A Systematic Approach for Identifying Companies with Economic Moats

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Introduction

Popularized by Warren Buffett,[1] the term "economic moat" refers to a sustainable competitive advantage that enables a company to protect its market share and generate high profitability over the long term. This advantage can stem from many factors such as network effects, economies of scale, strong brand recognition and high switching costs. Due to the potential financial rewards associated with investing in companies with a wide economic moat, some market participants consider these companies highly desirable.

In April 2024, S&P DJI launched the S&P 500® Economic Moat Index, which focuses on tracking companies from the S&P 500 that have been identified as having a wide economic moat. What sets this index apart is its purely quantitative approach to identifying these companies.

A quantitative approach may offer several advantages when identifying a company's economic moat. First, it provides an objective evaluation that eliminates subjective biases that are often associated with qualitative analysis, such as anchoring bias. Second, a quantitative approach provides a standardized method of evaluation, ensuring consistent identification across industries over time. Lastly, it enables investors to examine back-tested data, which is not possible with a qualitative analyst-driven strategy. Overall, a quantitative approach offers objectivity, consistency and the ability to analyze historical performance, making it a valuable tool in identifying economic moats.

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[1] Buffet, Warren, "Letter to Shareholders," Berkshire Hathaway, 2007.

Construction Approach

Determining a company's economic moat requires a comprehensive approach that goes beyond relying on a single quantitative measure. Instead, it requires the use of multiple metrics that complement each other. Consistency is another critical aspect to consider, as the ability to consistently generate high returns is indicative of a wide moat. Therefore, it is important to analyze the metrics over multiple periods to provide a more accurate understanding of the strength and durability of its economic moat.

Our research identifies three key metrics that should be considered when evaluating companies: sustained high return on invested capital (ROIC), sustained high gross margins and high market share. These metrics possess both an economic rationale and strong historical risk-adjusted returns over the long term. Collectively, they provide a comprehensive assessment of a company's economic moat (see Exhibit 1).

For Exhibits 2-4, we conducted a quintile analysis to demonstrate the metrics' efficacy over the long-term. For the quintile analysis, we tested each metric on a standalone basis by dividing S&P 500 constituents into quintiles based on their metric z-score and equally weighting them, with quintiles 1 and 5 being the lowest- and highest-ranked quintiles, respectively.

Exhibit 1: Economic Moat Indicators

Indicator	Details
Sustained High ROIC	Net Income / $((\text{Total Shareholder Equity}_t + \text{Total Debt}_t + \text{Total Shareholder Equity}_{t-1} + \text{Total Debt}_{t-1})/2)$ Average over the past five years
Sustained High Gross Margins	(Revenue - COGS) / Revenue and Gross margin standard deviation over the past five years
High Market Share	Weighted average revenue in industry hierarchy, calculated using Syntax's Market Share Score

Source: S&P Dow Jones Indices LLC. Data as of May 2024. COGS stands for cost of goods sold. For the full methodology rules, please refer to the S&P 500 Economic Moat Index Methodology. Table is provided for illustrative purposes.

Sustained High ROIC

In today's competitive capitalistic ecosystem, a company that consistently earns high ROIC will likely attract new competitors. In most cases, this increased competition will drive down returns on capital until an equilibrium is reached. However, in instances where a company possesses a wide economic moat, it may be able to fend off the competition and maintain its

high ROIC.[2] Therefore, a sustained high ROIC is arguably the most powerful indicator of a company's moat.

Exhibit 2 demonstrates a steady increase in long-term annualized returns based on companies' sustained ROIC ranking, with quintile 5 delivering an annualized return of 14.38%, compared to 10.56% for quintile 1. This aligns with the notion that companies capable of consistently generating higher ROIC should experience faster earnings and intrinsic value growth over the long term. Furthermore, as the quintile ranking increases, volatility tends to decrease, with quintile 5 exhibiting an annualized volatility of 15.81%, compared to 18.51% for quintile 1.

Exhibit 2: Sustained High ROIC Quintile Statistics

Statistic	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Annualized Return (%)	10.56	10.90	11.95	14.11	14.38
Annualized Volatility (%)	18.51	16.85	16.68	15.39	15.81
Risk-Adjusted Return	0.57	0.65	0.72	0.92	0.91
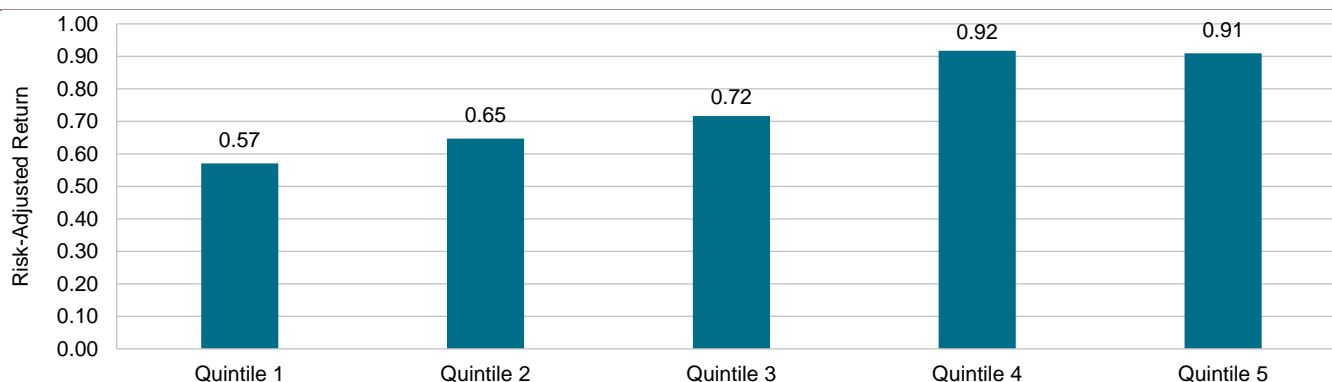
Quintiles 1-5 are hypothetical portfolios
Source: S&P Dow Jones Indices LLC. Data from June 28, 2013, to March 18, 2024. The S&P 500 Economic Moat Index was launched April 15, 2024. All data prior to such date is back-tested hypothetical data. Index performance based on monthly total return in USD. Past performance is no guarantee of future results. Table and chart are provided for illustrative purposes and reflect hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Sustained High Gross Margin

To evaluate sustained high gross margin, two metrics are utilized: gross margin over the past 12 months and gross margin stability over the past five years. These metrics are used to assess pricing power, which refers to a company's ability to charge a premium price over the cost of production.[3] This pricing power may indicate the presence of an economic moat. It could be important to consider gross margin stability in conjunction with high gross margin, as either metric on a standalone basis may be heavily biased by a company's industry or sector.

[2] Mauboussin, Michael J., and Dan Callahan, "ROIC and the Investment Process," Morgan Stanley Investment Management, June 6, 2023.

[3] Lock, William, Bruno Paulson and Dirk Hoffmann-Becking, PH.D, "Exploring Pricing Power," Morgan Stanley Investment Management, October 2019.

For example, a high gross margin could be attributed to certain industries having a structurally lower cost of goods sold (COGS), such as software or pharmaceuticals, or be a consequence of being in a cyclical industry during a cyclical peak. Furthermore, high gross margin stability may be due to certain sectors, such as Consumer Staples, Health Care and Utilities, benefitting from consistent consumer demand as a result of providing essential goods or services.

Exhibit 3 illustrates a consistent upward trend in long-term annualized returns based on companies' sustained high gross margin. Moreover, as companies maintained higher gross margins, volatility tended to decrease, leading to a significant enhancement in risk-adjusted return. Specifically, the risk-adjusted return increased from 0.48 in quintile 1 to 0.91 in quintile 5, representing a substantial 90% improvement.

Exhibit 3: Sustained High Gross Margin Quintile Statistics

Statistic	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Annualized Return (%)	9.52	12.07	12.40	13.29	14.02
Annualized Volatility (%)	19.70	16.60	16.30	15.81	15.36
Risk-Adjusted Return	0.48	0.73	0.76	0.84	0.91
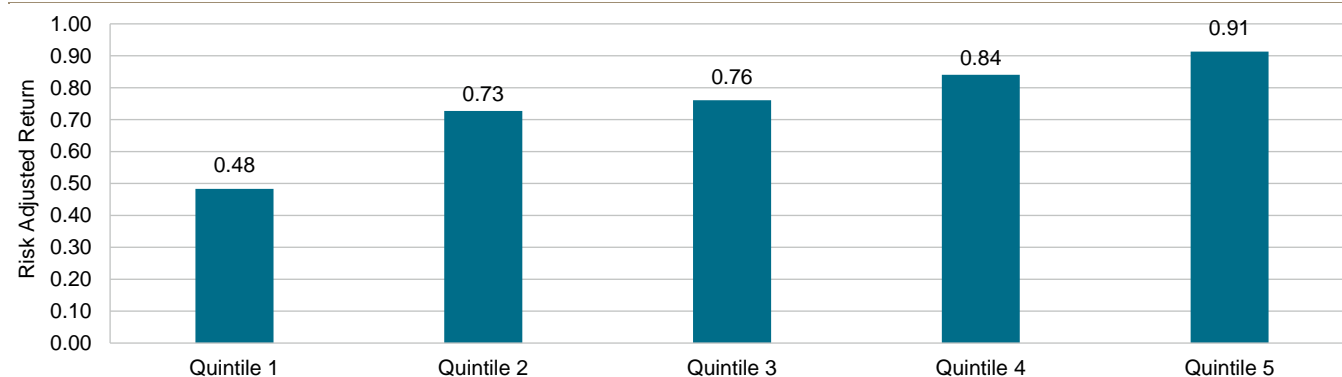
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High Market Share

A high market share, generally defined as a company holding a significant portion of sales within a particular industry or market, can be indicative of a strong economic moat. This may arise from economies of scale, network effects,[4] and brand power. However, it is important to consider other metrics in conjunction with market share, as a high market share alone may not guarantee high profitability or a sustainable competitive advantage. The calculation of market

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[4] Ramraika, Baijnath, Prashant Trivedi and Siddhi Gujar, "Sustainable Competitive Advantages: Network Effects (NE)," Advisor Perspectives, April 1, 2019.

share relies on Syntax's Market Share Score,[5] which offers a thorough evaluation of a company's market position.

While Exhibit 4 may not show a perfect monotonic trend, it still highlights the clear trend that companies with high market share have outperformed those with low market share. Notably, quintile 5 achieved the highest absolute return, at 14.64%, and displayed the lowest annualized volatility, at 15.00%. This translates to a risk-adjusted return of 0.98.

Exhibit 4: High Market Share Quintile Statistics

Statistic	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Annualized Return (%)	9.46	13.06	12.41	13.75	14.64
Annualized Volatility (%)	18.48	16.67	15.72	16.29	15.00
Risk-Adjusted Return	0.51	0.78	0.79	0.84	0.98
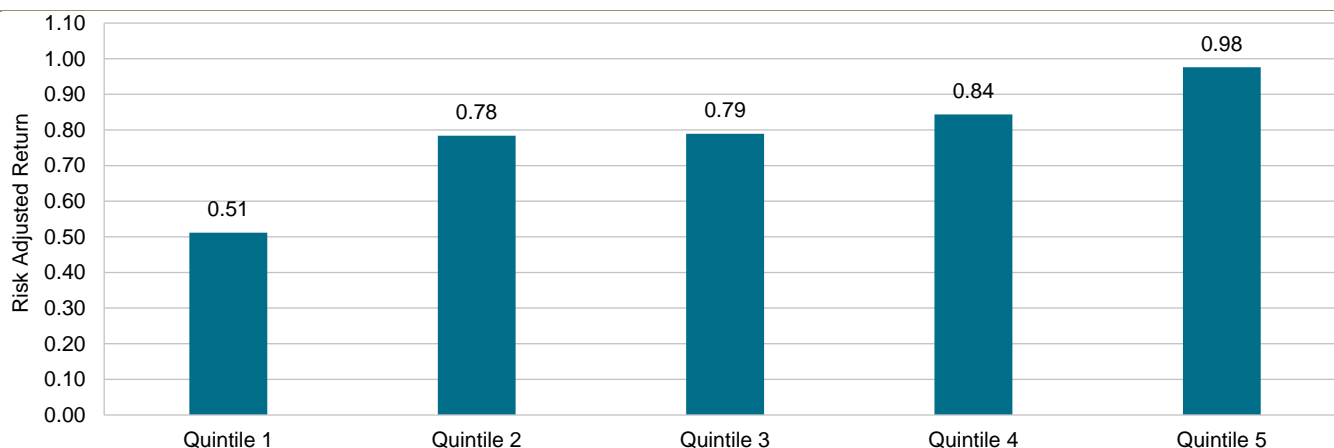
Quintiles 1-5 are hypothetical portfolios
Source: S&P Dow Jones Indices LLC. Data from June 28, 2013, to March 18, 2024. The S&P 500 Economic Moat Index was launched April 15, 2024. All data prior to such date is back-tested hypothetical data. Index performance based on monthly total return in USD. Past performance is no guarantee of future results. Table and chart are provided for illustrative purposes and reflect hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Complementary Metrics

While each selection metric has shown effectiveness on a standalone basis, relying on a single indicator may not always accurately identify companies with an economic moat. To enhance the effectiveness of identifying an economic moat, these three metrics should be used in combination. This approach reduces the risk of distortion that can occur when relying on a single indicator. For instance, software companies may have high gross margins due to their structurally lower COGS, and in certain industries like airlines, high market share has not historically indicated the presence of an economic moat.[6]

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[5] For more information on Syntax's Market Share Score, please see the methodology.

[6] Mauboussin, Michael J., and Dan Callahan, "Measuring the Moat: Assessing the Magnitude and Sustainability of Value Creation," Credit Suisse, July 22, 2013.

Implementing a multi-factor selection approach provides the added benefit of delivering strong historical risk-adjusted performance. As shown in Exhibit 5, quintile 5 achieved the highest annualized return (15.43%) and the lowest volatility (14.48%). These results translate to a risk-adjusted return of 1.07.

Exhibit 5: Multi-Factor Score Quintile Statistics

Statistic	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Annualized Return (%)	9.17	11.42	11.79	13.96	15.43
Annualized Volatility (%)	20.24	16.89	16.92	15.59	14.48
Risk-Adjusted Return	0.45	0.68	0.70	0.90	1.07
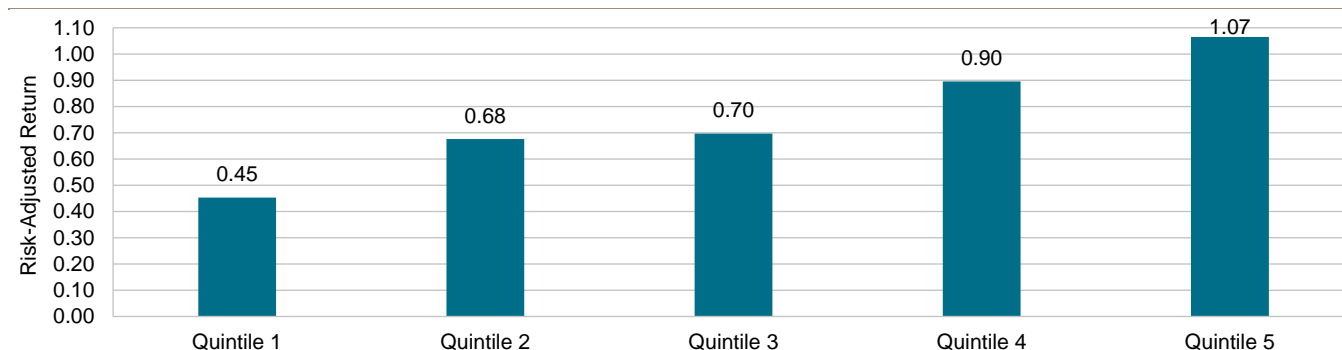
Quintiles 1-5 are hypothetical portfolios
Source: S&P Dow Jones Indices LLC. Data from June 28, 2013, to March 18, 2024. The S&P 500 Economic Moat Index was launched April 15, 2024. All data prior to such date is back-tested hypothetical data. Index performance based on monthly total return in USD. Past performance is no guarantee of future results. Table and chart are provided for illustrative purposes and reflect hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Full Construction Approach

The overall construction process of the S&P 500 Economic Moat Index is simple and transparent (see Exhibit 6). The selection is determined by the Economic Moat Score, which is calculated by taking the average of the three economic moat indicator z-scores. The top 50 companies with the highest Economic Moat Score are selected and equally weighted, which helps mitigate concentration risk and places each company on equal footing.

Exhibit 6: S&P 500 Economic Moat Index Methodology

Universe	S&P 500
Moat Indicators	1) Sustained high ROIC 2) Sustained high gross margin 3) High market share
Economic Moat Score	Transformed average of the three economic moat indicator z-scores
Stock Selection	Top 50 with highest Economic Moat Score
Weighting	Equally weighted
Rebalancing	Semiannually in June and December

Source: S&P Dow Jones Indices LLC. Data as of June 2024. For the full methodology rules, please refer to the S&P 500 Economic Moat Index Methodology. Table is provided for illustrative purposes.

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Historical Performance Characteristics

Higher Returns with Lower Volatility

Companies that possess sustainable competitive advantages are expected to exhibit a strong quality tilt, characterized by high risk-adjusted returns and defensive characteristics. Exhibit 7 shows the back-tested risk/return statistics for the S&P 500 Economic Moat Index, using June 28, 2013, as the starting point. Since then, companies with the widest economic moats have demonstrated better performance in terms of both absolute and risk-adjusted returns compared to their benchmark. The index achieved a risk-adjusted return of 1.10 for the entire period, compared to 0.91 for the S&P 500.

In more recent back-tested periods, despite its equal-weighting scheme and the performance of mega-cap stocks, the index has remained competitive. In fact, it has outperformed the S&P 500 by almost 1.5% on an annualized basis over the past three years. Throughout the entire period, the S&P 500 Economic Moat Index exhibited slightly lower volatility than the S&P 500.

Exhibit 7: Performance Statistics

| Period	S&P 500	S&P 500 Economic Moat Index
Annualized Return (%)		
Full Period	13.60	16.03
YTD	11.30	7.01
1-Year	28.10	20.05
3-Year	9.53	10.92
5-Year	15.79	17.11
10-Year	12.68	15.42
Annualized Volatility (%)		
Full Period	14.90	14.59
3-Year	17.81	17.89
5-Year	18.23	17.89
10-Year	15.29	14.89
Risk-Adjusted Return		
Full Period	0.91	1.10
3-Year	0.54	0.61
5-Year	0.87	0.96
10-Year	0.83	1.04
Drawdown (%)		
Full Period	-23.87	-24.87

Source: S&P Dow Jones Indices LLC. Data from June 28, 2013, to May 31, 2024. The S&P 500 Economic Moat Index was launched April 15, 2024. All data prior to such date is back-tested hypothetical data. Index performance based on monthly total return in USD. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Defensive Qualities

Exhibit 8 below illustrates the reduced drawdowns of the S&P 500 Economic Moat Index, indicating its defensive characteristics. This is not surprising, as companies with wide economic moats are typically of higher quality and better equipped to withstand market stress and uncertainty.

Exhibit 8: Drawdown Analysis

Event	S&P 500	S&P 500 Economic Moat Index
China's Black Monday (May 31, 2015-Sept. 30, 2015)	-8.2	-6.1
Inflation Fears (Jan. 31, 2018-March 31, 2018)	-6.1	-5.0
Q4 2018 (Sept. 30, 2018-Dec. 31, 2018)	-13.5	-11.0
March 2020 (Feb. 29, 2020-March 31, 2020)	-12.4	-11.5

Source: S&P Dow Jones Indices LLC. Data from June 28, 2013, to March 31, 2024. The S&P 500 Economic Moat Index was launched April 15, 2024. All data prior to such date is back-tested hypothetical data. Index performance based on monthly total return in USD. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Historically, the S&P 500 Economic Moat Index has demonstrated its ability to provide a buffer against volatility in most high volatility regimes. While the index underperformed by 28 bps on average when the VIX® level was above 30, it outperformed by an average of 57 and 72 bps when the VIX level was between 25-30 and 20-25, respectively (see Exhibit 9).

Exhibit 9: Average Monthly Return in Relation to VIX Level

VIX Levels	S&P 500	S&P 500 Economic Moat Index
>30	-3.37	-3.65
>25-30	-0.81	-0.24
>20-25	0.23	0.95
>15-20	0.87	1.08
<=15	2.81	2.80

Source: S&P Dow Jones Indices LLC. Data from June 28, 2013, to May 31, 2024. The S&P 500 Economic Moat Index was launched April 15, 2024. All data prior to such date is back-tested hypothetical data. Index performance based on monthly total return in USD. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Exhibit 10 demonstrates that the S&P 500 Economic Moat Index displayed lower downside capture ratios over the back-tested period, providing further evidence of its potential defensive attributes. Furthermore, it outperformed the S&P 500 on the upside.

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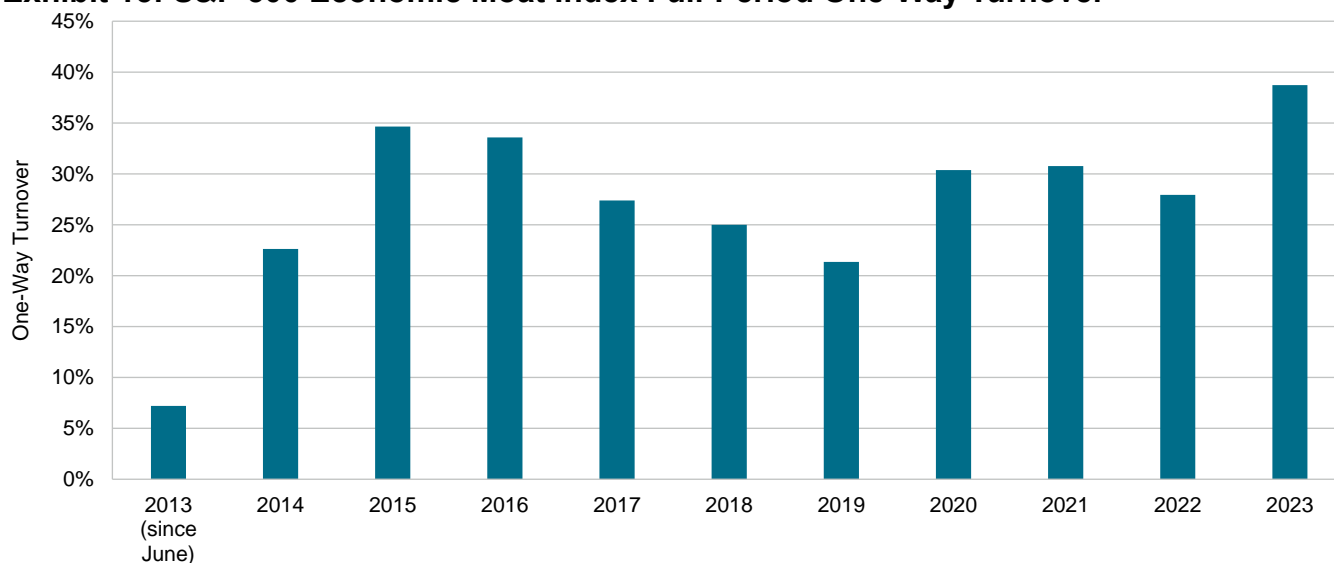## Exhibit 10: Upside/Downside Capture Ratios
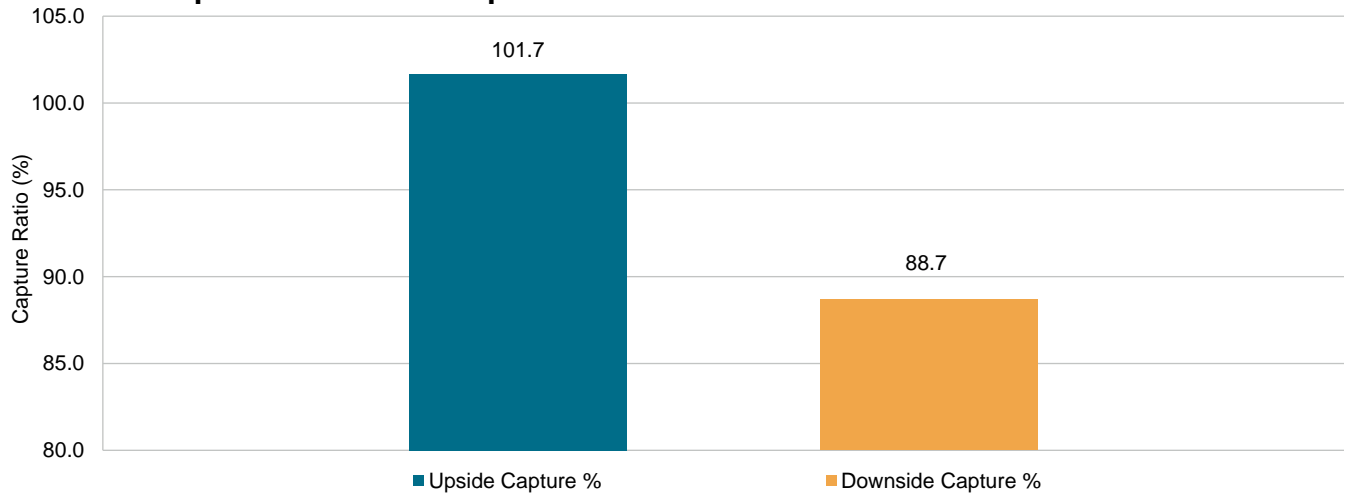
Source: S&P Dow Jones Indices LLC. Data from June 28, 2013, to May 31, 2024. The S&P 500 Economic Moat Index was launched April 15, 2024. All data prior to such date is back-tested hypothetical data. Index performance based on monthly total return in USD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Higher Quality

A wide economic moat provides a competitive advantage that enables a company to consistently generate high profitability, which is a key indicator of company quality. Exhibit 11 shows that the S&P 500 Economic Moat Index consistently outperformed the S&P 500 in terms of return on equity (ROE), ROIC and return on assets (ROA), showcasing its significantly higher profitability.

Exhibit 11: Profitability Comparison
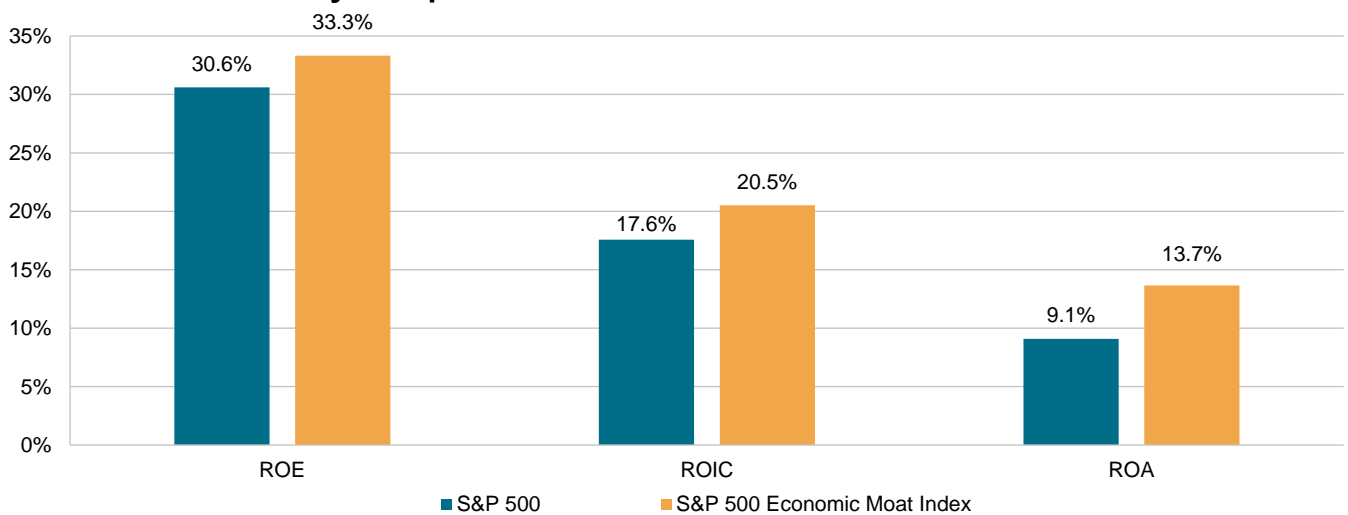
Source: S&P Dow Jones Indices LLC. Data as of May 31, 2024. Index performance based on monthly total return in USD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

Sector Breakdown

Exhibit 12 shows that the S&P 500 Economic Moat Index has had a notable overweight to consumer-oriented sectors such as Consumer Discretionary, Consumer Staples and Information Technology. These sectors may benefit from competitive advantages, such as strong brand power, network effects and high switching costs. As a result, the S&P 500 Economic Moat Index has had significant underweights to the Energy, Financials, Materials and Utilities sectors. One possible explanation for this is that companies in these sectors are more likely to produce more commodity-type products that lack product differentiation.

Exhibit 12: Full-Period Sector Weight Comparison

Sector	Weight (%)		Difference
	S&P 500	**S&P 500 Economic Moat Index**	**Difference**
Communication Services	6.2	3.7	-2.6
Consumer Discretionary	11.6	18.7	7.1
Consumer Staples	8.0	19.7	11.8
Energy	5.8	1.0	-4.8
Financials	13.6	5.5	-8.1
Health Care	14.0	11.8	-2.2
Industrials	9.4	7.2	-2.2
Information Technology	23.7	32.4	8.7
Materials	2.8	0.0	-2.8
Real Estate	1.9	0.0	-1.9
Utilities	3.0	0.0	-3.0

Source: S&P Dow Jones Indices LLC. Data from June 28, 2013, to May 31, 2024. The S&P 500 Economic Moat Index was launched April 15, 2024.. 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.

Exhibit 13 displays the full-period performance attribution for the S&P 500 Economic Moat Index versus the S&P 500. Of the total 105.73% full-period outperformance for the S&P 500 Economic Moat Index, 74.30% was due to the bottom-up stock selection effect, and 31.44% from the allocation or sector effect. The positive contributions were spread relatively evenly across many sectors, and just two sectors—Consumer Discretionary and Consumer Staples— had a negative total effect. The results are encouraging since balanced sector outperformance primarily driven by bottom-up stock selection may have a higher likelihood of sustainability in the future than outperformance solely due to a top-down allocation effect driven by a select number of sectors.

Exhibit 13: S&P 500 Economic Moat Index Sector Attribution Analysis

Sector	Allocation Effect (%)	Selection Effect (%)	Total Effect (%)
Overall	31.44	74.30	105.73
Communication Services	10.76	0.37	11.13
Consumer Discretionary	-13.87	-5.08	-18.95
Consumer Staples	-21.08	3.74	-17.35
Energy	31.79	0.60	32.39
Financials	-17.37	45.08	27.71
Health Care	3.29	17.49	20.78
Industrials	-1.94	14.31	12.37
Information Technology	18.85	-2.22	16.62
Materials	6.31	0.00	6.31
Real Estate	7.13	0.00	7.13
Utilities	7.54	0.00	7.54

Source: S&P Dow Jones Indices LLC. Data from June 28, 2013, to Dec. 31, 2023. The S&P 500 Economic Moat Index was launched April 15, 2024.. All data prior to such date is back-tested hypothetical data. Index performance based on monthly total return in USD. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Exhibit 14 provides a visual representation of the S&P 500 Economic Moat Index's sector weights over time. It is noteworthy that the sector weights have remained relatively stable since the index's inception, with Information Technology, Consumer Staples and Consumer Discretionary having the largest weights over the full period.

Exhibit 14: S&P 500 Economic Moat Index Sector Weights over Time
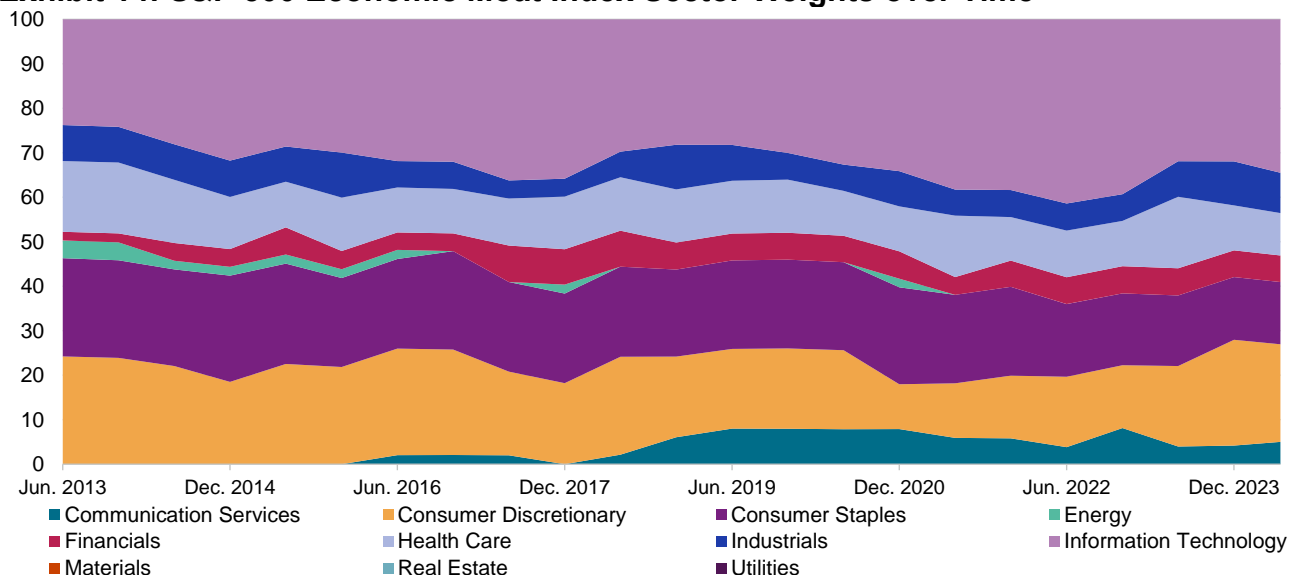
Source: S&P Dow Jones Indices LLC. Data from June 28, 2013, to May 31, 2024. The S&P 500 Economic Moat Index was launched April 15, 2024. All data prior to such date is back-tested hypothetical data. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects 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.

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Low Turnover Relative to Other Factor-Based Indices

Over the long term, the S&P 500 Economic Moat Index has maintained a low turnover rate. From 2014 onwards, the average annual one-way turnover was a modest 29.2%. This low turnover indicates that the index had a stable composition and did not frequently change its constituent stocks (see Exhibit 15).

Exhibit 15: S&P 500 Economic Moat Index Full-Period One-Way Turnover

Source: S&P Dow Jones Indices LLC. Data from June 28, 2013, to Dec. 31, 2023. The S&P 500 Economic Moat Index was launched April 15, 2024. All data prior to index launch 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.

Conclusion

Companies with a wide moat tend to possess a sustainable competitive advantage over their peers. A wide moat can be attributed to factors such as network effects, economies of scale, strong brand recognition and high switching costs, which enable companies to maintain their market position and generate above-average profits. The S&P 500 Economic Moat Index tracks these high quality, defensive companies, and we can see from its historical performance that it has had balanced sector outperformance, stable sector weights, low turnover, and it has had higher returns with lower volatility compared with the underlying index.

Performance Disclosure/Back-Tested Data

The S&P 500 Economic Moat Index was launched April 15, 2024. 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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