S&P Dow Jones Indices

A Division of S&P Global

Research

Distinguishing Style From Pure Style

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EXECUTIVE SUMMARY

- The first-generation S&P Style Indices cover broad market segments, grouped into value and growth categories using style metrics commonly used in the investment community. This makes the indices relevant benchmarks for evaluating the skill of active managers, as well as making them suitable for those seeking a traditional "buy-and-hold" index-linked investment implementation with a tilt toward a particular style.

- In contrast, the S&P Pure Style Indices have a stricter definition of value and growth style factors, leading each to have concentrated exposures. Unlike the standard style indices, there are no overlapping securities between pure growth and pure value, potentially presenting them as better candidates for market participants looking to have precise tools in their investment process.

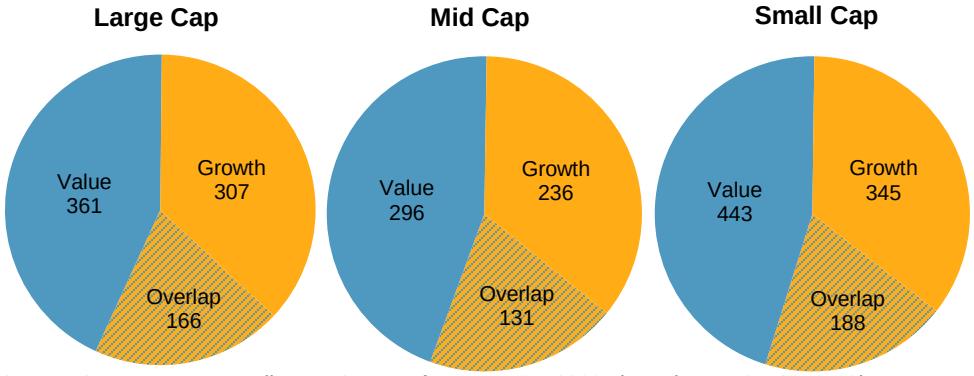
- Driven by methodological differences, the indices have distinct risk/return characteristics and behave differently in different style cycles. Over the long-term investment horizon, the pure style indices have exhibited greater returns and volatility, lower cross correlations, and wider return spreads than the standard style indices.

INTRODUCTION

Launched in 1992, the first-generation S&P U.S. Style Indices brought broad style benchmarks for large-, mid-, and small-cap equities. The indices group the investment universe into value and growth categories, based on relevant fundamental ratios for each style. Certain securities may exhibit both growth and value characteristics; in this scenario, the company's market capitalization is distributed between growth and value.

As a result, there are overlapping securities that fall into both growth and value indices. Our analysis shows that over the past 10 years, on average, 166 securities in the S&P 500®, 131 securities in the S&P Midcap 400®, and 188 securities in the S&P SmallCap 600® fell into both the growth and value indices (see Exhibit 1).

Exhibit 1: Average Constituent Counts and Overlaps in the S&P Style Indices



Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 2009, through Dec. 31, 2018. Charts are provided for illustrative purposes.

The first-generation S&P U.S. Style Indices brought broad style benchmarks for large-cap, mid-cap, and small-cap equities.

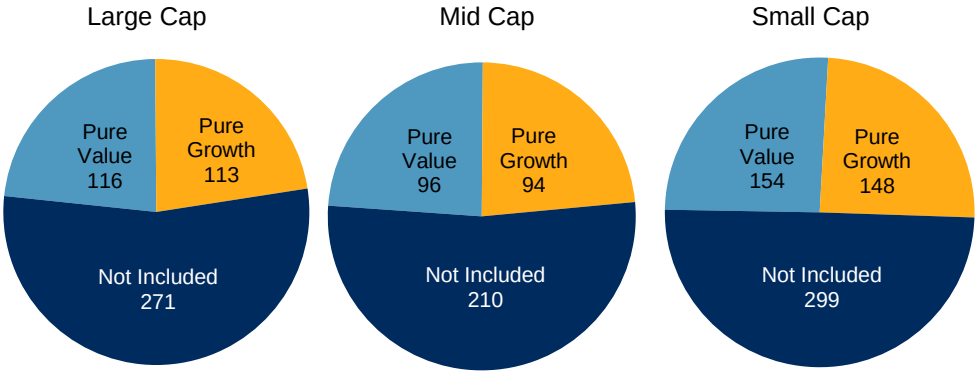
There are overlapping securities in the style indices that fall into both growth and value indices.

Hence, roughly one-third of each size segment exhibits neither strong growth nor value characteristics. Therefore, even though traditional style indices serve as investment universes and define the broad opportunity set for style equity managers, the overlapping nature of the indices may not appeal to market participants that desire more precise and focused measurements tools.

Exhibit 1 shows roughly one-third of each size segment exhibits neither strong growth nor value characteristics.

In 2005, S&P Dow Jones Indices introduced a second generation of style indices, the S&P Pure Style Indices, which require higher style scores for inclusion, resulting in clearer differentiation between growth and value. The pure style indices include only securities that exhibit either pure growth or pure value characteristics. Due to this, there are no overlapping securities between the pure style indices (see Exhibit 2).

Exhibit 2: Average Constituent Counts in the S&P Pure Style Indices



Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 2009, through Dec. 31, 2018. Charts are provided for illustrative purposes.

In 2005, S&P DJI introduced a second generation of style indices, the S&P Pure Style Indices, which require higher style scores for inclusion, resulting in clearer differentiation between growth and value.

As seen in Exhibit 2, there are no overlapping securities between the pure style indices.

Exhibit 3 highlights the methodological differences between the style and pure style indices, including stock selection rules and weighting schemes. These differences drive the long-term performance differential between the two sets of indices, giving rise to distinct risk/return profiles. The goal of our paper is to examine the risk/return differences between style indices and their purer counterparts, explore the role of style-based investing in

tactical and strategic asset allocation, and measure the effectiveness of each style as passive benchmarks against active strategies.

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These differences drive the long-term performance differential between the two sets of indices, giving rise to distinct risk/return profiles.

Exhibit 3: A Review of Index Construction

CATEGORY	S&P STYLE INDICES	S&P PURE STYLE INDICES
Universe Coverage	Exhaustive. All benchmark index stocks are included.	Selective. Only pure style stocks are included.
Factors	**Growth** • Three-year sales growth • Earnings change to price • Momentum **Value** • Sales to price • Book to price • Earnings to price	**Pure Growth** • Three-year sales growth • Earnings change to price • Momentum **Pure Value** • Sales to price • Book to price • Earnings to price
Overlapping Stocks in Growth and Value Indices	Yes. Stocks that do not fit into pure style baskets have their market cap distributed between growth and value indices.	No. Stocks are identified as either pure value or pure growth.
Weighting Scheme	Stocks are weighted by market capitalization.	Stocks are weighted by style score.
Breadth	Broader coverage	Narrower coverage

Source: S&P Dow Jones Indices LLC. Table is provided for illustrative purposes. For more information on these different styles, please visit our website at https://spindices.com/index-family/us-equity/style.

DISTINCT RISK/RETURN CHARACTERISTICS

We report the risk and return differences between the style and pure style indices in Exhibits 4, 5, and 6 for each size segment from year-end 1997 to year-end 2017.

We report the risk and return differences between the style and pure style indices in Exhibits 4, 5, and 6 for each size segment from year-end 1998 to year-end 2018. We divide the time period into four five-year sub-periods and present the results for the sub-periods as well as the entire history. For comparison purposes, we include the Russell Style Indices, given that market participants also benchmark to those indices.

The pure style indices had higher average returns than the style indices; however, they also exhibited higher volatility, evidenced by the average annual volatility figures.

The pure style indices had higher average returns than the style indices; however, they also exhibited higher volatility, evidenced by the average annual volatility figures. The return-over-risk ratio shows that pure style displayed mixed performance results, depending on the market-cap size, style orientation, and measurement period. For example, in large caps, the S&P 500 Pure Value and S&P 500 Pure Growth outperformed their style counterparts on a risk-adjusted basis over the 20-year horizon. However, during the same period, we found that the pure growth indices fared better than growth in the mid- and small-cap segments, while pure value underperformed value.

Exhibit 4: Risk/Return Profile – Large-Cap Style and Pure Style Indices

PERIOD	VALUE			GROWTH			BENCHMARK
	S&P 500 VALUE	S&P 500 PURE VALUE	RUSSELL 1000 VALUE	S&P 500 GROWTH	S&P 500 PURE GROWTH	RUSSELL 1000 GROWTH	S&P 500
AVERAGE ANNUAL RETURN (%)							
1999-2003	3.61	9.01	4.66	-0.90	8.80	-1.56	1.33
2004-2008	1.02	1.61	1.75	-0.93	-0.27	-1.20	0.02
2009-2013	17.09	30.23	17.12	19.73	27.70	21.06	18.41
2014-2018	6.61	5.98	6.47	10.95	8.75	10.90	8.90
1999-2018	**7.08**	**11.71**	**7.50**	**7.21**	**11.25**	**7.30**	**7.16**
AVERAGE ANNUAL VOLATILITY (%)							
1999-2003	20.21	18.46	18.35	23.60	31.70	26.12	20.99
2004-2008	18.76	21.10	18.42	17.17	18.26	17.50	17.68
2009-2013	19.84	26.52	20.04	17.68	21.68	17.92	18.49
2014-2018	12.46	14.77	12.58	13.69	15.41	13.70	12.74
1999-2018	**17.82**	**20.21**	**17.35**	**18.04**	**21.76**	**18.81**	**17.48**
AVERAGE ANNUAL RETURN/RISK							
1999-2003	0.31	0.58	0.35	0.13	0.55	0.18	0.21
2004-2008	0.63	0.77	0.73	0.35	0.42	0.33	0.49
2009-2013	1.12	1.41	1.12	1.29	1.44	1.35	1.21
2014-2018	0.75	0.59	0.71	1.17	0.84	1.17	1.04
1999-2018	**0.70**	**0.84**	**0.73**	**0.74**	**0.81**	**0.76**	**0.74**

Source: S&P Dow Jones Indices LLC, FactSet. Data from Dec. 31, 1998, to Dec. 31, 2018. Index performance based on total return in USD. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects 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.

Exhibit 5: Risk/Return Profile – Mid-Cap Style and Pure Style Indices

PERIOD	VALUE			GROWTH			BENCHMARK
	S&P MIDCAP 400 VALUE	S&P MIDCAP 400 PURE VALUE	RUSSELL MIDCAP VALUE	S&P MIDCAP 400 GROWTH	S&P MIDCAP 400 PURE GROWTH	RUSSELL MIDCAP GROWTH	S&P MIDCAP 400
AVERAGE ANNUAL RETURN (%)							
1999-2003	13.48	13.35	9.96	8.34	16.29	6.94	10.55
2004-2008	2.56	0.75	3.34	1.85	2.72	1.07	2.22
2009-2013	21.37	27.14	21.91	24.15	29.90	24.51	22.73
2014-2018	6.48	5.40	6.20	6.79	2.93	7.91	6.70
1999-2018	**10.97**	**11.66**	**10.35**	**10.28**	**12.96**	**10.11**	**10.55**
AVERAGE ANNUAL VOLATILITY (%)							
1999-2003	18.28	17.32	16.52	26.42	28.90	30.28	21.57
2004-2008	20.03	21.47	18.74	19.91	20.29	20.14	19.79
2009-2013	22.57	26.96	21.75	21.86	23.83	21.06	22.08
2014-2018	14.07	16.95	12.80	14.07	15.84	14.17	13.87
1999-2018	**18.74**	**20.68**	**17.45**	**20.56**	**22.21**	**21.41**	**19.33**
AVERAGE ANNUAL RETURN/RISK							
1999-2003	0.83	0.80	0.67	0.48	0.72	0.58	0.62
2004-2008	0.57	0.54	0.84	0.48	0.48	0.50	0.53
2009-2013	1.17	1.17	1.22	1.26	1.35	1.34	1.21
2014-2018	0.52	0.37	0.62	0.63	0.36	0.82	0.59
1999-2018	**0.77**	**0.72**	**0.84**	**0.71**	**0.73**	**0.81**	**0.74**

Source: S&P Dow Jones Indices LLC, FactSet. Data from Dec. 31, 1998, to Dec. 31, 2018. Index performance based on total return in USD. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects 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.

Exhibit 5: Risk/Return Profile – Mid-Cap Style and Pure Style Indices

PERIOD	VALUE			GROWTH			BENCHMARK
	S&P SMALLCAP 600 VALUE	S&P SMALLCAP 600 PURE VALUE	RUSSELL 2000 VALUE	S&P SMALLCAP 600 GROWTH	S&P SMALLCAP 600 PURE GROWTH	RUSSELL 2000 GROWTH	S&P SMALLCAP 600
AVERAGE ANNUAL RETURN (%)							
1999-2003	12.51	14.33	13.99	8.18	14.04	5.94	10.98
2004-2008	2.79	-0.92	2.35	2.88	2.80	0.06	2.82
2009-2013	20.88	30.48	18.43	23.44	25.69	23.71	22.11
2014-2018	6.21	1.39	4.69	7.91	6.91	5.68	7.02
1999-2018	**10.60**	**11.32**	**9.87**	**10.60**	**12.36**	**8.85**	**10.73**
AVERAGE ANNUAL VOLATILITY (%)							
1999-2003	19.11	17.10	17.48	24.30	23.46	27.81	20.93
2004-2008	23.13	25.48	23.71	21.36	21.22	23.96	22.14
2009-2013	25.66	32.80	25.87	23.22	24.76	24.92	24.32
2014-2018	15.68	19.30	15.37	16.29	18.01	17.82	15.81
1999-2018	**20.89**	**23.67**	**20.61**	**21.29**	**21.86**	**23.63**	**20.80**
AVERAGE ANNUAL RETURN/RISK							
1999-2003	0.72	0.76	0.81	0.56	0.74	0.52	0.66
2004-2008	0.42	0.33	0.40	0.41	0.43	0.24	0.42
2009-2013	1.08	1.10	0.95	1.22	1.20	1.16	1.15
2014-2018	0.40	-0.02	0.28	0.53	0.45	0.43	0.47
1999-2018	**0.65**	**0.54**	**0.61**	**0.68**	**0.71**	**0.59**	**0.67**

Source: S&P Dow Jones Indices LLC, FactSet. Data from Dec. 31, 1998, to Dec. 31, 2018. Index performance based on total return in USD. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects 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.

FUNDAMENTAL ANALYSIS

In this section, we review index-level fundamental ratios of the pure style, style, and benchmark indices. Style and pure style indices use the same fundamental metrics to calculate style scores and to group securities into value and growth categories. Additionally, the pure style indices use the style scores to determine constituent weights. Therefore, we expect the pure style indices to have stronger value or growth characteristics than their style peers.

All else equal, pure value indices should have lower (better) value ratios (price/earnings, price/book, price/sales) than value, and pure growth should have higher growth ratios (sales growth and earnings per share [EPS] growth) than growth. Exhibit 7 shows the annual averages of the ratios.

All else equal, pure value indices should have lower value ratios than value, and pure growth should have higher growth ratios than growth.

The resulting figures mostly lined up with our expectations.

Interestingly, the pure growth indices tended to have lower valuation multiples than their traditional growth counterparts.

Exhibit 7: Average Annual Value and Growth Ratios

INDEX	VALUE RATIOS			GROWTH RATIOS	
	PRICE/ EARNINGS	PRICE/ BOOK	PRICE/ SALES	HISTORICAL THREE-YEAR SALES GROWTH	HISTORICAL THREE-YEAR EPS GROWTH
LARGE CAP					
S&P 500 Pure Value	13.79	1.25	0.50	1.57	4.60
S&P 500 Value	16.41	2.05	1.17	7.37	9.60
S&P 500	19.53	2.95	1.62	10.34	14.06
S&P 500 Growth	23.92	5.19	2.58	13.10	18.07
S&P 500 Pure Growth	23.45	4.02	2.09	20.01	23.64
MID CAP					
S&P MidCap 400 Pure Value	13.34	1.07	0.38	9.30	8.34
S&P MidCap 400 Value	15.72	1.47	0.72	11.43	14.26
S&P MidCap 400	18.62	2.01	1.03	15.35	23.22
S&P MidCap 400 Growth	23.65	3.61	1.98	17.28	28.33
S&P MidCap 400 Pure Growth	22.18	3.36	1.69	22.89	27.53
SMALL CAP					
S&P SmallCap 600 Pure Value	14.57	1.05	0.28	5.27	5.03
S&P SmallCap 600 Value	16.76	1.51	0.61	9.43	9.94
S&P SmallCap 600	18.83	1.92	0.85	13.65	16.36
S&P SmallCap 600 Growth	21.90	2.97	1.61	18.37	21.88
S&P SmallCap 600 Pure Growth	18.76	2.58	1.51	22.98	27.66

Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 1997, to June 29, 2018. Index performance based on total return in USD. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects 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.

The resulting figures mostly lined up with our expectations. Across all size segments, the pure value indices historically had more attractive, or lower, price multiples than the value indices and underlying benchmarks. For example, in large caps, the average annual price/earnings ratio of the S&P 500 Pure Value was 13.79, which was lower than the S&P 500 Value (16.41) and the S&P 500 (19.53). Interestingly, the pure growth indices tended to have lower valuation multiples than their traditional growth counterparts. A potential reason may be due to the higher sales and earnings growth rates of the pure growth indices versus the growth indices, outweighing the price difference.

As for growth metrics, the pure growth indices showed higher growth rates for sales and earnings compared with the growth indices and respective

benchmarks. The one exception was in mid caps, where the average earnings growth rate was slightly higher for growth than pure growth.

WEIGHTING AND STYLE SCORE IMPACT ON RELATIVE PERFORMANCE

Over a long-term horizon, the average annual excess returns of the pure style indices over the style indices ranged from 0.95% to 4.6%, reflecting wide style return spreads.

Over a long-term horizon, the average annual excess returns of the pure style indices over the style indices ranged from 0.95% to 4.6%, reflecting wide style return spreads. What could explain the return differentials between pure style and style? Intuitively, we know that pure style indices differ from style indices in two aspects—weight scheme and security selection. Therefore, the return differences between the two sets of indices arose from weighting and style scores. However, it is not possible to cleanly attribute how much of the return difference came from security selection versus weighting by style score. The reason for that is because style scores are used in both selection and weighting, creating an interaction effect between the two.

What could explain the return differentials between pure style and style?

How much of the outperformance of the pure style indices over the style indices came from the weighting scheme?

Our analysis instead attempts to answer a number of pertinent questions relating to the relative outperformance of pure style indices. How much of the outperformance of the pure style indices over the style indices came from the weighting scheme? Secondly, out of the traditional style universe, how much have pure style securities contributed versus non-pure style securities? In what ways could sector grouping explain the return differences between the two style series?

Out of the traditional style universe, how much have pure style securities contributed versus non-pure style securities?

In what ways could sector grouping explain the return differences between the two style series?

For the first question, we estimate the portion of excess returns coming from weighting and attribute the remaining excess returns to other effects, such as security selection and interaction. Using market-cap-weighted returns of the pure style indices, we calculate the excess returns over the style indices. Exhibit 8 shows the average annual excess returns of the pure style indices relative to the style indices over two periods—from December 1997 to December 2018[1] and December 2005 to December 2018.

The average annual excess return of the S&P 500 Pure Growth and S&P 500 Growth was 3.99% in period 1, of which roughly 3.36% was due to the weighting scheme.

Weighting by style score resulted in positive excess returns compared with market-cap weighting.

Exhibit 8: Average Annual Excess Returns of the S&P 500 Pure Style Indices Relative to the S&P 500 Style Indices

INDEX	AVERAGE ANNUAL EXCESS RETURN: PURE STYLE MINUS STYLE (PURE STYLE WEIGHTED BY STYLE SCORE, %)	AVERAGE ANNUAL EXCESS RETURN: PURE STYLE MINUS STYLE (PURE STYLE WEIGHTED BY MARKET CAP, %)	AVERAGE ANNUAL EXCESS RETURN FROM WEIGHTING SCHEME (%)
PERIOD 1			
S&P 500 Pure Growth	3.68	0.40	3.28
S&P 500 Pure Value	4.24	0.81	3.43
S&P Midcap 400 Pure Growth	1.93	4.17	-2.24
S&P Midcap 400 Pure Value	0.63	-0.42	1.05
S&P SmallCap 600 Pure Growth	1.62	1.22	0.41
S&P SmallCap 600 Pure Value	0.92	0.51	0.40
PERIOD 2			
S&P 500 Pure Growth	1.43	0.71	0.71
S&P 500 Pure Value	3.65	-0.48	4.13
S&P Midcap 400 Pure Growth	0.61	1.27	-0.66
S&P Midcap 400 Pure Value	1.17	0.18	0.99
S&P SmallCap 600 Pure Growth	0.09	1.00	-0.92
S&P SmallCap 600 Pure Value	0.05	0.48	-0.43

Source: S&P Dow Jones Indices LLC. Data for period 1 from Dec. 31, 1997, to Dec. 31, 2018 and data for period 2 from Dec. 30, 2005, to Dec. 31, 2018. Index performance based on total return in USD. The average annual excess return from weighting scheme is calculated as the first column minus the second column. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects 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.

This means that weighting securities in the pure style indices by score can explain part of the performance differential.

The first column shows the average annual excess returns between the two style series, with the pure style indices weighted by style score. The second column measures the difference in average annual excess returns while weighting the pure style indices by market cap. The third and the final column attributes the excess returns coming from the style score weighting, calculated as the difference between the first column and the second. For example, the average annual excess return of the S&P 500 Pure Growth and S&P 500 Growth was 3.68% in period 1, of which roughly 3.28% was due to the weighting scheme.

Over the long-term investment horizon, with the lone exception of S&P MidCap 400 Pure Growth, weighting by style score resulted in positive excess returns compared with market-cap weighting. This means that weighting securities in the pure style indices by score can explain part of the performance differential.

For the most part, the difference in style purity (pure versus blended), as indicated by allocation effect, contributed positively to excess returns, with the exception of the S&P 500 Pure Value.

Next, we determine the performance impact of holding only pure style securities—those with a style score of 1—compared with the overall style universe, which contains pure and non-pure securities. To test this, we group securities of a given style universe into two groups (pure and blended) and look at the performance attribution using the groupings. The allocation effect in Exhibit 9 indicates the amount of average annual excess returns that was attributable to differences in value definitions between the S&P Style and Pure Style Indices. Although reported in Exhibit 9, selection effect is not meaningful for this analysis, as it also includes the interaction effect between selection and weighting. Exhibit 8 better represents the impact of the weighting scheme on performance.

Exhibit 9: Performance Attribution by Style Score

STYLE UNIVERSE	PURE GROWTH VERSUS GROWTH				PURE VALUE VERSUS VALUE			
	WEIGHT DIFFERENCE	ALLOCATION EFFECT	SELECTION EFFECT	TOTAL EFFECT	WEIGHT DIFFERENCE	ALLOCATION EFFECT	SELECTION EFFECT	TOTAL EFFECT
LARGE CAP								
Pure	42.97	0.43	NM	1.42	55.55	0.11	NM	4.03
Blended	-42.97	0.39	NM	0.01	-55.55	-0.21	NM	-0.39
Total	**-**	**0.83**	**0.60**	**1.43**	**-**	**-0.10**	**3.75**	**3.65**
MID CAP								
Pure	38.14	0.36	NM	0.30	56.93	0.47	NM	1.32
Blended	-38.14	0.63	NM	0.31	-56.93	0.23	NM	-0.15
Total	**-**	**0.99**	**-0.38**	**0.61**	**-**	**0.70**	**0.47**	**1.17**
SMALL CAP								
Pure	37.00	0.22	NM	0.42	59.12	0.20	NM	1.02
Blended	-37.00	0.38	NM	-0.34	-59.12	-0.04	NM	-0.97
Total	**-**	**0.60**	**-0.51**	**0.09**	**-**	**0.17**	**-0.19**	**0.05**

Source: S&P Dow Jones Indices LLC, FactSet. Data from Dec. 31, 2005, to Dec. 31, 2018. Index performance based on total return in USD. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects 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. NM = Not Meaningful.

The average annual excess returns of the S&P 500 Pure Growth over the S&P 500 Growth over the entire period was 1.94%, of which the difference in value definitions (allocation effect) added 1.01%.

For the most part, the difference in style purity (pure versus blended), as indicated by allocation effect, contributed positively to excess returns, with the exception of the S&P 500 Pure Value. For example, the average annual excess returns of the S&P 500 Pure Growth over the S&P 500 Growth over the entire period was 1.43%of which the difference in value definitions (allocation effect) added 0.83%.

Next, using sector grouping, we assess the performance differences between the two style series (see Exhibit 10). We compute the performance attribution on an annual basis and report the average of the figures. We found that stock selection played a larger role in explaining the returns than allocation differences for large- and mid-cap segments when grouped by sectors. The opposite occurred in small caps, where allocation differences among the sectors drove the excess returns.

Exhibit 10: Performance Attribution by Sectors (Average Annual Excess Returns)

SECTOR	PURE GROWTH VERSUS GROWTH				PURE VALUE VERSUS VALUE			
	WEIGHT DIFFERENCE	ALLOCATION EFFECT	SELECTION EFFECT	TOTAL EFFECT	WEIGHT DIFFERENCE	ALLOCATION EFFECT	SELECTION EFFECT	TOTAL EFFECT
LARGE CAP								
Communication Services	-0.61	0.02	-0.00	0.02	-2.21	0.05	-0.04	0.01
Consumer Discretionary	9.31	0.19	-0.28	-0.09	6.21	0.24	0.02	0.27
Consumer Staples	-5.57	0.14	0.19	0.33	-1.70	0.01	0.11	0.12
Energy	-2.01	0.04	0.20	0.24	-1.36	-0.20	0.24	0.04
Financials	1.50	0.02	-0.00	0.02	3.55	0.39	1.27	1.65
Health Care	2.02	0.14	0.46	0.60	-2.88	-0.00	0.37	0.37
Industrials	-1.80	-0.00	0.12	0.11	-5.08	0.04	0.23	0.26
Information Technology	-4.69	0.06	0.06	0.13	-3.38	-0.16	0.09	-0.07
Materials	1.55	0.03	0.15	0.18	1.72	0.12	0.18	0.30
Real Estate	0.64	-0.06	-0.01	-0.07	-0.39	0.01	-0.00	0.01
Utilities	-0.34	-0.03	-0.00	-0.03	5.52	0.52	0.16	0.68
Total	**-**	**0.55**	**0.88**	**1.43**	**-**	**1.02**	**2.62**	**3.65**
MID CAP								
Communication Services	0.01	-0.00	0.02	0.02	0.44	-0.03	0.00	-0.03
Consumer Discretionary	7.63	-0.06	0.27	0.21	5.60	-0.13	-1.41	-1.54
Consumer Staples	-0.36	-0.01	0.05	0.04	0.54	0.07	-0.15	-0.08
Energy	-0.68	0.05	-0.17	-0.13	-0.26	-0.27	-0.02	-0.29
Financials	-3.45	0.16	0.16	0.32	-4.30	0.10	0.88	0.99
Health Care	0.95	0.17	-0.01	0.16	-0.01	0.01	-0.42	-0.41
Industrials	-3.01	-0.21	0.03	-0.17	0.48	0.06	0.50	0.56
Information Technology	1.76	-0.01	-0.12	-0.14	-0.33	0.04	0.09	0.13
Materials	-0.75	-0.06	0.19	0.13	1.12	0.28	1.19	1.47
Real Estate	-0.66	0.05	0.01	0.06	-1.15	0.05	0.01	0.05
Utilities	-1.44	0.09	-0.01	0.08	-2.13	0.05	0.26	0.31
Total	**-**	**0.16**	**0.44**	**0.61**	**-**	**0.22**	**0.95**	**1.17**
SMALL CAP								
Communication Services	-0.00	-0.02	0.00	-0.01	-0.10	-0.09	-0.10	-0.19
Consumer Discretionary	3.62	-0.03	0.60	0.57	13.74	0.84	1.33	2.17
Consumer Staples	-0.00	-0.02	-0.09	-0.11	1.39	-0.00	-0.28	-0.28
Energy	-0.58	-0.13	-0.02	-0.16	0.39	-0.76	0.15	-0.61
Financials	-3.23	0.16	0.14	0.30	-7.42	-0.01	-0.89	-0.90
Health Care	3.22	0.11	-0.25	-0.14	-1.04	-0.00	-0.39	-0.40
Industrials	-4.36	0.06	-0.39	-0.33	-1.79	-0.05	-0.20	-0.25
Information Technology	3.50	-0.01	0.03	0.02	-2.31	0.12	0.32	0.44
Materials	-0.70	-0.01	-0.12	-0.13	1.61	0.11	-0.28	-0.16
Real Estate	-0.37	0.01	0.01	0.03	-0.75	0.10	-0.01	0.09
Utilities	-1.10	0.03	0.00	0.03	-3.70	0.09	0.04	0.13
Total	**-**	**0.16**	**-0.08**	**0.09**	**-**	**0.35**	**-0.31**	**0.05**

Source: S&P Dow Jones Indices LLC, FactSet. Data from Dec. 31, 2005, to Dec. 31, 2018. Index performance based on total return in USD. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects 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.

ASSET ALLOCATION IMPLICATIONS

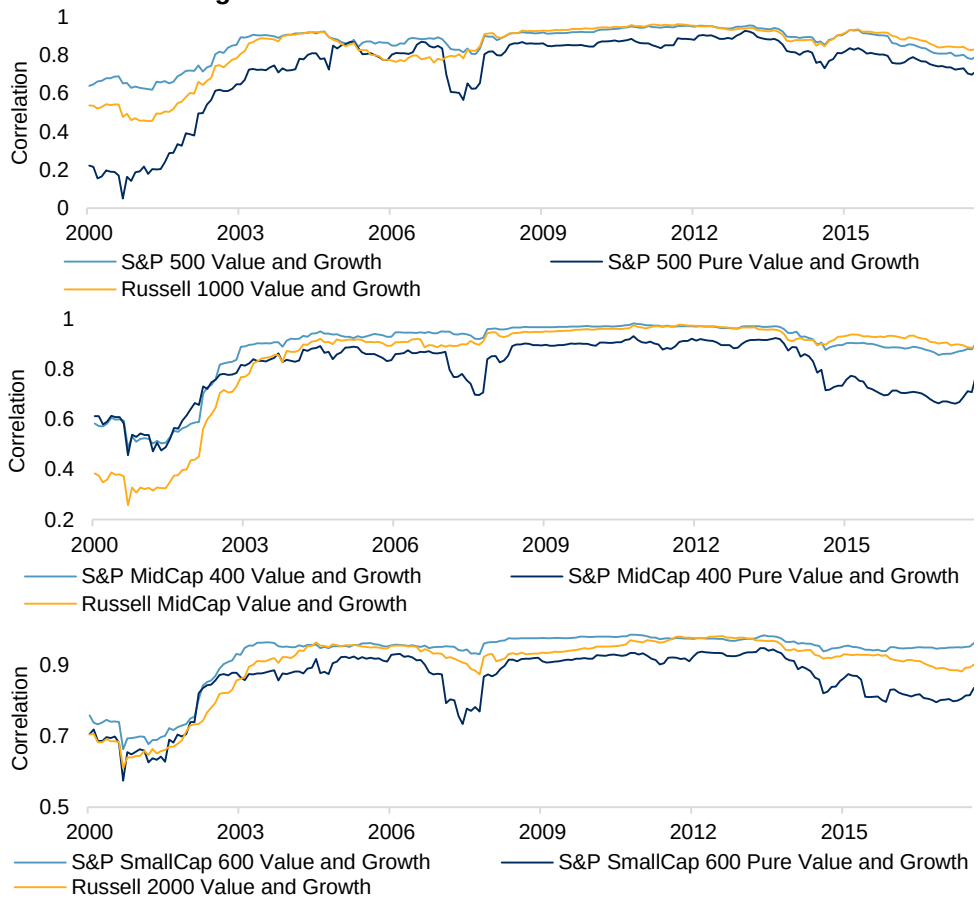
The suite of pure style and style indices can give choices for strategic and tactical asset allocations.

The long-term performance differentials between the style and pure style indices could affect investors' long-term capital market expectations. These expectations, in turn, could affect strategic asset allocation decisions, as style indices often serve as proxies for asset class returns for institutional investors in formulating policy portfolios. Broad style indices play a meaningful role in the strategic asset allocation process. For short-term tactical shifts, pure style indices may offer better ability to provide deeper exposure to a targeted style. Therefore, the suite of pure style and style indices can give choices for strategic and tactical asset allocations.

With that purpose, we look at the correlation of pure style and traditional style indices to the market.

With that purpose, we look at the correlation of pure style and traditional style indices to the market (represented by their respective benchmarks). By design, we expect the pure style indices to have higher return dispersion than the traditional style indices. Indeed, the pure style indices exhibited lower correlation than their traditional style counterparts, providing potential portfolio diversification benefits (see Exhibit 11).

Exhibit 11: Rolling 36-Month Correlation Between Value and Growth Indices



The pure style indices exhibited lower correlation than their traditional style counterparts, providing potential portfolio diversification benefits.

Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 1997, to Dec. 31, 2018. Index performance based on total return in USD. Past performance is no guarantee of future results. Charts are provided for illustrative purposes and 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.

For short-term and mid-term expectations on style returns, pure style indices may offer more opportunistic and concentrated exposure.

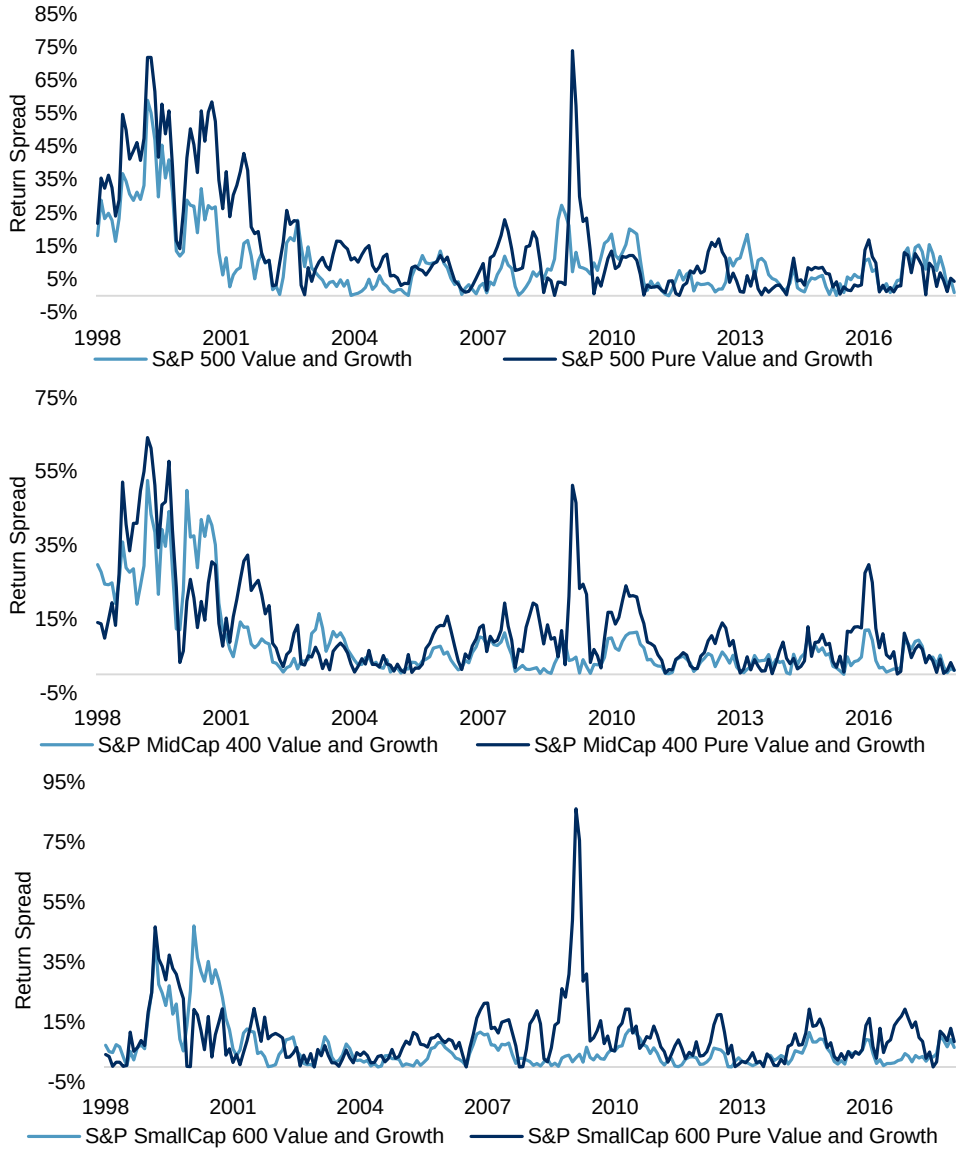
As we noted previously, for short-term and mid-term expectations on style returns, pure style indices may offer more opportunistic and concentrated exposure. For those tactical purposes, a sharp performance differentiation between growth and value is important. As such, we examine the style return spread (value minus growth) between the two sets of indices. Exhibit 12 illustrates the 12-month rolling return spreads of the style and pure style indices for the large-, mid-, and small-cap segments. As the performance of the value and growth indices moved in cycles over time, market participants may have made tactical adjustments to take advantage of short-term deviations in the asset class values.

For those tactical purposes, a sharp performance differentiation between growth and value is important.

As such, we examine the style return spread (value minus growth) between the two sets of indices.

During the periods in which one style was strongly favored over another, the return spreads of the pure style indices were significantly wider than the style indices across all three market-cap ranges.

Exhibit 12: Rolling 12-Month Return Spreads of the Style and Pure Style Indices



Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 1997, to Dec. 31, 2018. Index performance based on total return in USD. Past performance is no guarantee of future results. Charts are provided for illustrative purposes and 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.

During the periods in which one style was strongly favored over another, the return spreads of the pure style indices were significantly wider than the style indices across all three market-cap ranges. Therefore, the greater discriminatory power of the pure style indices may allow for more effective style rotation strategies and hedging tools.

Therefore, the greater discriminatory power of the pure style indices may allow for more effective style rotation strategies and hedging tools.

Wider style spreads also indicate that when one style was favored over another, pure style indices should have even stronger performance in the direction of the favored style. In other words, we would expect pure style to outperform its style counterpart. Using monthly frequency, we look at the times when a particular style does well versus the other (e.g., growth outperforms value) and then examine whether their more-focused counterpart provided additional excess return (see Exhibit 13).

In other words, we would expect pure style to outperform its traditional style counterpart.

Exhibit 13: Percentage of Pure Style Outperformance

SIZE	WHEN VALUE IS IN FAVOR			WHEN GROWTH IS IN FAVOR		
	FREQUENCY (%)	FREQUENCY OF PURE VALUE OUTPERFORMING VALUE (%)	PURE VALUE AVERAGE MONTHLY EXCESS RETURN (%)	FREQUENCY (%)	FREQUENCY OF PURE GROWTH OUTPERFORMING GROWTH (%)	PURE GROWTH AVERAGE MONTHLY EXCESS RETURN (%)
Large Cap	48	70	1.22	52	48	0.16
Mid Cap	49	61	0.67	51	60	0.17
Small Cap	50	67	1.06	50	46	-0.24

Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 1997, to Dec. 31, 2018. Index performance based on total return in USD. Large-, mid-, and small-cap pure style are represented by the S&P 500 Pure Style, S&P MidCap 400, and S&P SmallCap 600, respectively. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects 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.

Over the period, when value was in favor over growth, pure value outperformed value the majority of the time across all three sizes.

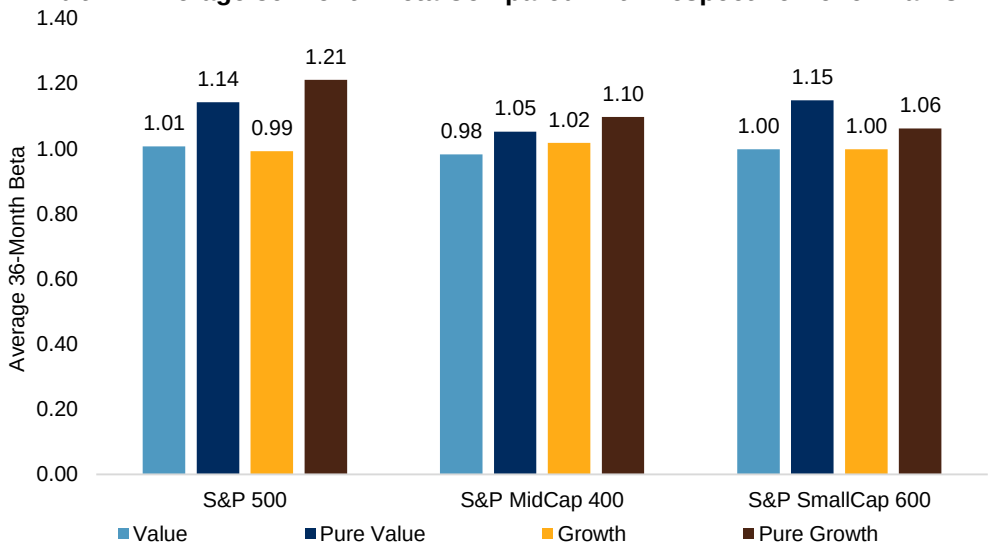
Over the period, when value was in favor over growth, pure value outperformed value the majority of the time across all three sizes (see Exhibit 13). However, when growth was in favor, we found that the results were mixed. In the mid-cap space, pure growth did better than growth more often, while growth did slightly better than pure growth in the large- and small-cap segments.

However, when growth was in favor, we found that results were mixed.

The asymmetric performance of the pure style indices indicates that the indices may have more sensitivity to market movements than the style indices. Next, we turn to the performance differentials between the indices in different market cycles by comparing their betas to their respective benchmarks. Exhibit 14 displays the average of the three-year rolling betas over the entire period for all the indices, while Exhibit 15 shows the three-year rolling betas compared with their benchmark over time.

The asymmetric performance of the pure style indices indicate that the indices may have more sensitivity to market movements than the style indices.

Exhibit 14: Average 36-Month Beta Compared With Respective Benchmarks



Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 1997, to Dec. 31, 2018. Index performance based on total return in USD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects 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.

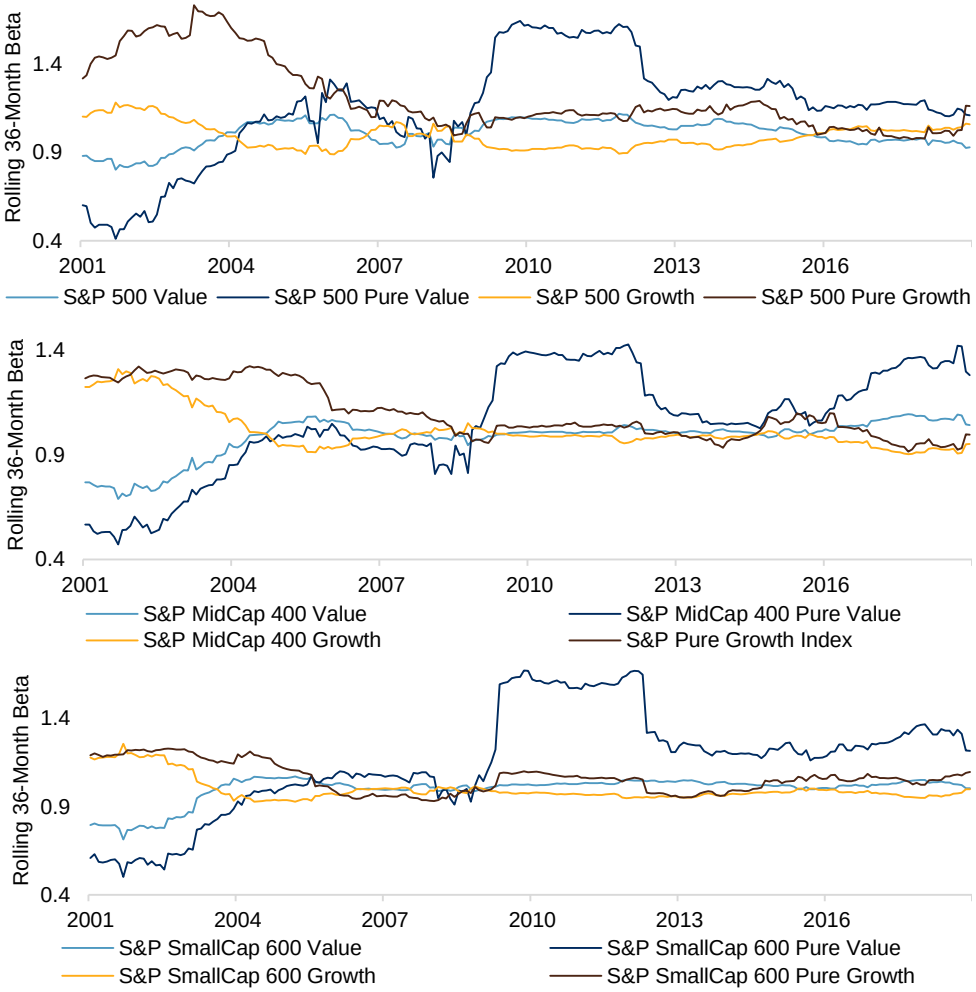
On average, the traditional growth and value indices had betas close to one, meaning the style indices generally moved in the same direction and magnitude as their respective benchmark.

On average, the traditional growth and value indices had betas close to one, meaning the style indices generally moved in the same direction and magnitude as their respective benchmark. Thus, the standard style indices may be a suitable choice for strategic long-term equity market exposure, with a slight tilt to the desired style.

In the same period, the pure style indices all had higher measured betas. Therefore, in an up market, pure style indices could be expected to outperform the style indices. Conversely, a higher beta also implies that in down market periods, pure style indices may deliver lower returns than their style counterparts.

Thus, the standard style indices may be a suitable choice for strategic long-term equity market exposure, with a slight tilt to the desired style.

Exhibit 15: Rolling 36-Month Beta Compared With Respective Benchmarks



Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 1997, to Dec. 31, 2018. Index performance based on total return in USD. Past performance is no guarantee of future results. Charts are provided for illustrative purposes and 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.

In the same period, the pure style indices all had higher measured betas.

Therefore, in an up market, pure style indices could be expected to do better than the style indices.

Conversely, a higher beta also implies that in down-market periods, pure style indices may deliver lower returns than their style counterparts.

While betas for the pure style indices were slightly greater than 1 in certain times throughout history, the rolling betas were significantly lower (early 2000s) and significantly higher (2009-2013).

The rolling three-year betas of the indices showed short-term diversions in betas throughout time. Indeed, while betas for the pure style indices were slightly greater than 1 in certain times throughout history, the rolling betas were significantly lower (early 2000s) and significantly higher (2009-2013). In contrast, the broader style indices had less dispersion in short-term betas.

STYLE AND PURE STYLE INDICES IN HYPOTHETICAL PORTFOLIO CONTEXT

In contrast, the broader style indices had less dispersion in short-term betas.

The previous section establishes that both style and pure style indices have undergone extended periods of underperformance. As a result, market participants often rotate between the two styles or hold a combination of style portfolios to harvest style premium. In this section, we attempt to answer whether holding a pure style portfolio or a combination of pure style

portfolios result in higher risk-adjusted returns than holding the same combinations of traditional style portfolios.

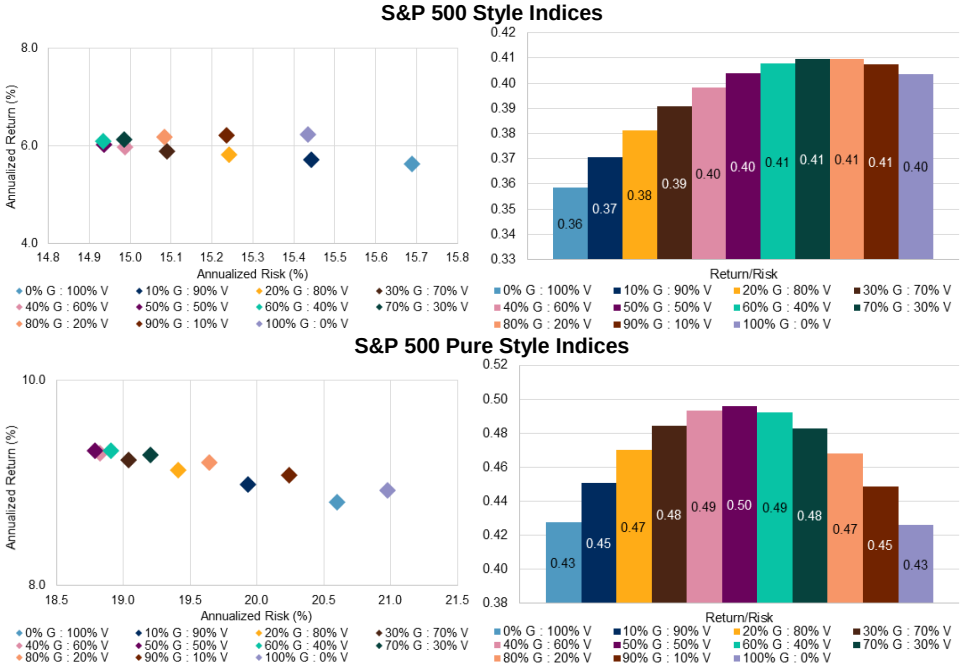
We want to note that in practice, market participants may hold a mix of style portfolios across different market caps. In addition, the decision to hold a combination of style portfolios or rotate entirely out of one style may come from a number of signals, ranging from valuation-based to macroeconomic conditions. It is beyond the scope of this paper to explore the dynamic style rotation strategies and their signals.

In this section, we attempt to answer whether holding a pure style portfolio or a combination of pure style portfolios result in higher risk-adjusted returns than holding the same combinations of traditional style portfolios.

For demonstrative purposes, we assume that the weights of the style portfolios used in our example (see Exhibits 16-18) are not time varying. In other words, we assume that market participants hold a fixed weight at the start of the measurement period and rebalance back to that weight on a monthly basis. For each market-cap range, we begin with 100% allocation to a given style (e.g., value) and linearly decrease the allocation by 10% while reallocating the same amount to its counterpart (e.g., growth). We perform the same analysis using the pure style indices. Overall, we form 11 hypothetical portfolios for each style in a given market cap, with 66 portfolios in total.

We assume that market participants hold a fixed weight at the start of the measurement period and rebalance back to that weight on a monthly basis.

Exhibit 16: S&P 500 Style and Pure Style Indices in Portfolio Context



For each market-cap range, we begin with 100% allocation to a given style and linearly decrease the allocation by 10% while reallocating the same amount to its counterpart.

All portfolios shown are hypothetical portfolios.
Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 1997, to Dec. 31, 2018. Index performance based on total return in USD. Past performance is no guarantee of future results. Charts are provided for illustrative purposes and 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.

Comparing the reward-to-risk ratios of the two sets of analysis, we found that allocating to pure style portfolios resulted in higher ratios in the large-cap space.

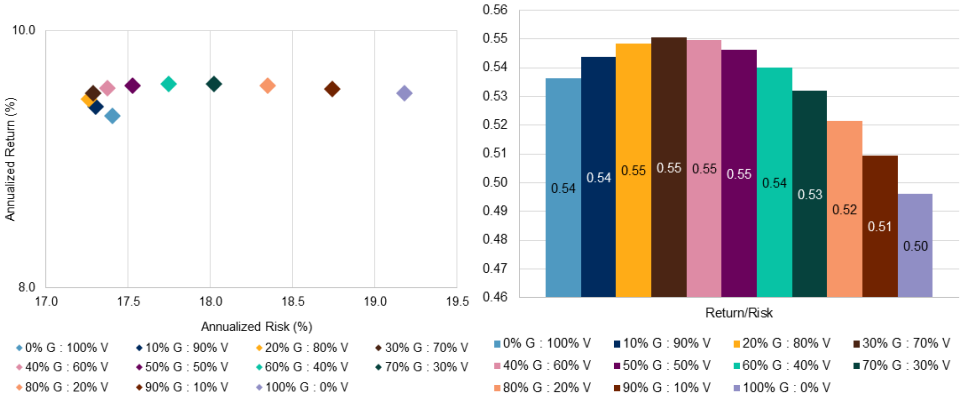
In mid-and small-cap segments, we found mixed results.

Portfolios with greater allocations to pure value (greater than 60%) tended to have lower reward-to-risk ratios than those with the same allocations to value.

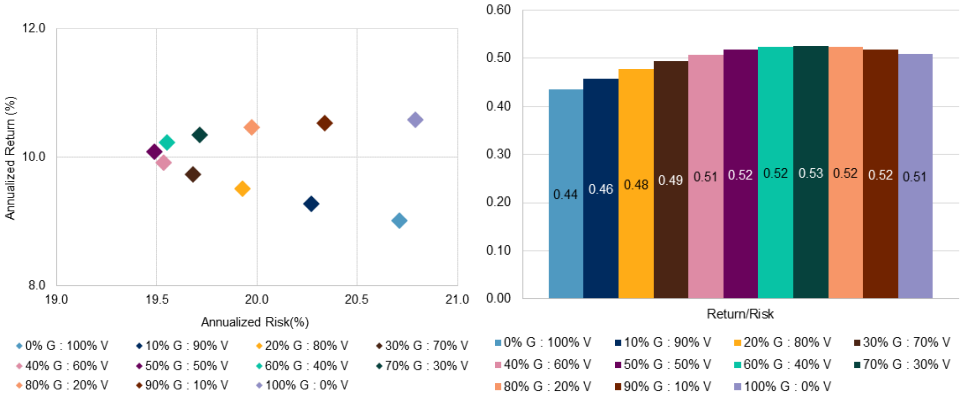
Portfolios with higher allocations to pure growth (greater than 60%) tended to have higher ratios than those with the same allocations to growth.

Exhibit 17: S&P MidCap 400 Style and Pure Style Indices in Portfolio Context

S&P MidCap 400 Style Indices

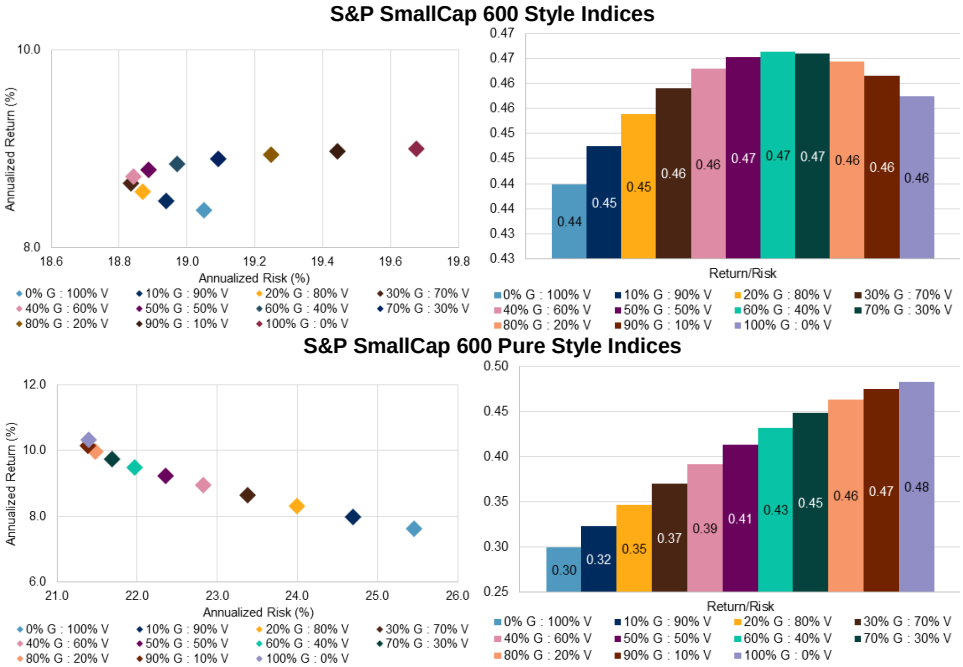


S&P MidCap 400 Pure Style Indices



All portfolios are hypothetical portfolios.
Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 1997, to Dec. 31, 2018. Index performance based on total return in USD. Past performance is no guarantee of future results. Charts are provided for illustrative purposes and reflect hypothetical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Exhibit 18: S&P SmallCap 600 Style and Pure Style Indices in Portfolio Context



All portfolios are hypothetical portfolios.
Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 1997, to Dec. 31, 2018. Index performance based on total return in USD. Past performance is no guarantee of future results. Charts are provided for illustrative purposes and 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.

The S&P Style Indices can be viewed as broad style benchmarks, representing the full opportunity set and returns for value and growth style investing.

The S&P Pure Style Indices are more representative of a higher conviction, more concentrated active style strategy.

Comparing the reward/risk ratios of the two sets of analysis, we found that allocating to pure style portfolios resulted in higher ratios in the large-cap space, regardless of the portfolio mix. For example, a portfolio with a 50/50 mix of value and growth had a reward-to-risk ratio of 0.40. The same mix using pure value and pure growth had a reward/risk ratio of 0.50. However, in mid-and small-cap segments, we found mixed results. Portfolios with greater allocations to pure value (greater than 60%) tended to have lower reward/risk ratios than those with the same allocations to value. In contrast, portfolios with higher allocations to pure growth (greater than 60%) tended to have higher ratios than those with the same allocations to growth.

Both sets of indices tilt away from a market-capitalization weighted benchmark and therefore, have meaningfully different risk/return profiles from the benchmark.

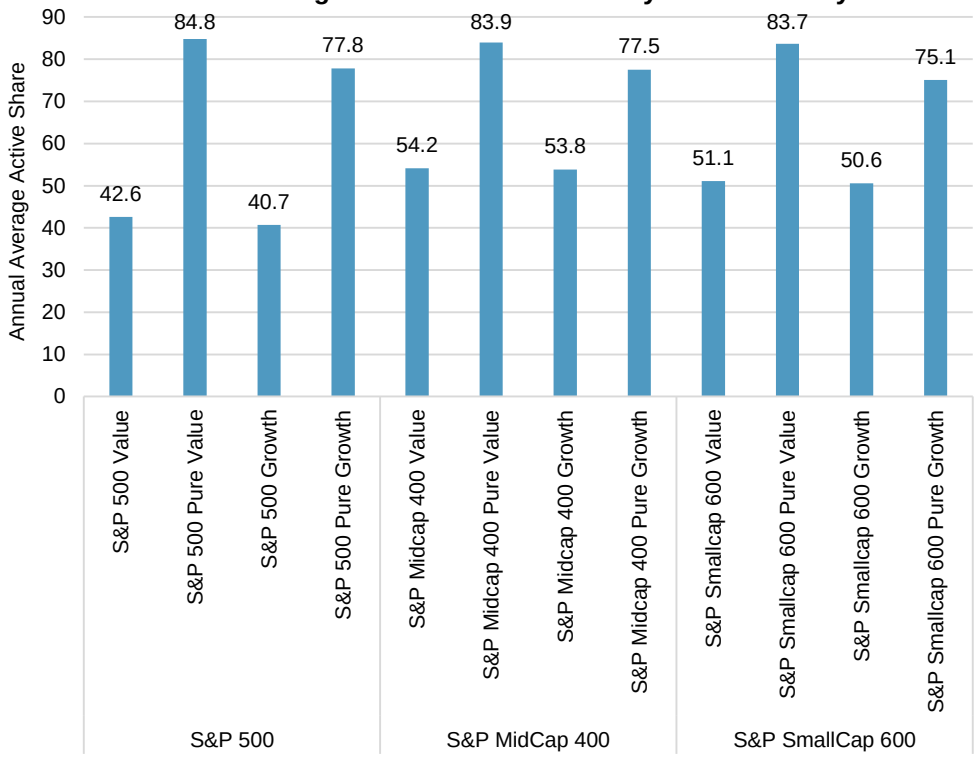
ACTIVE SHARE AND MANAGER PERFORMANCE MEASUREMENT

Based on index construction, risk/return profiles, and characteristics, we can see that the two sets of style indices serve different purposes for the investment community. The S&P Style Indices can be viewed as broad style benchmarks, representing the full opportunity set and returns for value and growth style investing. On the other hand, the S&P Pure Style Indices are more representative of a higher conviction, more concentrated active style strategy.

In light of the high active share exhibited by pure style indices, we find that comparing the returns of the pure style indices to those of actively managed funds would be more appropriate.

Both sets of indices tilt away from a market-capitalization-weighted benchmark and, therefore, have meaningfully different risk/return profiles from the benchmark. We use active share, calculated as the percentage of a portfolio's equity holdings that is different from the underlying benchmark, to estimate the degree of "activeness" of the style indices[2] against the respective S&P DJI benchmark (see Exhibit 16). Unsurprisingly, the average annual active share figures for the pure style indices were higher than those of the style indices across all three market-cap ranges.

Exhibit 19: Annual Average Active Share of S&P Style and Pure Style Indices



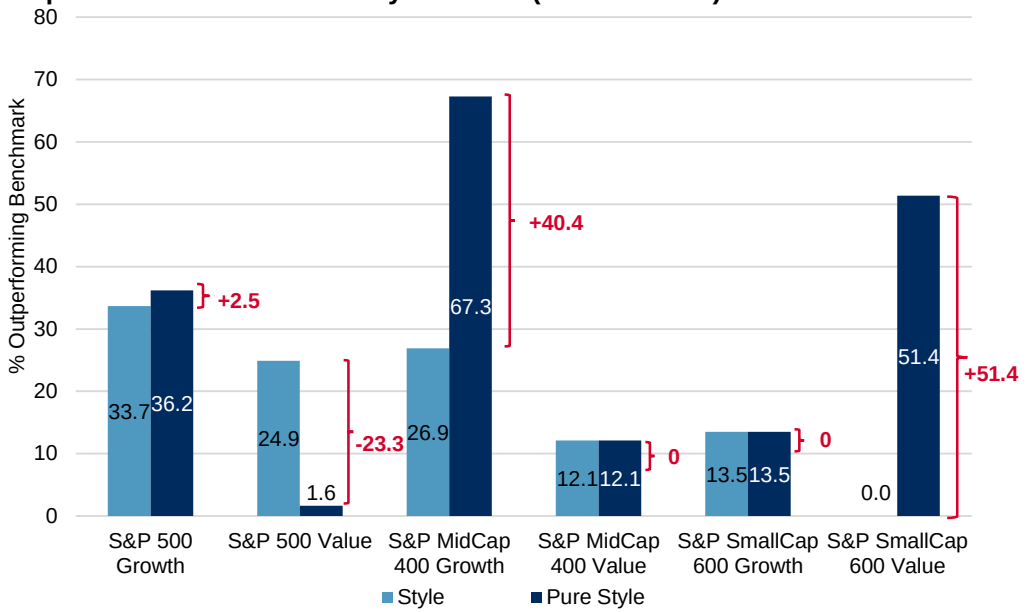
Source: S&P Dow Jones Indices LLC, FactSet. Data from Dec. 31, 1997, to Dec. 31, 2018. Index performance based on total return in USD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Exhibits 20 to 22 show the relative performance over 5-, 10-, and 15-year investment horizons ending June 29, 2018.

In light of the high active share exhibited by pure style indices, we find that comparing the returns of the pure style indices to those of actively managed funds would be more appropriate. To do so, we calculate the relative performance of actively managed large-, mid-, and small-cap domestic U.S. equity value and growth funds against their corresponding pure value and pure growth indices. Exhibits 20 to 22 show the relative performance over 5-, 10-, and 15-year investment horizons ending June 29, 2018.

Across all three periods, less than half of the actively managed value funds outperformed the value and pure value indices.

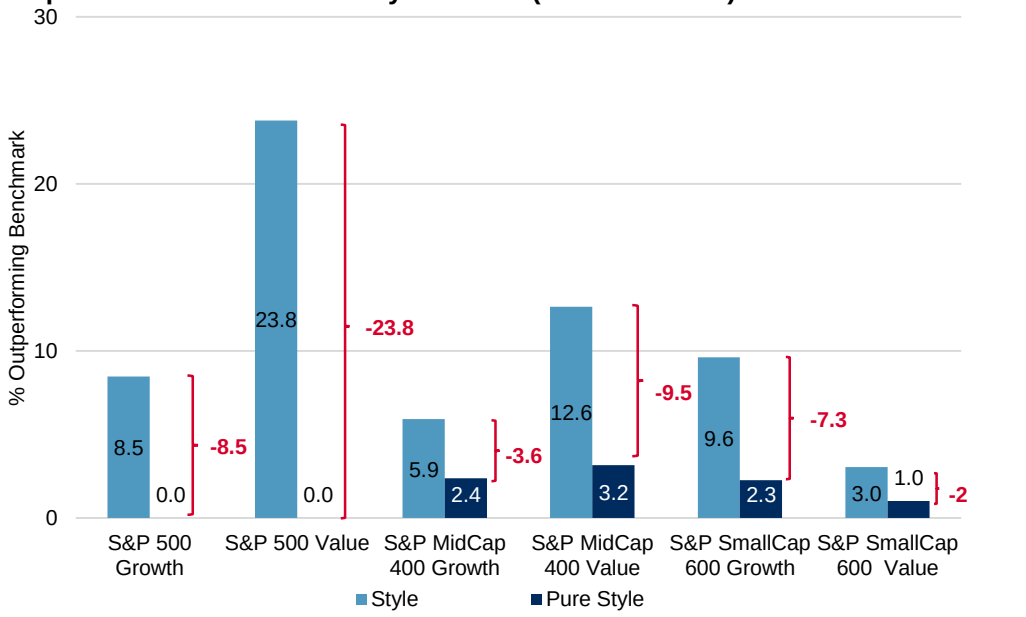
Exhibit 20: Percentage of Actively Managed Value and Growth Funds That Outperformed the S&P Pure Style Indices (5-Year Period)



Source: S&P Dow Jones Indices LLC, CRSP. Data from Dec. 31, 1997, to June 29, 2018. Index performance based on total return in USD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects 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.

For the 10- and 15-year time horizons, the percentage of large-, mid-, and small-cap funds that outperformed the pure style indices were in the single digits, with the exception of small-cap value funds.

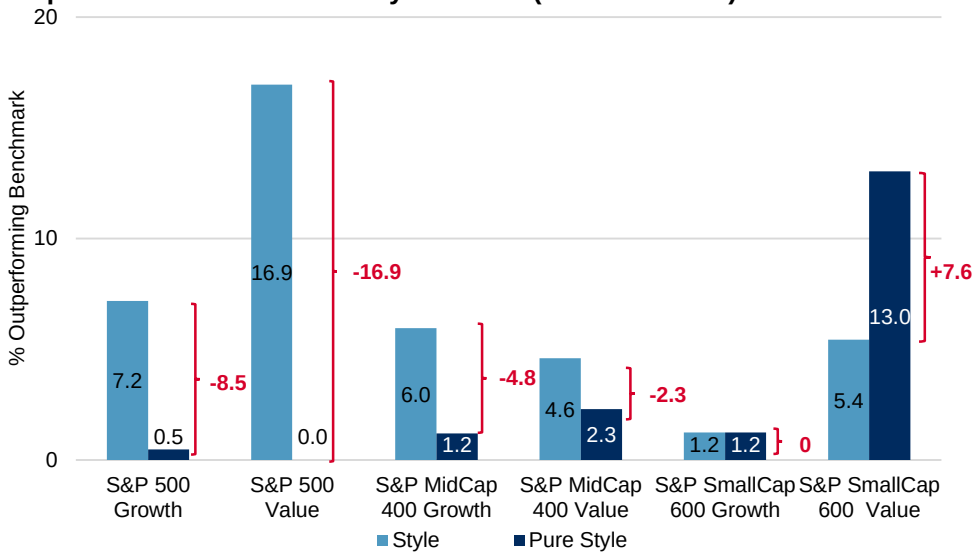
Exhibit 21: Percentage of Actively Managed Value and Growth Funds That Outperformed the S&P Pure Style Indices (10-Year Period)



It is clear that the pure style indices set a higher bar than the traditional style indices for active managers.

Source: S&P Dow Jones Indices LLC, CRSP. Data from Dec. 31, 1997, to June 29, 2018. Index performance based on total return in USD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects 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.

Exhibit 22: Percentage of Actively Managed Value and Growth Funds That Outperformed the S&P Pure Style Indices (15-Year Period)



Source: S&P Dow Jones Indices LLC, CRSP. Data from Dec. 31, 1997, to June 29, 2018. Index performance based on total return in USD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects 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.

Pure style indices may be a more appropriate benchmark—if not a secondary benchmark—for style strategies.

Both pure style and style indices serve as the underlying index for passive investment vehicles.

Across all three periods, less than half of the actively managed value funds outperformed the value and pure value indices. For the 10- and 15-year time horizons, the percentage of large-, mid-, and small-cap funds that outperformed the pure style indices were in the single digits, with the exception of small-cap value funds.

It is clear that the pure style indices set a higher bar than the traditional style indices for active managers. While the style indices serve as an opportunity set from which managers can perform security selection to construct their style portfolios, the pure style indices are closer to actively managed style strategies in construction. Therefore, pure style indices may be a more appropriate benchmark—if not a secondary benchmark—for style strategies.

CONCLUSION

Both pure style and style indices serve as effective tools for market participants that seek growth or value style exposure, either as benchmarks for active portfolios or to serve as the underlying index for passive investment vehicles. Due to differences in index construction, the two index series have offered meaningfully different risk/return characteristics, which may have implications for an investor's asset allocation decisions. Over the long-term investment horizon, the pure style indices have exhibited greater returns and volatility, lower cross correlations, and wider return spreads than the standard style indices. Given that pure style indices are more representative of an active style strategy, they may serve as more appropriate performance benchmarks for active fund managers.

ENDNOTES

[1] The second period is used as there was a methodology change in 2005. Prior to the change, value and growth indices did not have overlapping securities, with all securities in the benchmark assigned as a value or growth security.

[2] Active share (AS) of a portfolio from a benchmark is calculated per the following formula.

$$\mathrm{AS}_p = \sum_{i=1}^{n} \frac{|\, w_{i,p} - w_{i,b}|}{2}$$

where:

$w_{i,p}$ = weight of stock i in portfolio p

$w_{i,b}$ = weight of stock i in benchmark b

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PERFORMANCE DISCLOSURE

The S&P 500 Pure Growth, S&P 500 Pure Value, S&P MidCap 400 Pure Growth, S&P MidCap 400 Pure Value, S&P SmallCap 600 Pure Growth, and S&P SmallCap 600 Pure Value were launched December 16, 2005. 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.

S&P Dow Jones Indices defines various dates to assist our clients in providing transparency. The First Value Date is the first day for which there is a calculated value (either live or back-tested) for a given index. The Base Date is the date at which the Index is set at a fixed value for calculation purposes. The Launch Date designates the date upon which the values of an index are first considered live: index values provided for any date or time period prior to the index's Launch Date are considered back-tested. S&P Dow Jones Indices defines the Launch Date as the date by which the values of an index are known to have been released to the public, for example via the company's public website or its datafeed to external parties. For Dow Jones-branded indices introduced prior to May 31, 2013, the Launch Date (which prior to May 31, 2013, was termed "Date of introduction") is set at a date upon which no further changes were permitted to be made to the index methodology, but that may have been prior to the Index's public release date.

The back-test period does not necessarily correspond to the entire available history of the Index. Please refer to the methodology paper for the Index, available at www.spdji.com for more details about the index, including the manner in which it is rebalanced, the timing of such rebalancing, criteria for additions and deletions, as well as all index calculations.

Another limitation of using back-tested information is that the back-tested calculation is generally prepared with the benefit of hindsight. Back-tested information reflects the application of the index methodology and selection of index constituents in hindsight. No hypothetical record can completely account for the impact of financial risk in actual trading. For example, there are numerous factors related to the equities, fixed income, or commodities markets in general which cannot be, and have not been accounted for in the preparation of the index information set forth, all of which can affect actual performance.

The Index returns shown do not represent the results of actual trading of investable assets/securities. S&P Dow Jones Indices LLC maintains the Index and calculates the Index levels and performance shown or discussed, but does not manage actual assets. Index returns do not reflect payment of any sales charges or fees an investor may pay to purchase the securities underlying the Index or investment funds that are intended to track the performance of the Index. The imposition of these fees and charges would cause actual and back-tested performance of the securities/fund to be lower than the Index performance shown. As a simple example, if an index returned 10% on a US $100,000 investment for a 12-month period (or US $10,000) and an actual asset-based fee of 1.5% was imposed at the end of the period on the investment plus accrued interest (or US $1,650), the net return would be 8.35% (or US $8,350) for the year. Over a three year period, an annual 1.5% fee taken at year end with an assumed 10% return per year would result in a cumulative gross return of 33.10%, a total fee of US $5,375, and a cumulative net return of 27.2% (or US $27,200).

GENERAL DISCLAIMER