

# Measure Twice . . . Invest Once

## Measuring Portfolio Performance for Greater Trustee Control and Confidence

**Alan Greenwald, Dow Jones Indexes**

**Rex Holsapple, Sandy River Investment Consulting**

# Benchmarks for Trustees

**“Fiduciary responsibility” requires accurate manager performance measurement**

- **Targets for investment return in passive portfolios**
- **Performance benchmarks for the active managers**

**Trustees manage risk with benchmark indexes**

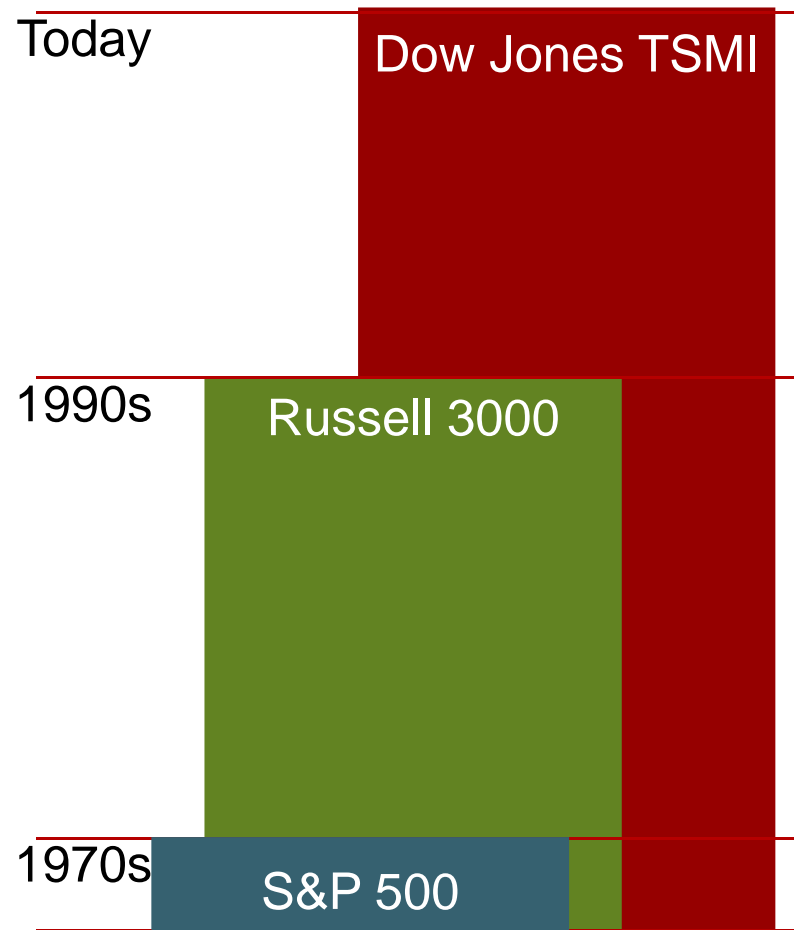
# Measure Twice . . . Invest Once

## Actual Example: total equity assets = \$50B . . . Pension Fund

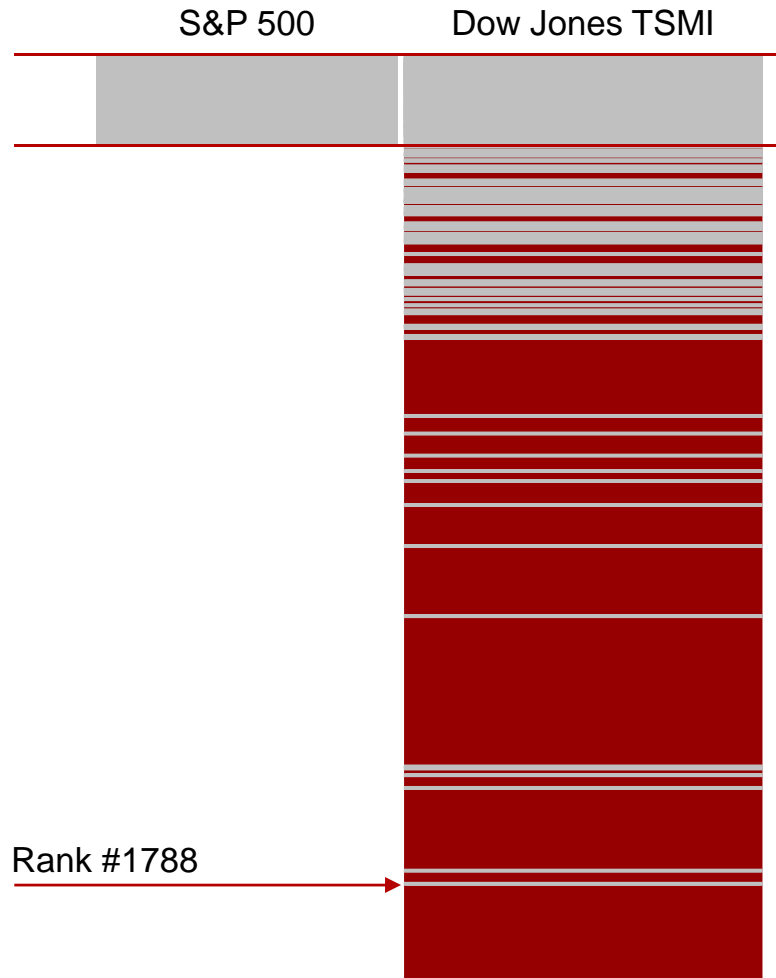
	Asset Value	Asset Value	Benchmark
	As of 6/30/2007	As of 6/30/2008	Return
<b>Total Domestic Equity Portfolio</b>	<b>\$31,474,841,997.00</b>		
Benchmark: S&P 1500 Index	\$31,474,841,997.00	\$27,470,566,044.49	-12.72%
Benchmark: Dow Jones Total Stock Market Index	\$31,474,841,997.00	\$27,530,940,393.84	-12.53%
<b>Benchmark Differential:</b>		<b>-\$60,374,349.35</b>	
<b>Total International</b>	<b>\$17,174,769,178.00</b>		
Benchmark: MSCI EAFE Index	\$17,174,769,178.00	\$15,431,883,043.37	-10.15%
Benchmark: Dow Jones Global Developed Ex-US Index	\$17,174,769,178.00	\$15,566,339,174.15	-9.37%
<b>Benchmark Differential:</b>		<b>-\$134,456,130.78</b>	
<b>Total Benchmark Differential:</b>		<b>-\$194,830,480.13</b>	

# Benchmarks for Trustees

## Major US Stock Benchmarks



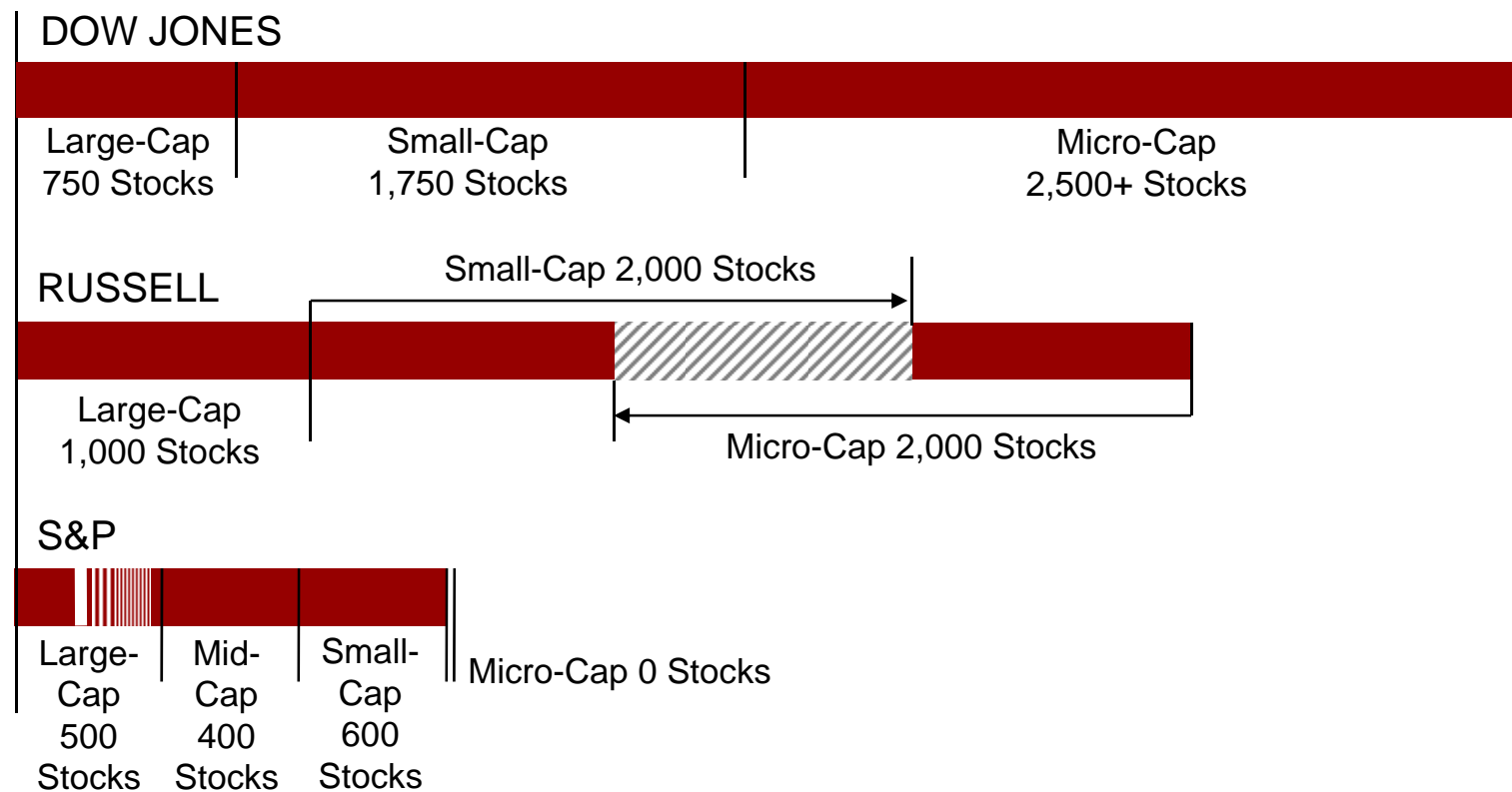
# Benchmarks for Trustees



Not all benchmarks are equal

# Benchmarks for Trustees

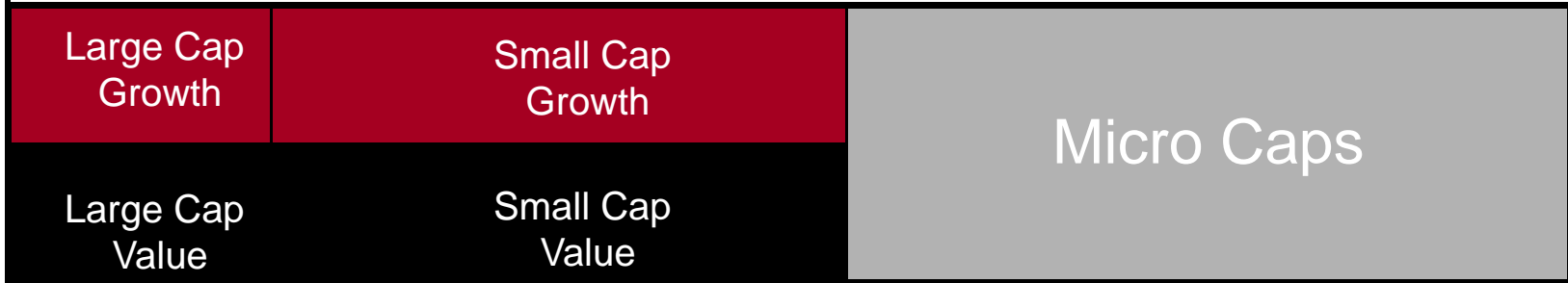
## Benchmark Construction that Fits



# Benchmarks for Trustees

## Index Family Construction

### DOW JONES



### RUSSELL



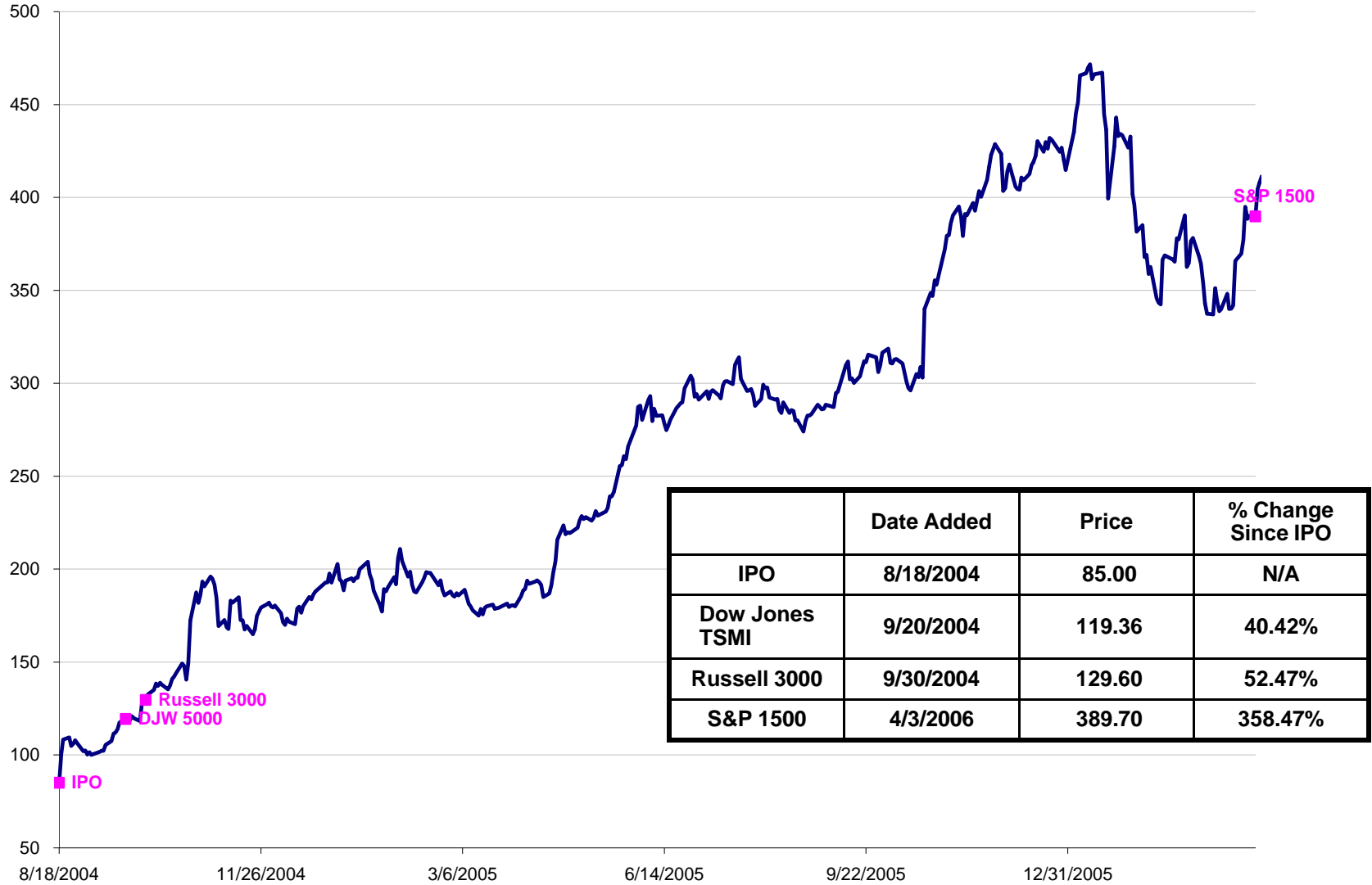
# Benchmarks for Trustees

## Factors Used for Mapping Stocks into Growth and Value Segments

	DOW JONES	S&P	RUSSELL
<b>Historical</b>			
Trailing revenue growth	●	●	○
Trailing earnings growth	●	●	○
<b>Current</b>			
Price-to-book Ratio	●	●	●
Dividend yield	●	●	○
<b>Projected</b>			
Projected earnings growth	●	○	●
Projected price-to-earnings ratio	●	○	○

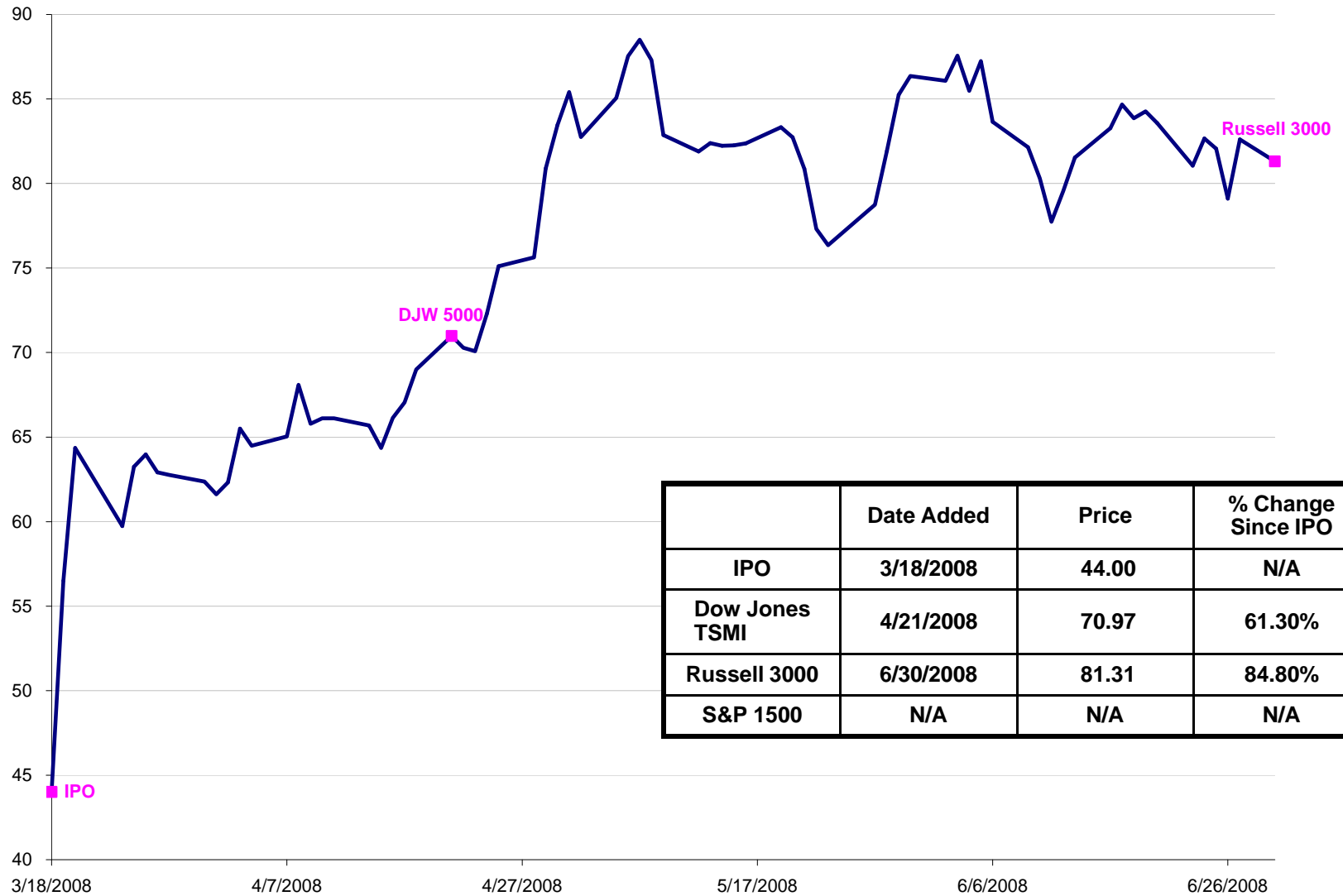
# Benchmarks for Trustees

## Google IPO



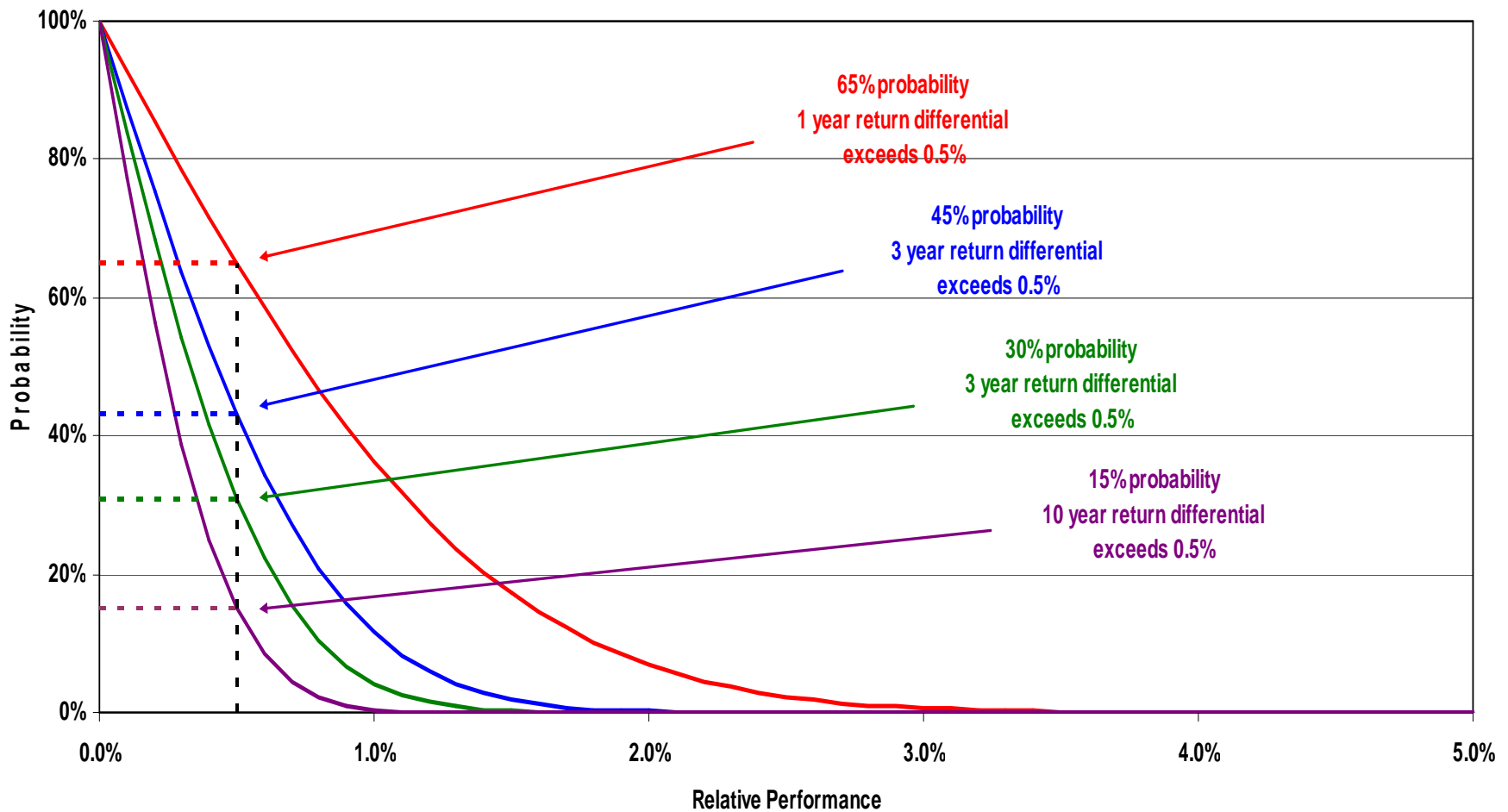
# Benchmarks for Trustees

## Visa IPO



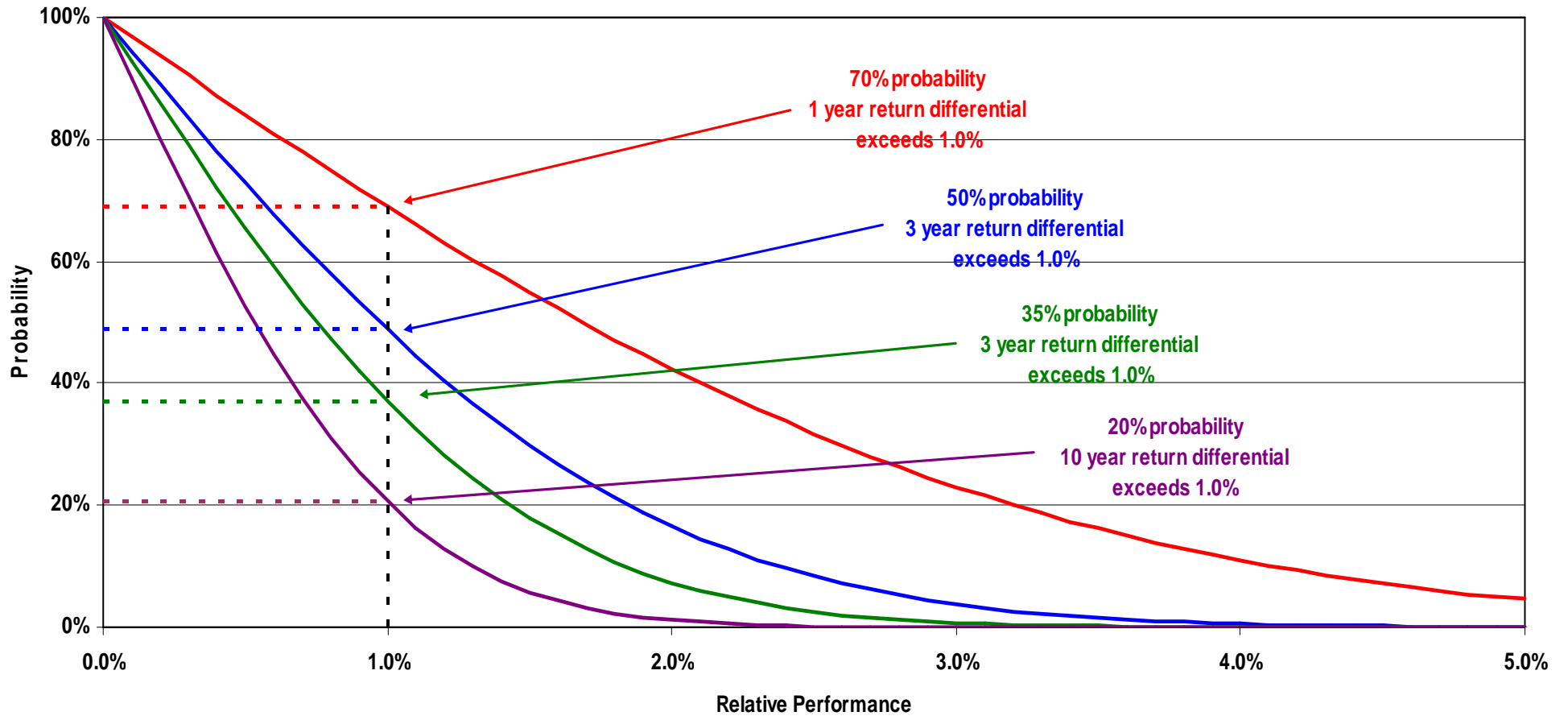
# Benchmarks for Trustees

Dow Jones TSMI v RUSSELL 3000  
probability of return differential



# Benchmarks for Trustees

Dow Jones TSMI v S&P 500  
probability of return differential



# Benchmarks for Trustees

	Dow Jones Total Stock Market Index	Russell 3000 Index	S&P 1500 Index
<b>Target Market Coverage</b>	100%	98%	85%
<b>Weighting Method</b>	Float adjusted market cap	Float adjusted market cap	Float adjusted market cap
<b>Index Governance</b>	Rules-based	Rules-based	Committee-based
<b>Size Class Determinations</b>	Companies are ranked by full market capitalization and assigned to size indexes in descending market cap order.	Companies included based on descending total market capitalization:	The market cap of a potential addition to an index is looked at in the context of its short- and medium-term historical trends, as well as those of its industry. These ranges are reviewed from time to time to assure consistency with market conditions.
<b>Large Cap</b>	DJW U.S. Large Cap Index 1-750	Russell 1000 Index 1-1,000	S&P 500 Index Full market capitalization of US\$3 billion or more
<b>Mid Cap</b>	DJW U.S. Mid Cap Index 501-1,000	Russell Midcap Index 201-1,000	S&P MidCap 400 Index US\$ 750 million to US\$ 3.3 billion
<b>Small Cap</b>	DJW U.S. Small Cap Index 751-2,500	Russell 2000 Index 1,001-3,000	S&P SmallCap 600 Index US\$ 200 million to US\$ 1 billion
<b>Micro Cap</b>	DJW U.S. Micro Cap Index 2501+	Russell Microcap Index 2,001-4,000	
<b>Sector Classification System</b>	Industry Classification Benchmarks (ICB)	Global Industry Classification Standards (GICS)	Global Industry Classification Standards (GICS)
<b>Number of Factors Used to Determine Style</b>	6	2	7
<b>Factors Used to Determine Style</b>	Projected Price-to-Earnings Ratio (P/E) Projected Earnings Growth Price-to-Book Ratio (P/B) Dividend Yield Trailing Revenue Growth Trailing Earnings Growth	Book-to-Price Ratio (B/P) I/B/E/S Forecast Long-Term Growth Mean	5-Year Earnings per Share Growth Rate 5-Year Sales per Share Growth Rate 5-Year Internal Growth Rate (IGR) Book Value to Price Ratio Cash Flow to Price Ratio Sales to Price Ratio Dividend Yield
<b>Adjustments and Maintenance (Monthly)</b>	Additions (IPOs, new exchange listings) and deletions (pink sheet)	N/A	Changes to the U.S. indices are made on an as needed basis. There is no annual or semi-annual reconstitution. Rather, changes in response to corporate actions and market developments can be made at any time.
<b>Adjustments and Maintenance (Quarterly)</b>	Component shares and float factors - March, June, September and December	IPOs - March, June, September and December	
<b>Adjustments and Maintenance (Semiannual)</b>	Size and style - March and September	N/A	
<b>Adjustments and Maintenance (Annual)</b>	N/A	Completely reconstituted (additions, deletions, size and style) - June	
<b>Treatment of IPOs</b>	Monthly	Quarterly	Wait 6 to 12 months before consideration
<b>Website</b>	<a href="http://www.djindexes.com">www.djindexes.com</a>	<a href="http://www.russell.com">www.russell.com</a>	<a href="http://www.standardandpoors.com">www.standardandpoors.com</a>
<b>Methodology Location</b>	<a href="http://www.djindexes.com/wilshire/us/5000-4500/index.cfm?go=methodology">www.djindexes.com/wilshire/us/5000-4500/index.cfm?go=methodology</a>	<a href="http://www.russell.com/indexes/about/construction_methodology/US/russell_us_indexes_methodology.aspx">www.russell.com/indexes/about/construction_methodology/US/russell_us_indexes_methodology.aspx</a>	<a href="http://www.standardandpoors.com/spf/pdf/index/SP_US_Indices_Methodology_Web.pdf">www.standardandpoors.com/spf/pdf/index/SP_US_Indices_Methodology_Web.pdf</a>

# Performance Reports

## **Purpose: Better Decision Making**

- A. Consistency of Performance**
- B. Contribution to Performance**
- C. Benchmark Misfit Performance**
- D. Asset Class Benchmark**

# Performance Reports

## Typical Report

	<u>Quarter</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Inception</u>
<b>Total Fund</b>	<b>-0.65%</b>	<b>6.37%</b>	<b>8.96%</b>	<b>12.87%</b>	<b>7.27%</b>	<b>9.24%</b>
<b>Policy Portfolio</b>	<b>-0.57%</b>	<b>7.95%</b>	<b>9.00%</b>	<b>11.90%</b>	<b>7.20%</b>	<b>9.15%</b>
<b>TOTAL PERFORMANCE</b>	<b>-0.08%</b>	<b>-1.58%</b>	<b>-0.04%</b>	<b>0.97%</b>	<b>0.07%</b>	<b>0.09%</b>
S&P 500 Index Fund	-3.36%	5.47%	8.65%	12.84%	5.93%	9.33%
S&P 500	<u>-3.33%</u>	<u>5.50%</u>	<u>8.62%</u>	<u>12.83%</u>	<u>5.91%</u>	<u>10.31%</u>
	-0.03%	-0.03%	0.03%	0.01%	0.02%	-0.98%
Active Large Cap Domestic Stocks	-4.29%	3.33%	10.40%	16.79%	9.65%	11.59%
S&P 500	<u>-3.33%</u>	<u>5.50%</u>	<u>8.62%</u>	<u>12.83%</u>	<u>5.91%</u>	<u>10.31%</u>
	-0.96%	-2.17%	1.78%	3.96%	3.74%	1.28%
Active Small Cap Domestic Stock A	0.42%	1.18%	10.09%	19.70%	5.49%	9.04%
Russell 2000	<u>-4.58%</u>	<u>-1.57%</u>	<u>6.80%</u>	<u>16.25%</u>	<u>7.08%</u>	<u>10.60%</u>
	5.00%	2.75%	3.29%	3.45%	-1.59%	-1.56%
Active Small Cap Domestic Stock B	-4.85%	-4.21%	5.22%	15.44%	5.14%	7.72%
Russell 2000	<u>-4.58%</u>	<u>-1.57%</u>	<u>6.80%</u>	<u>16.25%</u>	<u>7.08%</u>	<u>10.60%</u>
	-0.27%	-2.64%	-1.58%	-0.81%	-1.94%	-2.88%
Active Small Cap Domestic Stock C	0.26%	6.59%	8.14%	16.64%	7.43%	10.28%
Russell 2000	<u>-4.58%</u>	<u>-1.57%</u>	<u>6.80%</u>	<u>16.25%</u>	<u>7.08%</u>	<u>10.60%</u>
	4.84%	8.16%	1.34%	0.39%	0.35%	-0.32%
<b>Total Domestic Equity</b>	<b>-2.61%</b>	<b>3.33%</b>	<b>8.97%</b>	<b>15.74%</b>	<b>6.91%</b>	<b>9.89%</b>
<b>Russell 3000</b>	<b>-3.34%</b>	<b>5.14%</b>	<b>8.89%</b>	<b>13.63%</b>	<b>6.22%</b>	<b>10.42%</b>
<b>DOMESTIC EQUITY PERFORMANCE</b>	<b>0.73%</b>	<b>-1.81%</b>	<b>0.08%</b>	<b>2.11%</b>	<b>0.69%</b>	<b>-0.53%</b>
Total Foreign Equity	-3.50%	17.61%	17.51%	20.47%	10.48%	12.61%
EAFE	<u>-1.71%</u>	<u>11.63%</u>	<u>17.32%</u>	<u>22.08%</u>	<u>9.02%</u>	<u>8.40%</u>
<b>FOREIGN EQUITY PERFORMANCE</b>	<b>-1.79%</b>	<b>5.98%</b>	<b>0.19%</b>	<b>-1.61%</b>	<b>1.46%</b>	<b>4.21%</b>
Total Fixed Income	3.72%	5.89%	5.01%	5.09%	5.17%	5.70%
Lehman Aggregate	<u>3.00%</u>	<u>6.97%</u>	<u>4.56%</u>	<u>4.42%</u>	<u>5.97%</u>	<u>6.08%</u>
<b>FIXED INCOME PERFORMANCE</b>	<b>0.72%</b>	<b>-1.08%</b>	<b>0.45%</b>	<b>0.67%</b>	<b>-0.80%</b>	<b>-0.38%</b>

Data as of December 31, 2007.

# Performance Reports

## Consistency of Performance

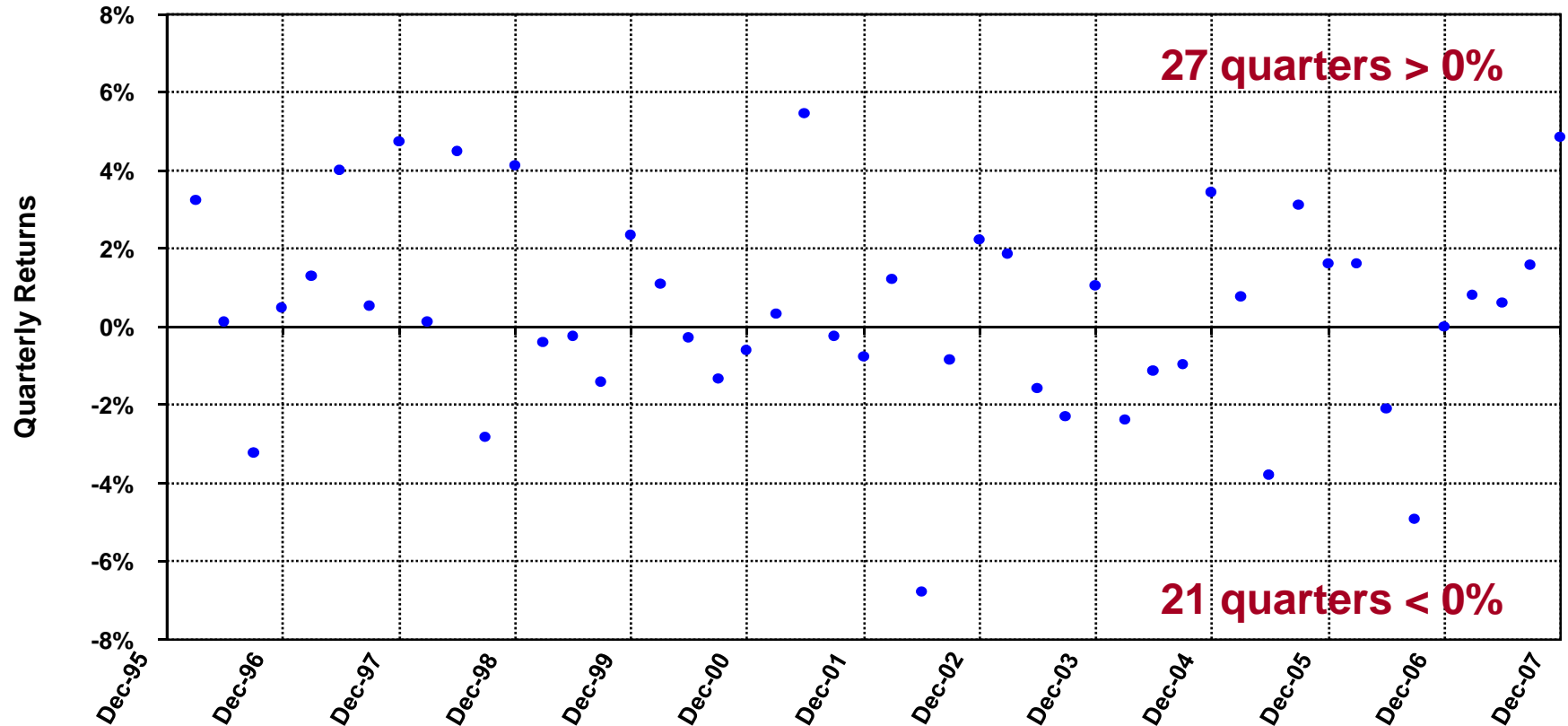
### IMPRESSIONS:

	Quarter	1 Year	3 Year	5 Year	10 Year
Active Small Cap Stock B	-4.85%	-4.21%	5.22%	15.44%	5.14%
Russell 2000	<u>-4.58%</u>	<u>-1.57%</u>	<u>6.80%</u>	<u>16.25%</u>	<u>7.08%</u>
<b>biggest problem</b>	<b>-0.28%</b>	<b>-2.64%</b>	<b>-1.58%</b>	<b>- 0.80%</b>	<b>-1.94%</b>
Active Small Cap Stock C	0.26%	6.59%	8.14%	16.64%	7.43%
Russell 2000	<u>-4.58%</u>	<u>-1.57%</u>	<u>6.80%</u>	<u>16.25%</u>	<u>7.08%</u>
<b>consistently good</b>	<b>4.84%</b>	<b>8.15%</b>	<b>1.34%</b>	<b>0.40%</b>	<b>0.35%</b>

# Performance Reports

## Consistency of Performance

### Small Cap Manager C



Small Cap Stock C  
Benchmark  
Performance

0.26%	6.59%	8.14%	16.64%	7.43%
-4.58%	-1.57%	6.80%	16.25%	7.08%
4.84%	8.15%	1.34%	0.40%	0.35%

# Performance Reports

Contribution to Performance		<u>1 Year</u>
	S&P 500 Index Fund	5.47%
	S&P 500	<u>5.50%</u>
	Performance	-0.03%
	Active Large Cap Domestic Stocks	3.33%
	S&P 500	<u>5.50%</u>
	Performance	-2.16%
	Active Small Cap Domestic Stock A	1.18%
	Russell 2000	<u>-1.57%</u>
	Performance	2.75%
	Active Small Cap Domestic Stock B	-4.21%
	Russell 2000	<u>-1.57%</u>
	Performance	-2.64%
	Active Small Cap Domestic Stock C	6.59%
	Russell 2000	<u>-1.57%</u>
	Performance	8.15%
	Average Manager	3.33%
	Average Benchmark	<u>2.67%</u>
	Average Manager Performance	0.66%

**Biggest Problem ?**

# Performance Reports

## Contribution to Performance

### S&P 500 Index Fund

Performance -0.03%

Percent of Portfolio 20%

**Contribution to Performance -0.01%**

### Manager A (Active Large Cap)

Performance -2.16%

Percent of Portfolio 10%

**Contribution to Performance -0.22%**

### Manager B (Active Small Cap)

Performance 2.75%

Percent of Portfolio 10%

**Contribution to Performance +0.27%**

### Manager C (Active Small Cap)

Performance -2.64%

Percent of Portfolio 5%

**Contribution to Performance -0.13%**

### Manager D (Active Small Cap)

Performance 8.15%

Percent of Portfolio 5%

**Contribution to Performance +0.41%**

# Performance Reports

## Benchmark Misfit Performance

<b>Domestic Equity Performance</b>	<b>-1.81%</b>
<b>Average Manager Performance</b>	<b>0.66%</b>
<b>Difference of Performance</b>	<b>-2.47%</b>
<b>Contribution Basis</b>	<b>-1.24%</b>

# Performance Reports

## Asset Class Benchmark

## PERFORMANCE REPORT

December 31, 2007

1 Year

Domestic Equities 3.33%

Russell 3000 **5.14%**

Domestic Equity Performance -1.81%

Contribution Basis -0.91%

Domestic Equities 3.33%

Dow Jones Total Stock Market Index **5.62%**

Domestic Equity Performance -2.29%

Contribution Basis -1.15%

Mis-Measurement of Performance -0.48%

Contribution Basis -0.24%

# Performance Reports

## **PRUDENT INVESTORS DO NOT TAKE UNCOMPENSATED RISK !!!**

- 1. Do I have asset managers that are consistently good or bad?**
- 2. Which manager is helping / hurting my performance the most?**
- 3. Does this report cover all performance?**
- 4. Are you using the correct benchmark?**

# SUMMARY

**Indexes should be used as benchmarks**

**Benchmarks inform hiring and firing decisions**

**Benchmarks identify and assign risks and returns**

**“Fiduciary responsibility” requires  
accurate manager performance measurement**

# MEMBERS' MONEY MATTERS MOST



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