

A Systematic Approach to GARP: Construction Methodology and Performance Insights

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Introduction

Growth at a reasonable price (GARP) is a well-recognized investment strategy that combines elements of growth and value investing. While pure growth strategies often pursue high growth but expensive stocks, and pure value strategies may take years to deliver results, GARP aims to strike a balance. This approach focuses on companies that exhibit consistent earnings and sales growth, strong profitability, robust financial strength and reasonable valuations.

To address the needs of market participants, we have developed systematic versions of GARP by creating the S&P GARP Indices. In this paper, we introduce the [S&P 500[®] GARP Index](#), [S&P Midcap 400[®] GARP Index](#) and [S&P SmallCap 600[®] GARP Index](#), highlighting their construction methodology, risk/return profiles, fundamental characteristics and attribution analysis.

Constituent Selection

Exhibit 1 illustrates the relevant style and factor components¹ associated with the GARP indices.

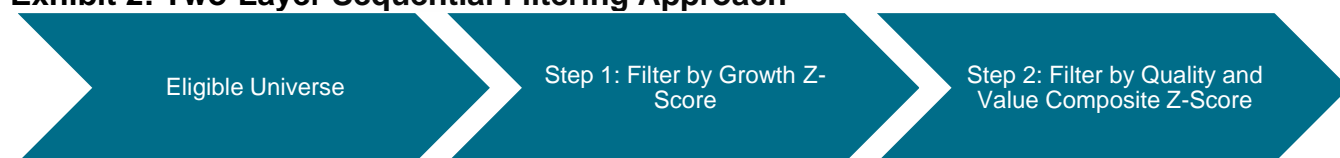
Exhibit 1: Style and Factor Components of the S&P GARP Indices

Style	Factor Components
Growth	1. Three-Year Earnings-per-Share (EPS) Growth 2. Three-Year Sales-per-Share (SPS) Growth
Quality and Value (QV) Composite	1. Return on Equity (ROE) 2. Financial Leverage Ratio 3. Earnings-to-Price Ratio

Source: S&P Dow Jones Indices LLC. Data as of October 2024. Table is provided for illustrative purposes.

To achieve their index objectives, the S&P GARP Indices employ a two-layer sequential filtering approach to select their constituents, as illustrated in Exhibit 2.

Exhibit 2: Two-Layer Sequential Filtering Approach



Source: S&P Dow Jones Indices LLC. Data as of October 2024. Chart is provided for illustrative purposes.

In the first step, stocks are ranked by their growth z-scores,² which are based on the average of their three-year EPS and SPS growth. The top 30% of these highest-ranked stocks remain eligible for inclusion.

In the second step, the remaining stocks are ranked by their QV composite z-scores, with the top half selected for inclusion.³ The QV score is calculated as the average of two quality factors (ROE and financial leverage ratio) and one value factor (earnings-to-price ratio).

¹ Fundamental ratio and winsorization definition are listed in Appendix I.

² Z-score computation details are listed in Appendix II.

³ Please refer to the [index methodology](#) and Appendix III for more details. The indices apply a 20% selection buffer according to the following process. 1: Rank the top growth z-score stocks by QV composite z-score and automatically select the top 80% highest ranking stocks for index inclusion. 2: Select current constituents ranked within the top 120% by QV composite z-score for index inclusion in order of QV composite z-score until the target QV count is reached. 3: If, at this point, there are not enough constituents selected to meet the QV count, select non-constituents based on QV composite z-score ranking until the target count is reached.

Constituent Weighting

Once constituents are selected, they are weighted proportionally to their growth score, with a maximum weight of 5% for any single stock and a 40% limit on sector weight. This approach seeks to provide high growth exposure while limiting the concentration risk associated with mega-cap companies and enhancing sector diversification. Exhibit 3 summarizes the index construction details.

Exhibit 3: S&P GARP Index Construction Details

Category	S&P 500 GARP Index	S&P MidCap 400 GARP Index	S&P SmallCap 600 GARP Index
Underlying Universe	S&P 500	S&P MidCap 400	S&P SmallCap 600
Index Construction	Uses a two-layer sequential filtering approach to select constituents		
Step 1: Selects Eligible Growth Stocks	150	120	180
Step 2: Selects Top-Ranked QV Constituents	75	60	90
Constituent Weighting	Growth Score Weighted	Growth Score Weighted	Growth Score Weighted
Stock Maximum Weight Constraint (%)	5	5	5
Stock Minimum Weight Constraint (%)	0.05	0.05	0.05
Sector Maximum Weight Constraint (%)	40	40	40
Rebalance Frequency	Semiannual	Semiannual	Semiannual

Source: S&P Dow Jones Indices LLC. Data as of October 2024. Table is provided for illustrative purposes.

Performance Review

Historically, including back-tested performance, the S&P GARP Indices have consistently outperformed their respective benchmarks in terms of total return and risk-adjusted return over the long term (see Exhibit 4). In the most recent one-year period, the performance of the S&P 500 GARP Index diverged from that of the [S&P 500](#), primarily due to the latter being driven by a few mega-cap companies. Since constituents are weighted proportionally to their growth score rather than their market capitalization, the performance of the S&P 500 GARP Index more closely aligns with that of the [S&P 500 Equal Weight Index](#) during this period.

Over the long term, the S&P 500 GARP Index has outperformed both the S&P 500 and the S&P 500 Equal Weight Index, providing a possible diversification alternative. Meanwhile, the S&P MidCap 400 GARP Index and S&P SmallCap 600 GARP Index have consistently outperformed their benchmarks significantly, in the short and long term, for both total return and risk-adjusted return.

All three S&P GARP Indices have demonstrated growth characteristics, as evidenced by participation ratios exceeding 100% in both up and down markets compared to their benchmarks.

Exhibit 4: Performance Comparison

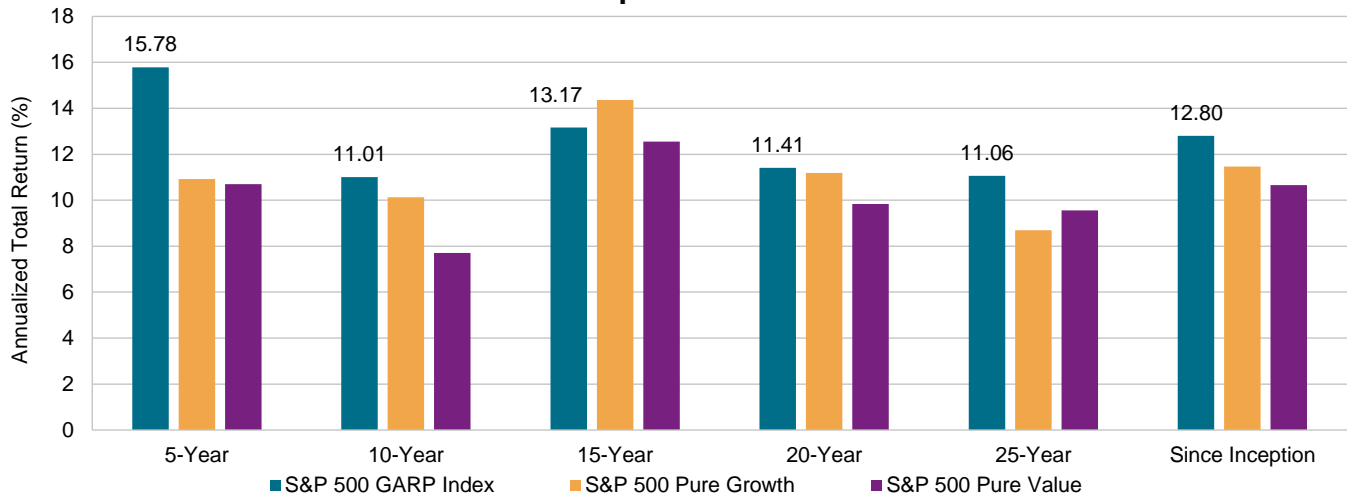
Period	S&P 500 GARP Index	S&P 500 Equal Weight Index	S&P 500	S&P MidCap 400 GARP Index	S&P MidCap 400	S&P SmallCap 600 GARP Index	S&P SmallCap 600
Annualized Return (%)							
1-Year	12.50	19.49	27.14	28.50	18.75	18.93	17.31
3-Year	5.69	5.97	9.38	16.02	5.62	7.16	2.85
5-Year	15.78	12.99	15.92	21.27	12.20	16.28	10.75
10-Year	11.01	10.59	12.98	13.48	9.68	12.78	9.35
15-Year	13.17	13.43	14.26	16.06	12.63	14.14	12.39
20-Year	11.41	10.70	10.65	13.66	10.40	11.09	9.93
25-Year	11.06	9.68	7.98	12.90	10.16	11.92	10.03
Since Inception	12.80	10.99	10.38	13.70	11.47	12.10	10.52
Return/Risk							
1-Year	0.84	1.21	1.93	1.22	0.98	0.81	0.75
3-Year	0.31	0.32	0.53	0.64	0.27	0.30	0.13
5-Year	0.76	0.65	0.88	0.82	0.56	0.64	0.45
10-Year	0.60	0.63	0.85	0.62	0.53	0.57	0.46
15-Year	0.74	0.83	0.98	0.79	0.72	0.69	0.64
20-Year	0.62	0.63	0.71	0.66	0.58	0.53	0.50
25-Year	0.60	0.56	0.52	0.62	0.57	0.56	0.51
Since Inception	0.70	0.65	0.68	0.67	0.64	0.58	0.54
Capture Ratio (%)							
Up Months	114.0	104.6	-	112.5	-	105.6	-
Down Months	105.7	102.9	-	105.7	-	100.4	-

Source: S&P Dow Jones Indices LLC. Data from June 30, 1995, to Aug. 31, 2024. Index performance based on total return in USD. The S&P 500 GARP Index was launched on Feb. 25, 2019. The S&P MidCap 400 GARP Index and S&P SmallCap 600 GARP Index were launched on May 1, 2023. All data prior to such date is back-tested hypothetical data. 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.

Balancing Growth and Value

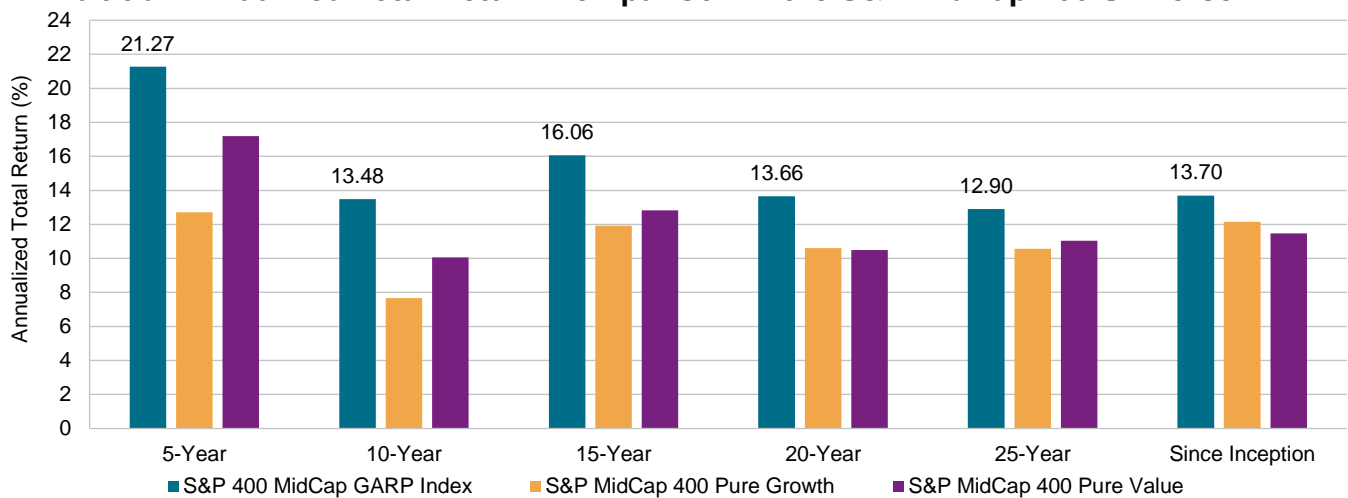
The GARP strategy seeks to strike a balance between growth and value. We assessed the performance of the S&P GARP Indices over various periods, as illustrated in Exhibits 5a, 5b and 5c. Historically, the GARP indices have outperformed their corresponding pure growth and pure value strategies over both the long and short term with respect to total return within the S&P 500, [S&P MidCap 400](#) and [S&P SmallCap 600](#) universes.

Exhibit 5a: Annualized Total Return Comparison in the S&P 500 Universe



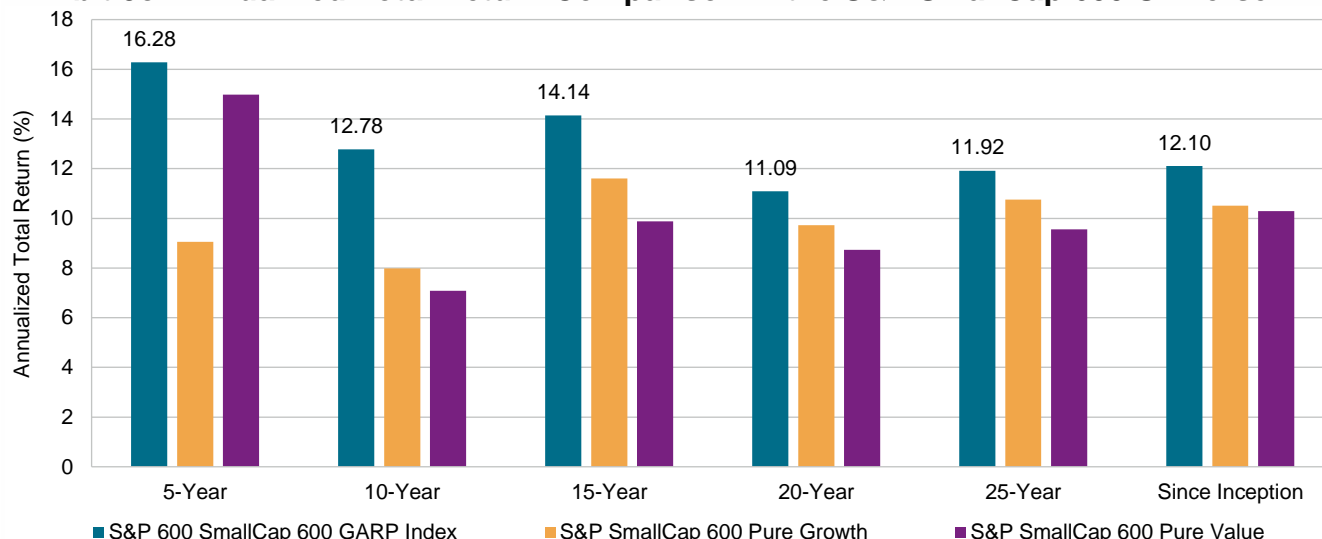
Source: S&P Dow Jones Indices LLC. Data from June 30, 1995, to Aug. 31, 2024. Index performance based on total return in USD. The S&P 500 GARP Index was launched Feb. 25, 2019. The S&P 500 Pure Growth and S&P 500 Pure Value were launched Dec. 16, 2005. All data prior to such date is back-tested hypothetical data. 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 5b: Annualized Total Return Comparison in the S&P MidCap 400 Universe



Source: S&P Dow Jones Indices LLC. Data from June 30, 1995, to Aug. 31, 2024. Index performance based on total return in USD. The S&P MidCap 400 GARP Index was launched May 1, 2023. The S&P MidCap 400 Pure Growth and S&P MidCap 400 Pure Value were launched Dec. 16, 2005. All data prior to such date is back-tested hypothetical data. 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 5c: Annualized Total Return Comparison in the S&P SmallCap 600 Universe



Source: S&P Dow Jones Indices LLC. Data from June 30, 1995, to Aug. 31, 2024. Index performance based on total return in USD. The S&P SmallCap 600 GARP Index was launched May 1, 2023. The S&P SmallCap 600 Pure Growth and S&P SmallCap 600 Pure Value were launched Dec. 16, 2005. All data prior to such date is back-tested hypothetical data. 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.

Fundamental Characteristics

Exhibit 6 presents the fundamental characteristics of the S&P GARP Indices compared to their corresponding benchmarks. Consistent with their design objectives, the S&P GARP Indices have historically exhibited strong growth, high quality and value tilts. Specifically, they recorded higher three-year trailing EPS and SPS growth rates, greater profitability (as measured by ROE), lower leverage (as measured by debt-to-equity ratio) and lower price-to-earnings (P/E) ratios than their benchmarks.

As of Aug. 31, 2024, the relative EPS and SPS growth ratios were generally higher than their historical averages, except for the EPS growth ratio of the S&P SmallCap 600 GARP Index. In terms of quality metrics, the S&P MidCap 400 GARP Index and SmallCap 600 GARP Index showed slightly higher ROE and lower leverage ratios than their historical averages. In contrast, the S&P 500 GARP Index exhibited slightly lower ROE and higher leverage ratios than its historical average. Additionally, all three GARP indices had significantly lower P/E ratios than their historical averages, indicating that they were valued at a discount.

Exhibit 6: Fundamental Characteristics

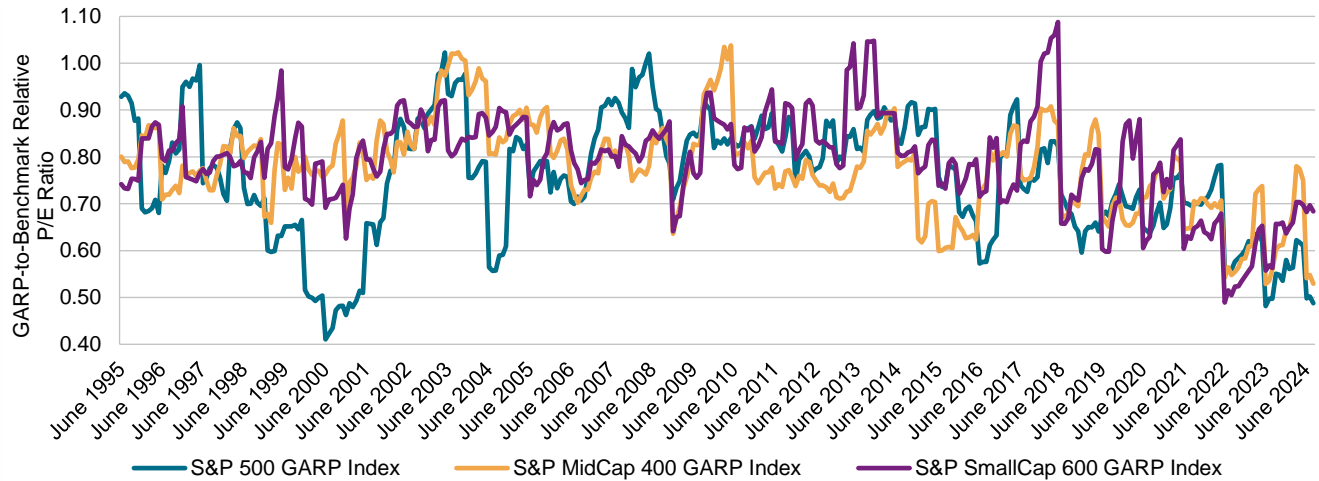
Metric	S&P 500 GARP Index	S&P 500	S&P MidCap 400 GARP Index	S&P MidCap 400	S&P SmallCap 600 GARP Index	S&P SmallCap 600
3-Year EPS Growth						
Historic Average (%)	28.93	16.04	36.06	17.67	39.70	17.76
Average GARP-to-Benchmark Ratio	1.80	-	2.04	-	2.24	-
As of Aug. 31, 2024 (%)	58.35	24.78	66.98	21.57	58.13	27.03
Current GARP-to-Benchmark Ratio	2.36	-	3.10	-	2.15	-
3-Year SPS Growth						
Historic Average (%)	16.01	11.23	21.14	13.74	25.72	14.49
Average GARP-to-Benchmark Ratio	1.43	-	1.54	-	1.78	-
As of Aug. 31, 2024 (%)	23.47	15.72	29.20	15.30	26.43	14.42
Current GARP-to-Benchmark Ratio	1.49	-	1.91	-	1.83	-
ROE						
Historic Average (%)	25.80	21.04	24.37	14.20	22.37	11.38
Average GARP-to-Benchmark Ratio	1.23	-	1.72	-	1.97	-
As of Aug. 31, 2024 (%)	32.00	29.66	32.53	16.07	25.79	11.01
Current GARP-to-Benchmark Ratio	1.08	-	2.02	-	2.34	-
Debt/Equity Ratio						
Historic Average (%)	68.18	141.08	57.37	106.10	39.81	85.56
Average GARP-to-Benchmark Ratio	0.48	-	0.54	-	0.47	-
As of Aug. 31, 2024 (%)	95.94	141.98	64.96	128.27	57.20	130.72
Current GARP-to-Benchmark Ratio	0.68	-	0.51	-	0.44	-
P/E Ratio						
Historic Average	14.78	19.96	14.88	19.10	14.75	18.43
Average GARP-to-Benchmark Ratio	0.74	-	0.78	-	0.80	-
As of Aug. 31, 2024	13.26	27.17	10.38	19.61	11.89	17.38
Current GARP-to-Benchmark Ratio	0.49	-	0.53	-	0.68	-

Source: S&P Dow Jones Indices LLC. Data from June 30, 1995, to Aug. 31, 2024. Index performance based on total return in USD. The S&P 500 GARP Index was launched on Feb. 25, 2019. The S&P MidCap 400 GARP Index and S&P SmallCap 600 GARP Index were launched on May 1, 2023. All data prior to such date is back-tested hypothetical data. 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.

Discounted Valuation

Exhibit 7 displays the time series of historic GARP-to-benchmark relative P/E ratios. The GARP-to-benchmark relative ratio is defined as the P/E ratio of an S&P GARP Index divided by the P/E ratio of its corresponding benchmark. As anticipated, the GARP-to-benchmark relative ratios are generally less than one, indicating that the S&P GARP Indices typically have lower P/E ratios compared to their benchmarks.

Exhibit 7: Historic GARP-to-Benchmark Relative P/E Ratios



Source: S&P Dow Jones Indices LLC. Data from June 30, 1995, to Aug. 31, 2024. Index performance based on total return in USD. The S&P 500 GARP Index was launched on Feb. 25, 2019. The S&P MidCap 400 GARP Index and S&P SmallCap 600 GARP Index were launched on May 1, 2023. All data prior to such date is back-tested hypothetical data. 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.

From Exhibits 7 and 8, it is notable that the current GARP-to-benchmark P/E relative ratios (as of Aug. 31, 2024) are near or at their lowest historical levels. This suggests that the S&P GARP Indices are currently valued at a significant discount relative to their benchmarks.

Exhibit 8: P/E Discounts of GARP Indices to Their Benchmarks

Metric	S&P 500 GARP Index	S&P 500	S&P MidCap 400 GARP Index	S&P MidCap 400	S&P SmallCap 600 GARP Index	S&P SmallCap 600
P/E Ratio as of Aug. 31, 2024	13.26	27.17	10.38	19.61	11.89	17.38
GARP-to-Benchmark P/E Relative Ratio as of Aug. 31, 2024	0.49	-	0.53	-	0.68	-
Cheapness Percentile Relative to History since June 30, 1995	97%	-	99%	-	97%	-

Source: S&P Dow Jones Indices LLC. Data from June 30, 1995, to Aug. 31, 2024. Index performance based on total return in USD. The S&P 500 GARP Index was launched on Feb. 25, 2019. The S&P MidCap 400 GARP Index and S&P SmallCap 600 GARP Index were launched on May 1, 2023. All data prior to index launch date is back-tested hypothetical data. 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.

Sector Weights

We now examine the relative sector weights of the S&P GARP Indices compared to their corresponding underlying universes (S&P 500, S&P MidCap 400 and S&P SmallCap 600).⁴

As shown in Exhibit 9a, throughout the full study period, all three S&P GARP Indices maintained a significant overweight in Consumer Discretionary (over 5.7%) relative to their benchmarks, while exhibiting a notable underweight in Financials (approximately -3.4% or more). Additionally, the S&P 500 GARP Index has shown substantial underweights in Consumer Staples (-5.58%) and Communication Services (-3.96%).

Exhibit 9a: Historic Sector Weights of S&P GARP Indices versus Their Benchmarks

Sector	Weight (%)					
	S&P 500 GARP Index	S&P 500	S&P MidCap 400 GARP Index	S&P MidCap 400	S&P SmallCap 600 GARP Index	S&P SmallCap 600
Communication Services	1.31	5.27	0.70	1.17	0.41	0.86
Consumer Discretionary	17.36	11.63	24.13	13.99	25.48	15.92
Consumer Staples	3.93	9.51	3.04	4.02	3.39	3.83
Energy	11.22	7.79	6.27	5.20	5.36	4.97
Financials	12.21	15.68	11.95	17.66	11.58	17.15
Health Care	13.02	12.98	10.35	10.39	14.87	12.20
Industrials	11.09	10.15	18.03	15.33	16.68	18.12
Information Technology	21.00	19.65	15.30	16.75	17.80	16.13
Materials	6.05	3.25	7.15	6.21	3.56	5.03
Real Estate	0.36	0.74	0.32	2.53	0.33	1.95
Utilities	2.21	3.22	2.75	6.56	0.55	3.71

Source: S&P Dow Jones Indices LLC. Data from June 30, 1995, to Aug. 31, 2024. The S&P 500 GARP Index was launched on Feb. 25, 2019. The S&P MidCap 400 GARP Index and S&P SmallCap 600 GARP Index were launched on May 1, 2023. All data prior to index launch date is back-tested hypothetical data. 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.

For the current period (see Exhibit 9b), all three S&P GARP Indices showed a significant overweight in Consumer Discretionary (over 4.5%) and Energy (over 7.0%) relative to their corresponding benchmarks, along with a notable underweight in Real Estate. Additionally, the S&P 500 GARP Index exhibited substantial underweights in Information Technology (-12.7%), Health Care (-9.1%) and Communication Services (-6.7%).

⁴ Relative sector weight is equal to GARP sector weight minus corresponding benchmark sector weight.

Exhibit 9b: Current Sector Weights of S&P GARP Indices versus Their Benchmarks

Sector	Weight (%)					
	S&P 500 GARP Index	S&P 500	S&P MidCap 400 GARP Index	S&P MidCap 400	S&P SmallCap 600 GARP Index	S&P SmallCap 600
Communication Services	2.01	8.76	0.00	1.50	1.60	3.07
Consumer Discretionary	14.34	9.67	26.91	14.61	20.51	13.41
Consumer Staples	2.84	6.00	3.55	4.39	3.55	3.36
Energy	24.35	3.53	16.79	5.09	12.42	4.74
Financials	13.92	13.32	12.51	16.96	20.06	19.86
Health Care	3.09	12.19	8.51	9.97	10.40	10.88
Industrials	13.07	8.46	15.08	21.95	14.71	17.31
Information Technology	18.30	31.05	9.85	8.82	10.39	12.15
Materials	8.07	2.24	5.49	6.56	5.58	5.60
Real Estate	0.00	2.35	0.00	7.54	0.00	7.52
Utilities	0.00	2.43	1.32	2.62	0.79	2.10

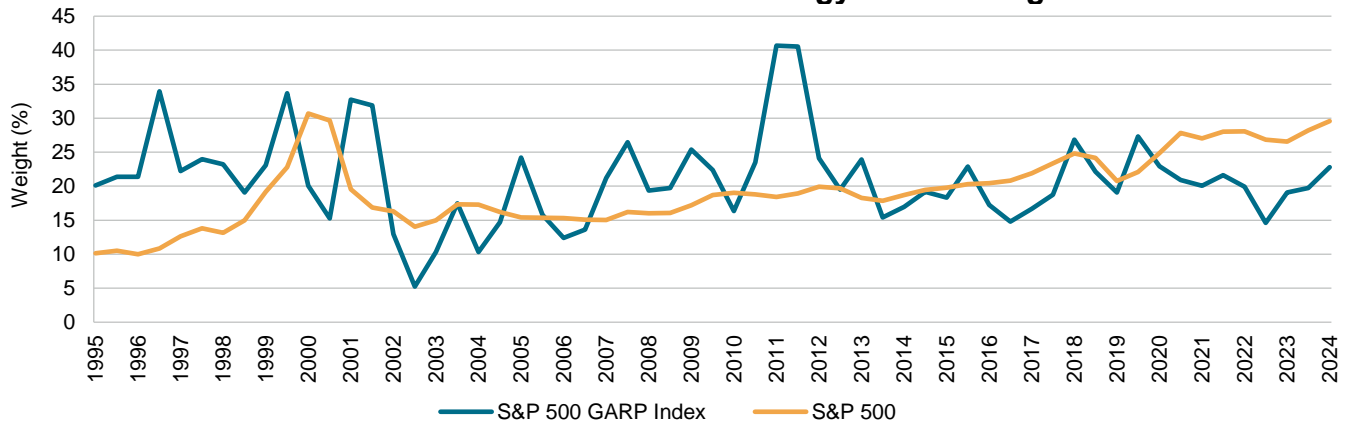
Source: S&P Dow Jones Indices LLC. Data as of Aug. 31, 2024. Table is provided for illustrative purposes.

Time-Series Weights in Information Technology and Energy Sectors

Information Technology and Energy were the two sectors with the largest active weights for the S&P 500 GARP Index in the current period. A closer examination of time-series sector weights reveals that the Information Technology sector has historically experienced an underweight of up to 16.44% and an overweight of up to 24.14%, as shown in Exhibit 10a.

The significant underweight in Information Technology occurred during 2000 and the second half of 2002, effectively mitigating the negative impact on performance when the tech bubble burst. Additionally, it is noteworthy that the S&P 500 GARP Index has maintained a relatively large underweight in the Information Technology sector since the second half of 2020, compared to the S&P 500.

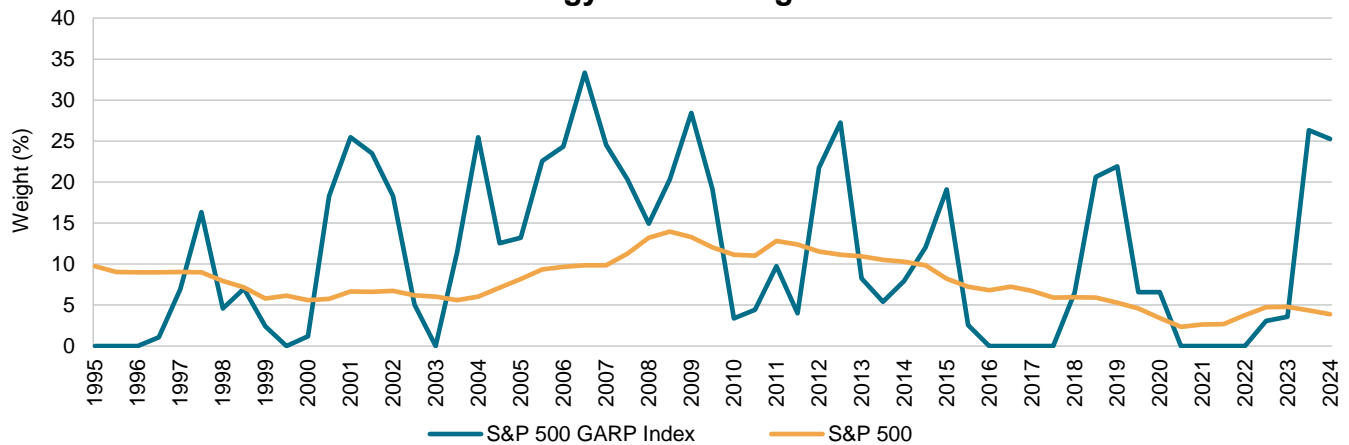
Exhibit 10a: Time-Series Plot of Information Technology Sector Weights



Source: S&P Dow Jones Indices LLC. Data from June 30, 1995, to Aug. 31, 2024. The S&P 500 GARP Index was launched on Feb. 25, 2019. All data prior to index launch date is back-tested hypothetical data. 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 10b illustrates that the Energy sector has historically experienced periodic large overweights compared to the S&P 500. The overweights have been primarily driven by the cyclical growth of the Energy sector and its relatively attractive valuations at various times.

Exhibit 10b: Time-Series Plot of Energy Sector Weights



Source: S&P Dow Jones Indices LLC. Data from June 30, 1995, to Aug. 31, 2024. The S&P 500 GARP Index was launched on Feb. 25, 2019. All data prior to index launch date is back-tested hypothetical data. 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.

Conclusion

This analysis of the S&P GARP Indices highlights their strong performance over time. Key insights indicate that these strategies consistently exhibited strong growth, quality and value characteristics, enhancing both total returns and risk-adjusted returns when compared with the benchmark over the period studied. The findings suggest that GARP strategies may provide diversification benefits and growth potential. Overall, the S&P GARP Indices present a compelling option for a balanced approach to growth and value.

Appendix I

Fundamental Ratios Calculation

As of the rebalancing reference date, fundamental ratios were calculated for each security in the index universe. They are defined as follows.

- **Three-Year EPS Growth:** Calculates as a company's three-year EPS compound annual growth rate (CAGR).

$$\text{CAGR} = \left(1 + \frac{\text{EPS FY current} - \text{EPS FY three years ago}}{\text{Absolute (EPS FY three years ago)}} \right)^{\frac{1}{3}} - 1$$

- **Three-Year SPS Growth:** Calculates as a company's three-year SPS CAGR.
- **Financial Leverage Ratio:** Calculates as a company's latest total debt divided by its book value per share (BVPS).

$$\text{Leverage} = \frac{\text{Total Debt}}{\text{BVPS} \times \text{Common Shares Outstanding}}$$

- **ROE:** Calculates as a company's trailing 12-month EPS divided by its latest BVPS.

$$\text{ROE} = \frac{\text{EPS}}{\text{BVPS}}$$

- **Earnings-to-Price Ratio:** Calculates as a company's trailing 12-month EPS divided by its price.

$$\text{Earnings to Price} = \frac{\text{EPS}}{\text{P}}$$

- **Outlier Handling and Winsorization.** Outlier fundamental ratios are winsorized to ensure that the average values used to calculate the overall component score are less distorted by extreme values. For a given fundamental variable, the values for all securities are first ranked in ascending order. Then, for securities that lie above the 97.5 percentile rank or below the 2.5 percentile rank, their value is set as equal to the value of the 97.5 percentile ranked or the 2.5 percentile ranked security, whichever is applicable.
- **ROE.** If the underlying EPS or BVPS for a given stock's ROE is negative, its ROE value will be excluded and the stock will be assigned an ROE z-score set as equal to the ROE z-score value of the 2.5 percentile-ranked security.

- **Financial Leverage Ratio.** If the underlying data point for a given stock's BVPS is negative, leading to a negative leverage, its leverage value will be excluded and the stock will be assigned a leverage z-score set as equal to the leverage z-score value of the 2.5 percentile-ranked security.

Appendix II

Z-score and Growth Score Computation

Z-Score Computation: Computing a z-score is a widely adopted method of standardizing a variable in order to combine it with other variables that may have a different scale or unit of measurement. After winsorizing all the fundamental ratios, the z-score for each of the ratios for each security is calculated using the mean and standard deviation of the relevant variable within each of the index universes.

The z-score is calculated as follows:

$$z_{\alpha} = (x_{\alpha} - \mu_{\alpha}) / \sigma_{\alpha}$$

Financial Leverage Ratios: The z-score is calculated as follows:

$$z_{\alpha} = -(x_{\alpha} - \mu_{\alpha}) / \sigma_{\alpha}$$

where:

z_{α} = z-score for a given security

x_{α} = winsorized variable for a given security

μ_{α} = arithmetic mean of the winsorized variable in a given index universe, excluding any missing values

σ_{α} = standard deviation of the winsorized variable in a given index universe

Average Z-Score Computation: For each security, the average z-score is computed by taking a simple average of the relevant scores. Where there is a missing value, the average z-score is computed by taking a simple average of the remaining scores. A security must have at least one z-score for it to be included in the index.

Outlier Handling and Winsorization: Outlier average z-scores are winsorized to ensure that the overall growth scores are less distorted by extreme values. To do this, for a given average z-score, the values for all securities are first ranked in ascending order. Then, for securities that lie above 4 or below -4, their value is set as equal to 4 or -4, whichever is applicable.

Growth Score Computation: Using the winsorized growth z-score, a growth score is computed for each of the securities. For a given security, if its winsorized growth z-score is above 0, then its growth score will be the addition of 1 and the winsorized growth z-score. On the other hand, if its winsorized growth z-score is below 0, then its growth score will be the result of the reciprocal of 1 subtracted by its winsorized growth z-score.

If average $z > 0$, growth score = $1 + Z$

If average $z < 0$, growth score = $(1 / (1 - Z))$

If average $z = 0$, growth score = 1

Appendix III

Buffer Rule

The index applies a 20% selection buffer according to the following process.

1. Rank the top growth z-score stocks by QV composite z-score, automatically selecting the highest-ranking 80% for index inclusion.
2. Select current constituents ranking between the top 80% and top 120% by order of QV composite z-score until the target QV count is reached.
3. If the target QV count has not yet been met, select the highest-ranking non-constituents in rank order, based on QV composite z-score, until the target count is reached.

Exhibit 11 illustrates the stock counts of stock selections and buffer rules.

Exhibit 11: Stock Counts of Stock Selections and Buffer Rules

Index	Growth Count	QV Count	Automatic Selection by QV Score	Current Constituents Selected by QV Score
S&P 500 GARP Index	150	75	60	61-90
S&P MidCap 400 GARP Index	120	60	48	49-72
S&P SmallCap 600 GARP Index	180	90	72	73-108

Source: S&P Dow Jones Indices LLC. Data as of October 2024. Table is provided for illustrative purposes.

Performance Disclosure/Back-Tested Data

The S&P 500 GARP Index was launched on February 25, 2019. The S&P MidCap 400 GARP Index and S&P SmallCap 600 GARP Index were launched on May 1, 2023. 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.spglobal.com/spdji. Past performance of the Index is not an indication of future results. Back-tested performance reflects application of an index methodology and selection of index constituents with the benefit of hindsight and knowledge of factors that may have positively affected its performance, cannot account for all financial risk that may affect results and may be considered to reflect survivor/look ahead bias. Actual returns may differ significantly from, and be lower than, back-tested returns. Past performance is not an indication or guarantee of future results. Please refer to the methodology for the Index 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. Back-tested performance is for use with institutions only; not for use with retail investors.

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 to a fixed value for calculation purposes. The Launch Date designates the date when 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 data feed 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.

Typically, when S&P DJI creates back-tested index data, S&P DJI uses actual historical constituent-level data (e.g., historical price, market capitalization, and corporate action data) in its calculations. As ESG investing is still in early stages of development, certain datapoints used to calculate S&P DJI's ESG indices may not be available for the entire desired period of back-tested history. The same data availability issue could be true for other indices as well. In cases when actual data is not available for all relevant historical periods, S&P DJI may employ a process of using "Backward Data Assumption" (or pulling back) of ESG data for the calculation of back-tested historical performance. "Backward Data Assumption" is a process that applies the earliest actual live data point available for an index constituent company to all prior historical instances in the index performance. For example, Backward Data Assumption inherently assumes that companies currently not involved in a specific business activity (also known as "product involvement") were never involved historically and similarly also assumes that companies currently involved in a specific business activity were involved historically too. The Backward Data Assumption allows the hypothetical back-test to be extended over more historical years than would be feasible using only actual data. For more information on "Backward Data Assumption" please refer to the [FAQ](#). The methodology and factsheets of any index that employs backward assumption in the back-tested history will explicitly state so. The methodology will include an Appendix with a table setting forth the specific data points and relevant time period for which backward projected data was used.

Index returns shown do not represent the results of actual trading of investable assets/securities. S&P Dow Jones Indices 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).

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