The Structural and Historical Advantages of Investing in Small Cap Equities…

and why the next market cycle may favor Small Cap investing

Leadership in Trustee Education

Pennsylvania Association of Public Employee Retirement Systems
PO Box 61543 . Harrisburg, PA 17106-1543

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Overview

Section 1: *The Small Cap Effect – Why Small Cap Equities?*

Section 2: *Structural Inefficiencies of Small Cap Equities*

Section 3: *Small Cap Investing During the Next Cycle*

About the presenter – Eric Green, CFA

- Senior Partner and Portfolio Manager – PENN Capital Management Company, Inc.

PENN
CAPITAL MANAGEMENT

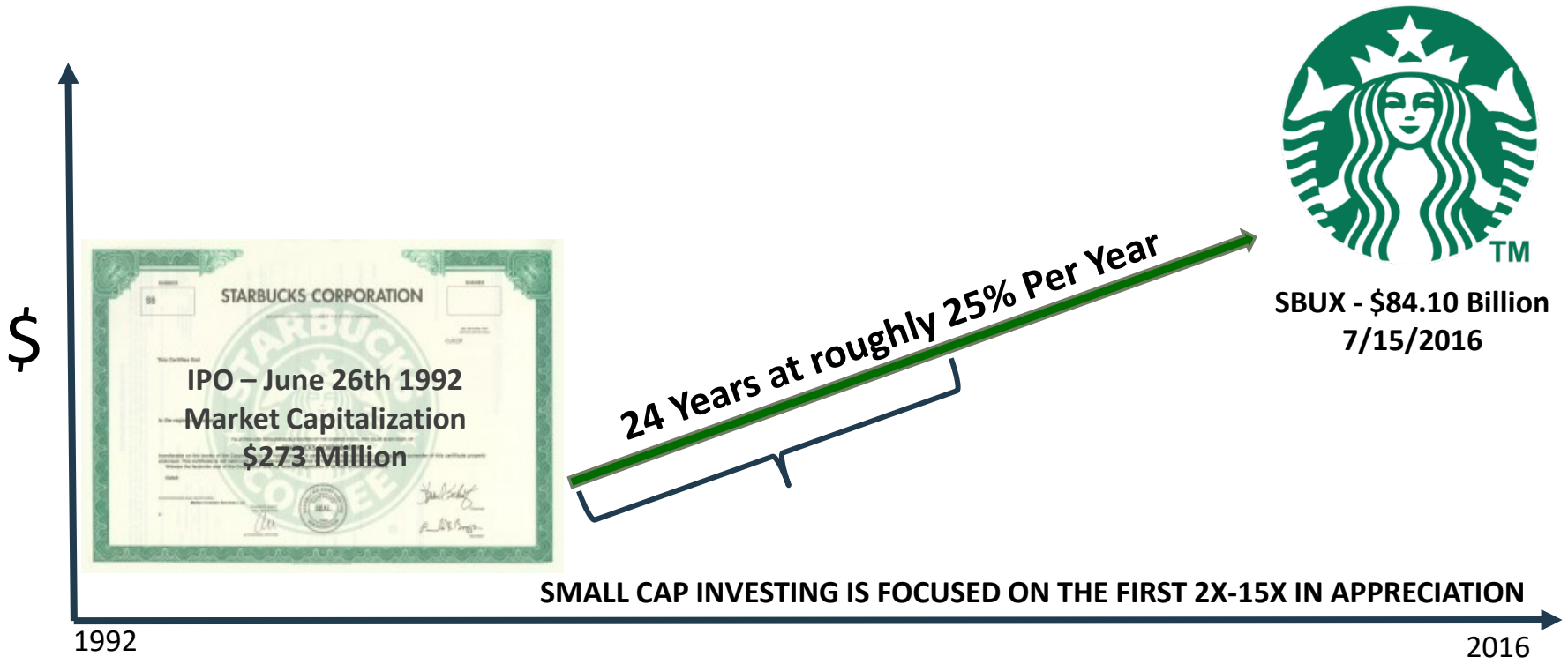
- Over 19 years of investing in Micro, Small and Mid Cap equities

- Director of Research for both credit and equity strategies

The Small Cap Effect

SECTION 1

Why invest in Small Cap equity stocks?

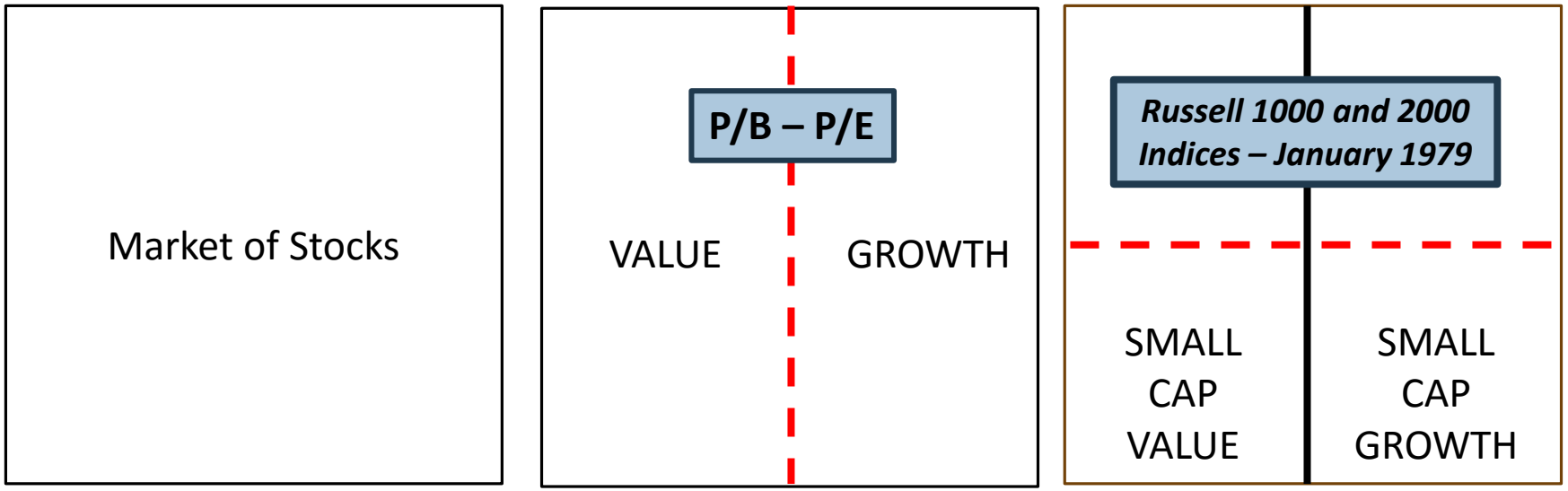


Evolution of equity style and size

Pre-ERISA*
1900 - 1974

Introduction of ERISA &
Style Research
1974 - 1977 – P/E Paper

The Size Effect
1926 -1976 – Size Paper



* The Employee Retirement Income Security Act of 1974 ("ERISA")

What is the Small Cap or “Size Effect?”

Banz, Rolf. W. 1981. “The Relationship between Return and Market Value of Common Stocks.” *Journal of Financial Economics* 9 (1): 3–18

- In 1981, Rolf Banz of University if Chicago published an academic paper that evidenced a ***“size effect."*** Specifically, he found that Small Cap stocks had outperformed Large Cap stocks in the United States over the period 1936–1975 on both an absolute and a risk-adjusted basis.
- NYSE Exchange Data

The Small Cap Effect…Confirmed Fama and French =

$$r = R_f + \beta_3(K_m - R_f) + b_s \cdot SMB + b_v \cdot HML + \alpha$$

Journal of Financial Economics Volume 33, Issue 1, February 1993, Pages 3-56

What is the "Small Firm Effect"

- A theory that holds that smaller firms outperform larger companies.
- This market anomaly is a factor used to explain superior returns in the *Three Factor Model*, created by Gene Fama and Kenneth French.
- The three factors are market return, companies with high book-to-market values, and small stock capitalization.
- Between 1980 and 2015, Small Cap stocks averaged 11.24% annual growth, outpacing Mid Cap stocks at 8.59% and Large Cap stocks at 8.00%.

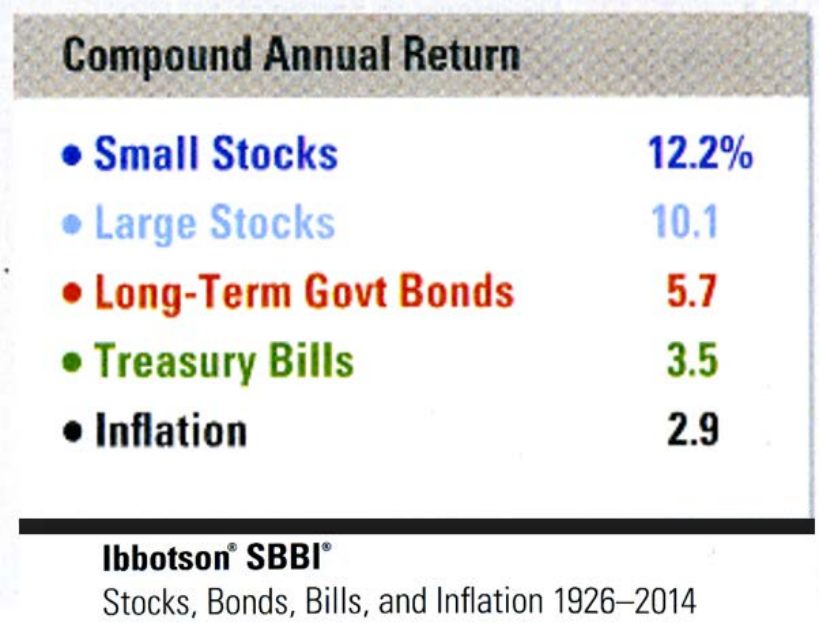
How does the industry define Small Cap?

What is the current "Small Cap" definition:

- The definition of Small Cap can vary by index provider, but it is generally a company with a market capitalization of between $300 million and $3 billion

The largest stock in the CRSP index is $9 billion in market cap

Micro Cap stocks are typically below $300 to $500 million



US Small Cap equity index providers

Index	Provider	Number of Securities
CRSP US Small Cap Index	Center for Research in Security Prices – University of Chicago	1,146
Russell 2000	FTSE Russell	2,006
S&P Small Cap 600	S&P Dow Jones Indices	601
Morningstar Small Cap Index	Morningstar	805 – Bottom 7% by Capitalization
Dow Jones US Small Cap TSM Index	S&P Dow Jones Indices	1,739

Performance across various Small Cap index providers

Small Cap Blend								
Year	CRSP	Dow Jones	Morningstar	MSCI	Russell	S&P	Average	Dispersion
10 year-CAGR	8.39%	8.12%	7.60%	7.79%	6.79%	8.14%	7.69%	1.35%
15 year-CAGR			8.24%	8.55%	7.27%	9.01%	8.15%	1.74%
20 year-CAGR					8.02%	10.13%	8.54%	2.11%

Small Cap Value								
Year	CRSP	Dow Jones	Morningstar	MSCI	Russell	S&P	Average	Dispersion
10-year CAGR	8.78%	7.42%	7.74%	6.68%	5.57%	6.83%	7.17%	3.21%
15-year CAGR			10.47%	9.35%	8.17%	8.57%	9.14%	2.30%
20-year CAGR				10.34%	9.26%	10.21%	9.94%	1.08%

Small Cap Growth								
Year	CRSP	Dow Jones	Morningstar	MSCI	Russell	S&P	Average	Dispersion
10-year CAGR	8.14%	8.61%	7.74%	8.77%	7.95%	8.77%	8.33%	1.03%
15-year CAGR			5.15%	7.39%	6.03%	8.81%	6.84%	3.66%
19-year CAGR				9.88%	6.31%	8.99%	8.39%	3.58%

Small Cap Blend Index Performance

Year	CRSP	Dow Jones	Morningstar	MSCI	Russell	S&P	Average	Dispersion
2015	-3.68%	-4.32%	-5.46%	-4.06%	-4.41%	-1.97%	-3.98%	3.49%
2014	7.54%	6.39%	6.92%	6.09%	4.89%	5.76%	6.27%	2.65%
2013	38.48%	39.63%	37.91%	39.09%	38.82%	41.31%	39.21%	3.40%
2012	18.59%	18.30%	16.49%	18.20%	16.35%	16.33%	17.38%	2.26%
2011	-1.85%	-2.91%	-2.57%	-2.75%	-4.18%	1.02%	-2.21%	5.20%
2010	27.98%	28.61%	28.37%	27.82%	26.86%	26.31%	27.66%	2.30%
2009	40.11%	41.93%	37.75%	36.15%	27.17%	25.57%	34.78%	16.36%
2008	-36.81%	-37.76%	-36.07%	-36.20%	-33.79%	-31.07%	-35.28%	6.69%
2007	1.99%	1.90%	-0.66%	1.20%	-1.57%	-0.30%	0.43%	3.56%
2006	16.00%	15.35%	17.05%	15.77%	18.37%	15.12%	16.28%	3.25%
2005	8.69%	7.98%	5.76%	7.48%	4.55%	7.68%	7.02%	4.14%
2004	20.01%	17.34%	20.44%	20.01%	18.33%	22.65%	19.80%	5.31%
2003	45.99%	46.79%	47.70%	47.38%	47.25%	38.79%	45.65%	8.91%
2002	-17.95%	-16.98%	-20.36%	-18.37%	-20.48%	-14.63%	-18.13%	5.85%
2001		3.10%	5.26%	3.22%	2.49%	6.54%	4.12%	4.05%
2000			**7.70%**	**8.67%**	**-3.02%**	**11.80%**	**6.29%**	**14.82%**
1999			17.80%	21.94%	21.26%	12.40%	18.35%	9.54%
1998			-6.00%	0.58%	-2.55%	-1.30%	-2.32%	6.58%
1997			20.60%	24.34%	22.36%	25.60%	23.23%	5.00%
1996					16.49%	21.32%	18.91%	4.83%
1995					28.45%	29.96%	29.21%	1.51%
1994					-1.82%	-4.77%	-3.30%	2.95%
10 year-CAGR	8.39%	8.12%	7.60%	7.79%	6.79%	8.14%	7.69%	1.35%
15 year-CAGR			8.24%	8.55%	7.27%	9.01%	8.15%	1.74%
20 year-CAGR					8.02%	10.13%	8.54%	2.11%

Factor Weights are typically the leading cause of dispersion across the various indices. Dispersion has significantly dropped over the past 10 years, but there are still inflection points like the 2009 post global financial crisis.

Small Cap Value Index Performance

Year	CRSP	Dow Jones	Morningstar	MSCI	Russell	S&P	Average	Dispersion
2015	-4.64%	-5.59%	-8.65%	-5.14%	-7.47%	-6.67%	-6.70%	3.51%
2014	10.63%	7.56%	10.03%	7.44%	4.22%	7.54%	7.36%	5.81%
2013	38.47%	35.03%	35.71%	33.71%	34.52%	35.71%	34.94%	2.00%
2012	20.50%	19.75%	18.30%	18.80%	18.05%	18.21%	18.62%	1.70%
2011	0.01%	-3.97%	-1.84%	-4.04%	-5.50%	-1.38%	-3.35%	4.12%
2010	27.18%	24.98%	-1.84%	25.01%	24.50%	24.72%	19.47%	26.85%
2009	**37.81%**	**36.83%**	**-1.84%**	**30.29%**	**20.58%**	**22.85%**	**21.74%**	**38.67%**
2008	-33.19%	-33.92%	-31.67%	-32.11%	-28.92%	-29.51%	-31.23%	5.00%
2007	-4.89%	-4.13%	-8.15%	-6.94%	-9.78%	-5.54%	-6.91%	5.65%
2006	18.86%	20.95%	20.03%	19.44%	23.48%	19.57%	20.69%	4.04%
2005	6.42%	6.68%	5.12%	6.28%	4.71%	6.18%	5.79%	1.97%
2004	22.50%	18.37%	24.03%	23.72%	22.25%	23.25%	22.32%	5.66%
2003	41.61%	43.66%	48.87%	44.34%	46.03%	40.03%	44.59%	8.84%
2002	-8.19%	-2.37%	-8.24%	-6.63%	-11.43%	-14.47%	-8.63%	12.10%
2001		12.80%	18.58%	12.95%	14.02%	13.10%	14.29%	5.78%
2000			18.65%	21.22%	22.83%	20.86%	20.89%	4.18%
1999			-5.19%	-2.17%	-1.49%	3.03%	-1.46%	8.22%
1998			-3.67%	-5.12%	-6.45%	-5.06%	-5.08%	2.78%
1997				34.73%	31.78%	36.45%	34.32%	4.67%
1996				23.52%	21.37%	26.10%	23.66%	4.73%
1995					25.75%	30.69%	28.22%	4.94%
10-year CAGR	8.78%	7.42%	7.74%	6.68%	5.57%	6.83%	7.17%	3.21%
15-year CAGR			10.47%	9.35%	8.17%	8.57%	9.14%	2.30%
20-year CAGR				10.34%	9.26%	10.21%	9.94%	1.08%

Factor Weights are typically the leading cause of dispersion across the various indices. Dispersion has significantly dropped over the past 10 years, but there are still inflection points like the 2009 post global financial crisis.

Small Cap Growth Index Performance

Year	CRSP	Dow Jones	Morningstar	MSCI	Russell	S&P	Average	Dispersion
2015	-2.60%	-2.73%	-0.18%	-3.05%	-1.38%	2.78%	-0.91%	5.83%
2014	3.98%	5.46%	2.46%	4.59%	5.60%	3.87%	4.40%	3.14%
2013	38.44%	44.46%	41.46%	44.50%	43.30%	42.69%	43.28%	3.04%
2012	15.39%	16.96%	14.50%	17.57%	14.59%	14.16%	15.56%	3.41%
2011	-3.08%	-2.09%	-1.04%	-1.53%	-2.91%	3.62%	-0.79%	6.53%
2010	29.43%	31.97%	31.26%	30.71%	29.09%	27.99%	30.20%	3.98%
2009	43.92%	47.38%	32.98%	41.97%	34.47%	28.35%	37.03%	19.03%
2008	-39.50%	-41.26%	-39.92%	-40.11%	-38.54%	-32.94%	-38.55%	8.32%
2007	9.62%	8.05%	11.08%	9.71%	7.05%	5.60%	8.30%	5.48%
2006	12.89%	9.07%	10.04%	12.02%	13.35%	10.54%	11.00%	4.28%
2005	11.75%	8.78%	5.77%	8.71%	4.15%	9.22%	7.33%	5.07%
2004	17.25%	15.47%	13.48%	16.13%	14.31%	22.00%	16.28%	8.52%
2003	50.61%	48.88%	52.65%	50.37%	48.54%	37.31%	47.55%	15.34%
2002	-27.68%	-38.89%	-36.87%	-29.31%	-30.26%	-15.36%	-30.14%	23.53%
2001		-8.50%	-12.92%	-6.29%	-9.23%	-1.18%	-7.62%	11.74%
2000			**-12.10%**	**8.67%**	**-22.43%**	**0.57%**	**-6.32%**	**31.10%**
1999			46.80%	49.55%	43.09%	19.57%	39.75%	29.98%
1998			-6.55%	6.63%	1.23%	-2.29%	-0.25%	13.18%
1997				14.56%	12.95%	15.65%	14.39%	2.70%
1996				13.88%	11.26%	16.09%	13.74%	4.83%
10-year CAGR	8.14%	8.61%	7.74%	8.77%	7.95%	8.77%	8.33%	1.03%
15-year CAGR			5.15%	7.39%	6.03%	8.81%	6.84%	3.66%
19-year CAGR				9.88%	6.31%	8.99%	8.39%	3.58%

Factor Weights are typically the leading cause of dispersion across the various indices. Dispersion has significantly dropped over the past 10 years, but there are still inflection points like the 2009 post global financial crisis.

Summary of concepts for this section

1. There is a measureable and academically supported “Small Cap Effect” in investing and it is persistent.

2. Small Cap equities may offer a substantial return premium over other asset classes over the long term.

3. There are a number of index providers and it is important to understand the fundamental differences.

Structural Inefficiencies of Small Cap Investing

SECTION 2

The Small Cap Advantage

- Active portfolio management can add value.
- A greater percentage of return comes from stock selection factors instead of style or industry.
- Consolidation and regulatory pressures have reduced analyst coverage in the Small Cap space leading to less efficient markets.
- A reduction in active market makers has made the market less liquid and capacity more important.
- Publicly traded Small Cap equities are attractive Mergers & Acquisitions (M&A) targets.
- Small Cap equities offer the opportunity for higher active share ratios.
- Better diversification and lower correlation relative to other key asset classes.

Active management can have a greater impact

80% of returns in small caps are stock-specific vs. 60% in large caps

Figure 9: Small-Cap Opportunity Set

Figure 10: Large-Cap Opportunity Set

Source: "Quantitative Strategy, The Quant View" – Deutsche Bank Markets Research, 4 March 2015

Limited analyst coverage can provide an information imbalance

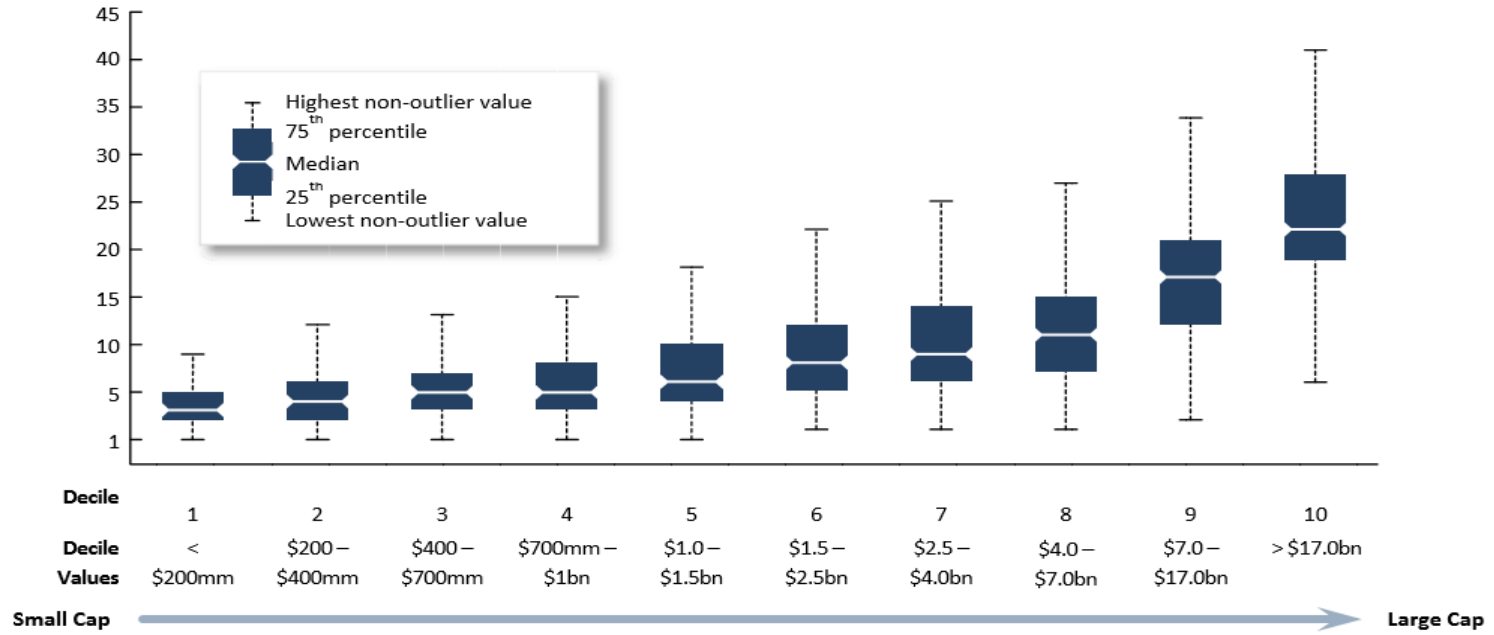
Table 1: Sell-Side Analyst Coverage (Mar '15)

	S&P 500	Russell 2000
Average	24	8
Median	23	7
Minimum	1	0
Maximum	58	31

Source: Bloomberg as of March 13, 2015

Number of analysts per market cap size decile

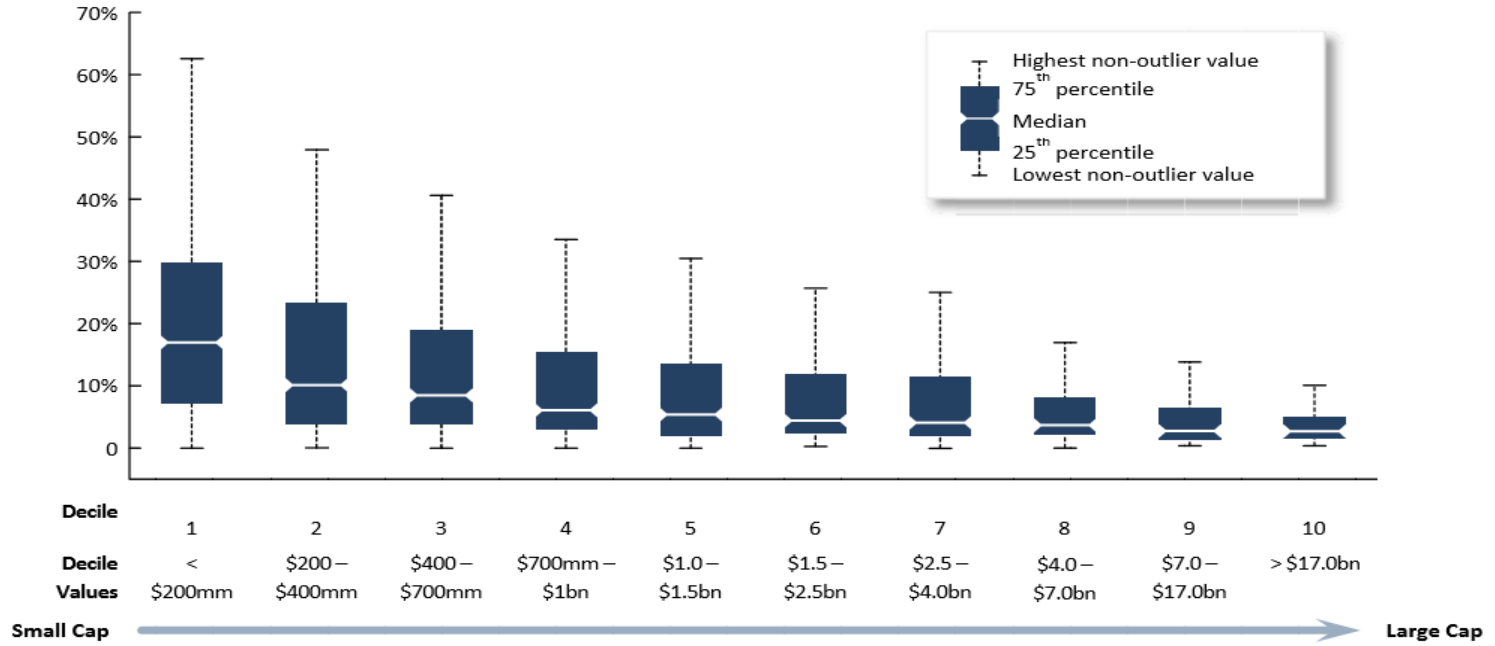
Figure 4: Number of Analysts per Market Cap Size Decile (Mar '2015)



Source: Investcorp, FactSet as of March 18, 2015. For clarity, outliers with values that are 1.5x IQR (interquartile range, e.g., the distance between the 25th and 75 percentiles) less than the 25th percentile or 1.5x IQR greater than the 75th percentile have been excluded.

Dispersion of analyst forecasts per market cap size decile

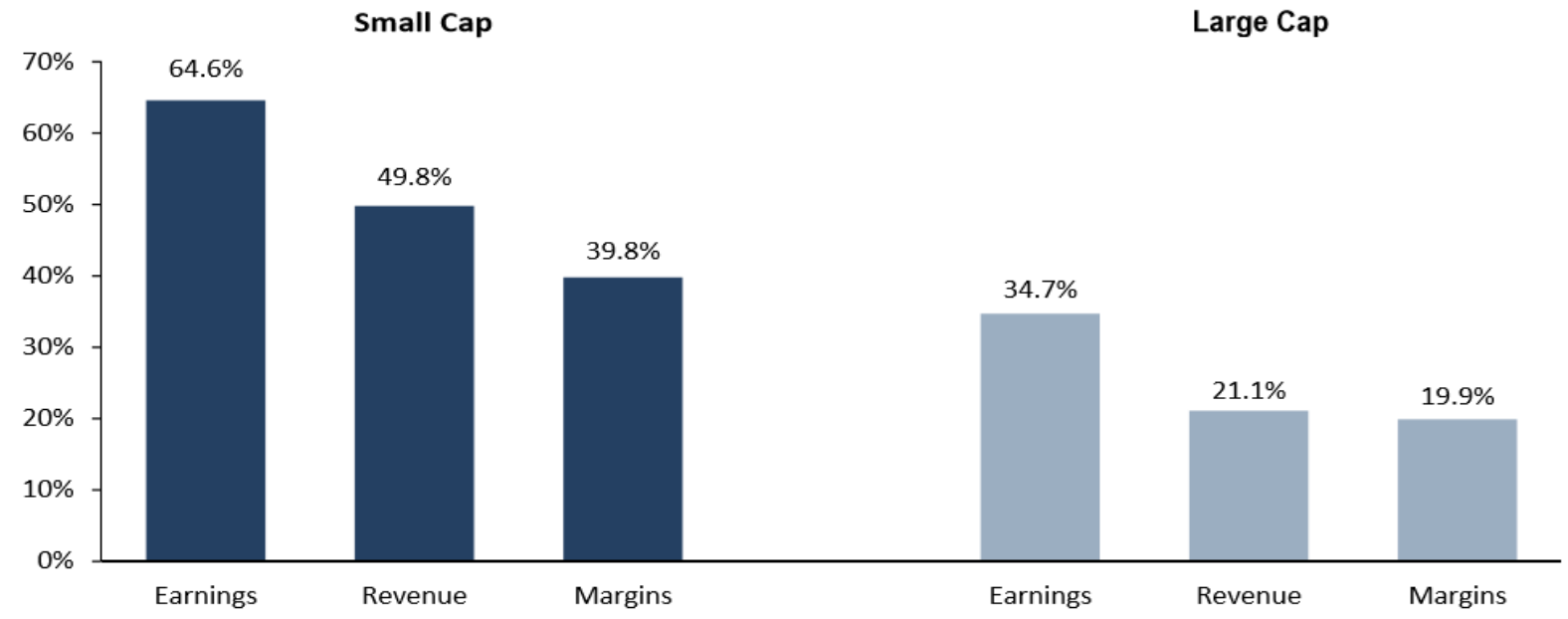
Figure 5: Dispersion of Analyst Forecasts per Market Cap Size Decile (Mar '2015)



Source: Investcorp, FactSet as of March 18, 2015. For clarity, outliers with values that are 1.5x IQR (interquartile range, e.g., the distance between the 25th and 75 percentiles) less than the 25th percentile or 1.5x IQR greater than the 75th percentile have been excluded.

Annualized excess return from properly identifying revisions of the upcoming month: 5-year average

Figure 8: Annualized Excess Return from Properly Identifying Revisions of the Upcoming Month; 5-year average

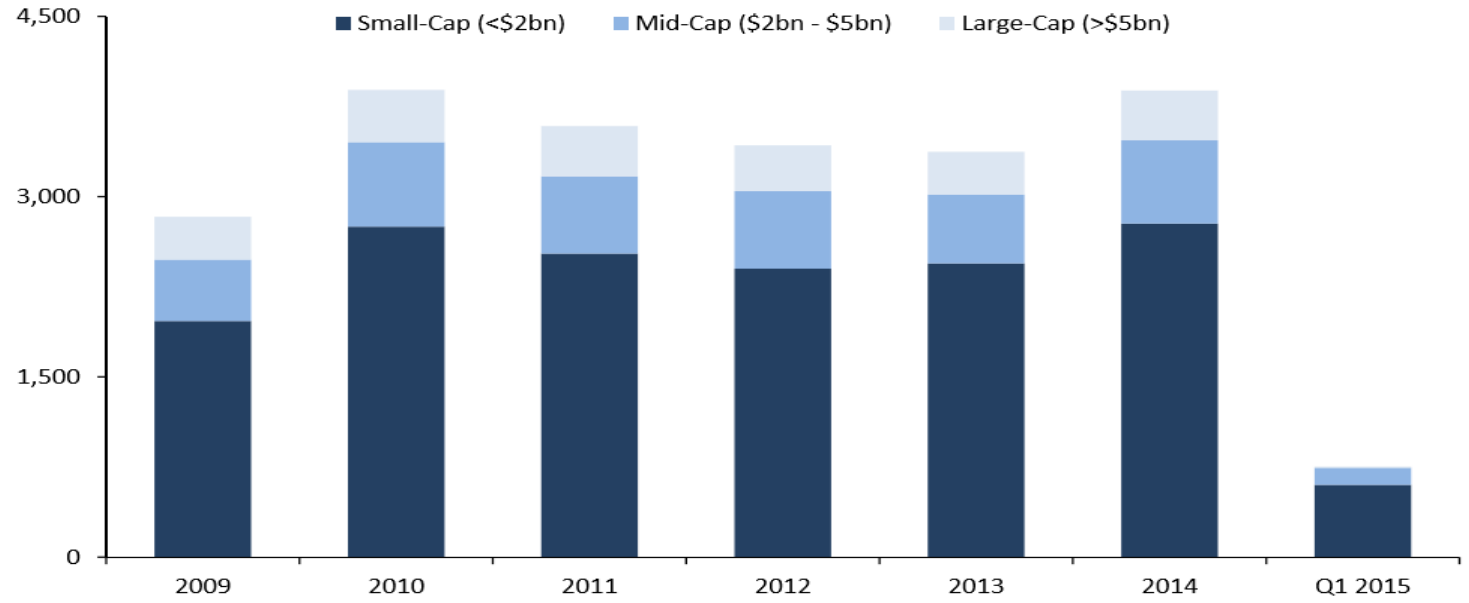


Source: RBC

Announced M&A Transactions

Worldwide – Private and Public

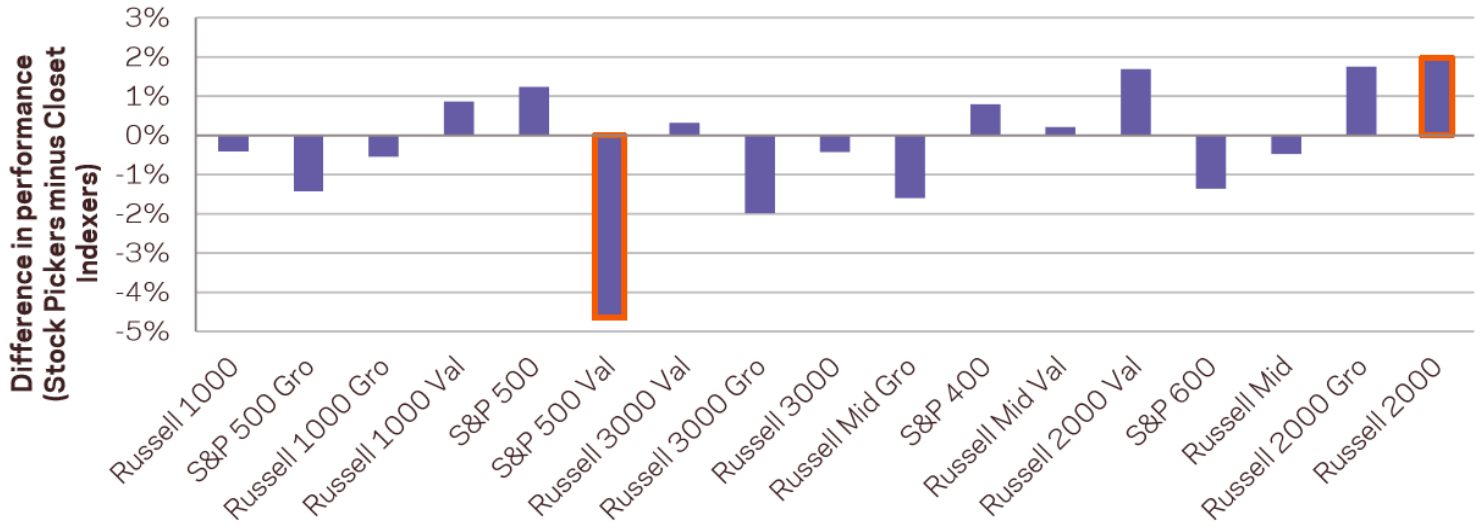
Figure 7: Announced M&A Transactions (count)



Source: Capital IQ, Investcorp

Active share scores are better with Small Cap funds

Exhibit 3 — Annualized Difference in Performance Between High and Low Active Share Funds by Benchmark. We present the difference in alpha between Stock Pickers and Closet Indexers estimated separately in each benchmark. The alpha measures outperformance controlling for market, size, value and momentum. Benchmarks are sorted on the average Active Share, as in Exhibits 1 and 2. We compute alphas as the intercept in the regression of benchmark-adjusted fund returns on market, size, value and momentum factors. 5% statistical significance is indicated by a red border.



Source: AQR using data from Petajisto's website; CRSP Mutual Fund Database. Data are from 1990-2009.

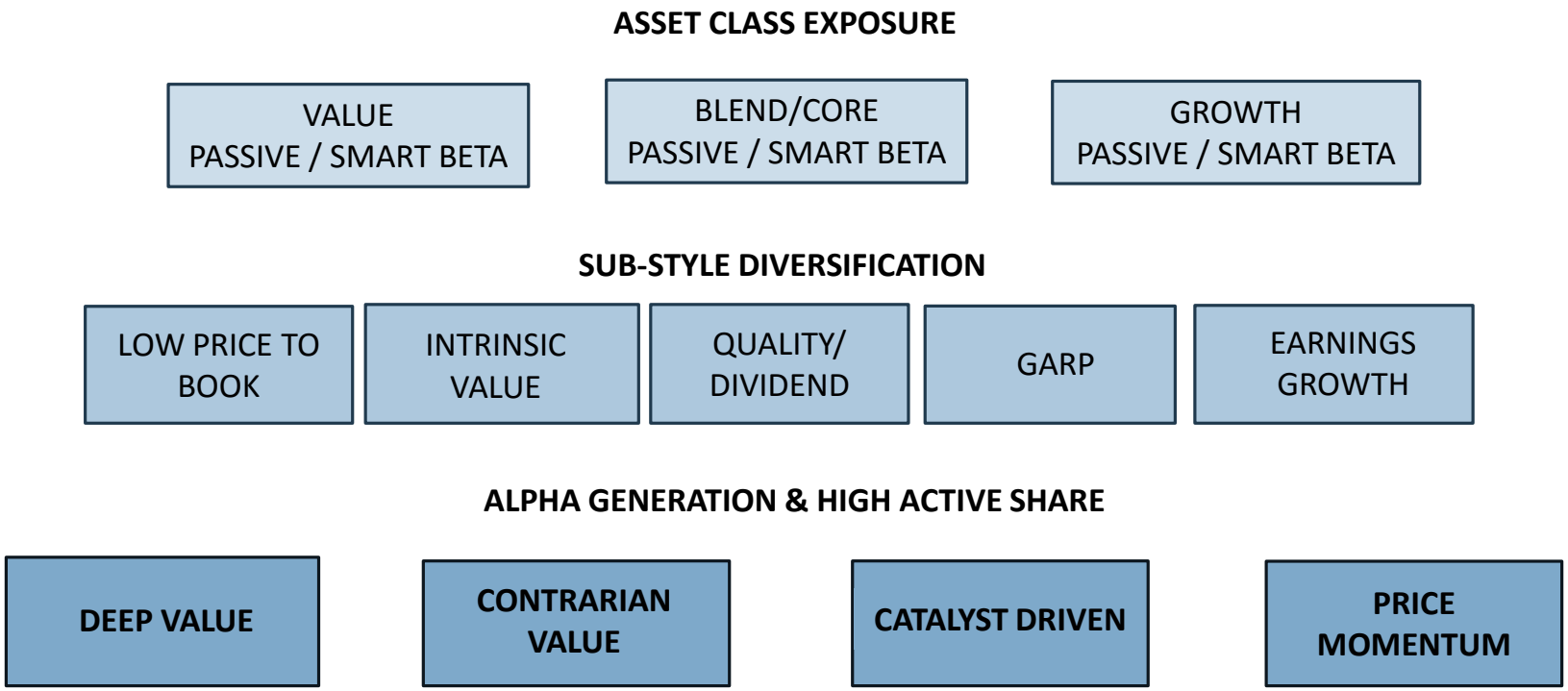
Diversification Benefits: Correlation factors are low enough to potentially provide benefits…especially with the bond market

Table 3
Correlations
Based on monthly returns: 06/1994 to 12/2015

Index	MSCI ACWIxUS SC	MSCI ACWIxUS	Russell 1000®	Russell 2000®	Barclays U.S. Aggregate
MSCI ACWI ex USA SC	1.00	0.93	0.74	0.74	0.01
MSCI ACWI ex USA	0.93	1.00	0.85	0.77	0.01
Russell 1000®	0.74	0.85	1.00	0.84	-0.02
Russell 2000®	0.74	0.77	0.84	1.00	-0.08
Barclays U.S. Aggregate	0.01	0.01	-0.02	-0.08	1.00

Source: Factset. **Past performance is no guarantee of future results.**

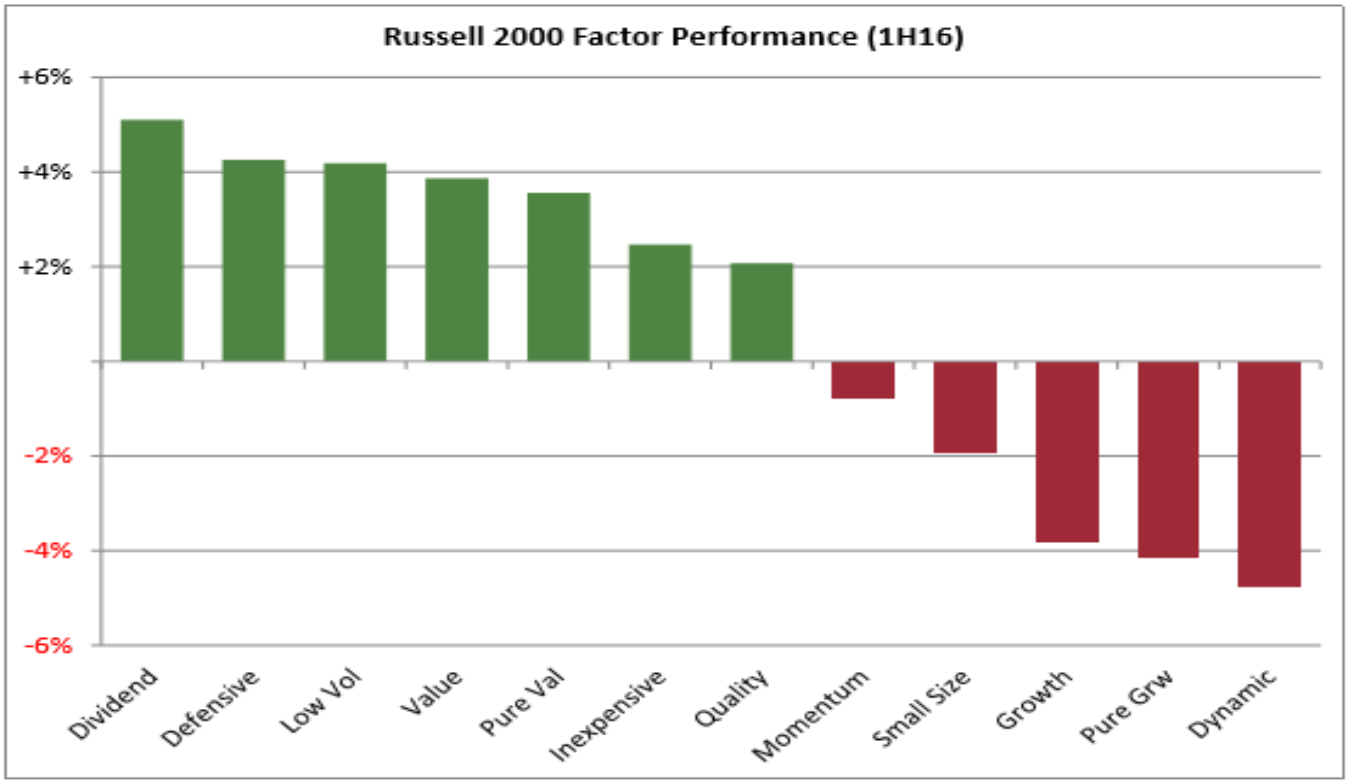
Sub-styles are important for potentially increasing the benefits of diversification and alpha generation



Dividends, defensive stocks and low volatility names dominated first half 2016

No surprises in this 6-month look-back

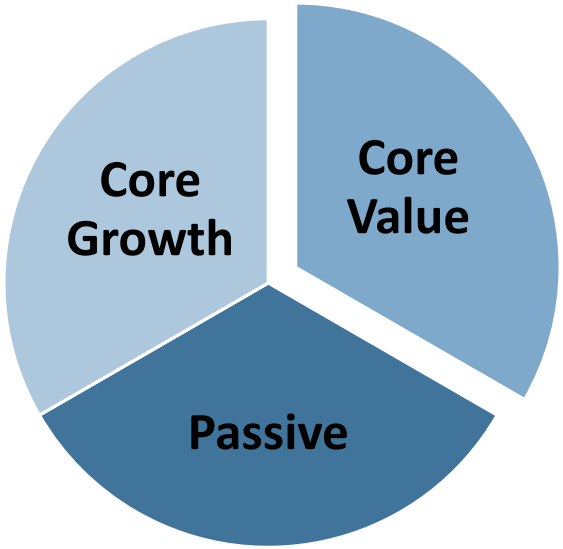
Fig 18. **Dividend and Defensive are leading YTD…**



Source: FRP, Morningstar and FactSet; as of 6/30/16

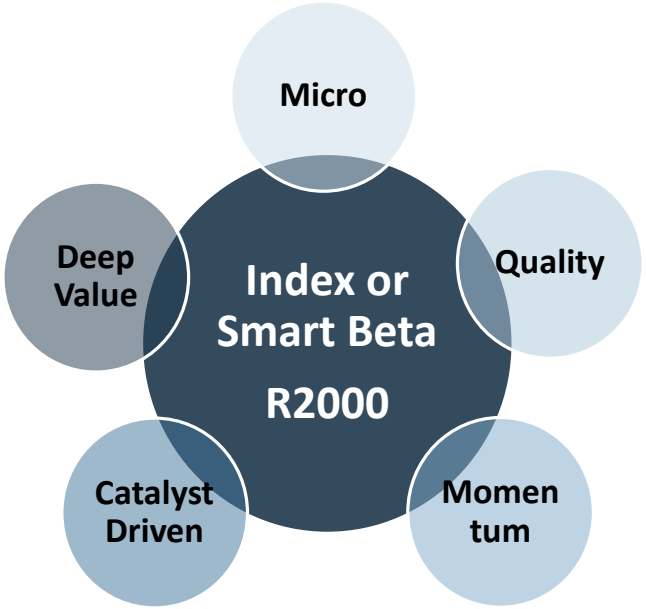
Two approaches to allocating to Small Cap equities

Seeking Diversification Benefits



or

Seeking Alpha Opportunities



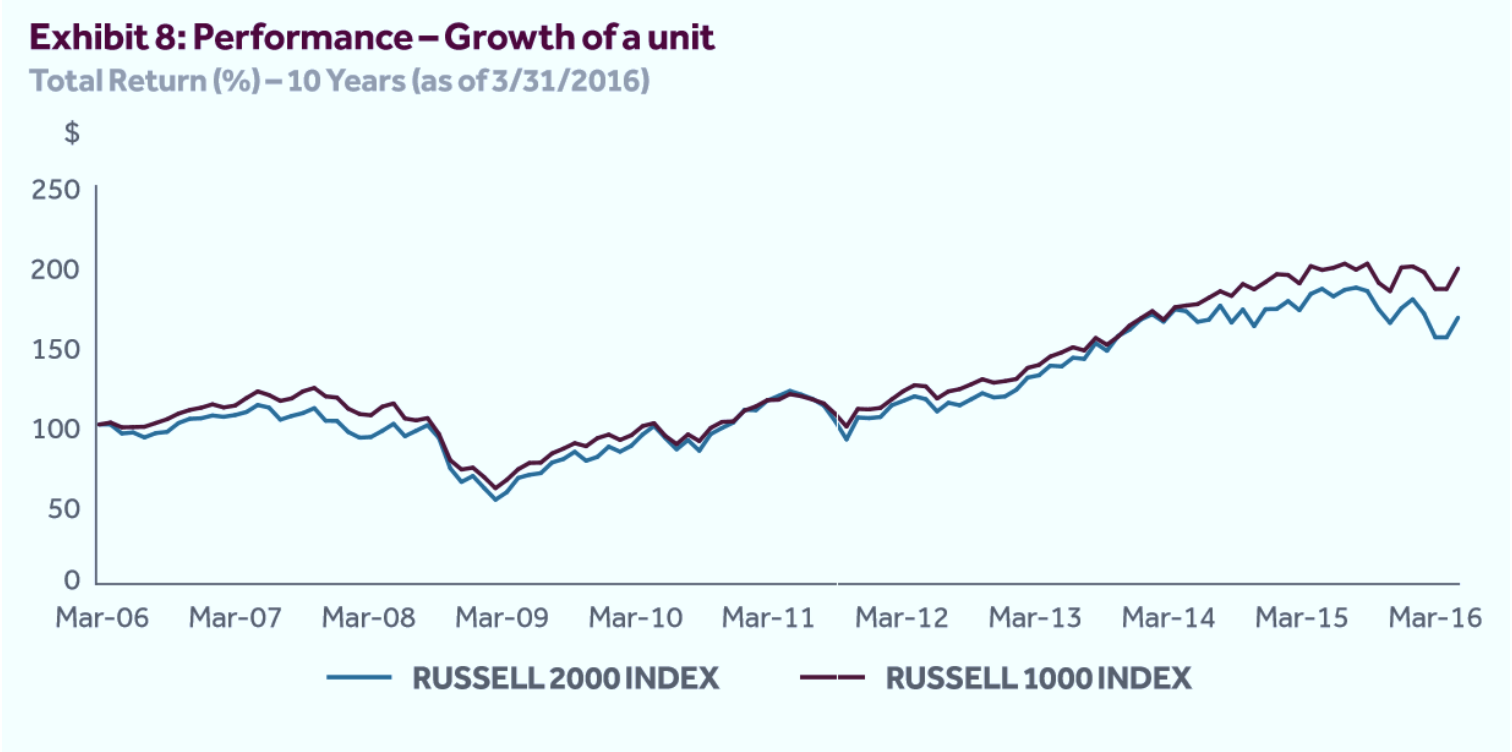
Summary Concepts

- Small Cap equities have numerous structural advantages and inefficiencies resulting in a potential performance advantage.
- M&A phases tend to favor Small Cap equities.
- Corporations have strong balance sheets and their stock prices may provide a strong currency in M&A deals.
- Selecting Small Cap investment styles requires a clear and consistent allocation strategy and investment return goal.

Why Small Cap Equities Now?

SECTION 3

The last 10 years have favored Large Cap equity investing, but valuations are diverging



Large Caps have outperformed on an absolute and risk-adjusted basis

Exhibit 6: Performance

Total Return (%) (as of 3/31/2016)

	Annualized											
	1st Qtr	YTD	1 Yr	3 Yr	5 Yr	10 Yr	2010	2011	2012	2013	2014	2015
Russell 2000 Index	-1.52	-1.52	-9.76	6.84	7.20	5.26	26.85	-4.18	16.35	38.82	4.89	-4.41
Russell 1000 Index	1.17	1.17	0.50	11.52	11.35	7.06	16.10	1.50	16.42	33.11	13.24	0.92

Source: FTSE Russell, data as of March 31, 2016. Past performance is no guarantee of future results. Please see important legal disclosures at the end of the report.

Exhibit 12: Risk Characteristics

Annualized (as of 3/31/2016)

	Standard Deviation (%)				Sharpe Ratio			
	1 yr	3 yr	5 yr	10 yr	1 yr	3 yr	5 yr	10 yr
Russell 2000 Index	16.71	15.11	16.54	19.84	-0.51	0.5	0.5	0.3
Russell 1000 Index	14.12	11.27	12.35	15.49	0.09	1.01	0.92	0.45

Source: FTSE Russell, data as of March 31, 2016. Past performance is no guarantee of future results. Please see important legal disclosures at the end of the report.

The Large Cap equity performance advantage has not held up in international markets

So what is different in the US?

Table 1
Annualized returns (%) for periods ending 12/31/15

Index	1 Year	3 Year	5 Year	10 Year
MSCI ACWI ex USA SC	-4.92	5.64	2.63	4.97
MSCI ACWI ex USA	-11.95	1.50	1.06	2.92
Russell 1000® Index	-1.82	15.01	12.44	7.40
Russell 2000® Index	-9.92	11.65	9.19	6.80

Source: Factset **Past performance is no guarantee of future results.**

+2.05%

-0.60%

Factors driving Large Cap stock performance advantage over Small Cap stock since 2006 may be ending…

Event/Trend	Consequence	Large Caps	Small Caps
Sarbanes Oxley	Changed compensation incentives and reporting risks…jail time!!	✓	
Bush Tax Cuts	Lower tax rates on dividends	✓	
Central Bank Policies - QE	The Federal Reserve and other Central Banks lowered rates	✓	
Demographics	Baby boomers started retiring and increasing the need for income	✓	
Global Market Volatility	Flight to Safety – Greece, China and Oil	✓	
Growth of Passive Investments	Capitalization based indexes expanded market share	✓	

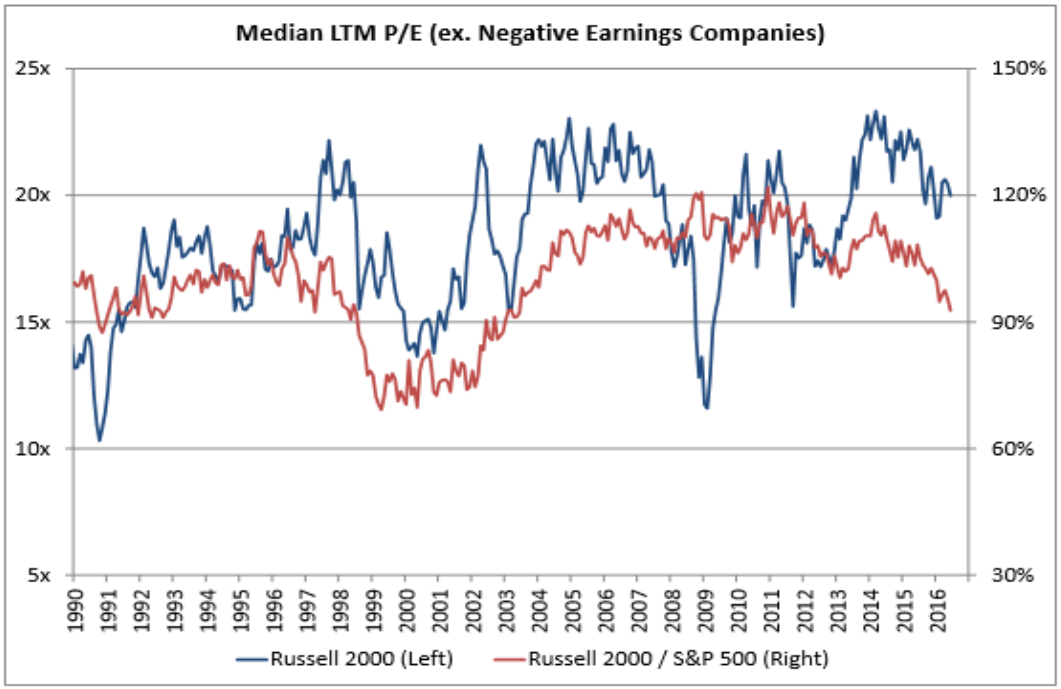
STANDARD &POOR'S 500

Small Cap valuation is a mixed picture

Excluding loss makers, Small Caps have not been this cheap (on a relative basis) in 15 years

The market is fairly priced with some sectors trading above historical valuations….

Fig 50. **Excluding loss-makers, R2 relative valuation versus SP5 was last this cheap in early 2003**



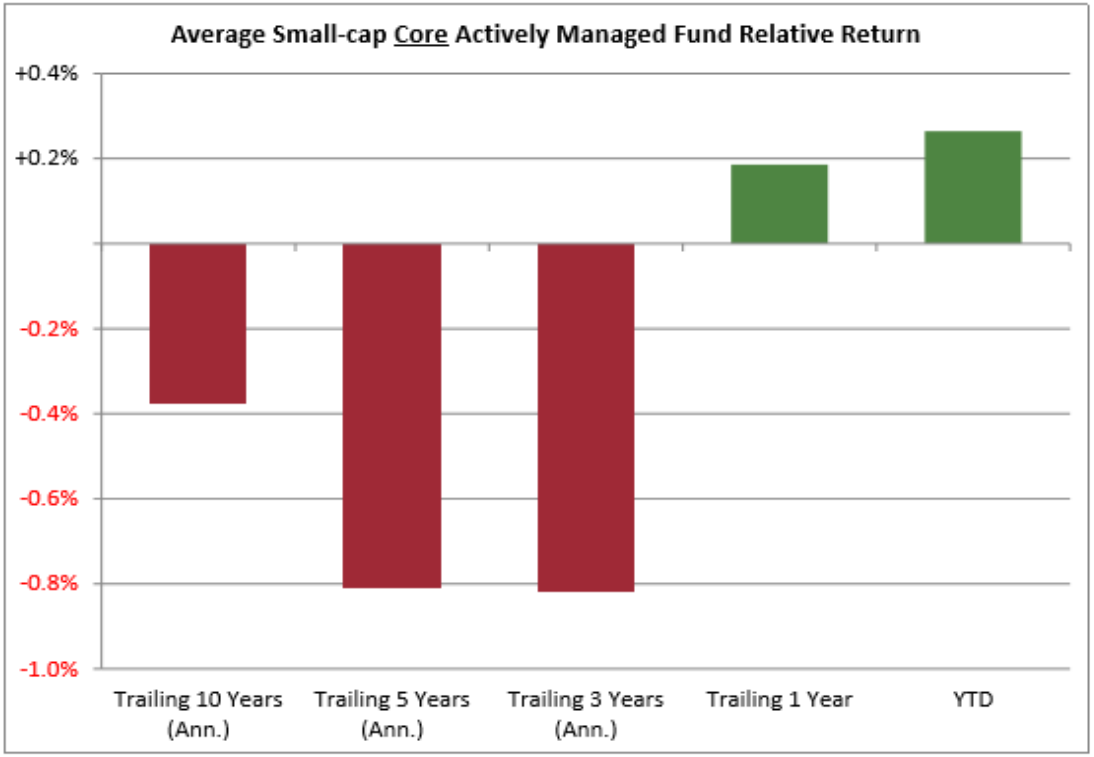
Source: FRP and FactSet; as of 6/30/16

but, Small Caps are cheaper on a relative basis to large caps… and some sectors are very attractive from an absolute valuation perspective

After a difficult decade, active managers are outperforming

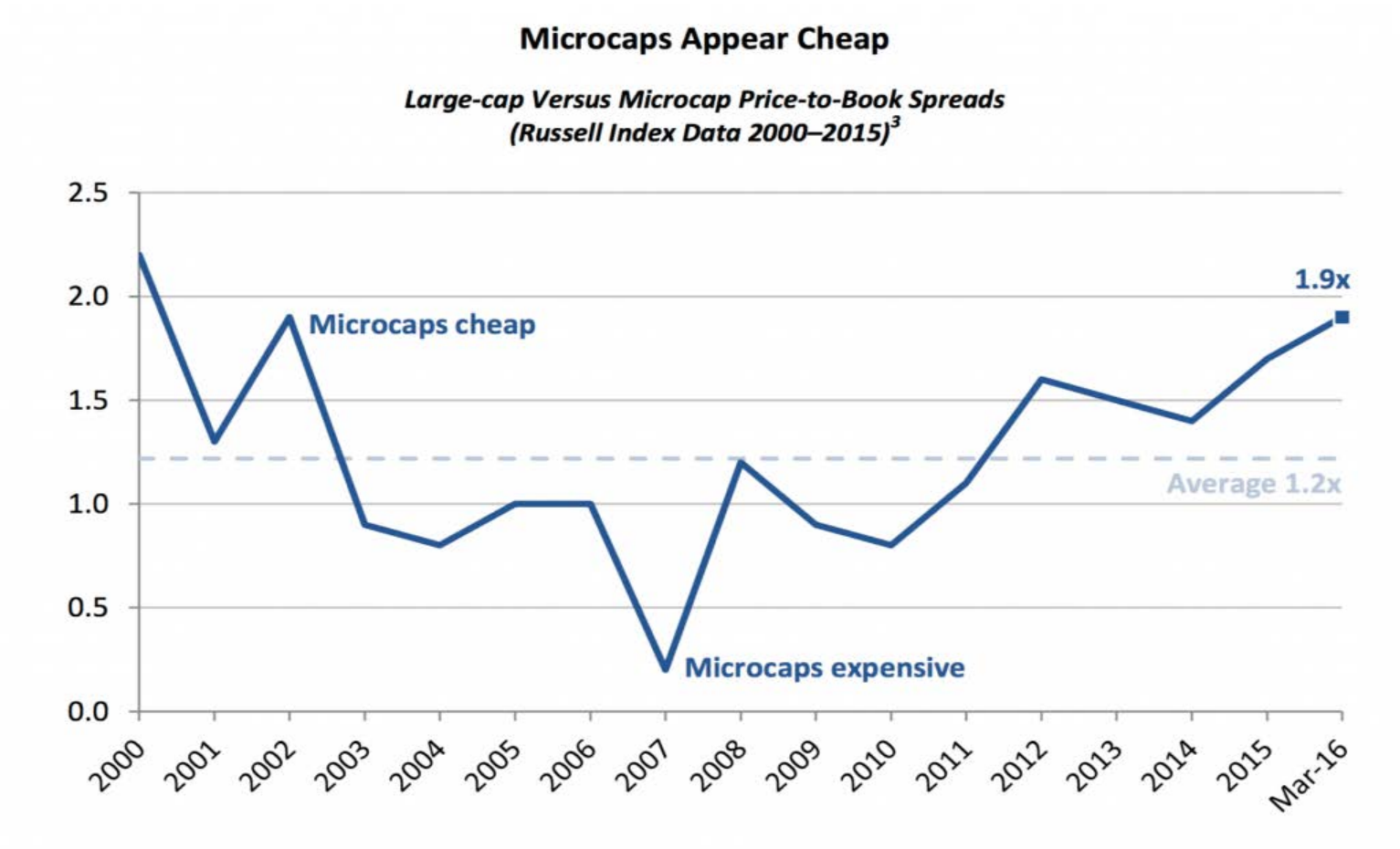
Active managers have shown improving returns in the past 12 months

Fig 40. **The average core fund is beating the R2 in the YTD and Trailing 1-year periods…**

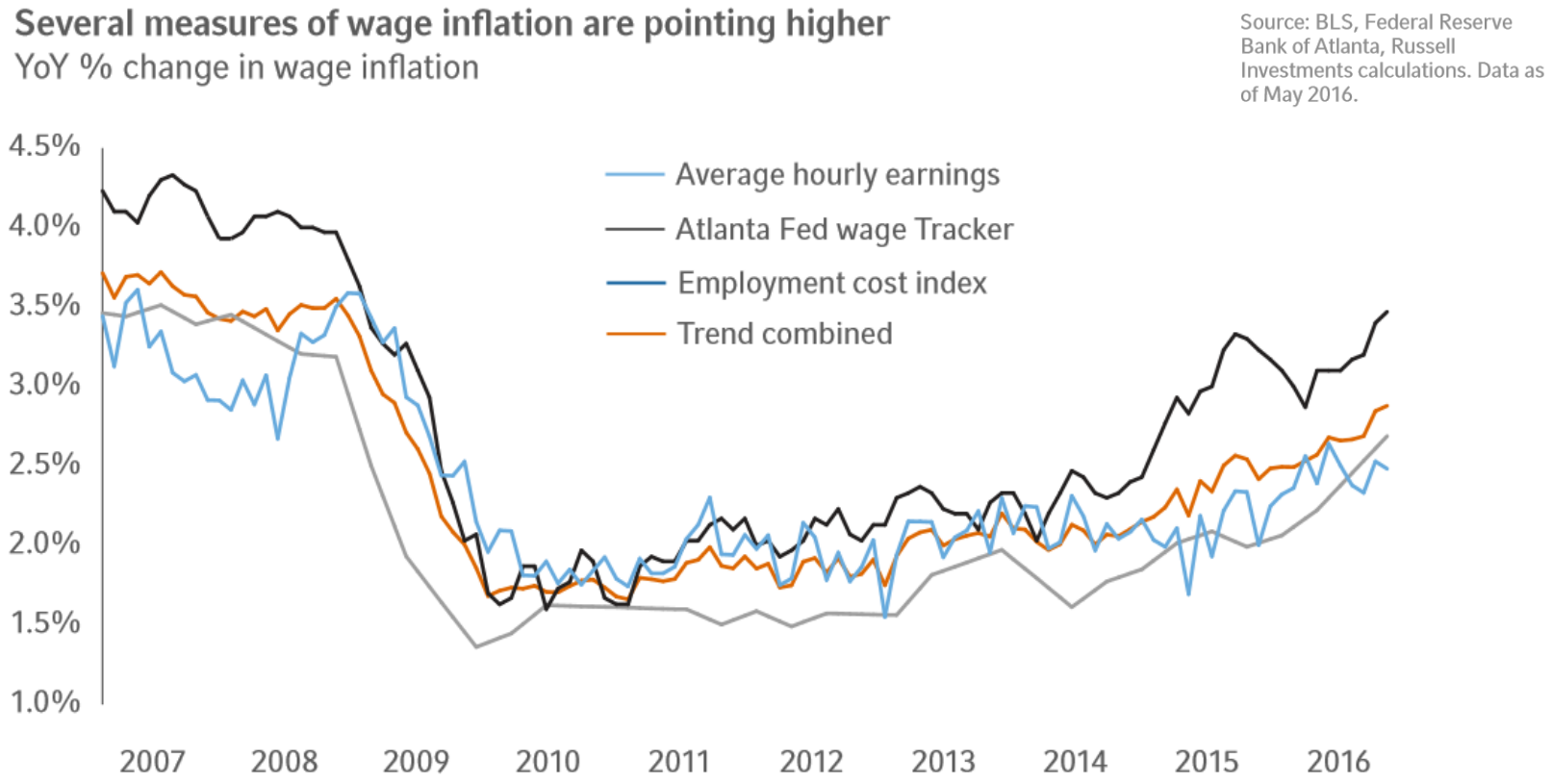


Source: FRP, Morningstar and FactSet; as of 6/30/16

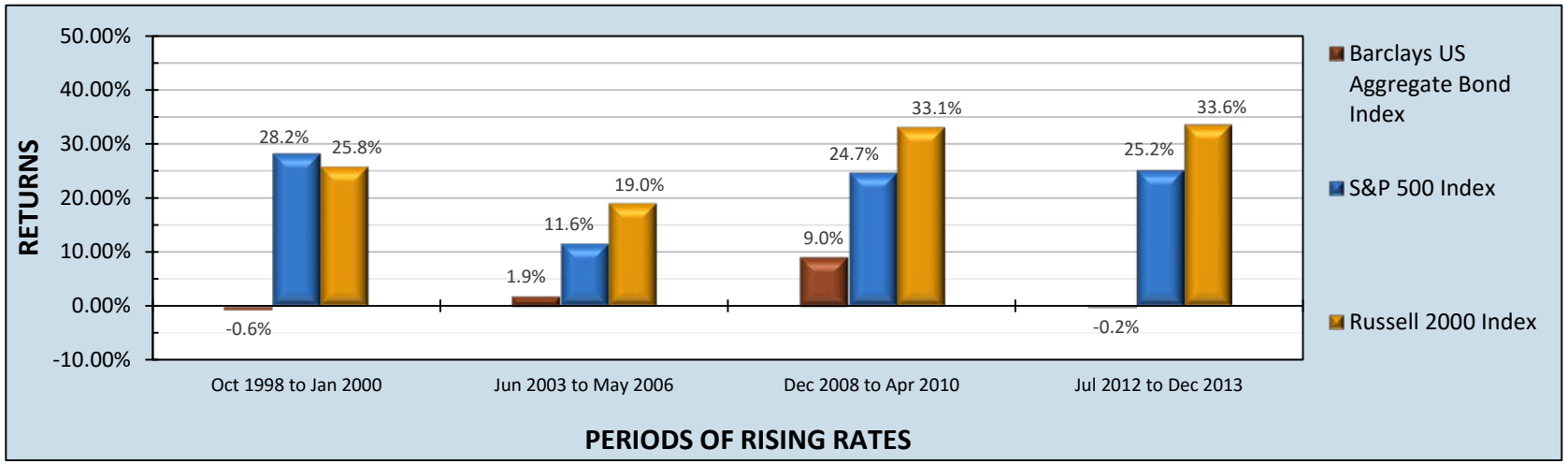
Micro Caps Appear Cheap



Inflation and pressure on interest rates is building



Equity Performance During Rising Rate Environments



Periods of Rising Rates			10 Year Treasury Yield (%)			Barclay's US Aggregate Bond Index	Annualized S&P 500 Index	Annualized Returns - Gross of Fees		
Start Date	End Date	Duration (Months)	Start	End	Change (bps)	Return	Return	Russell 2000	Russell 2500	Russell Midcap
Dec-93* to	Nov-94	10	5.80	7.91	+211	-3.06	1.04	-4.39	-	-
Oct-98 to	Jan-00	15	4.42	6.67	+225	-0.61	28.23	25.83	-	-
Jun-03 to	May-06	35	3.35	5.11	+176	1.91	11.61	19.01	19.73	20.43
Dec-08 to	Apr-10	16	2.96	3.66	+70	9.00	24.71	33.13	38.21	41.36
Jul-12 to	Dec-13	17	1.66	3.01	+135	-0.17	25.16	33.64	33.01	30.59

Past performance is no guarantee of future results
*10 Yr. Treasury rates started to rise in August 1993.

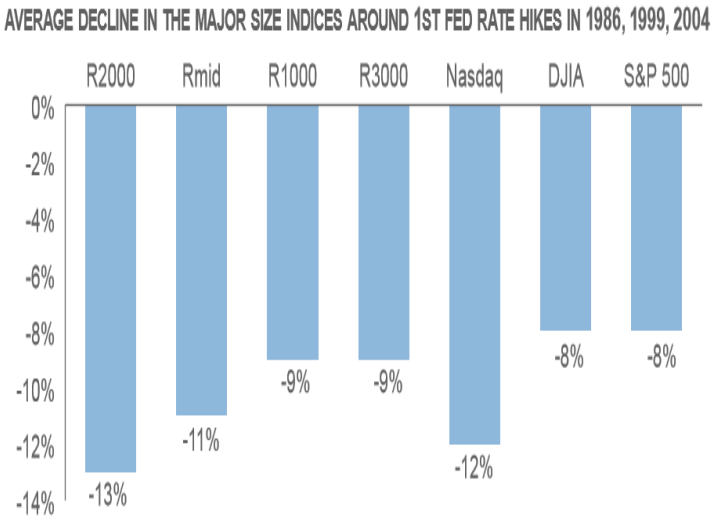
Source: Furey Research Partners, Bloomberg

Unfortunately, while the road may be bumpy, the alpha potential may be worth incurring periods of short-term volatility

Volatility is the fluctuation in the price of a security.

Risk is the permanent loss of capital – Las Vegas Real Estate 2006.

Between 1980 and 2015, Small Caps averaged 11.24% annual growth in the face of rising rates, easily outpacing Mid Caps at 8.59% and Large Caps at 8.00%.



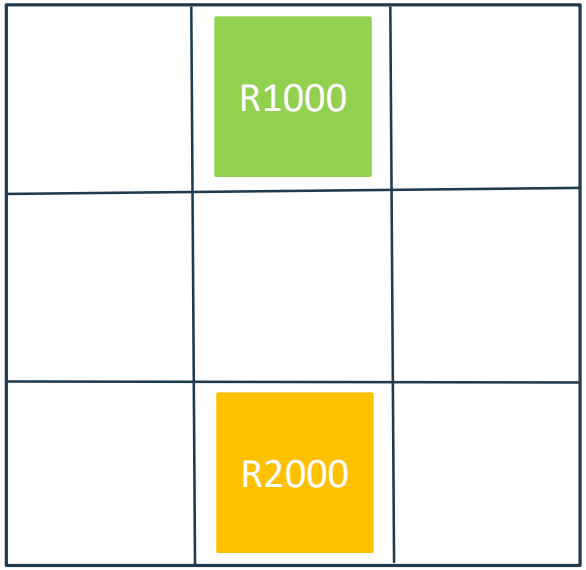
Source: Credit Suisse Small/Mid Cap US Equity Strategy, Bloomberg

Timing and duration of rate hike pullbacks varied. Calculations based on peak to trough moves in the respective indices which occurred shortly around the event. 1986 is not included in the Russell Midcap Index calculation.

The next cycle could favor Small Cap investing

Year	Russell 1000 (%)	Russell 2000 (%)	Calendar year performance difference LC-SC
1995	37.77	28.45	**9.32**
1996	22.45	16.49	**5.96**
1997	32.85	22.36	**10.49**
1998	27.02	-2.55	**29.57**
1999	20.91	21.26	**-0.35**
2000	-7.79	-3.02	**-4.77**
2001	-12.45	2.49	**-14.94**
2002	-21.65	-20.48	**-1.17**
2003	29.89	47.25	**-17.36**
2004	11.40	18.33	**-6.93**
2005	6.27	4.55	**1.72**
2006	15.46	18.37	**-2.91**
2007	5.77	-1.57	**7.34**
2008	-37.60	-33.79	**-3.81**
2009	28.43	27.17	**1.26**
2010	16.10	26.85	**-10.75**
2011	1.50	-4.18	**5.68**
2012	16.42	16.35	**0.07**
2013	33.11	38.82	**-5.71**
2014	13.24	4.89	**8.35**
2015	0.92	-4.41	**5.33**
2016 (6/30)	3.74	2.22	**1.52**

The Russell 1000 and 2000 indices have roughly split leadership over the past 37 years with large caps outperforming Small Caps in 19 years. Each, as a class, has had periods of consecutive years of out-performance.



Conclusion

- The “Size Effect” is real and obtainable, but it requires a long term perspective.
- Small Cap stocks offer structural advantages that are only increasing with the impact of various trends like increased regulation, lowest interest rates and overvalued large cap stock prices.
- The next cycle could substantially favor Small Cap stocks, but it is important to access investment strategies focused on real value or opportunities in the market.