LAFPP Educational Retreat – January 7, 2010

Performance Measurement

and Manager Evaluation

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Release Date: 06-30-2009

Vanguard PRIMECAP

Data updated through 06-30-2009

Rating	Net Assets	Morningstar Category
★★★★★	$15745.7 mil	Large Growth

Trailing-Time-Period Performance

		YTD	1 Mo	3 Mo	12 Mo	3 Yr Annlzd	5 Yr Annlzd	10 Yr Annlzd	15 Yr Annlzd	Load-Adjusted Return % as of 06-30-09	
Total Return % as of	06-30-09	7.93	0.78	14.13	-24.56	-4.17	1.51	2.84	10.95	12 Mo	-24.56
+/- S&P 500		4.77	0.58	-1.80	1.65	4.05	3.75	5.06	4.02	5 Yr	1.51
+/- Rus 1000Growth		-3.60	-0.34	-2.19	-0.06	1.28	3.34	7.02	4.97	10 Yr	2.84
% Rank within Category					30	15	7	3	1	Inception	12.67

1 = Best 100 = Worst

Calendar-Year Performance

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	06-09
Total Return %	41.34	4.47	-13.35	-24.56	37.75	18.31	8.50	12.31	11.49	-32.41	7.93
+/- S&P 500	20.30	13.57	-1.46	-2.46	9.06	7.43	3.59	-3.48	6.00	4.59	4.77
+/- Rus 1000Growth	8.18	26.89	7.07	3.32	8.00	12.01	3.24	3.24	-0.32	6.03	-3.60

Operations

Family:	Vanguard	Ticker:	VPMCX	Front-End Load:	0.00%
Inception:	1984-11-01	Min Init Purchase:	Closed	Deferred Load:	0.00%
Manager:	Schow/Van Slooten/Milias/Mo	Min IRA:	Closed	12b-1 Fee:	0.00%
Tenure:	16.2 Years	Min Auto Inv Plan:	Closed	Gross Exp Ratio:	0.50%
Telephone:	800-662-6273	Purchase Constraints:	C/	Net Exp Ratio:	0.50%
Objective	Growth	Internet:	NA	NAV/MKT:	48.07

MORNINGSTAR Principia™

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Investment Approach

Equity Style

Value Blend Growth — Large / Medium / Small

Equity Portfolio Statistics	Portfolio Avg	Relative Index	Relative Category
P/E Ratio TTM	12.4	0.93	0.89
P/C Ratio TTM	7.3	1.00	0.86
P/B Ratio TTM	2.1	1.05	0.87
3 Yr Earnings Growth %	22.4	1.75	1.09
Geo Avg Mkt Cap ($mil)	23789	0.65	0.97

Fixed-Income Style

Short Int Long — High / Medium / Low

Fixed-Income Portfolio Statistics	
Avg Eff Mat/Duration	—/—
Avg Weighted Coupon	—
Avg Weighted Price	
Avg Credit Quality	

Sector Weightings as of 03-31-09	% of Stocks	Relative S&P500
Information Economy	**29.8**	**1.43**
Software	13.7	3.19
Hardware	12.1	1.15
Media	3.8	1.41
Telecom	0.2	0.06
Service Economy	**49.7**	**1.22**
Healthcare	26.6	1.91
Consumer Services	7.4	0.89
Business Services	11.6	2.37
Financial Services	4.0	0.29
Manufact. Economy	**20.5**	**0.54**
Consumer Goods	2.7	0.27
Industrial Materials	11.0	0.96
Energy	6.7	0.51
Utilities	0.1	0.03

Composition % of assets as of 03-31-09

Cash	2.06	Bonds	0.00
U.S. Stocks	85.41	Other	0.00
Non-U.S. Stks	12.53		

Regional Exp % of stocks as of 03-31-09

Americas	91.2
Greater Europe	7.6
Greater Asia	1.2

Turnover Rate	11%
Assets in Top 10 Holdings %	33.92
Total Number of Holdings	112

MORNINGSTAR Principia™

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Risk / Return Profile

Morningstar	3 Yr 1565 funds	5 Yr 1294 funds	10 Yr 663 funds
Rating	★★★★	★★★★★	★★★★★
Risk	Below Avg	Below Avg	Avg
Return	Above Avg	High	High

MPT Statistics/Other Measurements

	Standard S&P 500	Best Fit Russ 1000 Growth
R-squared	93	96
Beta	0.94	0.94
Alpha	3.67	0.82

	3 Yr	5 Yr	10 Yr
Sharpe Ratio	-0.30		
Std Dev	18.53	15.93	18.38
Mean	-4.17	1.51	2.84

12-Month Yield	0.98%
30-day SEC Yield	0.94%
Potential Cap Gains Exp	5% of assets

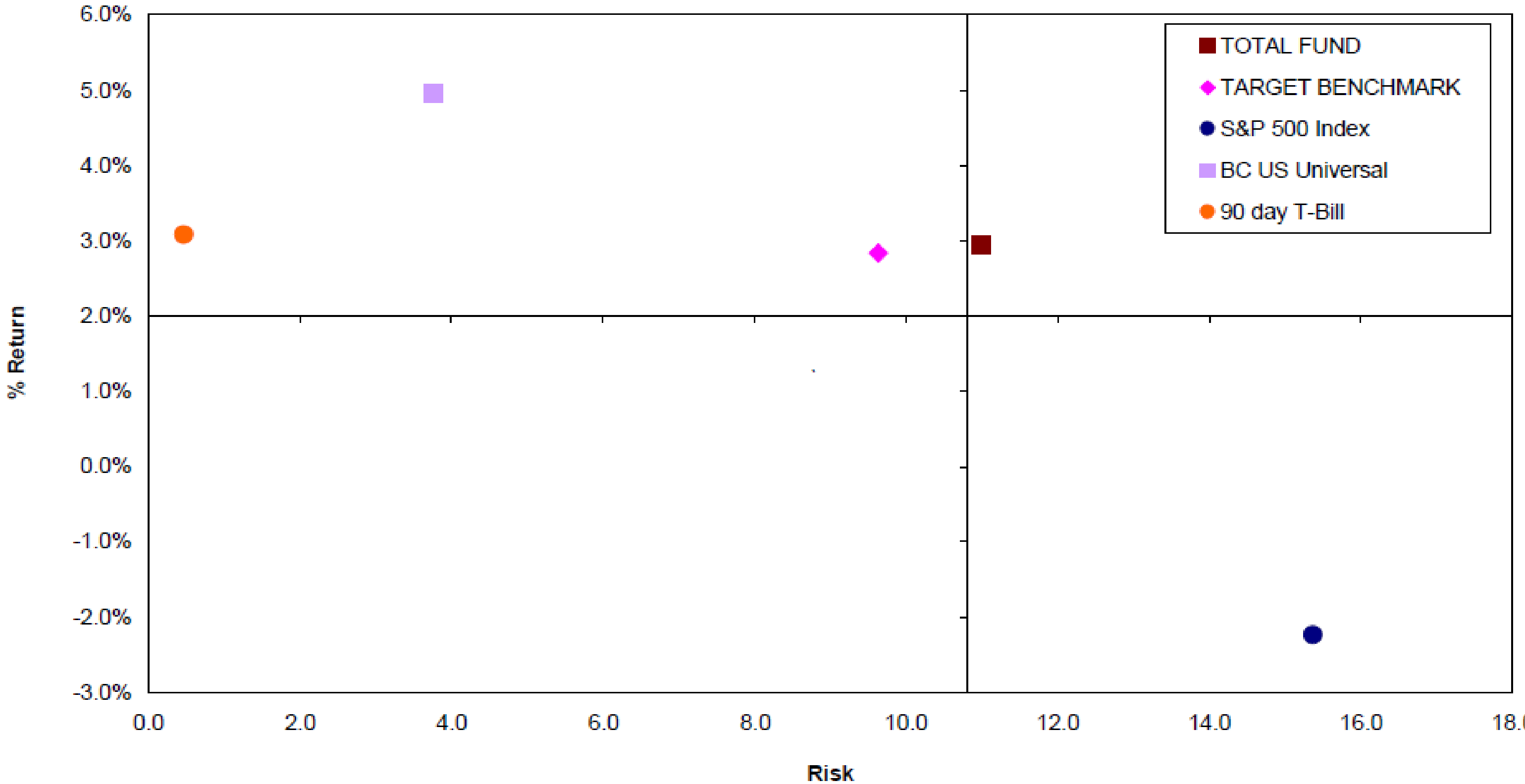
MORNINGSTAR Principia™

Los Angeles Fire and Police Pension System

Investment Policy Review

Total Fund Risk vs. Return - 5 Years

as of June 30, 2009



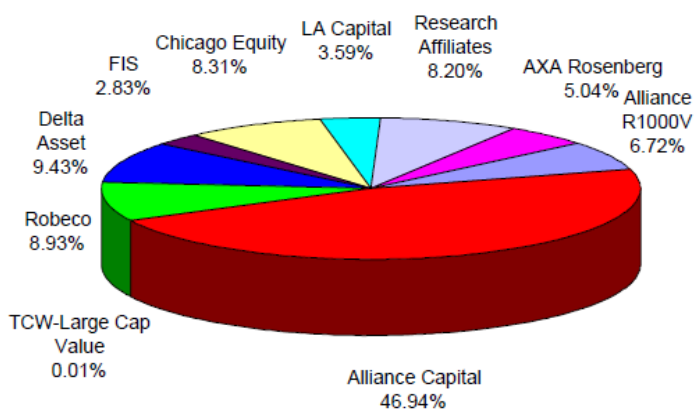
Source: LAFPPS Executive Summary 2nd Quarter 2009

Los Angeles Fire and Police Pension System

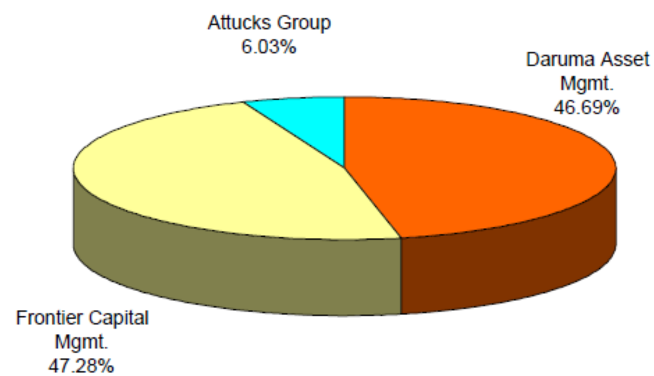
Investment Policy Review

as of June 30, 2009

Domestic Equity - Large Cap



Domestic Equity - Small Cap



Source: LAFPPS Executive Summary 2nd Quarter 2009

	Return	St. Deviation	Downside Risk	Beta	Alpha	R Squared	Sharpe Ratio	Tracking Error
Total Dom. Equity	-1.38	16.11	13.87	1.00	0.48	0.99	-0.28	1.66
Alliance Capital	-2.19	15.30	13.86	1.00	0.02	1.00	-0.34	0.12
Robeco LCV	1.78	15.77	13.17	0.94	3.58	0.95	-0.08	3.53
Delta Asset Mgmt	-0.95	15.61	13.99	0.96	0.72	0.95	-0.26	3.43
S&P 500 Index	-2.24	15.37	13.91				-0.35	

Source: LAFPPS Executive Summary 2nd Quarter 2009

Road Map of Presentation

1. **Risk-Adjusted Measures**
2. Manager Evaluation

Risk-Adjusted Measures

$$\begin{bmatrix}\text{Total}\\ \text{Risk}\end{bmatrix} = \begin{bmatrix}\text{Market}\\ \text{Risk}\end{bmatrix} + \begin{bmatrix}\text{Non - Market}\\ \text{Risk}\end{bmatrix}$$

Standard Deviation Of Return	ß	Tracking Error

- R^2 = Fraction of Total Risk that is Market Risk.

Risk-Adjusted Measures

- Total Risk Adjusted Measures
  - Sharpe Ratio
- Market Risk Adjusted Measure
  - α

Total Risk-Adjusted Performance

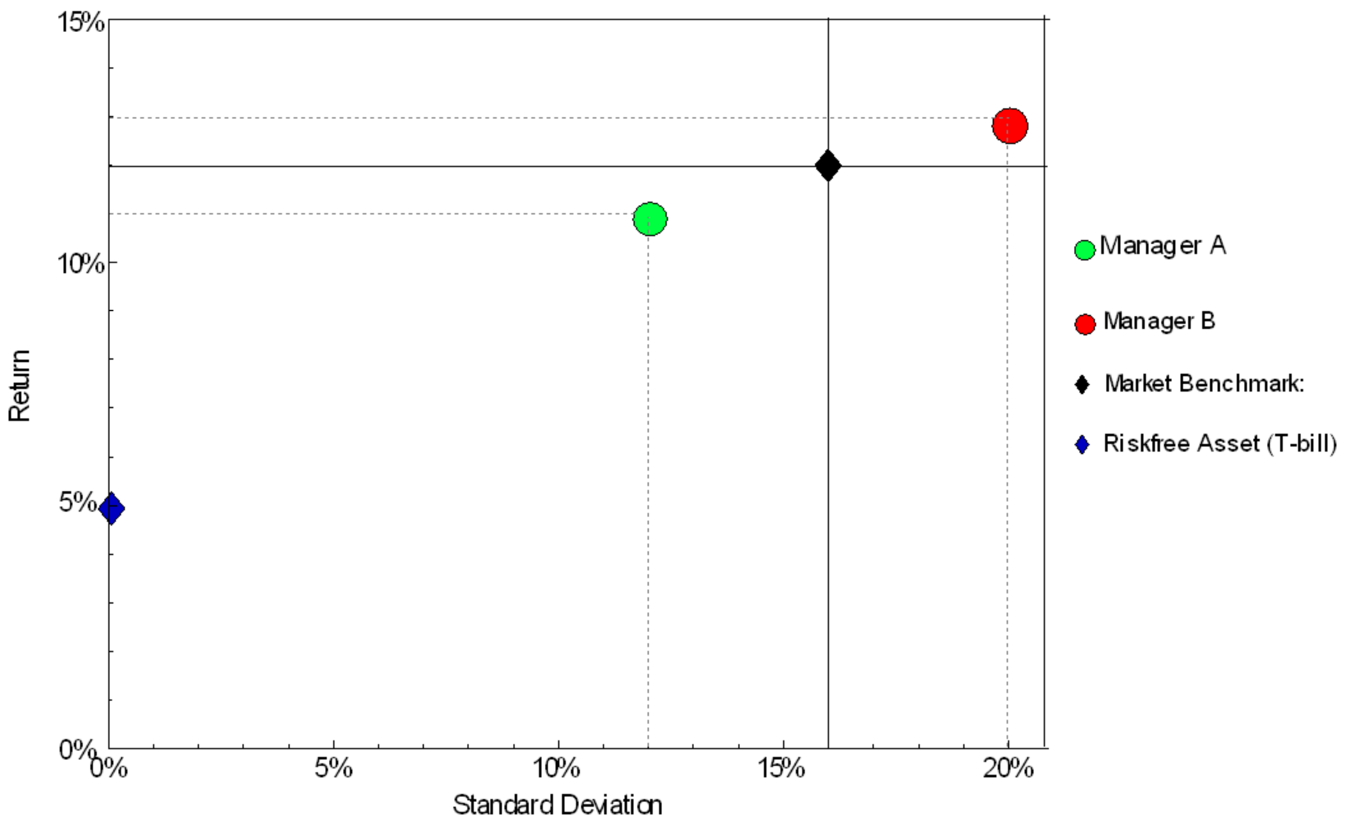
- Sharpe Ratio

$$\begin{bmatrix} \text{Sharpe} \\ \text{Ratio} \end{bmatrix} = \frac{\begin{bmatrix} \text{Fund} & - & \text{TBill} \\ \text{Return} & & \text{Return} \end{bmatrix}}{\begin{bmatrix} \text{Standard Deviation} \\ \text{of Fund Return} \end{bmatrix}}$$

  - Ratio provides a measure of return per unit total risk.
  - Higher ratio implies a more efficient portfolio.

Total Risk-Adjusted Performance

	Return	Standard Deviation
Mgr A	11%	12%
Mgr B	13%	20%
S&P	12%	16%
T-Bill	5%	---



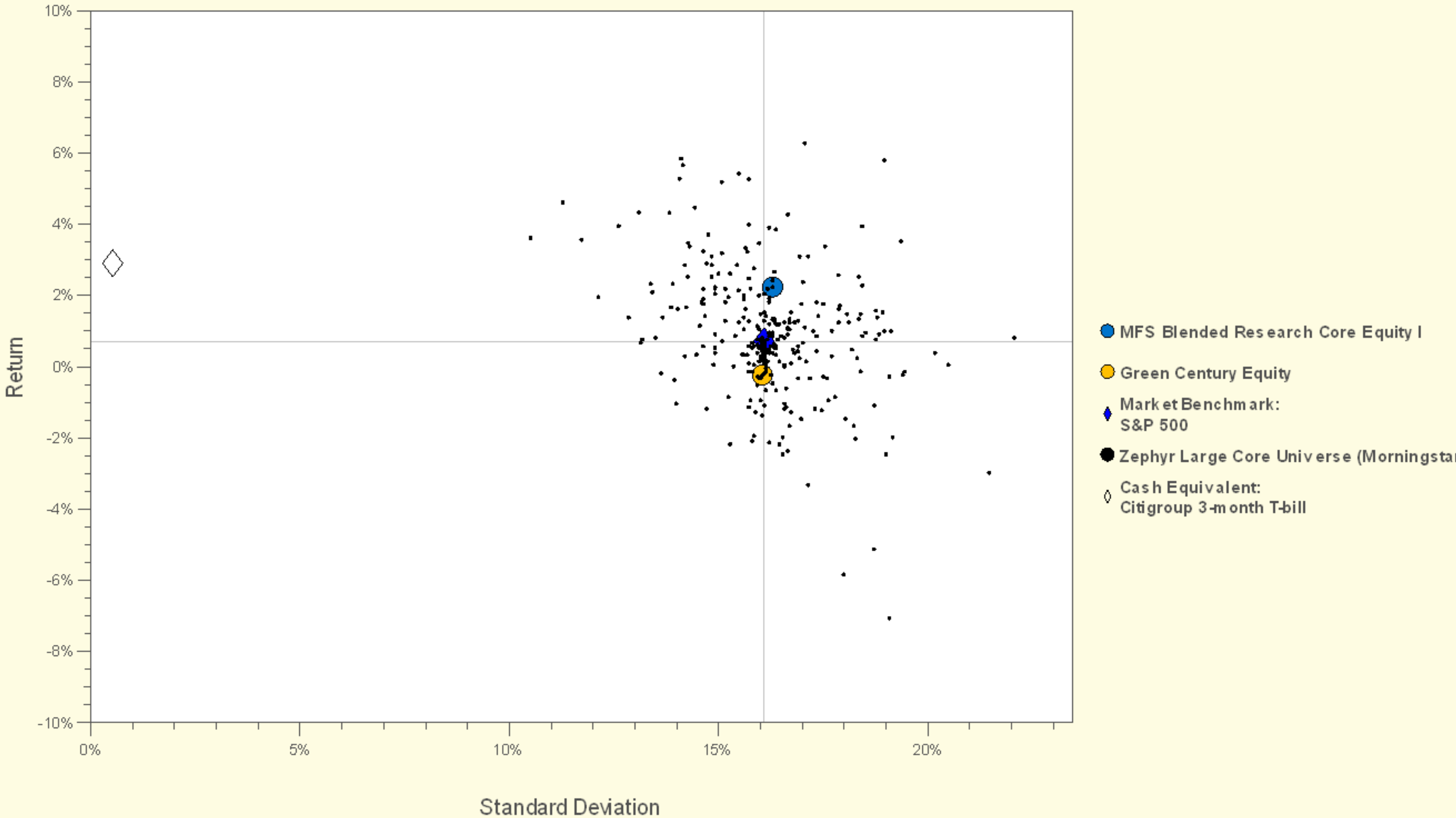
15%
10%
5%
0%
Return
0%
5%
10%
15%
20%
Standard Deviation
Manager A
Manager B
Market Benchmark:
Riskfree Asset (T-bill)

Zephyr StyleADVISOR

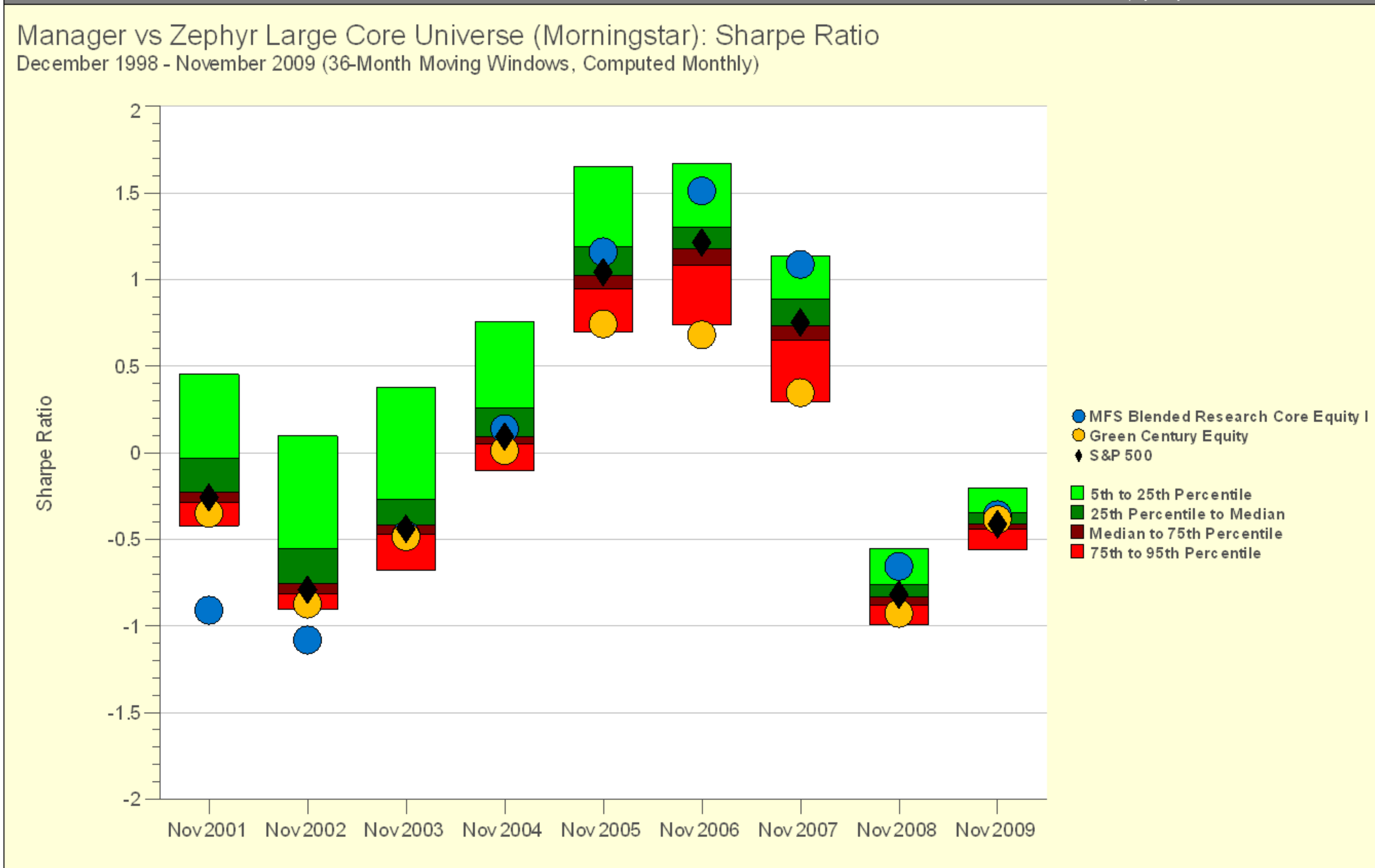
Zephyr StyleADVISOR: Wharton School

Risk / Return

December 2004 - November 2009 (Single Computation)



Zephyr StyleADVISOR



Market Risk-Adjusted Performance

	Return	ß
Mgr A	11%	0.67
Mgr B	13%	1.33
S&P	12%	1.00
T-Bill	5%	0.00

Market Risk-Adjusted Performance

- Need measure of expected return given Market Risk
  - Use ß as measure of market risk
  - Capital Asset Pricing Model (CAPM) provides expected return

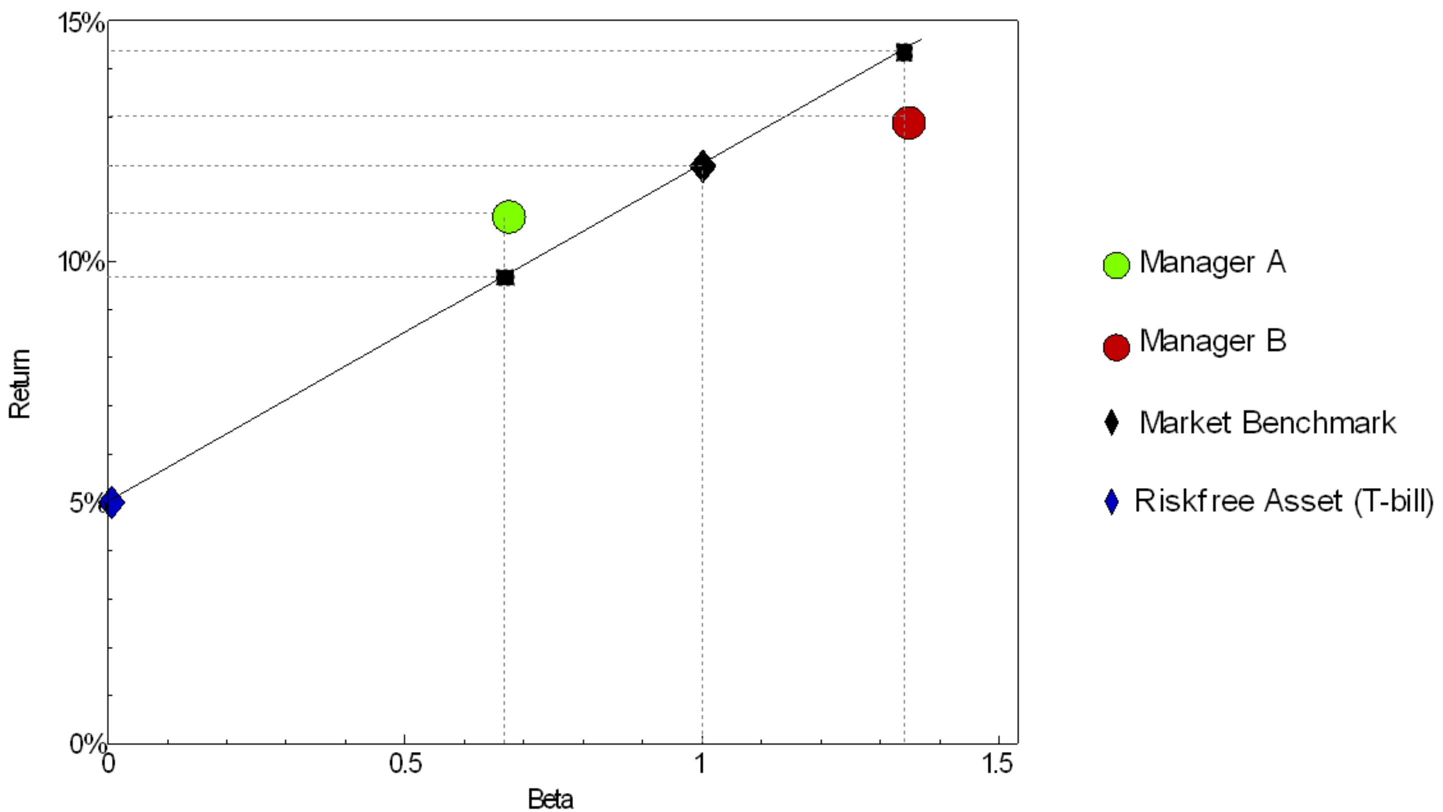
$$\begin{bmatrix} \text{Expected} \\ \text{Return} \\ \text{Given } \beta \end{bmatrix} = \begin{bmatrix} \text{Riskfree} \\ \text{T-Bill} \\ \text{Return} \end{bmatrix} + \beta \times \begin{bmatrix} \text{S\&P} & & \text{Riskfree} \\ \text{Market} & - & \text{T-Bill} \\ \text{Return} & & \text{Return} \end{bmatrix}$$

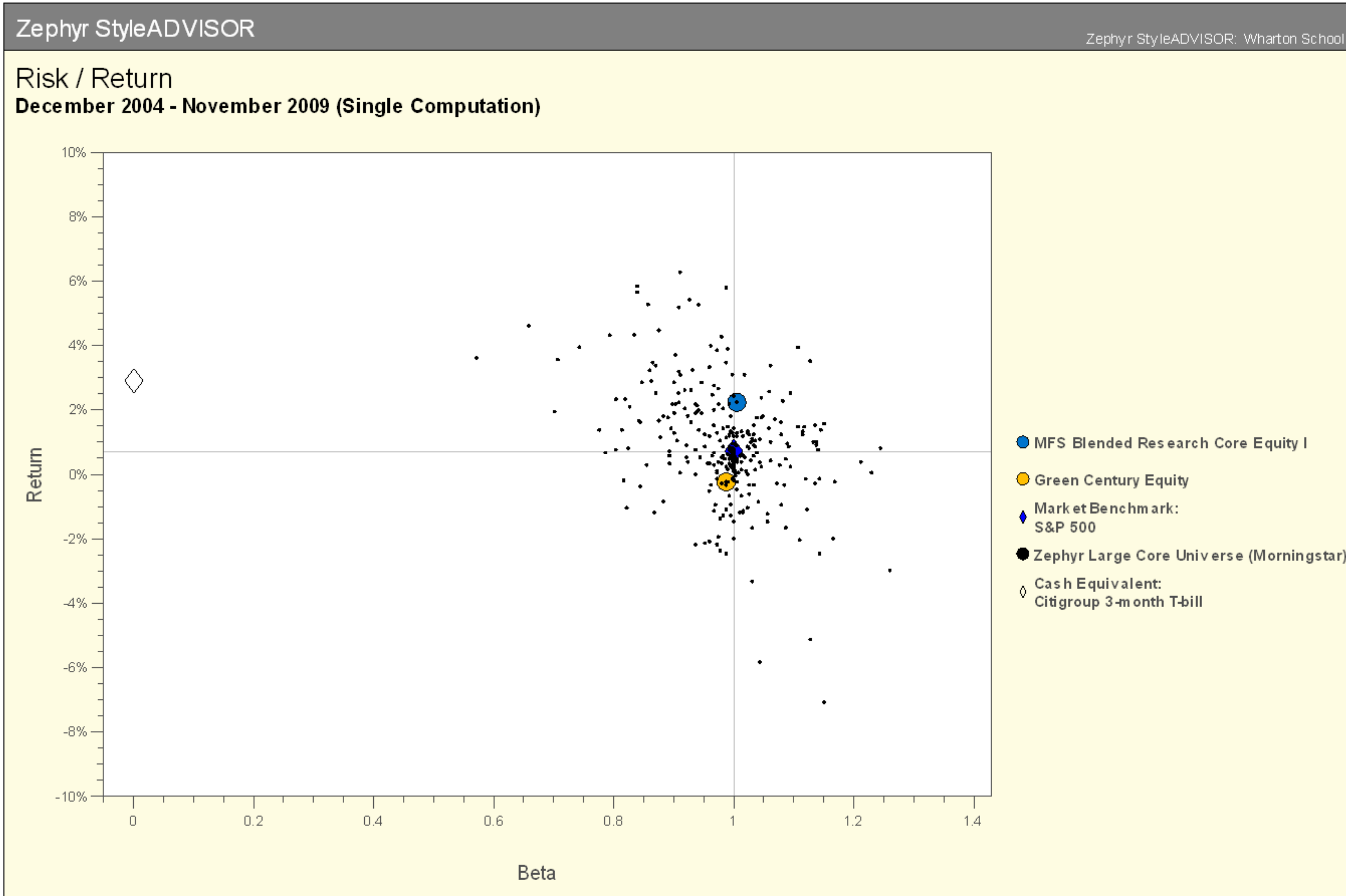
Market Risk-Adjusted Performance

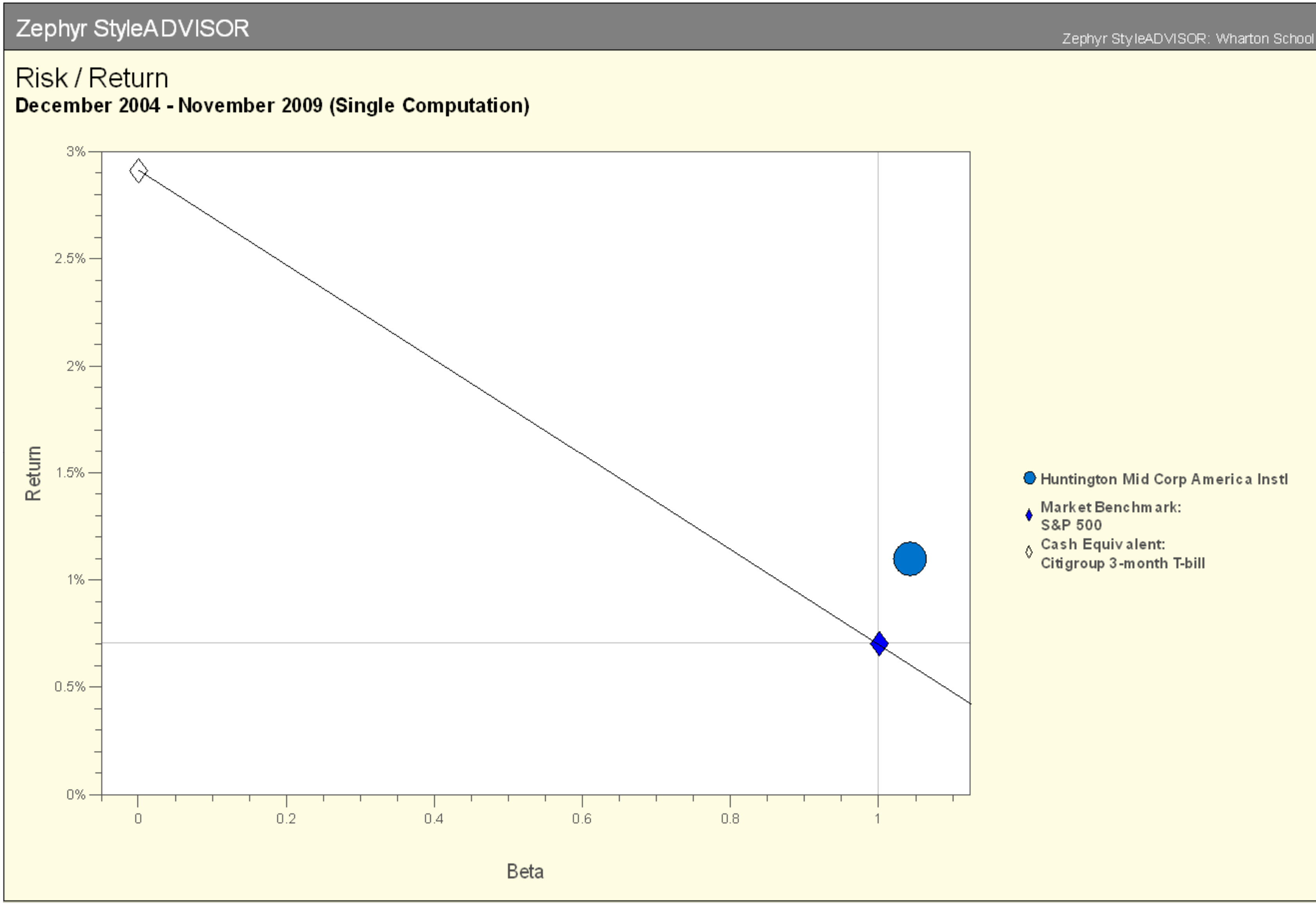
- Given the expected return, the market risk adjusted value added can be calculated.
- Often referred to as Jensen's α when CAPM used.

$$\alpha = \begin{bmatrix} \text{Fund} \\ \text{Return} \end{bmatrix} - \begin{bmatrix} \text{Expected Return} \\ \text{Given ß} \end{bmatrix}$$

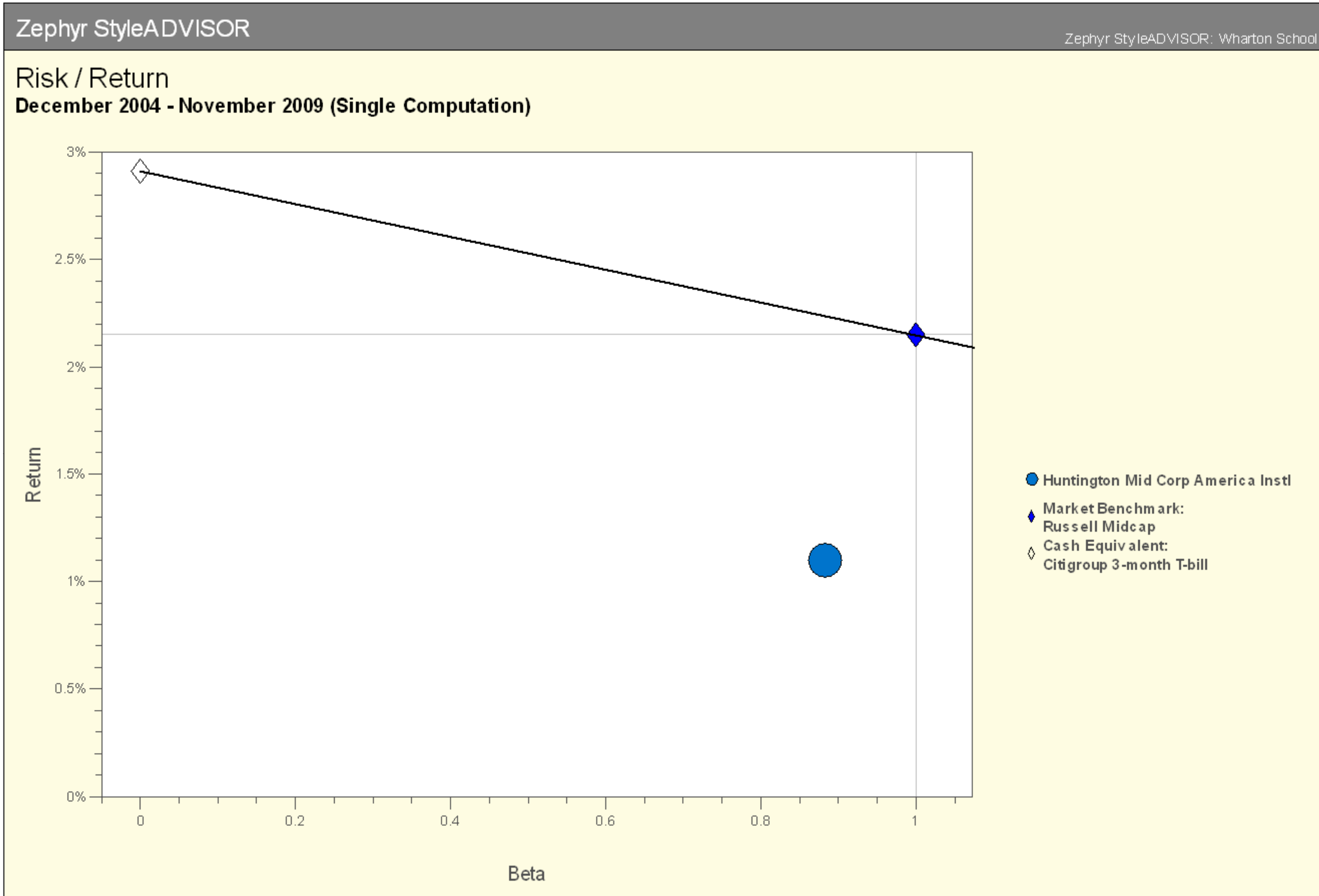
Market Risk-Adjusted Performance




Zephyr StyleADVISOR
Zephyr StyleADVISOR: Wharton School
Risk / Return
December 2004 - November 2009 (Single Computation)
Return
10%
8%
6%
4%
2%
0%
-2%
-4%
-6%
-8%
-10%
0
0.2
0.4
0.6
0.8
1
1.2
1.4
Beta
MFS Blended Research Core Equity I
Green Century Equity
Market Benchmark:
S&P 500
Zephyr Large Core Universe (Morningstar)
Cash Equivalent:
Citigroup 3-month T-bill



Zephyr StyleADVISOR
Zephyr StyleADVISOR: Wharton School
Risk / Return
December 2004 - November 2009 (Single Computation)
3%
2.5%
2%
1.5%
1%
0.5%
0%
Return
0
0.2
0.4
0.6
0.8
1
Beta
Huntington Mid Corp America Instl
Market Benchmark: S&P 500
Cash Equivalent: Citigroup 3-month T-bill



Zephyr StyleADVISOR
Zephyr StyleADVISOR: Wharton School
Risk / Return
December 2004 - November 2009 (Single Computation)
3%
2.5%
2%
1.5%
1%
0.5%
0%
Return
0
0.2
0.4
0.6
0.8
1
Beta
Huntington Mid Corp America Instl
Market Benchmark:
Russell Midcap
Cash Equivalent:
Citigroup 3-month T-bill

Road Map of Presentation

1. Risk-Adjusted Measures
2. **Manager Evaluation**

Manager Evaluation

- Use composition of portfolio
  - "Look under the hood"

- Objectives
  - Monitoring of diversification –
    - Is equity allocation diversified?

  - Evaluation of managers' value-added –
    - Did manager offer superior performance?

Manager Evaluation

- Approaches
  - Domestic Equity Portfolios
    - Use <u>style</u> or sectors
  - Global Portfolios
    - Use countries or regions
  - Fixed income Portfolios
    - Use duration and credit risk

Morningstar Indexes

2008

	Value	Core	Growth
Large Cap	-36.11	-31.47	-41.87
Mid Cap	-35.95	-38.73	-46.28
Small Cap	-31.67	-36.19	-39.92

Morningstar Indexes

2007

	Value	Core	Growth
Large Cap	-0.43	8.64	12.34
Mid Cap	-5.52	1.95	19.70
Small Cap	-8.15	-5.43	11.08

2006

	Value	Core	Growth
Large Cap	25.79	15.54	5.68
Mid Cap	18.81	14.72	9.63
Small Cap	20.03	21.17	10.04

Manager Evaluation

- Benchmarks

1. Policy benchmark for manager
2. Blended benchmark reflecting manager's actual portfolio composition

Manager Evaluation

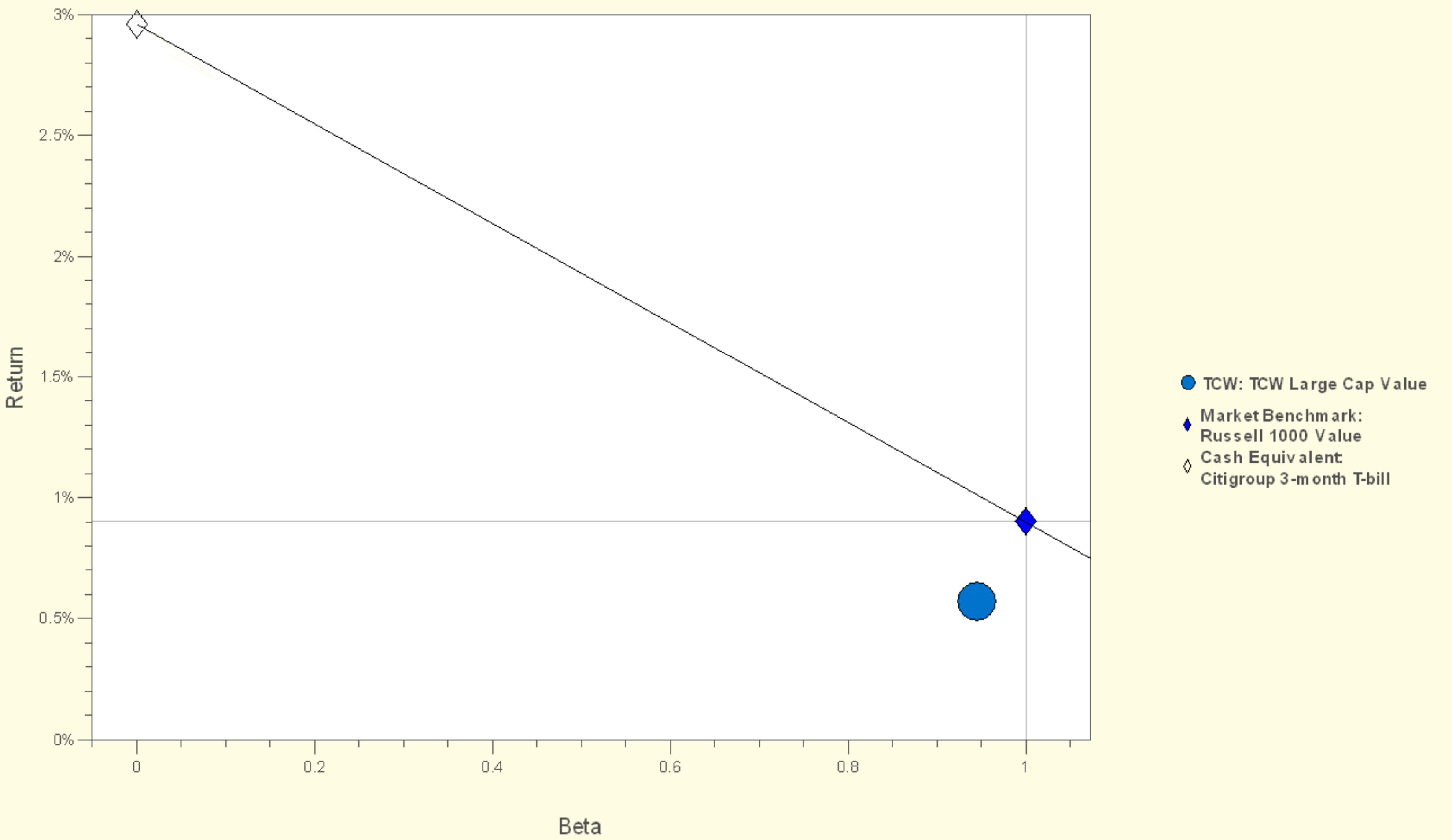
- Application
  - Manager Analysis

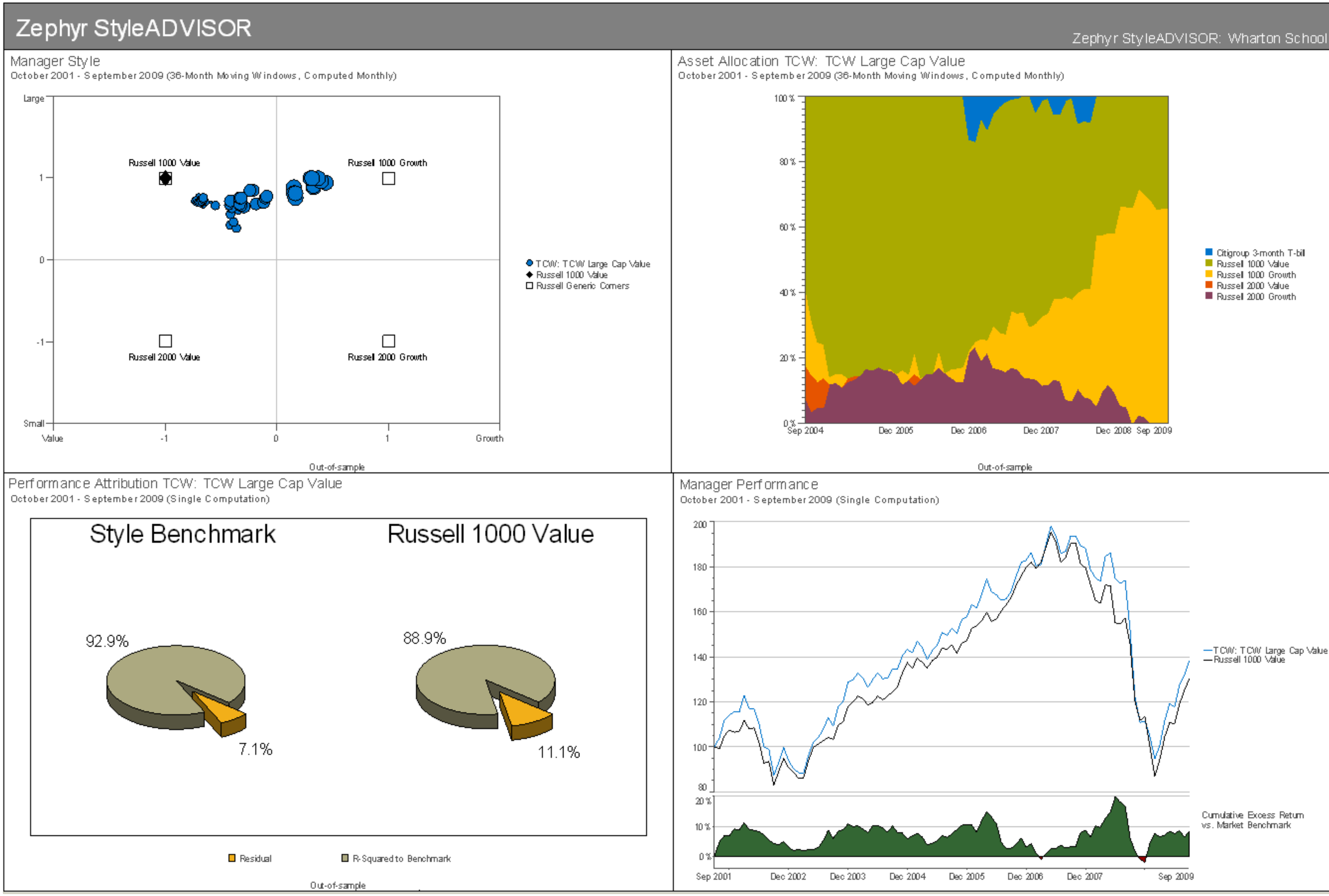
Zephyr StyleADVISOR

Zephyr StyleADVISOR: Wharton School

Risk / Return

October 2004 - September 2009 (Single Computation)




Zephyr StyleADVISOR
Zephyr StyleADVISOR: Wharton School
Manager Style
October 2001 - September 2009 (36-Month Moving Windows, Computed Monthly)
Large
Small
Value
Growth
Russell 1000 Value
Russell 1000 Growth
Russell 2000 Value
Russell 2000 Growth
TCW: TCW Large Cap Value
Russell 1000 Value
Russell Generic Corners
Out-of-sample
Asset Allocation TCW: TCW Large Cap Value
October 2001 - September 2009 (36-Month Moving Windows, Computed Monthly)
Sep 2004
Dec 2005
Dec 2006
Dec 2007
Dec 2008
Sep 2009
Citigroup 3-month T-bill
Russell 1000 Value
Russell 1000 Growth
Russell 2000 Value
Russell 2000 Growth
Out-of-sample
Performance Attribution TCW: TCW Large Cap Value
October 2001 - September 2009 (Single Computation)
Style Benchmark
Russell 1000 Value
92.9%
7.1%
88.9%
11.1%
Residual
R-Squared to Benchmark
Out-of-sample
Manager Performance
October 2001 - September 2009 (Single Computation)
TCW: TCW Large Cap Value
Russell 1000 Value
Cumulative Excess Return vs. Market Benchmark
Sep 2001
Dec 2002
Dec 2003
Dec 2004
Dec 2005
Dec 2006
Dec 2007
Sep 2009

Zephyr StyleADVISOR

Zephyr StyleADVISOR: Wharton School

Style Table

October 2001 - September 2009 (Single Computation)

	Russell 1000 Value		Asset Allocation						Style	
	Beta	R2 (%)	Sb3mtb	rvalue	rgrowth	r2value	r2growth	R2 (%)	Value-Growth	Small-Large
TCW: TCW Large Cap Value	0.9918	88.95	0.0000	0.5542	0.3244	0.0000	0.1214	92.88	-0.1084	0.7572

Out-of-sample

Performance Table

October 2001 - September 2009. 36-Month Moving Windows, Computed Monthly

	Portfolio Performance		vs. Style Benchmark				vs. Russell 1000 Value			
	Annualized Return (%)	Std Dev (%)	Annualized Excess Return (%)	Info Ratio	Explained Variance (%)	Tracking Error (%)	Annualized Excess Return (%)	Info Ratio	Explained Variance (%)	Tracking Error (%)
TCW: TCW Large Cap Value	0.58	17.32	-1.72	-0.36	92.32	4.81	-0.32	-0.05	88.19	6.03

Out-of-sample

Manager Evaluation

- Wrap-Up Discussion

Issues for manager selection, evaluation, and termination

Selection Issues:

1. Appropriate qualifications
2. Existing track record
3. Solid past performance
4. Reasonable fee structure
5. Knowledge of management and key personnel
6. Manager tenure information
7. Information on investment philosophy and strategy
8. Capacity for asset growth
9. Identification of policy benchmark
10. Information on turnover

Evaluation Issues:

1. Regular performance reports available
2. Satisfactory ongoing performance
3. Adherence to investment policy (risk)

Termination Issues:

1. Changes in investment style
2. Changes in organization
3. Change in manager
4. Changes in assets under management
5. Not adhering to philosophy / strategy
6. Poor performance relative to policy benchmark
7. Poor performance relative to peers
8. Lack of timely and accurate reporting
9. Fee structure not as agreed
10. Consider transition costs

Data for Examples

	Return	Standard Deviation	ß	Sharpe Ratio	α	Treynor Ratio
Mgr A	11%	12%	0.67	0.50	+1.3%	9%
Mgr B	13%	20%	1.33	0.40	-1.3%	6%
S&P	12%	16%	1.00	0.44	0.0%	7%
T-Bill	5%	---	---	---	---	

Useful Readings

- Fundamentals of Investments by B. Jordan and T. Miller, 4th edition, 2008, McGraw Hill-Irwin, New York.
- Investments by Z. Bodie, A. Kane, and A. Marcus,7th edition, 2008, McGraw Hill-Irwin, New York.
- “Determining a Fund's Effective Asset Mix” by W. Sharpe, published in Investment Management Review, September-October 1988.
- “Asset Allocation: Management Style and Performance Measurement” by W. Sharpe, published in Journal of Portfolio Management, Winter 1992.

Useful Readings (continued)

- "Asset Allocation and Stock Selection: On the Importance of Active Strategies" by A. Craig MacKinlay, published in Journal of Investment Consulting, December 1998.
- "Does Asset Allocation Policy Explain 40, 90, or 100 Percent of Performance?" by Roger Ibbotson and Paul Kaplan, published in Financial Analysts Journal, January-February 2000.
- "The Sharpe Ratio" by W. Sharpe, published in Journal of Portfolio Management, Fall 1994.