



# Dimensional vs. Vanguard

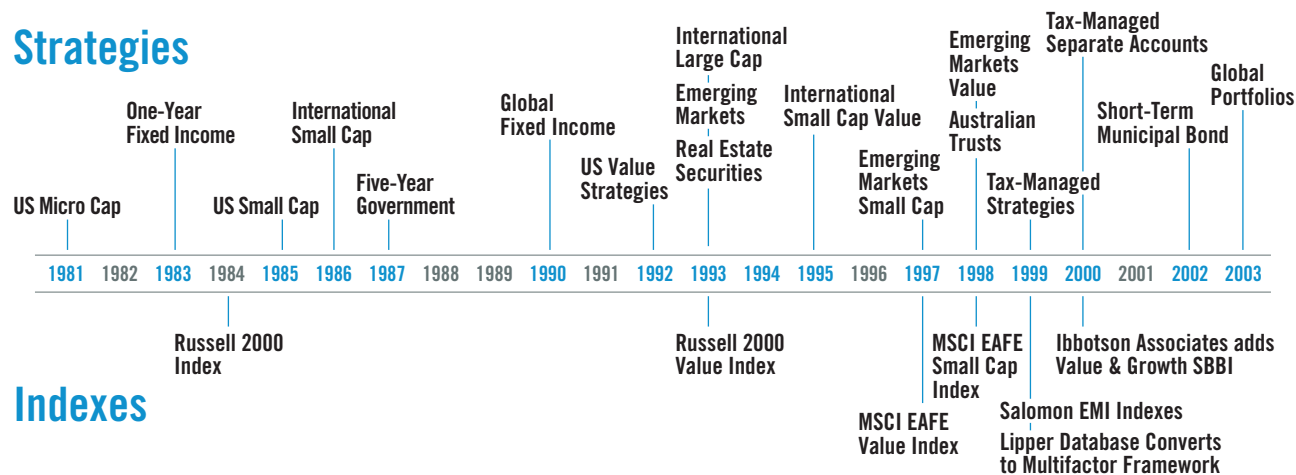
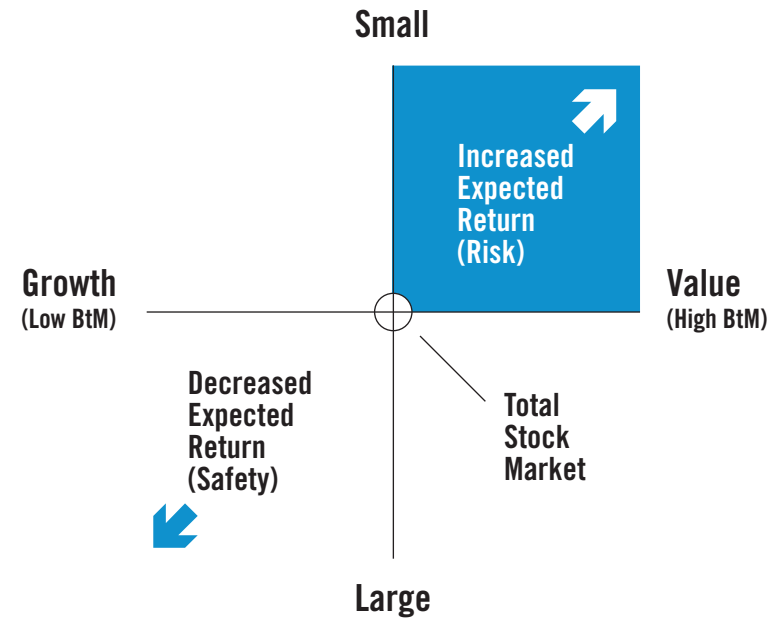
**May 3, 2005**

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## Financial Progress

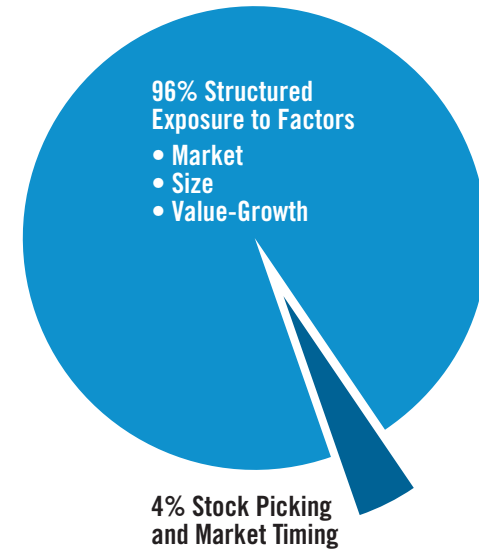
### Three Dimensions of Stock Returns Around the World

- Equity Market**  
 (complete value-weighted universe of stocks)  
 Stocks have higher expected returns than fixed income.
- Company Size**  
 (measured by market capitalization)  
 Small company stocks have higher expected returns than large company stocks.
- Company Price**  
 (measured by ratio of company book value to market equity)  
 Lower-priced “value” stocks have higher expected returns than higher-priced “growth” stocks.

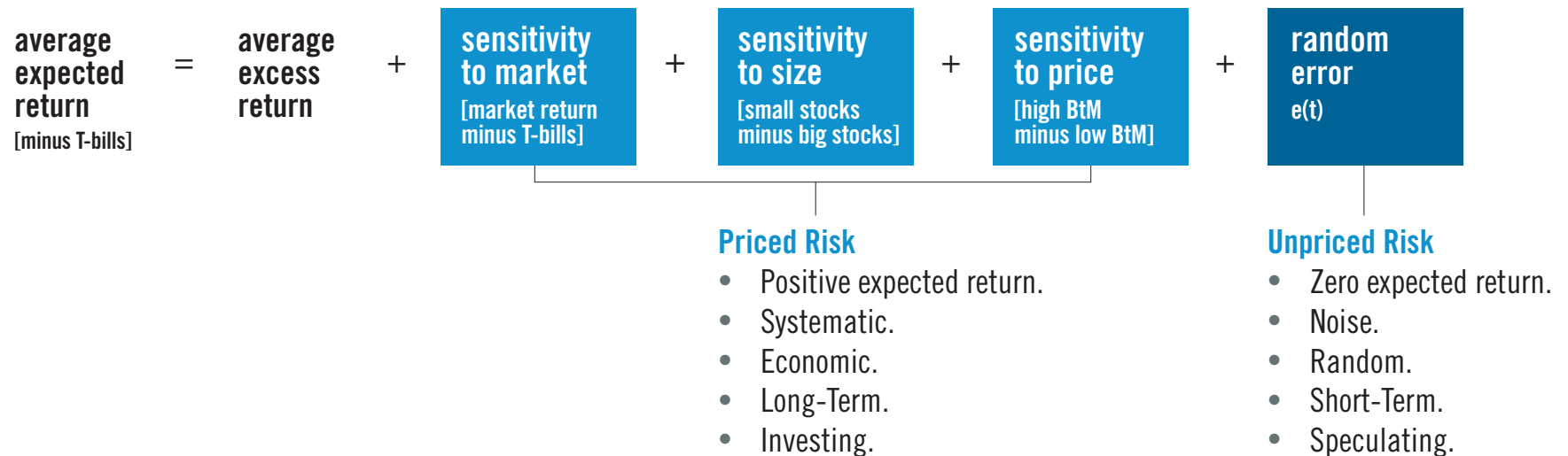


## Structure Determines Performance

- Over 96% of the variation in returns is due to risk factor exposure.
- This leaves only 4% of the variation to explain.
- After fees, traditional management typically reduces returns.



## The Model Tells the Difference Between Investing and Speculating



Source: Dimensional study (2002) of 44 institutional equity pension plans with \$452 billion total assets. Factor analysis run over various time periods, averaging nine years. Total assets based on total plan dollar amounts as of year-end 2001. Average explanatory power (R<sup>2</sup>) is for the Fama/French equity benchmark universe.

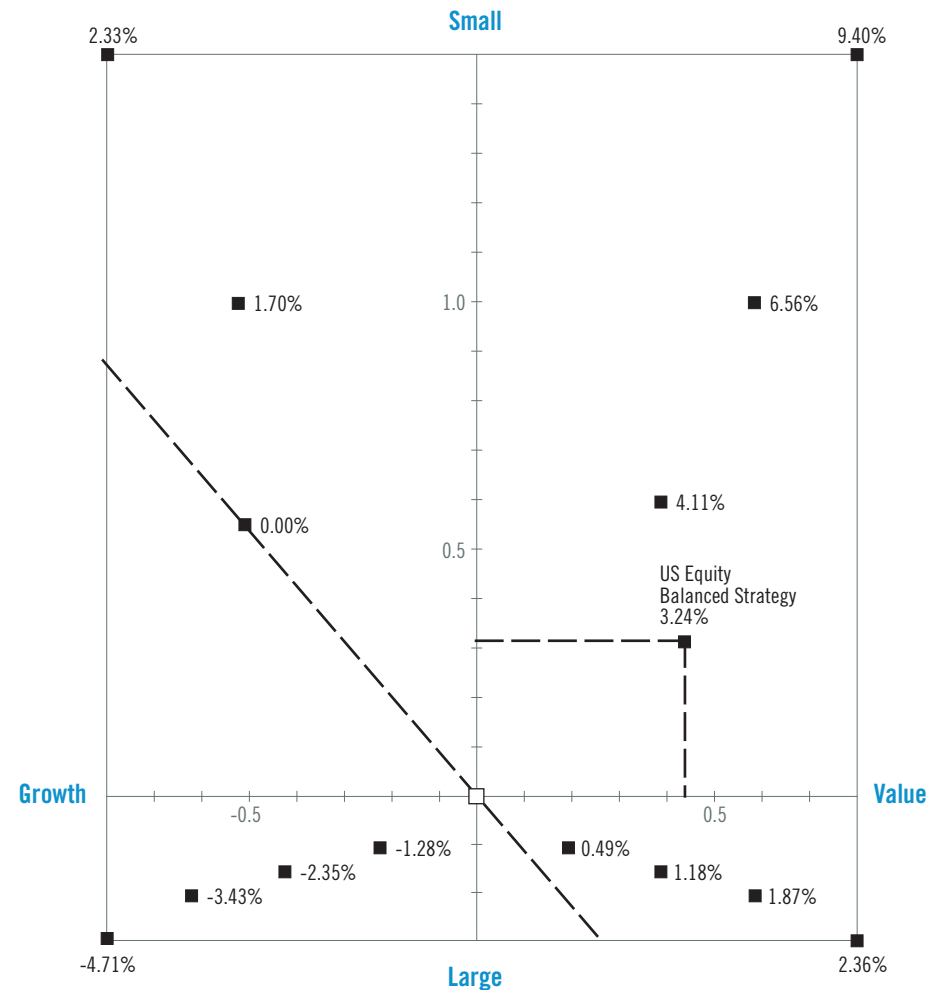
## Estimated Excess Return over Market Three-Factor Model

Market minus T-Bill = 8.48  
 Size Effect = 3.91  
 BtM Effect = 4.42

### Example Asset:

US Equity Balanced Strategy  
 Regression run from with monthly data from 1927-2003  
 Beta = 1.00  
 Size Loading = 0.32  
 BtM Loading = 0.45

Example Calculation:		
Beta × (Average Market minus T-Bill)	1.00 × (8.48)	<b>8.48</b>
Size Loading × (Average Size Effect)	+ 0.32 × (3.91)	<b>1.25</b>
BtM Loading × (Average BtM Effect)	+ 0.45 × (4.42)	<b>1.99</b>
Minus Market Excess Return	-	<b>8.48</b>
<b>Expected Return Over Market</b>		<b>3.24</b>



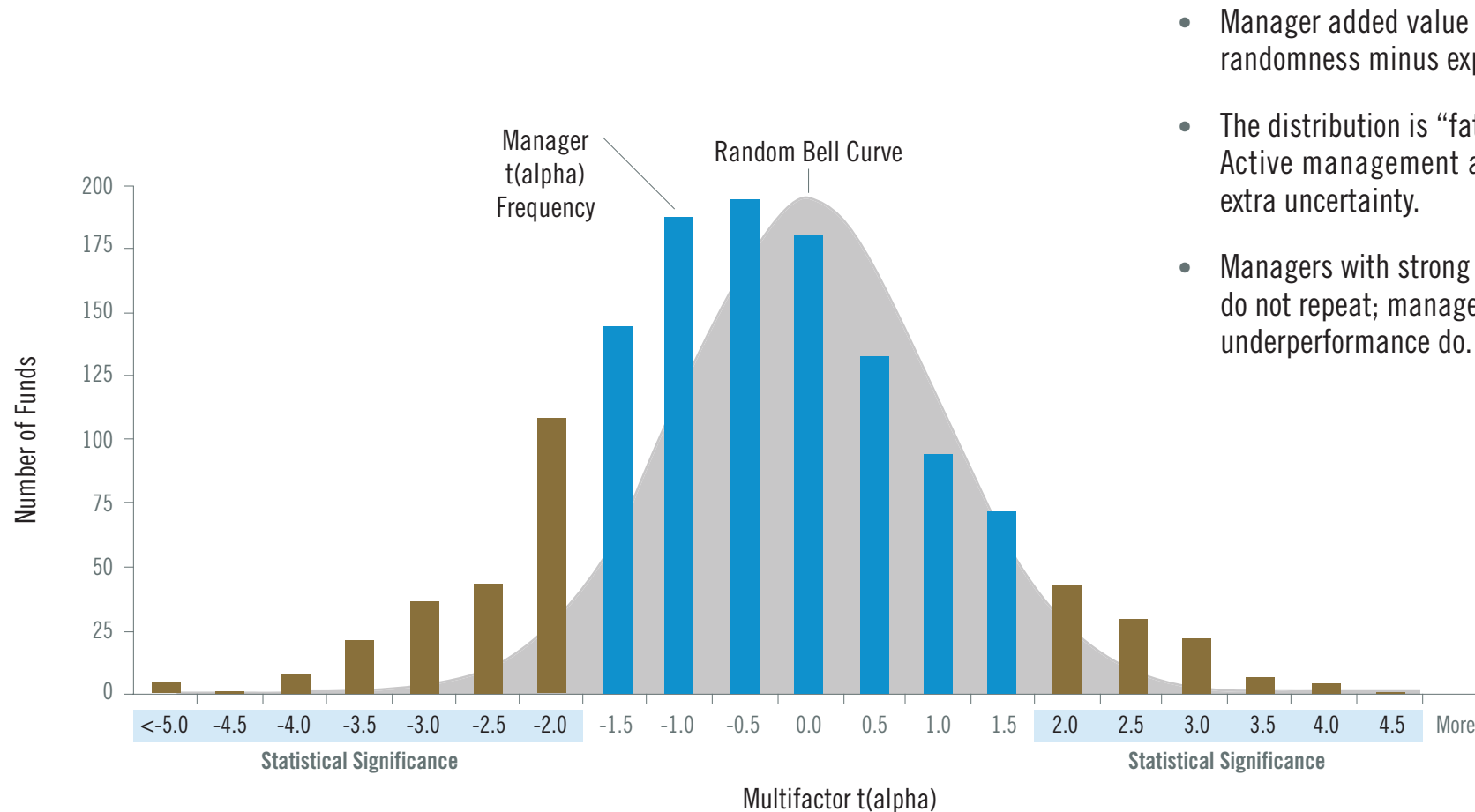
US Equity Balanced Strategy:  
 S&P 500 Index 33.5%, Fama/French US Large Cap Value Simulated Strategy 33.3%,  
 CRSP 6-10 Index 16.5%, Fama/French US Small Cap Value Simulated Strategy 16.7%.

## Value Added of Active Management vs. Chance

Distribution of Multifactor  $t(\alpha)$

1,302 Managers

1962-1995



- Manager added value is similar to randomness minus expenses.
- The distribution is “fat-tailed”: Active management adds extra uncertainty.
- Managers with strong outperformance do not repeat; managers with strong underperformance do.

## Sample Portfolio: All-Equity Allocation

Fund	Dimensional Portfolio	Vanguard Portfolio
Dimensional Large Company	20.0%	
Dimensional Large Value	20.0%	
Dimensional Micro Cap	5.0%	
Dimensional Small Cap	5.0%	
Dimensional Small Cap Value	10.0%	
Dimensional Real Estate Securities	7.0%	
Dimensional Large Cap Int	7.5%	
Dimensional Int Value	7.5%	
Dimensional Int Small Company	4.0%	
Dimensional Int Small Cap Val	4.0%	
Dimensional Emerging Markets	3.0%	
Dimensional Emerging Markets Value	3.0%	
Dimensional Emerging Markets Small	4.0%	
Vanguard S&P 500 Index		20.0%
Vanguard Value Index		20.0%
Vanguard Small Index		10.0%
Vanguard Small Value Index		10.0%
Vanguard REIT Securities Index		7.0%
Vanguard Developed Markets Index		7.5%
Vanguard Intl Value Index		7.5%
Vanguard Intl Explorer (Active Small/Mid)		8.0%
Vanguard Emerging Markets		10.0%
	<b>100.0%</b>	<b>100.0%</b>

Portfolios designed to match allocations across similar asset classes.

See Appendix: Standardized Performance Data and Disclosures to obtain complete information on performance, investment objectives, risks, advisory fees, and expenses of Dimensional's funds. The Portfolios above are not live investment vehicles. They are hypothetical portfolios that combine live mutual funds or separate accounts according to the weights shown, assuming quarterly rebalancing.

## Sample Portfolio: Domestic Equity Allocation

Fund	Domestic Dimensional	Vanguard Index	Expense Ratio
Dimensional Large Company	30%		0.15
Dimensional Large Cap Value	30%		0.32
Dimensional Micro Cap	8%		0.56
Dimensional Small Cap	7%		0.41
Dimensional Small Cap Value	15%		0.56
Dimensional REIT Securities	10%		0.39
Vanguard S&P 500 Index		30.0%	0.16
Vanguard Value Index		30.0%	0.34
Vanguard Small Index		15.0%	0.48
Vanguard Small Value Index		15.0%	0.47
Vanguard REIT Index		10.0%	0.24
	<b>100.0%</b>	<b>100.0%</b>	

Size Exposure (s)*	0.22	0.13
Value Exposure (h)*	0.28	0.22
Excess Annual Return E(R)	1.56	1.14
Weighted Average Expense Ratio	0.34	0.29

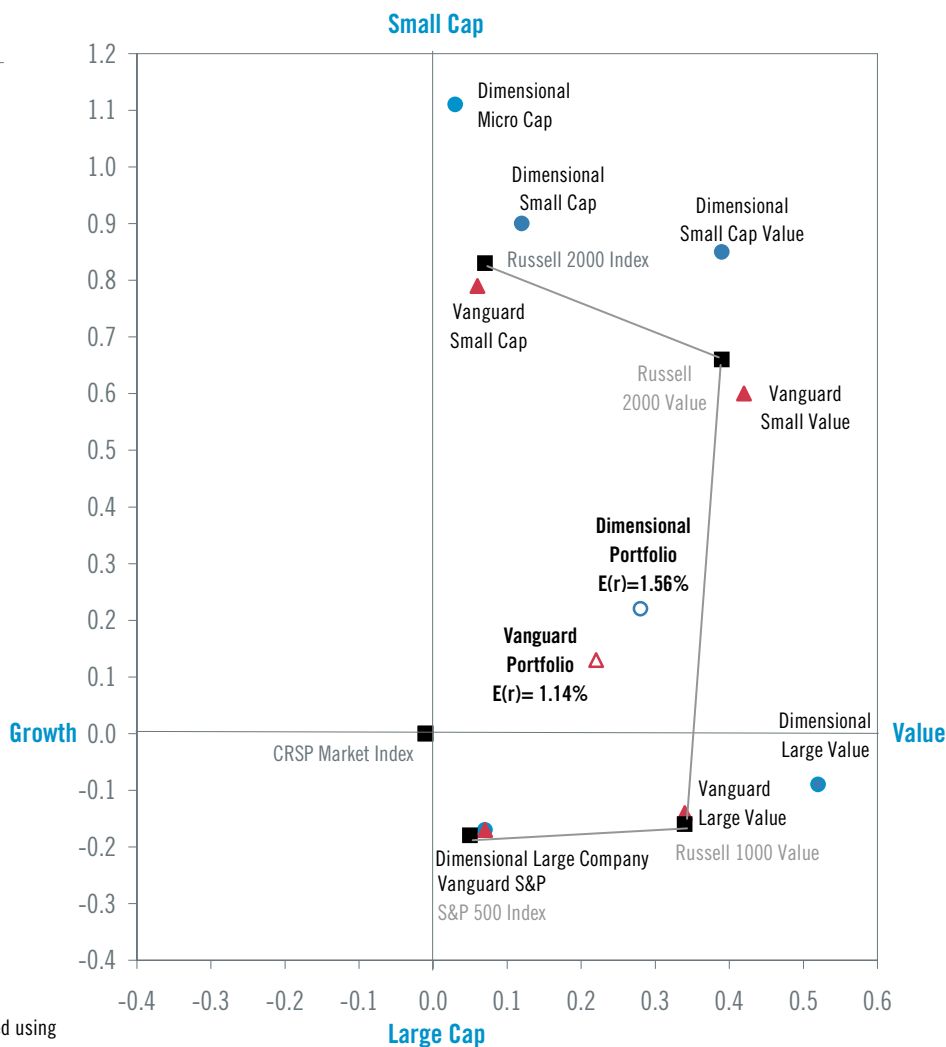
\*REIT Portfolios are excluded from regression analysis.

Excess annual return over the market computed using assumed premiums: Size Factor, 2.0%; Style Factor, 4.0%. Expected return is not a guarantee of future return. See Appendix: Standardized Performance Data and Disclosures to obtain complete information on performance, investment objectives, risks, advisory fees, and expenses of Dimensional's funds. The Portfolios above are not live investment vehicles. They are hypothetical portfolios that combine live mutual funds according to the weights shown, assuming quarterly rebalancing. Annualized standard deviation is presented as an approximation by multiplying the monthly value by the square root of twelve. Portfolio statistics were calculated from historical returns data (6/95 through 12/04).

## Three-Factor Regression Results: Domestic Equity

Monthly: January 1985 - February 2005

Manager	Excess Return Over Market	Alpha (α)	Market Factor (β)	Size Factor (s)	Price Factor (BtM)	R <sup>2</sup>
<b>Dimensional Portfolio</b>	<b>1.56</b>	<b>0.10</b>	<b>0.93</b>	<b>0.22</b>	<b>0.28</b>	<b>0.96</b>
<b>Vanguard Portfolio</b>	<b>1.14</b>	<b>-0.01</b>	<b>0.94</b>	<b>0.13</b>	<b>0.22</b>	<b>0.97</b>
Dimensional Large Company	1.90	0.18	0.96	-0.09	0.52	0.86
Dimensional Large Value	-0.06	0.00	0.99	-0.17	0.07	0.99
Dimensional Micro Cap	2.34	0.09	0.80	1.11	0.03	0.93
Dimensional Small Cap	2.28	-0.04	0.89	0.90	0.12	0.96
Dimensional Small Value	3.26	0.18	0.80	0.85	0.39	0.90
Vanguard S&P 500 Index	-0.06	0.01	0.99	-0.17	0.07	0.99
Vanguard Value Index	1.08	0.02	0.99	-0.14	0.34	0.95
Vanguard Small Index	1.82	-0.14	0.88	0.79	0.06	0.93
Vanguard Small Value Index	2.88	0.01	0.82	0.60	0.42	0.82
CRSP Market Index	-0.04	0.00	1.00	0.00	-0.01	1.00
CRSP Market Index	-0.04	0.00	1.00	0.00	-0.01	1.00
S&P 500 Index	-0.16	0.02	1.01	-0.18	0.05	0.99
Russell 1000 Value Index	1.04	0.04	0.95	-0.16	0.34	0.94
Russell 2000 Index	1.94	-0.14	0.97	0.83	0.07	0.95
Russell 2000 Value	2.88	0.03	0.85	0.66	0.39	0.86



Highlighted box in above table indicates significant result (t-stat greater than 2.0). Excess annual return over the market computed using assumed premiums: Size Factor, 2.0%; Style Factor, 4.0%. Expected return is not a guarantee of future return. See Appendix: *Standardized Performance Data and Disclosures* to obtain complete information on performance, investment objectives, risks, advisory fees, and expenses of Dimensional's funds. Sources: The S&P Data are provided by Standard & Poor's Index Services Group; Russell data courtesy of Russell Analytic Services; CRSP Index returns from the Center for Research in Security Prices, University of Chicago.

## Domestic Equity Characteristics

As of Month-End March 2005

Dimensional Asset Class	Ticker	Total Number of Holdings	P/B Ratio TTM	Geo Avg Market Cap \$MM	% Cash	% US Stocks	% Non-US Stocks	% Bonds	% Other	Expense Ratio	12b-1 Current	Sharpe Ratio
Micro Cap	DFSCX	2,455	2.90	289	0.50	98.30	0.10	0.00	1.10	0.56	0.00	0.66
Small Cap	DFSTX	2,965	3.10	629	1.60	97.40	0.10	0.10	0.80	0.41	0.00	0.48
Tag-Managed Small Cap	DFTSX	2,845	3.00	705	1.10	98.90	0.00	0.00	0.00	0.56	0.00	0.44
Small Cap Value	DFSVX	1,370	1.50	522	2.30	96.80	0.00	0.00	0.80	0.56	0.00	0.80
Tax-Managed Small Value	DTMVX	1,604	1.80	650	1.50	98.40	0.00	0.00	0.00	0.56	0.00	0.57
US Large Company	DFLCX	500	4.40	45,651	1.90	95.70	0.00	0.00	2.40	0.15	0.00	0.15
Enhanced US Large Comp.	DFELX	~	~	~	0.40	~	0.00	~	99.60	0.37	0.00	0.18
Tax Managed US Equity	DTMEX	2,784	4.50	25,334	0.50	98.80	0.10	0.00	0.50	0.25	0.00	0.11
Large Cap Value	DFLVX	227	1.60	12,775	1.10	97.60	0.30	0.00	0.90	0.32	0.00	0.49
Tax-Managed Mkt Wid Value	DTMMX	1,633	1.80	8,461	1.50	96.80	0.80	0.00	0.90	0.42	0.00	0.34
REIT Securities Portfolio	DFREX	128	2.70	3,221	1.40	98.60	0.00	0.00	0.00	0.39	0.00	1.18

Vanguard Index	Ticker	Total Number of Holdings	P/B Ratio TTM	Geo Avg Market Cap \$MM	% Cash	% US Stocks	% Non-US Stocks	% Bonds	% Other	Expense Ratio	12b-1 Current	Sharpe Ratio
Small Cap	NAESX	1,763	3.90	1,350	0.30	99.70	0.00	0.00	0.00	0.23	0.00	0.48
Tax-Managed Small Cap	VTMSX	606	3.40	1,072	0.00	99.90	0.00	0.00	0.10	0.14	0.00	0.57
Small Cap Value	VISVX	961	2.50	1,348	0.40	99.50	0.10	0.00	0.00	0.23	0.00	0.47
S&P 500	VFINX	509	4.30	47,646	0.40	99.60	0.00	0.00	0.00	0.18	0.00	0.15
Institutional Index	VINIX	507	4.30	47,663	0.30	99.70	0.00	0.00	0.00	0.05	0.00	0.16
Value Index	VIVAX	394	2.70	44,107	0.00	99.90	0.10	0.00	0.00	0.21	0.00	0.34
Value (Active)	VUVLX	336	3.20	22,839	1.40	98.60	0.00	0.00	0.00	0.49	0.00	0.35
Total Stock Index	VTSMX	3,721	4.30	23,016	0.30	99.70	0.10	0.00	0.00	0.19	0.00	0.25
REIT Index	VGSIX	122	3.00	3,507	2.10	97.90	0.00	0.00	0.00	0.24	0.00	1.13

Notes: Enhanced S&amp;P derives returns from S&amp;P 500 equity-linked derivatives fixed income, and cash.

Source: Morningstar Principia Mutual Fund Database and Dimensional Fund Advisors Inc.

## Sample Portfolio: International Equity Allocation

Fund	International Dimensional	International Vanguard	Expense Ratio
Dimensional Intl Large	23%		0.41
Dimensional Intl Value	23%		0.51
Dimensional Intl Small	12%		0.69
Dimensional Intl Small Value	12%		0.78
Dimensional Emerging Markets	9%		0.74
Dimensional Emerging Markets Value	9%		0.77
Dimensional Emerging Markets Small	12%		1.04
Vanguard Developed Markets Index		23.0%	0.31
Vanguard Intl Value Index		23.0%	0.23
Vanguard Explorer (Active Small)		24.0%	0.60
Vanguard Emerging Markets		30.0%	0.48
	<b>100.0%</b>	<b>100.0%</b>	

Size Exposure (s)*	0.37	0.21
Value Exposure (h)*	0.30	0.08
Excess Annual Return E(R)	1.94	0.74
Weighted Average Expense Ratio	0.65	0.41

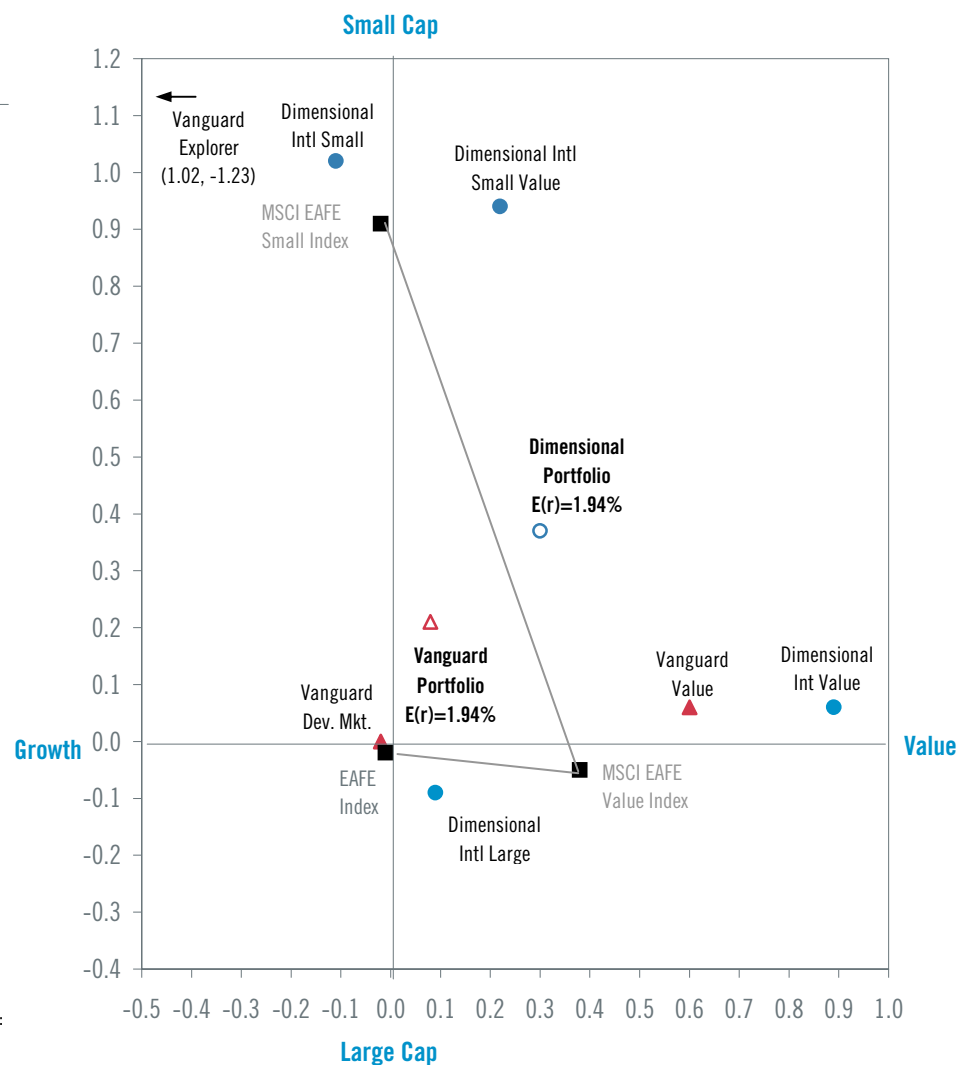
\*Emerging Market Portfolios are excluded from regression analysis.

Excess annual return over the market computed using assumed premiums: Size Factor, 2.0%; Style Factor, 4.0%. Expected return is not a guarantee of future return. See Appendix: Standardized Performance Data and Disclosures to obtain complete information on performance, investment objectives, risks, advisory fees, and expenses of Dimensional's funds. The Portfolios above are not live investment vehicles. They are hypothetical portfolios that combine live mutual funds according to the weights shown, assuming quarterly rebalancing. Annualized standard deviation is presented as an approximation by multiplying the monthly value by the square root of twelve. Portfolio statistics were calculated from historical returns data (6/95 through 12/04).

## Six-Factor Regression Results: International Equity

Monthly: March 1985 - February 2005

Manager	Excess Return Over Market	Alpha ( $\alpha$ )	Market Factor ( $\beta$ )	Size Factor (s)	Price Factor (BtM)	R <sup>2</sup>
<b>Dimensional Portfolio</b>	<b>1.94</b>	<b>0.01</b>	<b>0.96</b>	<b>0.37</b>	<b>0.30</b>	<b>1.00</b>
<b>Vanguard Portfolio</b>	<b>0.74</b>	<b>-0.19</b>	<b>1.06</b>	<b>0.21</b>	<b>0.08</b>	<b>0.99</b>
Dimensional Intl Large	-0.15	-0.09	0.97	-0.09	0.09	0.98
Dimensional Intl Value	2.85	-0.15	1.00	0.06	0.89	0.99
Dimensional Intl Small	2.73	0.02	1.00	1.02	-0.11	0.98
Dimensional Intl Small Value	3.43	0.05	0.99	0.94	0.22	0.97
Vanguard Developed Markets Index	-0.11	-0.08	0.99	0.00	-0.02	1.00
Vanguard Intl Value Index	2.03	-0.22	1.01	0.06	0.60	0.91
Vanguard Explorer (Active Small)	0.32	0.75	1.13	1.12	-1.23	0.78
MSCI EAFE Index	-0.08	-0.08	0.99	-0.02	-0.01	0.97
MSCI EAFE Value Index	1.42	1.42	0.99	-0.05	0.38	0.96
MSCI EAFE Small Index	1.74	1.74	1.11	0.91	-0.02	0.97



Highlighted box in above table indicates significant result (t-stat greater than 2.0). Excess annual return over the market computed using assumed premiums: Size Factor, 2.0%; Style Factor, 4.0%. Expected return is not a guarantee of future return. See Appendix: *Standardized Performance Data and Disclosures* to obtain complete information on performance, investment objectives, risks, advisory fees, and expenses of Dimensional's funds. Sources: MSCI data copyright MSCI 2005. All rights reserved.

## International and Global Equity Characteristics

As of Month-End March 2005

Dimensional Asset Class	Ticker	Total Number of Holdings	P/B Ratio TTM	Geo Avg Market Cap \$MM	% Cash	% US Stocks	% Non-US Stocks	% Bonds	% Other	Expense Ratio	12b-1 Current	Sharpe Ratio
Intl Small	DFISX	4,246	3.50	440	1	0	98	0	0	0.69	0.00	1.82
Intl Small Value	DISVX	2,488	1.90	427	1	0	99	0	1	0.78	0.00	2.04
Intl Value	DFIVX	591	2.20	7,723	0	0	99	0	1	0.51	0.00	1.05
Intl Large	DFALX	1,474	4.60	20,401	1	0	98	0	1	0.41	0.00	0.69
Intl Tax-Managed Value	DTMIX	791	2.50	6,846	3	0	97	0	0	0.65	0.00	1.02
Emerging Markets	DFEMX	496	3.70	3,360	1	1	93	0	5	0.74	0.00	1.03
Emerging Small	DEMSX	1,320	2.60	330	1	0	95	0	4	1.04	0.00	1.29
Emerging Value	DFEVX	1,361	2.30	489	5	0	87	0	8	0.77	0.00	1.36

Vanguard Index	Ticker	Total Number of Holdings	P/B Ratio TTM	Geo Avg Market Cap \$MM	% Cash	% US Stocks	% Non-US Stocks	% Bonds	% Other	Expense Ratio	12b-1 Current	Sharpe Ratio
Int'l Explorer (Active)*	VINEX	254	4.60	1,176	3	0	97	0	1	0.57	0.00	1.17
Intl Value	VTRIX	176	4.50	20,098	7	0	90	0	3	0.56	0.00	0.72
Developed Markets	VDMIX	0	4.70	25,331	0	0	97	0	2	0.00	0.00	0.69
Intl Tax-Managed	VTMGX	1,055	4.70	26,366	0	0	97	0	3	0.23	0.00	0.69
Intl Total Stock	VGTSX	637	4.60	22,219	0	0	97	0	3	0.00	0.00	0.72
Emerging Markets	VEIEX	637	3.80	7,526	0	1	95	0	4	0.48	0.00	0.94

\*Currently no Int'l Small/Mid indices offered by Vanguard. Vanguard Int'l Explorer is an actively managed investment vehicle.

Source: Morningstar Principia Mutual Fund Database and Dimensional Fund Advisors Inc.

# Domestic Equity Performance Summary

As of Month-End March 2005

	<b>Fund</b>	<b>1 Year</b>	<b>3 Year</b>	<b>5 Year</b>	<b>10 Year</b>
Small	Dimensional Micro Cap	4.06	13.00	8.58	14.84
	Dimensional Small Cap	5.66	9.34	7.25	12.92
	Vanguard Small Cap	8.21	8.91	4.76	11.32
	Vanguard Tax-Managed Small Cap	13.33	10.11	9.93	N.A.
	Russell 2000 Index	5.41	8.04	4.01	10.43
Small Value	Dimensional Small Cap Value	13.39	16.49	16.69	17.04
	Dimensional Tax-Managed Small Value	10.76	11.54	13.64	N.A.
	Vanguard Small Cap Value Index	11.46	8.38	13.58	N.A.
	Russell 2000 Value	9.79	11.49	15.41	14.28
Large	Dimensional Large Company	6.56	2.62	-3.31	10.60
	Dimensional Enhanced US Large Co.	5.03	3.05	-3.07	N.A.
	Dimensional Tax Managed US Equity	6.85	2.07	N.A.	N.A.
	Vanguard S&P 500	6.57	2.64	-3.24	10.72
	Vanguard Institutional Index	6.69	2.77	-3.12	10.86
	S&P 500 Index	6.67	2.75	-3.16	10.80
Large Value	Dimensional Large Cap Value	14.03	8.34	9.95	13.46
	Dimensional Tax Managed Marketwide Value	13.84	6.05	6.38	N.A.
	Vanguard Value (Active)	8.15	5.66	N.A.	N.A.
	Vanguard Value Index	12.42	5.83	2.31	11.09
	Russell 1000 Value	13.16	7.15	5.19	12.81

## Domestic Equity Performance Summary

As of Month-End March 2005

	<b>Fund</b>	<b>1 Year</b>	<b>3 Year</b>	<b>5 Year</b>	<b>10 Year</b>
Market	Vanguard Total Stock Market Index	7.05	4.13	-2.65	10.57
	CRSP 1-10 Index	6.85	4.06	-3.00	10.78
Real Estate	Dimensional REIT Securities Portfolio	17.80	20.20	20.91	14.44
	Vanguard REIT Index	16.14	19.42	19.94	N.A.
	Wilshire All-REIT Index	12.53	17.63	20.05	14.30
					<b>Total Data*</b>
<b>Portfolios</b>	<b>Dimensional</b>				<b>7.29</b>
	<b>Vanguard</b>				<b>5.04</b>

### Notes

\*Total Data as of June 1998.

Performance for periods greater than one year are annualized.

Source: Dimensional fund returns from Dimensional Fund Advisors Inc.; Third-party fund returns from Morningstar Principia Database; Russell Index returns from Frank Russell Company; S&P 500 Index returns from Ibbotson Associates

# International Equity Performance Summary

As of Month-End March 2005

	<b>Fund</b>	<b>1 Year</b>	<b>3 Year</b>	<b>5 Year</b>	<b>10 Year</b>
Small Small Value	Dimensional Int'l Small	21.55	27.53	12.62	N.A.
	Dimensional Intl Small Value	26.17	32.90	18.60	8.65
	Vanguard Intl Explorer (Active)*	22.89	20.88	1.95	N.A.
	MSCI EAFE Small Index	18.95	21.75	7.05	3.38
Large Value	Dimensional Int'l Value	20.45	19.04	9.57	8.68
	Vanguard Int'l Value	15.95	12.42	4.62	7.07
	MSCI EAFE Value Index	19.36	14.60	4.20	7.86
Market	Dimensional Int'l Large	13.43	11.11	-1.03	5.83
	Vanguard Developed Markets	14.98	11.55	N.A.	N.A.
	Vanguard Int'l Tax Managed	14.91	11.57	-1.22	N.A.
	Vanguard Int'l Total Stock	15.43	12.25	-0.58	N.A.
	MSCI EAFE Index Net	15.06	11.64	-1.15	5.40
Emerging Markets	Dimensional Emerging Markets	22.43	20.54	5.42	6.71
	Dimensional Emerging Markets Value	30.05	30.62	11.52	13.51
	Dimensional Emerging Markets Small	20.09	25.88	8.39	N.A.
	Vanguard Emerging Index	18.61	19.14	6.12	6.61
	MSCI Emerging Markets Index	16.61	18.84	4.20	N.A.
					<b>Total Data**</b>
<b>Portfolios</b>	<b>Dimensional</b>				<b>9.39</b>
	<b>Vanguard</b>				<b>3.85</b>

**Notes**

\*Currently no Int'l Small/Mid indices offered by Vanguard. Vanguard Int'l Explorer is an actively managed investment vehicle.

\*\*Total Data as of June 2000.

Performance for periods greater than one year are annualized.

Source: Dimensional fund returns from Dimensional Fund Advsiros Inc.; Third-party fund returns from Morningstar Principia Database; MSCI data copyright MSCI 2005. All rights reserved.

## Statistical Summary: Total Dimensional vs. Vanguard

Time Period: June 2000 - March 2005

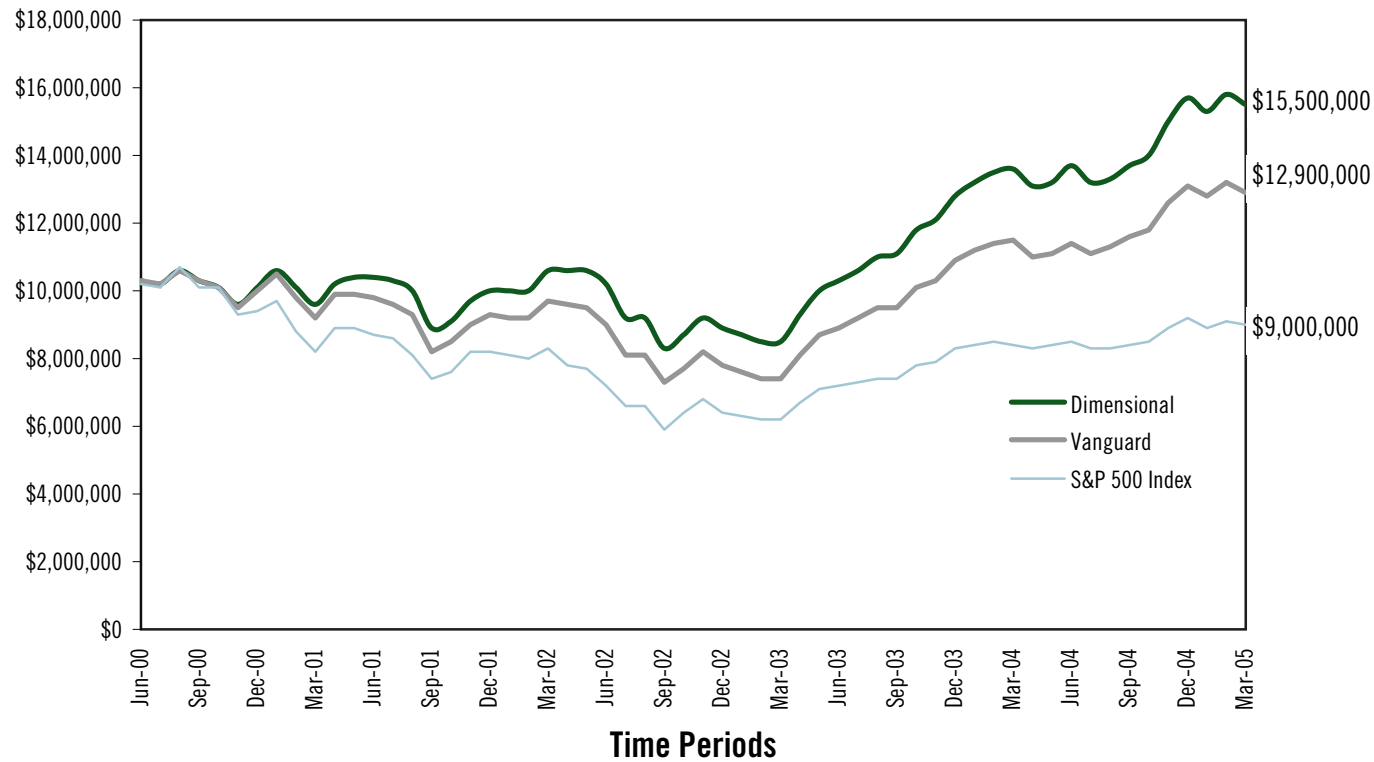
Total Portfolio	Dimensional	Vanguard	S&P 500
Annualized Return	9.46	5.44	-2.24
Total Return	54.81	29.16	-10.35
Growth of \$1	1.55	1.29	0.90
Standard Deviation	14.94	15.64	15.83
Sharpe Ratio	0.47	0.19	-0.29

Start date determined using longest possible data series

Excess annual return over the market computed using assumed premiums: Size Factor, 2.0%; Style Factor, 4.0%. Expected return is not a guarantee of future return. See Appendix: Standardized Performance Data and Disclosures to obtain complete information on performance, investment objectives, risks, advisory fees, and expenses of Dimensional's funds. The Portfolios above are not live investment vehicles. They are hypothetical portfolios that combine live mutual funds according to the weights shown, assuming quarterly rebalancing. Annualized standard deviation is presented as an approximation by multiplying the monthly value by the square root of twelve. Portfolio statistics were calculated from historical returns data (6/95 through 12/04).

# Growth of \$10 Million Dollars: Total Dimensional Vs. Vanguard

As of Month-End March 2005



**Notes**

Source: Dimensional fund returns from Dimensional Fund Advisors Inc; S&P 500 Index returns from Ibbotson Associates

# Appendix

## Regression Report: Domestic Equity

Monthly: January 1985 - February 2005

Manager	Excess Return Over Market	Alpha ( $\alpha$ )	t( $\alpha$ )	Market Factor ( $\beta$ )	se( $\beta$ )	Loading Factors			R <sup>2</sup>	Symbol	Start Date	
						Size Factor (s)	t(s)	Price Factor (BtM)				
<b>Dimensional Portfolio</b>	<b>1.56</b>	<b>0.10</b>	<b>0.81</b>	<b>0.93</b>	<b>0.02</b>	<b>0.22</b>	<b>7.24</b>	<b>0.28</b>	<b>11.61</b>	<b>1.05</b>	<b>0.96</b>	<b>Jun-98</b>
<b>Vanguard Portfolio</b>	<b>1.14</b>	<b>-0.01</b>	<b>-0.12</b>	<b>0.94</b>	<b>0.02</b>	<b>0.13</b>	<b>5.02</b>	<b>0.22</b>	<b>11.03</b>	<b>0.86</b>	<b>0.97</b>	<b>Jun-98</b>
Dimensional Large Company	1.90	0.18	0.79	0.96	0.05	-0.09	-1.50	0.52	11.15	2.05	0.86	DFLVX Jun-98
Dimensional Large Value	-0.06	0.00	-0.03	0.99	0.01	-0.17	-12.13	0.07	6.84	0.47	0.99	DFLCX Jun-98
Dimensional Micro Cap	2.34	0.09	0.44	0.80	0.04	1.11	20.03	0.03	0.73	1.89	0.93	DFSCX Jun-98
Dimensional Small Cap	2.28	-0.04	-0.27	0.89	0.03	0.90	22.09	0.12	3.81	1.38	0.96	DFSTX Jun-98
Dimensional Small Value	3.26	0.18	0.87	0.80	0.04	0.85	15.49	0.39	9.18	1.87	0.90	DFSVX Jun-98
Vanguard S&P 500 Index	-0.06	0.01	0.12	0.99	0.01	-0.17	-11.86	0.07	6.58	0.48	0.99	VFINX Jun-98
Vanguard Value Index	1.08	0.02	0.14	0.99	0.03	-0.14	-4.20	0.34	12.71	1.18	0.95	VIVAX Jun-98
Vanguard Small Index	1.82	-0.14	-0.70	0.88	0.04	0.79	15.50	0.06	1.53	1.73	0.93	NAESX Jun-98
Vanguard Small Value Index	2.88	0.01	0.05	0.82	0.06	0.60	8.34	0.42	7.53	2.44	0.82	VISVX Jun-98
CRSP Market Index	-0.04	0.00	-0.24	1.00	0.00	0.00	2.59	-0.01	-5.38	0.07	1.00	Jan-85
CRSP Market Index	-0.04	0.00	-0.24	1.00	0.00	0.00	2.59	-0.01	-5.38	0.07	1.00	Jan-85
S&P 500 Index	-0.16	0.02	0.69	1.01	0.01	-0.18	-22.30	0.05	7.14	0.38	0.99	Jan-85
Russell 1000 Value Index	1.04	0.04	0.65	0.95	0.02	-0.16	-7.02	0.34	16.83	1.04	0.94	Jan-85
Russell 2000 Index	1.94	-0.14	-1.79	0.97	0.02	0.83	31.85	0.07	3.03	1.21	0.95	Jan-85
Russell 2000 Value	2.88	0.03	0.25	0.85	0.03	0.66	17.57	0.39	11.47	1.74	0.86	Jan-85

Highlighted box in above table indicates significant result (t-stat greater than 2.0). Excess annual return over the market computed using assumed premiums: Size Factor, 2.0%; Style Factor, 4.0%. Expected return is not a guarantee of future return. See Appendix: *Standardized Performance Data and Disclosures* to obtain complete information on performance, investment objectives, risks, advisory fees, and expenses of Dimensional's funds. Sources: The S&P Data are provided by Standard & Poor's Index Services Group; Russell data courtesy of Russell Analytic Services; CRSP Index returns from the Center for Research in Security Prices, University of Chicago.

## Regression Report: International Equity

Monthly: March 1985 - February 2005

Manager	Excess Return Over Market	Alpha ( $\alpha$ )	t( $\alpha$ )	Market Factor ( $\beta$ )	Loading Factors			t(BtM)	s(e)	R <sup>2</sup>	Symbol	Start Date
					Size Factor (s)	Price Factor (BtM)	t(s)					
<b>Dimensional Portfolio</b>	<b>1.94</b>	<b>0.01</b>	<b>0.28</b>	<b>0.96</b>	<b>0.37</b>	<b>17.02</b>	<b>0.30</b>	<b>12.29</b>	<b>0.21</b>	<b>1.00</b>		<b>Jun-00</b>
<b>Vanguard Portfolio</b>	<b>0.74</b>	<b>-0.19</b>	<b>-2.14</b>	<b>1.06</b>	<b>0.21</b>	<b>3.80</b>	<b>0.08</b>	<b>1.28</b>	<b>0.54</b>	<b>0.99</b>		<b>Jun-00</b>
Dimensional Intl Large	-0.15	-0.09	-1.90	0.97	-0.09	-3.37	0.09	2.30	0.55	0.98	DFALX	Mar-94
Dimensional Intl Value	2.85	-0.15	-3.06	1.00	0.06	2.52	0.89	24.56	0.53	0.99	DFIVX	Mar-94
Dimensional Intl Small	2.73	0.02	0.26	1.00	1.02	36.36	-0.11	-2.60	0.58	0.98	DFISX	Oct-96
Dimensional Intl Small Value	3.43	0.05	0.69	0.99	0.94	26.58	0.22	4.23	0.76	0.97	DISVX	Jan-95
Vanguard Developed Markets Index	-0.11	-0.08	-1.48	0.99	0.00	-0.04	-0.02	-0.47	0.32	1.00		Jun-00
Vanguard Intl Value Index	2.03	-0.22	-1.82	1.01	0.06	0.95	0.60	6.45	1.36	0.91		Mar-94
Vanguard Explorer (Active Small)	0.32	0.75	2.60	1.13	1.12	8.29	-1.23	-6.24	2.77	0.78		Dec-96
MSCI EAFE Index	-0.08	-0.08	-0.39	0.99	-0.02	-4.75	-0.01	-1.68	0.84	0.97		Mar-94
MSCI EAFE Value Index	1.42	1.42	0.26	0.99	-0.05	-2.18	0.38	9.20	1.06	0.96		Jan-85
MSCI EAFE Small Index	1.74	1.74	-3.87	1.11	0.91	25.17	-0.02	-0.45	0.85	0.97		Jan-93

Highlighted box in above table indicates significant result (t-stat greater than 2.0). Excess annual return over the market computed using assumed premiums: Size Factor, 2.0%; Style Factor, 4.0%. Expected return is not a guarantee of future return. See Appendix: *Standardized Performance Data and Disclosures* to obtain complete information on performance, investment objectives, risks, advisory fees, and expenses of Dimensional's funds. Sources: MSCI data copyright MSCI 2005. All rights reserved.

## Regression Report: International Equity

Monthly: March 1985 - February 2005

Manager	Continental Market Beta ( $\beta$ )	Continental Market t( $\beta$ )	Pacific Rim Market Beta ( $\beta$ )	Pacific Rim Market t( $\beta$ )	U.K. Market Beta ( $\beta$ )	U.K. Market t( $\beta$ )	Japan Market Beta ( $\beta$ )	Japan Market t( $\beta$ )	Total International Beta ( $\beta$ )
<b>Dimensional Portfolio</b>	<b>0.45</b>	<b>30.83</b>	<b>0.06</b>	<b>5.30</b>	<b>0.21</b>	<b>11.76</b>	<b>0.24</b>	<b>38.01</b>	<b>0.96</b>
<b>Vanguard Portfolio</b>	<b>0.46</b>	<b>12.36</b>	<b>0.18</b>	<b>6.42</b>	<b>0.22</b>	<b>4.96</b>	<b>0.20</b>	<b>12.34</b>	<b>1.06</b>
Dimensional Intl Large	0.45	24.82	0.04	3.32	0.19	8.06	0.29	28.63	0.97
Dimensional Intl Value	0.47	27.14	0.06	5.61	0.19	8.35	0.28	29.24	1.00
Dimensional Intl Small	0.40	19.44	0.18	13.37	0.13	4.50	0.29	24.97	1.00
Dimensional Intl Small Value	0.34	13.07	0.17	10.40	0.19	5.57	0.29	20.56	0.99
Vanguard Developed Markets Index	0.49	22.42	0.06	3.43	0.21	8.11	0.23	24.33	0.99
Vanguard Intl Value Index	0.42	9.57	0.14	5.08	0.22	3.79	0.23	9.38	1.01
Vanguard Explorer (Active Small)	0.73	7.35	0.06	1.03	0.07	0.51	0.27	4.74	1.13
MSCI EAFE Index	0.37	22.89	0.04	3.75	0.18	11.06	0.40	43.99	0.99
MSCI EAFE Value Index	0.37	18.31	0.02	1.56	0.21	10.27	0.39	33.98	0.99
MSCI EAFE Small Index	0.48	17.84	0.18	11.44	0.07	2.01	0.38	27.97	1.11

Highlighted box in above table indicates significant result (t-stat greater than 2.0). Excess annual return over the market computed using assumed premiums: Size Factor, 2.0%; Style Factor, 4.0%. Expected return is not a guarantee of future return. See Appendix: *Standardized Performance Data and Disclosures* to obtain complete information on performance, investment objectives, risks, advisory fees, and expenses of Dimensional's funds. Sources: MSCI data copyright MSCI 2005. All rights reserved.

## Standardized Performance Data and Disclosures

As of March 31, 2005 Average Annual Total Returns (%)	One Year	Five Years	Ten Years	Since Inception	Inception
US Micro Cap Portfolio	4.06	8.58	14.85	13.77	12/23/1981
US Small Cap Portfolio	5.68	7.25	12.92	11.84	3/19/1992
US Small Cap Value Portfolio	13.39	16.70	17.04	15.78	3/2/1993
US Small XM Value Portfolio	14.71	17.77	N/A	19.64	2/23/2000
US Large Cap Value Portfolio	14.03	9.94	13.45	12.32	2/19/1993
US Large Company Portfolio	6.56	-3.32	10.61	11.40	12/28/1990
Enhanced US Large Company Portfolio	5.02	-3.07	N/A	8.68	7/2/1996
Real Estate Securities Portfolio	9.72	19.69	14.28	11.91	1/5/1993
International Small Company Portfolio	21.55	12.62	N/A	7.33	9/30/1996
Continental Small Company Portfolio	33.17	15.47	12.03	10.88	4/15/1988
Japanese Small Company Portfolio	11.76	8.72	-2.43	5.54	1/31/1986
Pacific Rim Small Company Portfolio	19.01	13.05	5.68	8.57	1/5/1993
United Kingdom Small Company Portfolio	18.01	9.89	11.29	12.93	3/4/1986
International Small Cap Value Portfolio	26.17	18.60	8.65	8.53	12/29/1994
International Value Portfolio	20.46	9.57	8.68	8.14	2/15/1994
Large Cap International Portfolio	13.43	-1.03	5.83	6.44	7/17/1991
Emerging Markets Small Cap Portfolio	20.09	8.39	N/A	14.55	3/5/1998
Emerging Markets Value Portfolio	29.49	11.09	N/A	14.53	4/1/1998
Emerging Markets Portfolio	22.45	5.42	6.71	5.99	4/25/1994
One-Year Fixed Income Portfolio	0.52	3.51	4.64	6.30	7/25/1983
Two-Year Global Fixed Income Portfolio	-0.37	3.78	N/A	4.75	2/9/1996
Five-Year Government Portfolio	-1.43	5.67	5.83	6.64	6/1/1987
Five-Year Global Fixed Income Portfolio	-0.79	5.30	7.00	7.01	11/6/1990
Intermediate Government Fixed Income Portfolio	-0.56	8.03	7.26	7.80	10/19/1990
Short-Term Municipal Bond Portfolio	0.00	N/A	N/A	1.58	8/20/2002

Performance data shown represents past performance. Past performance is no guarantee of future results and current performance may be higher or lower than the performance shown. The investment return and principal value of an investment will fluctuate so that an investor's shares, when redeemed, may be worth more or less than their original cost. To obtain performance data current to the most recent month-end access our website at [www.dfaus.com](http://www.dfaus.com). Average annual total returns include reinvestment of dividends and capital gains.

All Dimensional funds are offered by prospectus only. Prospectuses contain more complete information on the investment objectives, risks, advisory fees, distribution charges, other expenses and other information about the funds. The prospectus should be read carefully before investing. Prospectuses are available by calling Dimensional Fund Advisors Inc. collect at (310) 395-8005; on the Internet at [www.dfaus.com](http://www.dfaus.com); or, by mail, DFA Securities Inc., c/o Dimensional Fund Advisors Inc., 1299 Ocean Avenue, 11th floor, Santa Monica, California 90401.

Prior to April 1, 2002, the following reimbursement fees may have been charged to purchasers of the respective portfolios: International Small Company Portfolio 0.675%; Continental Small Company Portfolio 1.00%; Japanese Small Company Portfolio 0.50%; Pacific Rim Small Company Portfolio 1.00%; International Small Cap Value Portfolio 0.675%; Emerging Markets Small Cap Portfolio 1.00%; Emerging Markets Value Portfolio 0.50%; Emerging Markets Portfolio 0.50%. Prior to April 1998, the reimbursement fee for the International Small Company Portfolio was 0.70% and the reimbursement fee for the International Small Cap Value Portfolio was 0.70%. Prior to July 1995, the reimbursement fees were as follows: International Small Cap Value Portfolio 1.00%; Continental Small Company Portfolio 1.50%; Japanese Small Company Portfolio 1.00%; Pacific Rim Small Company Portfolio 1.50%; UK Small Company Portfolio 1.50%; Emerging Markets Portfolio 1.50%. Returns for these portfolios are presented net of these reimbursement fees.

All reimbursement fees are based on the net asset value of the shares purchased. The standardized returns presented reflect deduction, where applicable, of the reimbursement fees for the portfolios. Non-standardized performance data reported by Dimensional Fund Advisors Inc. does not reflect deduction of the reimbursement fee. If reflected, the fee would reduce the performance quoted.

Investments in foreign issuers are subject to certain considerations that are not associated with investments in US public companies. Investments of the Foreign Equity Portfolios and the Global Fixed Income Portfolios will be denominated in foreign currencies. Changes in the relative values of these foreign currencies and the US dollar, therefore, will affect the value of investments in the Portfolios. However, the Global Fixed Income Portfolios will utilize forward currency contracts to minimize these changes. Further, foreign issuers are not generally subject to uniform accounting, auditing, and financial reporting standards comparable to those of US public corporations and there may be less publicly available information about such companies than comparable US companies. Also, legal, political, or diplomatic actions of foreign governments, including expropriation, confiscatory taxation, and limitations on the removal of securities, property, or other assets of the Portfolios, could adversely affect the value of the assets of these Portfolios.

# Innovations in Finance

## Conventional Wisdom circa 1950

“Once you attain competency, diversification is undesirable. One or two, or at most three or four, securities should be bought. Competent investors will never be satisfied beating the averages by a few small percentage points.”

Gerald M. Loeb  
The Battle for Investment Survival, 1935

Analyze securities one-by-one. Focus on picking winners. Concentrate holdings to maximize returns.

Broad diversification is considered undesirable.

## The Role of Stocks

James Tobin  
Nobel Prize in Economics, 1981

Separation Theorem:  
1. Form portfolio of risky assets.  
2. Temper risk by lending and borrowing.

Shifts focus from stock selection to portfolio structure.

“Liquidity Preference as Behavior Toward Risk,”  
The Review of Economic Studies, February 1958

## Single-Factor Asset Pricing Risk/Return Model

William Sharpe  
Nobel Prize in Economics, 1990

Capital Asset Pricing Model:  
Theoretical model defines risk as volatility relative to market.

A stock’s cost of capital (the investor’s expected return) is proportional to the stock’s risk relative to the entire stock universe.

Theoretical model for evaluating the risk and expected return of securities and portfolios.

## Efficient Markets Hypothesis

Eugene F. Fama, University of Chicago

Extensive research on stock price patterns.

Extends work on unpredictability of stock prices and finds that prices quickly incorporate information.

Develops “Efficient Markets Hypothesis,” which asserts that prices reflect values and information accurately and quickly. It is difficult if not impossible to capture returns in excess of market returns without taking greater than market levels of risk.

Investors cannot identify superior stocks using fundamental information or price patterns.

## Options Pricing Model

Fisher Black, University of Chicago  
Myron Scholes, University of Chicago  
Robert Merton, Harvard University  
Nobel Prize in Economics, 1997

The development of the Option Pricing Model allows new ways to segment, quantify, and manage risk.

It spurs the development of a market for alternative investments.

1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974

## Diversification and Portfolio Risk

Harry Markowitz  
Nobel Prize in Economics, 1990

Diversification reduces risk.

Portfolio risk versus security risk.

Assets evaluated by their effect on portfolio. An optimal portfolio can be constructed to maximize return for a given standard deviation.

## Investments and Capital Structure

Merton Miller and Franco Modigliani  
Nobel Prizes in Economics, 1985 and 1990

Theorem relating corporate finance to returns.

A firm’s value is unrelated to its dividend policy.

Dividend policy is an unreliable guide for stock selection.

## Behavior of Securities Prices

Paul Samuelson, MIT  
Nobel Prize in Economics, 1970

Market prices are the best estimates of value.

Price changes follow random patterns.  
Future stock prices are unpredictable.

“Proof That Properly Anticipated Prices Fluctuate Randomly,”  
Industrial Management Review, Spring 1965

## First Major Study of Manager Performance

Michael Jensen, 1965 / A.G. Becker Corporation, 1968

First studies of mutual funds (Jensen) and of institutional plans (A.G. Becker Corp.) indicate active managers underperform indexes.

Becker Corp. gives rise to consulting industry with creation of “Green Book” performance tables comparing results to benchmarks.

First studies showing that investment professionals fail to outperform market indexes.

Jensen, Michael, “The Performance of Mutual Funds in the period 1945-1964,” Journal of Finance, December 1965

# Innovations in Finance

## A Major Plan First Commits to Indexing

New York Telephone Company Invests \$40 million in an S&P 500 Index fund.

The first major plan to index.

Helps launch the era of indexed investing.

“Fund spokesmen are quick to point out you can’t buy the market averages. It’s time the public could.”

Burton G. Malkiel  
A Random Walk Down Wall Street, 1973 ed.

## The Size Effect

Rolf Banz  
University of Chicago

Analyzed NYSE stocks, 1926–1975.

Found that, in the long term, small companies have higher expected returns than large companies and behave differently.

Dimensional Fund Advisors Inc. is founded in 1981 and launches the first passive small cap strategy (the US Micro Cap Portfolio).

## International Size Effect Implemented

Dimensional Fund Advisors Inc.  
International Small Cap Strategies

Structured Investing vs. Indexing:

With no index, Dimensional creates structured portfolios in an undiscovered asset class.

Dimensional’s live returns become the index used in Ibbotson Associates’ database. Structured investing is based on a rational risk dimension, and does not slavishly follow indexes or investing conventions.

## Multifactor Asset Pricing Model and Value Effect

Eugene Fama and Kenneth French  
University of Chicago

Improves on the single factor asset pricing model (CAPM).

Identifies market, size, and “value” factors in returns.

Develops the three-factor asset pricing model, an invaluable asset allocation and portfolio analysis tool.

Revolutionizes the way we construct and analyze portfolios by identifying independent sources of risk and return. Introduces first concentrated, empirical value strategies.

Leads to similar findings internationally.

1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997

## Random Prices and Practical Investing

John McQuown,  
Wells Fargo Bank, 1971  
Rex Sinquefield,  
American National Bank, 1973

The birth of index funds:  
Banks develop the first passive S&P 500 Index funds. Years later, Sinquefield chairs Dimensional and McQuown sits on its Board. Dimensional will later develop passive and structured investment strategies.

## Database of Securities Prices since 1926

Roger Ibbotson and Rex Sinquefield  
Stocks, Bonds, Bills, and Inflation

An extensive returns database for multiple asset classes is first developed and will become one of the most widely used investment databases.

The first extensive, empirical basis for making asset allocation decisions changes the way investors build portfolios.

## Variable Maturity Strategy Implemented

Dimensional Fund Advisors Inc.  
One-Year Fixed Income Strategy

With no prediction of interest rates, Eugene Fama develops a method of shifting maturities that identifies optimal positions on the fixed income yield curve.

## Nobel Prize Recognizes Modern Finance

Recognition of economists who shaped the way we invest, emphasizing the role of science in finance.

William Sharpe for the Capital Asset Pricing Model, beta, and relative risk.

Harry Markowitz for the theory of portfolio choice.

Merton Miller for work on the effect of firms’ capital structure and dividend policy on their prices.

## Sources and Descriptions of Data

All Dimensional portfolio returns are net of all fees unless otherwise indicated.  
All Dimensional trust returns are net of administrative fees only unless otherwise indicated.  
Prior to

### US Small

Russell 2000 Index:	1979-Present:	Courtesy of Russell Analytic Se based on market capitalization.
Russell 2000 Growth Index:	1979-Present:	Courtesy of Russell
Russell 3000 Growth Index:	1979-Present:	Courtesy of Russell
CRSP 9-10 Index:	1926-Present:	Courtesy of CRSP. Deciles 9-10 NYSE (plus AMEX equivalents since July 1962 and NASDAQ equivalents since 1973).
CRSP 6-10 Index:	1926-Present:	Courtesy of CRSP. Deciles 6-10 NYSE (plus AMEX equivalents since July 1962 and NASDAQ equivalents since 1973).
CRSP 6-7-8 Index:	1926-Present:	Courtesy of CRSP. Deciles 6-7-8 NYSE (plus AMEX equivalents since July 1962 and NASDAQ equivalents since 1973).
Fama/French US Small Cap Growth Simulated Strategy:	July 1963-Present:	Courtesy of Fama/French <sup>5</sup> and CRSP. Simulated strategy of lower-half market cap, lower 30% book-to-market NYSE (plus AMEX equivalents since July 1962 and NASDAQ equivalents since 1973). Includes estimated hold range and trading costs since July 1963, rebalanced quarterly.

### US Value

Russell 2000 Value Index:	1979-Present:	Courtesy of Russel
Russell 3000 Value Index:	1979-Present:	Courtesy of Russel
Fama/French US Small Cap Value Simulated Strategy:	July 1963-Present:	Courtesy of Fama/French and CRSP. Simulated strategy of lower-half market cap, upper 30% book-to-market NYSE (plus AMEX equivalents since July 1962 and NASDAQ equivalents since 1973). Includes estimated hold range and trading costs since July 1963, rebalanced quarterly.
Fama/French US Small Cap Value Index:	July 1963-Present:	Courtesy of Fama/French and CRSP. Lower-half market cap, upper 30% book-to-market. Buy range-only, no simulated hold range or estimated trading costs, rebalanced quarterly.
Wilshire Small Value Index:	1978-Present:	Courtesy of Wilshire Associates Incorporated. Market cap weighted index of value securities from Wilshire Small Cap 1750 Index.
Fama/French US 4-10 Value Simulated Strategy:	July 1963-Present:	Courtesy of Fama/French and CRSP. Simulated strategy of lower 70% market cap, upper 30% book-to-market NYSE (plus AMEX equivalents since July 1962 and NASDAQ equivalents since 1973). Includes estimated hold range and trading costs since July 1963, rebalanced quarterly.
Russell 1000 Value Index:	1979-Present:	Courtesy of Rus
Fama/French US Large Cap Value Simulated Strategy:	July 1963-Present:	Courtesy of Fama/French and CRSP. Simulated strategy of upper-half market cap, upper 30% book-to-market NYSE (plus AMEX equivalents since July 1962 and NASDAQ equivalents since 1973). Includes estimated hold range and trading costs since July 1963, rebalanced quarterly.
Fama/French US Large Cap Value Index:	July 1963-Present:	Courtesy of Fama/French and CRSP. Upper-half market cap, upper 30% book-to-market. Buy range-only, no simulated hold range or estimated trading costs, rebalanced quarterly.
Wilshire Large Value Index:	1978-Present:	Courtesy of Wilshire Associates Incorporated. Market cap weighted index of value securities from Wilshire Large Cap 750 Index.

### US Large

S&P 500 Index:	1926-Present:	Courtesy of Stocks, Bonds, Bills, and Inflation, Ibbotson Associates, Chicago (annually updates work by Roger G. Ibbotson and Rex A. Sinquefeld). Used with permission. All rights reserved. Comprised of the largest 500 US companies based on market capitalization.
Wilshire 5000 Index:	1978-Present:	Courtesy of Wilshire Associates Incorporated. Broad market Index, measures entire US stock market.
Russell 1000 Index:	1979-Present:	Courtesy of Russell Analytic Services. Comprised of the 1000 largest companies in the Russell 3000 Index.
Russell 1000 Growth Index:	1979-Present:	Courtesy of Russ
Fama/French US Large Cap Growth Simulated Strategy:	July 1963-Present:	Courtesy of Fama/French and CRSP. Simulated strategy of upper-half market cap, lowest 30% book-to-market NYSE (plus AMEX equivalents since July 1962 an mirror Dimensional's Value Strategies, rebalanced quarterly.
Fama/French US Large Cap Growth Index:	July 1963-Present:	Courtesy of Fama/French and CRSP. Upper-half market cap, lower 30% book-to-market. Buy range-only, no simulated hold range or estimated trading costs, rebalanced quarterly.
Wilshire REIT Index:	1975-Present:	Courtesy of Wilshire Associates Incorporated.

<sup>1</sup> CRSP: Center for Research in Security Prices, University of Chicago. <sup>2</sup> NYSE: New York Stock Exchange. <sup>3</sup> AMEX: American Stock Exchange.

<sup>4</sup> NASDAQ: NASDAQ National Market System. <sup>5</sup>Fama/French: Professor Eugene F. Fama, Graduate School of Business, University of Chicago and Professor Kenneth R. French, Tuck School of Business Administration, Dartmouth College.

## Sources and Descriptions of Data

### International Small

**MSCI EAFE Small Cap Index:** 1993-Present: Courtesy of Morgan Stanley Capital International. Europe, Australasia, and Far East Small Cap Index.  
**S&P/Citigroup Extended Market Index:** July 1989-Present: Courtesy of Citigroup Global Equity Index System. EPAC Extended Market Index.

### International Value

**MSCI EAFE Value/Growth Index:** 1975-Present: Courtesy of Morgan Stanley Capital International. Europe, Australasia, and Far East Value/Growth Index. Covers 20 developed markets. Price/Book Value (P/BV) ratios aggregated into regional Value/Growth indices, net dividends, returns in US dollars. Value/Growth indices are

### International Large

**MSCI EAFE Index:** 1970-Present: Courtesy of Morgan Stanley Capital International. Europe, Australasia, and Far East Index, net dividends.  
**United Kingdom Large Company Index:** February 1955-Present: Courtesy of Financial Times-Actuaries. Financial Times-Actuaries All Share Index.  
**Continental Large Company Index:** 1970-Present: Courtesy of  
**Japanese Large Company Index:** 1970-June 1986: Courtesy of the Nomura Securities Investment Trust Management Company, Ltd., Tokyo. Larger half of first section, Tokyo Stock Exchange.  
 July 1986-Present: Courtesy of Morgan Stanley Capital International. MSCI Japan Index.  
**Pacific Rim Large Company Index:** 1970-Present: Courtesy of Morgan Stanley Capital International. MSCI Pacific Rim excluding Japan Index, gross dividends reinvested (in US Dollars).

### Emerging Markets

**MSCI Emerging Markets Index:** 1993-Present: Courtesy of Morgan Stanley Capital International. Composed of 28 countries designated as emerging by MSCI. Gross of all fees.

### Fixed Income

**One Month Certificate of Deposit:** 1947- October 1971: One-Month Bankers' Acceptances.  
 November 1972-Present: One-Month Certificates of Deposit.  
**Rolling Three-Month Treasury Bills:** 1978-Present: Courtesy of Merrill Lynch.  
**Rolling Six-Month Treasury Bills:** 1964-December 1977: Courtesy of CRSP.  
 1978-Present: Courtesy of Merrill Lynch.  
**Rolling One-Year Treasury Bills:** July 1963-May 1991: Courtesy of CRSP/DFA. Rolling One-Year Treasury Bills Returns. Buy at 12 Months, sell at 11 Months.  
 June 1991-Present: Courtesy of Merrill Lynch.  
**Thirty-Day Treasury Bills:** 1926-Present: Courtesy of Stocks, Bonds, Bills, and Inflation, Ibbotson Associates, Chicago (annually updates work by Roger G. Ibbotson and Rex A. Sinquefeld). Used with permission. All rights reserved.  
**Five-Year Treasury Notes:** 1926-Present: Courtesy of Stocks, Bonds, Bills, and Inflation, Ibbotson Associates, Chicago (annually updates work by Roger G. Ibbotson and Rex A. Sinquefeld). Used with permission. All rights reserved.  
**Long-Term Corporate Bond Returns:** 1926-Present: Courtesy of Stocks, Bonds, Bills, and Inflation, Ibbotson Associates, Chicago (annually updates work by Roger G. Ibbotson and Rex A. Sinquefeld). Used with permission. All rights reserved. Average maturity: Twenty years.  
**Long-Term Treasury Bonds:** 1926-Present: Courtesy of Stocks, Bonds, Bills, and Inflation, Ibbotson Associates, Chicago (annually updates work by Roger G. Ibbotson and Rex A. Sinquefeld). Used with permission. All rights reserved. Average maturity: Twenty Years.  
**Lipper Institutional Money Market Index:** 1975-December 1983: Courtesy of Lipper. Lipper Money Market Fund Index monthly returns.  
 1984-Present: Lipper Institutional Money Market Index monthly returns.  
**Merrill Lynch 1-3 Year Government Index:** July 1977-Present: Courtesy of Merrill Lynch. US Government. Maturities: 1 to 3 years.  
**Lehman Intermediate Government Index:** 1973-Present: Courtesy of Lehman Brothers, Inc. Maturities: 1 to 10 years.  
**Lehman Intermediate Government/Credit Bond Index:** 1973-Present: Courtesy of Lehman Brothers, Inc. Maturities: 1 to 10 years.  
**Lehman Government/Credit Bond Index:** 1973-Present: Courtesy of Lehman Brothers, Inc. Maturities: 1 to 30+ years.  
**Lehman Aggregate Index:** 1976-Present: Courtesy of Lehman Brothers  
**Lehman Government Index:** 1973-Present: Courtesy of Lehman Brothers, Inc. Maturities: 1 to 30 years.  
**Lehman Global Hedged Country Index:** 1985-Present: Courtesy of Lehman Brothers, Inc.  
**Lehman Global Unhedged Country Index:** 1985-Present: Courtesy of Lehman Brothers, Inc.  
**Lehman Municipal Bond Three-Year Index:** 1990-Present: Courtesy of Lehman Brothers, Inc.  
**Inflation:** Courtesy of Stocks, Bonds, Bills, and Inflation, Ibbotson Associates, Chicago (annually updated work by Roger G. Ibbotson and Rex A. Sinquefeld). Used with permission. All rights reserved.  
**Citigroup 1-5 Year World Government Bond Index:** 1985-Present: Courtesy of Citigroup. Maturities: 1-5 years.  
**Citigroup 1-30+ Year World Government Bond Index:** 1985-Present: Courtesy of Citigroup. Maturities: 1-30+ years.