City of Milwaukee
Employes' Retirement System

Bernard J. Allen
Executive Director

David M. Silber, CFA, CAIA
Chief Investment Officer

Melody Johnson
Deputy Director

April 4, 2025

Mr. Jim Owczarski
City Clerk
Room 205, City Hall

Dear Mr. Owczarski:

Please be advised that an Investment Committee Meeting of the Annuity and Pension Board has been scheduled for **Thursday, April 10, 2025 at 9:00 a.m.** This meeting will be conducted via teleconference.

Special Notice: Instructions for the public on how to observe the meeting will be available on the ERS's website (www.cmers.com) prior to the meeting.

The agenda is as follows:

I. Chief Investment Officer Report.
II. Approval of Glide Path.
III. Callan 2025 Work Plan.
IV. Callan Investment Manager Due Diligence Report.
V. Brandes Investment Partners Presentation.
VI. Style Bias Overview Presentation.
VII. Value Add Analysis.

Please be advised that the Investment Committee may vote to convene in closed session on the following items (VIII. and IX.) as provided in Section 19.85(1)(e), Wisconsin State Statutes, to deliberate or negotiate the purchasing of public properties, the investing of public funds, or conducting other specified public business, whenever competitive or bargaining reasons require a closed session. The Investment Committee may then vote to reconvene in open session following the closed session.

VIII. Callan LLC Contract Update.
IX. Advisor Compliance Associates LLC Contract Update.

Sincerely,

Bernard J. Allen

Bernard J. Allen
Executive Director

BJA:jmw

Memorandum

To: CMERS Investment Committee
From: David M. Silber, CFA, CAIA
Date: March 13, 2025
Re: Callan Glide Path Presentation Thoughts

High Level Thoughts

- At 50% probability, Callan projects all 5 Glide Paths (GP) will achieve fully funded status at a 5.5% discount rate, with lower required contribution amounts over 30-years than projected by the Actuary;
- The Glide Paths are highly vulnerable (i.e., contributions significantly rise) to scenarios where the Fund significantly underperforms its 6.8% discount rate in the early years of this analysis;
- At 50% probability, Callan projects higher required contribution amounts for GP-C & GP-E over the next 10-years than projected by the Actuary, likely because GP-C & GP-E lower the discount rate when the Fund reaches an 85% funded status while the other Glide Paths don't lower the discount rate until the Fund reaches a 90% funded status;
- GP-A, GP-B, & GP-D are exactly the same once the Fund reaches an 85% funded status;
- The main difference between GP-A, GP-B, & GP-D is whether to de risk immediately, and if yes, by how much;
- Callan & Staff believe the Glide Paths analyzed in the presentation are representative of the range of options available. In other words, there does not appear to be a way to further reduce investment volatility and avoid paying more in projected contributions than GP-E;
- Some Pros & Cons of GP-A & GP-D are below; <u>GP-B plots somewhere in between GP-A and GP-D, so its comments are not included below even though it merits serious consideration along with GP-A & GP-D</u>.

	Glide Path A (GP-A)	**Glide Path D (GP-D)**
Pros:		
1.	At 50% probability, projected to achieve the highest return, result in the lowest required contributions, and achieve the highest funded status.	At 50% probability, projected to lower investment risk the most immediately, lower required contributions below what Actuary estimates, & achieve full funded status.
2.	Long time horizon before the Fund's liabilities and benefit payments peak supports taking investment risk.	Mix 2 has a higher Sharpe Ratio than the Target & Mix 1. Since GP-D invests in Mix 2 immediately, this Glide Path is expected to have a better risk-adjusted return.
3.	May be preferential option if Callan data is not compelling enough in terms of the risk & return trade-off between Target, Mix 1, & Mix 2 to make an immediate change.	Higher allocation to bonds and lower allocation to alternatives results in improved Fund liquidity, which is helpful during times of market stress.
4.		Lowers allocation to stocks right away in an environment where Callan explains stocks are historically expensive.
Cons:		
1.	Highest contribution volatility; Largest required contributions projected in bad stock market scenarios.	Contributions projected to rise above what Actuary currently predicts at 67th percentile probability for all GPs, including GP-D.

*Projected data for all Glide Paths (GPs) come from Callan's respective 2025 Phase II & Phase III Glide Path Analysis and Scenario Analysis presentations. Contributions reflect employer contributions only.
**CavMac total estimated employer contributions come from CavMac and are based on the January 1, 2024 valuations. Contributions reflect employer contributions only.

Callan Glide Path Presentation Thoughts Continued

	Target	Mix 1	Mix 2			CavMac
30-year Expected Return	7.5%	7.4%	7.3%			6.8%
10-year Expected Return	7.2%	7.1%	7.0%			6.8%
Expected Standard Deviation	12.2%	11.5%	11.0%			
Sharpe Ratio (10-yr. Return / Standard Deviation)	58.9%	61.1%	63.1%			
Illiquidity (Real Estate + Private Equity Target)	21.7%	19.7%	17.7%			
Fixed Income Target	29.0%	32.0%	36.0%			
Public Equity Target	39.0%	36.0%	34.0%			

	GP-A	GP-B	GP-D	GP-C	GP-E	CavMac
Initial Mix (Below 80%)	Target	Mix 1	Mix 2	Mix 2	Mix 2	
Mix @ 80% Funded	Mix 1	Mix 1	Mix 2	Mix 2	Mix 2	
Mix @ 85% Funded	Mix 2	Mix 2	Mix 2	Mix 3	Mix 4	
Mix @ 90% Funded	Mix 3	Mix 3	Mix 3	Mix 4	Mix 4	
Mix @ 95% Funded	Mix 4	Mix 4	Mix 4	Mix 5	Mix 5	
Discount Rate @ 80% Funded	6.80%	6.80%	6.80%	6.80%	6.80%	6.80%
Discount Rate @ 85% Funded	6.80%	6.80%	6.80%	6.50%	6.00%	6.80%
Discount Rate @ 90% Funded	6.50%	6.50%	6.50%	6.00%	6.00%	6.80%
Discount Rate @ 95% Funded	6.00%	6.00%	6.00%	5.50%	5.50%	6.80%

	GP-A	GP-B	GP-D	GP-C	GP-E	CavMac
Funded Status in 30-years (50%) (Funded Status for all GPs measured using 5.50% discount rate)	119%	119%	117%	117%	116%	100% (with 6.80% discount rate)
Probability of achieving a 100% Funded Status with $250m/year constraint (Funded Status for all GPs measured using 5.50% discount rate)	55%	54%	53%	52%	52%	50% (with 6.80% discount rate and no contribution constraint)
Probability of reaching 100% Funded Status at some point within 30 years with $250m/year constraint @ 6.00% discount rate	72.7%	72.0%	70.7%			
30-Year Contributions (50%)	$5.42b	$5.48b	$5.52b	$5.75b	$5.84b	$6.03b
10-Year Contributions (50%)	$2.31b	$2.32b	$2.35b	$2.41b	$2.49b	$2.37b
10-Year Contributions (67%)	$2.68b	$2.67b	$2.67b	$2.71b	$2.74b	
Median Projected Contribution in a single calendar year > CavMac from 2025 to 2030	No	No	No	Yes	Yes	

	Target	Mix 1	Mix 2			
10-Year Contributions – Tech Bubble Scenario	$3.51b	$3.38b	$3.28b			
10-Year Contributions – Calendar Year 2022	$3.49b	$3.49b	$3.51b			
10-Year Contributions – Global Financial Crisis	$4.14b	$4.03b	$3.94b			
10-Year Contributions – 1970s Stagflation Scenario	$4.07b	$4.03b	$3.99b			

*Projected data for all Glide Paths (GPs) come from Callan's respective 2025 Phase II & Phase III Glide Path Analysis and Scenario Analysis presentations. Contributions reflect employer contributions only.
**CavMac total estimated employer contributions come from CavMac and are based on the January 1, 2024 valuations. Contributions reflect employer contributions only.

Callan

City of Milwaukee Employes' Retirement System

2025 Work Plan

John Jackson, CFA
Senior Vice President

Mike Joecken
Senior Vice President

2025 Work Plan

April 10th

- Asset Allocation Discussion
- Investment Manager Due Diligence Report
- Work Plan Review

May 8th

- Real Estate Performance Review

June 5th

- Investment Policy Statement Review

September 4th

- Private Equity Pacing Review
- Education Presentation - Cryptocurrency

November 6th

- Real Estate Performance Review
- Fixed Income Manager Structure Review

December 4th

- Public Equity Structure Review

CMERS Manager Assessment as of 12/31/24

	Manager Overall	Product People	Philosophy/Process	Short Term Performance	Long Term Performance	Product Dynamics	Product Overall	**STATUS**	**NOTES**
LARGE CAP VALUE EQUITY									
BlackRock Russell 1000 Value Index	🟢	🔵	🟢	🟢	🟢	🟢	🟢	Within Expectations	• Head of iShares and Index Investments Salim Ramji departed the firm in Q1 2024. BlackRock has not opted to replace the position at this time, however the team remains deep at the PM level.
DFA Large Cap Value	🟢	🟢	🟢	🟢	🔵	🟢	🟢	Within Expectations	
LARGE CAP CORE EQUITY									
Northern Trust Global S&P 500 Index	🟢	🟢	🟢	🟢	🟢	🟢	🟢	Within Expectations	
ACWI XUS VALUE									
Brandes Investment Partners	🔵	🟢	🟢	🟢	🟢	🟢	🟢	Within Expectations	• Organization should be monitored going forward, but asset levels and flow activity have stabilized in recent years; the firm continues to maintain a healthy level of profitability in part due to cost restructuring (e.g., outsourcing client reporting/back office functions to SEI) several years ago. The profitability of the firm may be compromised below $10 billion. • The recent CEO change in May 2024 is notable, however, former CEO Brent Woods remains highly engaged as an investor and the president of the general partner. CEO Oliver Murray has had a lengthy career at the firm. Murray does not come from an investment background which we are mindful of while monitoring this change. • The International Equity strategy makes up 1/3 of firm assets and should be monitored accordingly.
GLOBAL ACWI GROWTH									
MFS Investment Management	🟢	🟢	🟢	🔵	🟢	🟢	🟢	Within Expectations	• Despite some underperformance, the strategy has met expectations. In recent periods it has protected on the downside, but predictably trailed in the narrow, strong up markets.
CORE PLUS BOND									
Loomis, Sayles & Company, L.P.	🔵	🔵	🟢	🟢	🟢	🟢	🟢	Within Expectations	• In January 2025 it was announced that the holding company for Loomis' parent company, Natixis, entered into an agreement to combine with Generali. The transaction is not expected to close until early 2026, and Callan will be monitoring any potential effects on Loomis in the interim. • Elaine Stokes, co-lead of Full Discretion team, retired at year-end 2023; Matt Eagan took over as sole lead of team.
Reams Asset Management	🟢	🔵	🟢	🟢	🟢	🟢	🟢	Within Expectations	• Securitized Credit PM Stephen Vincent retired April 2023; Neil Aggarwal hired in December 2022 to replace him as Head of Securitized Products.
INTERMEDIATE GOVERNMENT									
BlackRock US Govt Bond	🟢	🟢	🟢	🟢	🟢	🟢	🟢	Within Expectations	
DIVERSIFIED REAL ASSETS									
Principal DRA	🟢	🟢	🟢	🟠	🔵	🟢	🟠	Cautionary	• On January 11, 2024 Principal announced that its CEO since 2018, Pat Halter, would be stepping down on February 10, 2024 and retiring on April 2, 2024. Halter was replaced by Kamal Bhatia, previously the Global Head of Investments and President and Chair of Principal Funds. Bhatia joined Principal in 2019 from Oppenheimer Funds, he was promoted to COO in 2020 and his prior position in March 2023. • Long-term relative performance, while in line with the strategic benchmark, has begun to be weighed down by weak short-term results relative to the benchmark and peers.

🟢	Within Expectations
🔵	Notable
🟠	Cautionary
🔴	Under Review

	Manager Overall	Product People	Philosophy/Process	Short Term Performance	Long Term Performance	Product Dynamics	Product Overall	**STATUS**	**NOTES**
MID CAP CORE EQUITY									
Earnest Partners LLC	Within Expectations	Within Expectations	Within Expectations	Cautionary	Within Expectations	Notable	Within Expectations	Within Expectations	• Firm founder Paul Viera owns majority of firm. • Weighted median and average market cap is well above the Mid Core peer group median but in-line with the Russell Mid-Cap Index. • Portfolio style may exhibit value bias over short-term time periods but remains within expectations of a core style strategy. • Trailing one- and three-year results lag benchmark and rank below median peers.
SMALL CAP VALUE EQUITY									
DFA Small Cap Value	Within Expectations	Within Expectations	Within Expectations	Within Expectations	Within Expectations	Notable	Within Expectations	Within Expectations	• Strategy AUM exceeds $19 billion but mitigated by large number of portfolio holdings and low turnover.
NON-US DEVELOPED SMALL VALUE									
DFA International Small Cap	Within Expectations	Within Expectations	Within Expectations	Within Expectations	Within Expectations	Within Expectations	Within Expectations	Within Expectations	
GLOBAL ACWI CORE									
BlackRock Global Alpha Tilts	Within Expectations	Within Expectations	Within Expectations	Within Expectations	Within Expectations	Within Expectations	Within Expectations	Within Expectations	
LARGE CAP GROWTH EQUITY									
Polen Capital Management	Notable	Notable	Within Expectations	Cautionary	Notable	Within Expectations	Cautionary	Cautionary	• Employee ownership currently stands at 72%; employees continue to control 100% of the firm. • Polen completed a 2022 acquisition of a credit team and in 2023, acquired a Hong Kong-based Emerging Markets Growth team. • Firm recently announced the imminent departure of Jeff Mueller, co-portfolio manager for the Global Growth strategy and fundamental analyst for the Focus Growth strategy, due to personal reasons. Mueller's departed as of December 31, 2023; fundamental coverage for impacted strategies will be absorbed by team members. • Short-term performance remains challenged due to stock selection issues; continuing to monitor the portfolio's positioning and ability to provide downside protection, which has historically been a portfolio attribute. Polen struggled in the 2022 downturn
ACWI XUS GROWTH									
William Blair & Company	Notable	Within Expectations	Within Expectations	Notable	Within Expectations	Within Expectations	Within Expectations	Within Expectations	• In January 2025, William Blair announced that Stephanie Braming, Head of Investment Management, will be retiring from the firm at the end of 2025. Braming has been at the firm for over 20 years, 7 of which were spent in her current role. A search for her replacement has been initiated and will include both internal and external candidates. There are no anticipated structural or personnel changes associated with Braming's upcoming transition from her role. • Andy Siepker joined Ken McAtamney and Simon Fennell on the portfolio management team in January 2022. • Calendar year 2022 was a challenging year for the strategy as growth was out of favor and value had a very strong year.
EMERGING MARKETS CORE									
AQR Emerging Markets	Within Expectations	Within Expectations	Within Expectations	Within Expectations	Within Expectations	Within Expectations	Within Expectations	Within Expectations	• Firm and product AUM decline is notable, which sparked work-force reduction, although the majority was not related to the long-only equity products. • Investment professional and client stability should be monitored closely due to a series of departures and redemptions in recent years; however, AQR continues to maintain leadership continuity, deep investment team and a healthy level of assets. • Short- and long-term performance has recovered.

● (green)	Within Expectations
● (blue)	Notable
● (orange)	Cautionary
● (dark red)	Under Review

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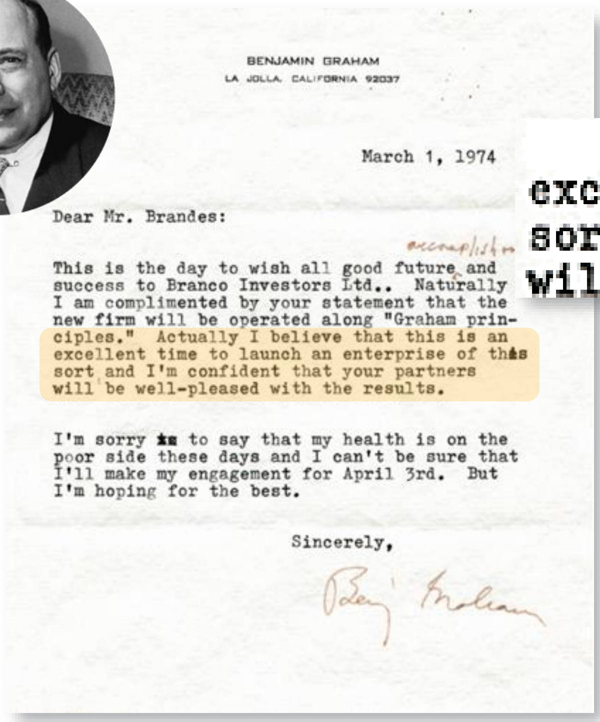
Relevancy of Value InvestingToday

Insights from the Past 50 Years

Presenter: Kenneth Little, CFA, Managing Director, Investments Group

BRANDES 50 YEARS OF VALUE INVESTING

Ben Graham – Market Timer??



BENJAMIN GRAHAM
LA JOLLA, CALIFORNIA 92037

March 1, 1974

Dear Mr. Brandes:

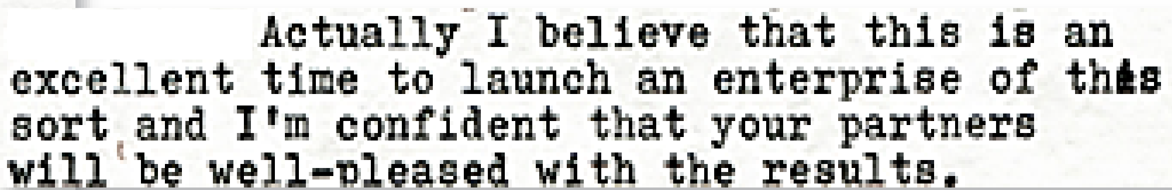
accomplishment

This is the day to wish all good future and success to Branco Investors Ltd.. Naturally I am complimented by your statement that the new firm will be operated along "Graham principles." Actually I believe that this is an excellent time to launch an enterprise of this sort and I'm confident that your partners will be well-pleased with the results.

I'm sorry to say that my health is on the poor side these days and I can't be sure that I'll make my engagement for April 3rd. But I'm hoping for the best.

Sincerely,

Benj Graham



Actually I believe that this is an excellent time to launch an enterprise of this sort and I'm confident that your partners will be well-pleased with the results.

1934
Graham publishes 1st edition of Security Analysis

1963
Ben Graham—CFA designation

1968
Charles Brandes and Ben Graham Meet

1974
Brandes Investment Partners founded

1978
Charles Brandes—CFA charterholder

2024
Brandes Investment Partners Celebrates 50 Years

The Future of Common Stocks

Financial Analysts Journal Article by Benjamin Graham, September/October 1974

SEPTEMBER/OCTOBER 1974 **FAJ**

by Benjamin Graham

The Future Of Common Stocks

The following article is taken, with slight revisions, from a paper prepared for delivery before a group of corporate pension executives in June 1974. The last half of the article aims to answer specific questions raised in connection with the address.

Before I came down to Wall Street in 1914 the future of the stock market had already been forecast—once for all—in the famous dictum of J.P. Morgan the elder: "It will fluctuate." It is a safe prediction for me to make that, in future years as in the past, common stocks will advance too far and decline too far, and that investors, like speculators—and institutions, like individuals—will have their periods of enchantment and disenchantment with equities.

To support this prediction let me cite two "watershed episodes"—as I shall call them—that occurred within my own financial experience. The first goes back just 50 years, to 1924; it was the publication of E.L. Smith's little book entitled, *Common Stocks as Long-Term Investments.* His study showed that, contrary to prevalent beliefs, equities as a whole had proved much better purchases than bonds during the preceding half-century. It is generally held that these findings provided the theoretical and psychological justification for the ensuing bull market of the 1920's. The Dow Jones Industrial Average (DJIA), which stood at 90 in mid-1924, advanced to 381 by September 1929, from which high estate it collapsed—as I remember only too well—to an ignominious low of 41 in 1932.

On that date the market's level was the lowest it had registered for more than 30 years. For both General Electric and for the Dow, the highpoint of 1929 was not to be regained for 25 years.

Here was a striking example of the calamity that can ensue when reasoning that is entirely sound when applied to past conditions is blindly followed long after the relevant conditions have changed. What was true of the attractiveness of equity investments when the Dow stood at 90 was doubtful when the level had advanced to 200 and was completely untrue at 300 or higher.

The second episode—historical in my thinking—occurred towards the end of the market's long recovery from the 1929 to 1932 debacle. It was the report of the Federal Reserve in 1948 on the public's attitude toward common stocks. In that year the Dow sold as low as 165 or seven times earnings, while AAA bonds returned only 2.82 per cent. Nevertheless, over 90 per cent of those canvassed were opposed to buying equities—about half because they thought them too risky and half because of unfamiliarity. Of course this was just the moment before common stocks were to begin the greatest upward movement in market history—which was to carry the Dow from 165 to 1050 last year. What better illustration can one wish of the age-old truth that the public's attitudes in matters of finance are completely untrustworthy as guides to investment policy? This may easily prove as true in 1974 as it was in 1948.

Benjamin Graham, senior author of Security Analysis, *first edition of which appeared in 1934, needs no introduction to the readers of this magazine.*

confidence in the financial community growing out of its own conduct in recent years. I insist that more damage has been done to stock values and to the future of equities from inside Wall Street than from outside Wall Street. Edward Gibbon and Oliver Goldsmith both wrote that. "History is little

Even if the averages may not be at an attractive level, can investors expect satisfactory results by choosing individual issues that are undoubtedly worth at least what they are selling for? The distinction I have just made is clearly relevant to the present situation because of the recent advent of the "two-tiered market," resulting from the massive preference of insititutions for large, high-growth companies.

15 per cent or better earnings yield? The opportunites available today afford a more promising investment approach than the recent absurd idea of aiming at, say, 25 per cent market appreciation by shifting equities among institutions at constantly higher price levels—a bootstrap operation if there ever was one.

Let me close with a quotation from Virgil, my favorite poet. It is inscribed beneath a large picture panel at the head of the grand staircase of the Department of Agriculture building in Washington. It reads:

"O fortunati nimium . . . (etc.) Agricolae!"

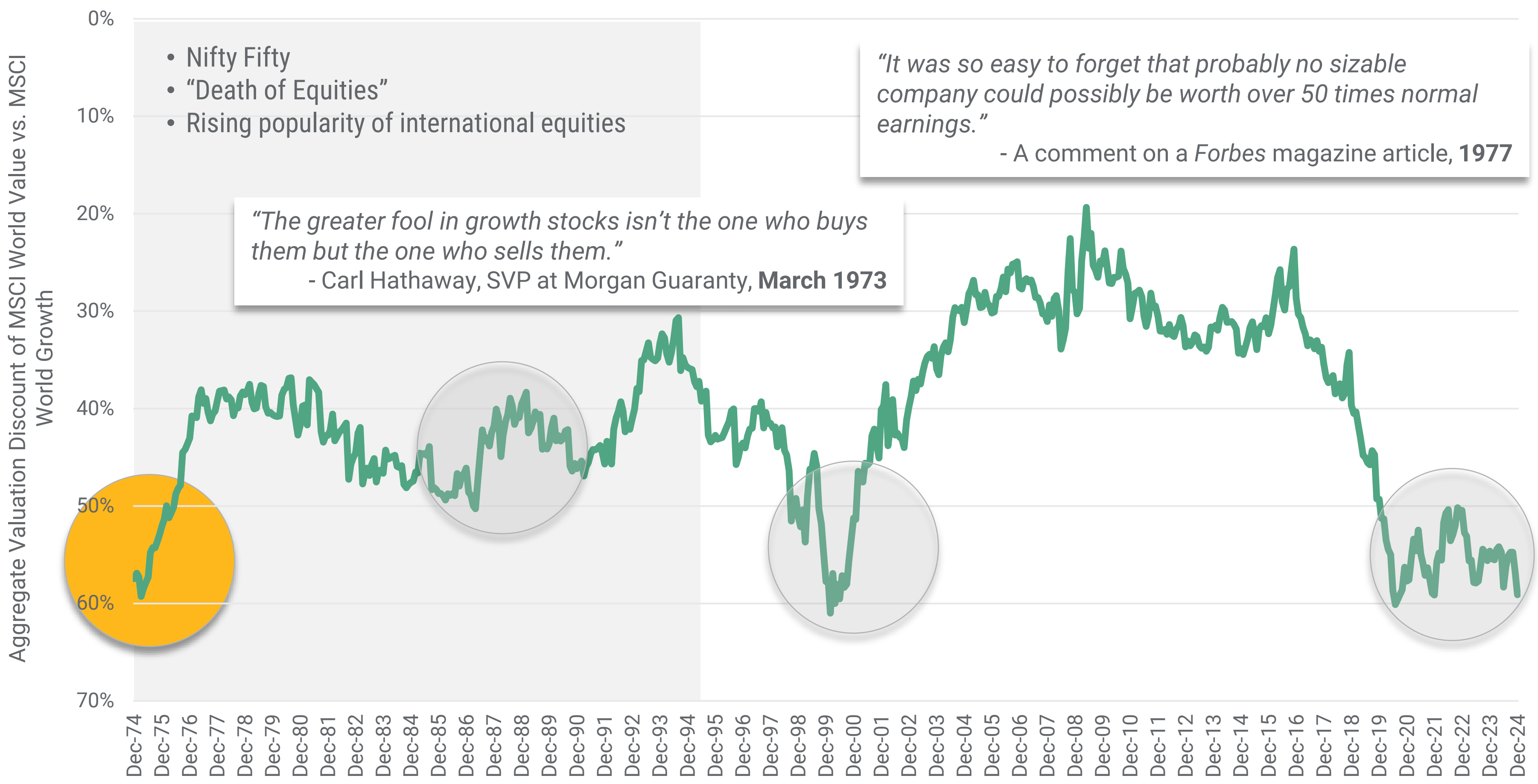
Virgil addressed this apostrophe to the Roman farmers of his day, but I shall direct it at the common-stock buyers of this and future years:

"O enviably fortunate Investors, if only you realized your current advantages!" ■

Source: Financial Analysts Journal, September/October Edition 1974

A Timely Beginning and The First 20 Years

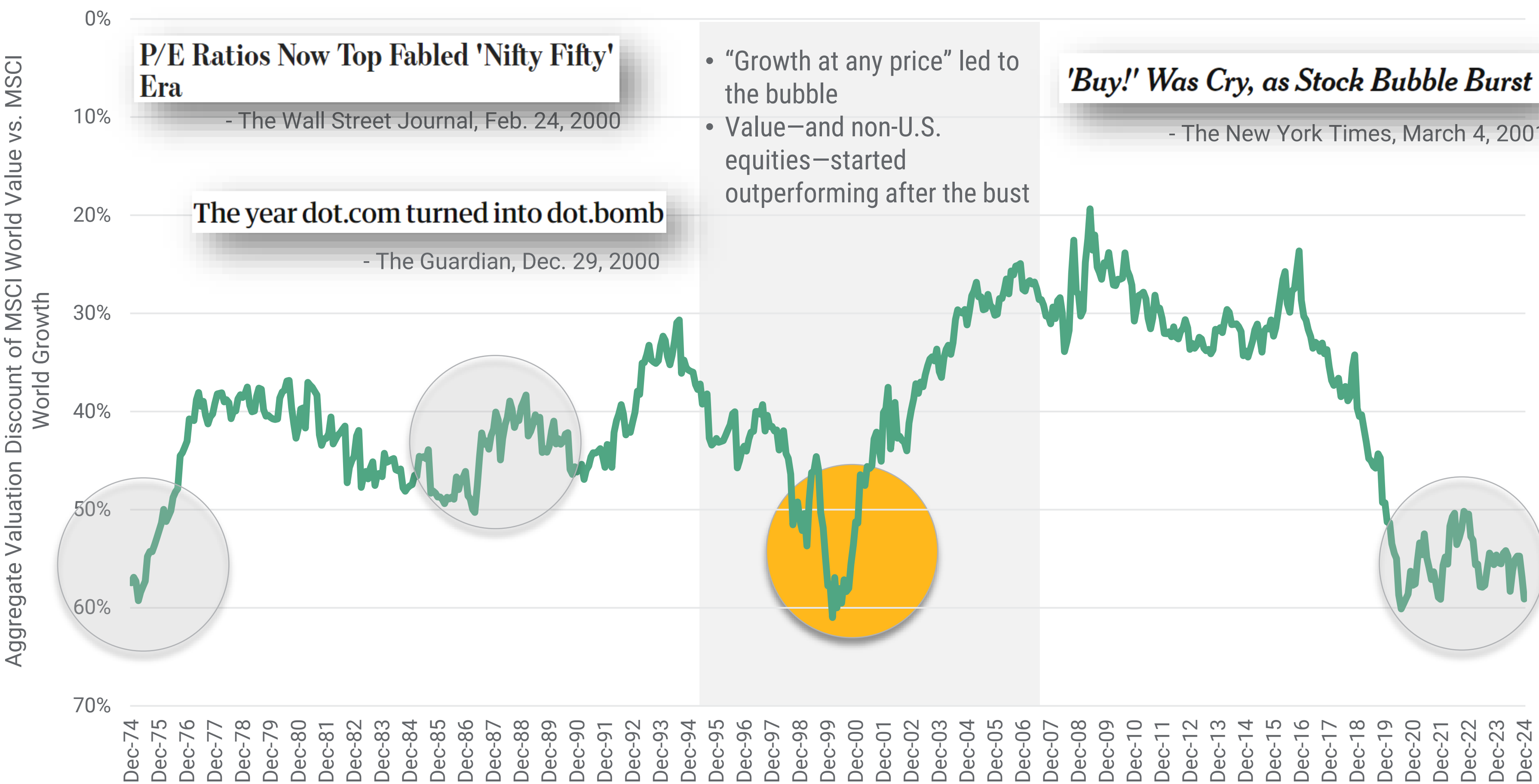
Lesson Learned: Valuations Matter; Themes Go in and out of Vogue



DECEMBER 31, 1974 TO DECEMBER 31, 2024 | Source: MSCI via FactSet. For each fundamental ratio (Price/Book, Price/Earnings, Price/Cash Flow, Forward Price/Earnings, Enterprise Value/Sales, Enterprise Value/Earnings Before Interest, Taxes, Depreciation, and Amortization), we calculate the average ratio of the MSCI World Value Index and divide it by the average ratio of the MSCI World Growth Index to determine the relative valuation. Aggregate valuation discounted based upon the average of each individual metric's valuation discount of the value index relative to growth. Please note that all indices are unmanaged and are not available for direct investment. The examples are for illustrative purposes only.

Tech Bubble: the Boom and the Bust

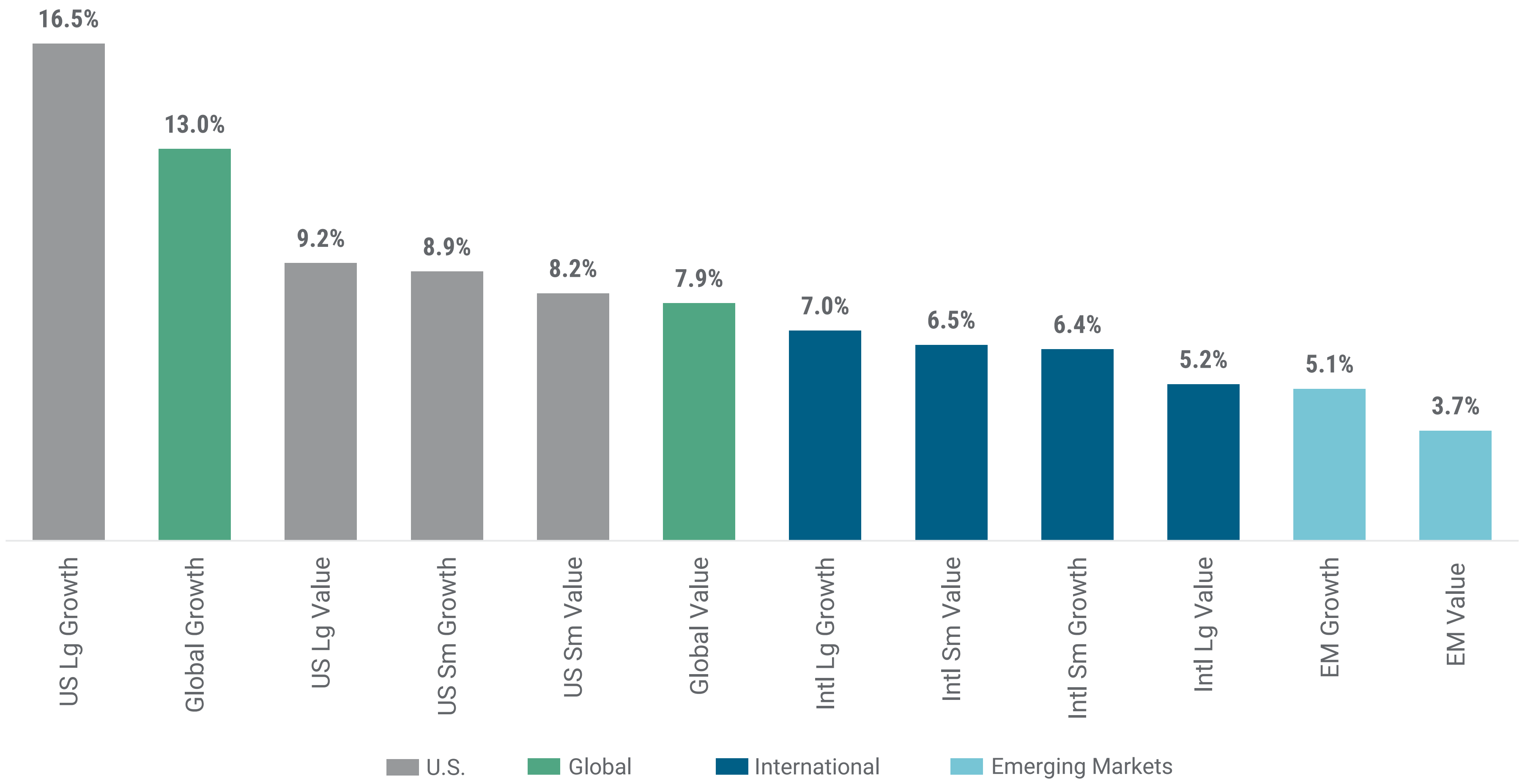
Lesson Learned: Staying Steadfast Pays Off



DECEMBER 31, 1974 TO DECEMBER 31, 2024 | Source: MSCI via FactSet. For each fundamental ratio (Price/Book, Price/Earnings, Price/Cash Flow, Forward Price/Earnings, Enterprise Value/Sales, Enterprise Value/Earnings Before Interest, Taxes, Depreciation, and Amortization), we calculate the average ratio of the MSCI World Value Index and divide it by the average ratio of the MSCI World Growth Index to determine the relative valuation. Aggregate valuation discounted based upon the average of each individual metric's valuation discount of the value index relative to growth. Please note that all indices are unmanaged and are not available for direct investment. The examples are for illustrative purposes only.

U.S. Dominated the Last Decade

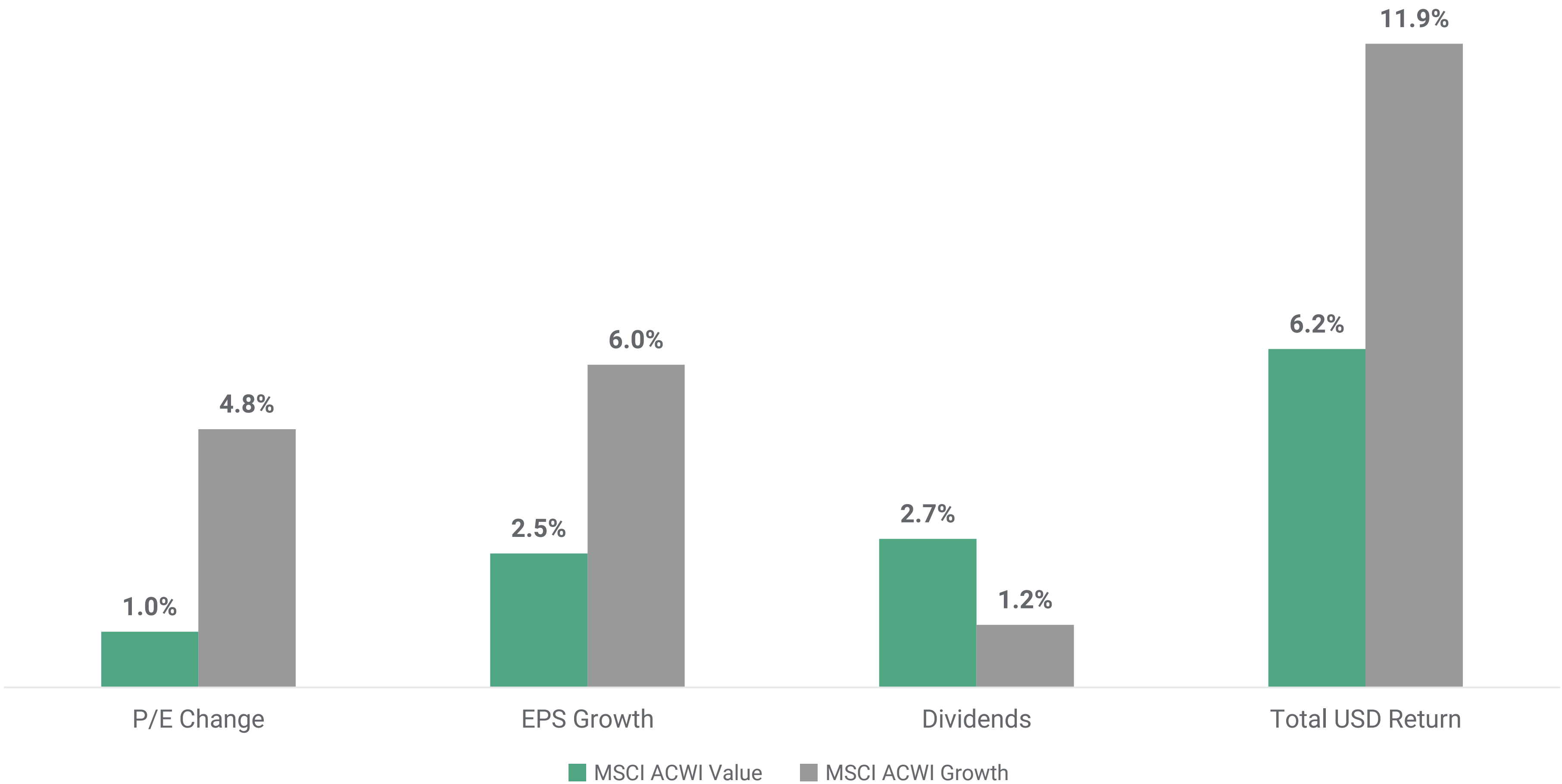
Performance Ranking by Asset Class for the 10-Yr Period Ending 9/30/24



ANNUALIZED RETURNS AS OF SEPTEMBER 30, 2024 | Source: FactSet. It is not possible to invest directly in an index. Reinvestment of dividends and capital gains assumed. Past performance is not a guarantee of future results. EM Growth: MSCI Emerging Markets Growth Index; EM Value: MSCI Emerging Markets Value Index; Int'l Lg Value: MSCI EAFE Value Index; Intl Lg Growth: MSCI EAFE Growth Index; Intl Small Value: MSCI ACWI ExUSA Small Cap Value Index; Intl Small Growth: MSCI ACWI ExUSA Small Cap Growth Index; U.S. Sm Value: Russell 2000 Value Index; US Sm Growth: Russell 2000 Growth Index; Global Value: MSCI World Value Index; Global Growth: MSCI World Growth Index; US Lg Value: Russell 1000 Value Index; US Lg Growth: Russell 1000 Growth Index.

10-Year Annualized Return Decomposition

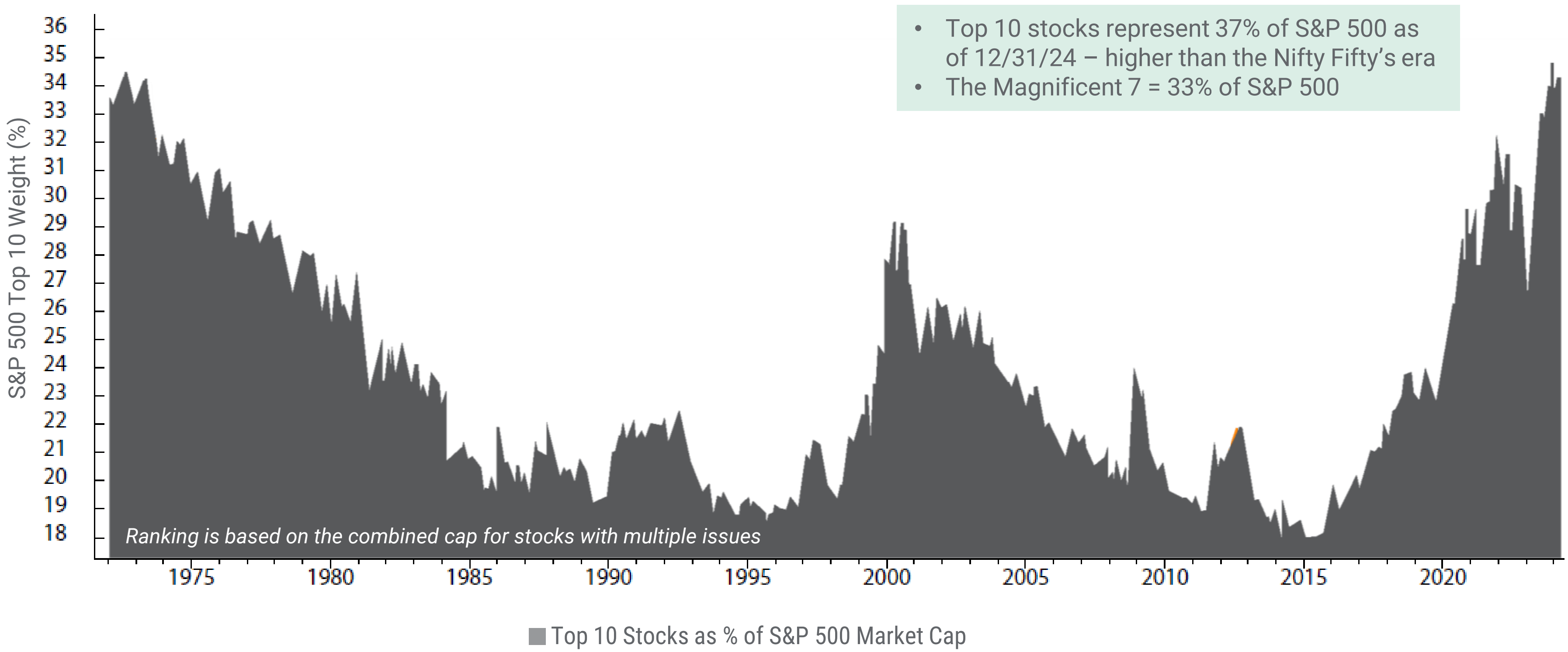
MSCI ACWI Value vs. MSCI ACWI Growth



FOR THE 10 YEARS ENDING DECEMBER 31, 2024 | Source: MSCI via FactSet. EPS – Earnings per share. P/E – Price/Earnings. Past performance is not a guarantee of future results. It is not possible to invest directly in an index. The declaration and payment of shareholder dividends are solely at the discretion of the issuer and are subject to change at any time.

Nifty Fifty Revisited?

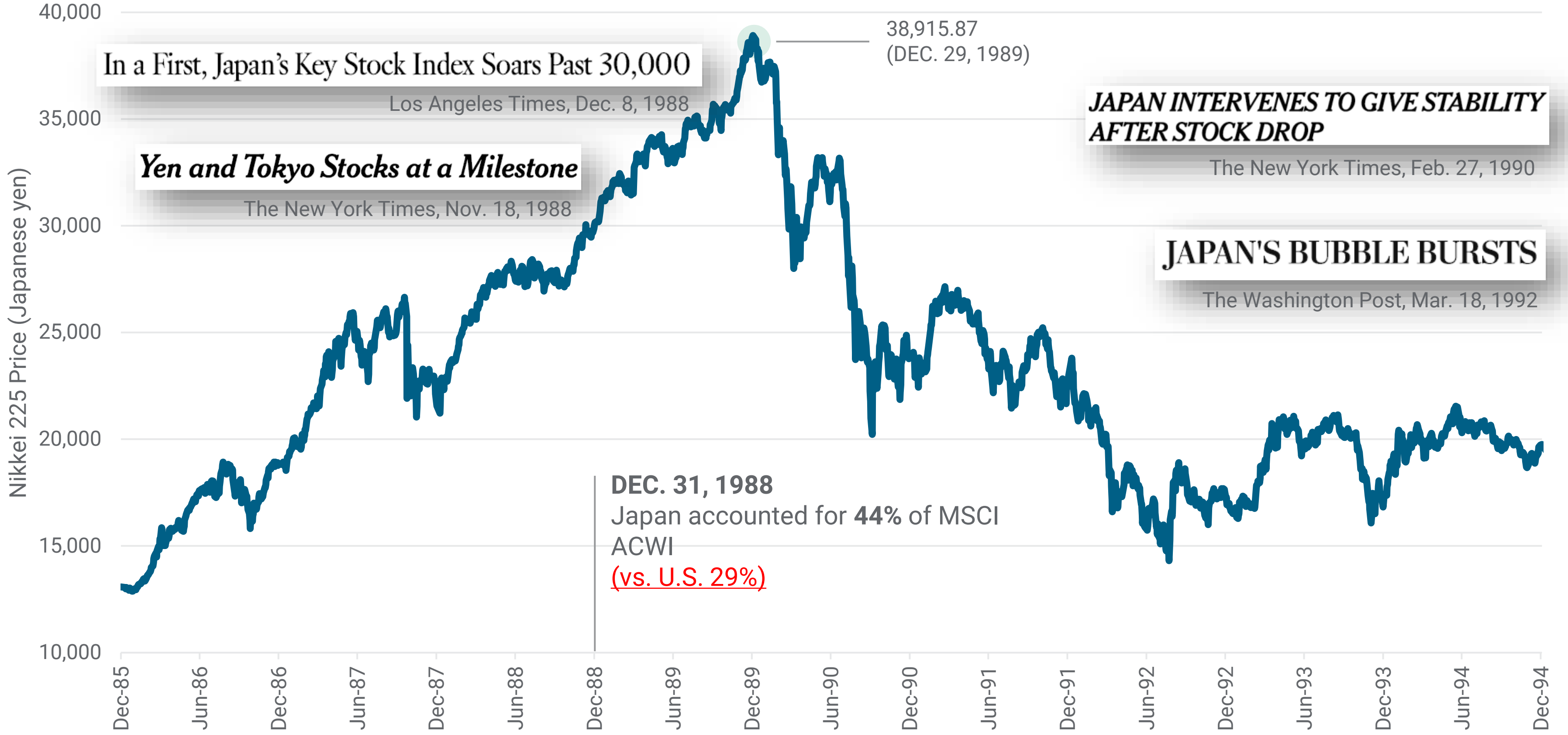
S&P 500 Has Become More Concentrated



AS OF DECEMBER 31, 2024 | Source: Ned Davis Research, FactSet, Brandes. Chart used with permission from NDR, Inc. Further distribution prohibited without prior permission. See NDR Disclaimer at https://www.ndr.com/terms-of-service. It is not possible to invest directly in an index.

Japanese Stocks Peaked in Late 1980s

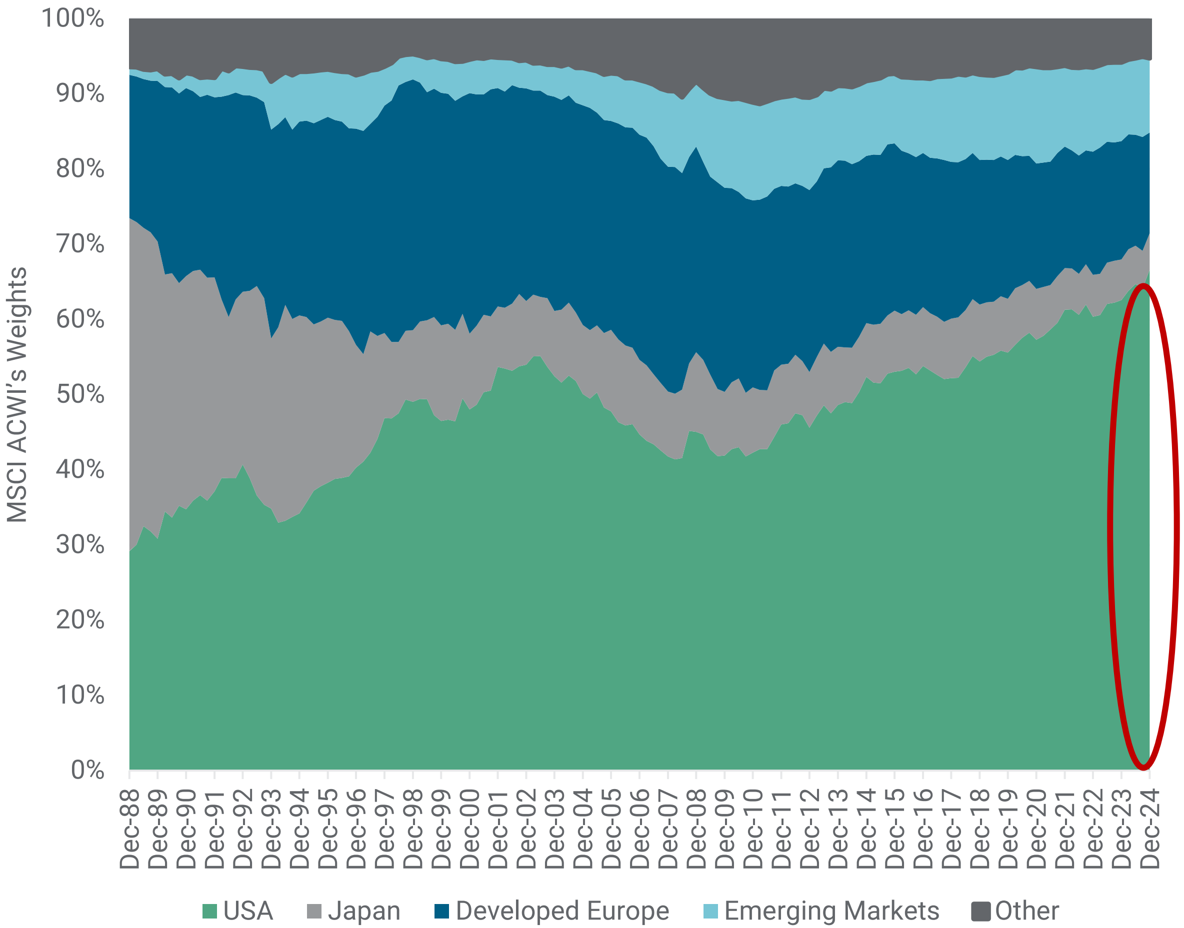
…and Subsequently Entered the "Lost Decade" – and Then Some



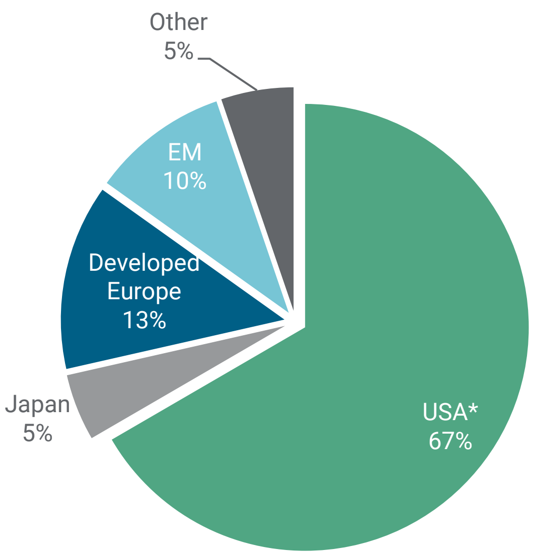
DECEMBER 31, 1985 TO DECEMBER 31, 1994 | Source: FactSet. Past performance is not a guarantee of future results. It is not possible to invest directly in an index.

The U.S. Now Accounts for over 60% of MSCI ACWI

U.S. Market Dominance Resulted in Record Weight



Weightings as of 12/31/2024

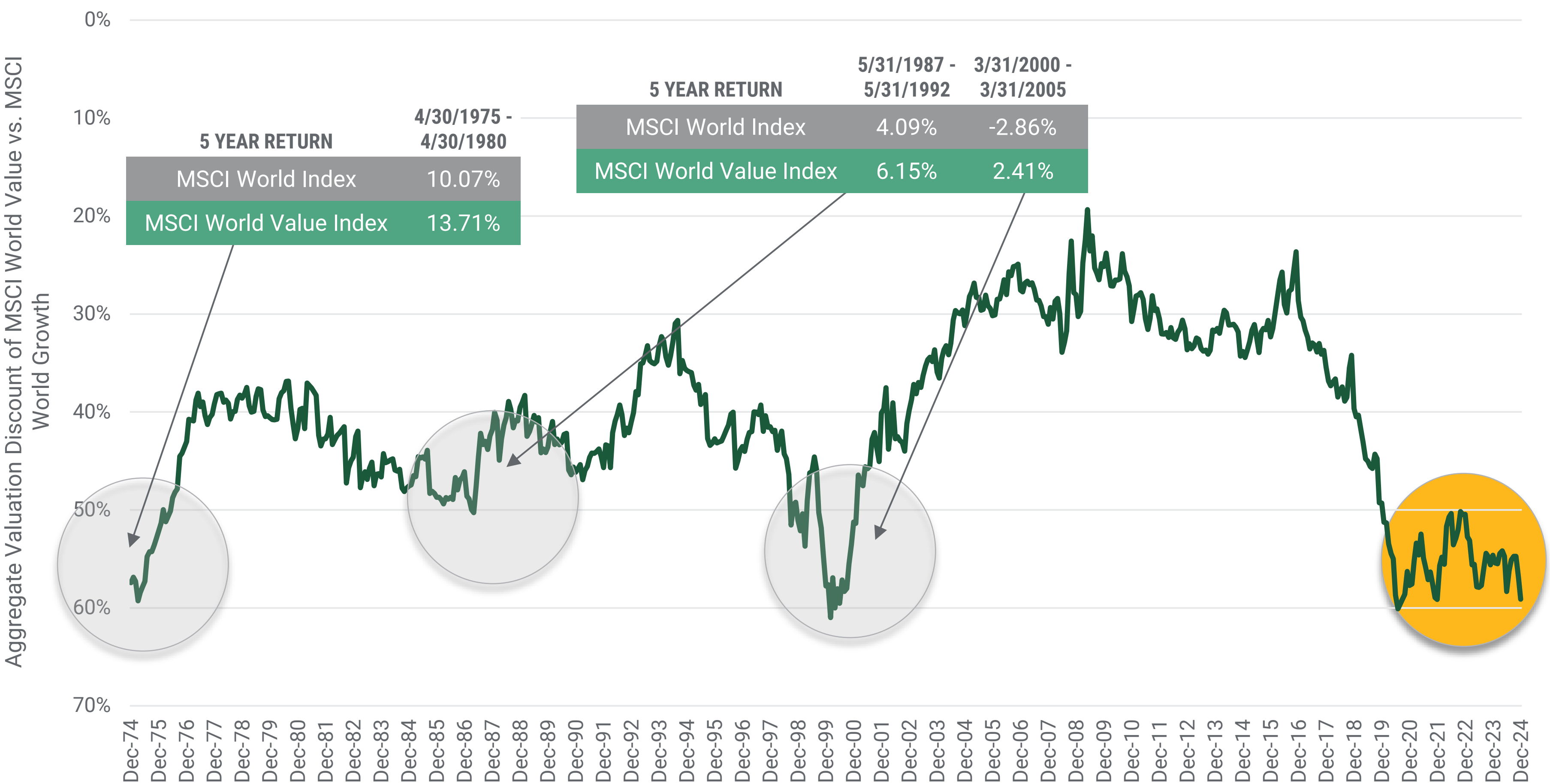


**9 out of MSCI ACWI's Top 10 (21%) are U.S. companies*

DECEMBER 31, 1988 TO DECEMBER 31, 2024 | Source: MSCI via FactSet. Developed Europe: countries included in MSCI Europe as of 12/31/23. Emerging Markets: countries included in MSCI EM as of 12/31/23. It is not possible to invest directly in an index.

Global Value Stocks' Relative Valuation

Valuation Relative to Growth Stocks vs. History



DECEMBER 31, 1974 TO DECEMBER 31, 2024 | Source: MSCI via FactSet. All returns annualized. For each fundamental ratio (Price/Book, Price/Earnings, Price/Cash Flow, Forward Price/Earnings, Enterprise Value/Sales, Enterprise Value/Earnings Before Interest, Taxes, Depreciation, and Amortization), we calculate the average ratio of the MSCI World Value Index and divide it by the average ratio of the MSCI World Growth Index to determine the relative valuation. Aggregate valuation discount based on the average of each individual metric's valuation discount of the value index relative to growth. Past performance is not not a guarantee of future results. One cannot invest directly in an index. Includes back-tested index performance provided by the index provider (i.e., calculations of how the index might have performed over that time period had the index existed). There may be material differences between back-tested performance and actual results. For illustrative purposes only. Does not represent the performance of any specific investment. Actual results will vary.

50 Years of Fundamental Value

Active Value Investing Has Evolved but Key Principles Are Enduring

Markets/styles tend to be cyclical

- Value vs. growth
- U.S. vs. international markets

Themes go in and out of favor – focus on margin of safety

- Nifty Fifty
- Japan's dominance in 1980s
- Tech bubble
- *What is next?*

Time in the market is essential

- Compounding is a powerful force but requires patience

Independence and structure matter

- Both in terms of managing portfolios and the firm

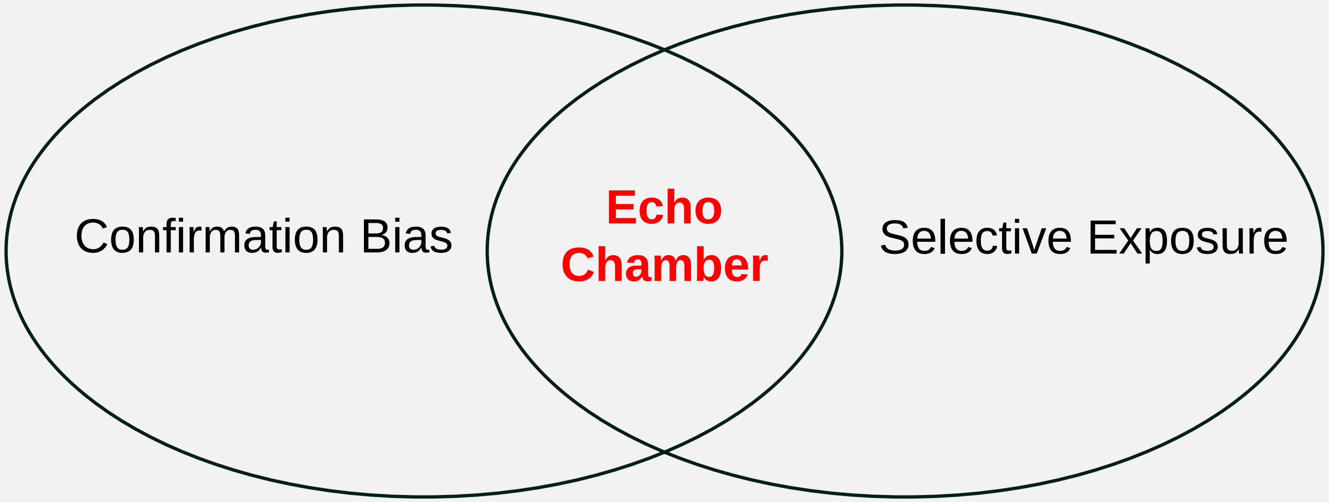
The margin of safety for any security is defined as the discount of its market price to what the firm believes is the intrinsic value of that security.

The Brandes Center

Social Media and Investment Decision-Making

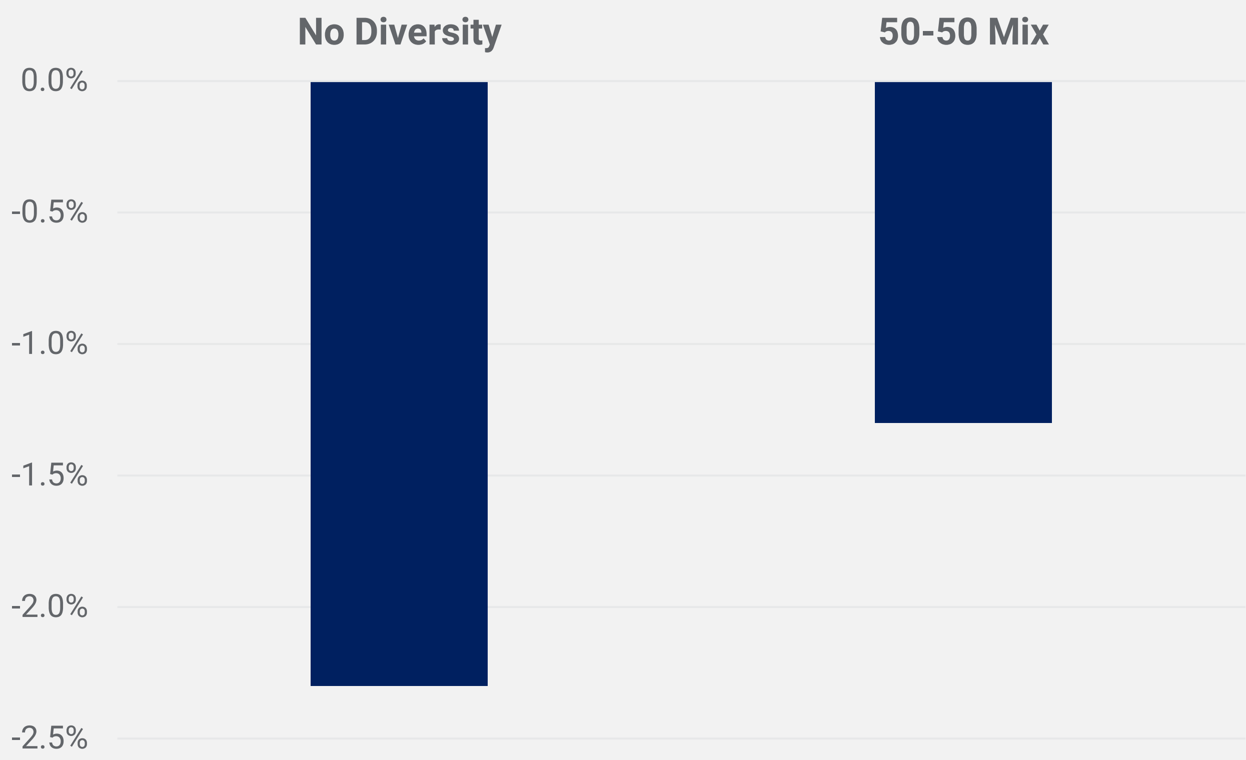
Presenter: Bob Schmidt, Executive Director, The Brandes Center
at UC San Diego's Rady School of Management

Two of Social Media’s Greatest Dangers



Diversity in Newsfeeds and Returns

Abnormal Returns Over Subsequent 5-Day Period



Source: Cookson, J. Anthony and Joseph Engelberg and William Mullins. Echo Chambers (2022). Review of Financial Studies (2023), Available here: https://papers.ssrn.com/sol3/papers.cfm? abstract_id=3603107

Social Media Influence: Not Just Individuals

Institutional Investors

- 80% use social media as part of their regular workflow
- 30% say social media has “influenced an investment recommendation or decision.”

Source: Dure, Elana. “Social Media’s Influence on the Investing Community.” JP Morgan Wealth Management. 1/10/2024

UC San Diego

RADY SCHOOL OF MANAGEMENT
The Brandes Center

Bob Schmidt

Executive Director

rpschmidt@ucsd.edu

Style Bias Overview

Presented by David Silber, CFA, CAIA

Putting Style Bias in Perspective

- Asset Allocation is the most important decision.
  - Drives approximately 80% of the Fund's risk and return results.
  - Led by our Investment Consultant (Callan), we review every 3-5 years.
  - Rely on Investment Consultant's 10 & 30-year Capital Market Assumptions to make long-term strategic decisions (not tactical).
  - Identifies the Target Allocation for each asset class.
  - Callan's Glide Path analysis is an Asset Allocation study.

- Upon completion of an Asset Allocation study, a Structure study for each Asset Class takes place to determine investment implementation.

- **Style Bias** is contemplated in the Structure study phase.

MILWAUKEE ERS Employes' Retirement System

Putting Style Bias in Perspective - continued

- Asset Allocation projections reflect Investment Consultant's 50% percentile predictions for the average investor.
  - Doesn't include Alpha for stock and bond asset classes.
    - Alpha can be positive and negative.

- Humbly speaking, what competitive advantages does CMERS think it has that can be successfully exploited on a consistent basis to make our results above average over the very long-term?
  - **My list of CMERS' competitive advantages:**
  - Long-term time horizon.
  - Disciplined Rebalancing.
  - Use asset size, combined with a positive reputation, to partner with top-tier investment managers at competitive fees.
  - Successful implementation of Active Management.
  - Successful implementation of **Style Bias**.
  - Qualified Staff & Investment Consultant for implementation.

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What is Style Bias?

- Style Bias occurs when the Fund hires an Investment Manager & measures their performance against a benchmark that is different than the benchmark of the Asset Class in which the Investment Manager resides.
  - Example #1: CMERS' Public Equity benchmark is the ACWI IMI. Brandes' mandate is measured against the EAFE index.
  - Example #2: CMERS' Fixed Income benchmark is the Bloomberg U.S. Aggregate Index. BlackRock's U.S. Government mandate is measured against the Bloomberg U.S. Government index.
  - Note: Does not have anything to do with an Investment Manager's actual performance.

- The vast majority of CMERS' Style Bias is expected to come from the Public Equity allocation.
  - Private Equity managers' benchmark = Asset Class benchmark.
  - Real Assets managers' benchmark = Asset Class benchmark (could see a small Style Bias when Real Estate and Principal actual allocations deviate from structure weights).
  - Absolute Return will always generate a small positive Style Bias because the investment managers' benchmark return is always > Asset Class benchmark return.
  - Fixed Income will generate Style Bias (positive and negative) because of Example# 2 above and Cash allocation.

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Public Equity Style Biases

- Intentional Style Biases within CMERS' Public Equity Structure:
  - Structure has a higher allocation to Value stocks than the benchmark & a corresponding lower allocation to Growth stocks than the benchmark.
  - Structure has a higher allocation to Small, Mid, & Micro capitalization stocks than the benchmark & a corresponding lower allocation to Large capitalization stocks than the benchmark.
- Unintentional Style Bias within CMERS' Public Equity Structure:
  - Structure presently has a higher allocation to non-U.S. stocks than the benchmark & a corresponding lower allocation to U.S. stocks than the benchmark (U.S. is about 96% of North America as of December 31, 2024).

Style Exposure Matrix
Holdings as of December 31, 2024

	Value	Core	Growth	Total
Large	19.4% (224) 21.1% (294)	18.4% (202) 16.4% (276)	26.5% (193) 40.2% (277)	64.3% (619) 77.7% (847)
Mid	9.6% (310) 4.9% (525)	5.8% (264) 4.3% (531)	4.7% (249) 4.8% (642)	20.1% (823) 14.0% (1698)
Small	6.1% (425) 2.2% (1018)	4.7% (418) 2.5% (1253)	1.2% (152) 2.2% (1124)	11.9% (995) 6.9% (3395)
Micro	2.5% (1330) 0.5% (896)	1.0% (404) 0.5% (961)	0.2% (122) 0.4% (688)	3.6% (1856) 1.4% (2545)
Total	37.6% (2289) 28.8% (2733)	29.9% (1288) 23.7% (3021)	32.6% (716) 47.6% (2731)	100.0% (4293) 100.0% (8485)

Style Exposure Matrix
Holdings as of December 31, 2024

	Value	Core	Growth	Total
Europe/ Mid East	6.3% (387) 3.2% (406)	6.1% (279) 4.3% (486)	5.8% (124) 5.9% (453)	18.1% (790) 13.4% (1345)
N. America	25.5% (1014) 20.7% (918)	17.1% (578) 13.3% (928)	19.1% (286) 34.0% (698)	61.7% (1878) 68.0% (2544)
Pacific	3.0% (742) 2.3% (447)	2.2% (259) 2.6% (508)	2.0% (116) 3.3% (452)	7.1% (1117) 8.2% (1407)
Emerging	2.9% (146) 2.5% (962)	4.5% (172) 3.5% (1099)	5.7% (190) 4.4% (1128)	13.1% (508) 10.4% (3189)
Total	37.6% (2289) 28.8% (2733)	29.9% (1288) 23.7% (3021)	32.6% (716) 47.6% (2731)	100.0% (4293) 100.0% (8485)

Why has CMERS Implemented Public Equity Style Biases for almost 30-years?

- Value & Small capitalization biases:
  - Supported by a significant amount of academic research & long-term data.
  - Many studies support the idea that value stocks & small capitalization stocks outperform growth stocks & large capitalization stocks, respectively, over the very long-term.
  - Some studies support the idea that value stocks have lower volatility than growth stocks over the very long-term.
  - Results in a more diversified portfolio (stocks & industry/sector).
  - In summary, if implemented successfully, projected to generate a superior risk-adjusted return over the very long-term utilizing a strategic approach (i.e. no tactical decisions required by CMERS to implement and maintain).

- Geographic stock Style Bias:
  - CMERS' target allocation to U.S. stocks has not changed significantly in the past decade.
  - As recently as September 2022, when CMERS conducted its last Public Equity Structure study, CMERS' target U.S. stock allocation was projected to be higher than the ACWI IMI benchmark.
  - As a result of U.S. stock markets performing better than non-U.S. markets in 2023 & 2024, the ACWI IMI benchmark weight to U.S. stocks has increased above the targets CMERS set in the 2022 Structure study.

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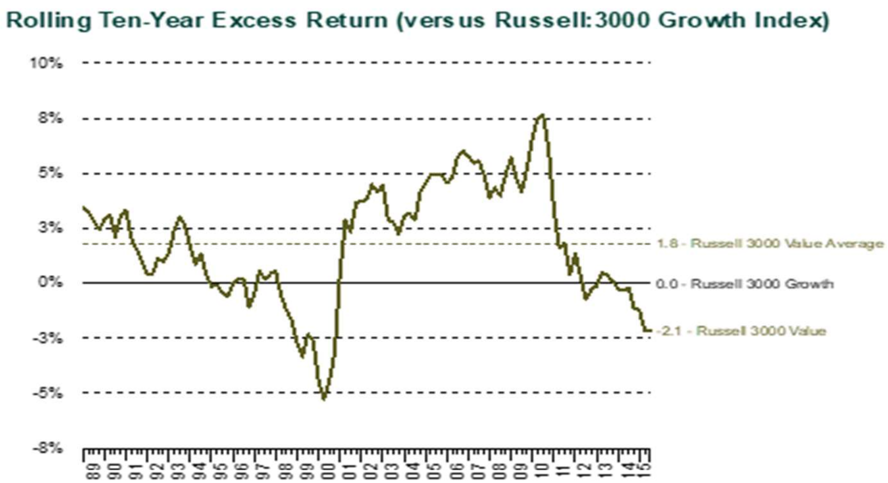
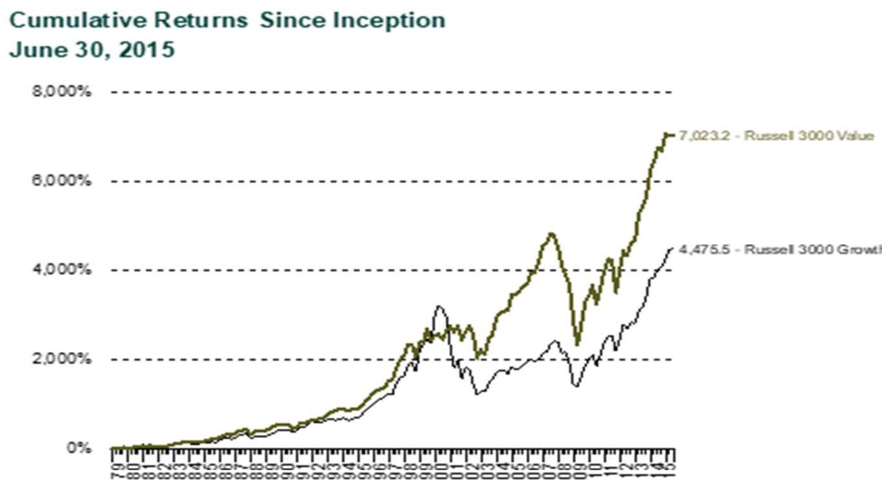
Long-Term Value Premium

U.S. Equity

Value v. Growth





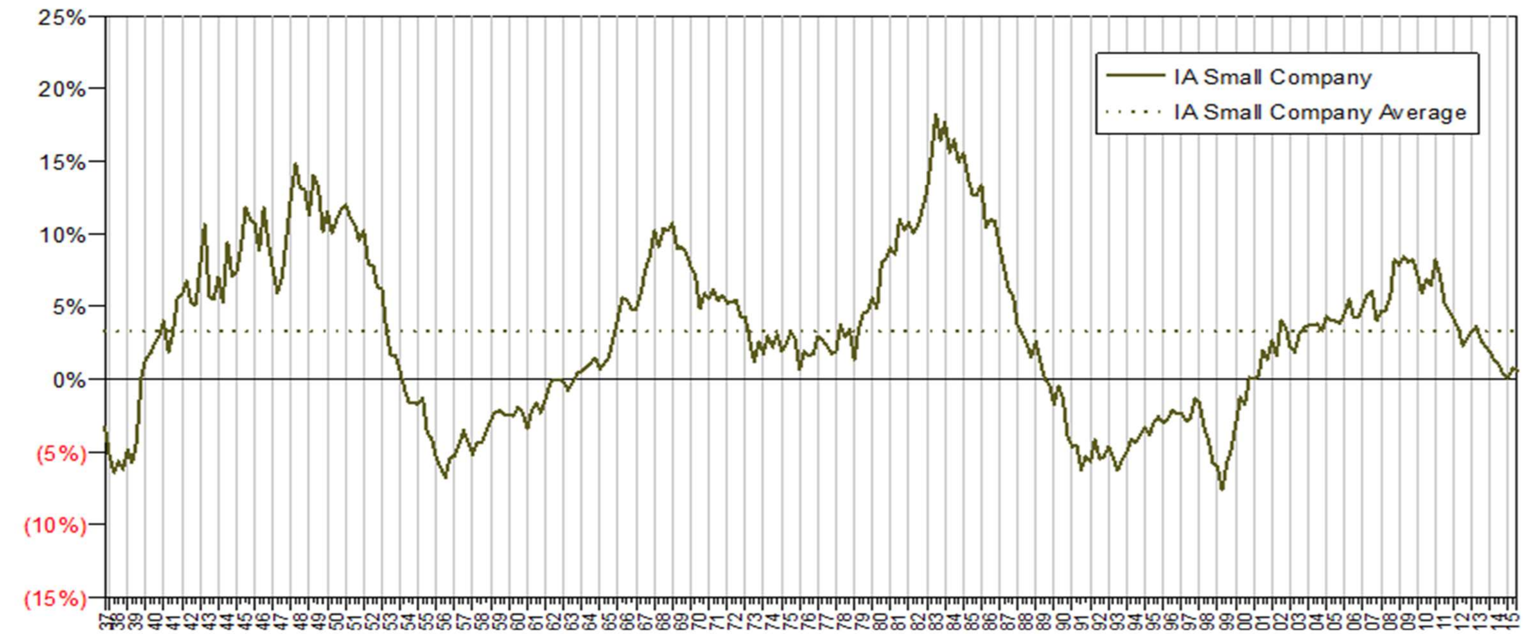
Callan | Knowledge. Experience. Integrity.

CMERS Equity Structure Review – Phase 2

*Slide from Callan’s November 2015 Investment Committee presentation to CMERS

Long-Term Small Capitalization Premium

Historical Small Cap Return Premium Over Large Cap



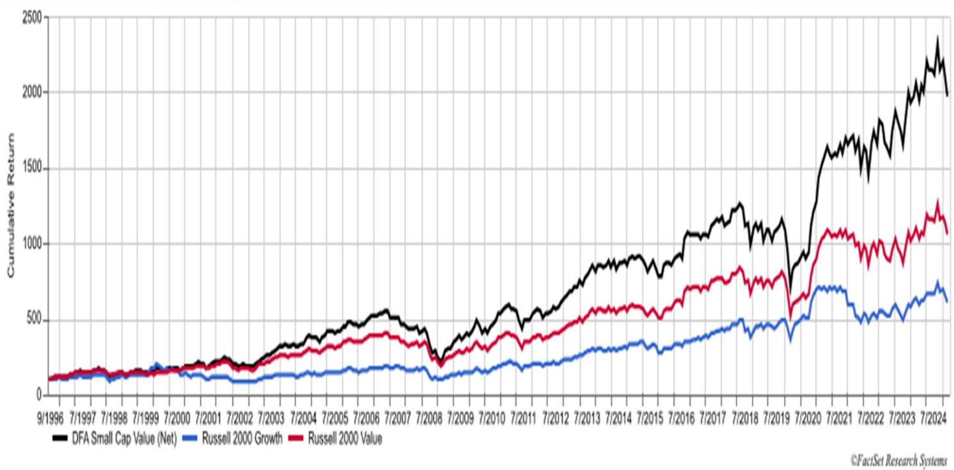
Source: Ibbotson Associates – reconstructed to 1936

*Slide from Callan's November 2015 Investment Committee presentation to CMERS

CMERS experience with DFA & Brandes

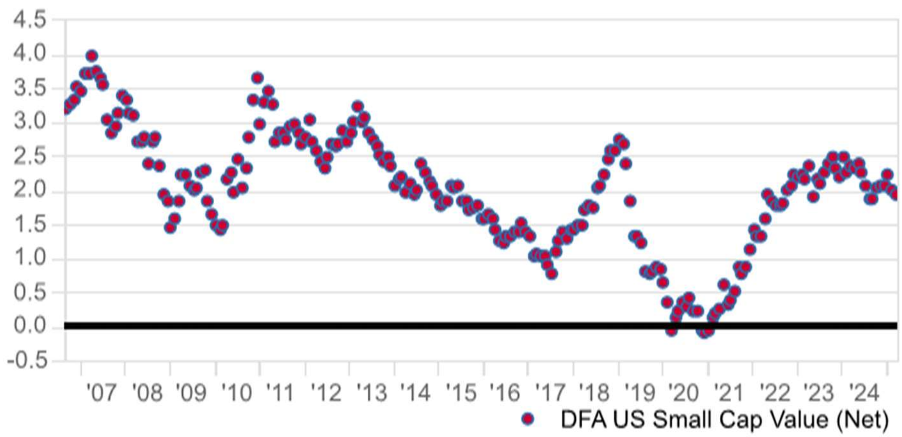
DFA US SCV Performance & Statistics – Since Inception (09/30/1996)

Investment Growth – Since Inception (09/30/1996)



10-Year Rolling Excess Returns – Since Inception (09/30/1996)

DFA US Small Cap Value - 10-Year Rolling Excess Returns
09/30/1996 to 3/31/2025

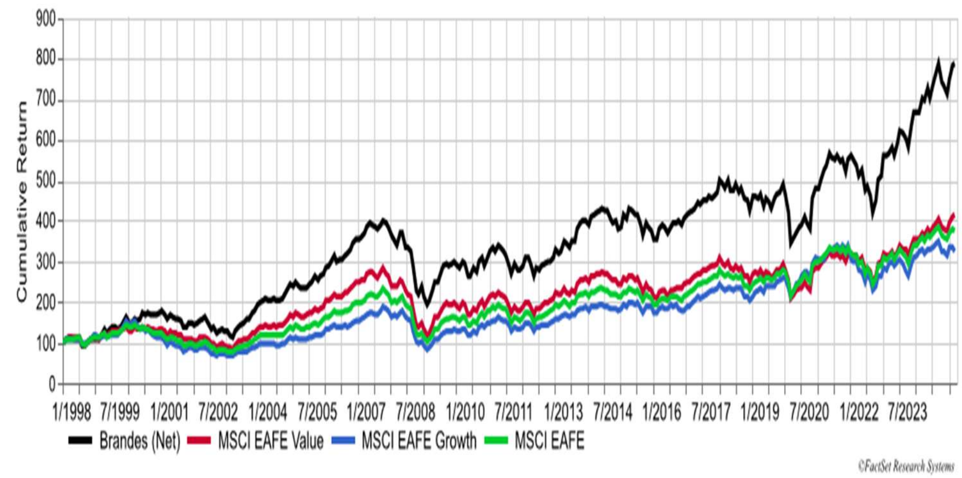


Risk – Since Inception (09/30/1996)

	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
DFA Small Cap Value (Net)	11.0	21.0	2.0	0.4	0.5	4.6	1.1
Russell 2000 Value	8.6	19.3	--	0.3	--	--	1.0
Russell 2000 Growth	6.5	22.9	--	0.2	--	--	1.0

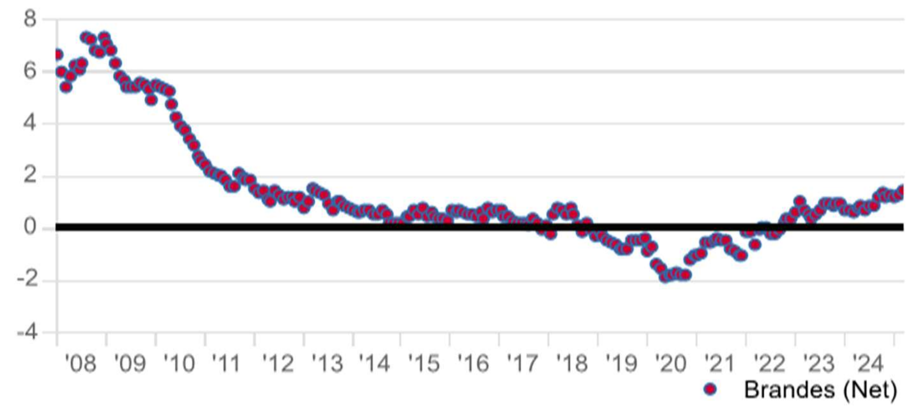
Brandes Performance & Statistics Since Inception – 01/31/1998

Investment Growth – Since Inception (01/31/1998)



10-Year Rolling Excess Returns – Since Inception (01/31/1998)

Brandes - 10-Year Rolling Excess Returns
1/31/1998 to 3/31/2025



Risk – Since Inception (01/31/1998)

	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
Brandes (Net)	7.9	17.8	2.9	0.3	0.5	5.9	1.0
MSCI EAFE	5.0	16.5	--	0.2	--	--	1.0
MSCI EAFE Value	5.4	17.5	--	0.2	--	--	1.0
MSCI EAFE Growth	4.4	16.4	--	0.1	--	--	1.0

Additional Notable Value & Small Cap Style Bias Findings from 2022 Structure Study

CMERS Equity Structure Process

Motivation and Development

- CMERS has historically had value and small cap biases motivated by a number of factors
  - Counter growth bias introduced by private equity investments
  - Historical outperformance over long periods
- The analysis began by attempting to determine the value overweight necessary to diversify private equity
  - The analysis showed that public equity diversifies private equity
  - However, the analysis also showed that value did not meaningfully diversify private equity better than growth
  - For the purpose of diversifying private equity value and growth could be equally weighted
- The analysis then looked at the long-term relative returns between value and growth
  - Analysis done separately for large cap, small cap and international equity
  - Active returns for large cap were very similar with the superior style dependent on the time period reviewed
  - Large cap value volatility was frequently meaningfully lower than large cap growth giving value superior risk-adjusted returns
  - Small cap value active returns were often better than growth
  - Small cap value volatility was regularly lower than growth providing value with compelling risk-adjusted returns
  - Active international value and growth returns were similar to each other since the impact of style is diluted by other factors
  - The performance of individual active international managers was often the most important factor
  - International value managers have had modestly less risk
- Active value managers are often less style oriented than active growth managers
  - Value managers often need to be overweighted to achieve overall style neutrality
  - This provides more dollars to value managers with lower risks and potentially superior long-term returns
  - Modest additional overweights can enhance this effect
  - Additional overweights are limited by the potential for intermediate-term underperformance

*Slide from Callan’s September 2022 Investment Committee presentation to CMERS

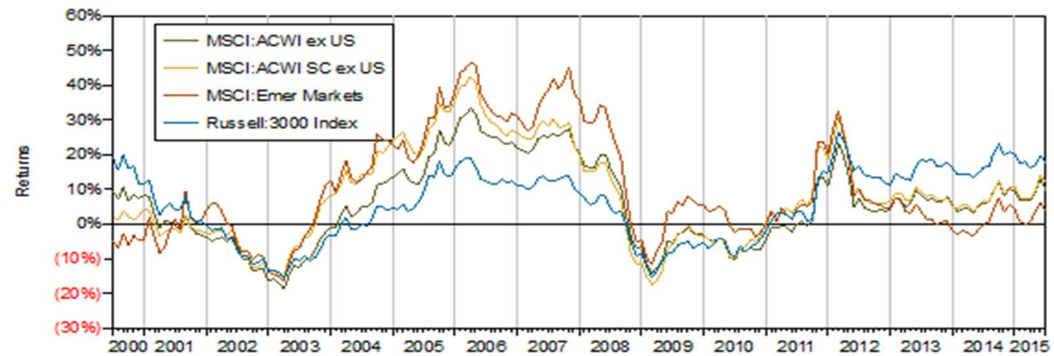
Rationale for non-U.S. Stock exposure

Role of International Equity

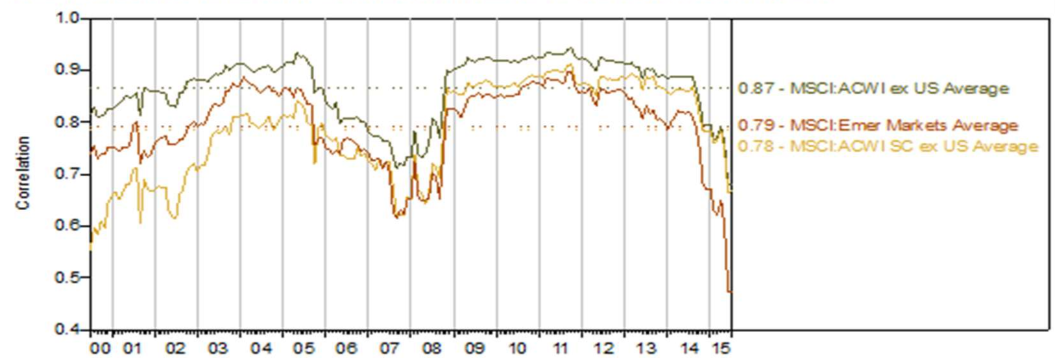
Contributions to Total Portfolio: Return Opportunities and Diversification

- Returns of developed international markets are generally similar to those of US equity
  - Higher returns over long periods may be earned by international small cap and emerging markets
- Non-US equity diversifies US equity
  - Different economic cycles allow developed international equity to diversify US equity
  - Further diversification is available from international small cap and emerging markets
  - Currency returns can also play a role in diversification

Rolling 36 Month Returns for 15 Years Ended June 30, 2015



Rolling 36 Month Correlation to Russell:3000 Index for 15 Years Ended June 30, 2015



*Slide from Callan's November 2015 Investment Committee presentation to CMERS

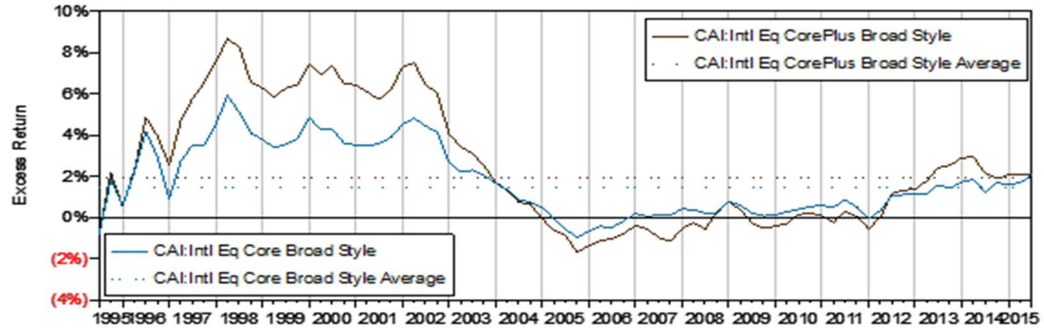
Rationale for non-U.S. Stock exposure - continued

Role of International Equity

Contributions to Total Portfolio: Active Management Value Added

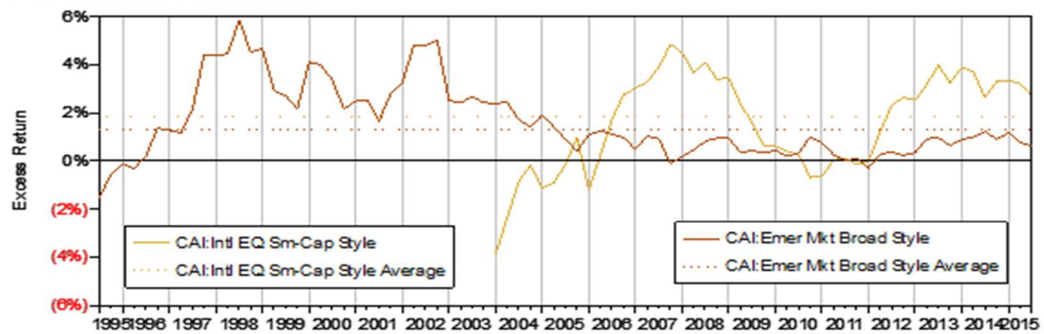
- Core plus managers have historically added more value than core managers despite their recent underperformance
- Active core/core plus managers can underperform the index at times
  - Passive management can provide returns that are competitive with those of many active core/core plus managers
- Active international small cap managers have periodically outperformed the index while active emerging markets managers have consistently outperformed the index
- Recent periods have generally shown less value added than earlier periods

Rolling 12 Quarter Excess Return Relative To Respective MSCI Benchmarks for 20 Years Ended June 30, 2015



CorePlus versus MSCI ACWI ex USA and Core versus MSCI World ex USA

Rolling 12 Quarter Excess Return Relative To Respective MSCI Benchmarks for 20 Years Ended June 30, 2015



Small Cap versus MSCI World ex USA Small Cap and Emerging Markets versus MSCI Emerging Markets

*Slide from Callan's November 2015 Investment Committee presentation to CMERS

Why Doesn't Everyone Do This?

- If an Investor can tilt the odds of outperforming their Investment Consultant's Long-Term Public Equity Capital Market Assumptions in their favor (from a return and/or risk perspective) simply by establishing a low-cost, strategic, non-tactical, overweight to Value and Small Capitalization stocks, why don't more investors do it?
  - Value & Small Capitalization cycles can go through very long periods of underperformance.
  - Investment Consultants, Investment Staff, Boards, & organizations, are often evaluated on time periods that make it uncomfortable when these biases lead to underperformance.
  - Having style biases that make performance look different compared to peers can be especially uncomfortable during times of underperformance.
  - Investment Consultants may be hesitant to recommend biases to a Board because of the above considerations.
  - A fundamental premise that CMERS has made, and reinforced many times, for almost 30-years is that the Fund's future decisionmakers (Board, Staff, Consultant) will be able to focus on the long-term benefits of having these style biases & remain disciplined enough to maintain them, even during times when it's uncomfortable to do so.
  - It is easy for me, as your Chief Investment Officer, to deliver this message to the Investment Committee because I am also a strong believer that the Fund will benefit over the long-term by maintaining these biases going forward.

MILWAUKEE ERS Employes' Retirement System

Secrets to CMERS Successful Implementation of Biases

- Premise is based on sound research.
- Implementation focuses on definitions of Value that are consistent with the research supporting the biases.
- Feel very strongly about DFA & Brandes' ability to implement successfully.
- Statement of Investment Policy is designed to implement & monitor in a very disciplined manner that remove personal biases & tactical impulses.
- Belief that CMERS's governance structure (Board, Staff, Consultant), now & in the future, will be able to evaluate the Value & Small biases in an appropriate portfolio context over the long-term, even during time periods when these biases are causing significant underperformance.
  - The ability to 1.) understand that there are many ways to think about risk, including performance versus a benchmark, performance versus peers, tracking error, standard deviation, career risk, headline risk, complexity, contribution volatility, overconfidence, etc., 2.) evaluate each risk in the appropriate context, **& 3.) draw appropriate conclusions so the Fund is positioned to have the best chance to succeed for the benefit of its members going forward.**

MILWAUKEE ERS Employes' Retirement System

Risks continued

Schwab S&P 500 Index Fund

Type: Mutual Funds **Symbol:** SWPPX **Total Expense Ratio:** 0.020%

Summary

Objective

The fund's goal is to track the total return of the S&P 500® Index.

Highlights

- A straightforward, low-cost fund with no investment minimum
- The Fund can serve as part of the core of a diversified portfolio
- Simple access to 500 leading U.S. companies and captures approximately 80% coverage of available U.S. market capitalization
- Invests in some of the most well-known U.S. based companies

Documents

SWPPX Prospectus an[d] Regulatory Documents

SWPPX Fact Sheet

View all documents ›

Important Notice Regarding the Schwab S&P 500 Index Fund's Diversification Policy

Schwab S&P 500 Index Fund may not purchase securities of an issuer, except as consistent with the maintenance of its status as an open-end diversified company under the Investment Company Act of 1940, the rules or regulations thereunder or any exemption therefrom, as such statute, rules or regulations may be amended or interpreted from time to time. However, the Schwab S&P 500 Index Fund may become "non-diversified", as defined in the Investment Company Act of 1940, solely as a result of a change in relative market capitalization or index weighting of one or more constituents of the index the fund is designed to track

Shareholders to vote on merger, diversification changes

July 29, 2020

Vanguard today announced plans to solicit votes later this year from shareholders of six U.S.-based Vanguard funds on a proposed merger for one fund and proposed diversification status changes for five funds. At an upcoming shareholder meeting, or by proxy beforehand, shareholders will vote on the proposals.

"We encourage shareholders of the six funds to vote on these important proposals, which we believe will lead to better outcomes for investors," said Vanguard CEO Tim Buckley. "The merger will place shareholders in a comparable fund with better historical long-term investment performance and a lower expense ratio, and the diversification status changes will give the funds' investment advisors greater flexibility in managing those funds."

Separately, the diversification status change proposals will ask shareholders of the following funds to approve reclassifying each fund as "non-diversified," as defined by the Investment Company Act of 1940:

Vanguard Health Care Fund

Vanguard Energy Fund

Vanguard U.S. Growth Fund

Vanguard Variable Insurance Funds—Growth Portfolio

Vanguard Variable Insurance Funds—Real Estate Index Portfolio

Changing the diversification status of five funds

Shareholders of the other five funds participating in the January 2021 shareholder meeting will vote on a proposal to change each fund's diversification status to "non-diversified," as defined by the Investment Company Act of 1940 (the 1940 Act).

The Health Care Fund, the Energy Fund, the U.S. Growth Fund, and the Growth Portfolio and Real Estate Index Portfolio of the Variable Insurance Funds are currently designated as "diversified" funds and must adhere to the 1940 Act diversificaiton requirements: As "diversified" funds, at least 75% of each fund's total assets must be represented by, cash and cash items, government securities, securities of other funds, and securities of other issuers, provided that the investment represented by securities of an issuer does not exceed 5% of the total assets of the fund or 10% of the voting stock of the issuer.

This means that the increased concentration of certain companies in a diversified fund's investment universe can potentially limit that fund's ability to invest where its advisor believes the greatest opportunities may lie. A non-diversified fund does not need to comply with the 1940 Act diversification requirements and therefore may generally be more concentrated in its investments. Notwithstanding the potential for improved investment performance, a non-diversified fund presents a heightened degree of investment risk because of its ability to make more concentrated investments.

"We believe this proposal is in the best interest of shareholders, because it provides the funds' investment advisors with greater flexibility in managing the respective funds," said Ms. Caughlin, the Vanguard Portfolio Review Department head. "Changing to non-diversified status can lead to potentially better performance outcomes for investors."

John Maynard Keynes' famous quote, "**Markets can remain irrational longer than you can remain solvent**," emphasizes the unpredictable nature of financial markets and the risks of betting against them, even when you believe they are mispriced or irrational.

INVESTING

Diversification Means Always Having To Say You're Sorry

By Brian Portnoy, Former Contributor.

Mar 09, 2015, 09:08am EDT

MILWAUKEE ERS Employes' Retirement System

Final Thoughts on Risk

- Risks that truly matter to CMERS.
  - Not achieving 6.8% over long-term.
  - Impairment of capital as a result of poor investment decisions.
- One of my favorite definitions of risk:
  - "Risk means uncertainty about which outcome will occur and about the possibility of loss when the unfavorable ones do."*
- Higher risk doesn't always mean higher returns.
  - Calculated Risk: e.g., Brandes, Buffett (deep value, distressed, intrinsic value based strategies)
  - Risky Risk: e.g., Aggressive Growth, Highly Leveraged strategies, Complexity, Investments with shorter track records.
  - There may be compelling rationales for setting up a Structure that has biases compared to its benchmark (i.e. Value, Small, more diversified, etc).
  - When it comes to investing, the best outcomes often occur when decision-makers decide not to make any changes & stay the course.
    - For many, the hardest decision to make is to choose to stay the course in the midst of a challenging time period.

*Quote made by Howard Marks, Co-Founder & Co-Chairman, Oaktree Capital Management

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Appendix

Manager Structure Objectives

Guiding Principles

- After strategic asset allocation, manager structure within an asset class is the most important determinant of fund performance
  - Determines size and sources of active management value added as well as tracking error
- Structure should reflect asset class role
  - Asset classes that focus on capital growth will have characteristics that are different from those whose role is risk reduction or diversification
- The starting place is neutral to the broad market
  - Deviations are warranted only where there are opportunities to ***strategically*** add value
- Simplicity
  - Enough managers to cover all areas of the market and diversify relationships without overlapping mandates
  - Additional managers add little marginal value to the overall plan, complicate monitoring and increase fees
- Active management
  - Active management is only justified in markets where the expected alpha sufficiently exceeds costs
  - Passive management should be used in efficient markets to reduce cost and increase liquidity
  - Use of passive management generally reduces the total number of managers
- Implementation
  - Be mindful of disruptive changes and transition costs

*Slide from Callan's November 2015 Investment Committee presentation to CMERS

What is Equity Structure Analysis? Why Do You Need One?

A Planning Framework for Risk Allocation

- **Equity structure is a blueprint:**
  - Defines investment strategy for the asset class.
  - Expression of investment beliefs.
  - Articulates mandates within the structure
    - Why are managers hired, what roles are they expected to play?
  - Imposes discipline, removes emotion from decision making.
    - Allocations
    - Rebalancing
    - Monitoring and evaluation

*Slide from Callan's November 2011 Investment Committee presentation to CMERS

There is Not a Single "Best" Structure

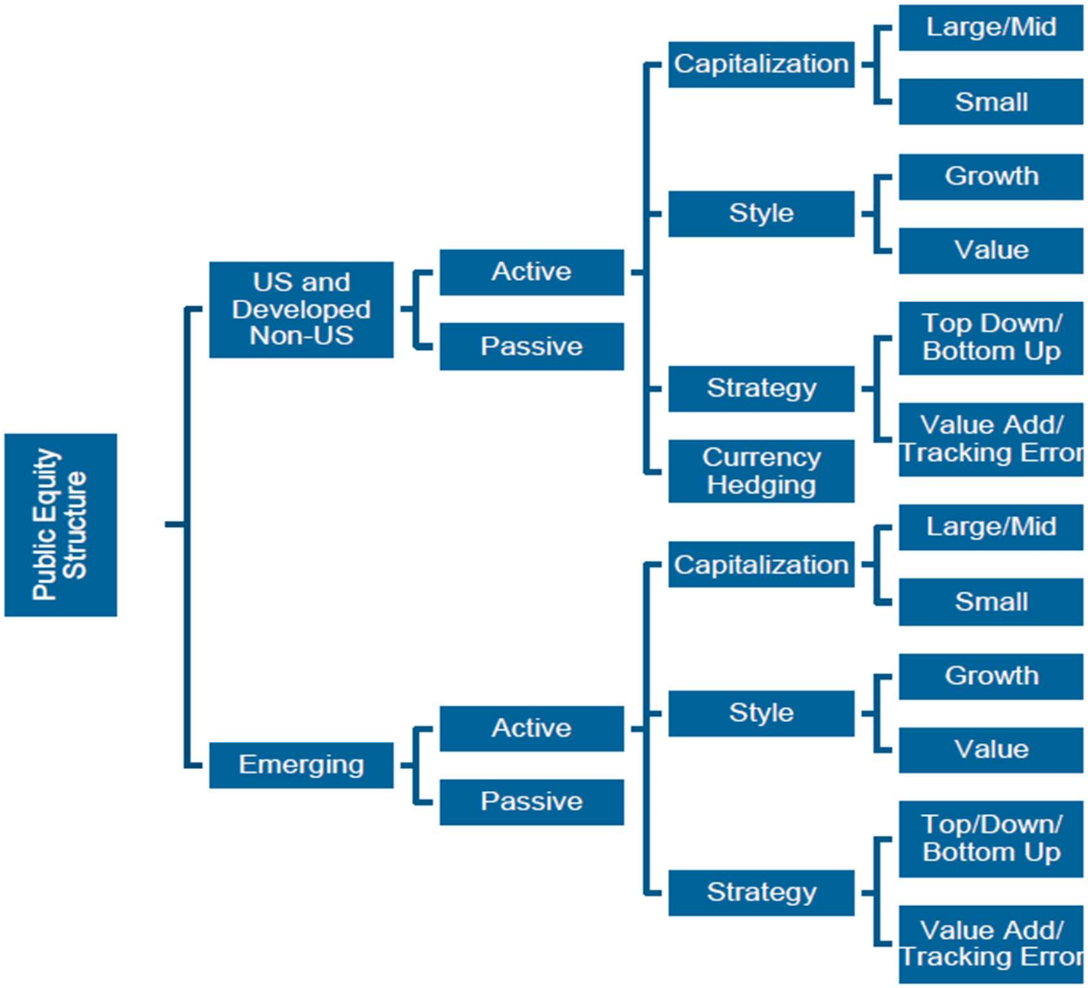
- Financial theory (academic literature) vs. Empirical evidence (capital market observations)
- Fund Sponsor risk tolerance
- Understanding, comfort and support for specific styles of management
- Time and resources available to monitor

*Slide from Callan's November 2015 Investment Committee presentation to CMERS

Equity Structure Components

Implementation Considerations

- US, Developed Non-US and Emerging Markets
- Active Management
  - Allocation
  - Capitalization
  - Style
  - Currency hedging
    - *Generally limited to developed markets*
  - Strategy
  - Sub-categories of active management are often a continuum
    - *Active manager capitalizations vary widely*
    - *Core encompasses both growth and value*
    - *Managers may combine elements of top down and bottom up approaches*
    - *There is a long list of individual manager strategy characteristics*



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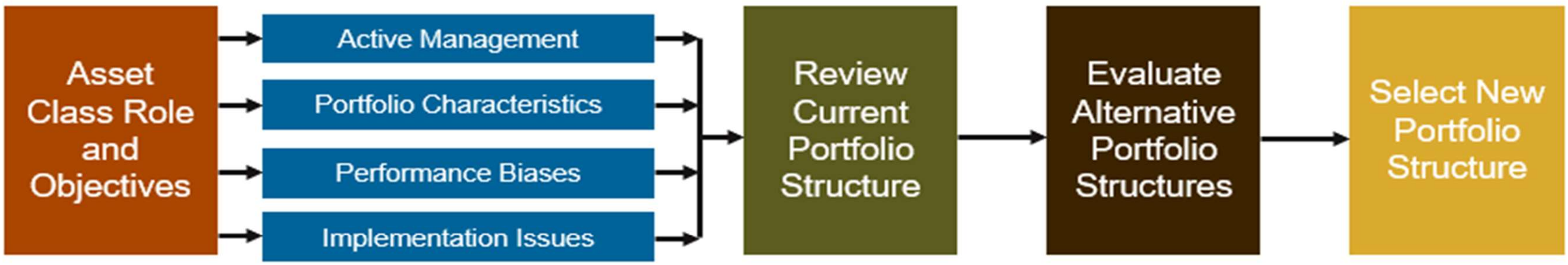
Portfolio Structure Process

Evaluation and Selection



- Manager Structure is the number and types of managers within an asset class.
  - Develop long-term strategic asset allocation among managers that is efficient and accurately reflects the strategic investment philosophy of the portfolio.
  - Identify and recommend allocation adjustments for unintended exposures or “gaps” in the portfolio.
  - Outline a series of action steps to implement the structure.
- Asset class role and objectives
- Translate the role and objectives into specific characteristics
- Review the current portfolio structure in light of the desired characteristics
- Evaluate alternative portfolio structures relative to the current structure
  - Looking for relative improvement
  - Trade-offs are often required
- Select the new portfolio structure

*Slide from Callan’s November 2015 Investment Committee presentation to CMERS

Basic Tenets of Manager Structure

Definition of the "Market"

- The "universe" of securities available for manager investment
- The universe is defined by a market index such as the S&P 500, MSCI ACWI- ex U.S., or Bloomberg Barclays U.S. Aggregate

Active or Passive Management

- Passive management approach attempts to replicate the performance of the target index with minimal tracking error
- Active managers construct portfolios that differ from their market indices in an attempt to outperform the index

Style Considerations

- Market capitalization: The size of a firm as measured by the dollar value of its stock outstanding
- Capitalization is divided into large, mid, and small
- "Growth" stocks are faster growing companies with more volatile returns
- "Value" stocks provide more stable returns often with relatively significant income components

Investment Strategy

- Active manager investment philosophy, idea generation framework, and implementation The criteria used to implement the portfolio varies across investment strategies
- "Bottom up" focuses on company fundamentals
- "Top down" emphasizes broader market factors
- "Core" managers have market-like characteristics
- "Satellite" managers focus on "best ideas" by usually owning a limited number of stocks

*Slide from Callan's September 2022 Investment Committee presentation to CMERS

Equity Structure Considerations

Seek to maximize plan alpha at a palatable level of active risk relative to the plan benchmark

– Think of manager structure in an overall portfolio context
– Incorporate active managers only if they are expected to contribute sufficient alpha to compensate for the possibility of underperforming the benchmark
– This is a net-of-fees exercise

Spend plan's active risk budget efficiently

– Spend active risk in sectors and regions where active management has high probability of succeeding
– Otherwise, rely heavily on indexes in order to control both expenses and risk
– Keep magnitude of systematic bets vs. the plan benchmark (misfit risk) under control

Incorporate diversification

– Seek broad diversification across all global equity markets
– The risk an individual active manager contributes to the overall portfolio depends on both its size and its tracking error
– Avoid excessive risk contribution from any one manager
– However, avoid over diversification or "closet indexing"

Simplify where appropriate

– Structure should meet investment objective with the minimum level of complexity
– Benefit is lower monitoring costs as well as explicit costs
– Active manager mandate sizes must be large enough to be meaningful to the fund but not overwhelming to the manager

*Slide from Callan's September 2022 Investment Committee presentation to CMERS

Sources of Active Risk in the Equity Structure

Selection Risk

Risk stemming from active managers' bets relative to their benchmarks

– Risk which is expected to be rewarded with alpha if manager is skillful
– The risk you are paying your active managers to take
– This risk at the plan level is reduced as the number of active managers increases due to diversification

Misfit Risk

Risk which results when the overall style exposures of the plan's manager benchmarks differ from the plan's benchmark

– When unintentional, misfit confers additional active risk without any expected return
– Misfit can be controlled by ensuring overall manager style exposures (large vs. small; value vs. growth, U.S. vs. international) are generally consistent with the plan's benchmark
– When intentional, some misfit can be justified if reflects a high conviction bet on styles, capitalizations, or regions
– However, the bar for skill is high and tactical bets should be scaled as to not be a disproportionate driver of active risk

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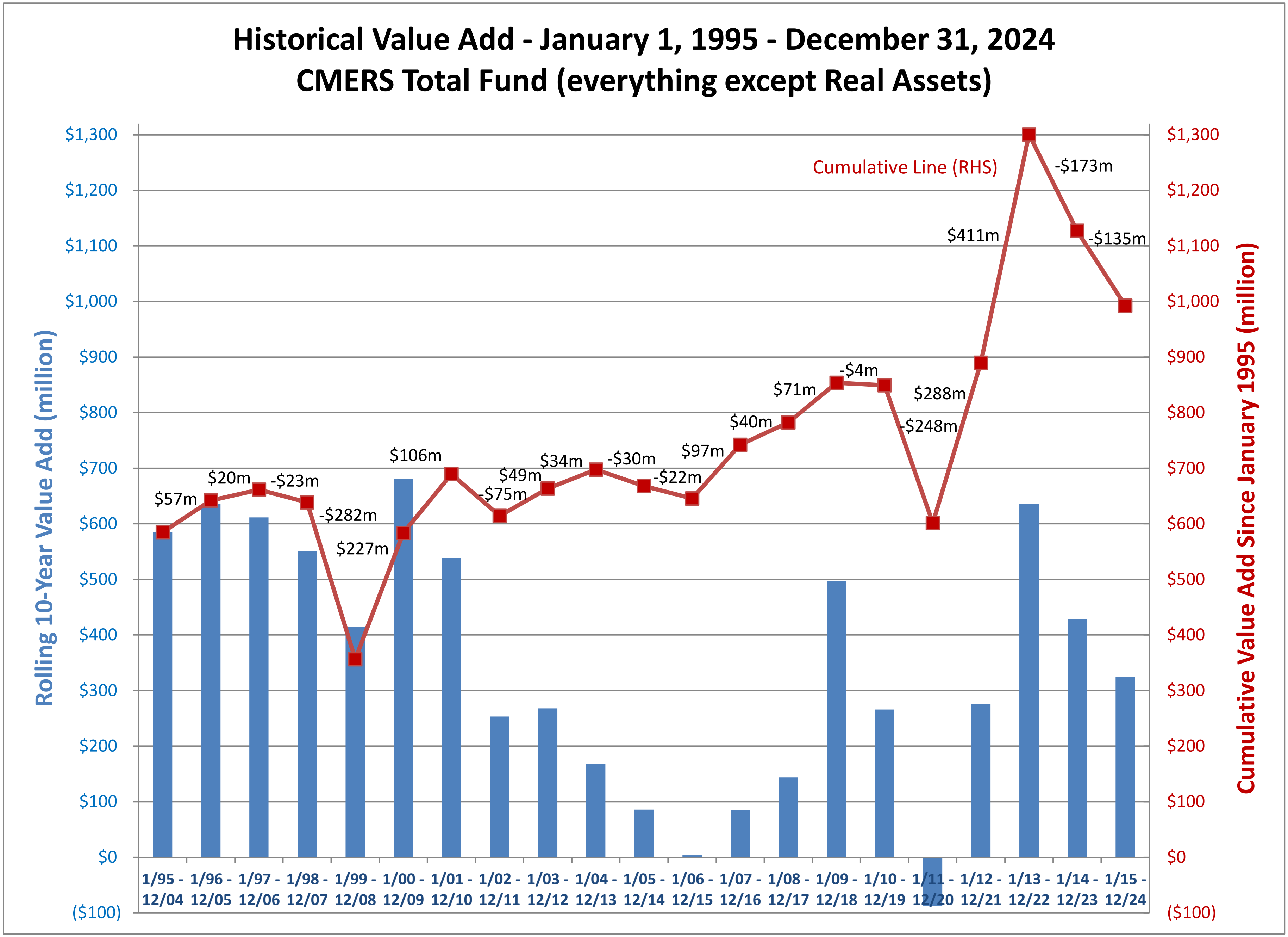

Historical Value Add - January 1, 1995 - December 31, 2024
CMERS Total Fund (everything except Real Assets)
Rolling 10-Year Value Add (million)
Cumulative Value Add Since January 1995 (million)
Cumulative Line (RHS)
$1,300
$1,200
$1,100
$1,000
$900
$800
$700
$600
$500
$400
$300
$200
$100
$0
($100)
$57m
$20m
-$23m
-$282m
$227m
$106m
-$75m
$49m
$34m
-$30m
-$22m
$97m
$40m
$71m
-$4m
-$248m
$288m
$411m
-$173m
-$135m
1/95 - 12/04
1/96 - 12/05
1/97 - 12/06
1/98 - 12/07
1/99 - 12/08
1/00 - 12/09
1/01 - 12/10
1/02 - 12/11
1/03 - 12/12
1/04 - 12/13
1/05 - 12/14
1/06 - 12/15
1/07 - 12/16
1/08 - 12/17
1/09 - 12/18
1/10 - 12/19
1/11 - 12/20
1/12 - 12/21
1/13 - 12/22
1/14 - 12/23
1/15 - 12/24

Historical Value Add - January 1, 1995 - December 31, 2024
CMERS Total Fund (everything except Real Assets)

MERS' decision to hire some active managers versus hiring only passive managers

		Time Weighted Returns			Dollar Weighted Estimates (Net of fees)		
		Annualized MERS Asset Class		Annualized Index	Value of a Dollar Invested in		Active Management Impact[c]
MERS Asset Class	**Index**	**Gross**	**Net of fees**	**Net of fees[a]**	**MERS Asset Class**	**Index**	**$Millions**
Domestic Equity	Russell 3000	10.67%	10.40%	10.79%	$ 19.45	$ 21.64	$ (3.2)
International Equity[b]	MSCI EAFE	7.13%	6.70%	4.67%	$ 6.42	$ 3.70	$ 429.6
Global Equity[b]	MSCI World / ACWI	10.00%	9.62%	9.38%	$ 3.88	$ 3.75	$ 23.0
Fixed Income	Bloomberg US Aggregate	5.72%	5.61%	4.54%	$ 5.14	$ 3.79	$ 307.4
Private Equity[b]	Russell 3000	N/A	12.70%	14.53%	$ 5.66	$ 7.15	$ 33.4
Absolute Return[b]	Bloomberg US Aggregate	N/A	6.20%	1.45%	$ 1.88	$ 1.16	$ 202.4
Estimate of Fund's benefit from its decision to hire active managers over past 30 years							$ 992.5

[a]Manager Fees for indices are assumed to be:

Russell 3000 Index - 2 basis points
MSCI EAFE Index - 5 basis points
MSCI World / ACWI Index - 5 basis points
Bloomberg US Aggregate Index - 2 basis points

[b]Inception Dates if less than 30 years:

International Equity Composite is May 1, 1996
Global Equity Composite is April 1, 2010
Private Equity Composite is July 1, 2010
Absolute Return Composite is July 1, 2014

[c]Active Management Impact $Millions Estimate is based on monthly ERS asset class balances.

Historical Value Add - January 1, 2015 - December 31, 2024
CMERS Total Fund (everything except Real Assets)

MERS' decision to hire some active managers versus hiring only passive managers

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Domestic Equity	Russell 3000	11.29%	11.02%	12.52%	$ 2.85	$ 3.25	$ (136.1)
International Equity	MSCI EAFE	6.72%	6.22%	5.15%	$ 1.83	$ 1.65	$ 98.4
Global Equity	MSCI World / ACWI	10.67%	10.31%	9.18%	$ 2.67	$ 2.41	$ 48.5
Fixed Income	Bloomberg US Aggregate	2.08%	1.95%	1.33%	$ 1.21	$ 1.14	$ 65.3
Private Equity	Russell 3000	N/A	15.74%	12.52%	$ 4.31	$ 3.25	$ 47.2
Absolute Return	Bloomberg US Aggregate	N/A	6.16%	1.33%	$ 1.82	$ 1.14	$ 199.9
Estimate of Fund's benefit from its decision to hire active managers over past 10 years							$ 323.1

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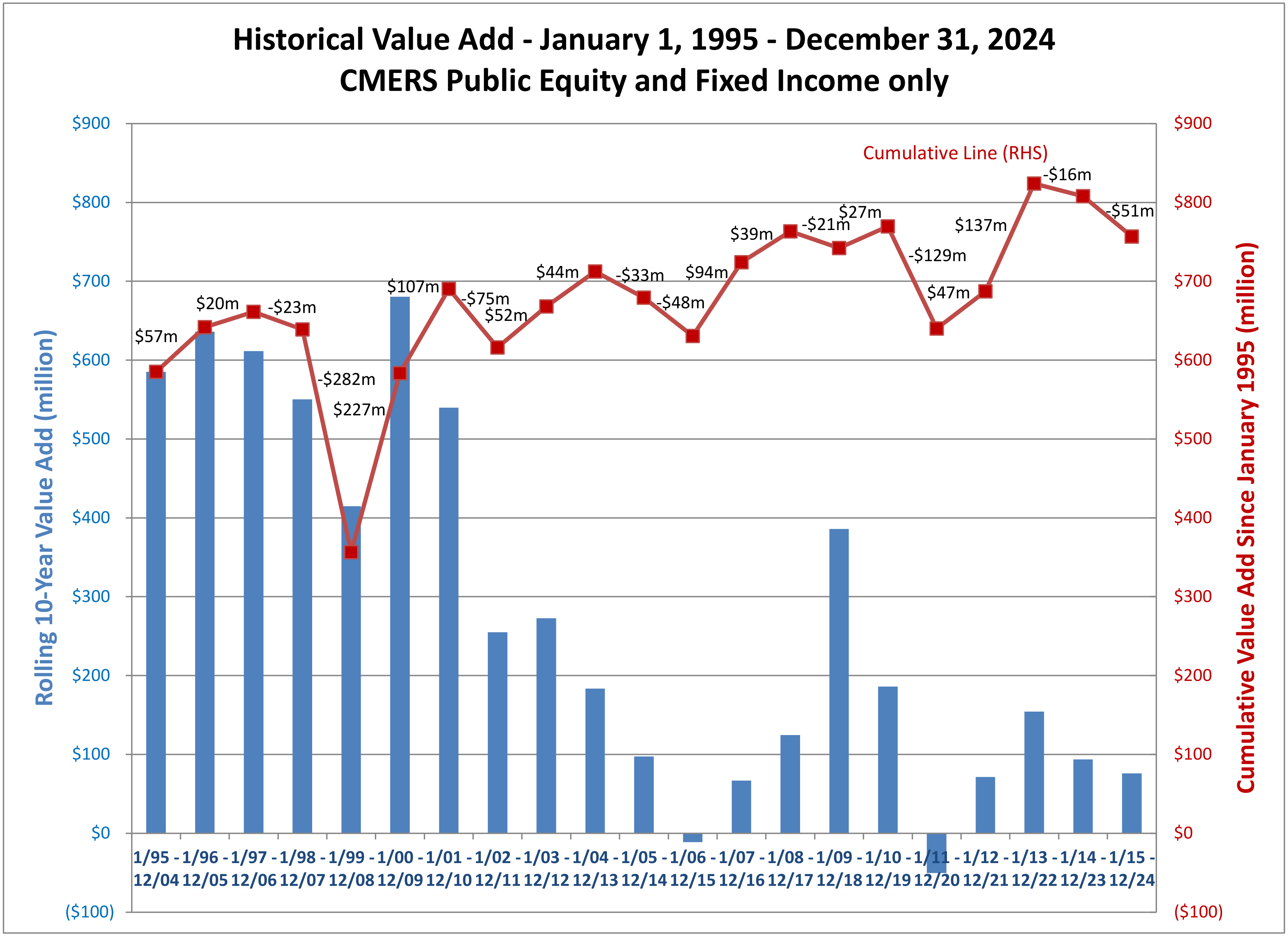
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Cumulative Value Add Since January 1995 (million)
Cumulative Line (RHS)
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$800
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$600
$500
$400
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$200
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$0
($100)
$57m
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-$282m
$227m
$107m
-$75m
$52m
$44m
-$33m
-$48m
$94m
$39m
-$21m
$27m
-$129m
$47m
$137m
-$16m
-$51m
1/95 - 12/04
1/96 - 12/05
1/97 - 12/06
1/98 - 12/07
1/99 - 12/08
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1/09 - 12/18
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1/12 - 12/21
1/13 - 12/22
1/14 - 12/23
1/15 - 12/24

Historical Value Add - January 1, 1995 - December 31, 2024
CMERS Public Equity and Fixed Income only

MERS' decision to hire some active managers versus hiring only passive managers

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Estimate of Fund's benefit from its decision to hire active managers over past 30 years							$ 756.8

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Global Equity	MSCI World / ACWI	10.67%	10.31%	9.18%	$ 2.67	$ 2.41	$ 48.5
Fixed Income	Bloomberg US Aggregate	2.08%	1.95%	1.33%	$ 1.21	$ 1.14	$ 65.3
	Estimate of Fund's benefit from its decision to hire active managers over past 10 years						$ 76.0

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MSCI World / ACWI Index - 5 basis points

Bloomberg US Aggregate Index - 2 basis points

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