

The S&P MidCap 400[®]: Outperformance and Potential Applications

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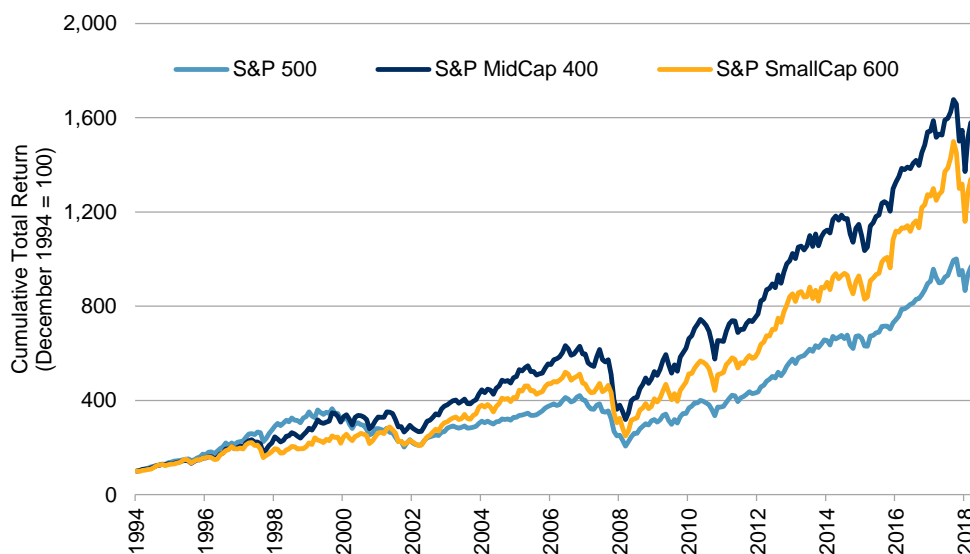
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EXECUTIVE SUMMARY

Mid-cap stocks have often been overlooked in favor of other size ranges in investment practice and in academic literature. Yet mid-caps have outperformed large- and small-caps, historically: **the S&P MidCap 400 has beaten the S&P 500[®] and the S&P SmallCap 600[®] by an annualized rate of 2.03% and 0.92%, respectively, since December 1994.** To better understand the historical outperformance by mid-caps, as well as their potential use within an investment portfolio, this paper:

- Provides an overview of S&P Dow Jones Indices' methodology for defining the U.S. mid-cap equity universe;
- Outlines the so-called "mid-cap premium," analyzing it from factor and sector perspectives;
- Shows that active managers have underperformed the S&P MidCap 400, historically;
- Highlights how mid-caps can be incorporated within a portfolio.

Exhibit 1: The S&P MidCap 400 Outperformed since 1994



Source: S&P Dow Jones Indices LLC. Data from Dec. 30, 1994, to May 31, 2019. Index performance based on monthly total return in USD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

INTRODUCTION

U.S. equity indices have a long history of measuring the performance of market segments. The [Dow Jones Transportation Average™](#), the first index and a precursor to the [Dow Jones Industrial Average®](#), was created in 1884. The inaugural capitalization-weighted U.S. equity index was first published in 1923 and evolved into today's widely followed 500-company U.S. equity benchmark—the S&P 500.

Mid-cap stocks have outperformed, historically...

More recently, after academic literature demonstrated the existence of a size factor,¹ index providers developed benchmarks to track the performance of smaller companies. Among them were the S&P MidCap 400 and the S&P SmallCap 600, launched in June 1991 and October 1994, respectively.

Despite the historical outperformance of mid-cap stocks, they appear to be under-allocated compared to small-caps. Exhibit 2 shows the proportion of assets invested in core U.S. equities, across the large-, mid-, and small-cap size ranges, by U.S.-domiciled retail and institutional funds at the end of 2018.² Based on overall market capitalization, we might expect funds to allocate twice as much to mid-caps compared to small-caps.³ Instead, the aggregate core allocation to small- and mid-caps is approximately the same: investors appear to have a preference for small-caps over mid-caps in their core holdings. The data shows this preference is especially true for active funds.

...yet they appear to be under-allocated compared to small-caps.

Exhibit 2: Mid-Caps Appear Under-Allocated Compared to Small-Caps

SIZE	PROPORTION OF ASSETS ALLOCATED (%)		
	ACTIVE AND PASSIVE	ACTIVE	PASSIVE
MUTUAL FUNDS – RETAIL			
Large	84.51	83.85	85.10
Mid	8.22	7.56	8.81
Small	7.27	8.58	6.09
MUTUAL FUNDS – INSTITUTIONAL			
Large	79.82	58.28	86.59
Mid	12.18	19.95	9.74
Small	8.00	21.77	3.67
MUTUAL FUNDS – RETAIL AND INSTITUTIONAL			
Large	82.50	76.80	85.88
Mid	9.92	10.98	9.29
Small	7.58	12.22	4.83

Source: Morningstar. Data as of Dec. 31, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

¹ See Stoll, Hans and Robert Whaley, "[Transaction costs and the small firm effect](#)," *Journal of Financial Economics*.

² Data is based on active and index-linked equity funds categorized by Morningstar as large-cap blend, mid-cap blend, or small-cap blend.

³ Using year-end data since 1994, S&P 500 constituents typically accounted for 89% of [S&P Composite 1500®](#) constituents' market capitalization. The remaining S&P Composite 1500 constituents' market capitalization was roughly split in a 2:1 ratio between constituents of the S&P MidCap 400 and the S&P SmallCap 600.

In addition to being under-allocated in core allocations compared to small-caps, **mid-caps also appear to be under-represented within the mutual fund universe.** Exhibit 3 provides 5-year snapshots of the number of U.S. active equity mutual funds across the three size ranges over the last 15 years.

Mid-caps also appear to be under-represented in the mutual fund universe...

Exhibit 3: There Were Fewer Mid-Cap U.S. Equity Funds, Historically

SIZE	TOTAL	CORE	GROWTH	VALUE
NUMBER OF FUNDS IN DECEMBER 2018				
Large-Cap	816	268	224	324
Mid-Cap	301	120	126	55
Small-Cap	548	277	181	90
NUMBER OF FUNDS IN DECEMBER 2013				
Large-Cap	1,073	412	332	329
Mid-Cap	383	110	175	98
Small-Cap	607	255	215	137
NUMBER OF FUNDS IN DECEMBER 2008				
Large-Cap	672	238	215	219
Mid-Cap	395	106	202	87
Small-Cap	552	242	208	102
NUMBER OF FUNDS IN DECEMBER 2003				
Large-Cap	816	309	297	210
Mid-Cap	371	74	199	98
Small-Cap	445	128	132	185

Source: CRSP. Data as of Dec. 31, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

... it was the only category to report a decline in the number of funds between 2003 and 2018.

Exhibit 3 shows that there were fewer active mid-cap funds than small- and large-cap funds in aggregate, and in almost all style categories, across the four snapshots. Mid-cap was also the only category to report a decline in the total number of active funds between December 2003 and December 2018. Combined with an apparent under-allocation of mid-caps compared to small-caps in core allocations, Exhibit 3 suggests that mid-caps have not received the same level of investor interest as small-caps.

Despite being under-allocated and under-represented as investment solutions, our research indicates that **mid-caps may have attractive risk/reward profiles** compared to their larger- and smaller-cap counterparts. In the remainder of this paper, we define the mid-cap segment, using the S&P MidCap 400 as a proxy for the asset class, and examine the mid-cap premium from factor and sector perspectives to better understand its return drivers. Also of interest to practitioners, we show the degree of difficulty active managers had in outperforming the S&P MidCap 400, historically. Finally, we demonstrate how a mid-cap equity allocation may complement an existing large-cap equity allocation.

There is no universally accepted way to define the mid-cap universe.

DEFINING THE MID-CAP UNIVERSE

Although market capitalization is the main determinant of size classifications, there is no universally accepted way to define the mid-cap universe. For example, while S&P Dow Jones Indices' Index Committee has set market-capitalization thresholds, it considers other criteria—such as a financial viability screen and sector representation—when considering companies for index inclusion.⁴ Some index providers use a fixed-count, ranked approach to determine the mid-cap universe, while others target a proportion of free float-adjusted market-capitalization coverage instead.⁵

S&P Dow Jones Indices' U.S. Equity Index Series is split into three size categories. The S&P 500, S&P MidCap 400, and S&P SmallCap 600 represent the large-, mid-, and small-cap U.S. equity universes, respectively, and collectively they compose the S&P Composite 1500. Exhibit 4 provides the average distribution of market capitalizations for each index's constituents between 1994 and 2018.

Large-caps accounted for most of the S&P Composite 1500's market capitalization.

INDEX	CONSTITUENT SIZE (USD BILLION)			
	AVERAGE	MINIMUM	MAXIMUM	TOTAL
S&P 500	24.83	1.18	430.03	12,449.39
S&P MidCap 400	2.77	0.42	14.34	1,107.29
S&P SmallCap 600	0.83	0.05	3.91	496.14

Source: S&P Dow Jones Indices LLC. Data from year-end 1994 to year-end 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Exhibit 4 shows that, on average, S&P 500 securities represented about 89% of S&P Composite 1500 constituents' total market cap, with the remaining market cap split in a 2:1 ratio between the S&P MidCap 400 and the S&P SmallCap 600. Unsurprisingly, the average size of S&P 500 constituents is an order of magnitude larger than S&P MidCap 400 and S&P SmallCap 600 constituents.

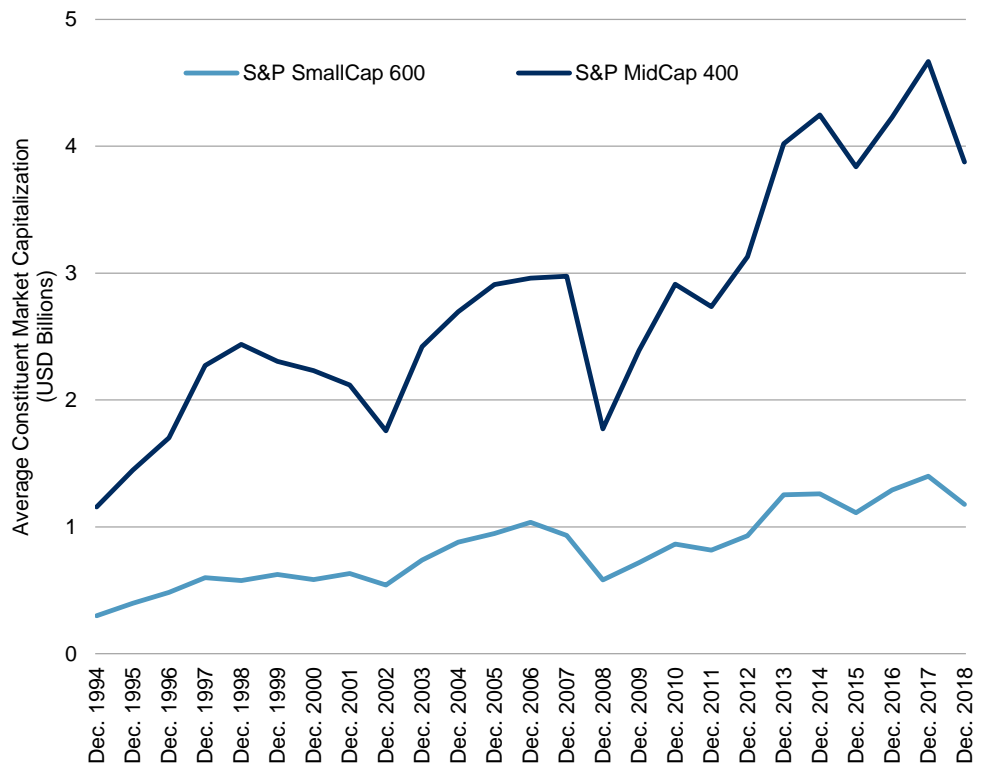
As expected, mid-caps appear to have greater investment capacity than small-caps.

As one might expect, **mid-caps appear to have greater investment capacity than small-caps.** Exhibit 5 shows that the average capitalization of mid-cap stocks between 1994 and 2018 was typically three times greater than for S&P SmallCap 600 constituents. This ratio has also increased over the last few years.

⁴ Please see [S&P Dow Jones Indices' U.S. Equity Indices Methodology](#) for more details.

⁵ For an overview of the differences in methodologies among index providers, see Ge, Wei; "[The Curious Case of the Mid-Cap Premium](#)," *The Journal of Index Investing*, Spring 2018, 8 (4) 22-30.

Exhibit 5: Average Constituent Market Capitalization



Source: S&P Dow Jones Indices LLC. Data from year-end 1994 to year-end 2018. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

Mid-caps were typically 3.5 times more liquid than small-caps.

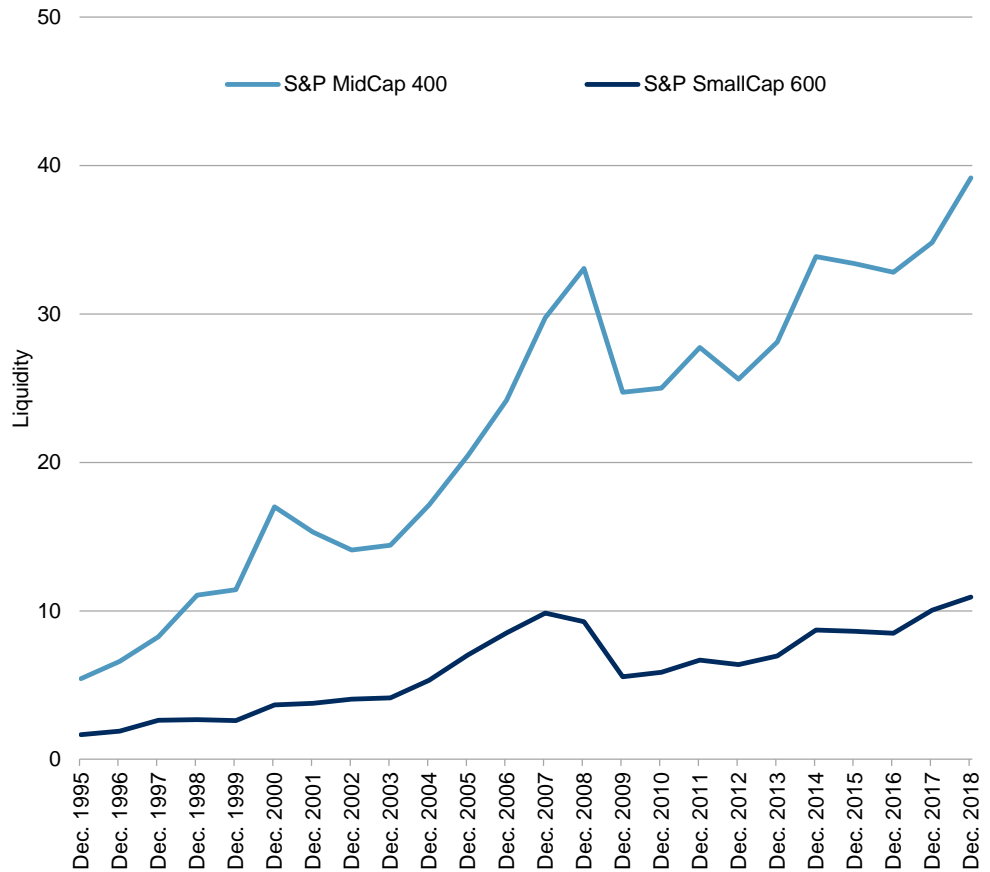
In addition to capacity, S&P MidCap 400 constituents were more liquid than small-cap stocks, historically. Exhibit 6 shows the average 12-month Median Dollar Value Traded (MDVT) at each year-end between 1994 and 2018.⁶ Quite clearly, S&P MidCap 400 stocks had higher liquidity—on average, S&P MidCap 400 constituents had 3.5 times higher MDVT than those of the S&P SmallCap 600.

Hence, all else being equal, we can argue that mid-cap stocks are more liquid and have higher investment capacity than small-cap stocks. Trading S&P MidCap 400 stocks should be easier than trading small-cap stocks.

⁶ 12-month MDVT is computed by first calculating the value, in U.S. dollars, that was traded in each index constituent in each of the last 252 trading days. The median of these 252 values is taken for each index constituent. Exhibit 6 shows the simple average of 12-month MDVTs for S&P MidCap 400 and S&P SmallCap 600 constituents.

Exhibit 6: S&P MidCap 400 Stocks Were More Liquid than S&P SmallCap 600 Stocks

All else equal, trading S&P MidCap 400 stocks should be easier than trading S&P SmallCap 600 stocks.



Source: S&P Dow Jones Indices LLC. Data from year-end 1995 to year-end 2018. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

HISTORICAL PERFORMANCE

As we noted earlier, the S&P MidCap 400 outperformed the S&P 500 and the S&P SmallCap 600 at an annualized rate of 2.03% and 0.92%, respectively, since December 1994. Exhibit 7a gives a more detailed breakdown.

The S&P MidCap 400 posted higher risk-adjusted returns than the S&P 500 over longer horizons.

The S&P MidCap 400 offered higher risk-adjusted returns than the S&P SmallCap 600 over shorter and longer horizons. And while the mid-cap index was, on average, roughly 15% more volatile than its large-cap counterpart, its higher returns more than compensated over longer periods.

Exhibit 7a: Risk/Return Statistics			
PERIOD	S&P 500	S&P MIDCAP 400	S&P SMALLCAP 600
RETURNS (ANNUALIZED, %)			
1-Year	3.78	-5.44	-10.47
3-Year	11.72	8.36	9.54
5-Year	9.66	7.31	7.85
10-Year	13.95	13.87	14.33
15-Year	8.40	9.30	9.30
20-Year	5.83	9.40	9.66
Since December 1994	9.67	11.70	10.78
VOLATILITY (ANNUALIZED, %)			
3-Year	11.54	14.43	17.25
5-Year	11.64	13.84	16.27
10-Year	12.62	15.04	16.74
15-Year	13.71	16.48	18.14
20-Year	14.57	16.83	18.48
Since December 1994	14.64	16.98	18.41
RETURN/RISK			
3-Year	1.02	0.58	0.55
5-Year	0.83	0.53	0.48
10-Year	1.11	0.92	0.86
15-Year	0.61	0.56	0.51
20-Year	0.40	0.56	0.52
Since December 1994	0.66	0.69	0.59

While mid caps were about 15% more volatile than large caps...

...the S&P MidCap 400's higher returns more than compensated over longer periods.

Source: S&P Dow Jones Indices LLC. Data from Dec. 30, 1994, to May 31, 2019. Index performance based on annualized monthly total return in USD. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Exhibit 7b provides further details on the relative returns between the three indices, breaking down the indices' monthly returns into 196 "up" and 97 "down" months, based on whether the S&P 500 posted a monthly gain or decline, respectively. The hit rates show the proportion of "up" and "down" months in which the mid- and small-cap indices beat the S&P 500.

Exhibit 7b: Performance in Different Market Environments			
STATISTIC	S&P 500	S&P MIDCAP 400	S&P SMALLCAP 600
Average Returns (Up Market)	3.17	3.49	3.49
Average Returns (Down Market)	-3.80	-3.88	-4.02
Average Excess Returns (Up Market)	-	0.32	0.31
Average Excess Returns (Down Market)	-	-0.08	-0.22
Hit Rate (Up Market)	-	53.57	55.61
Hit Rate (Down Market)	-	39.18	43.30

Source: S&P Dow Jones Indices LLC. Data from Dec. 30, 1994, to May 31, 2019. Index performance based on monthly total return index levels in USD. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

The S&P MidCap 400 and S&P SmallCap 600 outperformed by similar amounts during "up" months.

The S&P MidCap 400's tighter range of returns gave it higher average returns than the S&P SmallCap 600 in "down" markets.

Exhibit 7b shows that the S&P MidCap 400 and S&P SmallCap 600 typically outperformed the S&P 500 by similar amounts during "up" periods; both indices recorded similar average monthly excess returns when the large-cap U.S. equity benchmark gained. Additionally, while small-cap securities appear to be better insulated against "down" markets given their more frequent outperformance when S&P 500 fell, the S&P MidCap 400's tighter range of returns meant it posted higher average (excess) returns.

FACTOR ANALYSIS

In this section, we explore systematic drivers behind the S&P MidCap 400's excess returns. We employ a four-factor model that combines the traditional factors from the Fama-French Three Factor Model⁷ with a quality-minus-junk (QMJ) factor.⁸ In the model, the S&P MidCap 400's excess returns (dependent variable) are explained using their exposures to four factors (independent variables): sensitivity to the market (beta), size of the stocks in the index (size), average weighted book-to-market (value), and quality-minus-junk (quality).

We use a four-factor model to explore systematic drivers behind the S&P MidCap 400's excess returns.

The risk premium for each factor is defined as follows:

- **Equity Risk Premium:** Represented by $(RM - RF)$, which is the return on a market-value-weighted equity index minus the return on the one-month U.S. Treasury Bill. It measures systematic risk.
- **Size Premium:** Represented by small minus big (SMB), which measures the additional return from investing in small stocks. The SMB factor is computed as the average return on three small-cap portfolios minus the average return on three large-cap portfolios.
- **Value Premium:** Represented by high minus low (HML), which measures additional return from investing in value stocks, as measured by high book-to-market ratios. It is calculated as the average return on two high book-to-market portfolios minus the average return on two low book-to-market portfolios.
- **Quality Premium:** Represented by quality-minus-junk (QMJ), which measures the additional return from investing in quality stocks, as defined using profitability. It is calculated as the average return from two portfolios of high-quality stocks minus the average return from two portfolios of low-quality stocks.

Size, value, and quality were significant in explaining the S&P MidCap 400's excess returns.

⁷ Fama, Eugene F. and Kenneth R. French, "[Common risk factors in the returns on stocks and bonds](#)," *Journal of Financial Economics*, Vol. 33, Issue 1, pp. 3-56, 1993.

⁸ For more information, see Asness, Clifford S., Andrea Frazzini, and Lasse Heje Pedersen, "[Quality minus junk](#)," *Review of Accounting Studies*, 2019, 24, pp. 34-112.

The regression equation estimate is as follows:

$$R_i - R_F = \alpha + B_{market}(RM - RF) + B_{size}(SMB) + B_{value}(HML) + B_{quality}(QMJ)$$

The S&P MidCap 400 had a greater tilt to value than the S&P 500...

Exhibit 8 provides the summary statistics from regressing the excess returns of the S&P MidCap 400 on the historical monthly returns of the four factors described above. The coefficient for each of the four factors is given, as well as the corresponding t-statistic in parentheses.

Exhibit 8: Size Factor Is Significant across the Board						
COMPARISON INDEX	REGRESSION STATISTICS					
	INTERCEPT	RM-RF	SMB	HML	QMJ	R-SQUARED
Versus the S&P 500	-0.001 (-1.30)	0.05 (1.70)	0.45 (13.68)	0.19 (5.83)	0.03 (0.7)	0.46
Versus the S&P SmallCap 600	0 (0.12)	-0.01 (-0.35)	-0.48 (-17.69)	-0.16 (-6.07)	-0.15 (-3.76)	0.54

Source: S&P Dow Jones Indices LLC, Kenneth R. French Data Library. Data from Dec. 30, 1994, to Dec. 31, 2018. Table is provided for illustrative purposes.

Exhibit 8 shows the size premium (SMB) was significant in explaining the S&P MidCap 400's excess returns against the S&P 500 and the S&P SmallCap 600. The positive (negative) coefficient versus the S&P 500 (S&P SmallCap 600) is entirely expected; the S&P SmallCap 600 has more small-cap exposure than the S&P MidCap 400, which in turn has greater small-cap exposure than the S&P 500.

...and the S&P MidCap 400 appeared to be more growth-oriented than S&P SmallCap 600.

Additionally, the value factor was significant in explaining the S&P MidCap 400's excess returns in both instances; the loadings on the HML factor suggest the S&P MidCap 400 had a greater tilt to value than the S&P 500 and a greater growth bias than the S&P SmallCap 600. Combined with the statistically significant negative loading on the quality factor, when compared with the S&P SmallCap 600, the S&P MidCap 400 appeared to be more growth-oriented and had lower exposure to quality than its small-cap counterpart.

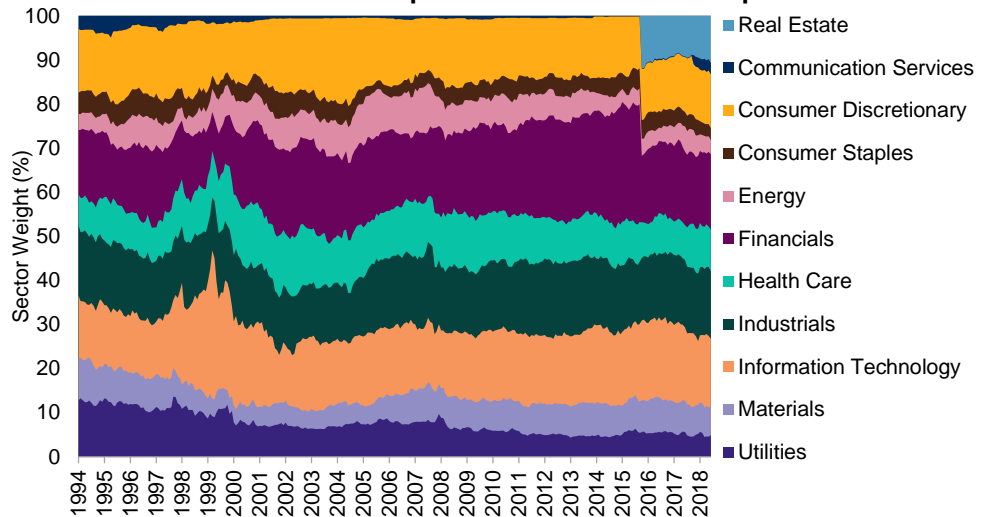
Finally, alpha—the intercept in our regression equation—tells us the sign and significance of the S&P MidCap 400's excess returns that were not explained by the regression model. Clearly, the intercepts were not significant in either case. Combined with the R-squared figures being about 50%, the regression model accounted for a sizable amount of the variation in the S&P MidCap 400's excess returns versus the S&P 500 and the S&P SmallCap 600.

SECTOR ANALYSIS

Next, we assess the S&P MidCap 400’s outperformance through a sector lens. Exhibit 9 shows the historical sector composition of the index over the last 25 years, and Exhibit 10 shows the average over- or under-weight of each sector, based on year-end data between 1994 and 2018. A positive value indicates that, on average, the S&P MidCap 400 had greater exposure to that sector compared to the S&P 500 or the S&P SmallCap 600.⁹

The S&P MidCap 400 was less exposed to Information Technology stocks than the S&P 500...

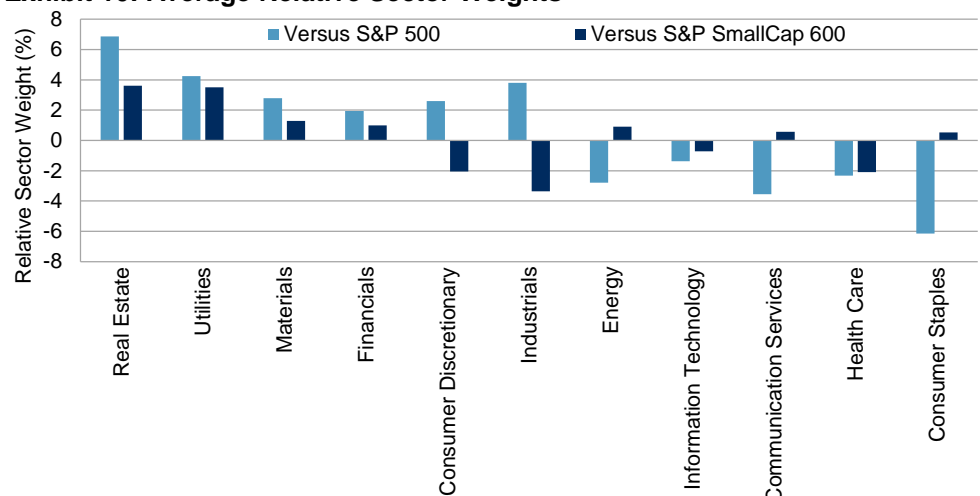
Exhibit 9: Historical Sector Composition in the S&P MidCap 400



Source: S&P Dow Jones Indices LLC. Data based on monthly sector weights between Dec. 30, 1994, and May 31, 2019. Chart is provided for illustrative purposes.

...which helped explain the S&P MidCap 400’s relative performance.

Exhibit 10: Average Relative Sector Weights



Source: S&P Dow Jones Indices LLC. Annual data from Dec. 30, 1994, to Dec. 31, 2018. Chart is provided for illustrative purposes.

⁹ The average over- or under-weight for each sector only covers the period that each market segment was a stand-alone sector. For example, Real Estate became a stand-alone sector in September 2016 and so data prior to December 2016 was not used when calculating the average relative weights for that sector. Prior to September 2018, Communication Services was called Telecommunication Services.

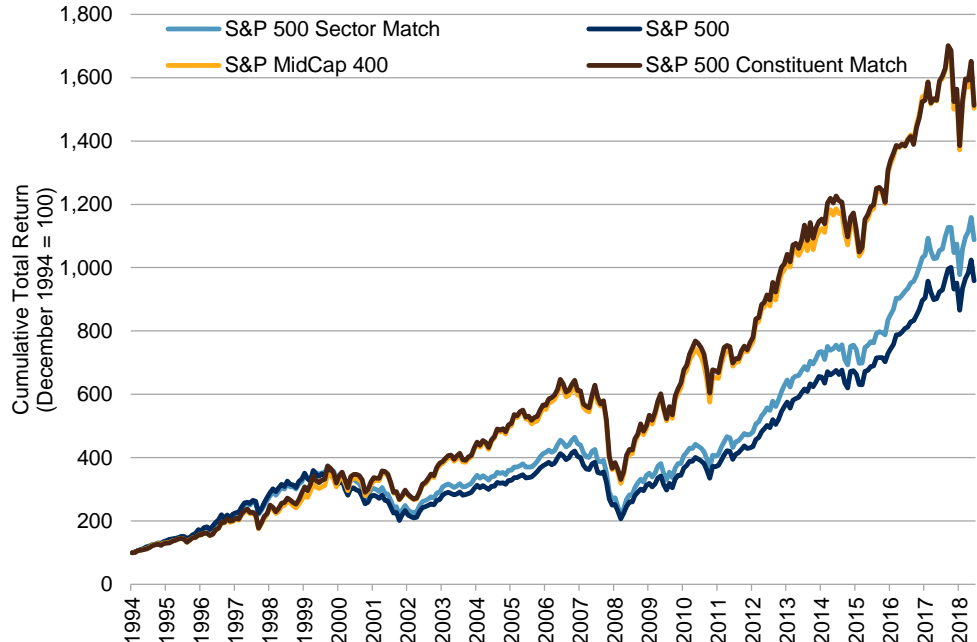
The S&P MidCap 400 typically had much higher exposures to Utilities and Materials, and its underweight position in Information Technology may also help to explain its relative performance, especially versus the S&P 500. For example, 2000 (when the “Tech Bubble” burst) was the best year for the S&P MidCap 400 versus the S&P 500, and the former lagged its large-cap counterpart amid the Information Technology-led market rally in 2017.

“Sector match” portfolios show the importance of stock selection on S&P MidCap 400 performance...

However, understanding the importance of sectors in determining relative performance requires us to answer two questions. First, how much of the S&P MidCap 400’s relative returns came from its sector allocations? And second, what was the impact of the performance of stocks within each sector? To answer these two questions, we compare the performance of hypothetical portfolios.

Specifically, the “**sector match**” portfolios are constructed by combining the capitalization-weighted S&P 500 (and S&P SmallCap 600) sector indices in proportions that match the sectoral exposures of the S&P MidCap 400. The “**constituent match**” portfolios combine the capitalization-weighted S&P MidCap 400 sector indices in proportions that match the sectoral exposures of the S&P 500 (and the S&P SmallCap 600). Exhibits 11 and 12 show the cumulative total returns from the hypothetical portfolios, as well as the indices used to construct them.¹⁰

Exhibit 11: S&P MidCap 400 versus the S&P 500

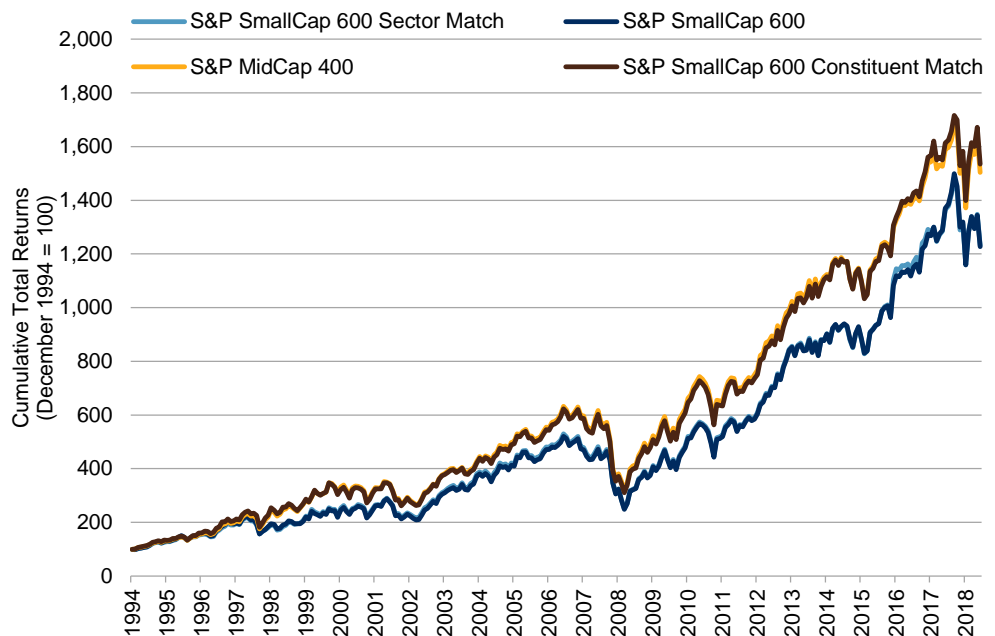


... while “constituent match” portfolios give the relative importance of sector allocations.

The S&P 500 sector match and S&P 500 constituent match portfolios are hypothetical portfolios. Source: S&P Dow Jones Indices LLC. Data from Dec. 30, 1994, to May 31, 2019. Index performance based on monthly total return in USD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

¹⁰ The hypothetical portfolios rebalance at each year-end.

Exhibit 12: S&P MidCap 400 versus the S&P SmallCap 600



Changing sectoral allocations did not have a material impact on S&P MidCap 400 returns...

The S&P SmallCap 600 sector match and S&P SmallCap 600 constituent match portfolios are hypothetical portfolios. Source: S&P Dow Jones Indices LLC. Data from Dec. 30, 1994, to May 31, 2019. Index performance based on monthly total return in USD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

Exhibits 11 and 12 show that the hypothetical “constituent match” portfolios offered almost identical return streams to the S&P MidCap 400. In other words, changing sectoral allocations did not have a material impact on the S&P MidCap 400’s returns, historically. Instead, switching sector constituents had a far greater impact; the “sector match” portfolios’ returns were much closer to the S&P 500 and the S&P SmallCap 600, which in turn were less than the S&P MidCap 400. As a result, **stock selection was far more important than sector exposures in explaining the S&P MidCap 400’s historical outperformance.**

... instead, stock selection was far more important in explaining historical performance.

A more formal approach to assess the relative importance of stock selection versus sector allocation is to run a bottom-up, holdings-based performance attribution. Grouping by sectors, the selection effect gives us the impact of stock selection on excess returns, whereas the allocation effect gives us the impact of sector allocations on excess returns. Exhibit 13 shows the average annual effects for all sectors from 1995 to 2018.

Exhibit 13 reinforces the fact that constituent selection was a bigger driver than sector allocation behind the S&P MidCap 400’s relative performance. The average annual selection effect was nearly four times the allocation effect. Interestingly, the Information Technology sector accounted for a sizeable proportion of the overall selection effect, especially at the start of the 21st century. In other words, while the S&P MidCap 400’s underweight position in Information Technology explained the relative performance

(versus the S&P 500) around the “Tech Bubble,” the choice of mid-cap Information Technology companies was more important.¹¹

Exhibit 13: Performance Attribution by Sector

SECTOR	AVERAGE OVER/UNDERWEIGHT	ALLOCATION EFFECT	SELECTION EFFECT	TOTAL EFFECT
VERSUS S&P 500				
Communication Services*	-4.15	0.08	0.02	0.10
Consumer Discretionary	1.94	0.01	0.03	0.05
Consumer Staples	-4.95	0.07	0.1	0.17
Energy	-3.00	0.13	-0.02	0.11
Financials	0.60	0.11	0.37	0.48
Health Care	-2.73	0.07	0.07	0.14
Industrials	5.70	0.04	0.18	0.22
Information Technology	-2.21	0.09	0.76	0.85
Materials	3.21	-0.05	0.01	-0.04
Real Estate	1.12	0.02	-0.05	-0.03
Utilities	4.48	-0.13	0.23	0.10
Total	-	0.46	1.69	2.15
VERSUS S&P 600				
Communication Services*	0.45	-0.14	0.17	0.03
Consumer Discretionary	-2.41	-0.05	0.26	0.21
Consumer Staples	0.46	-0.01	-0.04	-0.05
Energy	0.80	0.01	0	0
Financials	1.33	-0.04	0.11	0.07
Health Care	-1.45	-0.04	-0.17	-0.21
Industrials	-3.71	0.03	0.06	0.08
Information Technology	-0.09	-0.06	1.22	1.16
Materials	1.11	-0.08	0.04	-0.04
Real Estate	-0.09	-0.02	-0.04	-0.06
Utilities	3.58	0.12	-0.17	-0.05
Total	-	-0.29	1.44	1.15

The average annual selection effect was nearly four times the allocation effect.

While being underweight in Information Technology explained the mid-cap index's relative performance after the tech bubble...

...the choice of mid-cap Information Technology companies was more important.

Source: FactSet. Data from Dec. 30, 1994, to Dec. 31, 2018. *Prior to September 2018, Communication Services was called Telecommunication Services. Table is provided for illustrative purposes.

DOES INDEXING WORK IN MID-CAPS?

The importance of security selection in explaining the outperformance of mid-caps over large- and small-caps led us to compare the performance of actively managed mid-cap managers. This may be of particular interest since market participants may view mid-caps as a less well-defined,

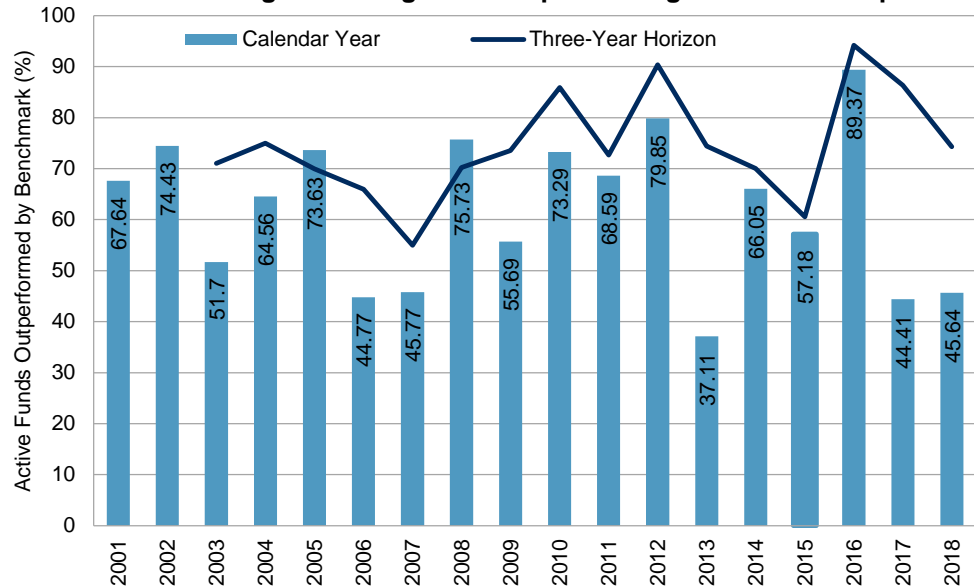
¹¹ The relative importance of the selection effect may also help to explain why the majority of S&P MidCap 400 sectors outperformed their large-cap counterparts, historically. For more information, see Chan, Fei Mei and Craig Lazzara, “[Mid Cap: A Sweet Spot for Performance](#),” S&P Dow Jones Indices, 2015.

relatively inefficient asset class that lends itself to stock selection by active managers.

Since 2002, S&P Dow Jones Indices has published the S&P Indices Versus Active (SPIVA®) U.S. Scorecard. This semi-annual scorecard measures the performance of active managers against their respective benchmarks.¹² Exhibit 14 shows that in most calendar-year periods, the majority of mid-cap U.S. equity managers underperformed the S&P MidCap 400.

Active managers have found it difficult to beat the S&P MidCap 400.

Exhibit 14: Percentage of Managers Underperforming the S&P MidCap 400



While 2017 and 2018 offered bright spots for active managers...,

Source: [SPIVA U.S. Year-End 2018 Scorecard](#), S&P Dow Jones Indices LLC. Data as of Dec. 31, 2018. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

Although many active managers found it difficult to beat the S&P MidCap 400, there were some bright spots for them; the majority of active managers outperformed in 2017 and 2018, for example. However, two years of consecutive outperformance hardly signals skill, and studies by S&P Dow Jones Indices have shown a lack of performance persistence among mid-cap equity managers.

...past performance is no guarantee of future success.

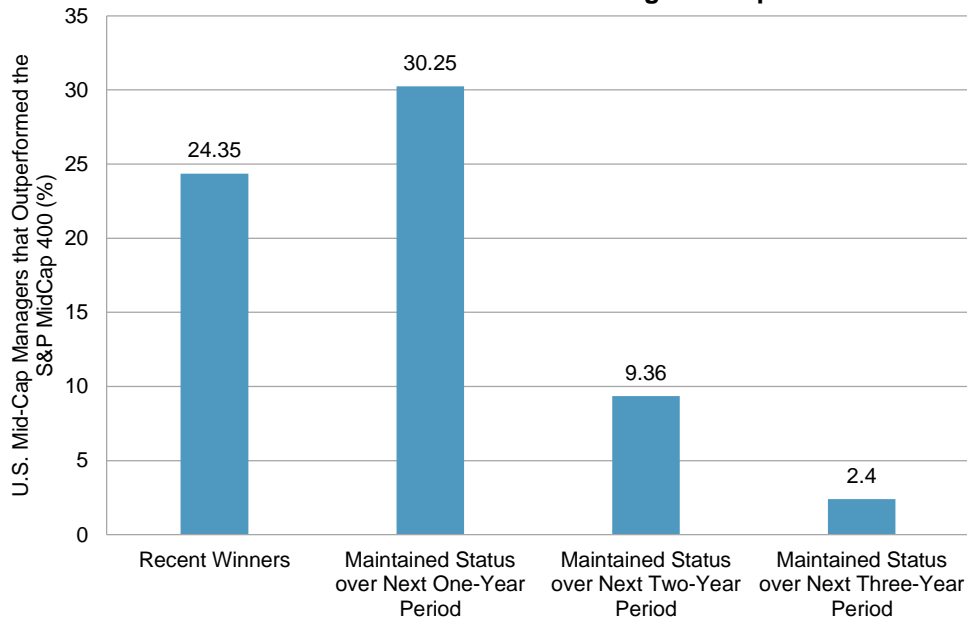
Exhibit 15 shows the typical persistence in outperformance among active U.S. mid-cap equity managers. In particular, using net-of-fees total returns from the University of Chicago’s Center for Research and Security Prices (CRSP) database, we identify each quarter those active U.S. mid-cap equity managers that successfully beat the S&P MidCap 400 over trailing three-year periods. We then see what proportion of these “recent winners” maintained their status in each of the next three one-year periods. Exhibit

¹² For more information, please see S&P Dow Jones Indices’ [SPIVA microsite](#).

15 shows the average proportion of persistence in outperformers between March 2003 and September 2018.¹³

Exhibit 15 tells us that, on average, 24.35% of all mid-cap equity funds managed to qualify as “recent winners.”¹⁴ Of these “recent winners,” typically 30.25%, 9.36%, and 2.40% maintained their outperforming status over the following one-, two-, and three-year periods, respectively. For comparison, if performance persistence was determined by luck alone, we would expect 50%, 25%, and 12.5% of “recent winners” to continue to outperform the S&P MidCap 400 over the various horizons.

Exhibit 15: Lack of Performance Persistence among Mid-Cap Active Funds



On average, only 2.40% of “recent winners” maintained their status in each of the following three years.

The persistence of “recent winners” was worse than would be expected under luck alone.

Source: *Fleeting Alpha: The Challenge of Consistent Outperformance*, S&P Dow Jones Indices LLC. Data from March 2003 to September 2018. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

As a result, not only have many active managers failed to beat the S&P MidCap 400, but the typical performance persistence among outperformers was worse than would be expected under luck alone. Hence, indexing in mid-caps may be an attractive alternative for many market participants.

MID-CAPS IN A PORTFOLIO CONTEXT

We have shown that mid-cap stocks have higher risk-adjusted returns than their large- and small-cap counterparts over several horizons. In this section, we explore the possibility of incorporating a core mid-cap allocation in a stylized portfolio context. To do so, we construct three hypothetical portfolios.

¹³ For more information, see Liu, Berlinda, Hamish Preston, and Aye Soe, “[Fleeting Alpha: The Challenge of Consistent Outperformance](#),” S&P Dow Jones Indices, February 2019.

¹⁴ There were an average of 393 mid-cap funds analyzed each quarter between March 2003 and September 2018.

Each hypothetical portfolio maintains a fixed 40% allocation to both the S&P 500 and the Bloomberg Barclays U.S. Aggregate Bond Index. The remaining 20% is then allocated to the S&P 500, the S&P MidCap 400, and the S&P SmallCap 600, giving us the hypothetical “60/40 Blend,” “Mid Blend,” and “Small Blend” portfolios, respectively. Exhibit 16 provides a breakdown of the equity allocations in each case. Each portfolio rebalances back to its specified weights at each year-end.

Incorporating mid-caps in a multi-asset portfolio may be an attractive option for market participants.

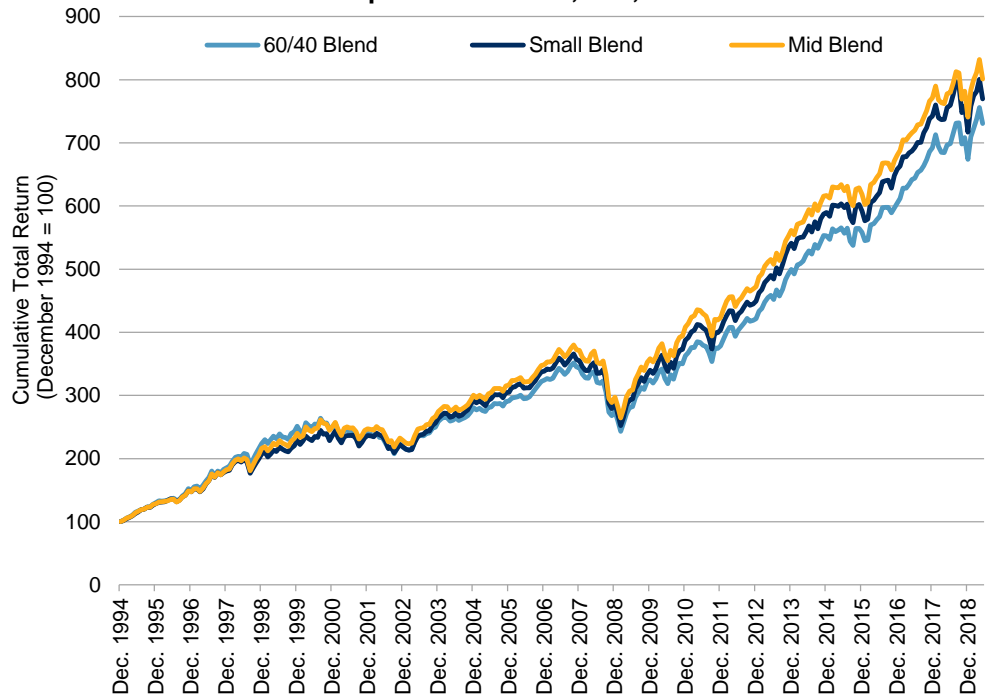
Exhibit 16: Hypothetical Portfolio Composition

PORTFOLIO	BLOOMBERG BARCLAYS U.S. AGGREGATE BOND INDEX	EQUITY		
		S&P 500	S&P MIDCAP 400	S&P SMALLCAP 600
60/40 Blend (%)	40	60	-	-
Mid Blend (%)	40	40	20	-
Small Blend (%)	40	40	-	20

The 60/40 Blend, Mid Blend, and Small Blend portfolios are hypothetical portfolios. Source: S&P Dow Jones Indices LLC. Table is provided for illustrative purposes.

Exhibit 17 shows the cumulative total returns of each of the hypothetical portfolios from December 1994 to December 2018. Exhibit 18 provides the summary statistics.

Exhibit 17: Total Return Comparison of 60/40, Mid, and Small Blend Portfolios



The hypothetical “Mid Blend” portfolio outperformed the “60/40 Blend.”

The 60/40 Blend, Small Blend, and Mid Blend portfolios are hypothetical portfolios. Source: S&P Dow Jones Indices LLC. Data from Dec. 30, 1994, to May 31, 2019. Performance based on monthly total return in USD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

Exhibit 18: Statistics Summary of Indices and Blend Portfolios

STATISTIC	S&P 500	S&P SMALLCAP 600	S&P MIDCAP 400	BLOOMBERG BARCLAYS U.S. AGGREGATE BOND INDEX	60/40 BLEND	SMALL BLEND	MID BLEND
Returns (Annualized, %)	9.67	10.78	11.70	5.52	8.45	8.69	8.86
Volatility (Annualized, %)	14.64	18.41	16.98	3.48	8.75	9.03	9.00
Return/Risk	0.66	0.59	0.69	1.59	0.97	0.96	0.99

The 60/40 Blend, Small Blend, and Mid Blend portfolios are hypothetical portfolios. Source: S&P Dow Jones Indices LLC. Monthly data from Dec. 30, 1994, to May 31, 2018. Index performance based on total returns in USD. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

The “Mid Blend” portfolio offered slightly better risk-adjusted returns than the “Small Blend.”

Exhibits 17 and 18 show that incorporating mid-caps within an equity/bond portfolio resulted in higher risk-adjusted returns than both the 60/40 and the “Small Blend” portfolios. These results were driven by the “Mid Blend’s” higher returns compared to the 60/40 portfolio, and a combination of higher returns and lower volatility compared to the “Small Blend.”

CONCLUSION

Mid-cap securities outperformed their large-cap and small-cap counterparts over longer-term investment horizons. Excess returns analysis shows that mid-cap securities had higher positive exposure to the size factor than large-caps and lower exposure to the quality factor than small-caps. Further, holdings-based analysis also shows that security selection played a significant role in explaining the S&P MidCap 400’s relative performance.

Even considering the relative importance of stock selection in explaining the S&P MidCap 400’s outperformance, the majority of active mid-cap managers underperformed the S&P MidCap 400 since 2001. And within a portfolio context, incorporating a core allocation to mid-caps offered better diversification benefits, with higher risk-adjusted returns.

The above findings suggest index-based solutions within the mid-cap space can potentially be an effective, lower-cost alternative to active managers.

The findings suggest index-based solutions within the mid-cap space could be an effective, lower-cost alternative to active managers.

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