MEKETA
INVESTMENT GROUP

2021 CERS Trustee Education

June 2021

Presented by:
Meketa Investment Group

Judy Chambers
David Sancewich

Introduction: Meketa Panelists

Judy Chambers, Managing Principal

- 22 years of industry experience
- Joined the firm in 2019 as part of the merger between Meketa and Pension Consulting Alliance (PCA), Joined PCA in 2007, Shareholder
- Private Markets Consultant focusing on private equity, infrastructure, and opportunistic asset classes
- Co-Chair of Meketa's Emerging and Diverse Manager Committee, and member of the Private Markets Policy, Private Markets Research, and Diversity Leadership Committees
- MBA from Northwestern University's Kellogg School of Management; BA from Duke University

David Sancewich, Managing Principal

- 20 years of industry experience
- Joined the firm in 2019 as part of the Meketa/PCA Merger, Joined PCA in 2004, Shareholder
- Serves as a consultant to public funds
- Consulting work includes asset allocation, risk budgeting, investment policy and guideline development, portfolio and manager attribution analysis, asset class structural reviews, investment manager searches, and performance monitoring
- Member of Meketa's Marketable Securities Investment Committee
- MBA from Washington State University; BBA in Finance and Business Management from Washington State University

2021 CERS Trustee Education

Overview of Agenda Topics

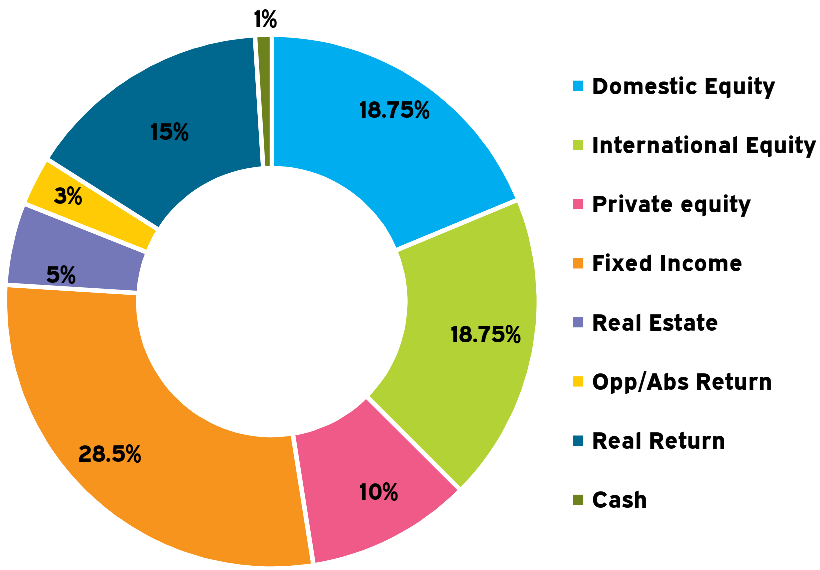
1. History of CERS
2. Investment Approach
3. Investment Policy Development
4. Risk Tolerance
5. Alternative Investing
6. Role of the CIO and CEO
7. External Advisors
8. Closing Comments
9. Appendix

We encourage you to ask questions at any time.

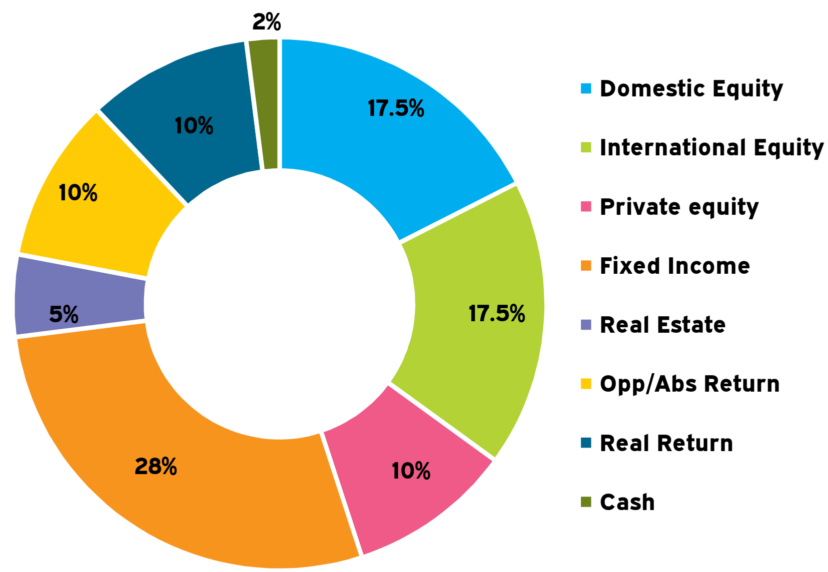
Section 1 – History of CERS

History of CERS: Then and Now

CERS Strategic Allocation Policy (2021)*



CERS Strategic Allocation Policy (2018)*

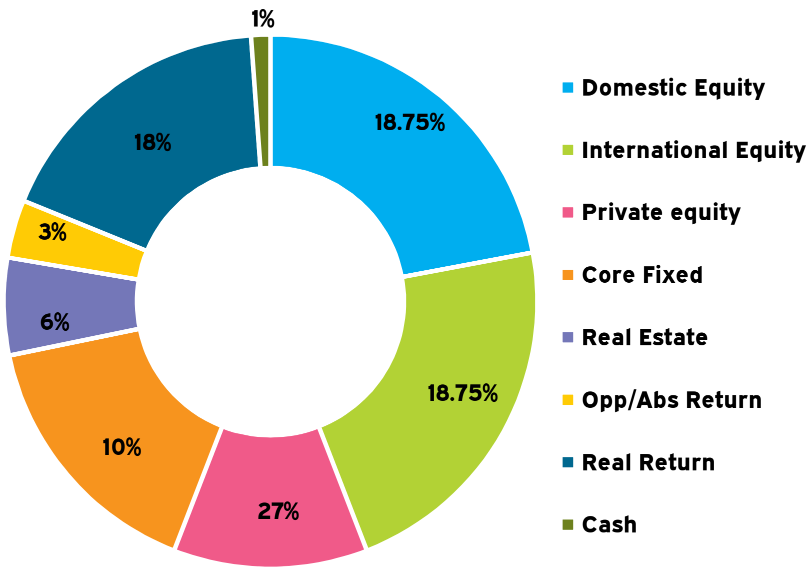


- Increase in public equity allocation.
- Significant reduction in Opportunistic/Absolute Return targets.

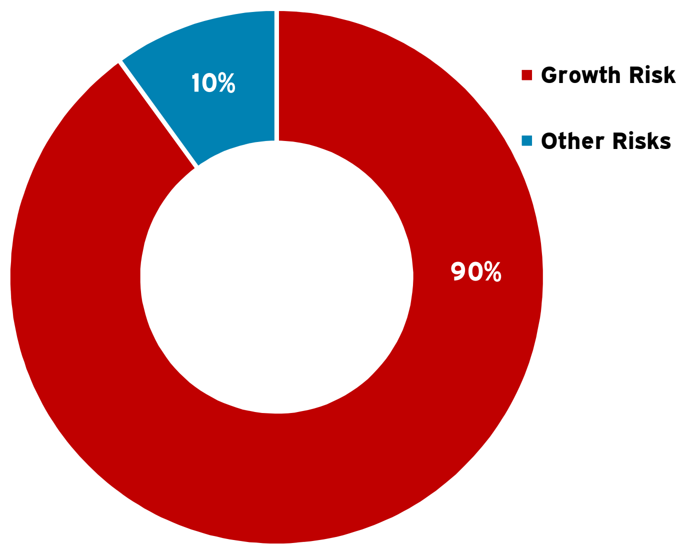
* Source: March 2021 Targets based on various CERS reports, and most recent actuarial report, available in CERS's website.
** Estimated based on CERS Target allocations.

History of CERS: Now – March 31, 2021

CERS Strategic Allocation Policy*



CERS Risk Allocation**



Basic Financial Metrics*	
Contribution Rates***	44%
Assumed Rate of Return	7.0%
Funded Ratio***	49.4%
AUM	$1,812 (M)

* Source: March 2021 Targets based on various CERS reports, and most recent actuarial report, available in CERS's website.
** Estimated based on CERS Target allocations.
*** Hazardous Fund

CERS Net Performance – March 31, 2021*

	Quarter(%)	1 YR(%)	3 YR(%)	5 YR(%)
CERS Pension Plan	3.95	29.65	8.54	9.73
CERS Policy Benchmark	3.22	29.32	8.48	---
IM Public DB Median**	3.20	35.90	10.30	10.20

* Source: March 2021 based on various CERS reports, and most recent actuarial report, available in CERS's website.

** Net of Fees

Section 2 – Investment Approach

The Board's fiduciary duty is to act solely in the best interests of the plan*

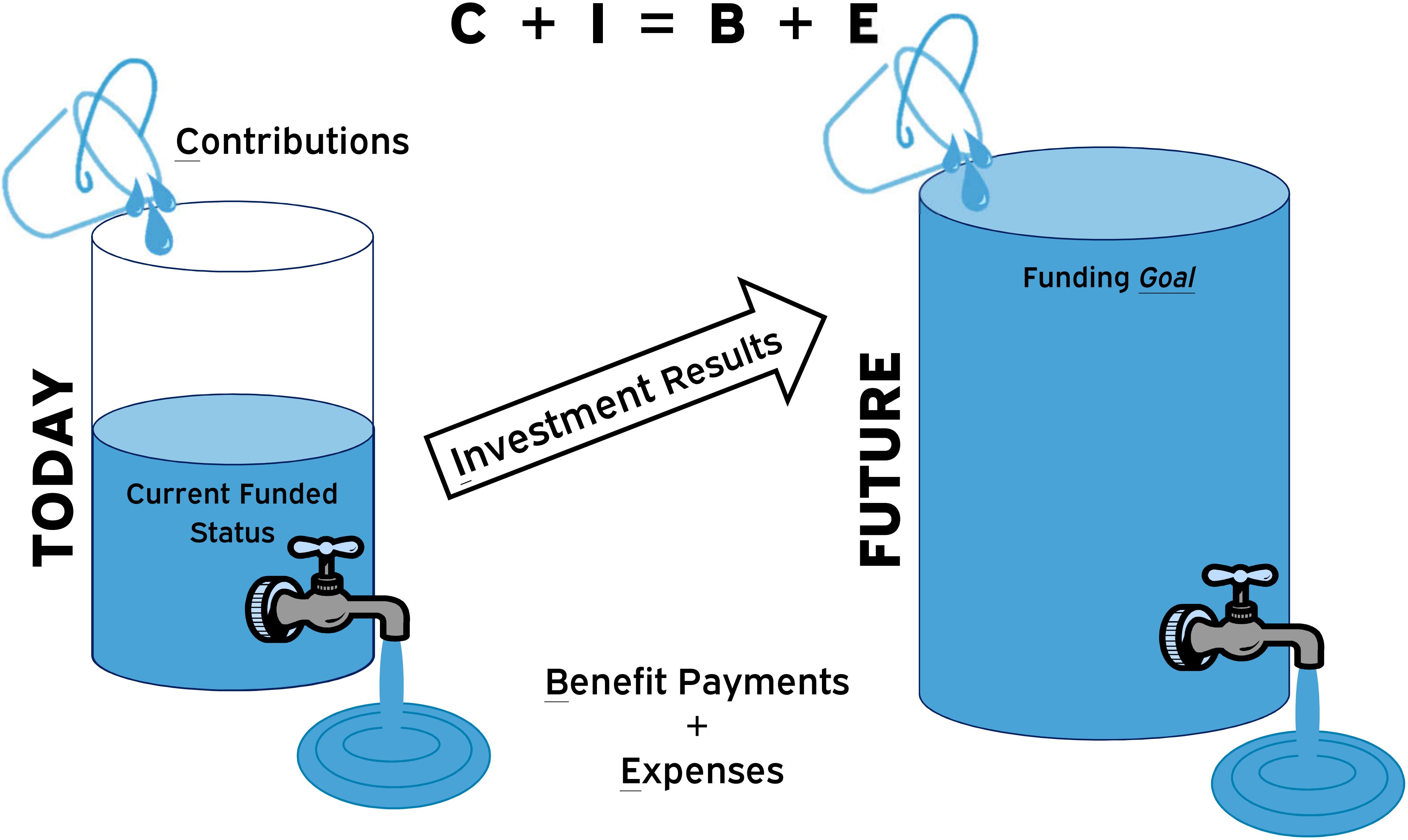
- "Best interests" pertain largely to ensuring that promised economic benefits flow to the pension plan's participants
- Economic benefits are, in large part, influenced by the underlying investment results produced by the assets that support such benefits

There are four guiding principles that can help Trustees maintain perspective on their obligations as a fiduciary:

- Be loyal to the participants (no self-dealing)
- Be impartial (only act for the benefit of the beneficiaries)
- Act prudently (establish and follow detailed processes)
- Exercise due diligence (do your homework)

* Fiduciary laws can vary from state to state, and this is general advice not legal advice. Each plan should have its own fiduciary legal counsel to advise on the specific laws that are applicable in your jurisdiction.

$$C + I = B + E$$


Contributions
TODAY
Current Funded Status
Investment Results
FUTURE
Funding *Goal*
Benefit Payments
+
Expenses

Investment Approach: Importance of Good Governance

- Creates an operating / management environment to achieve fund objectives
  - The public fund environment is difficult
- Board focused on policy issues
  - Largest impact on the fund
- Clearly defined roles and responsibilities
- Clear investment policies
  - Documentation
- Role of the Trustees
  - Governance starts at the top of the organization
- Prudence is process

Investment Approach: The Investment Challenges Facing Public DB Plans

- Public pension fund policy-makers face many daunting challenges as they strive to provide retirement security to plan beneficiaries
- Expected return target: 7% to 8%
- Plan characteristics and financial health
- Low expected return environment
  - Record low interest rates
  - Equity markets are not bargain priced

"The important thing in life is not to have a good hand but to play it well."

- Louis Fortin, Writer

Investment Approach: The Investment Challenges Facing Public DB Plans

- Expected return target: 7% to 8% (median 7.25%)
  - Seems high when compared to expected returns in the capital markets
- Most DB plans are underfunded – average 72% funded; down from 100% in 2001
- Average active member to annuitant ratio is 1:3; down from 2:5 in 2001
- Most plans are mature: Benefit payments > Employer + Employee contributions
  - Net overflow on average is 2.6% per year
- Underfunded status and negative cash flow reduce the funds' ability to recover from a large negative equity market event
  - Average fund allocation to public equity: 47%

Data Source; NASRS Public Fund Survey.

Investment Approach: The Investment Challenges Facing Public DB Plans

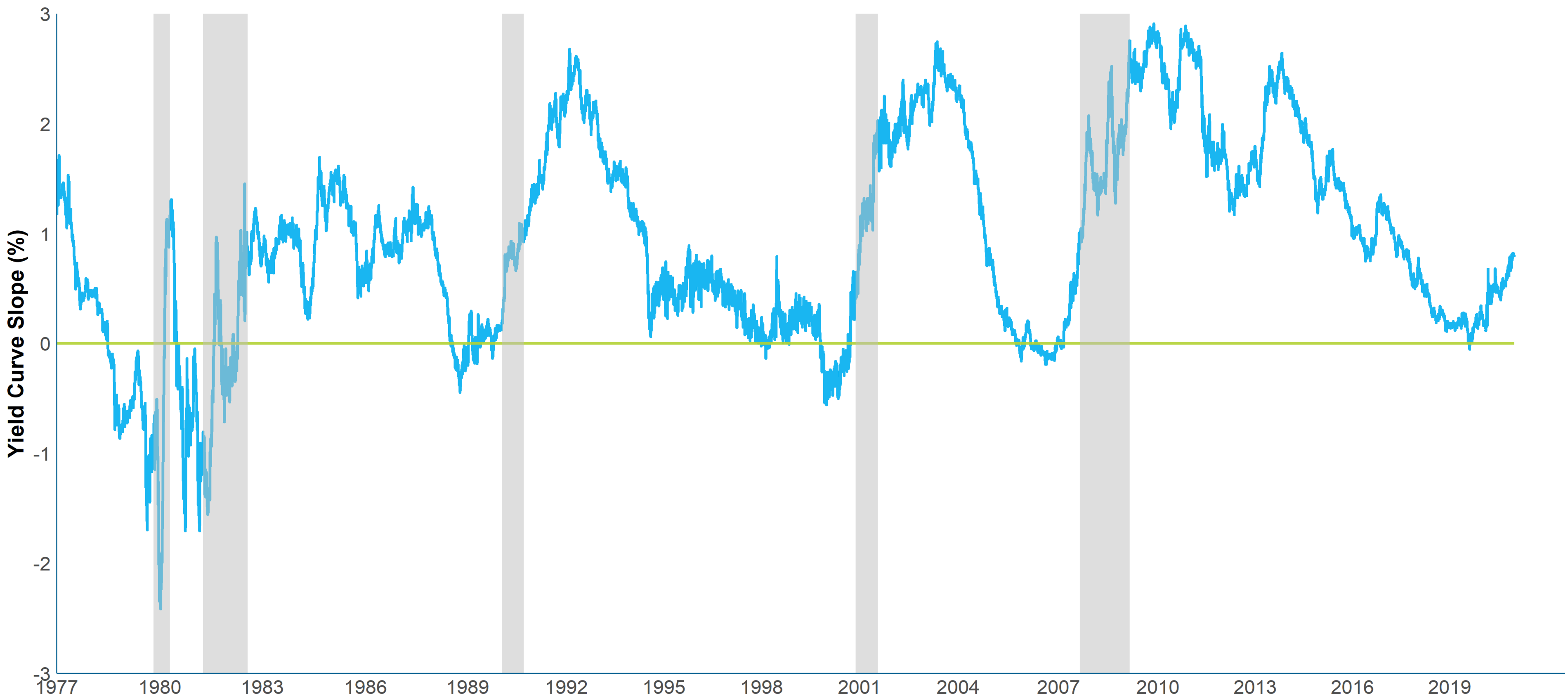
- DB plans, though long-term investors, have to also be concerned with performance in the near term
  - The journey matters!
- Policy-makers must manage conflicting objectives
  - High returns or stable returns?
  - Lower contributions or lower contribution variability?

Investment Approach: Capital Market Returns: December 2020

	4Q20(%)	1 YR(%)	3 YR(%)	5 YR(%)	10 YR(%)
Domestic Equity					
S&P 500	12.1	18.4	14.2	15.2	13.9
Russell 3000	14.7	20.9	14.5	15.4	13.8
Russell 1000	13.7	21.0	14.8	15.6	14.0
Russell 1000 Growth	11.4	38.5	23.0	21.0	17.2
Russell 1000 Value	16.3	2.8	6.1	9.7	10.5
Russell MidCap	19.9	17.1	11.6	13.4	12.4
Russell MidCap Growth	19.0	35.6	20.5	18.7	15.0
Russell MidCap Value	20.4	5.0	5.4	9.7	10.5
Russell 2000	31.4	20.0	10.2	13.3	11.2
Russell 2000 Growth	29.6	34.6	16.2	16.4	13.5
Russell 2000 Value	33.4	4.6	3.7	9.7	8.7
Foreign Equity					
MSCI ACWI (ex. US)	17.0	10.7	4.9	8.9	4.9
MSCI EAFE	16.0	7.8	4.3	7.4	5.5
MSCI EAFE (Local Currency)	11.4	0.8	3.0	5.8	6.8
MSCI EAFE Small Cap	17.3	12.3	4.9	9.4	7.8
MSCI Emerging Markets	19.7	18.3	6.2	12.8	3.6
MSCI Emerging Markets (Local Currency)	16.0	19.1	8.1	12.6	6.6
Fixed Income					
Bloomberg Barclays Universal	1.3	7.6	5.5	4.9	4.2
Bloomberg Barclays Aggregate	0.7	7.5	5.3	4.4	3.8
Bloomberg Barclays US TIPS	1.6	11.0	5.9	5.1	3.8
Bloomberg Barclays High Yield	6.5	7.1	6.2	8.6	6.8
JPM GBI-EM Global Diversified	9.6	2.7	3.0	6.7	1.5
Other					
FTSE NAREIT Equity	11.6	-8.0	3.4	4.8	8.3
Bloomberg Commodity Index	10.2	-3.1	-2.5	1.0	-6.5
HFRI Fund of Funds	7.5	10.3	4.7	4.4	3.3

Source: InvestorForce.

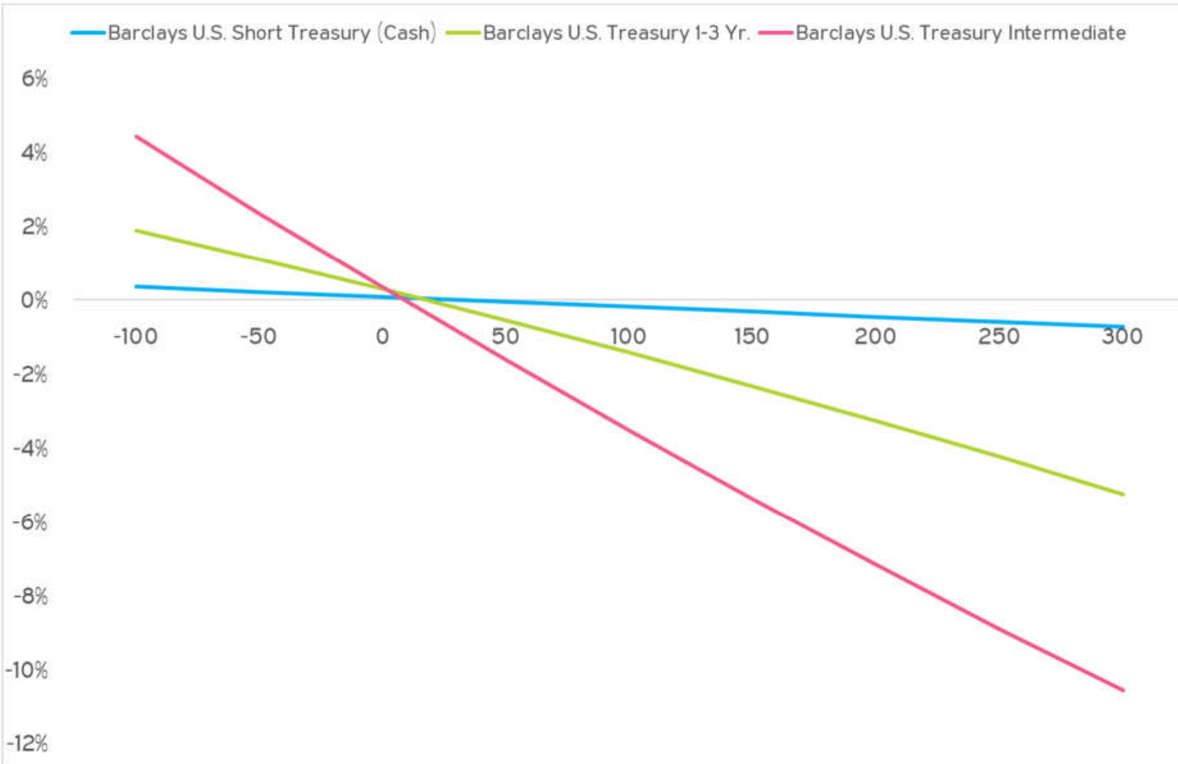
Yield Curve Slope (Ten Minus Two)
(As of December 31, 2020)



Yield Curve Slope (Ten Minus Two) – Source: Bloomberg, and Meketa Investment Group. Yield curve slope is calculated as the difference between the 10-Year US Treasury Yield and 2-Year US Treasury Yield.

Total Return Given Changes in Interest Rates (bps)[1]

(As of December 31, 2020)

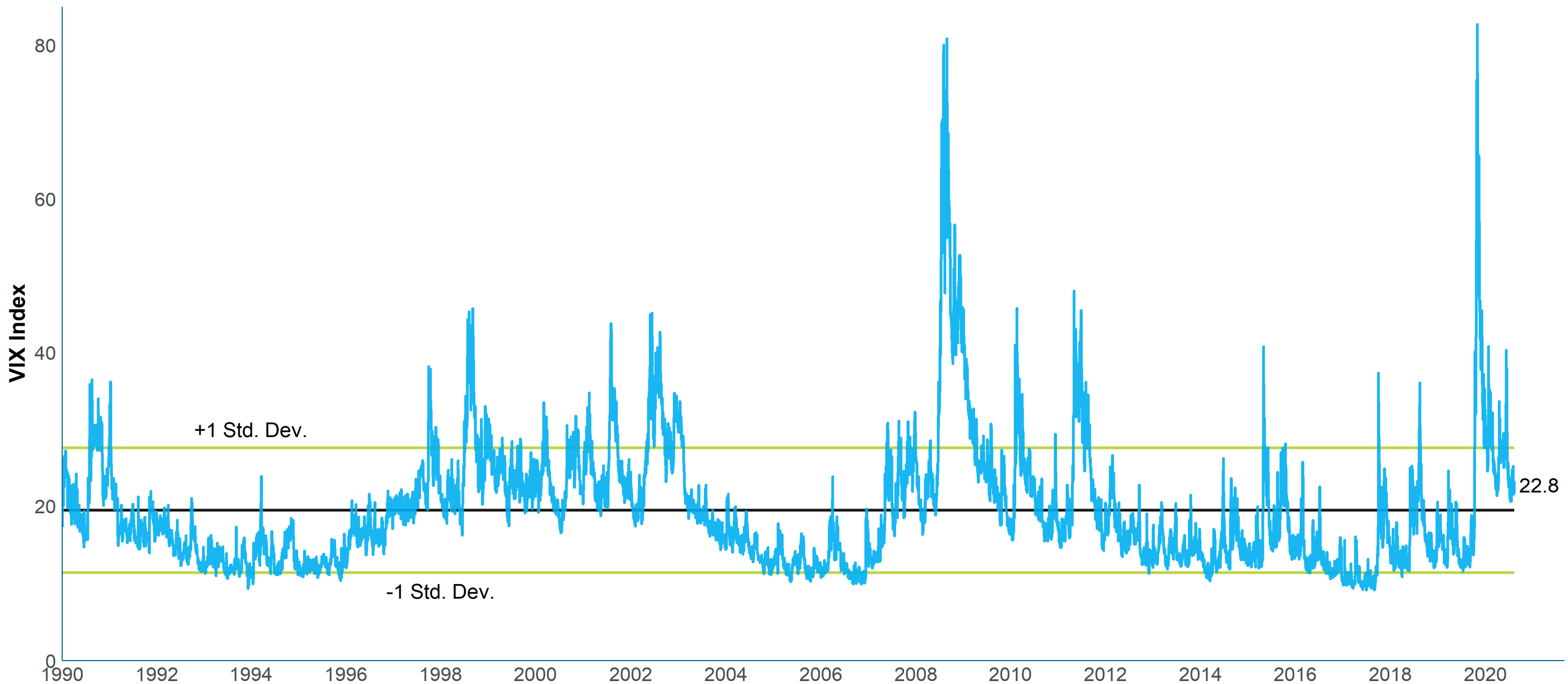


	Total Return for Given Changes in Interest Rates (bps)									Statistics	
	-100	-50	0	50	100	150	200	250	300	Duration	YTW
Barclays US Short Treasury (Cash)	0.3%	0.2%	0.1%	-0.1%	-0.2%	-0.3%	-0.5%	-0.6%	-0.7%	0.27	0.07%
Barclays US Treasury 1-3 Yr.	1.9%	1.1%	0.3%	-0.6%	-1.4%	-2.3%	-3.3%	-4.3%	-5.3%	1.65	0.28%
Barclays US Treasury Intermediate	4.4%	2.3%	0.3%	-1.6%	-3.5%	-5.4%	-7.2%	-8.9%	-10.6%	3.98	0.32%
Barclays US Treasury Long	23.0%	11.7%	1.5%	-7.5%	-15.5%	-22.3%	-27.9%	-32.4%	-35.8%	19.24	1.51%

[1] Data represents the expected total return from a given change in interest rates (shown in basis points) over a 12-month period assuming a parallel shift in rates. Data is as of December 31, 2020 via Barclays, Bloomberg, and Meketa Investment Group.

Investment Approach: Volatility

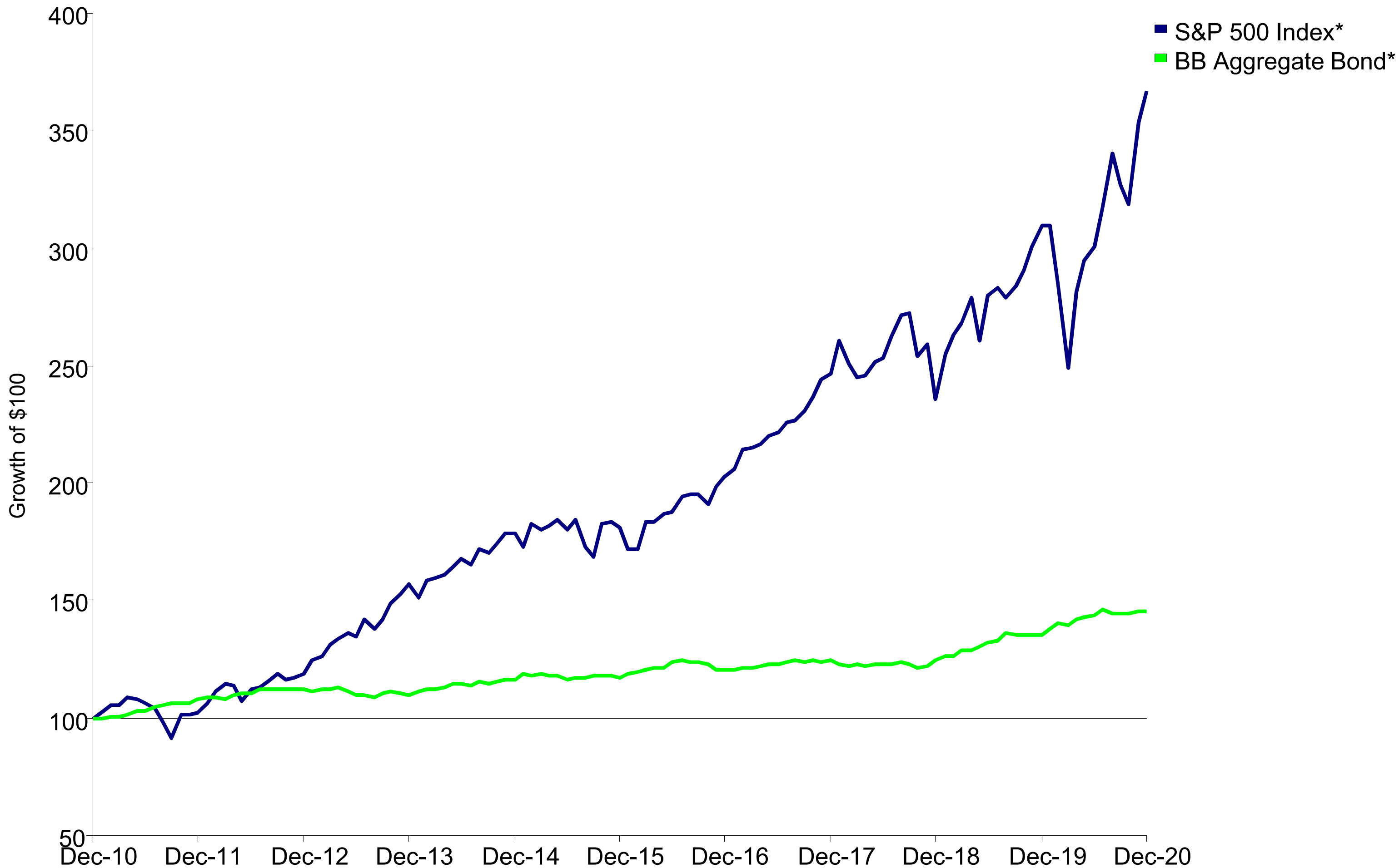
Equity Volatility*
(As of December 31, 2020)



* Equity Volatility – Source: Bloomberg, and Meketa Investment Group. Equity Volatility proxied by VIX Index, a Measure of implied option volatility for US equity markets.

Investment Approach: Investment Environment: Equity Investing Has Risks

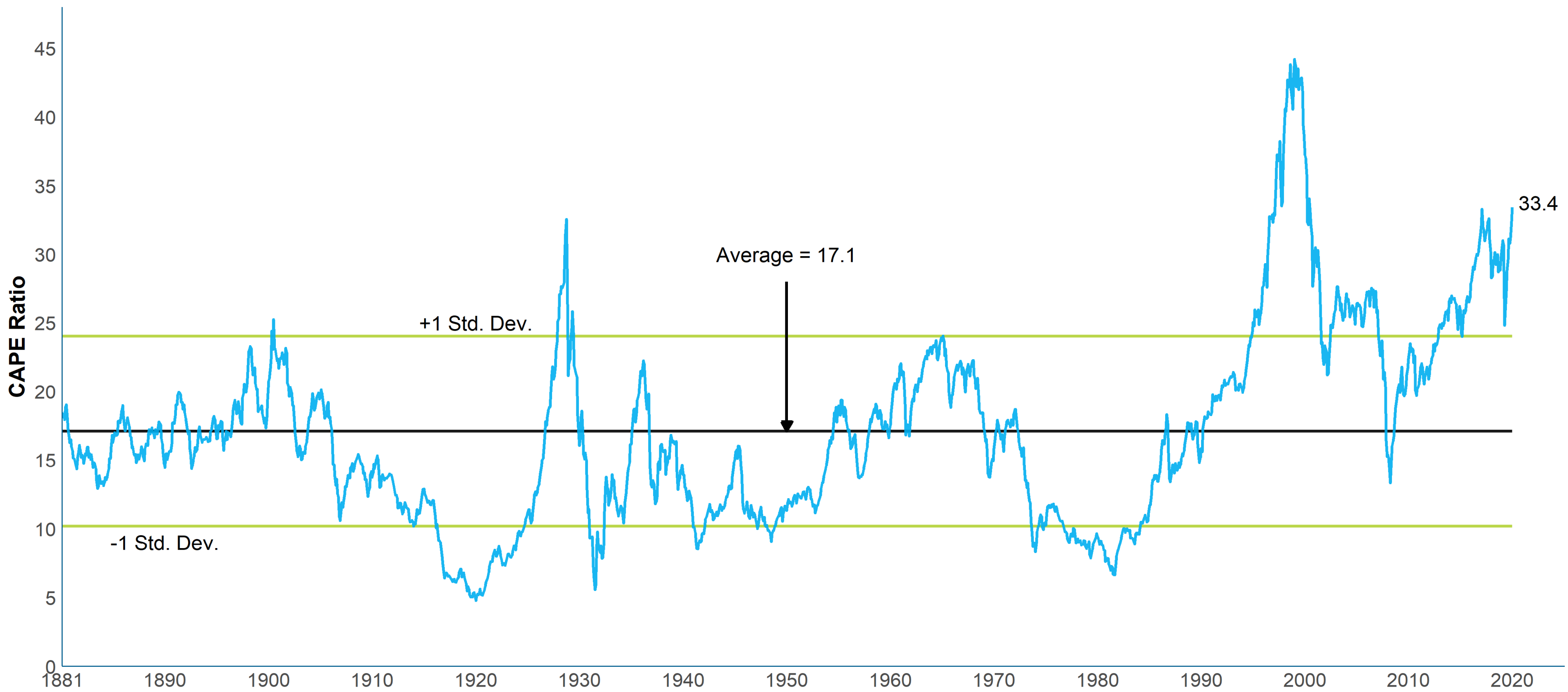
Growth of $100 – 10 years ending December 2020



* Source: Bloomberg, S&P, and Meketa Investment Group..

Investment Approach: Investment Environment: US Equity Market Not Cheap (12/2020)

U.S. Equity Cyclically Adjusted P/E*

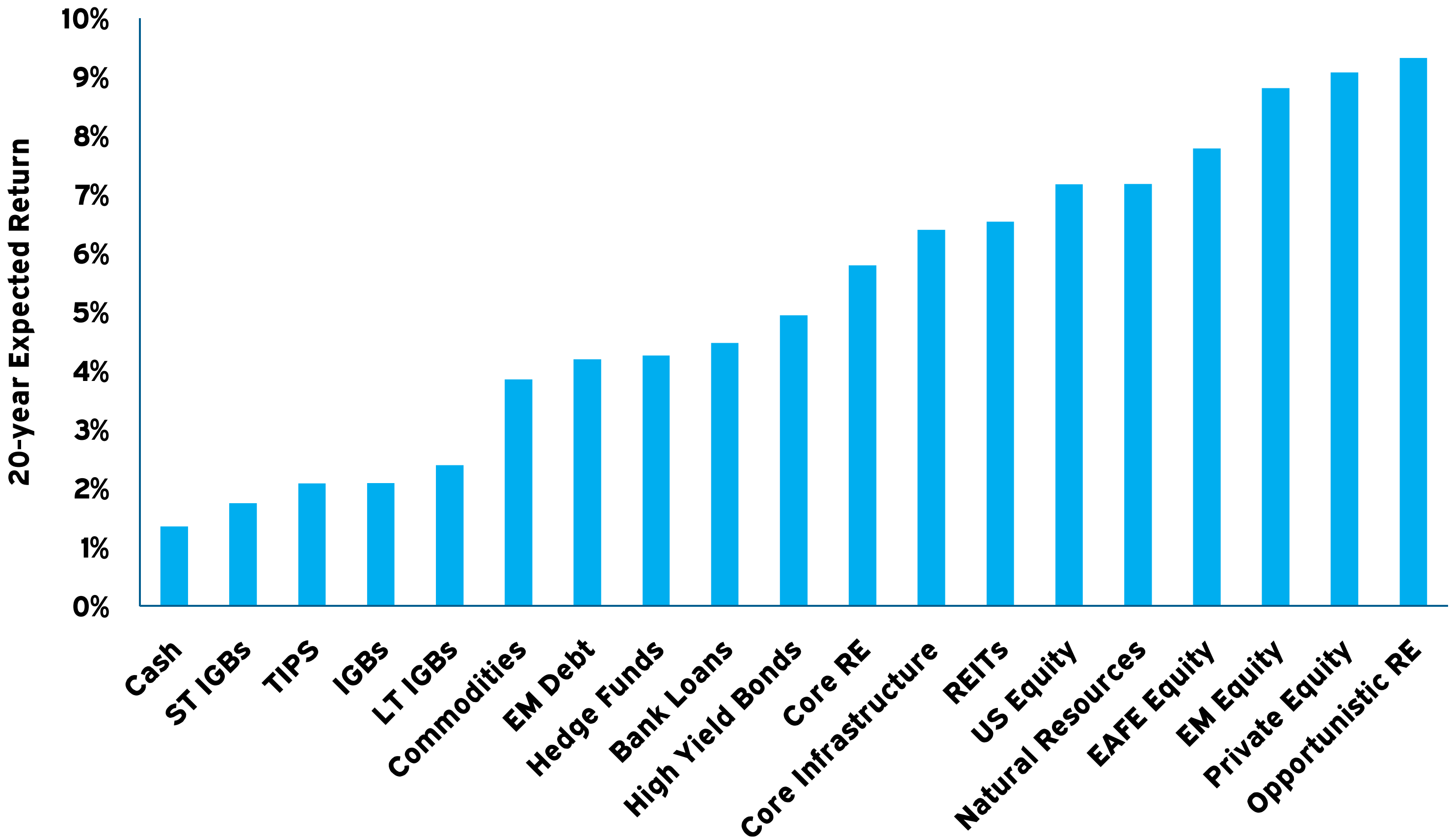


* US Equity Cyclically Adjusted P/E on S&P 500 Index. Source: Robert Shiller, Yale University, and Meketa Investment Group.

Growth P/E vs. Value P/E*
(As of December 31, 2020)

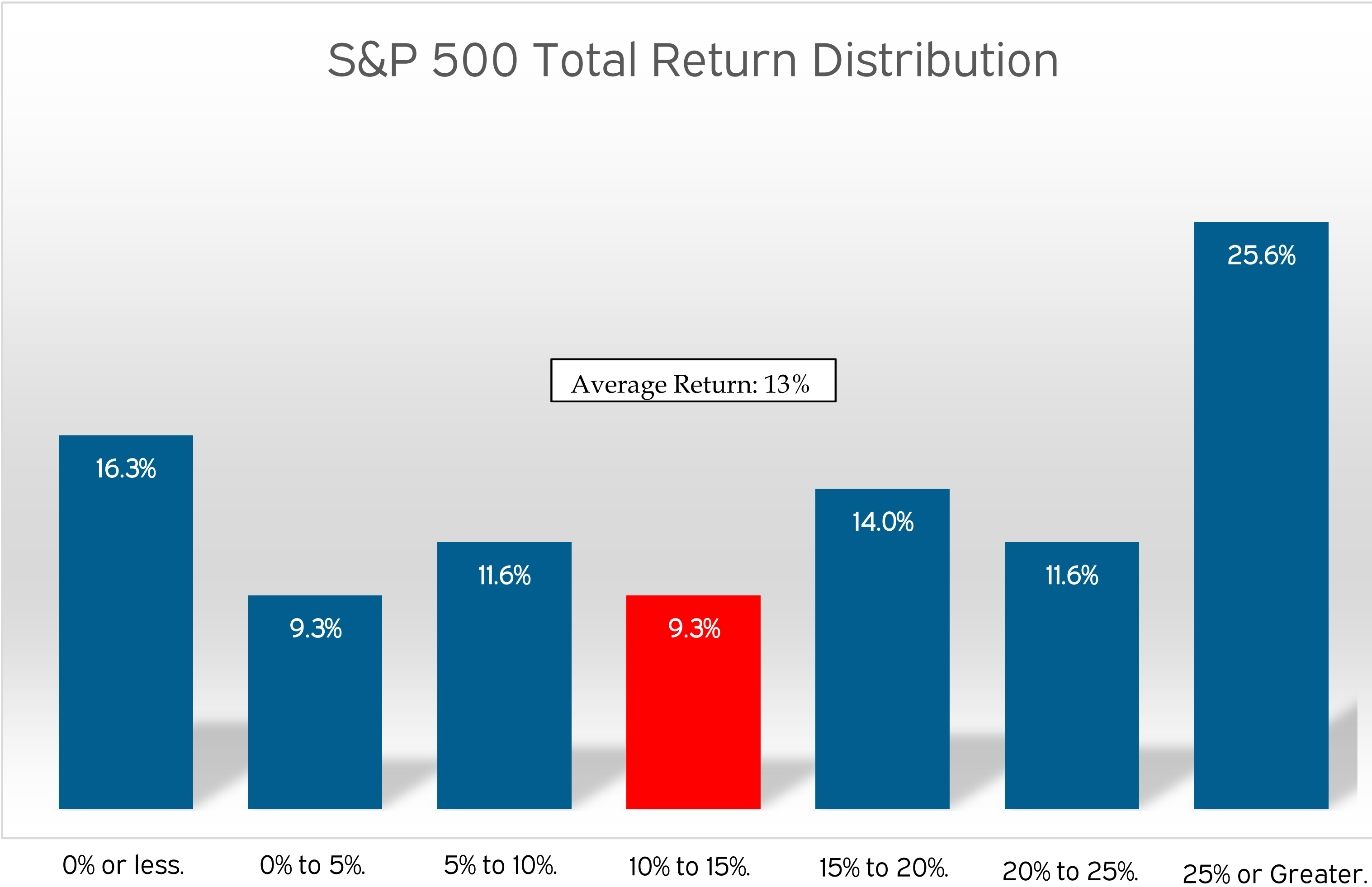
* Growth P/E (Russell 3000 Growth Index) vs. Value (Russell 3000 Value Index) P/E - Source: Bloomberg, MSCI, and Meketa Investment Group. Earnings figures represent 12-month "as reported" earnings.

Long-Term Outlook – 20-Year Annualized Expected Returns



* Source: Meketa Investment Group's 2020 Annual Asset Study.

Investment Approach: Equity Returns Are Rarely Average

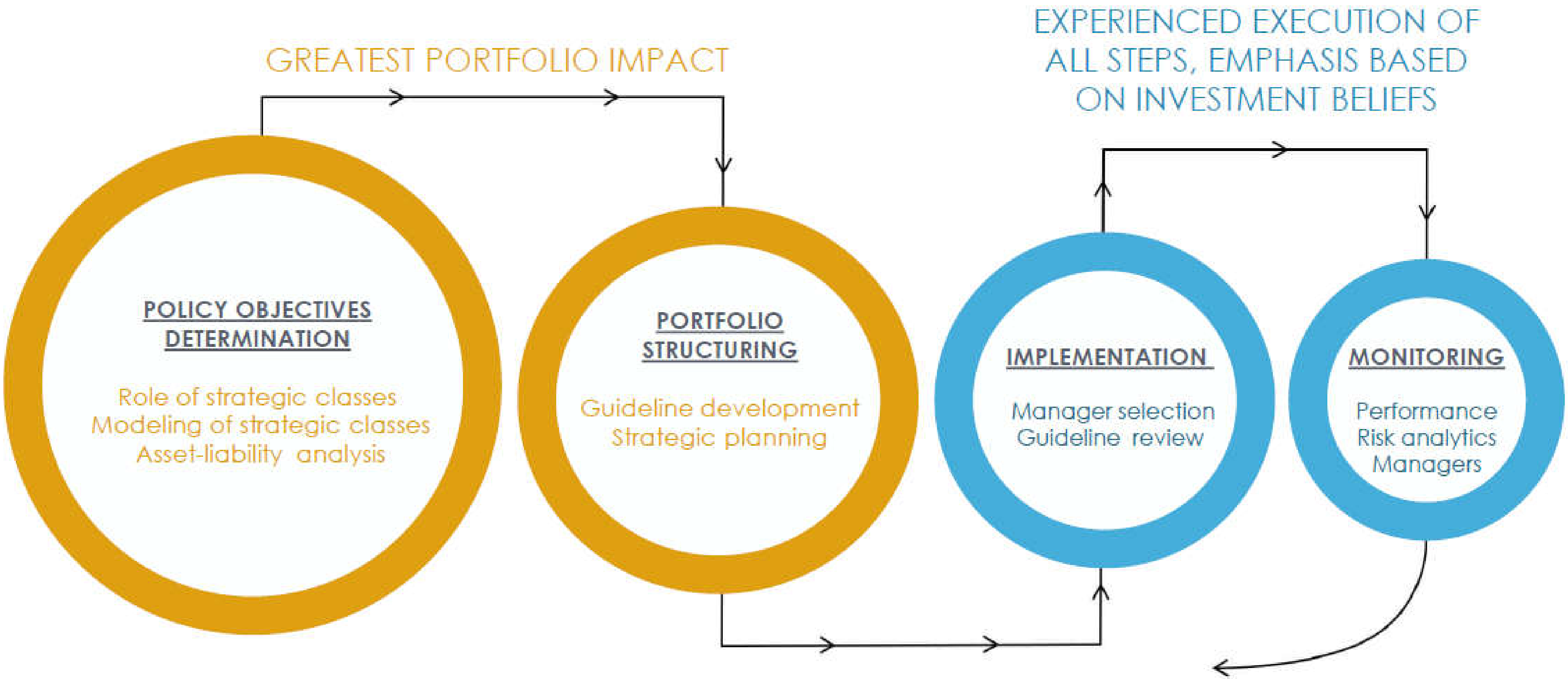


- Equity market returns are rarely "average".
- Long-term investors face a bumpy ride to capture the equity return premium.

Source: Meketa Investment Group, S&P annual history 1978 through 2020/ Red Bar indicates where "average" falls.

Section 3 – Investment Policy Development

Investment Policy Development: Philosophy: Strategy/Policy Are Drivers of Results



Purpose

- Provide organization with a management roadmap
- Address how Board will manage conflicting goals and objectives
- Documentation

Contents

- Mission Statement
- Roles / Responsibilities
- Investment Objectives
- Investment Beliefs
- Risk Management Strategy / Risk Tolerance
- Asset Allocation Policy
- Portfolio Structure
- Portfolio Monitoring and Evaluation Standards

Elements of an effective Investment Policy Statement:

- Roles and responsibilities delineated (between Board and staff)
- Delegation of bounded authority
- Clear overall goals (objectives)
- Asset classes (roles of each investment class addressed)
- Clear strategic policy portfolio weighting and latitude
- Evaluative criteria
- All discretionary implementation authority delegated to staff should be explicitly specified in policy

Practical Benefits:

- Avoid unforced errors
  - Switching philosophy mid-stream
  - Helps stay the course
- Board's risk philosophy disseminated through the organization
- Apply philosophy consistently throughout the portfolio
- Template to evaluate future policy changes and the suitability of new investment strategies
- Consistency of policy if there is Board turnover

Investment Objectives:

- Are they realistic?
- Do they conflict?
- How will you manage those conflicts?
- Is your portfolio designed to achieve these objectives?
- Examples of conflicting objectives
  - Capital preservation is our primary objective
  - The portfolio will be invested to achieve the actuarial target return

"Any organization, in order to survive and achieve success, must have a sound set of beliefs on which it premises all its policies and actions."

- Thomas Watson Jr.

- Articulated in Investment Policy document
- Guide to managing the investment portfolio
- High-level investment principles
- Does a proposed investment strategy (product) comply with the fund's investment beliefs?

Investment Policy Development: Investment Beliefs: Sample

- As a long-term investor, XYZ should allocate a significant portion of its assets to illiquid, private markets.
- To exploit market inefficiencies, XYZ must be contrarian and innovative in its approach to opportunistic investments.
- Over the long-term, equity-oriented investments provide reliable return premiums relative to risk-free investments.
- All fees, commissions, and transaction costs should be diligently monitored and managed in order to maximize net investment returns.

Investment Policy Development: Investment Beliefs: Sample

- Adequate and peer-group relative resources are required to successfully compete in world capital markets.
- Asset allocation among complementary investment classes in the XYZ's leading policy decision is impacting long-term returns and risk.
- Certain segments of the capital markets have inefficiencies that can be exploited with active management.
- The XYZ has authority to set and monitor portfolio risk. Both short-term and long-term risks are critical.

Section 4 – Asset Allocation

Asset allocation is the most important determinant of the portfolio return and risk

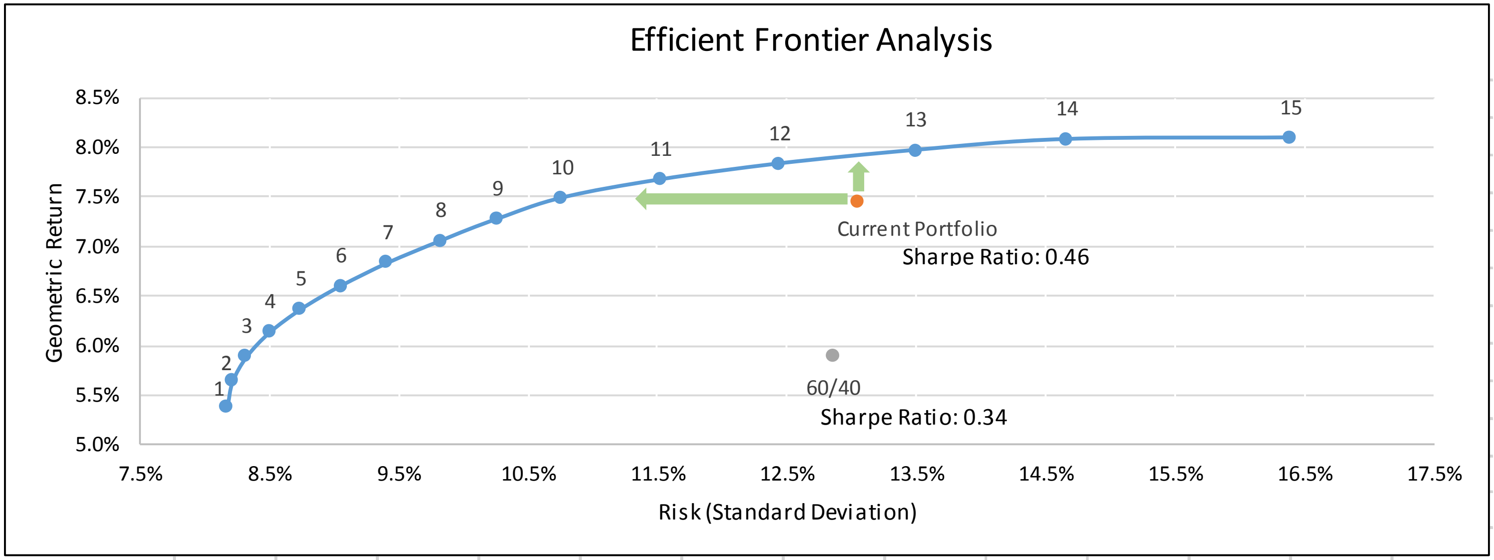
Modeling Process:

- Determination of assets to include in the modeling
- Determination of asset class assumptions
  - Expected return
  - Expected risk
  - Expected correlations
  - Asset class constraints (minimum and maximum allocations)
- Run model – check for reasonableness
- Review and discussion of model output given investor risk preferences
- Adoption of allocation

Asset Allocation: Model Output

Allocation Constraints

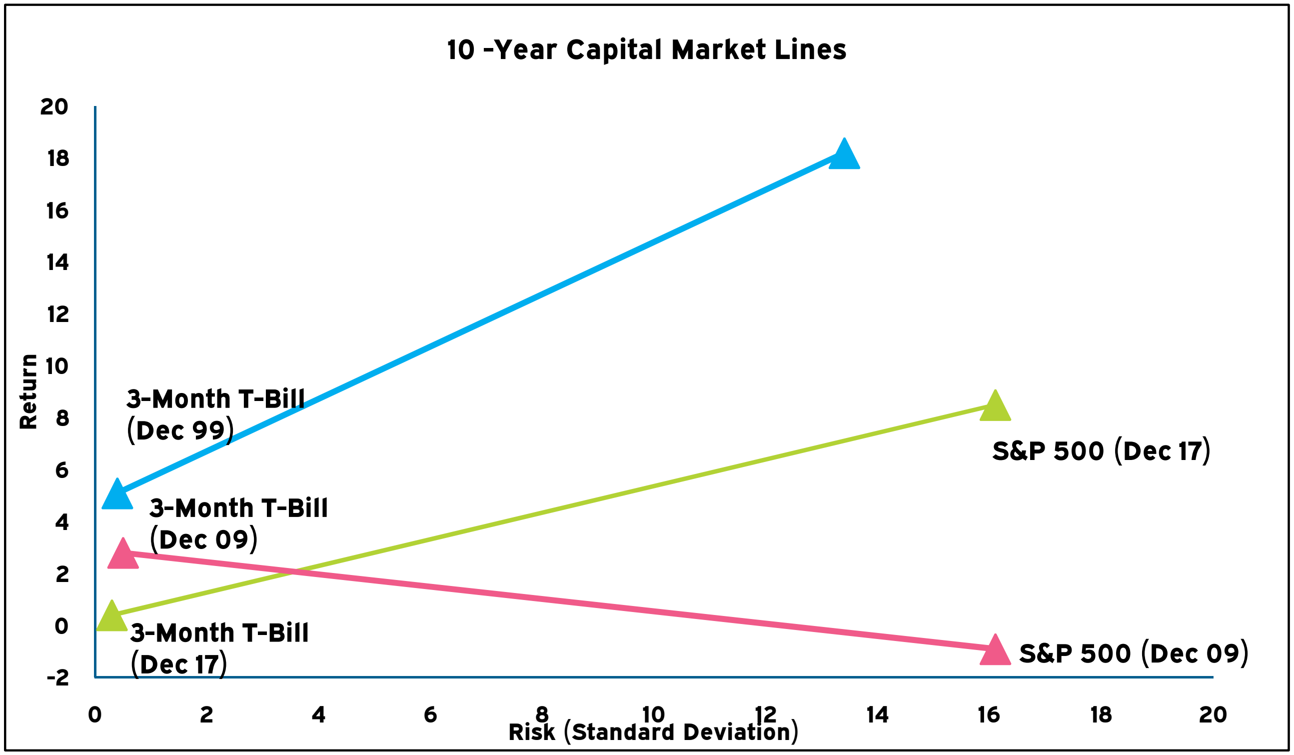
	Min	Max
Global Equity	30	100
Private Equity	0	25
Real Estate	0	25
Fixed Income	10	100
Liquid Alts	0	100
Illiquid Alts	0	100



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	CP	60/40
Arithmetic Return	5.7%	6.0%	6.2%	6.5%	6.7%	7.0%	7.3%	7.5%	7.8%	8.0%	8.3%	8.6%	8.8%	9.1%	9.3%	8.2%	6.7%
Risk (StDev)	8.2%	8.2%	8.3%	8.5%	8.7%	9.1%	9.4%	9.8%	10.3%	10.8%	11.5%	12.4%	13.5%	14.7%	16.4%	13.0%	12.9%
Geometric Return	5.4%	5.6%	5.9%	6.1%	6.4%	6.6%	6.8%	7.1%	7.3%	7.5%	7.7%	7.8%	8.0%	8.1%	8.1%	7.5%	5.9%
Sharpe Ratio	0.42	0.45	0.48	0.50	0.51	0.52	0.53	0.54	0.54	0.54	0.52	0.51	0.49	0.47	0.43	0.46	0.34

Global Equity	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	40%	38%	60%
Private Equity	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	7%	13%	18%	24%	25%	18%	0%
Real Estate	8%	10%	12%	14%	16%	18%	20%	22%	22%	25%	25%	25%	25%	25%	25%	13%	0%
Fixed Income	56%	51%	45%	40%	35%	30%	24%	19%	13%	10%	10%	10%	10%	10%	10%	20%	40%
Liquid Alts	6%	10%	13%	16%	19%	23%	26%	29%	32%	29%	26%	22%	17%	11%	0%	6%	0%
Illiquid Alts	0%	0%	0%	0%	0%	0%	0%	0%	3%	5%	2%	0%	0%	0%	0%	7%	0%

Asset Allocation: Investment Challenge: Risk Is Not Always Rewarded



- Investors are usually rewarded for taking investment risk
- However, risk is not rewarded in every 10-year time period
- Asset allocation reviews conducted in 1999 underestimated the market risk environment over the next decade
- Model assumptions that miss the actual outcome are called estimation errors

A 60/40 portfolio has many positive attributes:

- Investible
- Inexpensive to manage
- Easy to implement
- Has performed well in the past

May not be suitable for a mature public DB plan in the current investment environment

- 60/40 portfolio risk profile is dominated by one risk – equity (growth) risk
  - The success or failure of the portfolio meeting its investment objectives rests on one outcome : equity investments continuing to rise in value
- 60/40 portfolio has a lower expected return than other portfolio allocations
  - Primarily because Fixed Income yields are so low

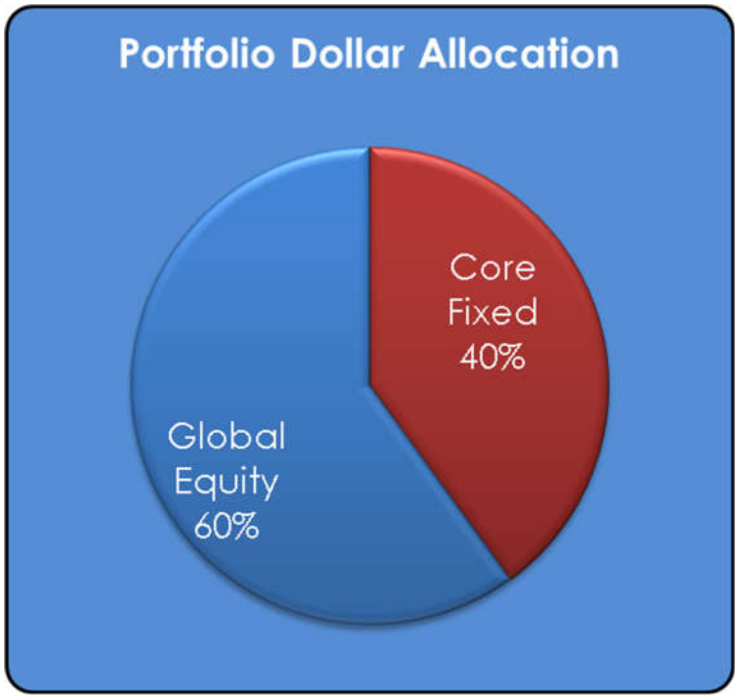
Asset Allocation: Sources of Portfolio Risk: 60/40 Portfolio

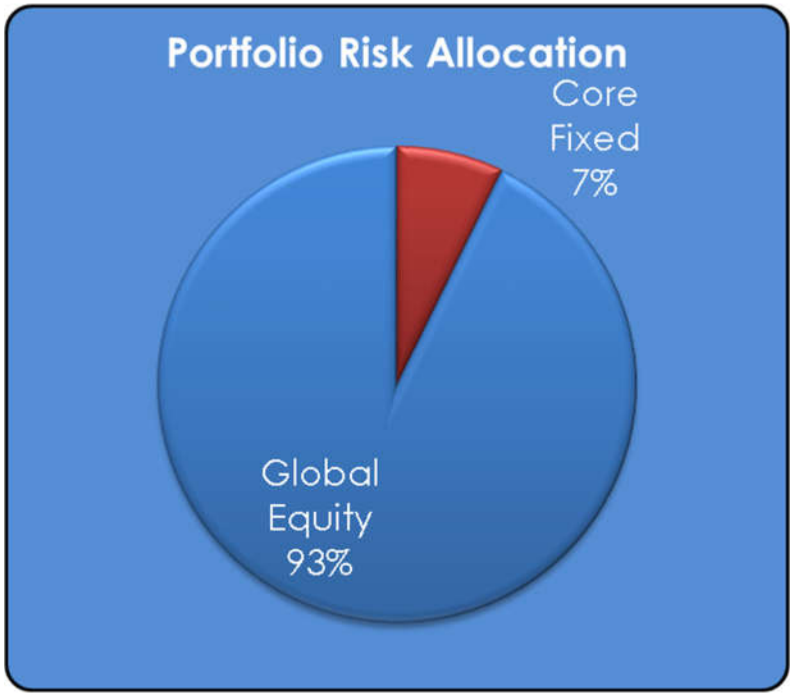
Portfolio Arithmetic Return: 6.5%

Portfolio Geometric Return: 5.8%

Portfolio Standard Deviation: 11.8%

Expected Sharpe Ratio: 0.32





- Total portfolio risk (volatility) is dominated by equity (growth) risk

Note: Risk defined as return variability.

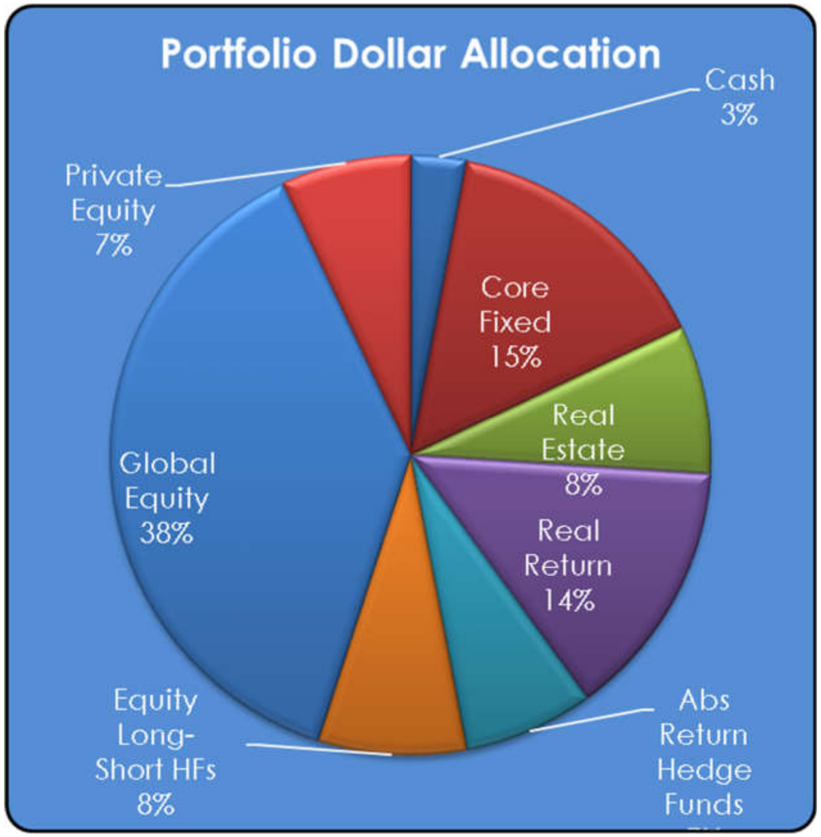
Asset Allocation: Sources of Portfolio Risk: Diversified Portfolio

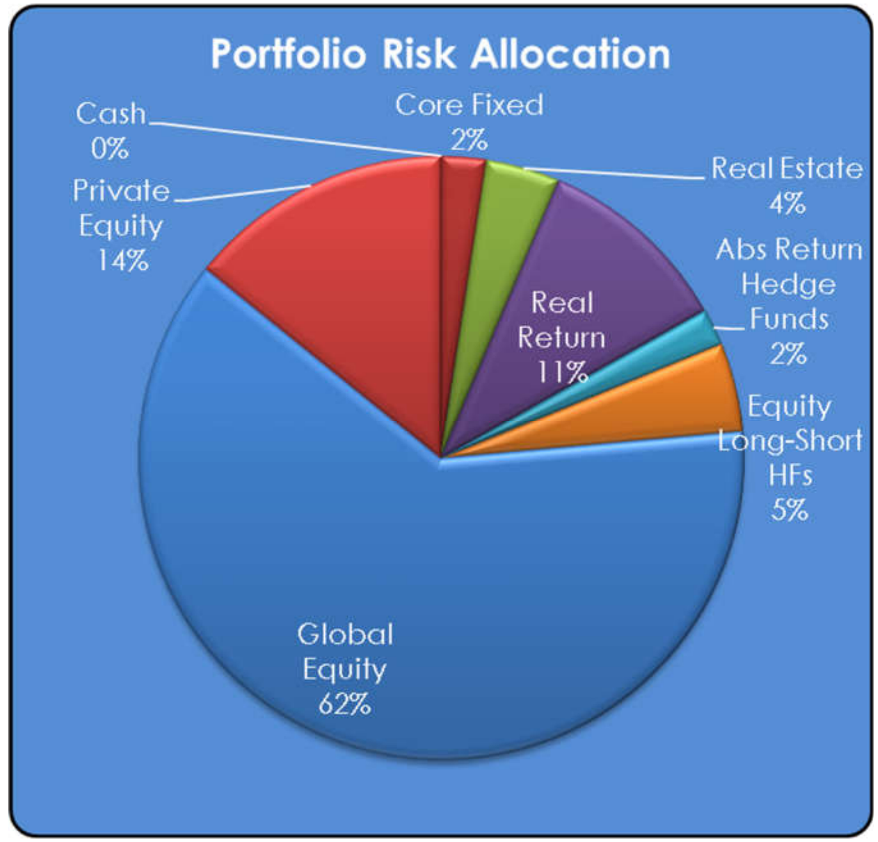
Portfolio Arithmetic Return: 7.2%

Portfolio Geometric Return: 6.6%

Portfolio Standard Deviation: 11.1%

Expected Sharpe Ratio: 0.39





Note: Risk defined as return variability.

Asset Allocation: Mature DB Plan: Volatility Is Not Your Friend

- Net cash outflows reduce the investment flexibility of a long-term investor
- Large negative market movements (drawdowns) are particularly harmful to plan solvency for mature funds
  - Under the worst case scenarios, investors are forced to liquidate long-dated assets in down markets or are forced sellers of illiquid assets – at price concessions
  - Cash inflows are not available to invest in lower valuation assets

Asset Allocation: Diversification is Your Friend

- A risk management investment strategy, which includes uncorrelated investments, is expected to yield higher returns and provide a lower risk (volatility) than any individual investment within the portfolio
- Requires you look at the portfolio as a whole, not as an individual asset class or investment
- In a diversified portfolio, some part of the portfolio will not be performing well in any given investment environment
  - If all assets are doing well or poorly at the same time, the portfolio is not really diversified

"If you're not worried about something in your portfolio you aren't really diversified."

-- Peter Bernstein

Section 5 – Risk Tolerance

What is risk?

- Risk is a condition where there are a greater number of possible outcomes than actual outcomes

Institutional investors operate under a condition of uncertainty

- The "objective" probability of individual outcomes is unknown
- Therefore, we substitute "subjective" probabilities of possible outcomes

Risk management considers both subjective probabilities of outcomes and consequences of outcomes

Risk in an institutional portfolio context:

- Anything that prevents an organization from attaining its goals
  - Inability to meet a return target
    - Over what time horizon?
  - Return volatility – mark-to-market value changes
    - Typically driven by risk exposure

"Risk management is the quality of decision we make in the face of uncertainty."

-- Peter Bernstein

Risk Tolerance: Risks Institutional Investors Face

- Volatility of investment return (market risk)
- Risk of monetary loss or permanent impairment of value
- Liquidity risk
- Credit risk
- Inflation risk
- Counterparty risk
- Operational risk
- Reputational risk or “headline risk”
- Regulatory risk
- Valuation risk
- Concentration risk
- Leverage risk
- Litigation risk

How does one smooth out total fund return volatility?

Many investors have sought to reduce return volatility through investing in:

- Uncorrelated assets or strategies
- Covered Calls portfolio in Growth Portfolio
- Risk-oriented Tactical Portfolios – Tactical Asset Allocation
- Currency Overlay Product to reduce short-term volatility of currency exposure
- Tail risk management strategies
- Other

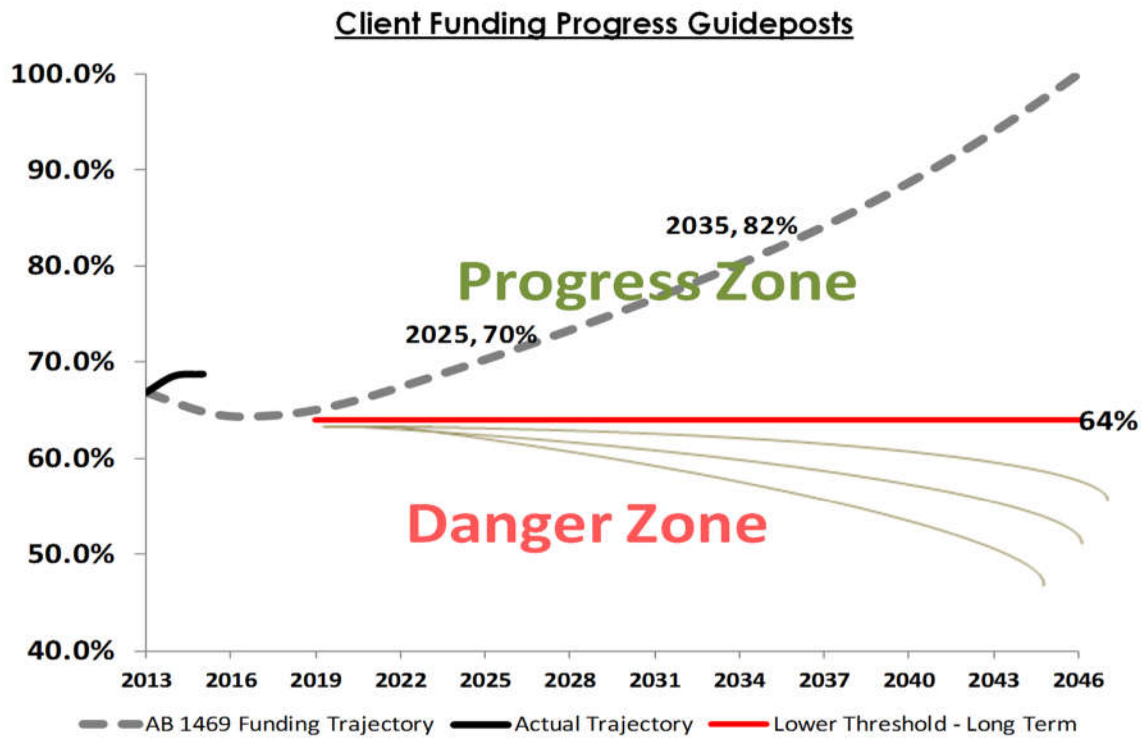
Risk Tolerance: Public Fund DB Plans

- Pre-2008
  - Primarily focused on long-term return averages
  - Volatility of historical returns
- Post-2008
  - Focus of probability of not meeting benefit payments
  - Focus on probability of increased contributions
  - Focus on managing worst case portfolio outcomes
  - Less concern with peer universe comparisons

Risk Tolerance: Investment Horizon for Mature DB Plans

- "We have long dated liabilities – therefore, we're long-term investors."
- "The fund can ride out the market volatility that comes with being an equity investor."
  - You won't know until you test the statement
- You are not a long-term investor if a major market decline can permanently impair fund solvency
  - The level at which the fund solvency is in question is not 0%

Example



- Based on cash-flow dynamics, falling below 64% funding after 2019 presented material implications for the plan
- 64% funding ratio was used as a key threshold during the modeling

Risk Tolerance: Challenge

- Reducing risk typically reduces portfolio expected return
- Since the plan has a 7.5% expected return target, risk cannot just be reduced
- The portfolio must have a reasonable expectation of meeting the target return
- It is difficult to move the needle without forfeiting expected returns
- Adding diversified strategies offers the prospect of reducing portfolio risk without sacrificing expected returns
- Diversifying (low correlated) strategies often require use of:
  - Leverage
  - Shorting
  - Derivatives

Risk Tolerance: Challenge

- Low correlated assets reduce risk. However:
  - The allocation must be large enough to have a risk reduction impact on the total portfolio return
  - Low volatility assets do not have sufficient volatility to materially impact total portfolio return
  - Most diversifying assets / strategies reduce risk very slowly
  - Most institutional investors' portfolios risk profiles are dominated by equity risk
    - If you have a 7.5% return target, it is difficult to construct a portfolio where that is not the case
- It takes time for a reduced risk strategy to pay off
  - Unless there is a market crisis in the near term
- There are more up periods than down periods
- Risk reduction strategies lag in periods where risk is rewarded

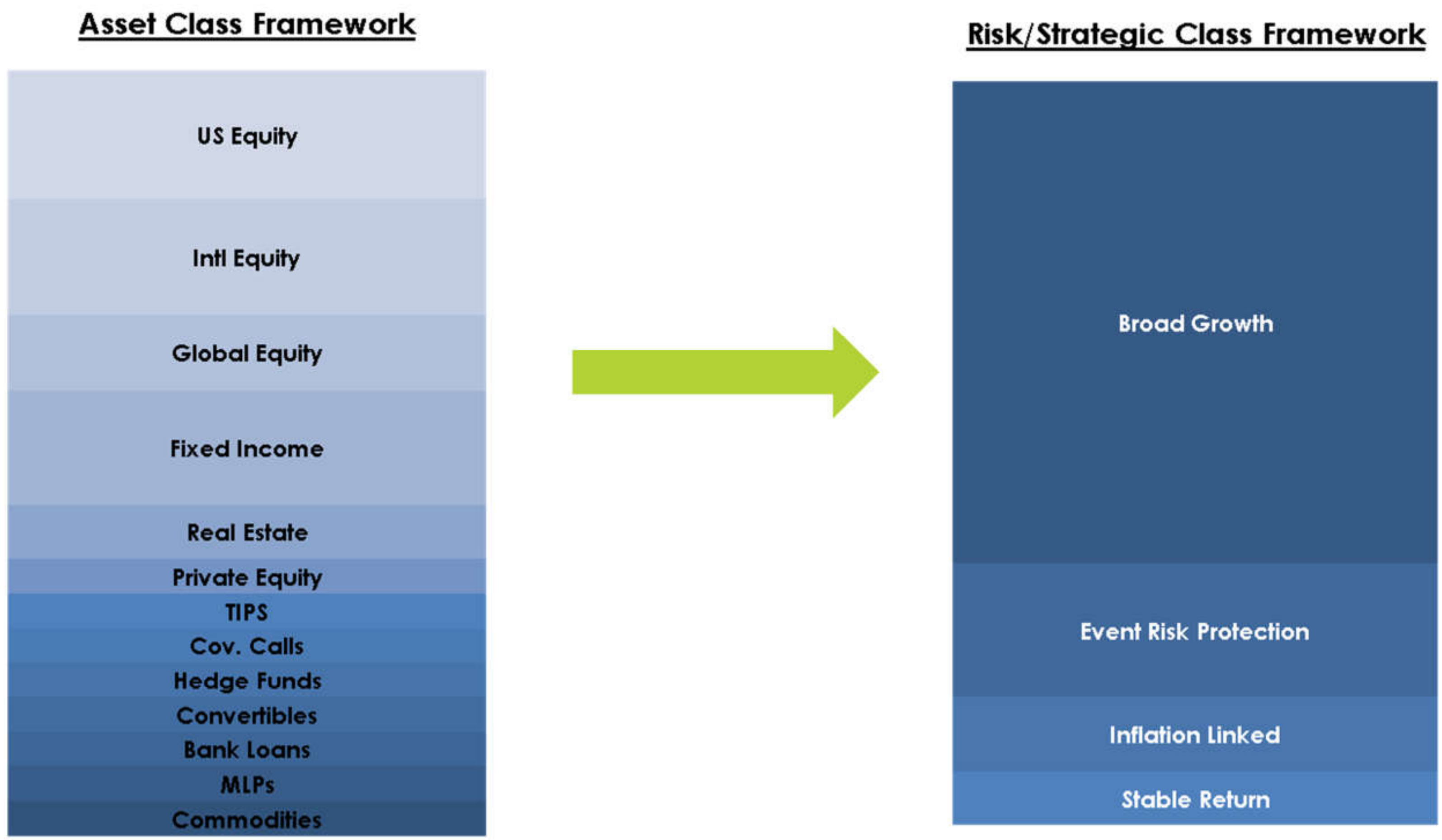
Tail Risk Management

- Tail risk is the small chance of a large negative capital market event occurring that results in a large negative total portfolio return
- Investors have found tail risk events occur more frequently than expected
- Tail risk events are difficult to predict
  - Thus creating the prospect for large losses when they do occur
- Tail risk is expensive to hedge or insure against
  - Investors are compensated for taking tail risk
- Policy-makers may not decide to manage tail risk
  - However, you should discuss the pros and cons

Tail Risk Management Options: Purchase Tail Risk Insurance

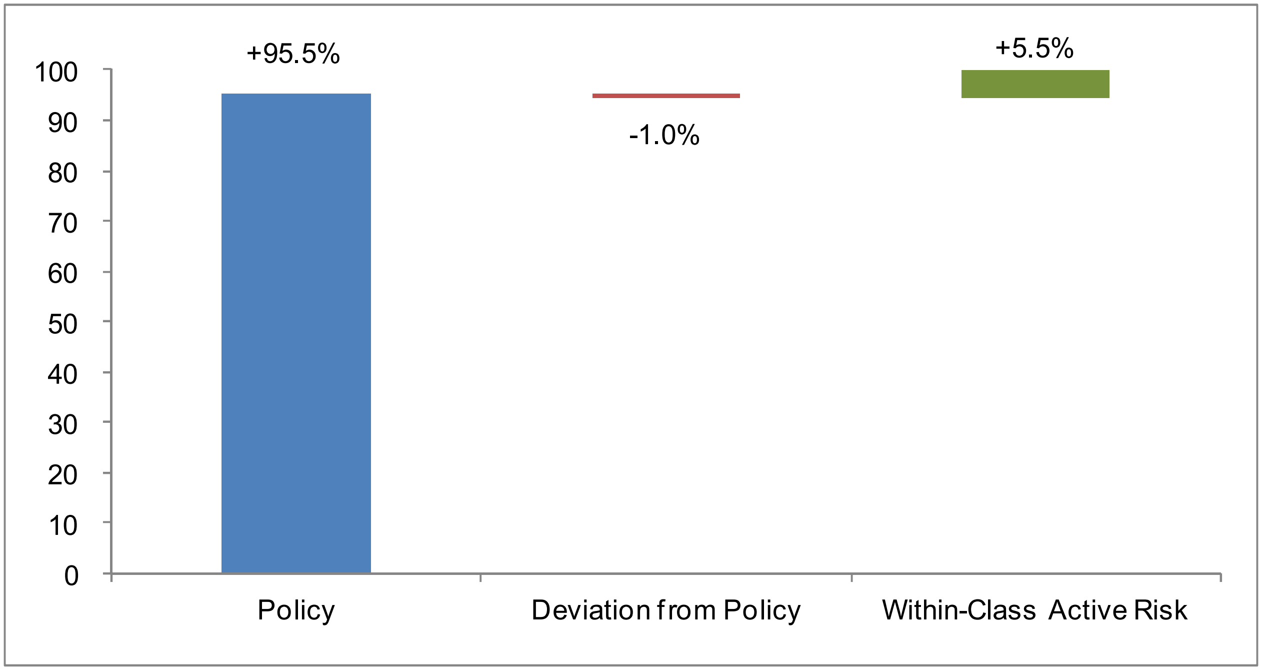
- Systematically hedge tail risk: place a permanent insurance or hedge against tail risk
  - A typical tail risk hedge product costs 1% (of total fund return) to "guarantee" total fund floor return of at least -15%
    - Foregoing 1% return in a low expected return environment is costly
    - -15% is a low floor return
- Tactically hedge tail risk: only insure or hedge against tail risk when risk conditions warrant
  - Difficult to execute
    - When risk perception is high – insurance is expensive
    - When risk perception is low – insurance is cheap

Risk Tolerance: From Asset Complexity to Functional/Risk Framework



- Over time, too many asset categories have blurred visibility of purpose
- High-level decision-makers need to focus on main drivers of risk and performance

Example Risk Contribution



- Awareness of risks embedded in policy portfolio is critical
- Key aspect of implementation: capturing policy risk exposures / intentions effectively and efficiently

Section 6 – Alternative Investing

We define alternative investments as Private Equity, Real Estate, Infrastructure / Natural Resources, Private Debt and Opportunistic Investments.

- It is crucial to define the role of alternative investments
  - Clearly define the role of each alternative program's sub-portfolio
  - Strategy first, managers second
- Fortify strategic partnerships with managers of conviction
  - Fewer, more significant relationships
  - Allow flexibility for tactical investing
- Extensive due diligence to identify the top-performing investment managers in the market
  - Investment, operations and legal
- Be cognizant of the investment horizon and remain patient and deliberate
  - Make transparent, meaningful, cost-effective and scalable commitments

Alternative Investing: Role of Alternative Investments

- Drive investment returns
  - Higher return profiles are expected in exchange for illiquidity
- Diversify the plan's investment portfolio via:
  - Returns that are more income driven and less liquid capital market reliant
  - Long-term investment horizon, capital appreciation, and cash flow generation
- To provide inflation protection

Alternative Investing: Investment Challenges

- Defining and adhering to strategic goals
  - Strategic objectives
  - Investment policies
  - Portfolio construction and strategic allocation modeling
  - Implementing and evaluating the portfolios
  - Benchmarking alternative classes
  - Assessing implementation
  - Valuation considerations
- Identifying and fulfilling fiduciary obligation
  - Fiduciary duty
  - Fees, terms and conditions, and transparency
  - Reputation and headline risk potential
  - Trustee education
- Addressing unique characteristics of alternative investments
  - Pacing process and long-term planning
  - New strategy development, implementation and evaluation
  - Liquidity concerns
  - Delayed reporting

What Keeps Board Members Up at Night?

- Strategic goals and implementation
- Managing allocation to illiquid assets
- Meeting the return expectations for the overall investment portfolio over the long term
- Liquidity needs
- Risk and risk mitigation
- Investment/ manager selection and due diligence
- Fees and terms
- Monitoring responsibilities and assessment – reporting, monitoring and education
- Stakeholder concerns
- Legislative oversight
- Media attention

Annually reaffirm Program's long-term investment objectives

- Including consistency with performance targets and risk objectives
- Review progress toward previously established goals
  - Commitment pacing
  - Market allocation
  - Diversification
  - Performance

Establish investment activity goals for the upcoming calendar year

- Analyze the current market environment
  - Identify attractive segments
- Dependent upon client's unique needs
  - Target annual commitment level utilizing a customized pacing model
  - Target number of investments
  - Target areas of emphasis by strategy or focus
- Understand risk factor exposures of alternative investment strategies
  - Growth risk, rate risk, inflation risk, liquidity risk

Alternative Investing: Fees and Terms

- Fee and expense policies are an important area where more transparency and education is needed
- Pension plans should:
  - Work with General Partners to gain more transparency of fees and terms;
  - Receive education on the changing market dynamics;
  - Collaborate with industry groups that advocate on behalf of limited partners (e.g., ILPA);
  - Negotiate to obtain optimal fees and investment structures; and
  - Serve on Limited Partner Advisory Committees

Alternative Investing: Private Equity Definition

- Equity or equity-linked securities in operating companies that are not publicly traded on a stock exchange
- Types of investment strategies:
  - Buyout – acquisition of a company that investor believes can be made more valuable
  - Growth capital – investment in mature companies looking for capital to expand, restructure, enter new markets
  - Venture capital – investment in typically less mature companies for launch, early development, or expansion
  - Mezzanine – subordinated debt/preferred equity used to reduce amount of equity capital required to finance leveraged buyouts
  - Distressed – equity securities of financially stressed companies
  - Secondaries – investment in existing private equity assets
- Types of structures:
  - Direct investment – direct purchase of equity securities of a private company
  - Co-investments – investments in equity securities of a private company alongside the manager of a direct fund
  - Direct fund – pool of capital formed to make direct investments
  - Fund of funds – pool of capital formed to make investments in direct funds

Alternative Investing: Private Equity Characteristics

- Illiquid, long-term time horizon (7- to 12-year closed-end partnerships)
- Quality of the managers selected is the key determinant of success
- High volatility of returns compensated by higher expected returns
- Encompasses four stages: fundraising, portfolio construction, investment exit, and return realization

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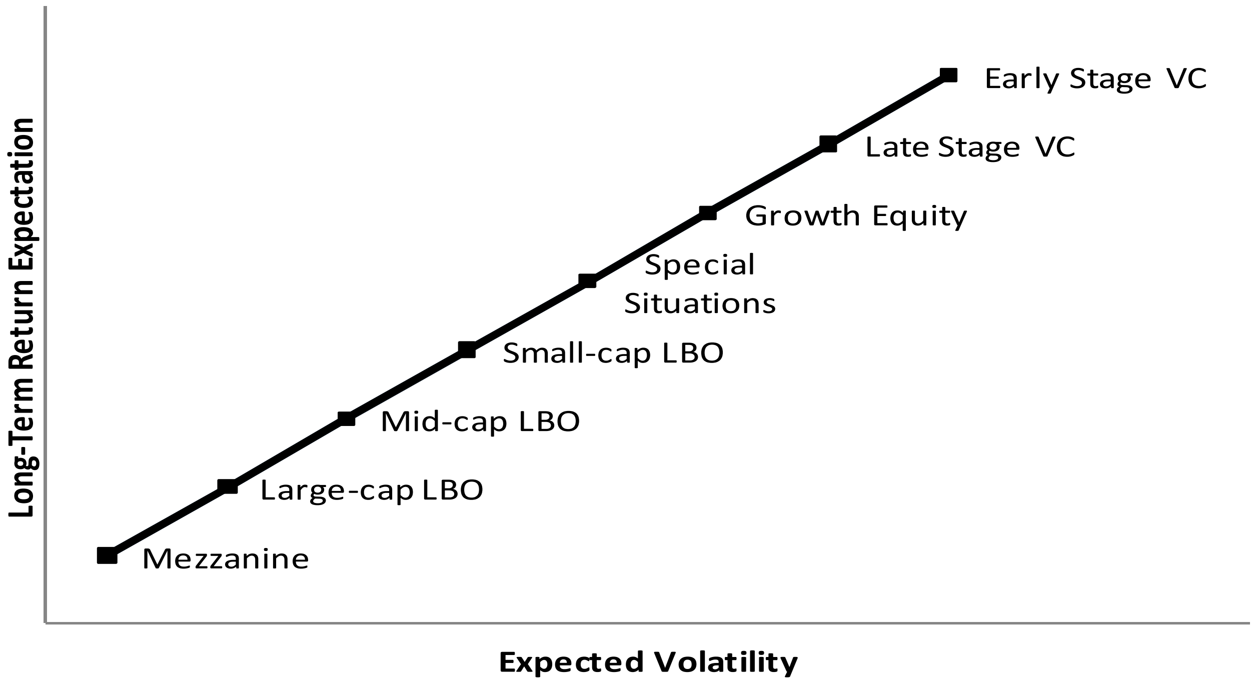
Alternative Investing: Private Equity Risk and Return Expectations

Private Equity Risk vs Return



Performance Expectations

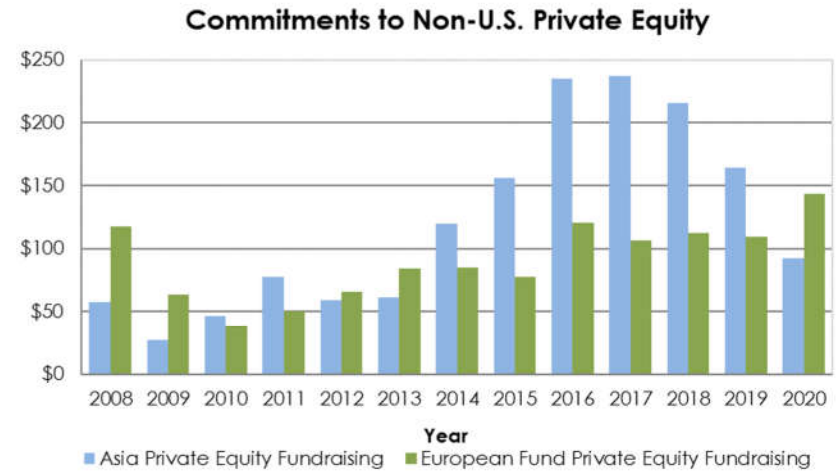
Strategy	Payback Period	Performance Target
Venture Capital	6 to 10 years	Public Equities + (4% - 5%)
Mid/Small LBO	5 to 8 years	Public Equities + (3% - 4%)
Large LBO	5 to 8 years	Public Equities + (2% - 3%)
Mezzanine	4 to 6 years	Public Equities + (1% - 3%)
Distressed	3 to 5 years	Public Equities + (3% - 5%)
Natural Resources	6 to 10 years	Public Equities + (1% - 2%)
Special Situations	2 to 5 years	Public Equities + (2% - 5%)

Alternative Investing: Private Equity Guiding Principles

- Private Equity markets are inefficient
  - Investments should be made on an opportunistic basis relative to market environment
- Manager selection is crucial
  - Value can be added through extensive due diligence
- Emphasize larger commitments with fewer partnerships to managers of conviction
  - Over-diversifying can lead to median results
- Target outsized returns through intelligent portfolio construction
  - Sector exposure, payback structure, investment type, vintage year diversification

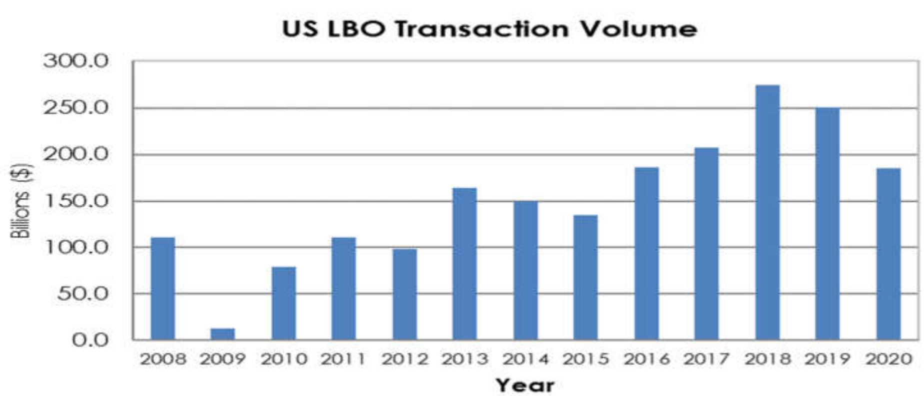
This section examines the private equity market environment, including fundraising, purchase price multiples, debt multiples, and private equity market performance

Source: Preqin

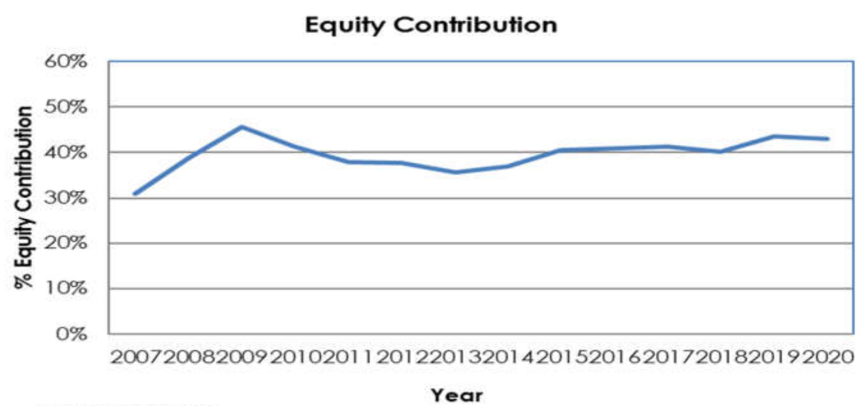


Source: Preqin

Domestic fundraising activities decreased in 2020 compared to a record high in 2019. Non-US fundraising remains strong with record fundraising activity in Europe. However Asia continued to decrease over the past few years

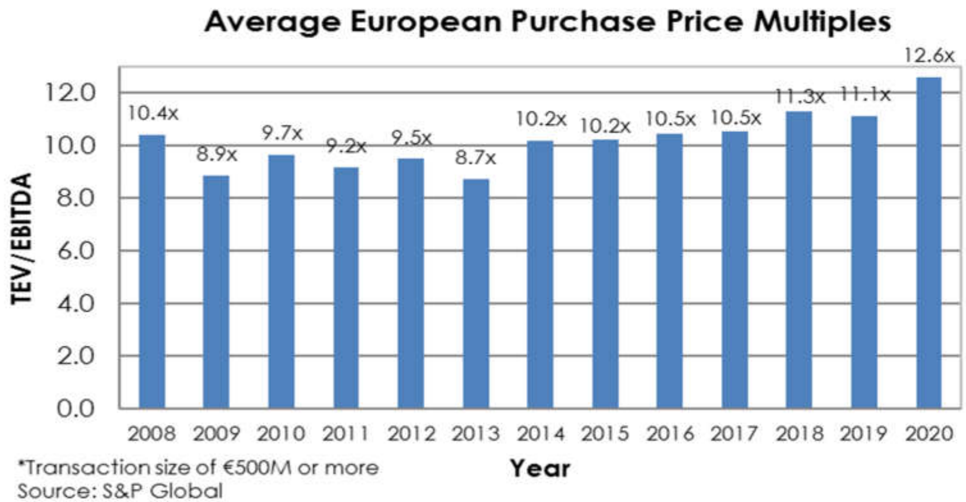


Source: S&P Global

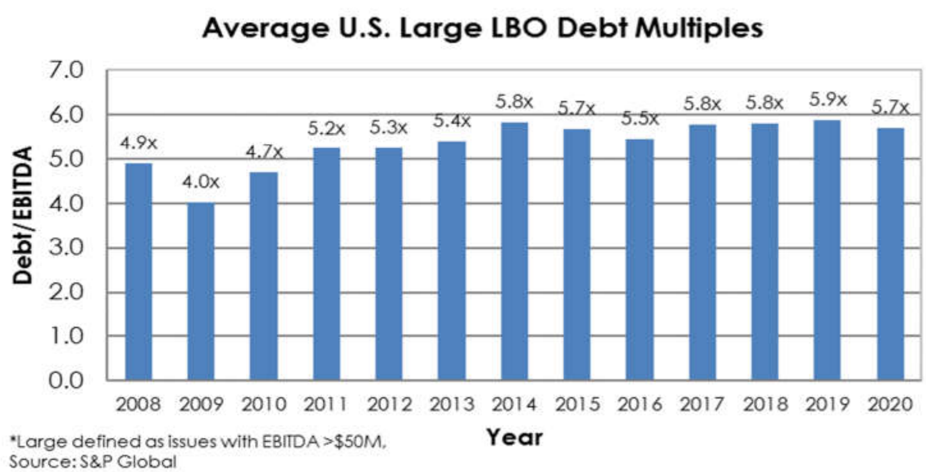


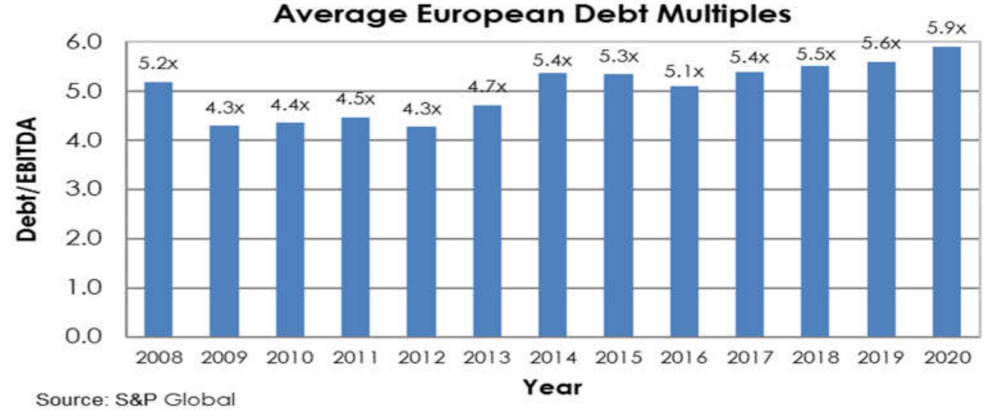
Source: S&P Global

Buyout transaction activity has slowdown through 2020 compared to 2019



LBO transactions continue to be expensive, both domestically and in Europe…





…while use of leverage also continues to be high

What is private credit?

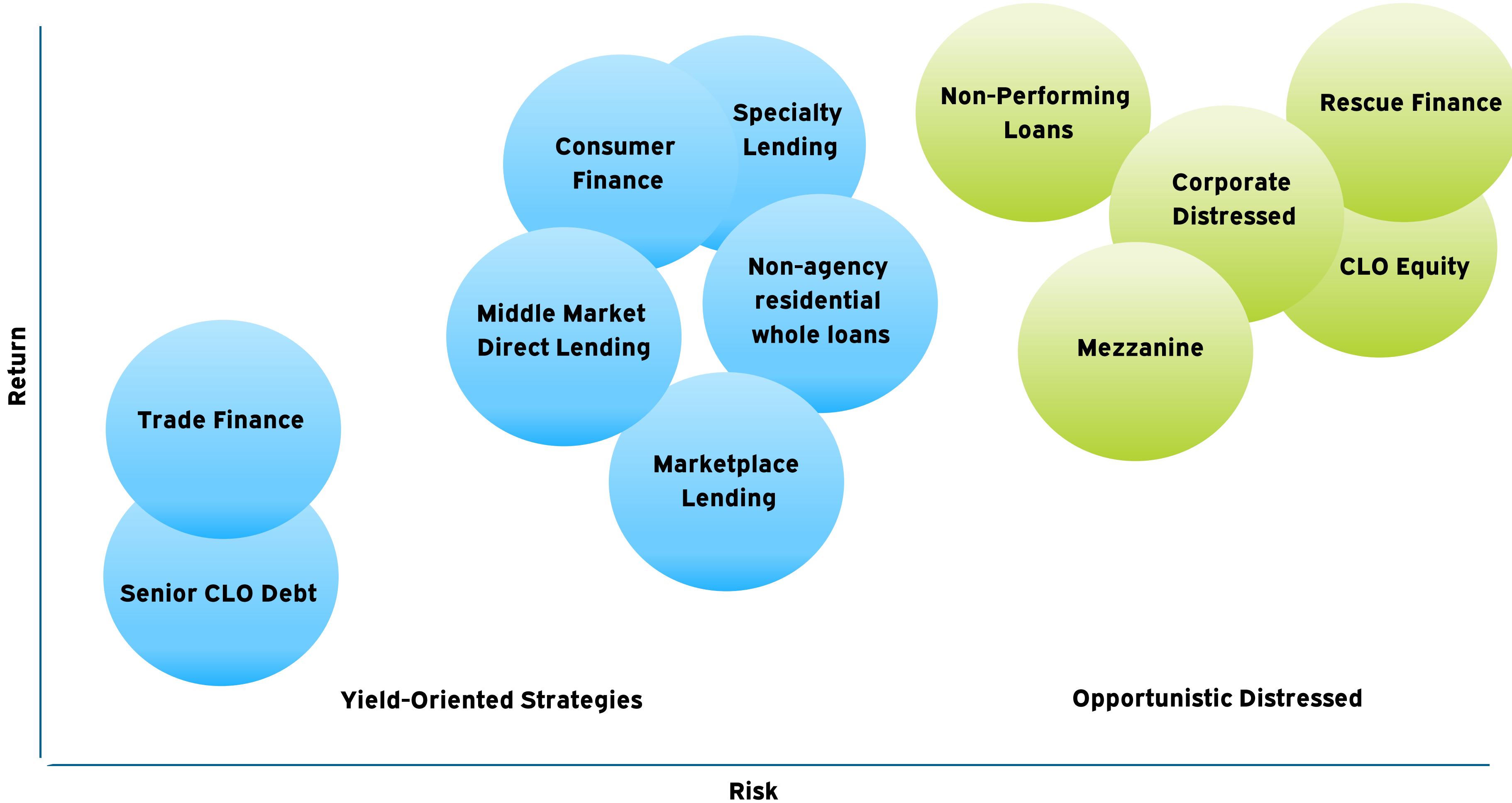
Private credit is a broad opportunity set that includes both **origination-based** strategies as well as **asset sales**. The former focuses on providing illiquid financing to borrowers who cannot access the broadly syndicated credit markets, while the latter are opportunistic strategies that capitalize on monetizing discounts.

Sources of Return		
Illiquidity Premium	Sourcing/Asset Management	Scarcity of capital/ non-economic sellers

Private credit covers a diverse range of collateral types (corporate, consumer, real estate and asset-backed).

Yield-Oriented Expected Returns 7-11% (net)	Opportunistic Distressed Expected Returns mid-teen (net)
Mid Market Direct Lending	Non-Performing Loans
CLO Debt	Bridge Lending
Marketplace Funding	Rescue Finance
Mortgage Credit	Special Situations
Commercial Real Estate Debt	Mezzanine
Regulatory Capital Relief	CLO Equity/Risk Retention
Specialty Lending (Commercial/Consumer)	Corporate Distressed

Alternative Investing: Private Credit Risk/Return Profiles



Risk in private credit primarily ties to capital loss rather than volatility. Market beta and interest rate sensitivity are also considerations.

For illustrative purposes only.

Alternative Investing: Private Credit Structure

	LIQUID CREDIT	PRIVATE CREDIT	PRIVATE EQUITY
LIQUIDITY	Liquid	Less liquid	Illiquid
INVESTMENT TERM	<1 year	2-5 years	7+ years
FUND LIFE	Evergreen	5-7 years	10-12 years
DISTRIBUTIONS	Daily/Quarterly	Income distributions during investment period	During harvest
MANAGEMENT FEES	Paid on NAV	Typically paid on invested capital	Typically paid on committed capital
INCENTIVE FEES	Yearly incentive fees; no hurdle rate	Incentive fees paid on realizations; hurdle rate	Incentive fees paid on realizations; hurdle rate
J-CURVE	N/A	Modest	Severe
VALUE CREATION	Market analysis/trading	Sourcing, underwriting, asset management	Operational improvement, asset management
MONETIZATION	Trading	Cash flow/ Work-out	IPO/Sale

Private equity-like structure with better liquidity and alignment of interests

Alternative Investing: Infrastructure Definition

Definition

- Physical structures, facilities and networks which provide essential services within a community
- Services provided are crucial to the economic productivity of a community
- Assets are either privately owned or owned/operated by government entities

Major Categories

- Brownfield projects that are already operational and/or have a predecessor of some description at the same location
- Greenfield assets that are in the planning, development, financing or construction stage

How to Invest

- Private/Unlisted Infrastructure (Debt/Equity)
- Listed Infrastructure
- Public Private Partnerships (PPPs/PFIs)
- Municipal Bonds

Alternative Investing: Infrastructure Subsectors

Infrastructure assets are tangible assets that derive their value from intrinsic physical qualities, substance, properties – many are the foundations for the production and delivery of goods and services critical to the global economy.

Infrastructure			
Transportation	**Energy/Utilities**	**Social**	**Communications**
Toll Roads	Midstream	Hospitals & Medical Facilities	Cable Networks
Bridges	Transmission & Distribution Systems	Education Facilities	Macro Cell Towers
Tunnels	Storage Facilities	Police & Military Facilities	Small Cells
Airports	Power Generation	Civic Buildings	Data Centers
Seaports	Renewables		Fiber
Rail & Mass Transit	Water Transportation		Satellite Systems
Parking Facilities	Water Treatment & Distribution		Spectrum
	Wastewater Treatment and Reuse		
	Waste Treatment		

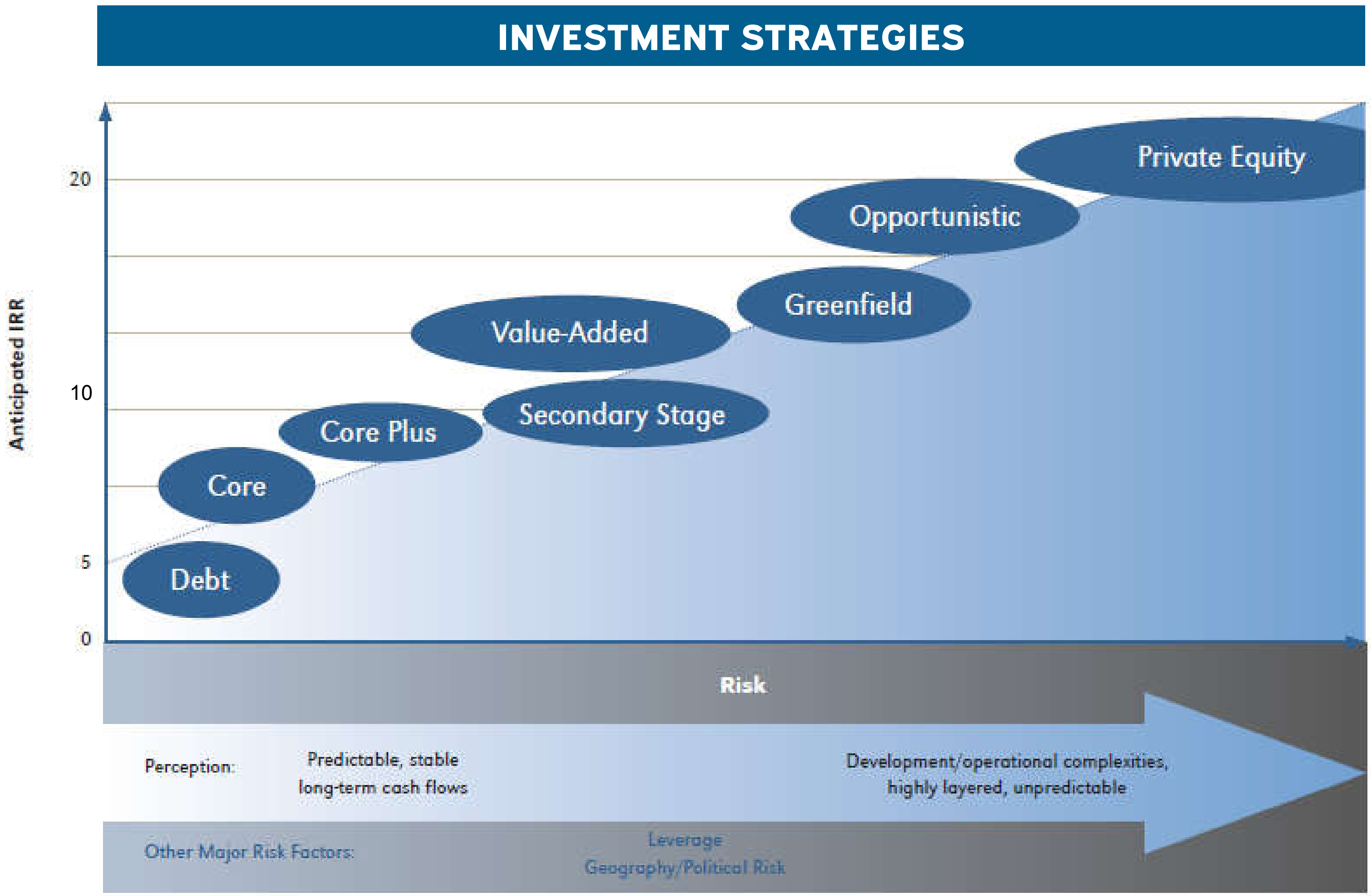
Alternative Investing: Benefits of Infrastructure Investments to Pension Plans

High Stable Yields	• Attractive risk adjusted returns
Low Correlation	• Low beta relative to traditional asset classes portfolio diversification
Duration Hedging	• Long lived assets to match liability duration 15- to 99-year cash flows
Inflation Protection	• Regulation or concession within pricing
Low Cyclicality	• Inelastic demand and monopolistic position support stable cash flows
Risk Transfer	• Risks transferred to subcontractors or back to public entity via partnership arrangements
Low Volatility	• Limited exposure to economic downturns
Greenfield Projects	• Job creation

Alternative Investing: Infrastructure Investment Concerns for Pension Plans

Leverage	• Deals are typically leveraged between 50% and 90%
Market Inefficiency	• Competitive auctions – overpaying • Current pricing – deal outliers or trend setters • Management teams with a proven track record are crucial • Limited history and track record in infrastructure space
Political & Headline Risk	• Potential lack of public acceptance of privatization • Different political landscape in every state and municipality
Regulatory Risk	• Regulated assets subject to changes • Government influence on pricing • Potential negative impact on bottom line
Construction & Development	• Project overruns and delays transfer to construction partners • Volume/demand risk for new developments; availability payments
Worker Impact	• Greenfield projects should generate new jobs • Concession agreements must address jobs and involve union/worker participation
Asset Control	• Stipulations via concession agreements limit some management control (pricing, growth, decision approvals, etc.)
Benchmarking	• There is no standard benchmark for the asset class

Alternative Investing: Infrastructure Investments Risk/Reward Profile



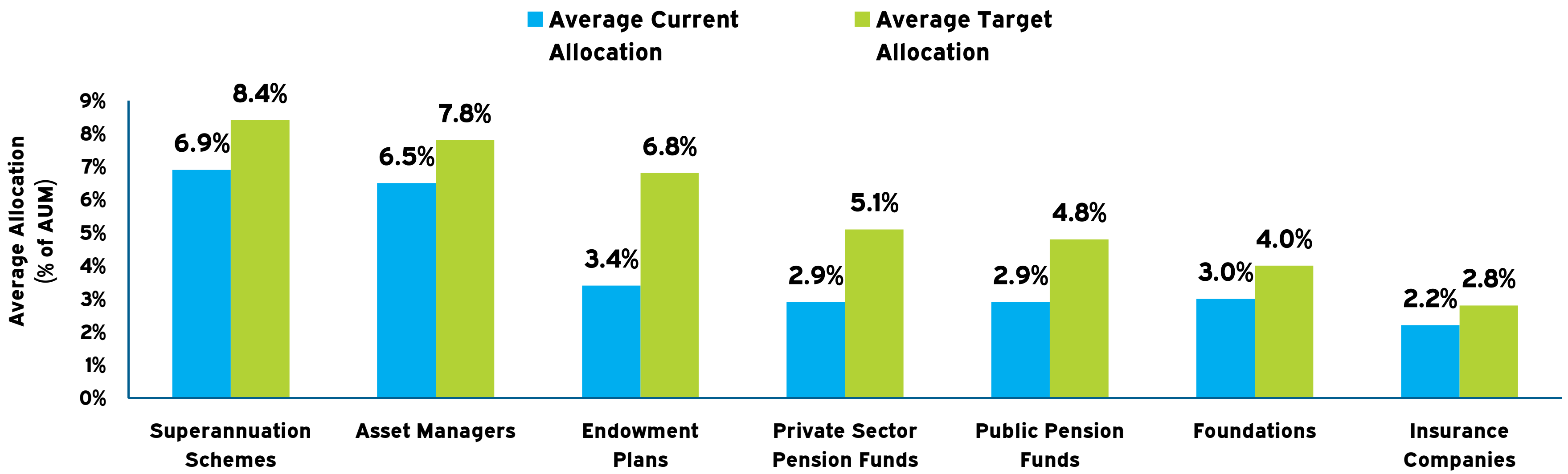
Source: Probitas Partners.

Potential Ways to Access Infrastructure Assets: Investment Vehicle Options

Type	Pros	Cons
Commingled Funds	Specialized management teams, access to non-public opportunities, value-added opportunities, diversified portfolio	Blind pool risk, j-curve effect, possible strategy drift
Separately Managed Accounts	Customizable strategies, lower fees, greater governance, consortium opportunities via Club approaches	Generally requires higher minimum commitment, additional staff participation and monitoring
Co-Investments	Selective exposure to compelling opportunities alongside strategic managers, typically lower fees than commingled funds, or no fee at all	Requires resources and specialization to transact, quick turnaround and approval process needed, increased exposure to a single asset, opportunities are sporadic
Directs	Origination, diligence, ownership, management, exits investor-driven, maximizes governance and lowers fees	Requires considerable in-house staff resources and expertise, market compensation, outside advisors, and management partners
Secondaries	Mitigate blind pool risk, mitigate j-curve effect, favorable pricing	Inefficient marketplace, expensive to transact, opportunities are sporadic

Alternative Investing: Investor Allocations to Infrastructure

Average Current and Target Allocations to Infrastructure by Investor Type[1]



Jurisdiction	Typical Pension Fund Allocation to Infrastructure
Western Europe	3% - 5%
Australia	5% -10%
Canada	5% -10%
US	0% - 5%

[1] Investor universe includes investors in 80 countries worldwide.
Source: Preqin, Stonepeak Infrastructure Partners.

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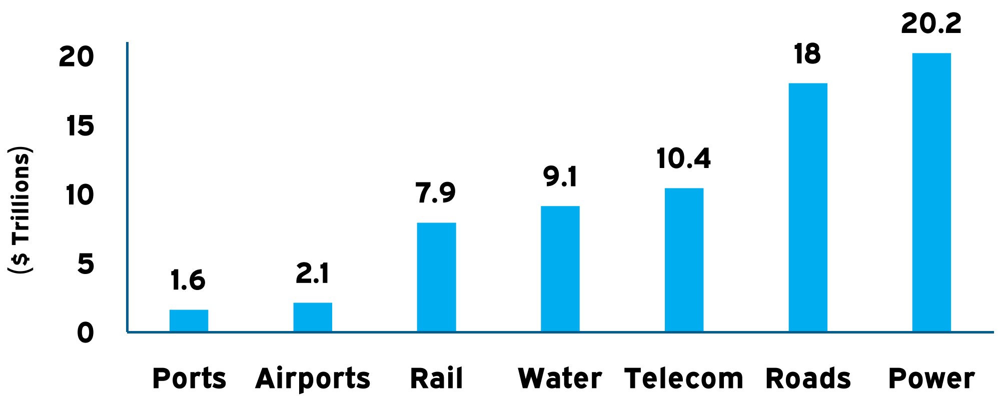
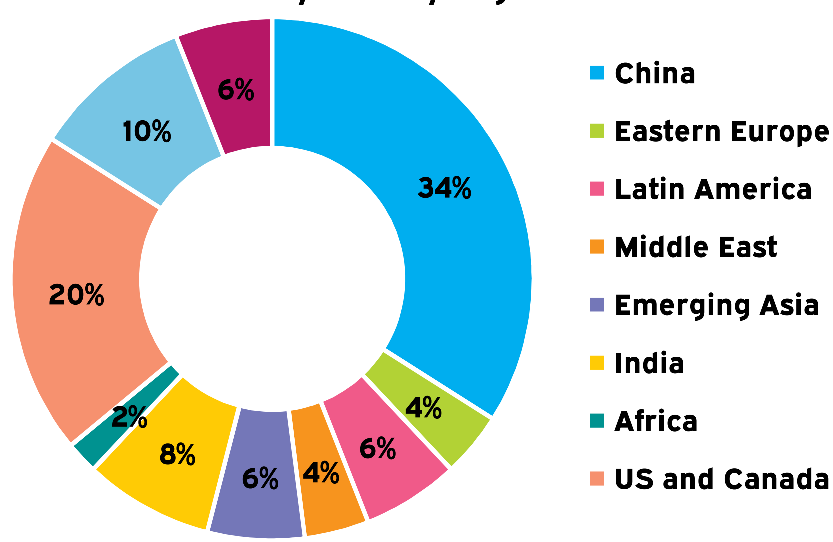
Alternative Investing: Global Infrastructure Needs

- Global infrastructure investment need is massive
- Developed economies face challenges posed by neglected and deteriorating infrastructure
- Many developing countries aspire to meet basic human development needs, including providing sanitation, wide access to power and safe drinking water
- According to McKinsey estimates, $69.4 trillion in infrastructure investments will be required to support projected global GDP growth through 2035
- The world needs to invest an average of $3.7 trillion annually to support expected rates of growth

Global Infrastructure Annual Need 2017 to 2035 by Sector



Global Infrastructure Need by 2035 by Region



Source: McKinsey & Co.

Section 7 – Role of the CIO and CEO

Role of the CIO and CEO: CIO

- Communication
  - With the Board
- Managing Board Expectations
  - No surprises
- Strategic Planning (Investment Portfolio)
  - Primary: thinking long-term
  - Secondary: focus on two-to-five year horizon
- Risk Management
  - Risk monitoring / managing / reporting to Board
  - Compliance
- Manage Investment Staff
  - Career development
  - Staff morale
- Investment Management Industry Interfacing

CIO job requirements:

- Investment experience
- Investment philosophy consistent with the fund's
- Long-term perspective
- Communicate to all parties in a clear and effective manner
- Management skills
  - Organized
  - Ability to prioritize
  - Ability to delegate
- People skills
- Ability to say no

CIO making the transition form the private industry to the public sector

- The public fund environment is different
- More rules (restrictions) than in the private sector
- Perception is reality
- Potential lack of resources
- Managing headline risk is important
- Administration is a big part of the job

The CEO works with the Board to execute their fiduciary responsibilities

- Interface with the plan sponsor (City Hall, State Capitol – Governor or Legislature)
  - Manage expectations
- Organizational leadership
- Organization management
  - Accounting / reporting
  - IT
  - Benefits management
  - Personnel issues
  - Other
- Interface with the membership
- Securing resources for the staff

Some organizations combine both roles of CIO and CEO

- There are many successful examples of this structure; however, it may not be ideal
- Both roles are very important to the organization's success
- You don't want to have an individual spread too thin

Section 8 – External Advisors

External Advisors can add value to a pension plan when the following are considered:

- Area of expertise
- Goals of the plan (investment managers, consultants, actuaries, etc.)
- When cost to train, hire and allocate to long-term internal goals are outweighed by readily available resources
- Lack of resources
- Political considerations

External Advisors: Cost

- Fee structures should be directly related to the aligning of performance with the strategic objective of the investment portfolio
- Flat fees
  - Flat fees are usually stated in basis points (bps), relative to the level of assets invested
  - Some vehicles include an annual minimum fee
- Performance fees
  - Generally structured with a low annual fee and an incentive based portion

Meketa Investment Group believes the ideal relationship has the following features:

- Clear vision of mission
- Process-oriented
- Candor and willingness to ask questions
- Willingness to express opinions
- Embracive of diverse approaches to solving problems
- Collegial/collaborative
- Transparency

Closing Comments

We appreciate the opportunity to present to you today and thank you for your time.

Questions?

Appendix

Panelist Contact Information

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Panelist Biographies

Judy Chambers, Managing Principal
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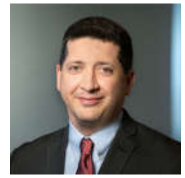
Ms. Chambers is a private markets consultant focusing on private equity, infrastructure, and opportunistic asset classes. Ms. Chambers joined the firm in 2019 as part of the merger between Meketa and Pension Consulting Alliance (PCA) and has 19 years of industry experience. She has authored research on the developing infrastructure sector within the United States and provides infrastructure advice/services to numerous public pension plans. She also specializes in developing emerging manager platforms and special investment vehicles for institutional investors. In addition to her consulting responsibilities, Ms. Chambers is a member of the firm's Executive, Private Markets, Emerging and Diverse Manager, and Marketing committees.

Prior to joining PCA in 2007, Ms. Chambers was a Principal at Caswell Capital Partners, a merchant bank formed to serve the needs of small and middle market media and entertainment companies. Prior to joining Caswell Capital Partners, Ms. Chambers was a Vice President in Investment Banking at Lehman Brothers in the Leveraged Finance Group where she originated and executed transactions in high yield bonds, leveraged loans and bridge financings related to mergers and acquisitions, leveraged buyouts, and recapitalizations. Ms. Chambers' completed transactions span various industries, including natural resources, media, financial institutions, industrial, and consumer services.

Ms. Chambers holds a Bachelor of Arts from Duke University and a Master of Business Administration in Finance and Accounting from the Kellogg School of Management at Northwestern University.

She serves as a member of the Board of Trustees for Community Service Society of New York and as the chair of the Advisory Board of the Robert Toigo Foundation. In addition, Ms. Chambers is on the Advisory Board of the Jazz Foundation of America.



David Sancewich, Managing Principal
Portland, OR

Mr. Sancewich is a consultant and has 20 years of industry experience. Mr. Sancewich joined the firm in 2019 as part of the merger between Meketa and Pension Consulting Alliance (PCA). Mr. Sancewich serves a consultant to public funds. His consulting work included asset allocation, risk budgeting, investment policy and guideline development, portfolio and manager attribution analysis, asset class structural reviews, investment manager searches, and performance monitoring. Mr. Sancewich is a member of the firm's Marketable Securities Investment Committee and Marketing Committee.

Prior to joining PCA in 2004, Mr. Sancewich worked at Windermere Investment Consulting as an Analyst where he focused on performance measurement analysis, traditional manager research, and day-to-day support of client specific issues. Prior to that, Mr. Sancewich worked as an Analyst for the Russell Investment Group where he evaluated various U.S. equity products for Russell's manager research group. Mr. Sancewich also advised large institutional clients on manager selection as well as Russell's multi-manager funds business. He also helped work on the structure of Russell's equity, taxable, and alternative investment products.

Mr. Sancewich earned his Bachelor of Arts in Finance and Business Management as well as his Master of Business Administration from Washington State University. Mr. Sancewich has been a speaker at multiple conferences including the State Association of County Retirement Systems (SACRS), National Conference on Public Employee Retirement Systems (NCPERS), and Institutional Investor.

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