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PRIVATE MARKET ALLOCATIONS:

THEORY VS. REALITY

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Private Market Allocations: Theory vs. Reality

Investors have increasingly sought access to private markets to achieve their long-term return, risk and diversification objectives.

These markets come with new portfolio opportunities and challenges, particularly:

- Strategic Asset Allocation
- Liquidity and Market Risk Management
- Governance and Oversight

This session seeks to highlight several practical solutions to these challenges, including:

- Portfolio-level factor exposure and analysis
- “Proxy” assets and Reference portfolios
- Use of Value at Risk as a common risk definition and tool
- Strategic manager selection

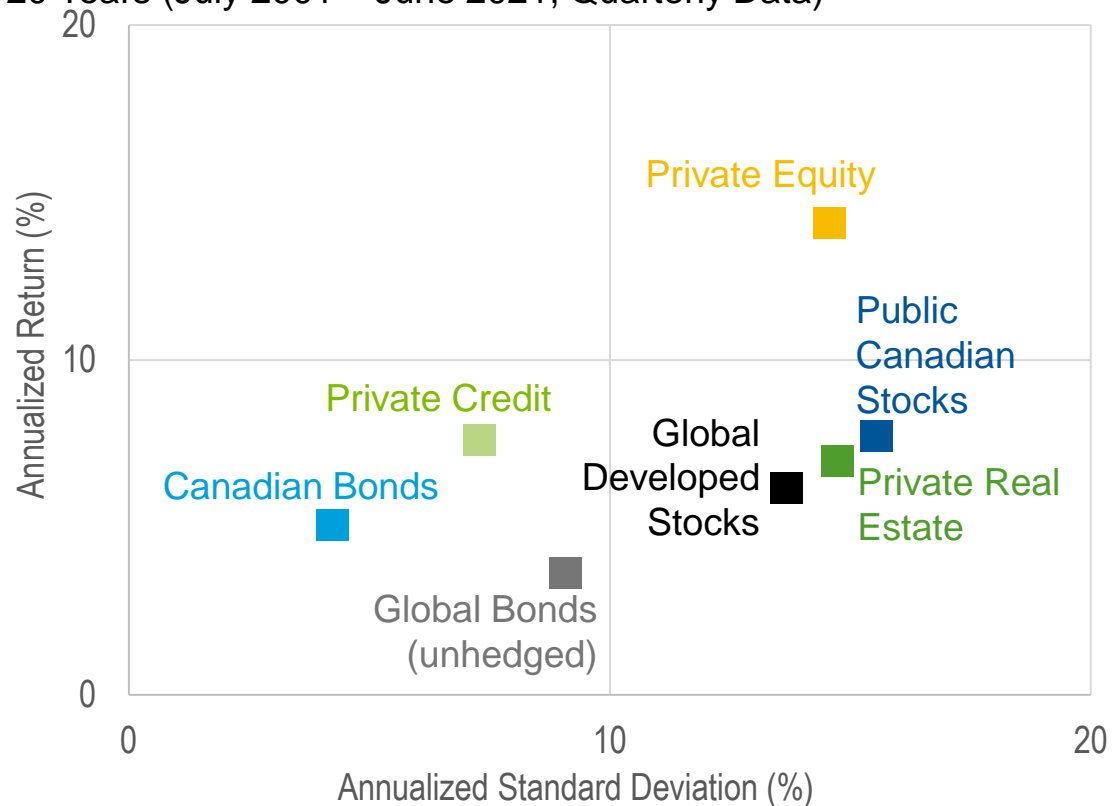
Why invest in Private Markets?

Theory

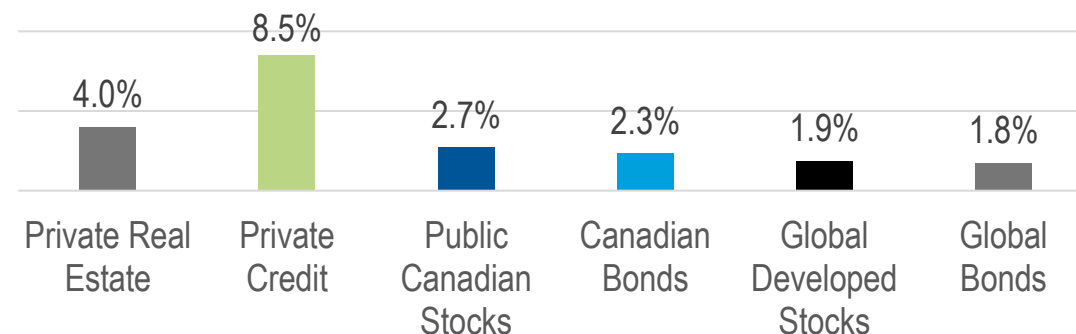
Private markets have the potential to deliver attractive risk-adjusted returns and diversification

Historical Performance vs. Risk¹

20 Years (July 2001 – June 2021, Quarterly Data)



Current Annual Yields^{1,2}



Correlations to Traditional Assets¹

20 Years (7/2001 – 6/2021, Quarterly Data)

	Public Canadian Stocks	Canadian Bonds	Global Developed Stocks	Global Bonds (unhedged)
US Private Credit	-0.27	0.09	0.08	0.50
US Private Real Estate	0.00	-0.19	0.12	-0.05
US Private Equity	0.62	-0.10	0.76	-0.26

Currency: CAD

1- Private Equity: Cambridge Associates LLC U.S. Private Equity, Private Credit: Cliffwater Direct Lending Index (Unlevered, Gross of Fees) back filled with Credit Suisse Leveraged Loan Index prior to January 2005, Private Real Estate: NCREIF Fund ODCE, Public Canadian Stocks: S&P/TSX Composite Index, Canadian Bonds: Bloomberg Canada Aggregate TR CAD, Global Developed Stocks: MSCI World NR Index, Global Bonds (unhedged): Bloomberg Global Aggregate TR. Standard deviation and correlation metrics include adjustments for autocorrelations.

2- Private Real Estate: Trailing 1 year income return for NCREIF ODCE (Gross of fee) as of 12/31/2021, Private Credit: <http://www.cliffwaterdirectlendingindex.com/> as of 12/31/2021 (Unlevered, Gross of Fee), S&P/TSX Composite Index: S&P Dow Jones Indices dividend yield as of 2/28/2022, Bloomberg Canada Aggregate: Barclays Live Yield to Worst as of 2/28/2022.

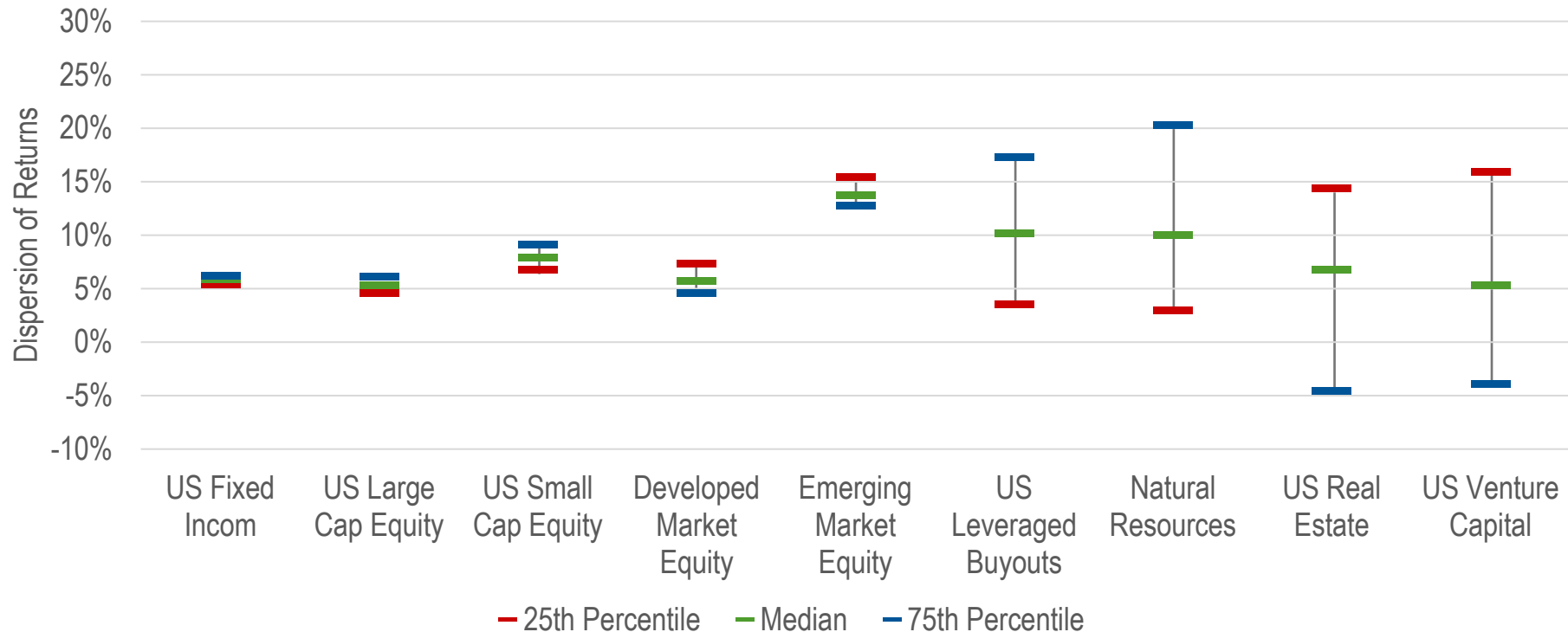
Why invest in Private Markets?

Reality

Returns are highly dependent on manager selection skill

Alternative Asset Returns Exhibit Significant Dispersion

Active Manager Returns by Quartile for Periods Ending June 30, 2012



Solution

Complete deep due diligence on a small, select group of “strategic partner” managers, maintain allocations through market cycles, don’t “over-diversify” by manager

Source: 2012 Yale Endowment Update

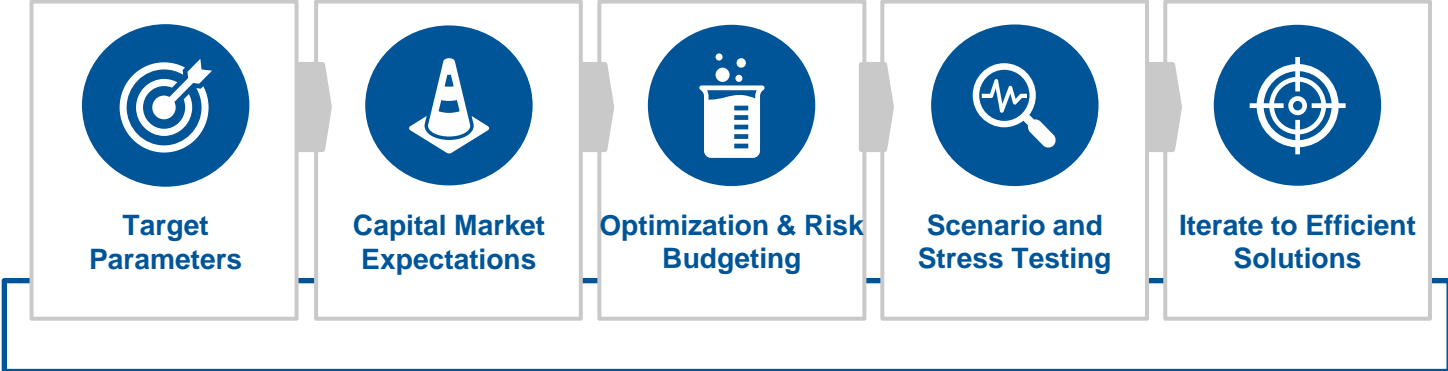
Fixed income and marketable equity performance based on annualized ten-year returns of BNY Mellon manager universes, adjusted for fees. Venture capital, LBO, real estate, and natural resources returns based on annualized since-inception IRRs of Cambridge Associates manager universes.

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Strategic asset allocation

Theory

Mean Variance Optimization can be the primary input into long-term target asset class weights



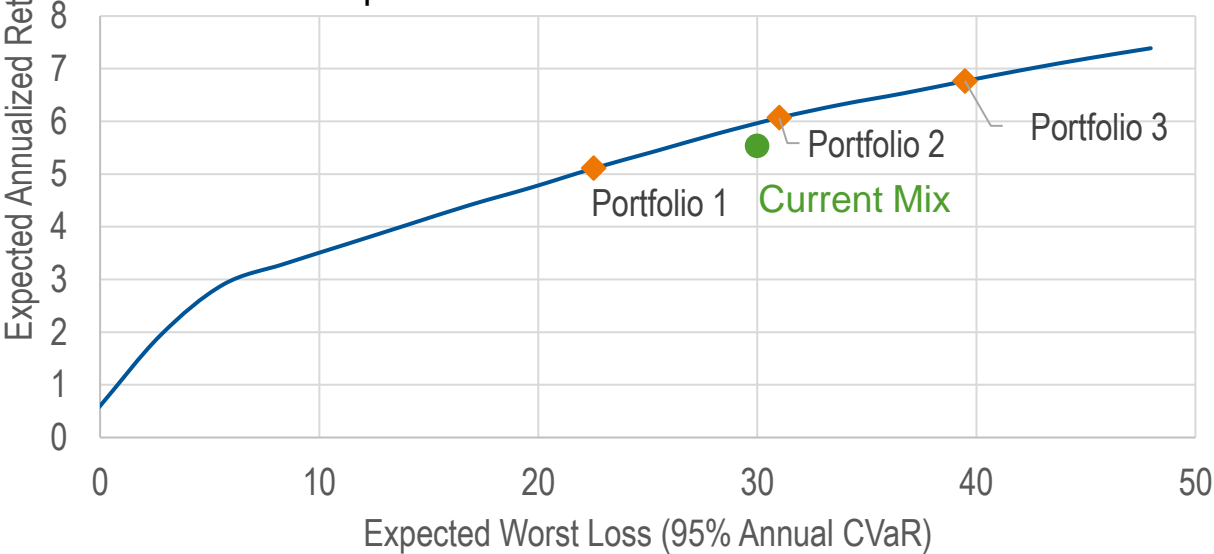
Reality

Supply and organizational constraints eliminate Portfolio #3 as a realistic option (not to mention liquidity and risk!)

	Portfolio 1	Portfolio 2	Portfolio 3	Current Mix
Return	5.1	6.1	6.8	5.7
95% CVaR	23	31	39	30
Standard Deviation	7.7	10.2	13.4	13
Asset Allocation				
Cash	0.0	0.0	0.0	
Global Bonds	21.2	6.9	0.5	
Global Equities	26.3	38.9	47.2	70
Hedge Funds	21.9	11.3	1.6	30
US Private Credit	18.9	24.1	11.6	
US Private Real Estate	10.4	15.3	18.5	
US Private Equity	1.3	3.5	20.7	

Efficient Frontier

Illustrative Example



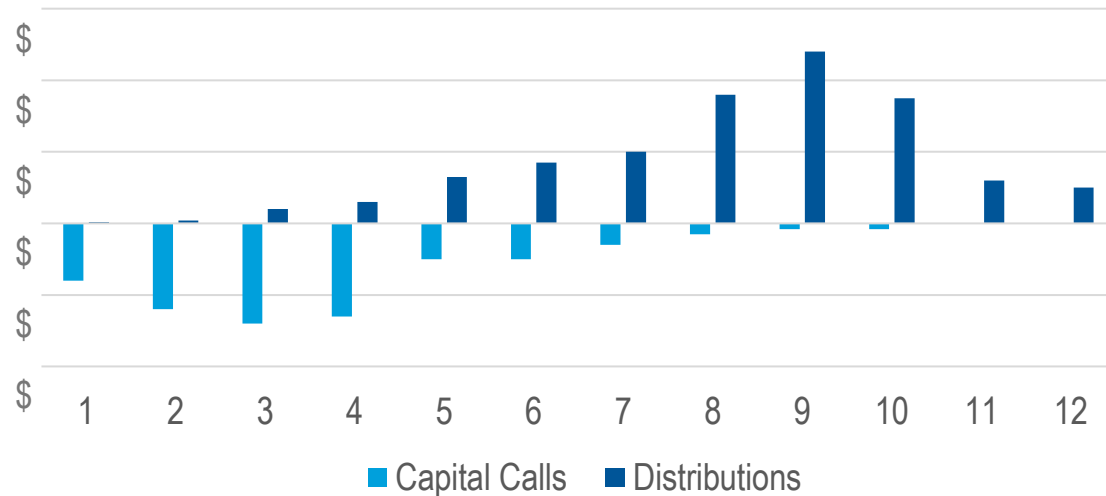
Liquidity Risk Management Illustrative Example

Theory

Illiquid assets require additional liquidity from elsewhere in the portfolio

Capital Calls and Distribution Profile

Illustrative Example

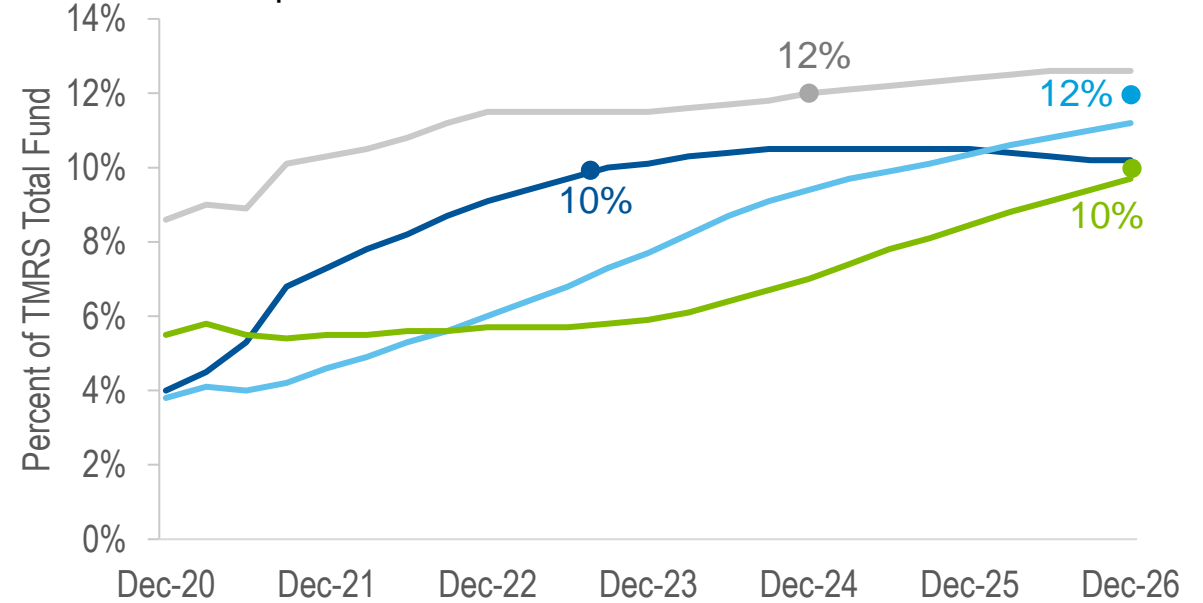


Reality

- Private portfolios do require additional liquidity during a “build phase”
- Mature private portfolios give back more cash than they demand - in most market environments.
- Build pacing models on what can be realistically deployed and accessed each year, with a margin for estimation error.

Private Market Pacing Plan

Illustrative Example



Asset Class	Target Allocation
Private Equity	● 10%
Other Private Markets & Proxies	● 12%
Real Estate	● 10%
Non-Core Fixed Income	● 12% (est.)

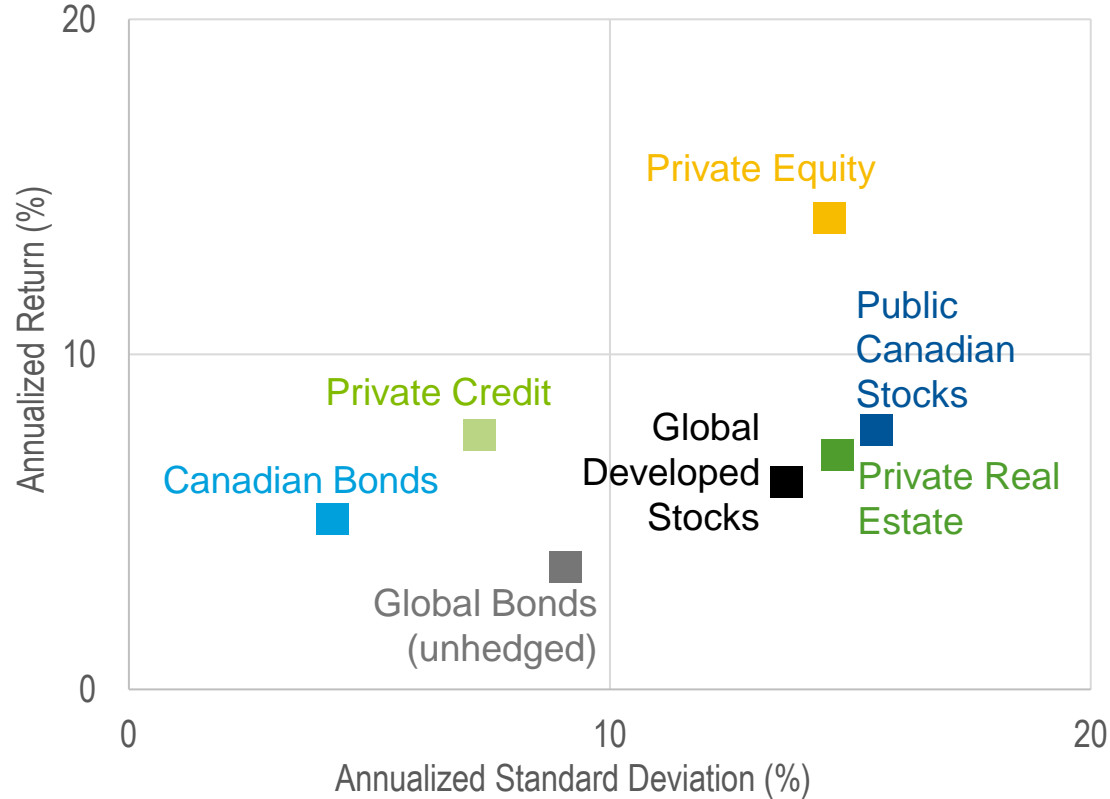
Measuring market risk

Theory

Volatility is a useful tool for measuring market risk across a portfolio

Historical Performance vs. Risk¹

20 Years (July 2001 – June 2021, Quarterly Data)



Currency: CAD

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2. Private Markets Strategy – Hypothetical Back-Test: 50% Cambridge Associates US Private Equity Index, 25% NCREIF Fund ODCE Index, 25% Cliffwater Direct Lending Index. Annual rebalancing, quarterly data. Please see appendix for back-test methodology and relevant indices used.

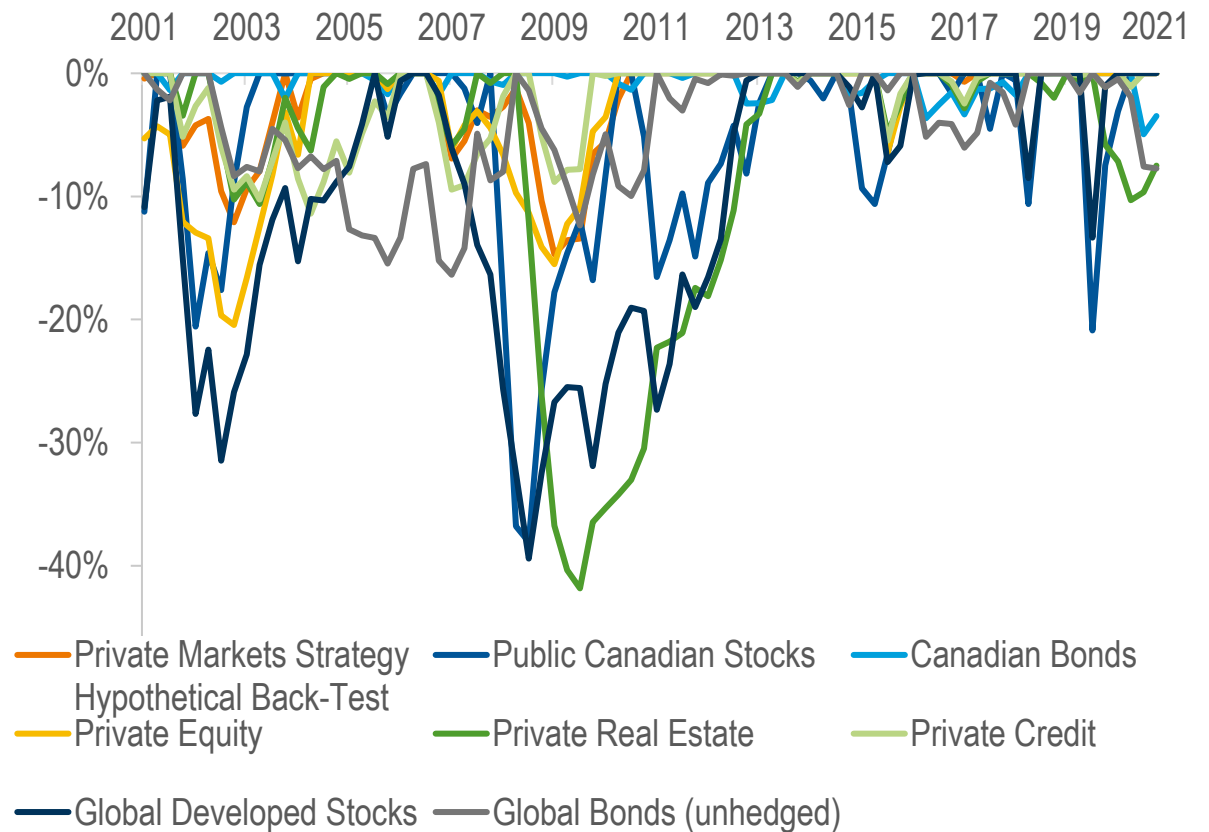
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Reality

“Value at Risk” and maximum drawdown may be more useful once private market assets are introduced

Drawdown Chart²

Since Common Inception (September 2001– June 2021)



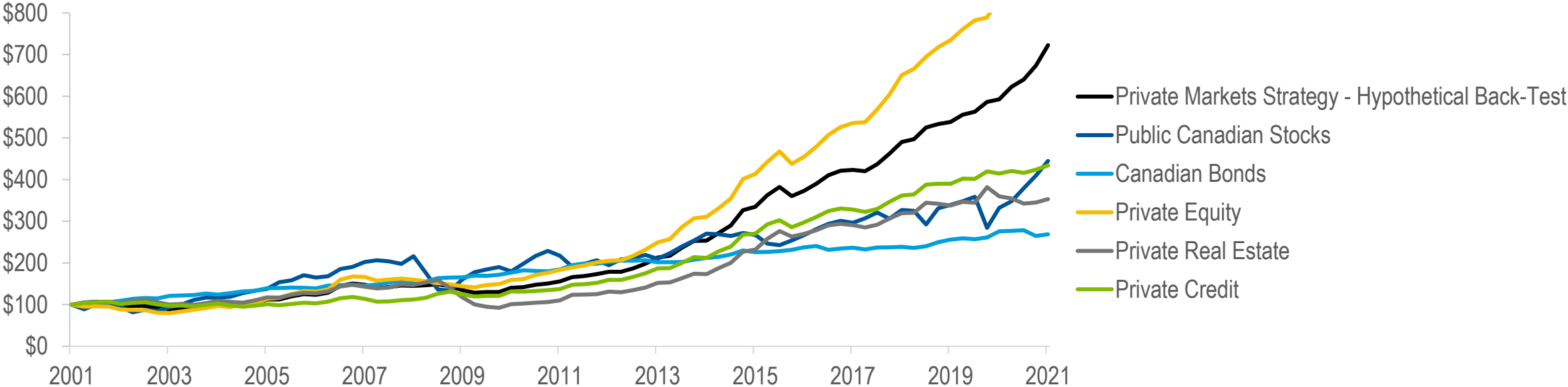
Governance and Oversight: Benchmarking

Theory

Benchmarks are an effective way to measure performance of private market asset classes

Cumulative Growth of \$100¹

Since Common Inception (July 2002 – June 2021)



Reality

Public market comparables and reference portfolios may be a better way to evaluate the contribution of a private market allocation.

Currency: CAD

1. Private Markets Strategy – Hypothetical Back-Test: 50% Cambridge Associates US Private Equity Index, 25% NCREIF Fund ODCE Index, 25% Cliffwater Direct Lending Index. Annual rebalancing, quarterly data. Please see appendix for back-test methodology and relevant indices used., Public Canadian Stocks: S&P/TSX Composite Index, Canadian Bonds: Bloomberg Canada Aggregate TR CAD.

Governance and Oversight: Internal vs. External Management

Theory

Internal management saves costs and can improve performance



Direct private investment



Keeping your best team,
right-sizing staff

Reality

Building an internal management program in private markets is complex and implicates new governance and management challenges. Consider outsourcing and external management until of sufficient scale.

Hypothetical back-test methodology and relevant indices used in this presentation

Private Markets Strategy – Hypothetical Back-Test:

50% Cambridge Associates US Private Equity Index, 25% NCREIF Fund ODCE Index, 25% Cliffwater Direct Lending Index. Cliffwater Direct Lending Index is backfilled with the Credit Suisse Leveraged Loan Index prior to 9/30/2004. The Index assumes annual rebalancing and uses quarterly returns data. The hypothetical back-tested returns are gross of allocation fees and transaction costs. The index weights represent indicative expected long-term average strategy allocations to the respective asset classes.

Cliffwater Direct Lending Index

The Cliffwater Direct Lending Index (CDLI) seeks to measure the unlevered, gross of fee performance of U.S. middle market corporate loans, as represented by the asset-weighted performance of the underlying assets of Business Development Companies (BDCs), including both exchange-traded and unlisted BDCs, subject to certain eligibility requirements.

Credit Suisse Leveraged Loan Index

This index tracks the investable market of the U.S. dollar denominated leveraged loan market. This index is composed of all fully funded term loan facilities trading in the syndicated loan market.

Cambridge Associates US Private Equity Index

The index is a horizon calculation based on data compiled from 2,446 US private equity funds, including fully liquidated partnerships, formed between 1986 and 2021. All returns are net of fees, expenses, and carried interest.

NCREIF Fund ODCE Index

Represents the capitalization weighted performance of open-end commingled private real estate funds pursuing a core investment strategy. Reported gross of fees. Measurement is time-weighted.

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