

Shooting the Messenger: What's Behind the Rise of Passive?

CFA Society New York

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**S&P Dow Jones
Indices**

A Division of **S&P Global**

A Pressing Question

Are you a god? No, just a passive asset manager

Source: Pensions & Investments, Nov. 27, 2017

Our Approach

“Active investing has been subjected to increasing abuse, particularly by those whose opinions are driven by the persistent accumulation of hard data and logical arguments.”

– Charles D. Ellis, “In Defense of Active Investing,”
Financial Analysts Journal, 2015

Behind the Rise of Passive

- An Inexorable Influence
- A (Possibly) Transient Trend
- Index Innovation (a.k.a. “Smart Beta”)
- Stocks’ Skewness

An Inexorable Influence

Some Professorial Suggestions

“What we need is a no-load, minimum-management-fee mutual fund that simply buys the hundreds of stocks making up the broad stock-market averages and does no trading from security to security in an attempt to catch the winners.” – Burton G. Malkiel, *A Random Walk Down Wall Street*, first edition, 1973, p. 226

“...some large foundation should set up an in-house portfolio that tracks the S&P 500 Index – if only for the purpose of setting up a naïve model against which their in-house gunslingers can measure their prowess.” – Paul A. Samuelson, “Challenge to judgment,” *Journal of Portfolio Management*, 1974

Index Versus Active Performance - US

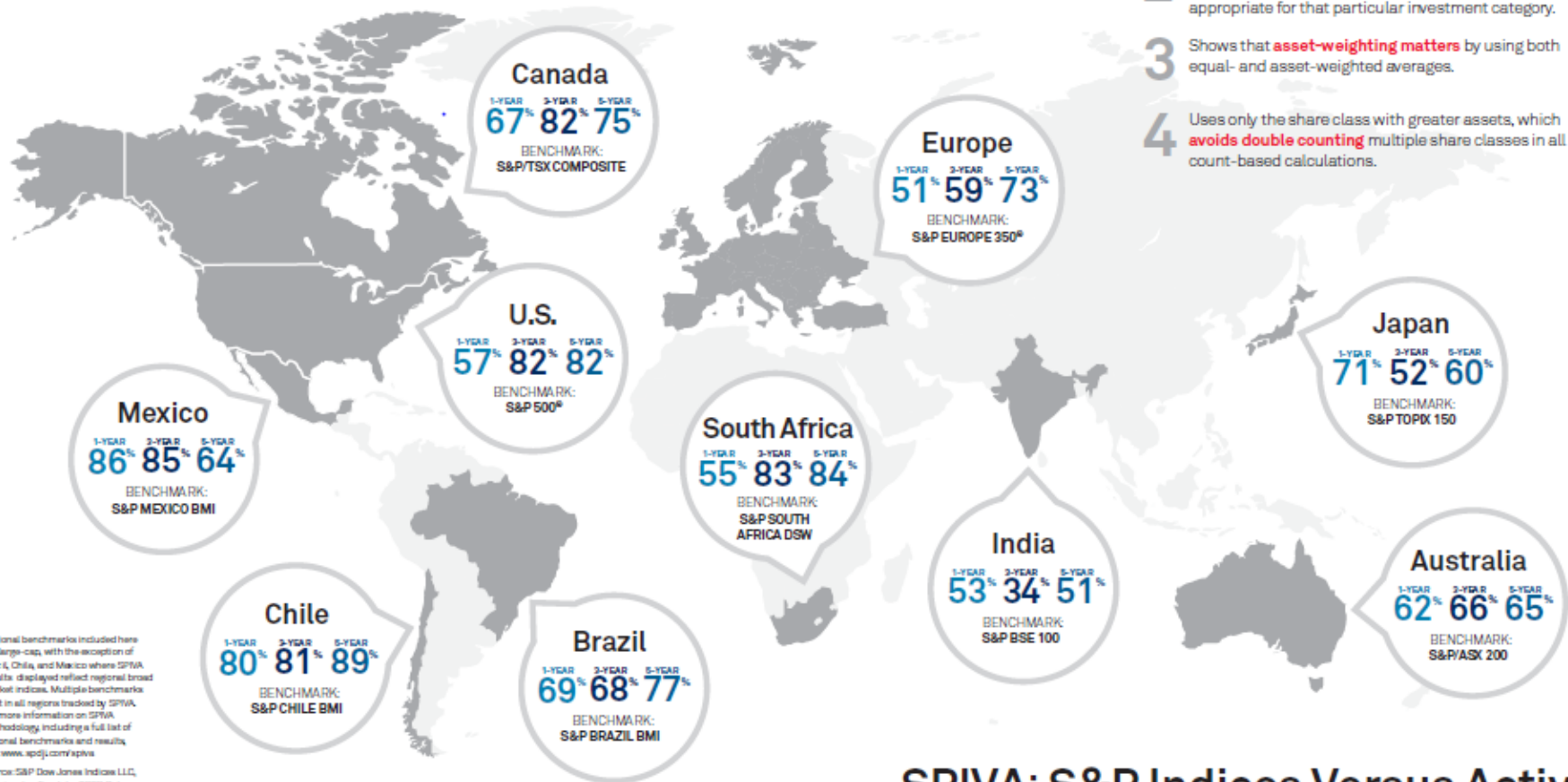
Percentage of U.S. Equity Funds Underperforming Index

Fund Category	Comparison Index	1 Year	5 Years
All Large Cap Funds	S&P 500	57%	82%
All Mid Cap Funds	S&P MidCap 400	61%	87%
All Small Cap Funds	S&P SmallCap 600	60%	94%

Source: S&P Dow Jones Indices LLC, Center for Research in Security Prices (CRSP). Data as of June 30, 2017. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

SPIVA® Around the World

Percentage of active funds outperformed by benchmarks* over 1-, 3-, and 5-year periods



*Regional benchmarks included here are large-cap, with the exception of Brazil, Chile, and Mexico where SPIVA results displayed reflect regional broad market indices. Multiple benchmarks exist in all regions tracked by SPIVA. For more information on SPIVA methodology, including a full list of regional benchmarks and results, visit www.spdji.com/spiva.

Source: S&P Dow Jones Indices LLC, Morningstar, Fundstat, CRSP. Data as of June 30, 2017. Charts and tables are provided for illustrative purposes. Past performance is no guarantee of future results.

The SPIVA Difference

- 1 Accounts for the entire opportunity set—not just the survivors—thereby **eliminating survivorship bias**.
- 2 Applies an **apples-to-apples comparison** by measuring a fund's returns against the returns of a benchmark appropriate for that particular investment category.
- 3 Shows that **asset-weighting matters** by using both equal- and asset-weighted averages.
- 4 Uses only the share class with greater assets, which **avoids double counting** multiple share classes in all count-based calculations.

SPIVA: S&P Indices Versus Active

www.spdji.com/spiva

Persistence of Above-Average Performance

Percentage of U.S. Equity Funds in Top Half of Distribution

Fund Category	% in Top Half 5 Consecutive Years
Large Cap Funds	4.03%
Mid Cap Funds	5.88%
Small Cap Funds	5.75%

N.B. Probability of flipping heads four times in a row = 6.25%

Source: S&P Dow Jones Indices LLC. Data for periods ending March 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Persistence of Above-Average Performance – US

US Equity Funds in Two Consecutive Five Year Periods

Fund Category	% Repeating in Top Quartile	% Moving from Top to Bottom Quartile
Large Cap	20.14%	20.86%
Mid Cap	15.38%	19.23%
Small Cap	13.95%	26.74%

Source: S&P Dow Jones Indices LLC. Data for periods ending March 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

No Natural Source of Alpha

- Investor A can be above average only if Investor B is below average.
- The total outperformance of the winners must equal the total underperformance of the losers (before costs).
- The source of the winners' positive alpha is the losers' negative alpha.
- "...after costs, the return on the average actively managed dollar will be less than the return on the average passively managed dollar." — William F. Sharpe, "The Arithmetic of Active Management," *Financial Analysts Journal*, 1991

How Might the Supply of Alpha Shrink?

	A	B
Total Market Cap	\$20.0 T	\$20.0 T
% actively managed	100%	90%
Value Actively Managed	\$20.0 T	\$18.0 T
Value Outperforming	\$10.0 T	\$9.0 T
Value Underperforming	\$10.0 T	\$9.0 T
Average Underperformance (%)	5%	4%
Total Underperformance (\$)	\$500 B	\$360 B

A hypothetical 10% reduction in active AUM led to a hypothetical 28% reduction in outperformance.

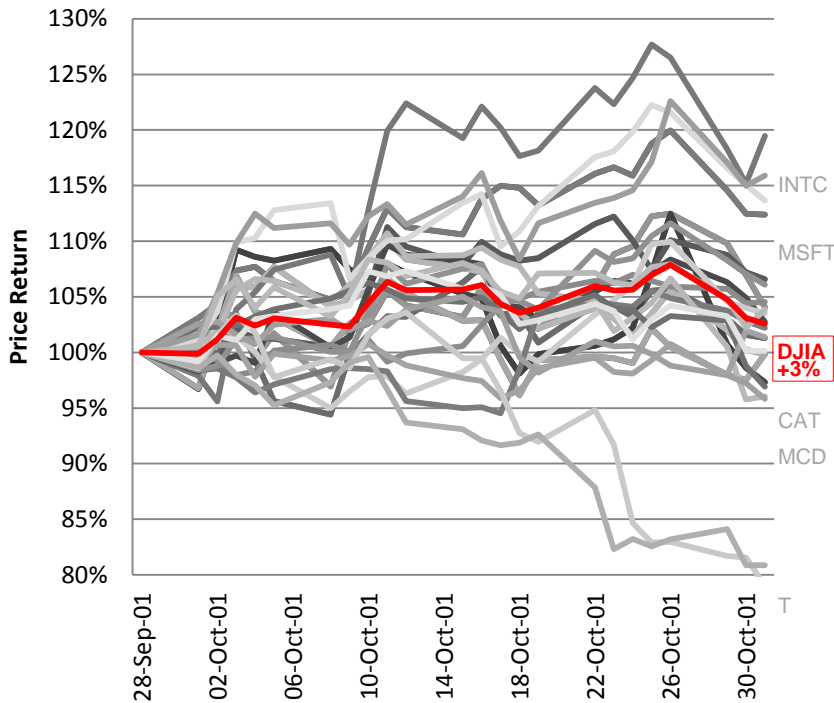
Source: S&P Dow Jones Indices. Chart is for illustrative purposes only and reflects hypothetical performance.

A (Possibly) Transient Trend

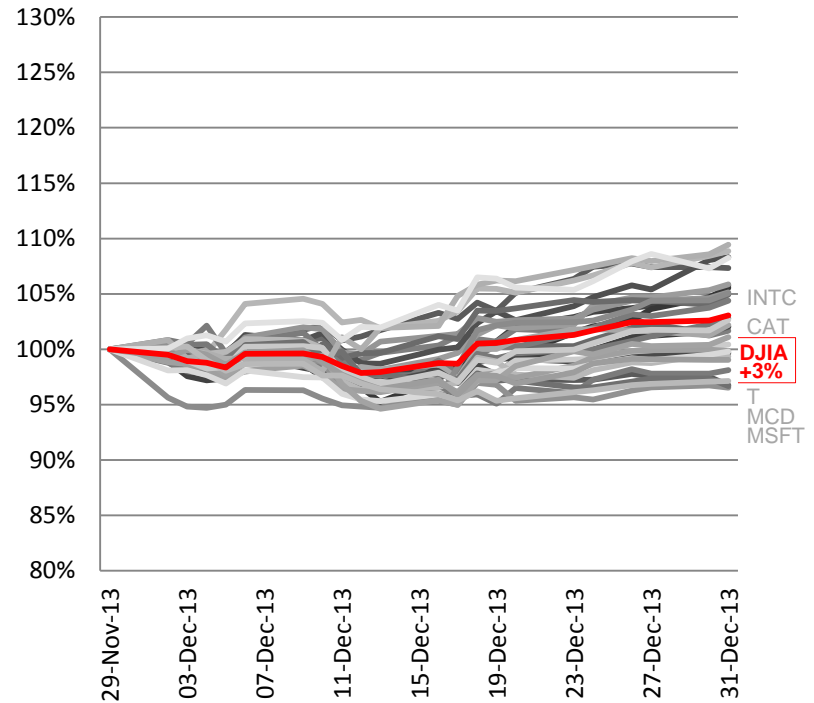
Pictures of Dispersion


Dispersion measures the spread of performances among components of an index.

**Dow Jones Industrial Average -
October 2001**



... and December 2013



 Dow Jones Industrial Average

 DJIA Individual Components

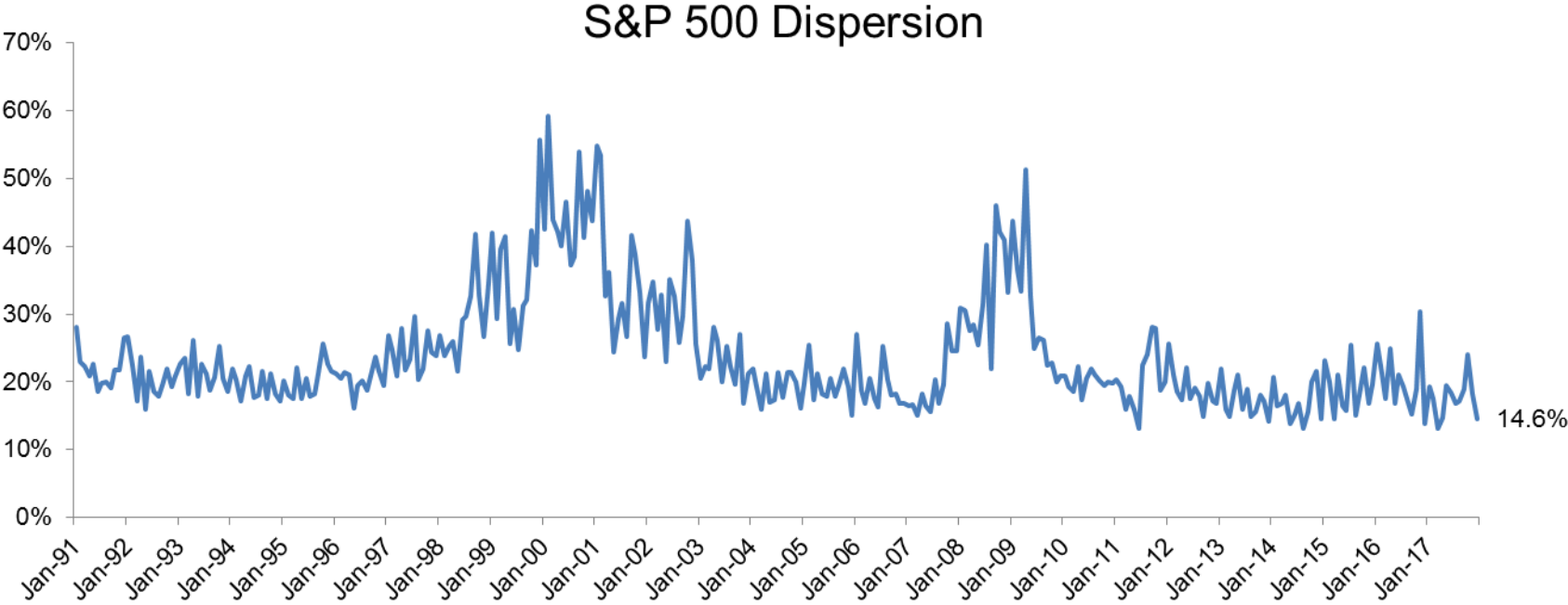
Source: S&P Dow Jones Indices. Data as of October 30, 2001 and December 31, 2013. Past performance is no guarantee of future results

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Dispersion – S&P 500



Source: S&P Dow Jones Indices. Data from Dec. 31, 1990 through Dec. 31, 2017. Chart is for illustrative purposes only. Past performance is not an indication of future results.

S&P Dow Jones Indices

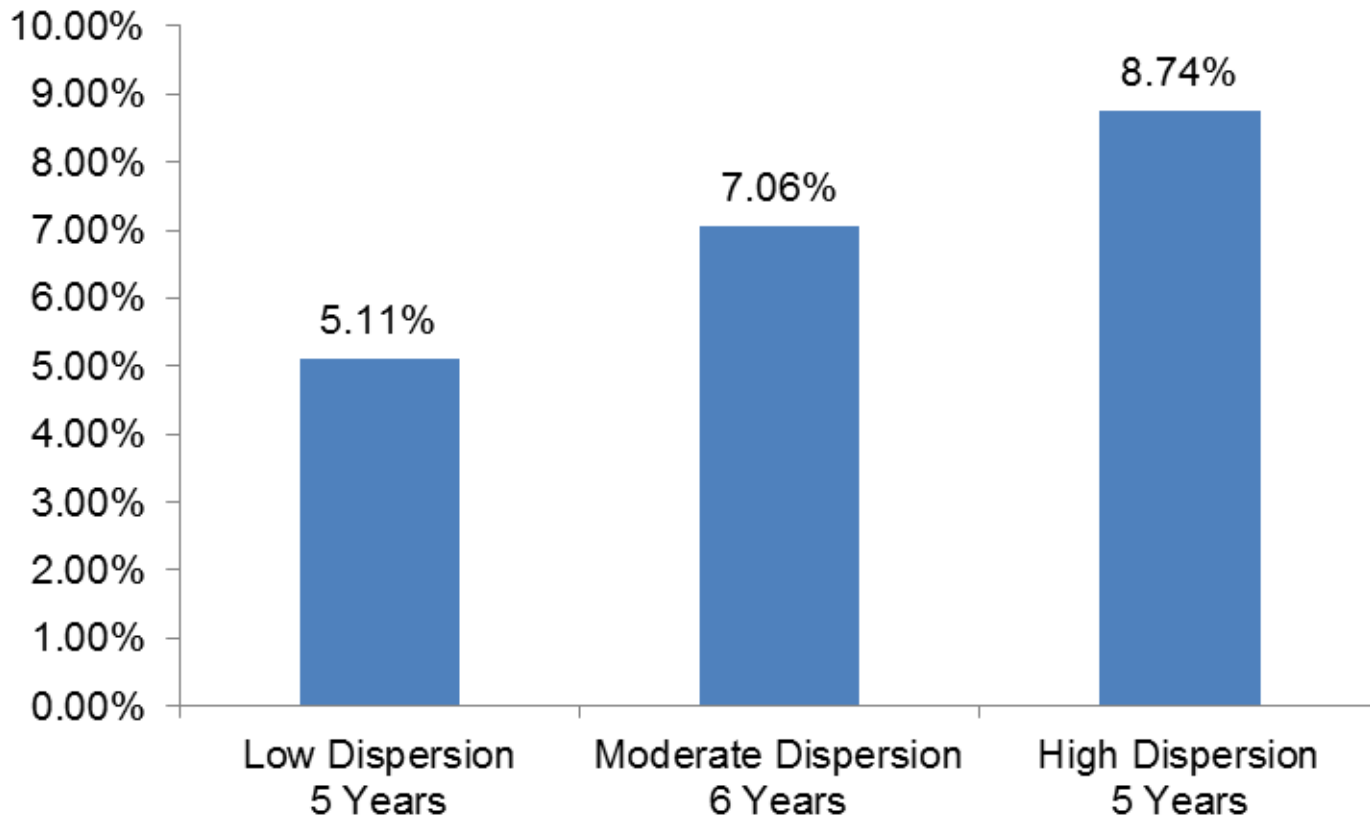
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Dispersion and Correlation

- Correlation and dispersion measure different aspects of market behavior.
- Correlation is a measure of timing. It tells us whether stocks go up and down **at the same time**.
- Dispersion is a measure of magnitude. It tells us **by how much** the return of the average stock differs from the market's return.

Top managers' relative performance improved as dispersion rose...

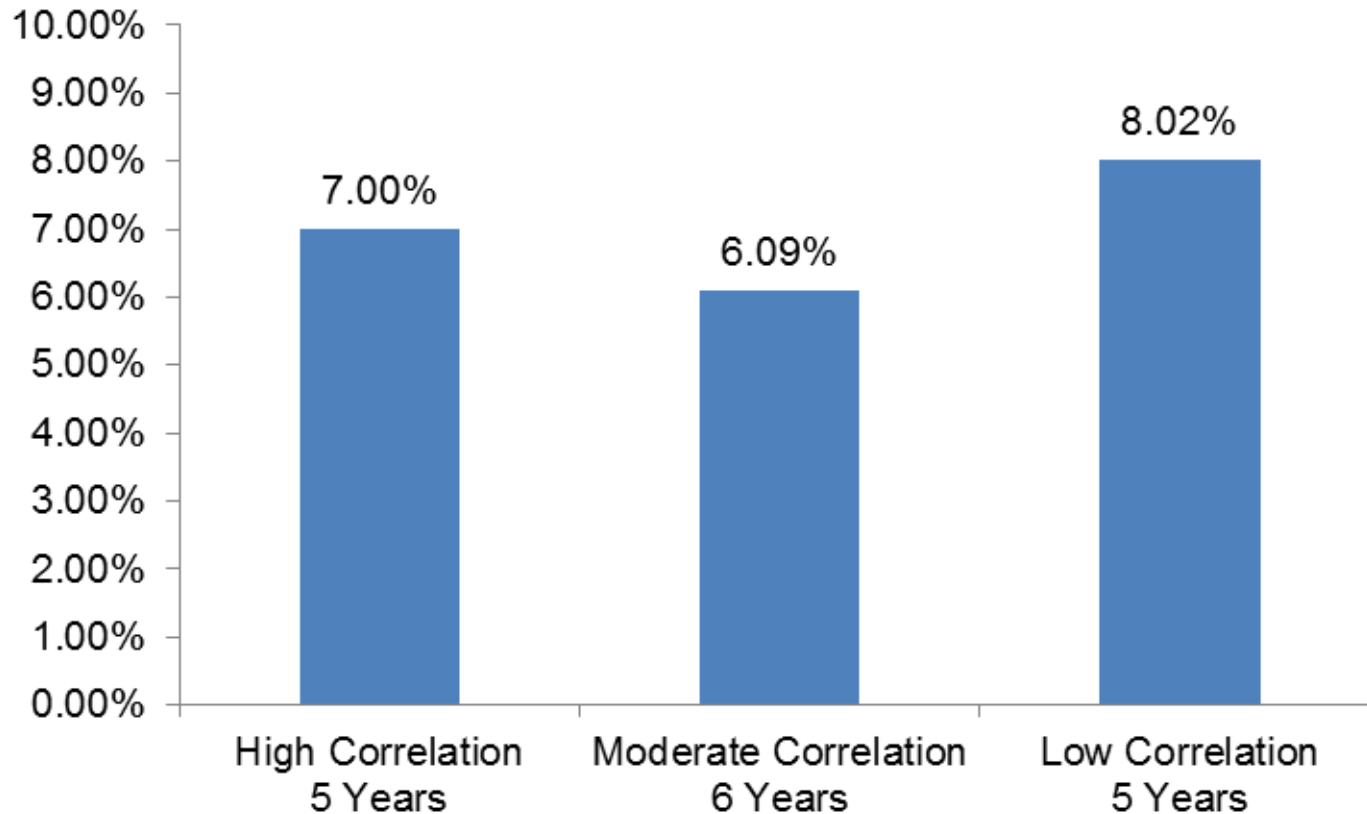
Interquartile Performance Range and Dispersion



Source: S&P Dow Jones Indices LLC, Center for Research in Security Prices (CRSP). Data from Dec. 31, 200 through Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

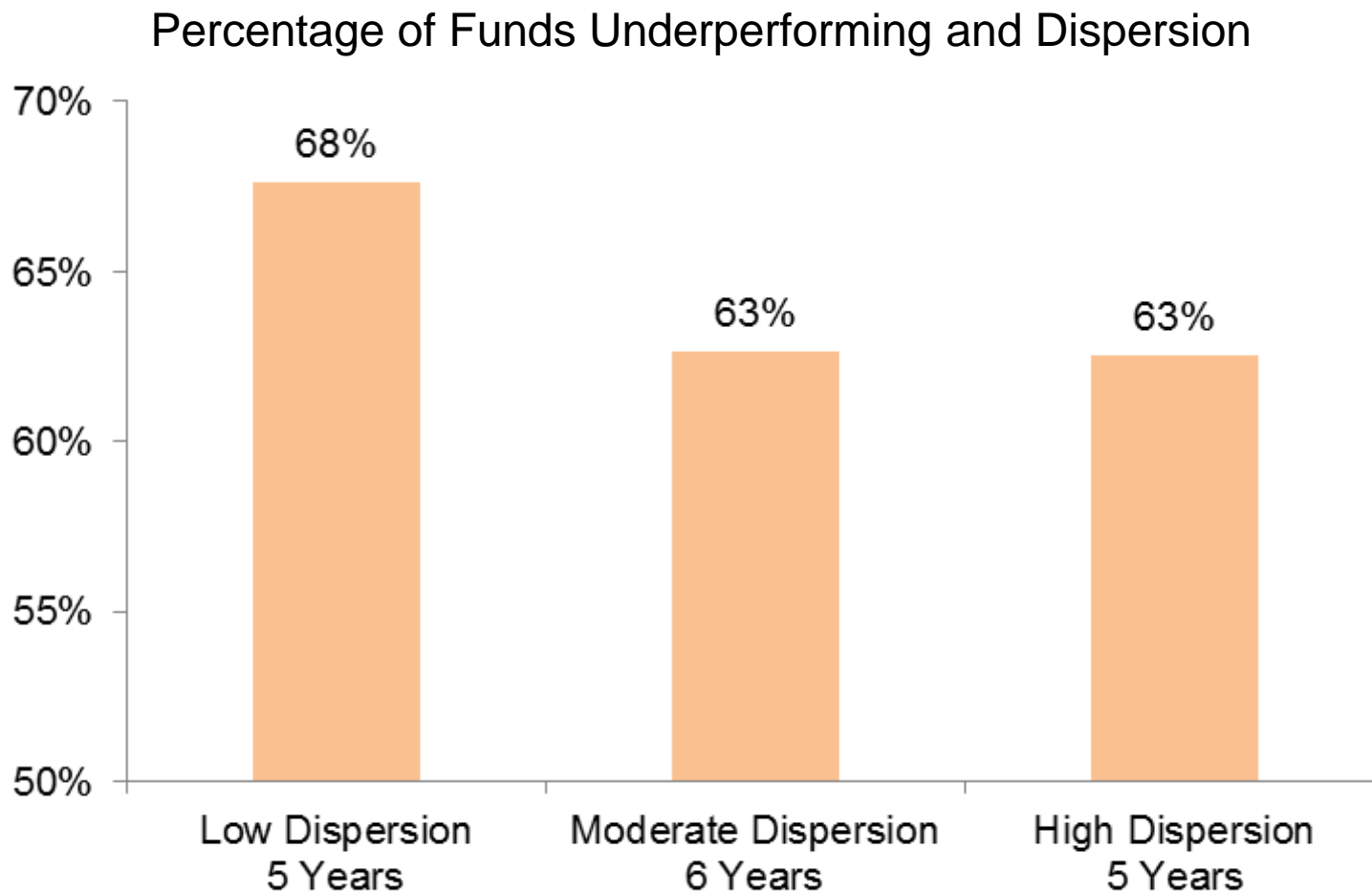
...but not as correlation declined

Interquartile Performance Range and Correlation



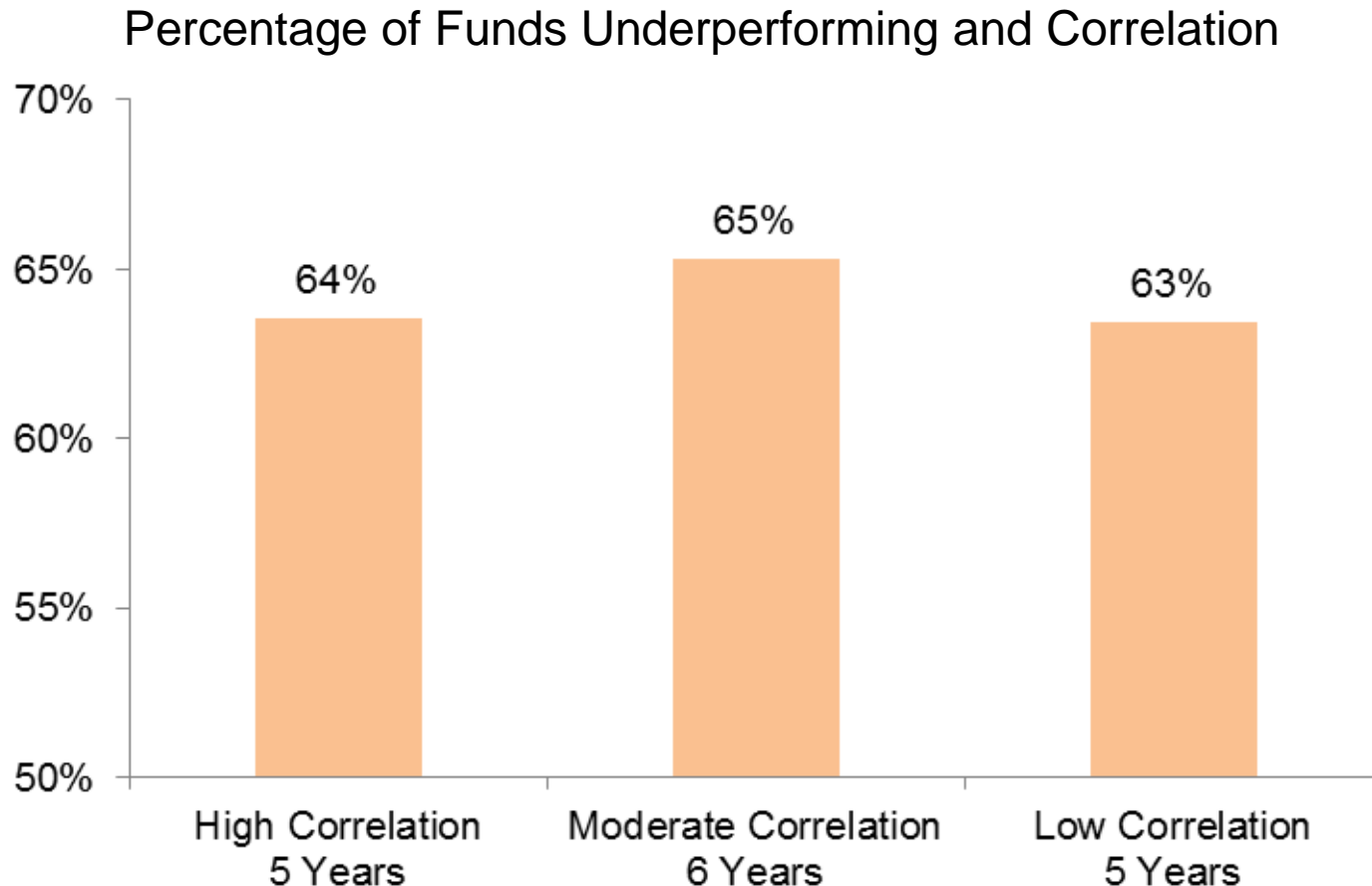
Source: S&P Dow Jones Indices LLC, Center for Research in Security Prices (CRSP). Data from Dec. 31, 200 through Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

More managers underperformed when dispersion was low...



Source: S&P Dow Jones Indices LLC, Center for Research in Security Prices (CRSP). Data from Dec. 31, 200 through Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

...But not when correlation was high



Source: S&P Dow Jones Indices LLC, Center for Research in Security Prices (CRSP). Data from Dec. 31, 200 through Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

Dispersion and Active Management

- An active manager's skill level does not depend on dispersion.
- But the value of skill is higher when dispersion is higher.
- The fixed costs of active management are easier to cover when dispersion is high.
- Lower dispersion means less potential for alpha generation.

Dispersion and Factor Index Performance – U.S.

	Least Disperse	2nd Least	3rd Least	Most Disperse	Most to Least Ratio
S&P 500 High Beta	1.67%	2.10%	3.16%	6.14%	3.7
S&P 500 Low Volatility	1.03%	1.45%	1.41%	3.79%	3.7
S&P 500 Equal Weight	0.51%	0.67%	0.95%	2.00%	3.9
S&P 500 Div Aristocrats	0.68%	1.01%	1.18%	3.10%	4.5
S&P 500 Growth	0.42%	0.56%	0.69%	1.71%	4.1
S&P 500 Pure Growth	0.94%	1.38%	1.56%	3.69%	3.9
S&P 500 Value	0.45%	0.59%	0.74%	1.77%	4.0
S&P 500 Pure Value	1.18%	1.62%	2.01%	4.41%	3.7

Source: S&P Dow Jones Indices. Data from Dec. 31, 1991 through Dec. 31, 2017. Charts are provided for illustrative purposes. Past performance is no guarantee of future results. This chart may reflect hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Index Innovation (a.k.a. “Smart Beta”)

Index Evolution

Indices	Examples	Attributes
Broad Market	S&P 500 [®] , S&P Global BMI	<ul style="list-style-type: none">• Capitalization-weighted• Aim to represent an asset class
Specialized	S&P MidCap 400 [®] , S&P Select Sectors	<ul style="list-style-type: none">• Focus on a subset of the broader market• Typically capitalization-weighted
Factor/ Smart Beta/ Strategic Beta	S&P 500 Low Volatility, S&P 500 Equal Weight	<ul style="list-style-type: none">• Focus on specific <i>patterns</i> or <i>characteristics</i>• Better “indicize” active strategies• Typically <i>not</i> capitalization-weighted

“Smart Beta” Indices

Provide exposure to factors or combinations of factors

Indicise factor tilts

- Provide cheap, transparent, reliable factor exposure
- Limit ability to charge active fees for *average* factor exposure
- Require active managers to add value by factor *rotation* or *stock selection*

Make active management harder

Growth of Smart Beta (U.S.)

Exhibit 2 United States Strategic-Beta ETP Asset Growth

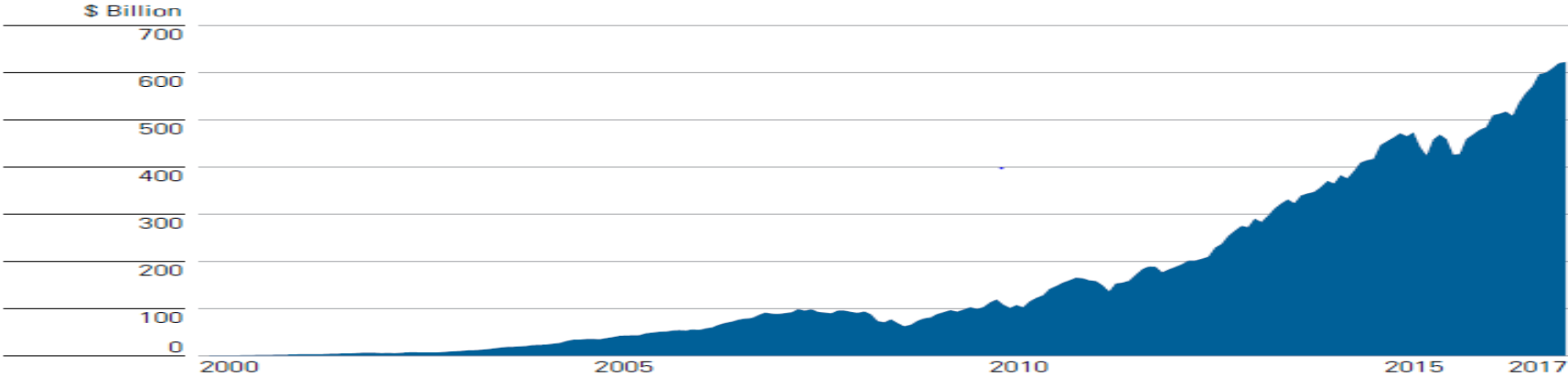
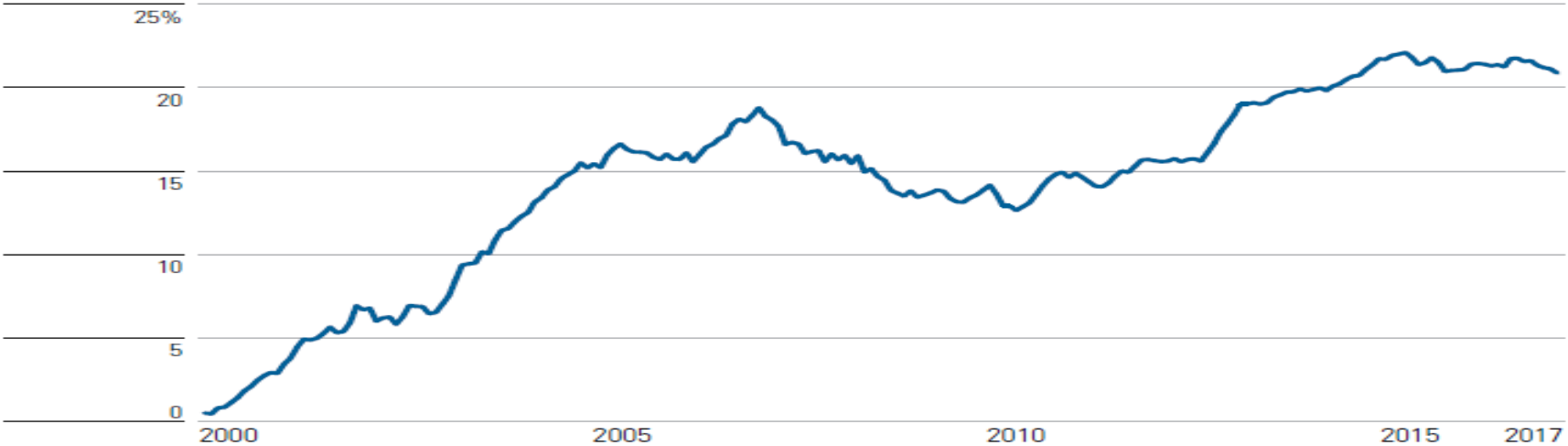
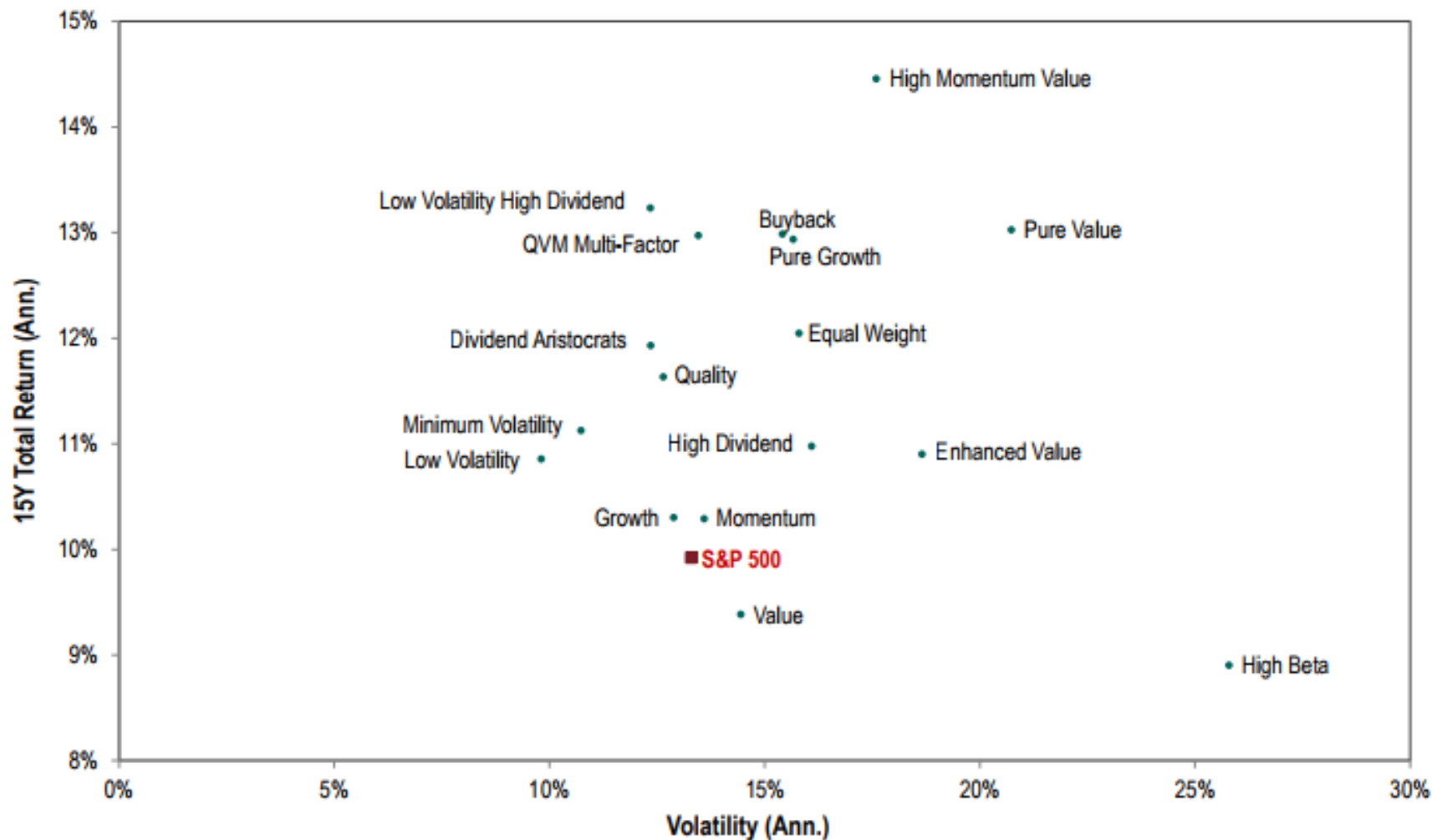


Exhibit 4 Strategic-Beta ETPs' Share of the Overall U.S. ETP Market (%)



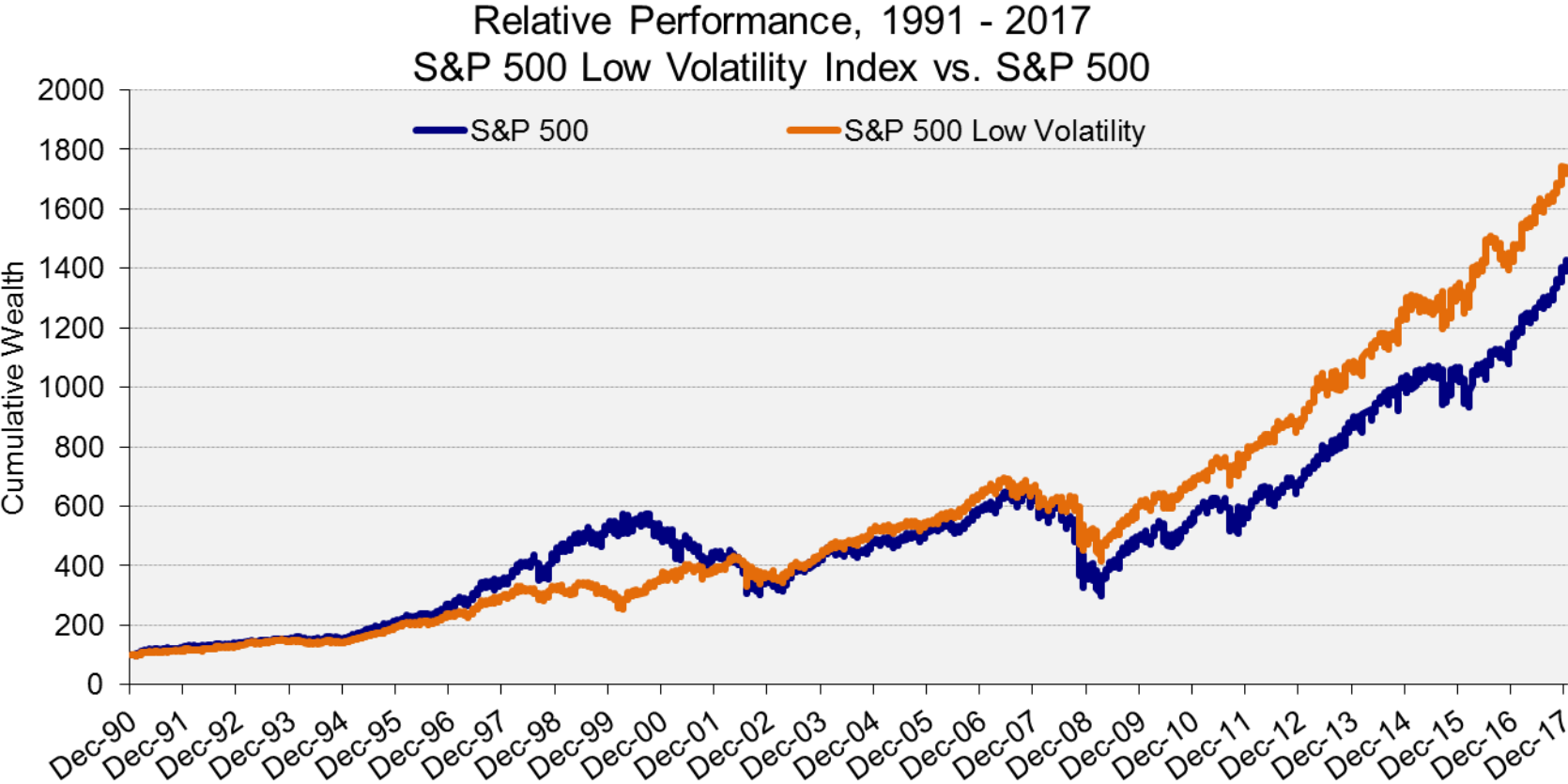
Source: Morningstar, "A Global Guide to Strategic-Beta Exchange-Traded Products," September 2017.

15-Year Risk & Return – Absolute (U.S.)



Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of Dec. 29, 2017. Illustrative purposes only. Past performance is no guarantee of future results.

S&P 500 Low Volatility Index

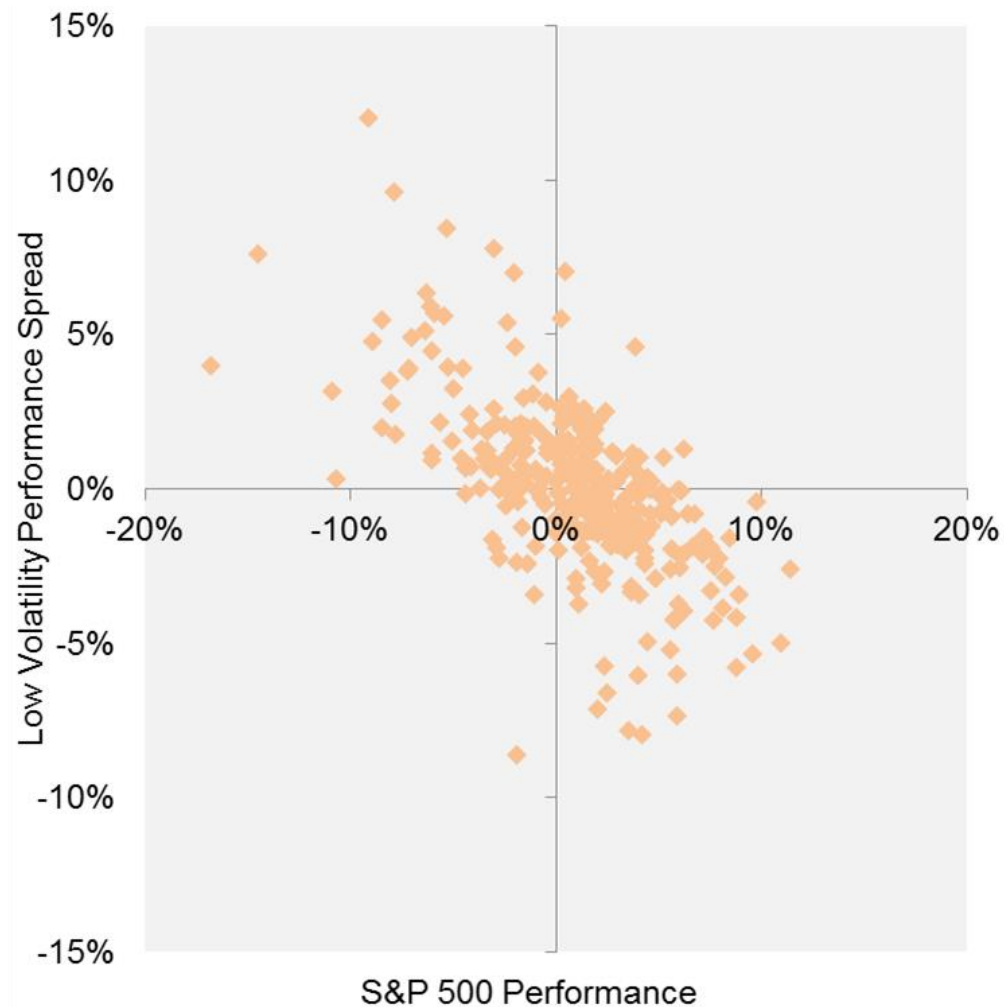


Source: S&P Dow Jones Indices. Data from Dec. 31, 1990 through Dec. 31, 2017. Charts are provided for illustrative purposes. Past performance is no guarantee of future results. This chart may reflect hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

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S&P 500 Low Vol Performance Differential



Source: S&P Dow Jones Indices. Data from Dec. 31, 1990 through Dec. 31, 2017. Charts are provided for illustrative purposes. Past performance is no guarantee of future results. This chart may reflect hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

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Average Monthly Returns and Spreads

		Average Monthly Return			
	# of Mos	S&P 500 Low Volatility	S&P 500	Low Volatility minus S&P 500	Hit rate
Less than -2.44%	54	-2.85%	-5.64%	2.79%	87%
Between -2.44 and 0%	54	-0.59%	-1.40%	0.82%	78%
Between 0 and 2.50%	108	1.16%	1.26%	-0.10%	47%
Greater than 2.50%	108	3.28%	4.93%	-1.66%	19%

Source: S&P Dow Jones Indices. Data from Dec. 31, 1990 through Dec. 31, 2017. Charts are provided for illustrative purposes. Past performance is no guarantee of future results. This chart may reflect hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Stocks' Skewness

A Hypothetical Market

Stock	Return
A	10%
B	10%
C	10%
D	10%
E	50%
Average	18%
Median	10%

Source: Heaton, J.B., N.G. Polson, and J.H. Witte, "Why Indexing Works," October 2015, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2673262 and S&P Dow Jones Indices. Chart is for illustrative purposes only.

Possible Portfolio Combinations

Number of Stocks	Number of Portfolios	Median Return	Average Return	Probability of Outperformance
1	5	10%	18%	20%
2	10	10%	18%	40%
3	10	23%	18%	60%
4	5	20%	18%	80%

- *Expected* return is the same regardless of portfolio size, but
- Holding more stocks increases the *likelihood* of outperformance.

Source: S&P Dow Jones Indices. Chart is for illustrative purposes only

Outperformance and Skewness of Returns

Simple example “worked” because returns were skewed to the right.

- Average return $>$ median return

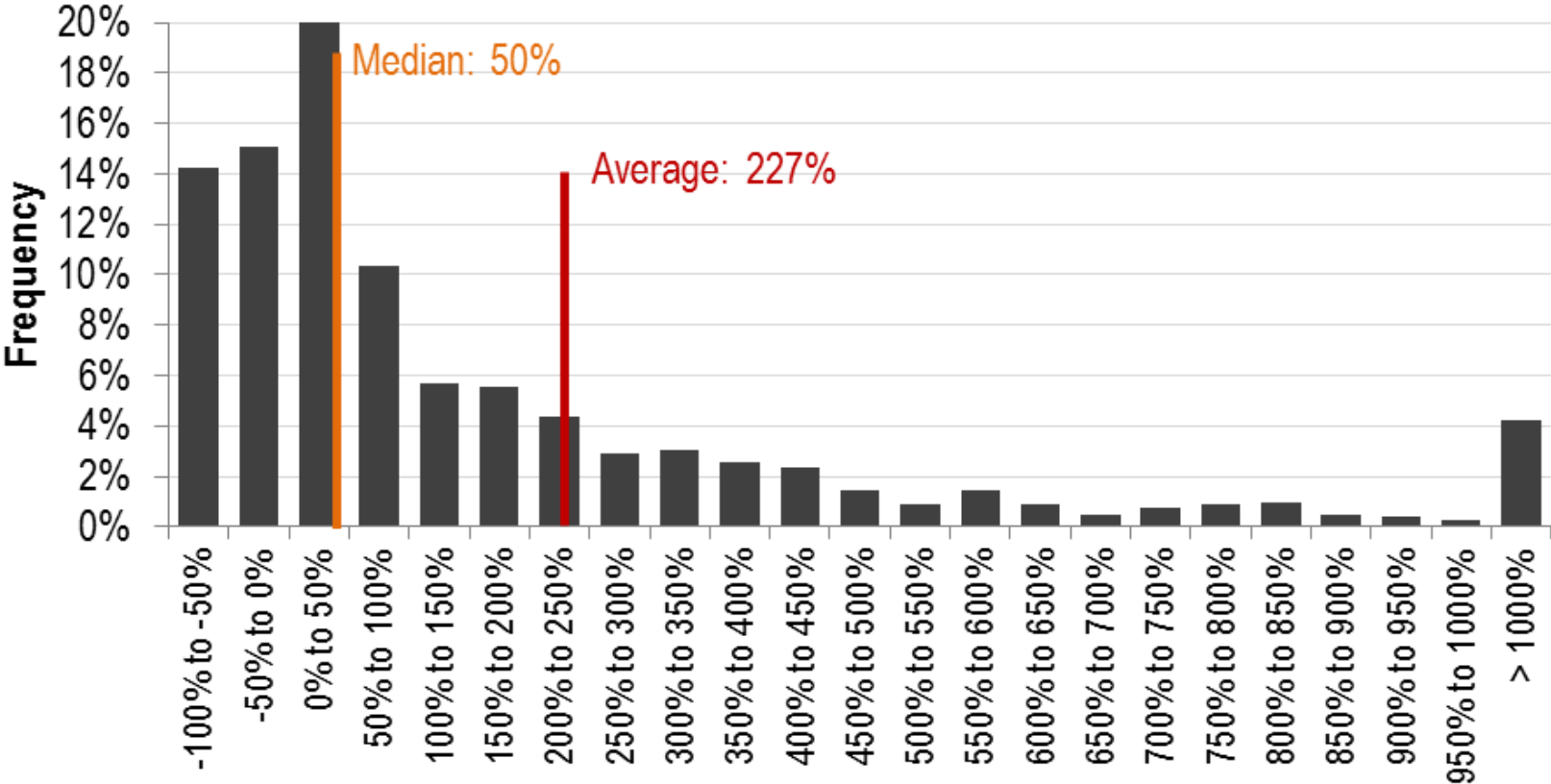
How often does average return exceed median return?

- For S&P 500 (1991-2017): 23 of 27 years

If returns are skewed, the probability of outperformance rises when portfolios hold more stocks.

Source: S&P Dow Jones Indices. Data from Dec. 31, 1990 through Dec. 31, 2017. Charts are provided for illustrative purposes. Past performance is no guarantee of future results.

Historical Skewness for S&P 500



Source: S&P Dow Jones Indices LLC, FactSet. Data from Dec. 31, 1997 through Dec. 31, 2017. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

How Might the Supply of Alpha Shift?

	B	C
Total Market Cap	\$20.0 T	\$20.0 T
% actively managed	90%	90%
Value Actively Managed	\$18.0 T	\$18.0 T
Value Outperforming	\$9.0 T	\$6.0 T
Value Underperforming	\$9.0 T	\$12.0 T
Losers' Underperformance (%)	4%	3%
Winners' Outperformance (%)	4%	6%
Total Underperformance (\$)	\$360 B	\$360 B

Distribution of outperformance and underperformance need not be symmetric.

Source: S&P Dow Jones Indices. Chart is for illustrative purposes only.

Final Thoughts

- Most active managers fail most of the time.
- Low dispersion has reduced the value of manager skill.
- Factor indices enable us to indicize sophisticated strategies formerly available only via active management.
- Equity return skew suggests a possible equilibrium between active and passive management.

Thank you

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Performance Disclosure

The S&P 500 Buyback Index was launched November 29, 2012. The S&P 500 Enhanced Value Index was launched April 27, 2015. The S&P 500 Pure Value was launched December 16, 2005. The S&P 500 Quality Index was launched July 8, 2014. The S&P 500 Pure Growth was launched December 16, 2005. The S&P 500 Momentum was launched November 18, 2014. The S&P 500 High Beta Index was launched April 4, 2011. The S&P 500 Equal Weight Index was launched January 8, 2003. The S&P 500 Low Volatility High Dividend Index was launched September 17, 2012. The S&P 500 Dividend Aristocrats was launched May 2, 2005. The S&P 500 High Dividend Index was launched September 21, 2015. The S&P 500 Minimum Volatility Index was launched November 9, 2012. The S&P 500 Low Volatility Index was launched April 4, 2011. The S&P/ASX 200 Quality Index was launched October 16, 2015. All information presented prior to an index's Launch Date is hypothetical (back-tested), not actual performance. The back-test calculations are based on the same methodology that was in effect on the index Launch Date. However, when creating back-tested history for periods of market anomalies or other periods that do not reflect the general current market environment, index methodology rules may be relaxed to capture a large enough universe of securities to simulate the target market the index is designed to measure or strategy the index is designed to capture. For example, market capitalization and liquidity thresholds may be reduced. Complete index methodology details are available at www.spdji.com. Past performance of the Index is not an indication of future results. Prospective application of the methodology used to construct the Index may not result in performance commensurate with the back-test returns shown.

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