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U.S. Equities

LONG-TERM BENEFITS OF THE T. ROWE PRICE APPROACH TO ACTIVE MANAGEMENT

- T. Rowe Price has demonstrated that skilled active management, backed by in-depth fundamental research, can add value for clients over longer time horizons. Focusing solely on short-term relative performance could be a critical mistake, as active portfolio strategies may take time to come to fruition.
- Research has shown that specific market environments are often associated with periods of active underperformance and outperformance. Research also indicates that some specific manager characteristics may contribute to long-term active success.
- We reviewed the performance of 18 T. Rowe Price institutional diversified active U.S. equity strategies over the 20 years ending in 2016, or since inception in cases where the strategy had less than a full 20-year track record. On average, the strategies included in the study generated positive excess returns, net of fees, versus their designated benchmarks over rolling 1-, 3-, 5-, and 10-year periods.[1]
- The likelihood that T. Rowe Price's diversified U.S. equity strategies would outperform the relevant benchmarks typically increased as rolling time periods were extended.
- We attribute the value we have been able to create for our U.S. equity clients to the strengths of our underlying investment process and research platform, which we believe match many of the characteristics linked to active management success.

[1] Given that the U.S. equity market is generally considered the world's most efficient, transparent market, we believe it provides a strong test for active management skill. See the appendix (page 10) for additional information on the performance study methodology.

Evaluating managers based on quarterly or even annual results can be difficult and potentially misleading. Successful active strategies often take time to bear fruit...

Most sophisticated investors are aware of the pitfalls of overreacting to short-term market trends—a habit that can lead to disappointing long-term returns. Capital markets are volatile, and investors who rush to sell or buy assets based solely on their recent performance may find they've taken on more risk than they expected.

The same principle applies to actively managed investments—those that seek to add value for clients through security selection, sector rotation, factor weighting, or other techniques. Like the markets themselves, active performance tends to be volatile. Evaluating managers based on quarterly or even annual results can be difficult and potentially misleading. Successful active strategies often take time to bear fruit, and contrarian bets are rarely rewarded immediately. Attractive growth opportunities may be prospective, not immediate, and undervalued companies may remain undervalued for months or years.

The academic literature is clear on the obvious problem that the "average" active manager faces in seeking to generate excess returns, especially net of fees and other costs. Over time, the positive and negative excess returns of active managers as a group have tended to balance out, leaving fees and other costs as a net drag on relative performance.

However, while we recognize the virtues of passive index strategies—and employ indexed components in some of our asset allocation strategies—we do believe strongly that skilled, risk-aware active management has the potential to add value for clients over longer-term time horizons.

Evaluating active manager performance requires investors and/or their financial advisors to distinguish between the signal and the noise—that is, to see past the many factors that may generate volatility in active returns and paint a distorted short-term picture (either positive or negative) of manager skill.

Active Performance Is Noisy in the Short Term

The first point to recognize is that active performance—active equity performance, in particular—can be extremely volatile over the short run, as seen by the trends in manager rankings in four key size/style categories in the eVestment Alliance database over the past two decades (Figure 1).[2]

While aggregate active outperformance will tend to equal aggregate underperformance over time, that may mean a relatively small number of managers outperforming a benchmark by wide margins while a large majority of managers

Figure 1

Rolling one-year periods ended 12/31/2016

eVestment Manager Categories

U.S. Large Growth 251 Managers

U.S. Large Value 299 Managers

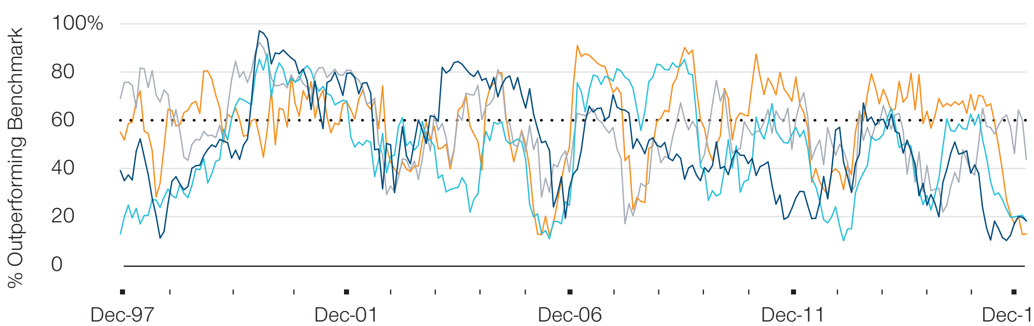
U.S. Small Growth 152 Managers

U.S. Small Value 192 Managers

Sources: Zephyr StyleAdvisor and eVestment Alliance; data analysis by T. Rowe Price.

Active performance can be very volatile over the short run

Percentage of managers in eVestment Alliance database outperforming their category and style benchmarks (net of fees)



Active performance can vary widely over short-term periods due to market trends or other factors. The result is a high degree of volatility, or statistical "noise."

[2]Based on relative performance of the strategies in their respective categories in the eVestment Alliance database, net of fees, as of December 31, 2016. Size and style categorization is by eVestment Alliance. The performance of large growth managers was measured against the Russell 1000 Growth Index, large value managers against the Russell 1000 Value Index, small growth managers against the Russell 2000 Growth Index, and small value managers against the Russell 2000 Value Index.

Note that past performance data throughout this material is not a reliable indicator of future performance.

Figure 2

Active managers may lead in bear markets, lag in bull markets

Manager performance versus benchmark performance (net of fees)

Rolling one-year periods ended 12/31/2016

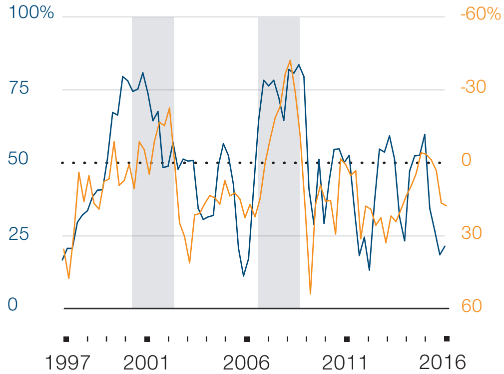
% of U.S. Large Value Managers Outperforming Benchmark

Russell 1000 Value Index Returns (Reversed)

Bear Markets

Correlation: -0.56

U.S. Large Value



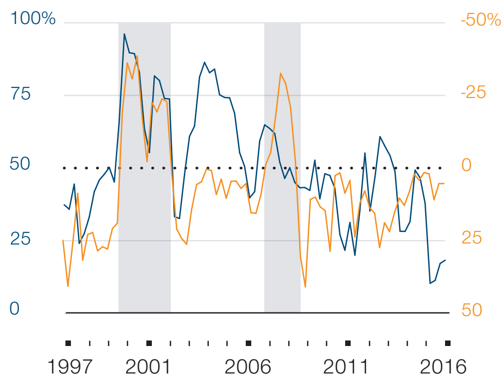
% of U.S. Large Growth Managers Outperforming Benchmark

Russell 1000 Growth Index Returns (Reversed)

Bear Markets

Correlation: -0.44

U.S. Large Growth



Sources: Zephyr StyleAdvisor, eVestment Alliance, and Russell; data analysis by T. Rowe Price.

Active managers, as a group, have tended to outperform in bear markets by limiting downside volatility. Market performance has been inverted in the above charts to make that point clearer.

slightly underperform—or vice versa. This balance can reverse very quickly. When return dispersion is low, manager and benchmark performance may differ by only a handful of basis points, further magnifying the volatility of active performance rankings when return differentials widen again.

Times When Active Outperforms

Within that short-term noise, more predictable—or at least more cyclical—patterns also may be found. Research has identified several broad market environments in which active equity managers, in general, may be more likely to outperform.

These include:

- **Bear markets:** Research suggests that active U.S. equity managers have had a relatively higher chance of outperforming when market performance is poor (Figure 2). At least one study has argued that this effect persisted even after differences in exposure to market risk (i.e., beta) were taken into account, suggesting that active managers have provided a certain amount of active performance improvement in more volatile markets.[3]
- **High return dispersion:** When the correlation of returns within a benchmark is low, active managers as a whole may have more opportunities to add value through security selection or sector rotation.
- **Volatile markets:** Figures 2 and 3 both suggest that active U.S. equity managers as a group have been somewhat more likely to outperform in periods when market returns have been more variable.

Over longer time horizons, periods of extreme active underperformance or outperformance have tended to revert toward the mean, smoothing out some of the noise that dominates quarterly and annual results. This tendency is highlighted in Figure 4 (page 4), which shows relative active manager performance in the same four eVestment Alliance

Figure 3

When return dispersion is high, active managers may have more opportunities to add value

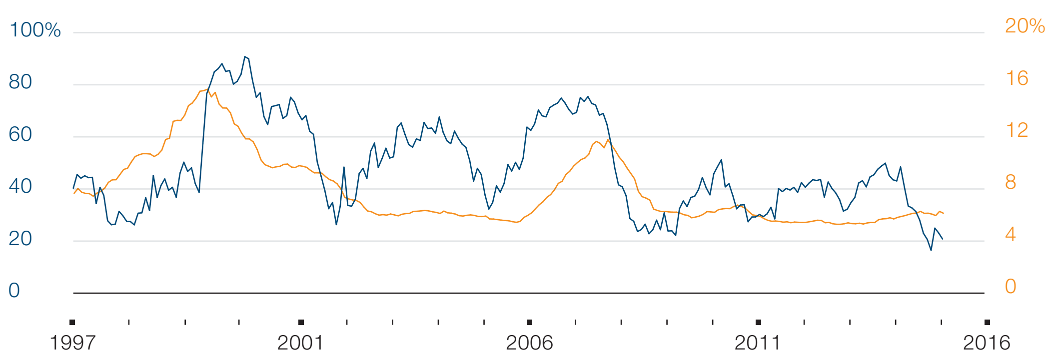
Active manager performance versus return dispersion (net of fees)

Rolling one-year periods ended 12/31/2016

% of U.S. Large Core Managers Outperforming the Russell 1000 Index

Average Dispersion of Monthly Returns in the Russell 1000 Index

Correlation: 0.45



Sources: Zephyr StyleAdvisor, eVestment Alliance, and Russell; data analysis by T. Rowe Price.

[3]Kosowski, "Do Mutual Funds Perform When It Matters Most? U.S. Mutual Fund Performance and Risk in Recessions and Expansions," *Quarterly Journal of Finance*, Vol. 1, No. 3, 2011.

Figure 4

Rolling periods ended 12/31/2016

eVestment Manager Categories

U.S. Large Growth 251 Managers

U.S. Large Value 299 Managers

U.S. Small Growth 152 Managers

U.S. Small Value 192 Managers

Active performance has been more stable over longer time horizons

Percentage of managers in the eVestment Alliance database outperforming their benchmarks (net of fees)

The charts above show how active performance has tended to offer a more consistent picture as time periods extend, smoothing out some of the noise that dominates one-year periods.

Sources: Zephyr StyleAdvisor and eVestment Alliance; data analysis by T. Rowe Price.

categories as in Figure 1 (page 2), but across progressively longer rolling time periods.[4]

The influence of longer-term cyclical factors is now more visible. Over the entire 20-year time frame, the percentage of managers outperforming their benchmarks in most of the eVestment Alliance categories shown has typically fluctuated around the 50% mark. Small-value managers have shown a tendency toward outperformance over recent 10-year rolling periods, perhaps reflecting the financial sector's extremely heavy weight in the Russell 2000 Value Index (almost 33% as of December 31, 2016) and the effect this had on relative performance during the global financial crisis and its aftermath.

Performance of T. Rowe Price Diversified U.S. Equity Strategies

Looking at broad historical trends can be enlightening when it comes to evaluating the performance of active managers as a group. But it doesn't tell us much about the question investors are probably most interested in: Can my active manager generate positive excess returns after management fees and other costs?

For investors with longer time horizons—such as pension plan sponsors—we believe this question is best answered across multiyear periods (or even multiple market cycles) to filter out the short-term active volatility described above. However, the standard 1-, 3-, 5-, and 10-year return histories typically shown to clients and prospective investors—and used in many industry performance studies—provide only snapshots of past performance as of a current date. To gain a clearer picture of manager skill, we believe more intense investigation is required.

As active equity managers, we are primarily interested in whether our own investment process—which emphasizes bottom-up fundamental analysis, in-depth research coverage, and collaboration across size and style categories—has created long-term value for our clients. For a better understanding of this issue, we conducted a study of the performance of T. Rowe Price's institutional diversified U.S. equity strategies over the 20 years ended December 31, 2016 (or since inception for strategies that lacked a full 20-year track record).

Our study included 18 of the 29 active institutional diversified U.S. equity strategies currently advised by T. Rowe Price. In instances where a portfolio manager managed multiple strategies in a particular sub-asset class style (e.g., U.S. small-cap growth), we used only the strategy with the highest assets

[4]Based on the same eVestment Alliance manager categories and benchmark comparisons used in Figure 1 (page 2).

under management to avoid double counting.[5] The strategies included in our study represented approximately 78% of total U.S. equity assets in the domestic and global equity strategies advised by the firm as of December 31, 2016. The designated benchmark for each strategy, and the date of its inclusion in the study, are shown in Figure 5.

For each strategy in the study, we examined performance over rolling 1-, 3-, 5-, and 10-year periods (rolled monthly) from December 31, 1996, through December 31, 2016. We then calculated excess returns (positive or negative) for each strategy for each time period relative to the appropriate benchmark—the designated style benchmark used in T. Rowe Price performance reports and disclosures. Strategy returns were calculated net of fees, based on the highest breakpoint fee for T. Rowe Price institutional U.S. equity clients.

For each strategy, we calculated hit rates (the percentage of periods in which the strategy outperformed its benchmark) and average returns relative to that benchmark for each time frame (i.e., over all rolling 1-, 3-, 5-, and 10-year periods).[6] The results are displayed in Figures 6 and 7 (page 6).

Figure 5

The performance study universe

T. Rowe Price strategies, benchmarks, and inclusion dates

Strategy	Designated Benchmark	Inclusion Date
U.S. Capital Appreciation Composite	S&P 500 Index	12/31/1996
U.S. Dividend Growth Equity Composite	S&P 500 Index	12/31/1996
U.S. Growth Stock Composite	Russell 1000 Growth Index	12/31/1996
U.S. Large-Cap Core Growth Equity Composite	Russell 1000 Growth Index	12/31/1996
U.S. Large-Cap Equity Income Composite	Russell 1000 Value Index	12/31/1996
U.S. Large-Cap Growth Equity Composite	Russell 1000 Growth Index	11/30/2001
U.S. Large-Cap Value Equity Composite	Russell 1000 Value Index	12/31/1996
U.S. Mid-Cap Growth Equity Composite	Russell Midcap Growth Index	12/31/1996
U.S. Mid-Cap Value Equity Composite	Russell Midcap Value Index	12/31/1996
U.S. Multi-Cap Growth Equity Composite	Russell 1000 Growth Index	4/30/2000[7]
U.S. Small-Cap Core Equity Composite	Russell 2000 Index	12/31/1996
U.S. Small-Cap Growth II Equity Composite	Russell 2000 Growth Index	12/31/1996
U.S. Diversified Small-Cap Value Equity Composite[8]	Russell 2000 Value Index	12/31/1996
U.S. Smaller Companies Equity Composite	Russell 2500 Index	7/31/2001
U.S. Structured Active Mid-Cap Growth Equity Composite	Russell Midcap Growth Index	12/31/1996
QM U.S. Small-Cap Growth Equity Composite[9]	Russell 2000 Growth Index	4/30/1997
U.S. Structured Research Equity Composite	S&P 500 Index	5/31/1999
U.S. Value Equity Composite	Russell 1000 Value Index	12/31/1996

Source: T. Rowe Price.

[5]Our performance study covered composites for 18 institutional diversified U.S. equity strategies that had accounts and were actively being offered by T. Rowe Price as of December 31, 2016. It excluded any dormant or previously terminated composites. Composites for four institutional diversified U.S. equity strategies currently offered by T. Rowe Price also were excluded from the study due to their extremely limited longer-term performance track record. U.S. Large-Cap Core Equity incepted in June 2009 and U.S. Amplified Structured Research Equity incepted in December 2010, providing only 31 and 13 5-year rolling periods, respectively, making a long-term performance analysis unreliable. QM U.S. Small & Mid-Cap Core Equity and QM U.S. Value Equity both incepted at the end of February 2016 and thus did not have any completed performance periods in the time frames covered by the study. We believe inclusion of the four strategies would have been inappropriate. Three socially responsible strategies (U.S. Large-Cap Growth Socially Responsible Equity, U.S. Large-Cap Value Socially Responsible Equity, and U.S. Large-Cap Core Growth Socially Responsible Equity) were also excluded from the study. The composites for these strategies consist of portfolios for clients that mandate specific stock restrictions. The portfolio manager in turn alters the base strategy, often substituting a different holding for the restricted security. Given that the restrictions are client-dictated and that the portfolios are otherwise managed in a manner similar to the base strategy, we felt it was appropriate to exclude these strategies. More detailed information about the study methodology can be found in the appendix on page 10.

[6]Excess returns for the 3-, 5-, and 10-year rolling periods were annualized.

[7]U.S. Multi-Cap Growth Equity incepted on December 31, 1995, but was added to the study as of the date of an investment program change that broadened its objective to include investing in a diversified portfolio of U.S. growth companies. See the appendix (page 10) for additional information.

[8]Formerly the U.S. Small-Cap Value IV Equity Composite.

[9]Formerly the U.S. Structured Active Small-Cap Growth Equity Composite.

Results of T. Rowe Price Performance Study

We found that for most T. Rowe Price institutional diversified U.S. equity strategies, shorter-term hit rates (over rolling one-year periods, in this case) averaged significantly higher than the 50% mark one would normally expect for the average active manager over an extended time frame—like the 20 years covered by our study. Sixteen of the 18 strategies outperformed in more than half of all one-year rolling periods, while only two strategies underperformed half the time or more.

Short-term excess returns net of fees also tended to be significantly more positive than for the average active manager. Sixteen of the 18 strategies showed positive excess returns, on average, across the one-year rolling periods covered by the study. Two strategies showed negative one-year average excess returns (Figure 7, first column). Hit rates and excess return results may differ depending on a particular strategy's overall performance pattern—a strategy that outperformed its index by a large margin in a relatively small number of periods, for example, might show positive excess returns but a negative (i.e., below 50%) hit rate.

Positive results for most T. Rowe Price diversified U.S. equity strategies over longer time horizons

Rolling periods 12/31/1996 through 12/31/2016

Figure 6

Hit rate: percentage of rolling periods with returns higher than benchmark (net of fees)

Figure 7

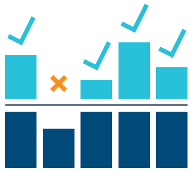
Average annualized excess returns over benchmark (net of fees)

	Figure 6 Rolling periods				Figure 7 Rolling periods			
Strategy	1-Year	3-Year	5-Year	10-Year	1-Year	3-Year	5-Year	10-Year
U.S. Capital Appreciation	53%	65%	80%	100%	2.56%	4.21%	5.09%	4.83%
U.S. Dividend Growth Equity	52	57	77	97	-0.08	0.55	1.15	1.18
U.S. Growth Stock	62	72	83	95	1.60	2.45	2.69	2.32
U.S. Large-Cap Core Growth Equity	60	77	86	100	1.11	1.83	2.06	1.69
U.S. Large-Cap Equity Income	37	46	64	69	-0.33	0.06	0.40	0.43
U.S. Large-Cap Growth Equity	58	75	93	100	1.71	1.44	1.17	1.12
U.S. Large-Cap Value Equity	52	65	80	99	0.44	0.66	0.81	0.83
U.S. Mid-Cap Growth Equity	69	86	99	100	1.97	2.94	3.50	3.25
U.S. Mid-Cap Value Equity	50	56	67	93	0.82	1.15	1.28	1.32
U.S. Multi-Cap Growth Equity	66	75	80	100	2.14	1.83	1.72	1.85
U.S. Small-Cap Core Equity	68	76	86	100	2.17	2.42	2.46	2.05
U.S. Small-Cap Growth II Equity	73	92	100	100	3.79	4.19	4.19	3.53
U.S. Diversified Small-Cap Value Equity	58	78	94	100	1.11	1.64	1.93	2.08
U.S. Smaller Companies Equity	62	65	79	100	0.57	0.92	1.09	1.13
U.S. Structured Active Mid-Cap Growth Equity	55	64	75	79	1.27	1.73	1.68	1.29
QM U.S. Small-Cap Growth Equity	73	75	82	100	1.29	1.77	1.77	1.49
U.S. Structured Research Equity	76	80	89	100	0.93	0.76	0.75	0.77
U.S. Value Equity	59	76	88	100	1.30	1.51	1.53	1.42

Periods with positive hit rates or positive excess returns.

Sources: T. Rowe Price, Russell, and Standard & Poor's; data analysis by T. Rowe Price.

Past performance is not a reliable indicator of future performance.



Hit rates

The hit rate records the percentage of times a strategy beat its designated benchmark, net of fees and trading costs, over a specified time period (e.g., 10 years). Think of this as a measure of how often a client might review his or her regular performance reports and find that a strategy has outperformed.

We've defined a positive hit rate as a strategy beating the performance of its designated benchmark in more than half of the periods measured.

See Figure 6 (page 6) for details on the specific hit rates for each strategy over 1-, 3-, 5-, and 10-year rolling time periods.

One of the more consistent findings in the study was that strategy performance tended to improve over most longer time periods.

- While 17 of the 18 strategies had positive hit rates (i.e., higher than 50%) over rolling three-year periods, all 18 had positive five-year and 10-year hit rates.
- Two-thirds of the strategies (12 of 18) outperformed their benchmarks over every rolling 10-year period. Another four strategies outperformed in 93% or more of all rolling 10-year periods.
- All but two of the 18 strategies had positive excess returns, on average, over rolling one-year periods, while all 18 strategies had positive average excess returns over three-year, five-year, and 10-year rolling periods.
- Excess returns tended to increase over most—but not all—longer-term time frames. For 15 of 18 strategies, five-year annualized excess returns were higher, on average, than one-year average excess returns.
- Average 10-year annualized excess returns were higher than average one-year returns in 13 of 18 cases.

Our study indicates that a majority of T. Rowe Price's institutional diversified U.S. equity strategies have generated positive active performance, net of fees and trading costs, over the past 20 years. However, there were some potential biases inherent in the study that we needed to address.

The diverse range of investment objectives represented in the study, for example, made it inappropriate to calculate simple performance averages across all 18 strategies. The universe of smaller stocks is typically less deeply researched than the large-cap market, potentially making it easier for small-cap managers to generate excess returns by exploiting informational inefficiencies. Thus, the excess returns for the small-cap managers in the study could have biased a simple average higher, concealing relatively weak results for large-cap managers.

“One of the more consistent findings in the study was that strategy performance tended to improve over most longer time periods.

Performance averages could also be distorted by the fact that five of the 18 strategies did not have histories that spanned the entire 20-year study period, resulting in an extremely small number of longer-term performance periods for some strategies.[10]

As of December 31, 2016, for example, the U.S. Large-Cap Growth Equity Composite had completed only 62 rolling 10-year periods since its inception at the end of November 2001. Yet results for all 18 strategies would have equal weight in a simple average, whatever their longevity.

To correct for these potential biases, we divided the 18 strategies in the study into three capitalization categories—large-, mid-, and small-cap—based on their designated benchmarks. We then calculated average hit rates and average excess returns for each category. These averages were time-weighted—that is, the results were weighted by the percentage of the total performance periods in each category that were provided by each strategy.[11] The results of our category analysis are shown in Figure 8 (average hit rates), and Figure 9 (excess returns) on page 9.[12]

- As one might reasonably expect, time-weighted excess returns for T. Rowe Price's small-cap managers were, on average, stronger than for large-cap managers—with mid-cap managers, not surprisingly, falling somewhere in between.
- Time-weighted average results for small-cap managers were especially strong (relative to mid- and large-cap managers) over shorter-term periods. However, average excess returns for large-, mid-, and small-cap managers all weakened slightly at the 10-year time horizon.
- Time-weighted average hit rates for T. Rowe Price large-cap managers were positive (above 50%) over all time horizons. Average excess returns were positive over all periods.
- Time-weighted hit rates for all three manager categories consistently increased as time horizons were extended.

Disciplined Investing for the Long Run

Although the study appears to confirm that T. Rowe Price U.S. equity managers, on average, have been able to add value net of fees and trading costs, especially over longer time horizons, the same is clearly not true for all our strategies across all time periods. Like other active managers, we have encountered prolonged market environments that were unfriendly either to our overall philosophy or to specific size and style disciplines. A number of T. Rowe Price growth strategies, for example, underperformed in the 1990s after their managers, concerned about lofty valuations, declined to match the soaring weights for technology stocks in capitalization-weighted growth indexes.

However, underperformance turned into active outperformance for some strategies when markets normalized and cap-weighted

[10]Four strategies did not have full 20-year performance histories for the period covered by the study: U.S. Large-Cap Growth Equity, U.S. Smaller Companies Equity, QM U.S. Small-Cap Growth Equity, and U.S. Structured Research Equity. A fifth strategy, U.S. Multi-Cap Growth Equity, did not have a full 20-year history for its current strategy objective (see footnote 7).

[11]The time weights for each strategy are shown in the appendix (Figure A2), page 12.

[12]The capitalization categories for each strategy are shown in the appendix (Figure A2), page 12.

18 of 18

diversified U.S. equity strategies had positive hit rates over rolling five-year periods.

12

diversified U.S. equity strategies outperformed their benchmarks over every rolling 10-year period.

100%

of diversified U.S. equity strategies had positive excess returns over both rolling five-year and rolling 10-year periods.

benchmarks were dragged lower by their heavy exposure to deflating technology stocks. That episode suggests a disciplined investment approach can pay off over the long run. Still, the fact that cyclical market factors can have such persistent effects suggests that the performance of individual strategies also should be interpreted with caution—especially for those with track records that do not span the full 20 years covered by our study.

A Focus on Long-Term Value Creation

If, as our study suggests, it is possible for active U.S. equity managers to add value over longer time horizons, what factors might influence their degree of success? Academic research indicates there are some common characteristics associated with active manager outperformance.[13]

One of the most important factors, obviously, is cost. While studies have suggested that some active managers do exhibit skill in outperforming the market before costs, that performance edge typically disappears, on average, after trading expenses and fees are subtracted.[14] Accordingly, active managers that can hold costs down would appear to have an advantage over their peers. But more substantive, investment-related factors also have been linked to strong active performance.

These include:

- **Stock selection skill:** Some researchers have concluded that active equity managers as a group have the ability to select stocks that outperform the broad market on a before-cost basis.[15]
- **Manager tenure:** Active strategies with stable, experienced management teams that have been in place for some time appear to be more likely to outperform.[16]
- **Management structures:** Teams that feature clear lines of authority appear to outperform those with less well-defined organizational roles.[17]

To the extent T. Rowe Price's institutional diversified U.S. equity strategies have been able to deliver strong long-term active performance, net of fees, over the past two decades, we believe it reflects the strengths of our investment process in these key areas.

Fundamental analysis, backed by a well-resourced global research platform, is the core of our approach, providing a strong foundation for bottom-up stock picking. Our 154 equity research professionals follow almost 2,500 public companies worldwide—equaling 63% of total global market capitalization.[18] The fact that our analyst team frequently covers a company through every stage of its corporate life cycle—from initial public offering through market leadership—gives our managers a critical informational edge, in our view.

Our portfolio managers also tend to be long-tenured, with an average of 15 years of experience at T. Rowe Price and 20 years in the investment industry.[19] Our recruiting and internal mentoring programs help us attract and develop talented analysts, which in turn provides a pool of experienced candidates to fill open portfolio manager positions. This emphasis on long-term career development historically has resulted in an experienced team with low manager turnover relative to other firms in the industry.

Finally, T. Rowe Price's culture and research structure encourages close collaboration among managers, between managers and analysts, and between our equity and fixed income professionals. We believe a collaborative approach can lead to significant idea sharing and investment decisions that are based on the full breadth of the firm's resources. However, our organizational structure also features clear lines of authority in which the responsibilities of each member of a portfolio management team are appropriately defined and understood.

T. Rowe Price's performance evaluation and compensation practices—such as annual bonuses and long-term incentives—are heavily focused on long-term results. They are also designed to encourage collegiality and cooperation and discourage a "star system" mentality.

[13]Mutual fund net asset value data are the most commonly used by researchers examining active manager performance. Accordingly, many of the studies cited here refer to mutual fund vehicles. However, we believe the research and its conclusions are also applicable to the institutional separate account managers represented by the performance composites used in our study.

[14]See: Fama, French, "Luck versus Skill in the Cross-Section of Mutual Fund Returns," *Journal of Finance*, Vol. 65, No. 5, October 2010; Dellva, Olson, "The Relationship Between Mutual Fund Fees and Expenses and Their Effects on Performance," *Financial Review*, Vol. 33, No. 1, February 1998; and Kacperczyk, Sialm, Zheng, "Unobserved Actions of Mutual Funds," *Review of Financial Studies*, Vol. 21, No. 6, November 2008.

[15]See: Grinblatt, Titman, "The Persistence of Mutual Fund Performance," *Journal of Finance*, Vol. 47, No. 5, December 1992; Culbertson, Nitzsche, O'Sullivan, "Mutual Fund Performance: Skill or Luck?" *Journal of Empirical Finance*, Vol. 15, No. 4, September 2008; Baker, Litov, Wachter, Wurgler, "Can Mutual Fund Managers Pick Stocks? Evidence From Their Trades Prior to Earnings Announcements," *Journal of Financial and Quantitative Analysis*, Vol. 45, No. 5, October 2010.

[16]Golec, "The Effects of Mutual Fund Manager Characteristics on Their Portfolio Performance, Risk and Fees," *Financial Services Review*, Vol. 5, No. 2, 1996.

[17]Luo, Qiao, "On the Team Approach to Mutual Fund Management: Observability, Incentives, and Performance," paper presented at the European Financial Management Association 2014 Annual Meeting, January 12, 2014.

[18]Number of equity research professionals and analyst coverage as of December 31, 2016. Equity analyst staff includes 11 sector portfolio managers, 90 research analysts, 42 associate research analysts, 6 quantitative analysts, and 5 specialty analysts.

[19]As of December 31, 2016.

By remaining focused on the underlying factors that support strong active performance, T. Rowe Price will continue to seek long-term value creation for our U.S. equity clients.

The excess returns shown in Figure 9, below, may seem rather modest relative to the absolute returns that investors typically have been able to achieve in the U.S. equity markets over longer periods. However, even a small improvement in annualized returns can make a significant difference in ending portfolio value over longer time horizons.

Take, for example, a hypothetical equity portfolio that appreciated at a rate equal to the 7.68% annualized total return on the S&P 500 Index over the 20-year period covered by our study. A portfolio that achieved even a 100-basis-point improvement in annualized return over those same 20 years, after all fees and costs, could have increased its ending value by more than 20% (Figure 10).

The data in Figure 10 are hypothetical in nature and are shown for illustrative, informational purposes only. It is not intended to forecast or predict future events. It does not reflect the actual returns of a portfolio or strategy. Certain assumptions have been made for modeling purposes, and no representation or warranty is made as to the reasonableness of the assumptions made or that all assumptions used in achieving the hypothetical returns have been stated or fully considered. Changes in the assumptions may have a material impact on the hypothetical returns presented. Data shown represent the manager's analysis as of December 31, 2016, and are subject to change over time. Actual results experienced by clients may vary significantly from the hypothetical illustrations shown. This information is not intended as a recommendation to buy or sell any particular security.

Positive long-term average hit rates and excess returns within U.S. equity strategy categories

Figure 8

Rolling periods 12/31/1996 through 12/31/2016

U.S. Large-Cap Average (10 strategies)

U.S. Mid-Cap Average (3 strategies)

U.S. Small-Cap Average (5 strategies)

Time-weighted average hit rates

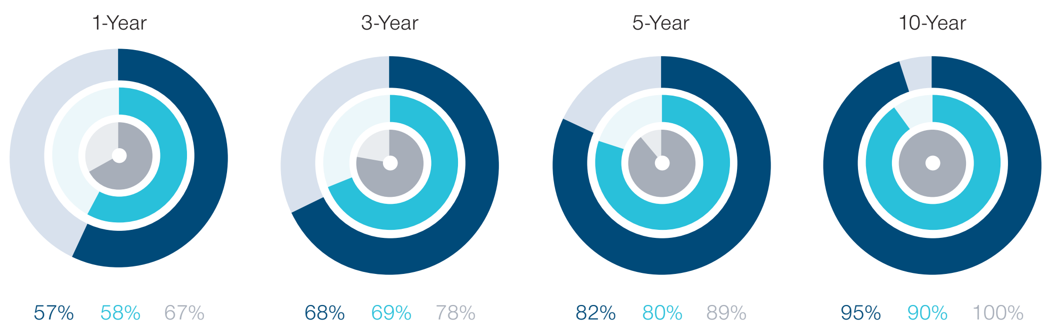
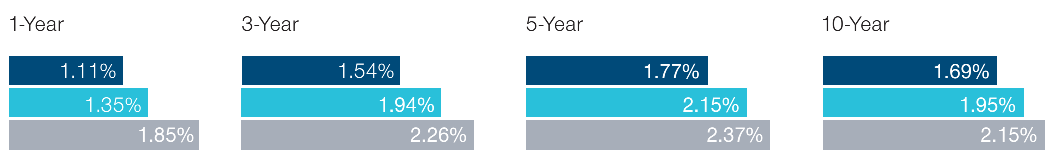


Figure 9

Average annualized time-weighted excess returns (net of fees)



Sources: T. Rowe Price, Russell, and Standard & Poor's; data analysis by T. Rowe Price.

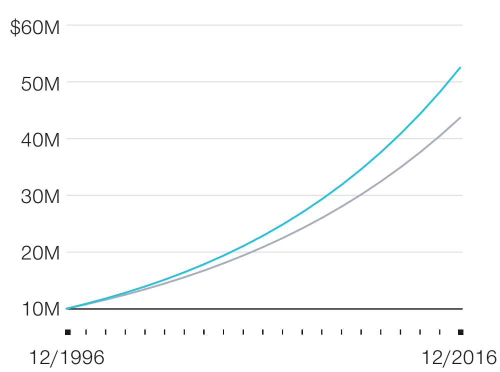
Figure 10

12/31/1996 through 12/31/2016

Hypothetical Portfolio (8.68%: S&P 500 + one percentage point)

S&P 500 Index (7.68%)

Hypothetical results of a $10M investment vs. S&P 500 + one percentage point over 20 years



Source: T. Rowe Price.

Appendix:
STUDY METHODOLOGY

We examined the performance of 18 of T. Rowe Price's current lineup of institutional diversified active U.S. equity strategies over a 20-year period beginning December 31, 1996, and ending December 31, 2016, or since their inception. The 18 institutional composites included in the study were those that had accounts and were actively being offered by T. Rowe Price as of December 31, 2016. The study excluded any dormant or previously terminated composites. Diversified strategies were defined as those that had the ability to invest across one or more U.S. equity categories, such as large-cap growth and large-cap value; mid-cap growth and mid-cap value; small-cap growth and small-cap value; or the core large-, mid-, and small-cap universes. One of the 18 strategies, U.S. Capital Appreciation, also has the ability to invest in fixed income assets but is primarily an equity portfolio and is benchmarked to the S&P 500 Index.

Our study was limited to diversified U.S. equity strategies primarily for two reasons:

- Many of T. Rowe Price's international and global equity products have significantly more limited performance records than our U.S. diversified equity offerings. Combining them in the U.S. diversified equity study could have significantly skewed average performance comparisons over shorter and longer rolling time periods and between the early and later years of the study.
- U.S. equity markets are widely regarded as the world's most efficient, transparent, and intensively researched, making them particularly formidable tests of active management skill.

More specialized sector portfolios—such as T. Rowe Price's Health Sciences and Media & Telecommunications Strategies—were excluded from the study because the narrow, sector-specific performance benchmarks used by these strategies made direct comparisons with diversified strategies inappropriate, in our view. It is our belief that including these strategies would not have had a materially negative effect on the study's conclusions, as most T. Rowe Price sector strategies show positive excess returns against their specialized benchmarks that, in many cases, are larger than for the firm's diversified U.S. equity strategies.

Four of T. Rowe Price's diversified U.S. equity strategies were excluded from the study due to their extremely limited longer-term performance track record. U.S. Large-Cap Core Equity began operations in June 2009, and U.S. Amplified Structured Research Equity began operations in December 2010, making a long-term performance analysis unreliable. QM U.S. Small & Mid-Cap Core Equity and QM U.S. Value Equity both incepted at the end of February 2016 and thus did not have any completed performance periods within the time frames covered by the study. We believe inclusion of these four strategies would have been inappropriate.

Three socially responsible strategies (U.S. Large-Cap Growth Socially Responsible Equity, U.S. Large-Cap Value Socially Responsible Equity, and U.S. Large-Cap Core Growth Socially Responsible Equity) also were excluded from the study. The composites for these strategies consist of portfolios for clients that mandate specific stock restrictions. The portfolio manager in turn alters the base strategy, often substituting a different holding for the restricted security. Given that the restrictions are client-dictated and that the portfolios are otherwise managed in a manner similar to the base strategy, we felt it was appropriate to exclude these strategies.

In cases where one portfolio manager managed multiple strategies in the same sub-asset class style (e.g., U.S. small-cap growth), only the largest composite as measured by assets under management was included in the study to avoid double counting.

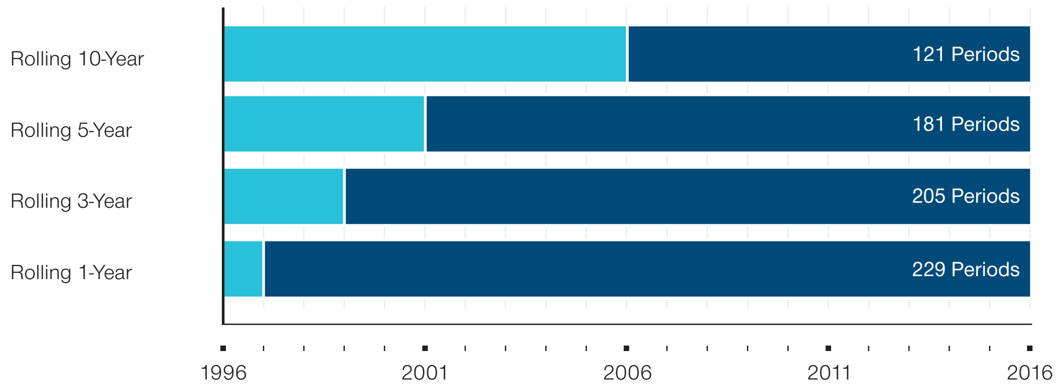
Strategies were included in the study universe as of December 31, 1996, or for strategies without full 20-year track records for the period covered by the study, as of the date of their inception. An exception was the U.S. Multi-Cap Growth Equity Composite, which began operations on December 31, 1995, but was included in the study as of April 30, 2000. Prior to its study inclusion date, U.S. Multi-Cap Growth Equity was a specialized sector strategy focused on the U.S. service sectors. The strategy was added to the study as of the date of an investment program change that broadened its objective to include investing in a diversified portfolio of U.S. growth companies.

Strategy and benchmark return data were taken from T. Rowe Price's internal performance database, which is used by T. Rowe Price to calculate returns for its quarterly, semiannual, and annual client reports; for marketing materials; and for regulatory disclosures. Benchmark returns in the T. Rowe Price database are collected from the index providers—in this case, the Standard & Poor's Corporation and Russell Investments. All study results were based on total returns including dividends reinvested. Performance was calculated net of fees, based on the highest breakpoint fee for T. Rowe Price institutional U.S. equity clients.

Figure A1

Rolling time periods in performance study

First Period in Each Series



Source: T. Rowe Price.

For each strategy in the study, T. Rowe Price analysts calculated 1-, 3-, 5-, and 10-year rolling returns, rolled monthly. Returns for the 3-, 5-, and 10-year rolling periods were annualized. To ensure these periods all covered the equivalent two-decade slice of U.S. equity market history, each rolling series began on December 31, 1996, and ended on December 31, 2016. This produced:

- 229 rolling one-year periods,
- 205 rolling three-year periods,
- 181 rolling five-year, and
- 121 rolling 10-year periods.[20]

For each rolling period, the returns for each strategy's current size and/or style benchmark were subtracted from the strategy return, producing an excess return. The percentage of rolling periods in each time series in which excess returns were positive was then calculated, producing a hit rate for each strategy across each time horizon. Excess returns were averaged across every rolling period in each time frame for each strategy to arrive at the results shown in Figure 7 (page 6).

Firmwide performance averages were calculated for three capitalization categories in the study universe: U.S. large-cap strategies, U.S. mid-cap strategies, and U.S. small-cap strategies. Managers were placed in these categories based on their designated benchmarks:

- Strategies benchmarked to the S&P 500 Index, the Russell 1000 Value Index, or the Russell 1000 Growth Index were included in the U.S. large-cap category.
- Strategies benchmarked to the Russell Midcap Growth Index or the Russell Midcap Value Index were included in the U.S. mid-cap category.
- Strategies benchmarked to the Russell 2000 Index, the Russell 2000 Growth Index, or the Russell 2000 Value Index were included in the U.S. small-cap category.

To adjust for the fact that a number of strategies had performance histories considerably shorter than the full 20-year period covered by the study, performance averages in each category were time-weighted, meaning the results were adjusted to reflect the percentage of the total performance periods in each category that were provided by each strategy. These weights are shown in Figure A2 (page 12). Overall, time-weighting had relatively little effect on average performance results. Time-weighted results for large-cap strategies were somewhat higher compared with simple averages, while time-weighted results for small-cap strategies were somewhat lower.

Due to the relatively small sample sizes in each capitalization category (10 U.S. large-cap strategies, 3 U.S. mid-cap strategies, and 5 U.S. small-cap strategies), the results of this analysis are of limited statistical significance and should be regarded as indicative only.

[20]Since not all strategies had performance records covering the full 20-year study, the number of rolling periods was smaller for some strategies.

Figure A2

Rolling periods ended 12/31/2016

Time weights for T. Rowe Price strategies

Percentage of total rolling performance periods within each capitalization category

Rolling Periods	1-Year	3-Year	5-Year	10-Year
U.S. Large-Cap				
U.S. Capital Appreciation Composite	10.59%	10.67%	10.76%	11.18%
U.S. Dividend Growth Equity Composite	10.59	10.67	10.76	11.18
U.S. Growth Stock Composite	10.59	10.67	10.76	11.18
U.S. Large-Cap Core Growth Equity Composite	10.59	10.67	10.76	11.18
U.S. Large-Cap Equity Income Composite	10.59	10.67	10.76	11.18
U.S. Large-Cap Growth Equity Composite	7.86	7.60	7.25	5.73
U.S. Large-Cap Value Equity Composite	10.59	10.67	10.76	11.18
U.S. Multi-Cap Growth Equity Composite	8.74	8.58	8.38	7.49
U.S. Structured Research Equity Composite	9.25	9.16	9.04	8.50
U.S. Value Equity Composite	10.59	10.67	10.76	11.18
U.S Mid-Cap				
U.S. Structured Active Mid-Cap Growth Equity Composite	33.33	33.33	33.33	33.33
U.S. Mid-Cap Growth Equity Composite	33.33	33.33	33.33	33.33
U.S. Mid-Cap Value Equity Composite	33.33	33.33	33.33	33.33
U.S. Small-Cap				
U.S. Small-Cap Core Equity Composite	21.09	21.22	21.39	22.16
U.S. Small-Cap Growth II Equity Composite	21.09	21.22	21.39	22.16
U.S. Diversified Small-Cap Value Equity Composite	21.09	21.22	21.39	22.16
U.S. Smaller Companies Equity Composite	16.02	15.53	14.89	12.09
QM U.S. Small-Cap Growth Equity Composite	20.72	20.81	20.92	21.43

Source: T. Rowe Price.

Past performance cannot guarantee future results.

Important Information

STANDARDIZED PERFORMANCE

Annualized total returns for periods ended September 30, 2017

As of 9/30/2017 Figures shown in U.S. dollars	Annualized Total Returns 1-Year	3-Year	5-Year	10-Year	Inception Date
U.S. Capital Appreciation Composite (Gross)	**12.99%**	**11.03%**	**13.13%**	**9.27%**	**12/31/1995**
U.S. Capital Appreciation Composite (Net)	12.43	10.48	12.57	8.72	—
S&P 500 Index	18.61	10.81	14.22	7.44	—
U.S. Dividend Growth Equity Composite (Gross)	**15.97**	**11.80**	**14.41**	**8.40**	**12/31/1995**
U.S. Dividend Growth Equity Composite (Net)	15.40	11.25	13.84	7.86	—
S&P 500 Index	18.61	10.81	14.22	7.44	—
U.S. Growth Stock Composite (Gross)	**26.91**	**14.66**	**17.04**	**9.91**	**12/31/1995**
U.S. Growth Stock Composite (Net)	26.29	14.10	16.46	9.36	—
S&P 500 Index	18.61	10.81	14.22	7.44	—
Russell 1000 Growth Index	21.94	12.69	15.26	9.08	—
U.S. Large-Cap Core Growth Equity Composite (Gross)	**27.91**	**15.05**	**17.83**	**10.35**	**12/31/1995**
U.S. Large-Cap Core Growth Equity Composite (Net)	27.28	14.48	17.25	9.81	—
S&P 500 Index	18.61	10.81	14.22	7.44	—
Russell 1000 Growth Index	21.94	12.69	15.26	9.08	—
Lipper Large-Cap Growth Funds Index	21.44	11.19	14.28	7.56	—
U.S. Large-Cap Equity Income Composite (Gross)	**19.04**	**8.82**	**12.51**	**6.73**	**12/31/1989**
U.S. Large-Cap Equity Income Composite (Net)	18.46	8.28	11.96	6.20	—
S&P 500 Index	18.61	10.81	14.22	7.44	—
Russell 1000 Value Index	15.12	8.53	13.20	5.92	—
U.S. Large-Cap Growth Equity Composite (Gross)	**31.36**	**15.62**	**18.49**	**11.00**	**11/30/2001**
U.S. Large-Cap Growth Equity Composite (Net)	30.72	15.05	17.90	10.45	—
Russell 1000 Growth Index	21.94	12.69	15.26	9.08	—
U.S. Large-Cap Value Equity Composite (Gross)	**17.32**	**9.65**	**14.63**	**7.45**	**3/31/1990**
U.S. Large-Cap Value Equity Composite (Net)	16.74	9.11	14.07	6.91	—
Russell 1000 Value Index	15.12	8.53	13.20	5.92	—
S&P 500 Index	18.61	10.81	14.22	7.44	—
U.S. Mid-Cap Growth Equity Composite (Gross)	**21.16**	**14.70**	**17.33**	**11.01**	**12/31/1995**
U.S. Mid-Cap Growth Equity Composite (Net)	20.44	14.02	16.64	10.35	—
Custom Benchmark - Linked for U.S. Mid-Cap Growth Strategy	17.82	9.96	14.20	8.89	—
Russell Midcap Growth Index	17.82	9.96	14.18	8.20	—
U.S. Mid-Cap Value Equity Composite (Gross)	**14.69**	**10.59**	**14.58**	**9.34**	**7/31/1996**
U.S. Mid-Cap Value Equity Composite (Net)	14.01	9.93	13.90	8.69	—
Russell Midcap Value Index	13.37	9.19	14.33	7.85	—
U.S. Multi-Cap Growth Equity Composite (Gross)	**26.29**	**13.97**	**16.98**	**10.75**	**12/31/1995**
U.S. Multi-Cap Growth Equity Composite (Net)	25.62	13.35	16.34	10.14	—
Russell 1000 Growth Index	21.94	12.69	15.26	9.08	—
Lipper Multi-Cap Growth Funds Index	21.03	10.67	14.32	7.58	—

Net-of-fees performance reflects the deduction of the highest applicable management fee (Model Net Fee) that would be charged based on the fee schedule appropriate to you for this mandate, without the benefit of breakpoints. Please be advised that the composite may include other investment products that are subject to management fees that are inapplicable to you but are in excess of the Model Net Fee. Therefore, the actual performance of all the portfolios in the composite on a net-fee basis will be different, and may be lower, than the Model Net Fee performance. However, such Model Net Fee performance is intended to provide the most appropriate example of the impact management fees would have by applying management fees relevant to you to the gross performance of the composite. **Past performance cannot guarantee future results.**

As of 9/30/2017 Figures shown in U.S. dollars	Annualized Total Returns 1-Year	3-Year	5-Year	10-Year	Inception Date
U.S. Small-Cap Core Equity Composite (Gross)	**20.78%**	**12.81%**	**14.98%**	**10.87%**	**12/31/1995**
U.S. Small-Cap Core Equity Composite (Net)	19.89	11.97	14.13	10.04	—
Russell 2000 Index	20.74	12.18	13.79	7.85	—
U.S. Small-Cap Growth II Equity Composite (Gross)	**25.61**	**15.72**	**18.21**	**12.96**	**12/31/1995**
U.S. Small-Cap Growth II Equity Composite (Net)	24.69	14.86	17.34	12.13	—
Russell 2000 Growth Index	20.98	12.17	14.28	8.47	—
U.S. Diversified Small-Cap Value Equity Composite (Gross)	**24.61**	**13.84**	**14.26**	**9.46**	**12/31/1995**
U.S. Diversified Small-Cap Value Equity Composite (Net)	23.70	13.00	13.41	8.64	—
Russell 2000 Value Index	20.55	12.12	13.27	7.14	—
U.S. Smaller Companies Equity Composite (Gross)	**18.67**	**12.56**	**15.86**	**11.08**	**7/31/2001**
U.S. Smaller Companies Equity Composite (Net)	17.80	11.72	15.01	10.26	—
Russell 2500 Index	17.79	10.60	13.86	8.19	—
U.S. Structured Active Mid-Cap Growth Equity Composite (Gross)	**19.95**	**12.24**	**15.45**	**9.48**	**12/31/1992**
U.S. Structured Active Mid-Cap Growth Equity Composite (Net)	19.24	11.58	14.77	8.83	—
Russell Midcap Growth Index	17.82	9.96	14.18	8.20	—
QM U.S. Small-Cap Growth Equity Composite (Gross)	**20.65**	**12.81**	**16.24**	**11.33**	**4/30/1997**
QM U.S. Small-Cap Growth Equity Composite (Net)	20.00	12.20	15.61	10.73	—
Custom Benchmark - 100% RS2GR to 100% MUSCG on 10/1/2006	19.33	10.75	14.42	9.12	—
U.S. Structured Research Equity Composite (Gross)	**20.37**	**12.04**	**15.04**	**8.27**	**5/31/1999**
U.S. Structured Research Equity Composite (Net)	19.96	11.66	14.64	7.89	—
S&P 500 Index	18.61	10.81	14.22	7.44	—
U.S. Value Equity Composite (Gross)	**17.95**	**9.43**	**15.27**	**8.11**	**12/31/1995**
U.S. Value Equity Composite (Net)	17.37	8.89	14.70	7.57	—
S&P 500 Index	18.61	10.81	14.22	7.44	—
Russell 1000 Value Index	15.12	8.53	13.20	5.92	—

Net-of-fees performance reflects the deduction of the highest applicable management fee (Model Net Fee) that would be charged based on the fee schedule appropriate to you for this mandate, without the benefit of breakpoints. Please be advised that the composite may include other investment products that are subject to management fees that are inapplicable to you but are in excess of the Model Net Fee. Therefore, the actual performance of all the portfolios in the composite on a net-fee basis will be different, and may be lower, than the Model Net Fee performance. However, such Model Net Fee performance is intended to provide the most appropriate example of the impact management fees would have by applying management fees relevant to you to the gross performance of the composite. **Past performance cannot guarantee future results.**

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