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Building Better Portfolios with Smart Beta Strategies

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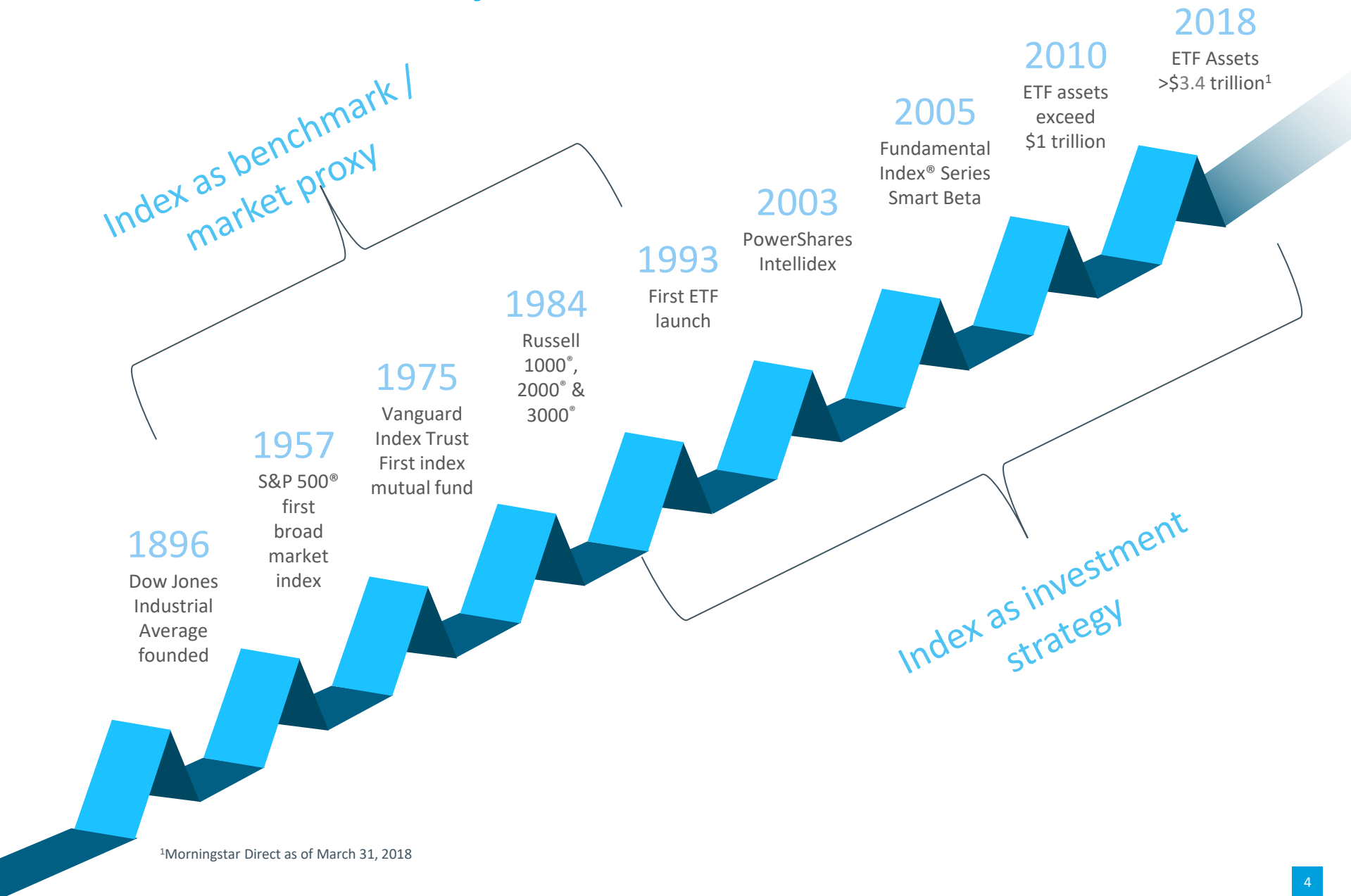
Own your tomorrow.

Agenda

- ❑ The Evolution of Indexing
- ❑ From 'Cheap Beta' to 'Smart Beta'
- ❑ Evaluating the options
- ❑ Fundamental Indexing
- ❑ Building Better Portfolios

The Evolution of Indexing

Indexes: 100+ years of evolution



The Growth of Indexing

- ❑ Indexing has experienced very strong growth over the last several years, largely at the expense of active management
- ❑ Indexing provides a number of benefits to investors
 - Diversification within a single investment
 - Cost-effective exposure to markets
 - Tax-efficiency as compared to active management
 - Dynamic – changes with the markets
 - Removes the emotion often hindering investors abilities to invest
- ❑ Indexing has evolved from “cheap beta” to “smart beta”
- ❑ Active managers have had a hard time outperforming passive indexes

It's challenging to beat the market...

Percentage of managers outperforming their respective benchmark

	1 Year	3 Years	5 Years	7 Years	10 Years
U.S. Large Cap	28.82%	22.39%	22.81%	16.60%	27.92%
U.S. Small Cap	23.88%	31.82%	32.53%	35.32%	36.92%
International	44.95%	31.44%	17.31%	16.55%	31.13%
Emerging Markets	37.07%	33.09%	43.53%	45.89%	47.44%

Source: Schwab Center for Financial Research with data provided by Zephyr StyleADVISOR. Data as of December 31, 2017. For illustrative purposes only. Indexes are unmanaged, do not incur management fees, costs and expenses, and cannot be invested in directly. **Past performance is no guarantee of future results.**

Regardless of how you analyze the data

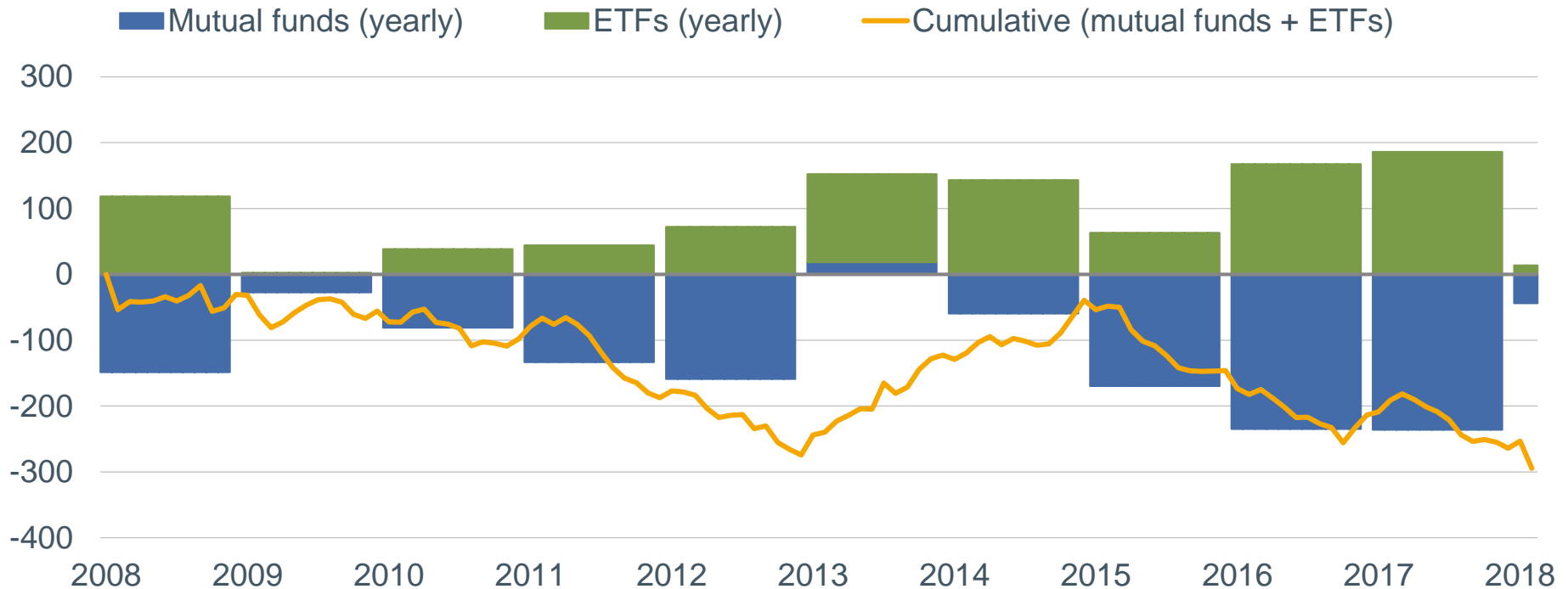
Percentage of managers outperforming their respective benchmarks

	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
U.S. Large Cap	28.82%	27.25%	20.52%	18.70%	45.31%	40.80%	19.41%	31.75%	55.09%	46.46%
U.S. Small Cap	23.88%	43.64%	47.47%	48.58%	39.21%	38.67%	62.72%	34.39%	64.95%	43.75%
International	44.95%	40.94%	36.46%	36.83%	18.11%	49.17%	30.21%	67.74%	47.76%	52.31%
Emerging Markets	37.07%	27.10%	59.53%	39.80%	57.94%	60.00%	38.02%	48.10%	24.81%	49.92%

Source: Schwab Center for Financial Research with data provided by Zephyr StyleADVISOR. Data as of December 31, 2017. For illustrative purposes only. Indexes are unmanaged, do not incur management fees, costs and expenses, and cannot be invested in directly. **Past performance is no guarantee of future results.**

Active versus Passive Fund Flows

Domestic Equity Net New Cash Flow (In billions of dollars)



As of February 28, 2018. ETF=exchange-traded fund. Source: Investment Company Institute (ICI).

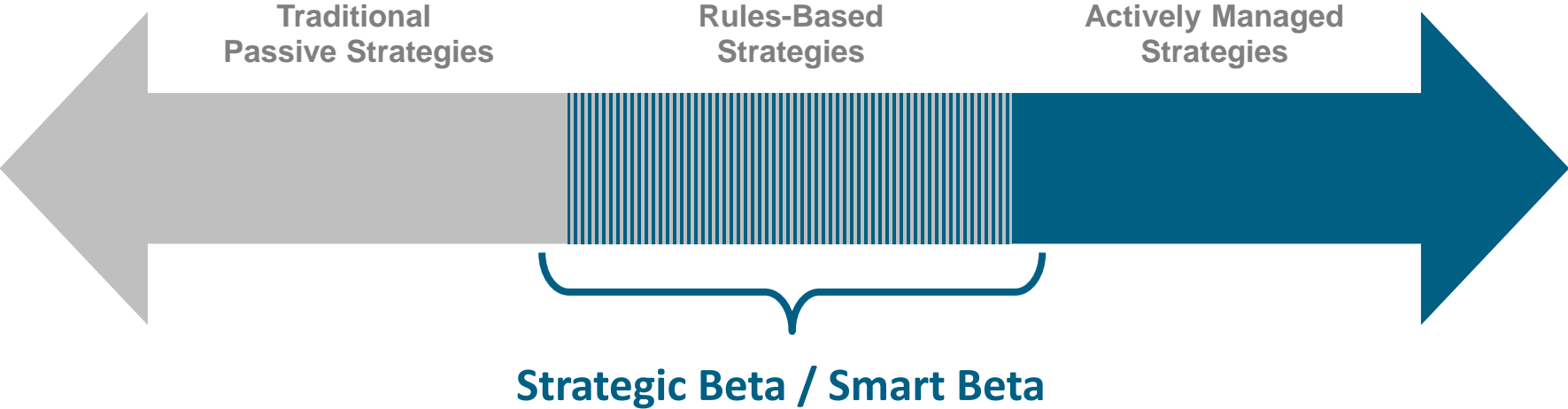
It's tough for active managers to outperform due to fees...



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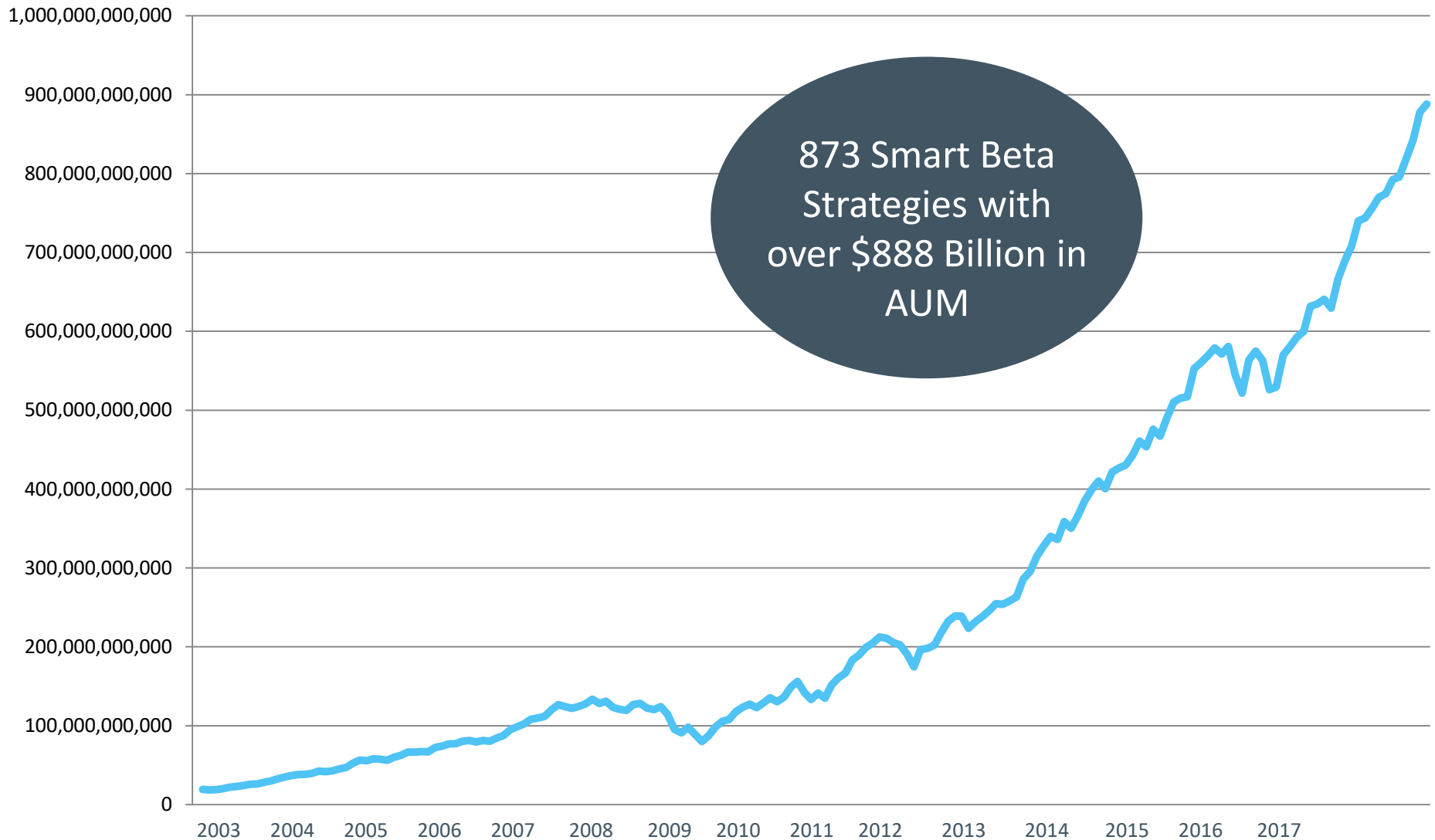
From 'Cheap
Beta' to 'Smart
Beta'

Smart Beta Strategies Are Designed to Capture Positive Attributes of Active and Passive Investing



The Growth of Smart Beta

January 1, 2003 – December 31, 2017



Source: Schwab Center for Financial Research with data provided by Morningstar Direct. Data used from January 1, 2003 through December 31, 2017.

Morningstar's Strategic Beta Taxonomy

Return-Oriented

Dividend Screened/Weighted

Value

Growth

Fundamentals

Multi-Factor

Size

Momentum

Buyback/Shareholder Yield

Earnings Weighted

Quality

Expected Returns

Revenue Weighted

Risk-Oriented

Minimum Variance

Risk-Weighted

Low/High Beta

Other

Non-Traditional Commodity

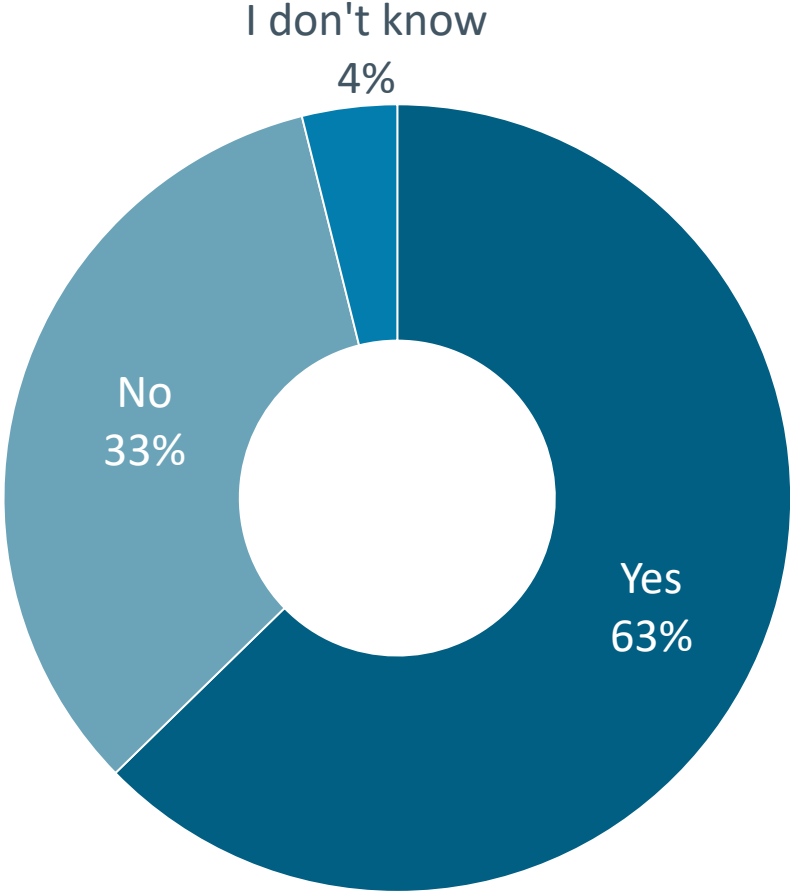
Equal-Weighted

Non-Traditional Fixed Income

Multi-Asset

Based on the Schwab Investor Survey, Investors Have Reduced Their Active Exposures and Replaced Them With Smart Beta Exposures in the Last Three Years

Reduced Active Exposures and Replaced with Smart Beta Exposures
Among those who invest in Smart Beta ETFs

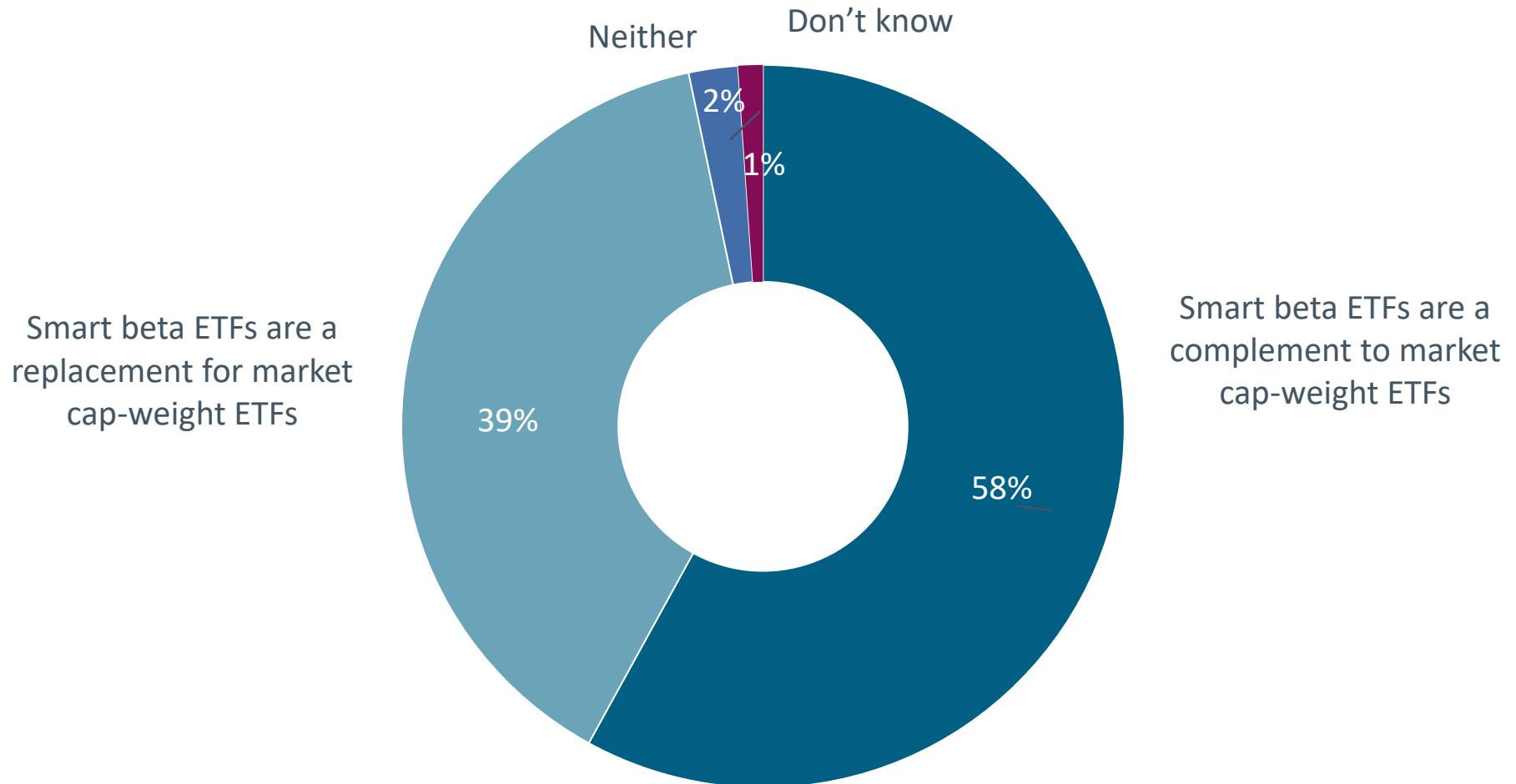


Q39. Have you reduced your active exposures and replaced them with smart beta exposures in the last three years? (Base: ETF Investors who invest in smart beta products=362)

About Six in Ten ETF Investors Say Smart Beta ETFs Are a Complement to Market-Cap-Weight ETFs

View of Smart Beta ETFs

Among those who invest in Smart Beta ETFs

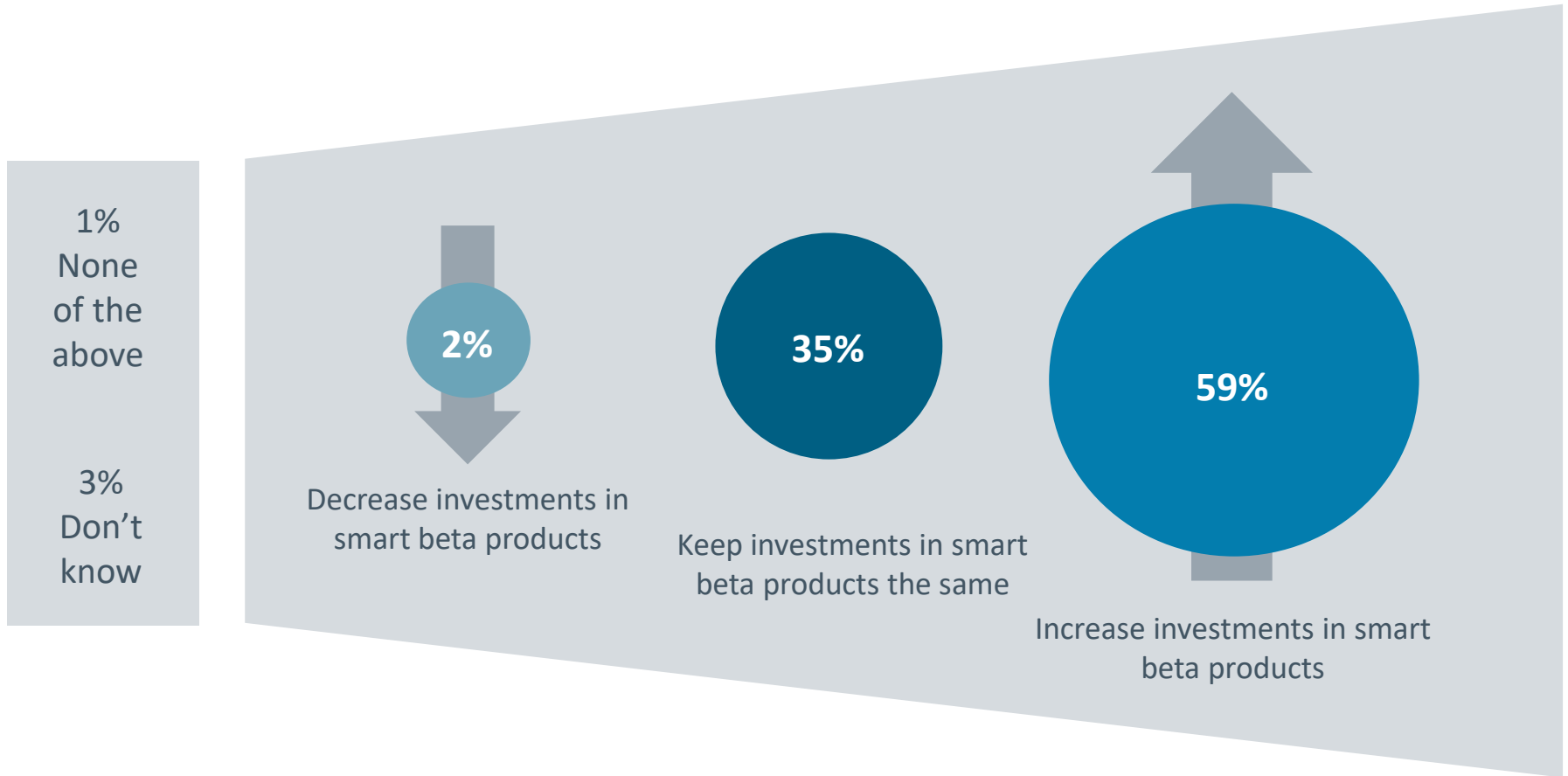


Q34. Do you see smart beta ETFs as a complement to market cap-weight ETFs, or a replacement for market cap-weight ETFs?
(Base: ETF Investors who invest in smart beta products=362)

Six in Ten ETF Investors Plan to Increase Investments in Smart Beta Products

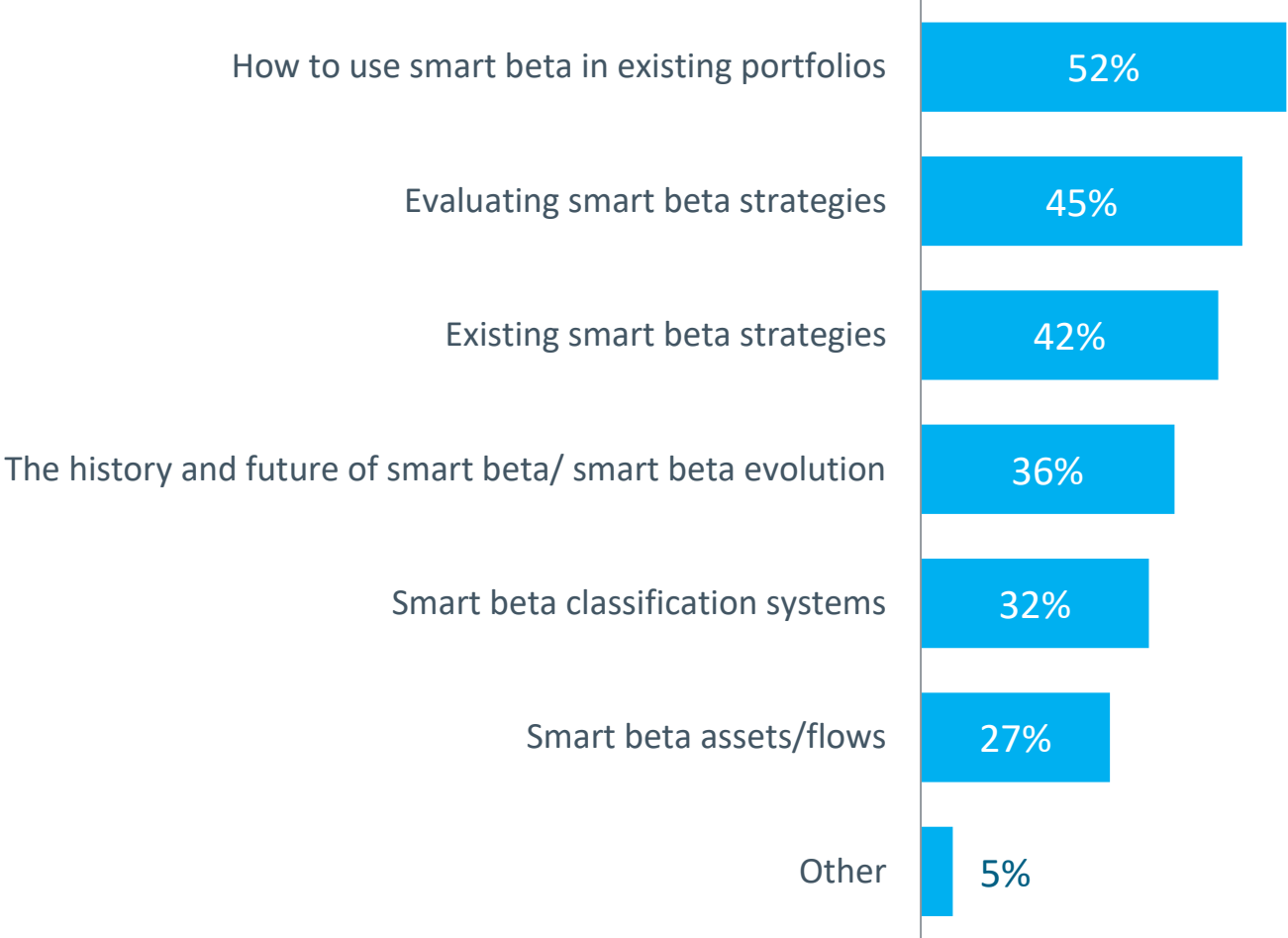
Expect to do in Next Year

Among those who invest in Smart Beta ETFs



Investors Are Most Interested in Learning More About How to Use Smart Beta in Existing Portfolios

Smart Beta Topics Would Like to Learn More About



Q37. Which of the following smart beta topics would you like to learn more about? (Base: ETF Investors=1,264)

Evaluating the Options

Evaluating the Options:

Schwab believes in the value of strategic beta strategies. However, we see a high degree of variability across the types of strategies. Investors should understand the weighting methodologies, underlying indexes, sector allocations, market capitalization, and value-growth tilts.

Not all alternatives are created equal.

GICS® Sectors¹

Name	Materials	Cons. Disc.	Financials	Cons. Staples	Health-care	Utilities	Telecom Services	Energy	Industrials	Info Tech
Russell RAFI U.S. Large Company Index	4	13	14	10	11	4	3	14	11	16
MSCI USA Momentum Factor Index	2	8	21	1	16	0	0	0	15	38
S&P 500 Equal Weight Index	5	16	13	7	12	6	1	7	14	13
FTSE RAFI US 1000 Index	4	11	19	9	11	5	13	11	11	14
S&P 500 Low Volatility Index	3	4	21	10	6	21	0	2	19	10
WisdomTree LargeCap Dividend Index	3	8	14	14	12	5	6	9	10	16
Russell 1000 Index	3	13	15	8	13	3	2	6	11	23
S&P 500 Index	3	12	15	8	14	3	2	6	10	23

¹ Global Industry Classification Standard (GICS®). Source: Morningstar Direct. Data as of December 31, 2017. The numbers represent the percentage breakdown of the GICS Sector allocations, and are rounded to the nearest whole number. Indexes are unmanaged, do not incur fees or expenses, and cannot be invested in directly. See slide 39 for index definitions.

Market Cap and Style Breakdown

Name	Mega Cap	Large Cap	Mid Cap	Small Cap	Micro Cap
Russell RAFI U.S. Large Company Index	44	35	17	3	0
MSCI USA Momentum Factor Index	54	13	14	0	0
S&P 500 Equal Weight Index	11	40	48	1	0
FTSE RAFI US 1000 Index	42	35	18	5	1
S&P 500 Low Volatility Index	24	46	30	0	0
WisdomTree LargeCap Dividend Index	59	33	8	0	0
Russell 1000 Index	45	33	20	2	0
S&P 500 Index	50	36	13	0	0

Value	Core	Growth
50	34	16
12	29	59
38	34	28
49	34	16
35	40	25
52	32	17
33	33	34
34	33	33

Source: Morningstar Direct. Data as of December 31, 2017. Market capitalization may vary without notice. Market-capitalization breakpoints, determined by Morningstar Direct: Mega Cap, over \$78.3 billion; Large Cap, between \$17.3 billion and \$78.3 billion; Mid Cap, between \$3.6 billion and \$17.3 billion; Small Cap, between \$1.1 billion and \$3.6 billion. The numbers represent the market cap and style allocation breakdowns, and percentages are rounded to the nearest whole number. Indexes are unmanaged, do not incur fees or expenses, and cannot be invested in directly. See slide 39 for index definitions.

Smart Beta Year-Over-Year Results

2012	2013	2014	2015	2016	2017
Equal Weight 17.7%	Equal Weight 36.1%	Low Volatility 17.5%	Momentum 8.7%	Fundamental 16.3%	Momentum 37.2%
Fundamental 16.3%	Fundamental 34.3%	Equal Weight 14.5%	Low Volatility 4.3%	Equal Weight 14.8%	Quality 28.1%
Quality 16.1%	Momentum 34.0%	Momentum 14.2%	Quality 2.1%	Market Cap 12.0%	Market Cap 21.8%
Market Cap 16.0%	Market Cap 32.4%	Market Cap 13.7%	Market Cap 1.4%	Quality 10.7%	Equal Weight 18.9%
Momentum 14.3%	Quality 31.7%	Quality 13.3%	Equal Weight -2.2%	Low Volatility 10.4%	Low Volatility 17.4%
Low Volatility 10.3%	Low Volatility 23.6%	Fundamental 12.3%	Fundamental -3.0%	Momentum 4.6%	Fundamental 17.3%

Source: Schwab Center for Financial Research with data provided by Morningstar Direct. Data used from January 1, 2012 through December 31, 2017. Strategy performance represented by annual total returns for the following indexes: Market Cap – S&P 500; Fundamental – Russell RAFI US LC; Equal Weight – S&P 500 Equal Weighted; Momentum – MSCI USA Momentum; Low Volatility – S&P Low Volatility; Quality – Russell 1000 Quality Factor. Indexes are unmanaged, do not incur fees or expenses, and cannot be invested in directly. **Past performance is no guarantee.**

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Fundamental Indexing

Portfolio Comparisons

	Market Cap	Fundamental	Active
Portfolio Weighting	Cap weighting	Economic Factors	Varies by manager
Portfolio Construction	Larger-cap bias	Value tilt	Varies by manager
Portfolio Turnover	Reconstitution	Reconstitution and rebalancing	Buy and sell discipline
Tax Efficiency	Typically	Typically	Not typically
Cost Structure	Lowest cost	Low cost	Varies by manager and structure
Alpha/Beta	Beta	Potential Alpha	Varies by manager
Investment Process	Passive	Rules-based	Active

Index Comparison

As of December 31, 2017	Rank in Russell 1000	Rank in Russell RAFI US Large Cap	Forward P/E Ratio	Price-to-Book Ratio
Facebook	4	174	27.7	7.5
Amazon	3	114	133.3	23.5
Netflix	68	--	94.3	26.7
Google (Alphabet)	9	66	26.5	4.8
Russell 1000 Index	--	--	22.6	3.11
Russell RAFI Index	--	--	20.5	2.52

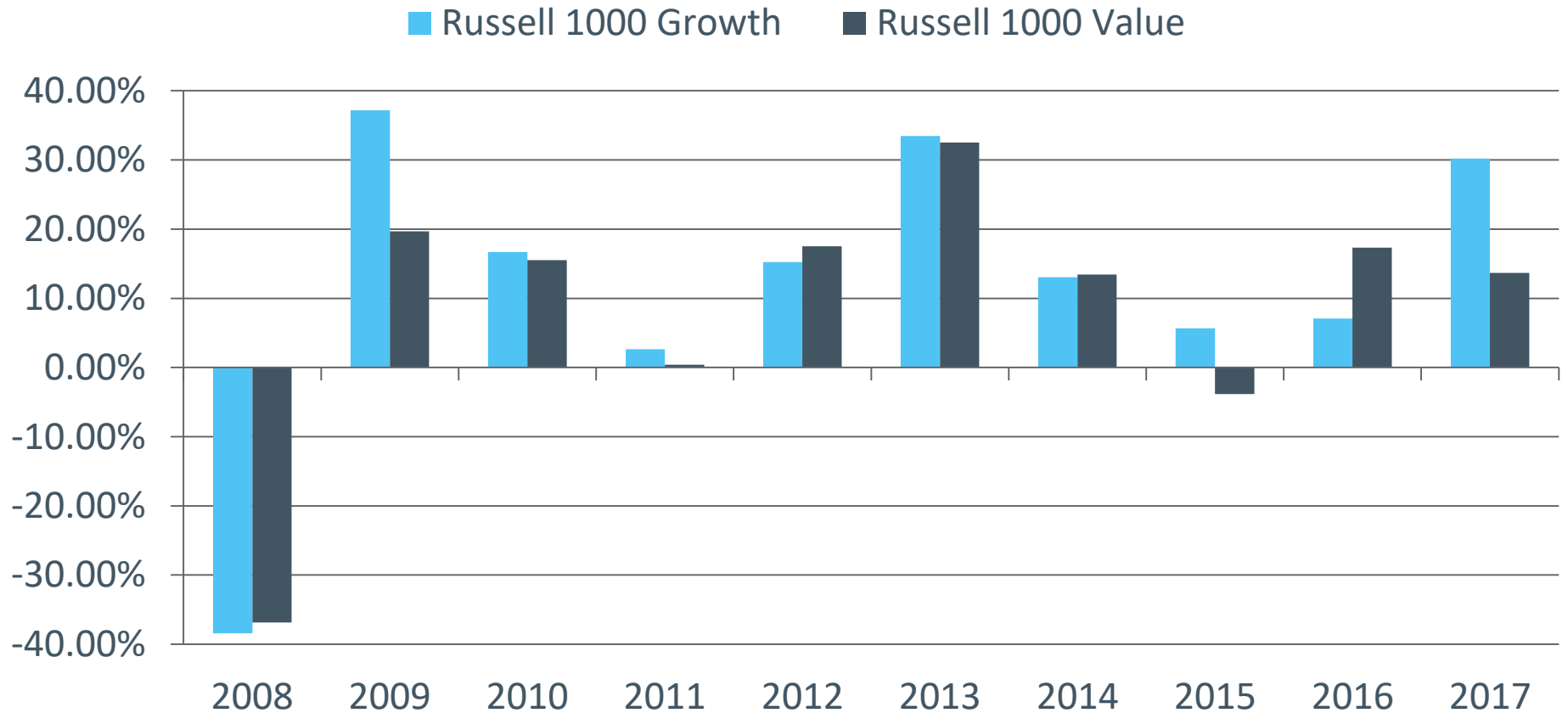
Source: Schwab Center for Financial Research with data provided by Morningstar Direct Data as of December 31, 2017. For illustrative purposes only. Not a recommendation or guarantee that any company is or has been profitable.

Index Comparison

As of March 31, 2018	Rank in Russell 1000	Rank in Russell RAFI US Large Cap	Forward P/E Ratio	Price-to-Book Ratio
Facebook	6	181	22.3	7.5
Amazon	3	101	138.9	24.3
Netflix	41	--	106.4	34.4
Google (Alphabet)	9	61	24.8	4.6
Russell 1000 Index	--	--	22.6	3.11
Russell RAFI Index	--	--	20.5	2.52

Source: Schwab Center for Financial Research with data provided by Morningstar Direct Data as of December 31, 2017. For illustrative purposes only. Not a recommendation or guarantee that any company is or has been profitable.

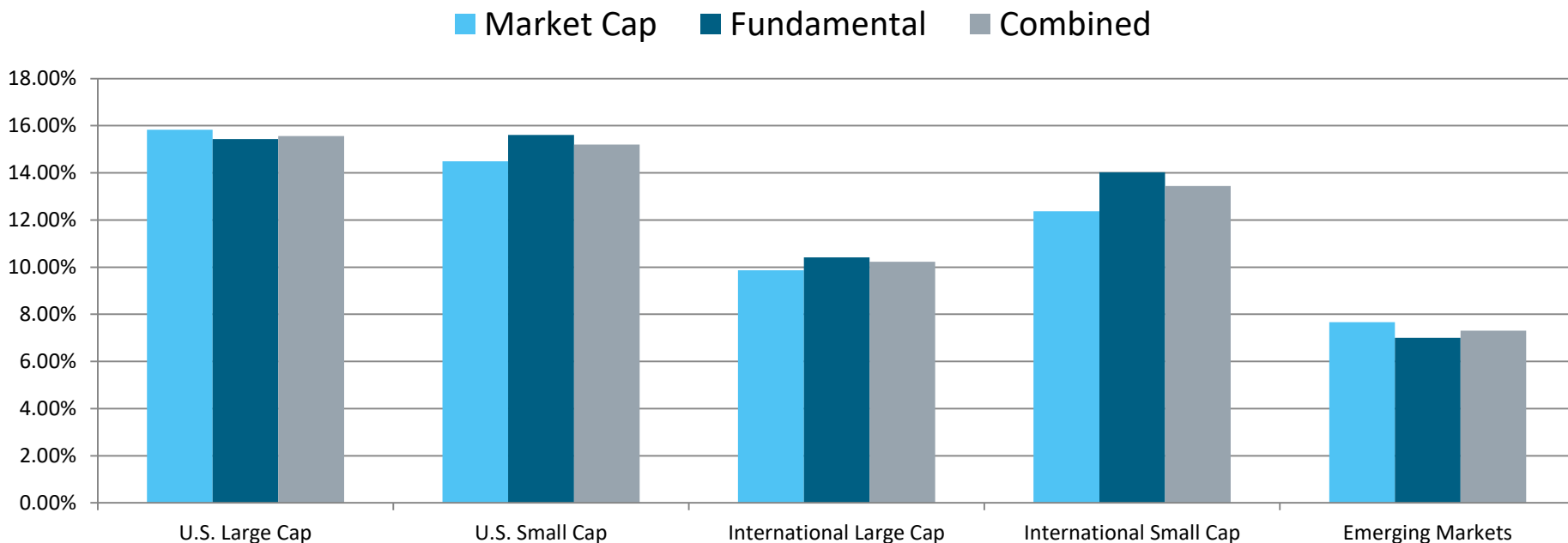
Growth Versus Value Comparison



Source: Morningstar Direct and Schwab Center for Financial Research. This chart represents a hypothetical investment and is for illustrative purposes only. Data is from January 1, 2008 – December 31, 2017. See disclosures for more information about the market indexes used. Indexes are unmanaged, do not incur fees or expenses, and cannot be invested in directly. **Past performance is no guarantee of future results**

Better Together

Annualized Returns January 1, 2012 – December 31, 2017



Recommended Allocation	U.S. Large Cap	U.S. Small Cap	International Large Cap	International Small Cap	Emerging Markets
Market Cap	40%	37%	35%	35%	35%
Fundamental	60%	63%	65%	65%	65%

Source: Schwab Center for Financial Research with data provided by Morningstar Direct. Data from January 1, 2012 - December 31, 2017. For illustrative purposes only.

Building Better Portfolios with Smart Beta Strategies

Schwab believes that **active, market-cap, and fundamental** strategies can be used together in building portfolios. **We believe that portfolio construction should be a combination of art and science, utilizing behavioral finance, historical data, and financial intuition.** Our research shows that constructing portfolios in an optimal fashion provides better risk-adjusted results and a smoother ride for investors.

- Anthony B. Davidow, CIMA® - *An Evolutionary Approach to Portfolio Construction*, 2017

Portfolio Construction Levers

Key Lever	Market Cap	Fundamental	Active
Tracking error	Little or no tracking error	Higher tracking error	Varies by manager
Loss aversion	No downside protection	No downside protection	May provide a level of downside protection
Alpha	No	Potential alpha	Varies
Cost	Lowest Cost	Low Cost	Varies by manager and vehicle

Portfolio Construction Recommendations

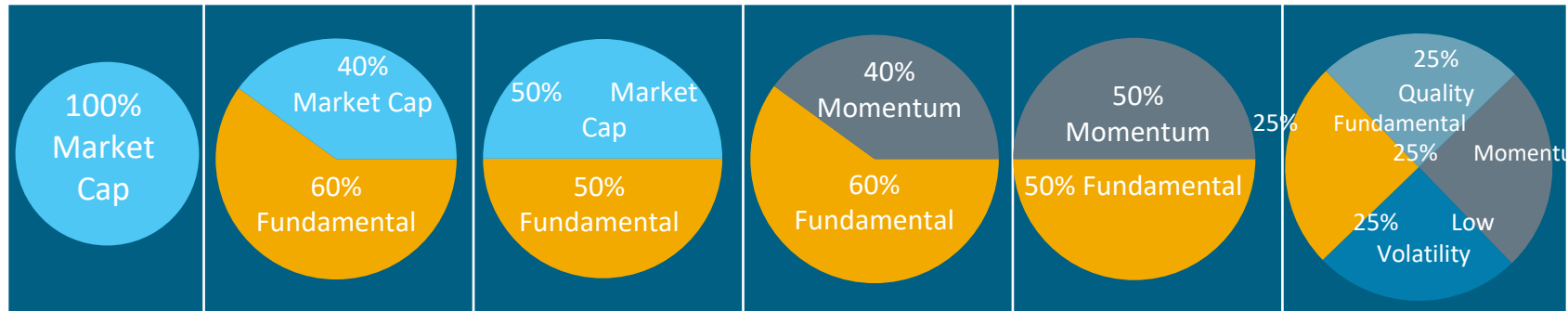
Schwab believes that portfolio construction is a combination of art and science, and needs to incorporate insights in building better portfolios.

Recommended Portfolio Allocations

	Domestic Large Co.	Domestic Small Co.	International Large Co.	International Small Co.	Emerging Markets
Market Cap	30%	25%	20%	20%	20%
Fundamental	50%	50%	30%	30%	30%
Active	20%	25%	50%	50%	50%

Strategy Comparisons

5 years ending December 31, 2017



Annualized Return	15.79%	15.44%	15.50%	16.77%	17.24%	16.42%
Standard Deviation	9.49	9.60	9.57	9.26	9.25	8.92
Alpha	--	-0.29	-0.24	1.46	2.01	1.91
Beta	1.00	1.00	1.00	0.96	0.95	0.91
Information Ratio	--	-0.25	-0.24	0.57	0.66	0.25
Tracking Error	--	1.42	1.18	1.73	2.18	2.56

For illustrative purposes only. Not representative of any specific investment or account. The sample portfolios are represented by the following indexes: Market Cap – S&P 500, Fundamental – Russell RAFI U.S. Large Cap, Momentum – MSCI USA Momentum Factor, Quality – Russell 1000 Quality Factor, Low Volatility – S&P 500 Low Volatility. Source: Schwab Center for Financial Research with data provided by Morningstar Direct.

Conclusion

Conclusion

With the growth of index-based strategies, advisors have more tools at their disposal; however, they need to better understand the nuances of the various strategies available in the market. Based on the weighting methodology used, investors may receive dramatically different results.

- ❑ We believe that fundamental strategies represent an evolutionary step forward, capturing positive attributes of both active and passive strategies.
- ❑ We believe that fundamental index strategies can serve as a valuable complement to active management and traditional market-cap strategies.
- ❑ Smart Beta strategies have grown significantly over the last several years, in both the number and types of strategies available in the marketplace.
- ❑ Investors should spend the time to know **what they own – and how they own it.**

Appendix

Accessing Schwab's Thought Leadership & Content

INSIGHTS & IDEAS

Keeping you at the forefront of modern investing



PORTFOLIO MANAGEMENT

Home → Portfolio Management → Smart Beta Strategies: Understanding Key Differences

Smart Beta Strategies: Understanding Key Differences

PORTFOLIO MANAGEMENT ASSET ALLOCATION

FEBRUARY 16, 2018

Schwab Asset Class Quilt™

Smart Beta Strategies, Year-Over-Year Results

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Low Volatility -21.4%	Equal Weight 46.5%	Equal Weight 21.9%	Low Volatility 14.8%	Equal Weight 17.7%	Equal Weight 38.1%	Low Volatility 17.5%	Momentum 8.7%	Fundamental 16.3%	Momentum 37.4%
Quality -31.1%	Fundamental 33.1%	Fundamental 17.9%	Quality 8.5%	Fundamental 16.3%	Fundamental 34.3%	Equal Weight 14.5%	Low Volatility 4.3%	Equal Weight 14.8%	Quality 28.1%
Fundamental -34.7%	Quality 26.7%	Momentum 17.8%	Momentum 5.5%	Quality 16.1%	Momentum 34.0%	Momentum 14.2%	Quality 2.1%	Market Cap 12.0%	Market Cap 21.8%
Market Cap -36.7%	Market Cap 26.5%	Market Cap 15.1%	Fundamental 2.9%	Market Cap 16.0%	Market Cap 32.4%	Market Cap 13.7%	Market Cap 1.4%	Quality 10.7%	Equal Weight 18.9%
Equal Weight -39.7%	Low Volatility 19.2%	Quality 14.5%	Market Cap 2.1%	Momentum 14.3%	Quality 31.7%	Quality 13.3%	Equal Weight -2.2%	Low Volatility 10.4%	Low Volatility 17.4%
Momentum -41.1%	Momentum 17.1%	Low Volatility 13.4%	Equal Weight -0.1%	Low Volatility 10.3%	Low Volatility 23.6%	Fundamental 12.3%	Fundamental -3.0%	Momentum 4.6%	Fundamental 17.3%



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Journal of Investment Research

Better Together: Fundamental & Market-Cap Indexes

Anthony B. Davidson, CMAA®
Vice President, Alternative Beta and Asset Allocation Strategies
Schwab Center for Financial Research®

In this paper
We discuss why we believe that fundamental and market-cap indexes are better together. We also address the following:

- Why now is a good time for fundamental indexing.
- Why we favor fundamental indexing rather than other types of smart beta strategies.
- The benefits of combining fundamental and market-cap indexing.

Better Together: Fundamental & Market-Cap Indexes

Biography



ANTHONY B. DAVIDOW, CIMA®

Vice President, Alternative Beta and Asset Allocation Strategist

Anthony Davidow is responsible for providing Schwab's point of view on asset allocation and portfolio construction. He is also responsible for providing research and analysis on alternative beta strategies and how investors can incorporate them in their portfolios. Davidow is also a member of the firm's Asset Allocation Council and Alternative Investment Product Council.

Before joining Schwab, Davidow was a managing director, portfolio strategist, and head of the ETF Knowledge Center for Guggenheim Investments. Before joining Guggenheim, Davidow was executive vice president and head of distribution for IndexIQ. Previously, he spent 15 years at Morgan Stanley, where he served as managing director and head of sales and training for the Consulting Services Group. While at Morgan Stanley, he was responsible for building and managing the Institutional Consulting Group and Graystone Wealth Management.

Davidow has authored several white papers, and spoken at numerous industry conferences on a range of topics, including: "Asset Allocation and Manager Selection," "Alpha-Beta Separation," "Democratizing Alternative Investments," "An Evolutionary Approach to Portfolio Construction," and "The Case for Global Asset Allocation" among others. In 2017, he was awarded the Steven L. Kessler Writing Award by the Investment & Wealth Institute (formerly IMCA), and in 2015, he received the Steven L. Kessler Writing Award (Honorable Distinction).

Davidow holds a B.B.A. degree in finance and investments from Bernard M. Baruch College, and has earned the Certified Investment Management Analyst (CIMA®) designation from the Investment Management Consultant's Association (IMCA) and the Wharton School of the University of Pennsylvania.

He served on the Board of Directors for IMCA from 2009 to 2015, and currently serves as the Chair, Investment & Wealth Monitor, Editorial Advisory Board. He holds FINRA Series 7, 24, and 63 registrations.

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International investments involve additional risks, which include differences in financial accounting standards, currency fluctuations, geopolitical risk, foreign taxes and regulations, and the potential for illiquid markets. Investing in emerging markets may accentuate these risks.

Fixed income securities are subject to increased loss of principal during periods of rising interest rates. Fixed income investments are subject to various other risks, including changes in credit quality, market valuations, liquidity, prepayments, early redemption, corporate events, tax ramifications, and other factors. Lower rated securities are subject to greater credit risk, default risk, and liquidity risk.

Diversification strategies do not ensure a profit and do not protect against losses in declining markets.

Indexes are unmanaged, do not incur management fees, costs, and expenses, and cannot be invested in directly.

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