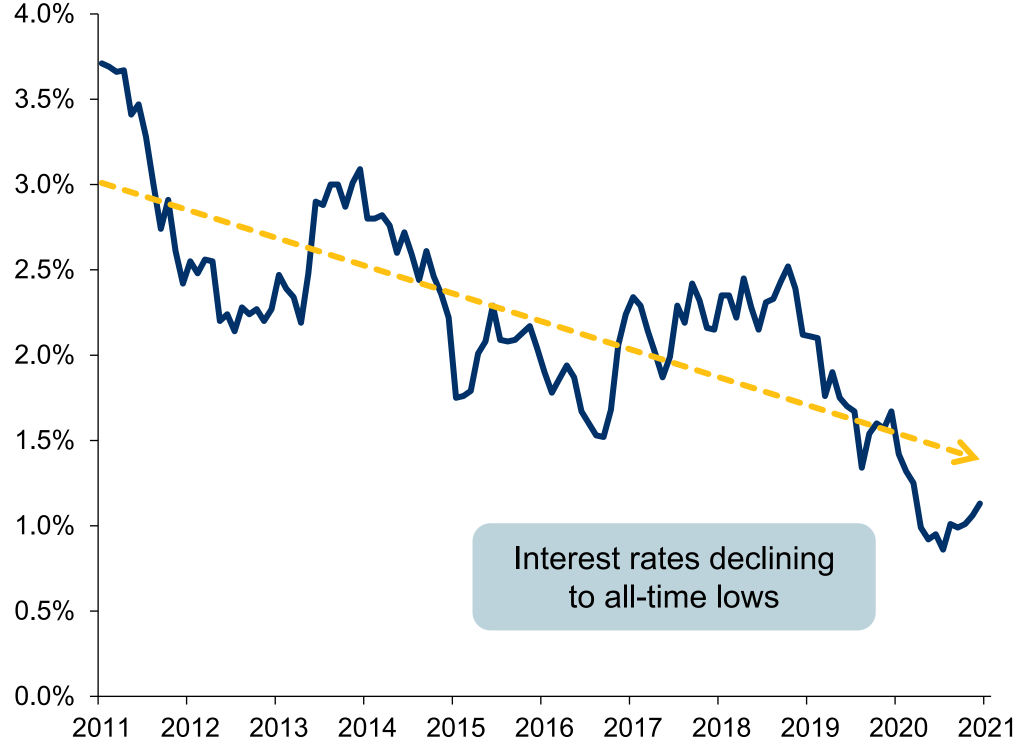
RBC Global Asset Management
PH&N Institutional

Revisiting portfolio decisions made in an ultra-low return environment

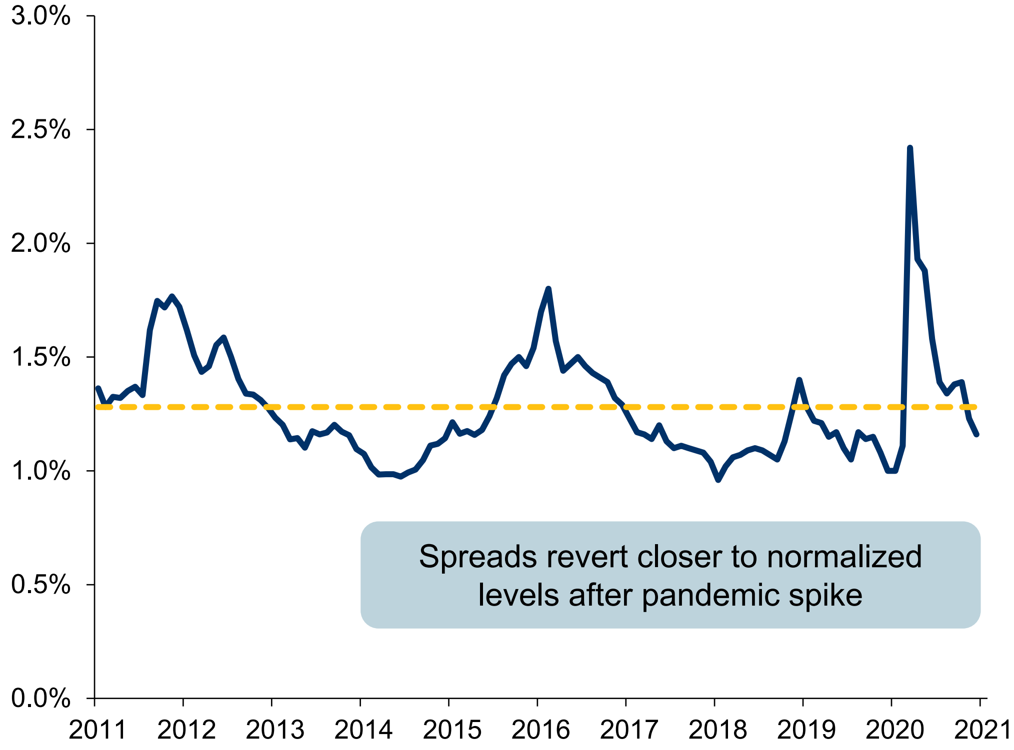
2023 | PH&N Investment Perspectives
For Institutional Investors

The investment landscape leading up to 2021

Government bond yields[1]



Credit spreads[2]



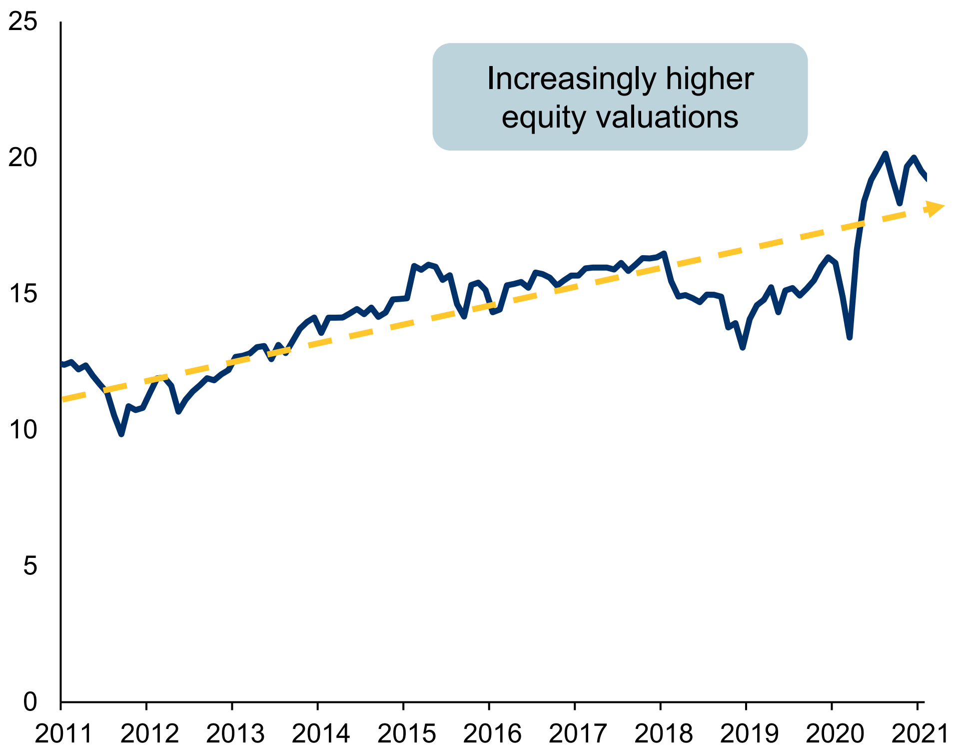
Source: RBC GAM, FTSE Global Debt Capital Markets Inc. As of Dec 31, 2020

[1] 10-year Government of Canada Bond Yields

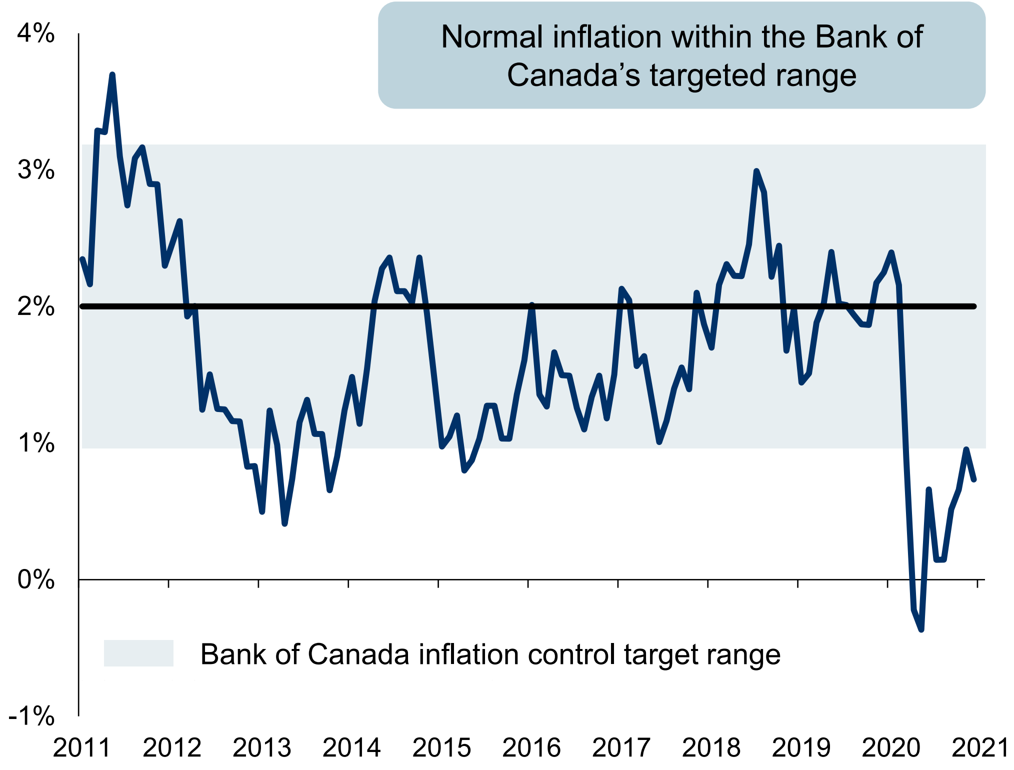
[2] FTSE Canada universe bond investment grade credit spread

The investment landscape leading up to 2021

Equity valuations[1]



Annual inflation rate[2]



Source: RBC GAM, MSCI, Bloomberg. As of Dec 31, 2020
[1] MSCI All Country World Index 12-month forward Price:Earnings Ratio
[2] Annual Consumer Price Index (CPI) change, not seasonally adjusted, Canada. .

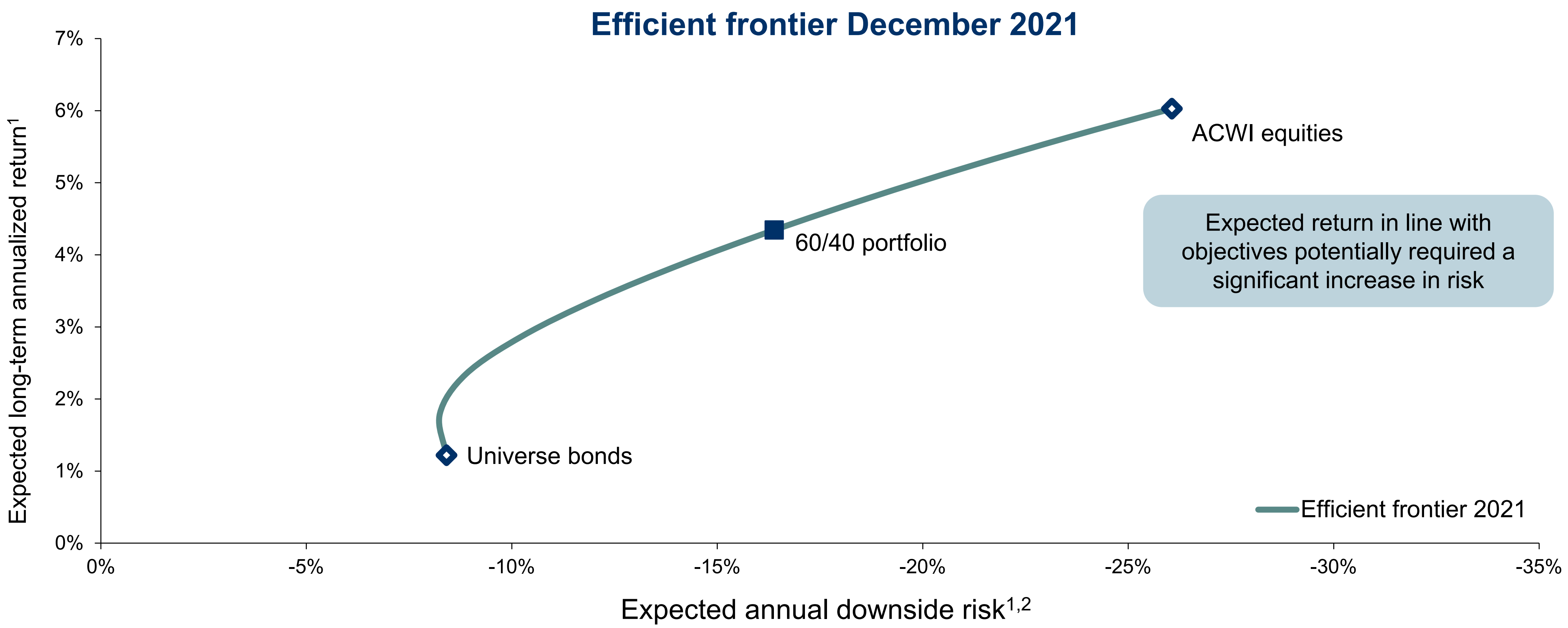
Impact on long-term forward-looking expected returns

The traditional 60/40 model portfolio[1]

2011	2016	2021
6% - 7%	**5% - 6%**	**4% - 5%**
Consistent with return objectives of many investors	Decline to levels that could pose a future challenge	Insufficient return expectations to meet objectives

[1] Expected returns are high level approximations for a portfolio comprised of 60% ACWI equities and 40% universe bonds based on the views of PH&N institutional. For illustrative purposes only.

Achieving risk/return objectives became a challenge



[1] Refer to appendix for modeling assumptions and disclosures. Capital market assumptions from 2021.
[2] CVaR95 which represents the expected loss during the worst 5% of return outcomes.
Hypothetical performance analyses are for illustrative purposes only and there is no guarantee that hypothetical returns or projections will be realized.

What investors considered to achieve risk/return objectives

1. Implementation changes within an asset class

2. Investment policy & asset mix changes

Enhancing portfolios with specialty asset classes

Increase fixed income yield

- Core plus strategies
- Multi-asset global credit
- Alternative credit

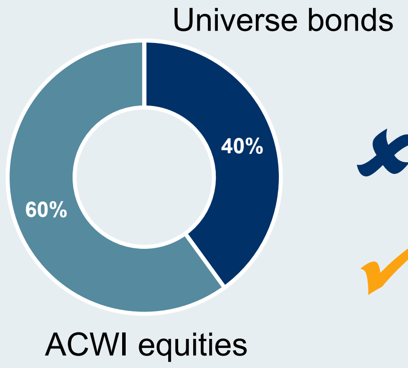
Improve risk-adjusted equity returns

- Low volatility equities
- Small/mid cap equities
- More emerging markets

Allocate to alternatives

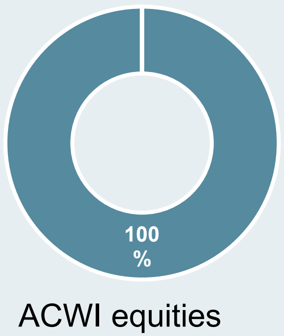
- Private debt & equity
- Real assets
- Absolute return

Illustrative portfolio enhancements using specialty strategies



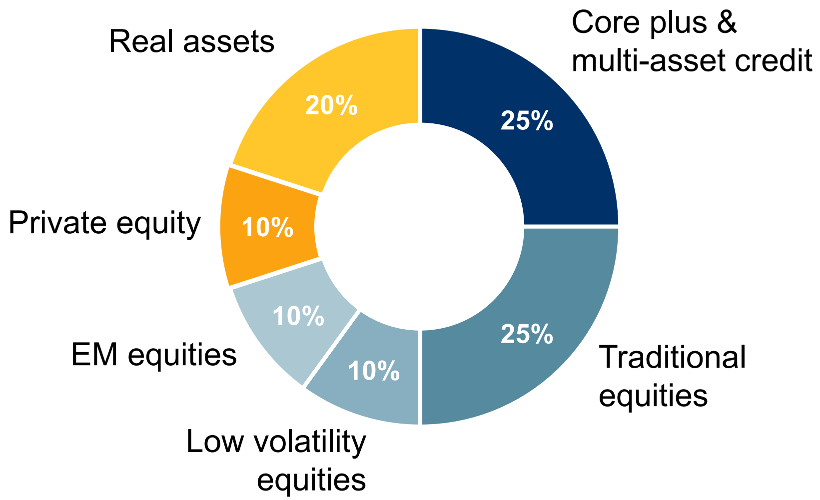
✗ ***Not enough return***

✓ ***Acceptable risk***



✓ ***Acceptable return***

✗ ***Too much risk***



Modelled expectations[1]	
Long-term return	***6%***
Annual downside risk[2]	***-17%***

[1] Refer to appendix for modeling assumptions and disclosures. Capital market assumptions from 2021. Traditional equities represented by Canadian and global equities. Low volatility equities represented by global low volatility equities. Real assets represented by real estate and infrastructure.
[2] CVaR95 which represents the expected loss during the worst 5% of return outcomes.
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Implications of portfolio changes that were made

Numerous benefits

- Higher expected returns
- Diversification of risk factor exposures
- Access to alternate risk premiums
- Greater active management potential

No free lunch

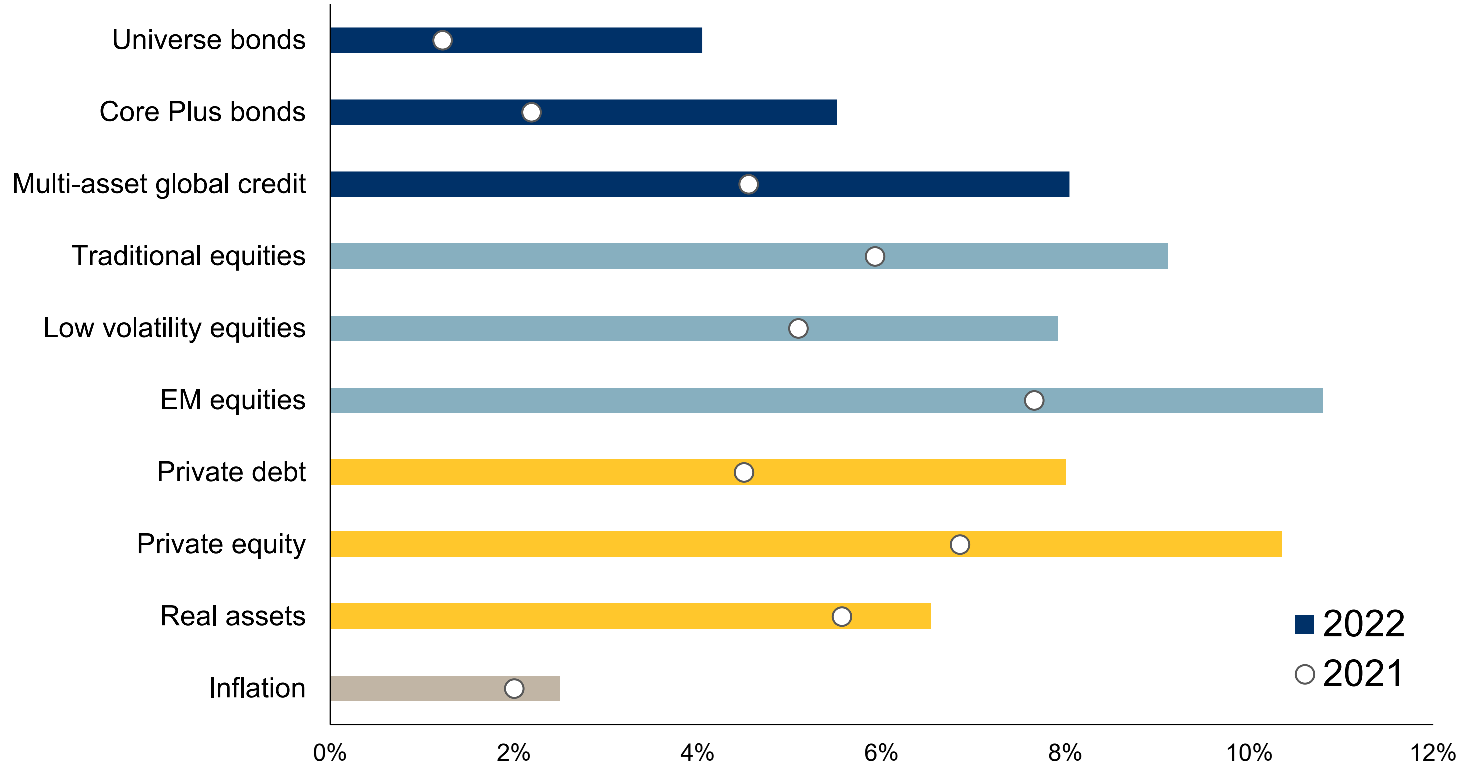
- Higher fees and expenses
- Increased complexity and governance
- Potential reduction in liquidity
- Wider dispersion in manager returns

What happened over the last two years?

Government bond yields	Credit spreads	Equity valuations	Annual inflation rate
↑ **+220 bps**	↑ **+40 bps**	↓ **-30%**	↑ **6% - 8%**

Source: RBC GAM, FTSE Global Debt Capital Markets Inc., MSCI, Bloomberg. For the two year period ending Dec 30, 2022. Government Bond Yields are represented by 10-year Government of Canada Bond Yield. Credit Spreads are represented by FTSE Canada universe bond investment grade credit spread. Equity Valuations are represented by MSCI All Country World Index 12-month forward Price:Earnings Ratio. Annual Inflation Rate is represented by Annual Consumer Price Index (CPI) change, not seasonally adjusted, Canada.

Impact on long-term capital market assumptions



Fixed income
Higher starting yields

Equities
More attractive valuations

Alternatives
Combinations of factors

Inflation
Higher starting level

Note: Refer to appendix for modeling assumptions and disclosures. Traditional equities represented by Canadian and global equities. Low volatility equities represented by global low volatility equities. Real assets represented by real estate and infrastructure.
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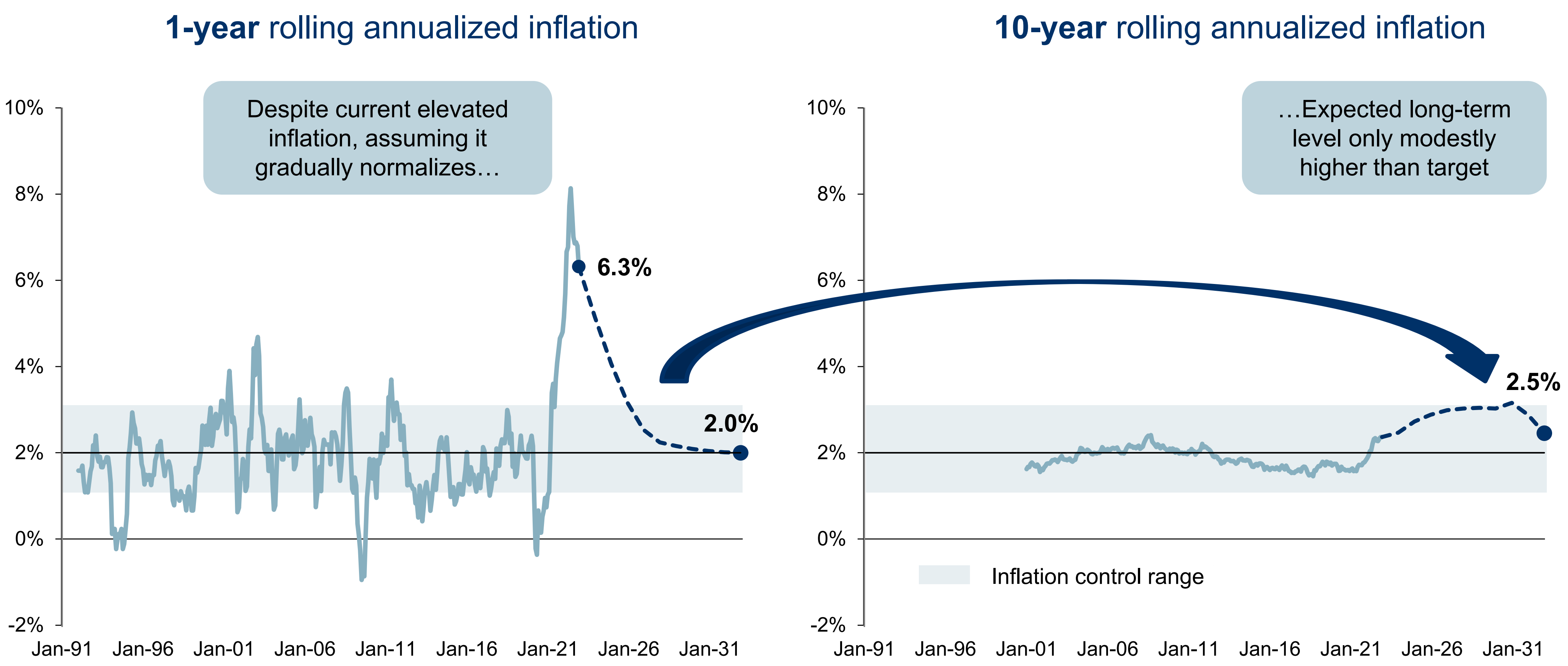
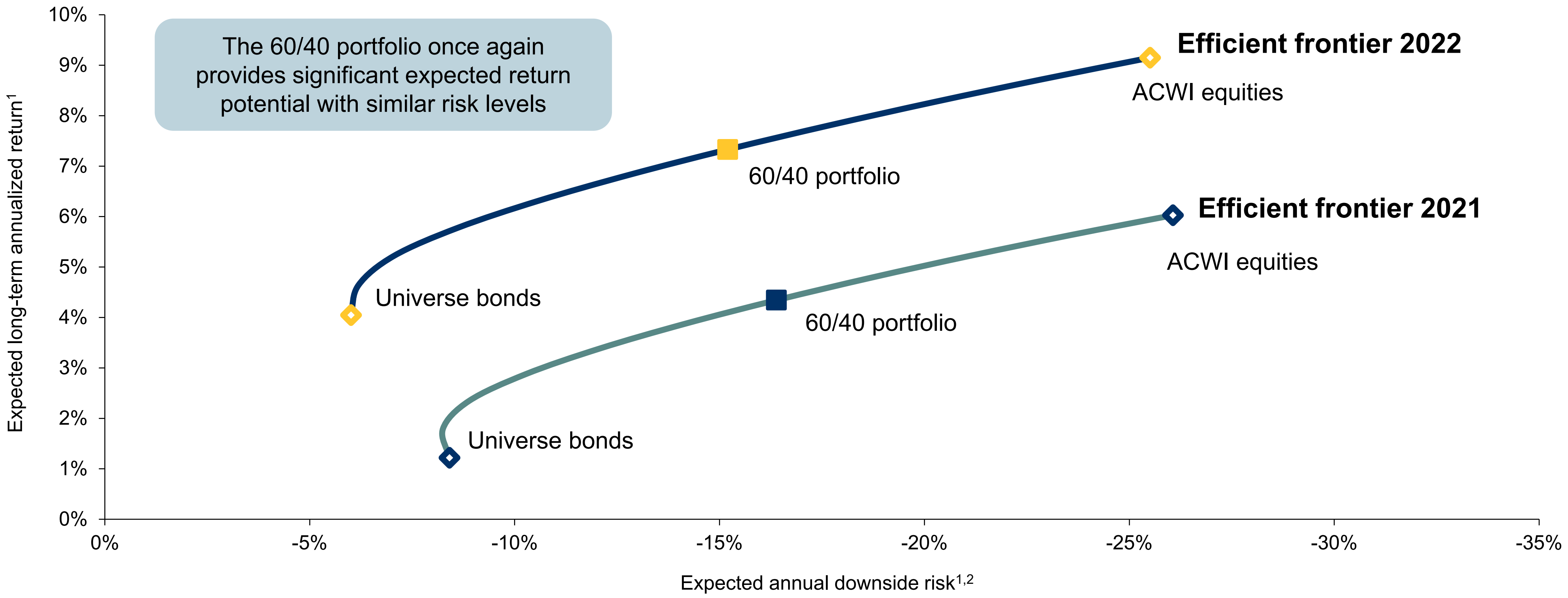
Inflation in the context of a long-term expectation



Source: Bloomberg. Consumer Price Index (CPI), not seasonally adjusted, Canada. Forward-looking scenario is for illustrative purposes only.

Achieving risk/return objectives in the current environment



[1] Refer to appendix for modelling assumptions and disclosures.
[2] CVaR95 which represents the expected loss during the worst 5% of return outcomes.
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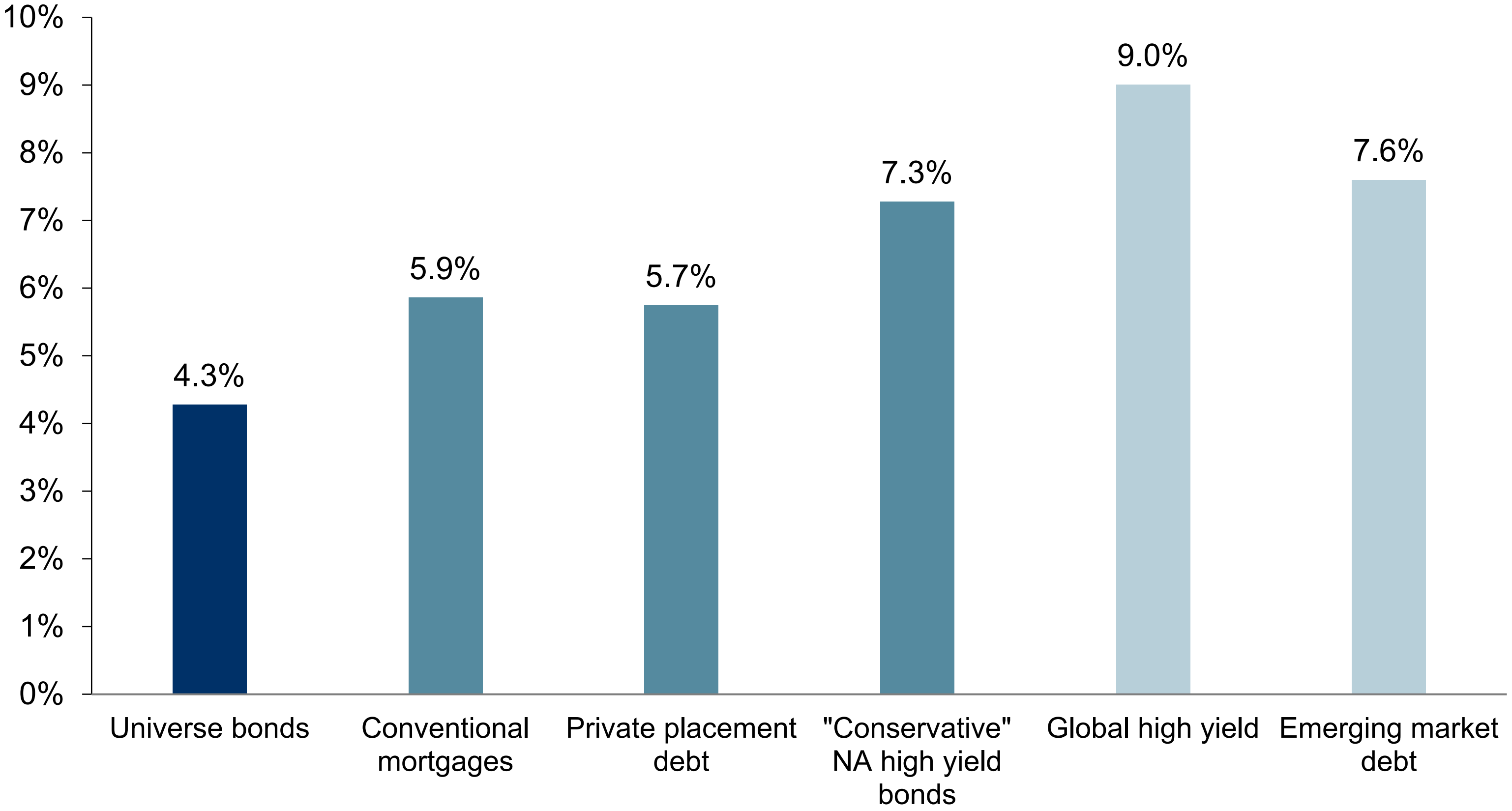
Implementation changes that were made within an asset class

The continued case for core plus & multi-asset credit

Core plus & multi-asset credit
Add returns or reduce risk relative to conventional stocks and bonds
Access diverse, attractive risk premiums
Earn bond returns "plus"
Simplify governance

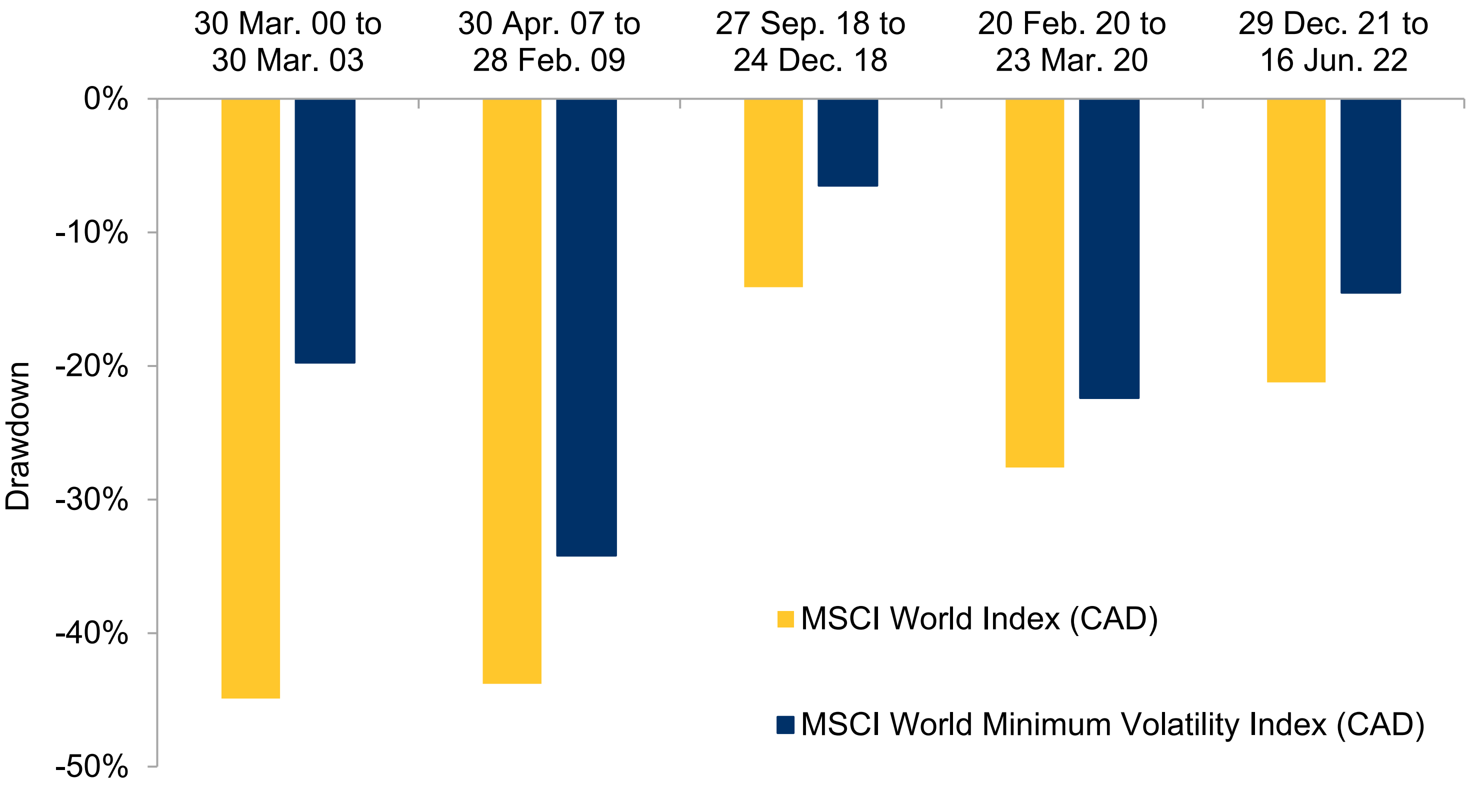


Source: RBC GAM, FTSE Global Debt Capital Markets Inc., Bloomberg, ICE Data Services, JP Morgan, BondLab. Data as of December 31, 2022. Universe Bonds are represented by FTSE Canada Universe Bond Index. Conventional Mortgages are represented by PH&N Mortgage Pension Trust. Private Placement Debt is represented by PH&N Private Placement Corporate Debt Fund. "Conservative" High Yield is represented by ICE BoA BB US High Yield Index. Global High Yield is represented by ICE BoA Global High Yield Constrained Index. Emerging Market Debt is represented by 33.3% JP Morgan Corporate Emerging Markets Bond Index Broad Diversified (CEMBI, hard currency corporate), 33.3% JP Morgan Government Bond Index-Emerging Markets Global Diversified (GBI-EM, local currency sovereign), and 33.3% JP Morgan Emerging Markets Bond Index Global Diversified (EMBI, hard currency sovereign).

Implementation changes that were made within an asset class

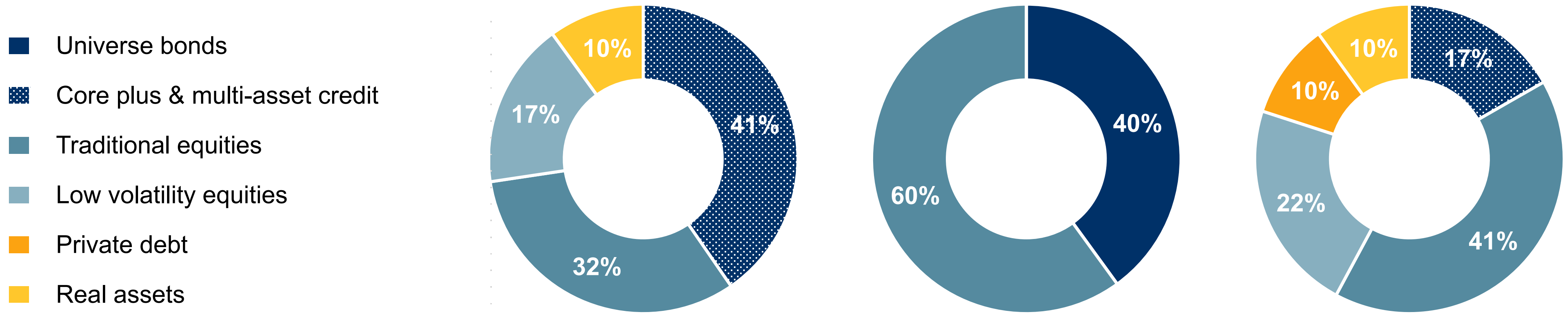
The continued case for low volatility equities

Low volatility equities
Participate in market upside while reducing downside
De-risk a portfolio by reducing overall equity risk
Re-distribute risk by shifting the risk budget towards other investments
Complement equity strategies with other styles



Source: RBC GAM, MSCI. Represents the five largest drawdowns for the MSCI World Index since 2000. Returns are calculated using monthly data for periods prior to 2010, and daily data for subsequent periods. The MSCI World Minimum Volatility Index was launched on Apr 14, 2008. Data prior to the launch date is back-tested test (i.e. calculations of how the index might have performed over that time period had the index existed). There are frequently material differences between back-tested performance and actual results. Past performance – whether actual or back-tested – is no indication or guarantee of future performance. Back-tested data provided by MSCI.

The continued case for investment policy & asset mix changes



Modelled expectations[1]	Same return, lower risk	Traditional	More return, same risk
Long-term return	7%	***7%***	***8%***
Annual downside risk[2]	***-11%***	***-15%***	-15%

[1] Refer to appendix for modelling assumptions and disclosures. Capital market assumptions from 2022. Traditional equities represented by Canadian and global equities. Low volatility equities represented by global low volatility equities. Real assets represented by real estate and infrastructure.
[2] CVaR95 which represents the expected loss during the worst 5% of return outcomes.
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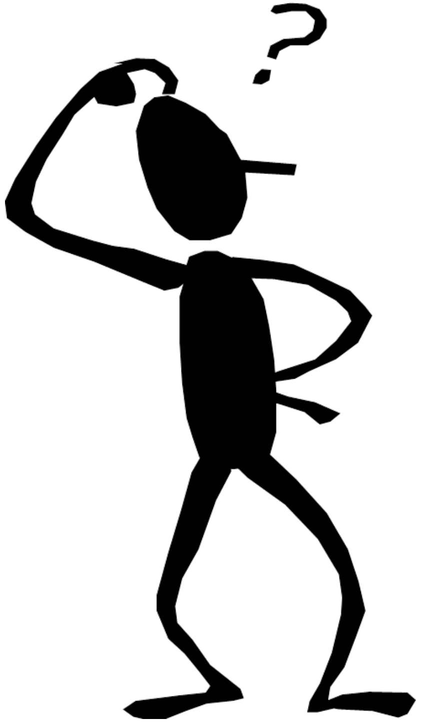
Implications for institutional decision making

How does the new environment affect investment policy decisions?



Should an existing policy asset mix be revised?

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Break

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Part 2

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I think our strategic imperative is to get someone who can understand our strategy!

Source: Cartoonstock.com

What type of decision is investment policy asset mix?

	Strategic	Tactical
Time horizon	Long-term	Short-term
Objective	Why you have the money	Actively implementing the strategic mix
Factors	Objectives, risk tolerance, unique investor circumstances, etc.	Prevailing market conditions, outlooks, pricing anomalies, etc.
Example	% of total assets allocated to equities	Choosing an overweight in equities

Foundations of a sound strategic asset allocation process

Under what circumstances should the policy be reviewed?

- Change in investment objectives and/or risk tolerance ✓
- Change in investor circumstances ✓
- Change in regulatory backdrop ✓
- Different investment opportunity set under consideration ✓
- Significant time has passed since the last review ✓
- Material change to long-term return forecasts ✓

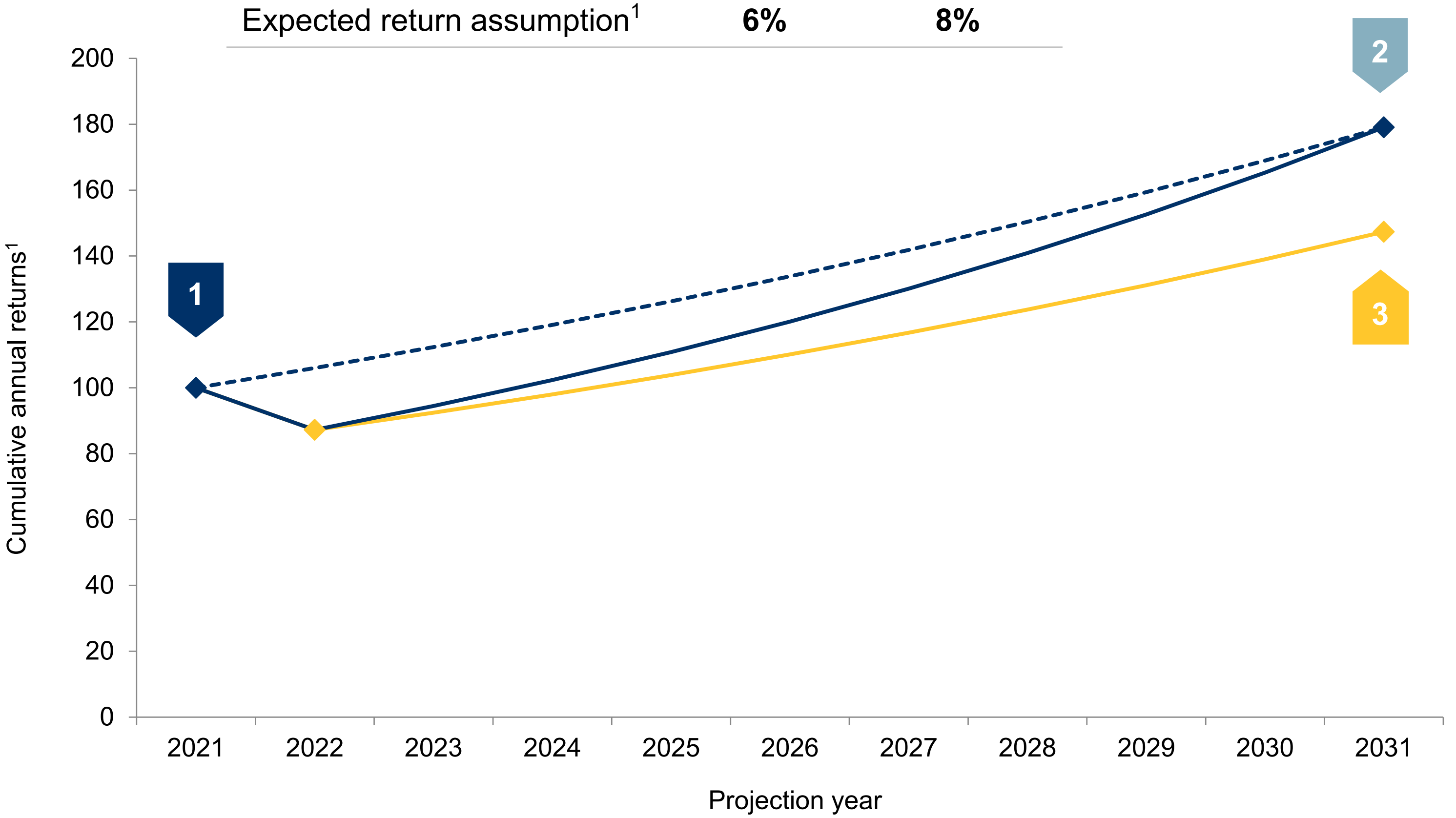
What about when forecasts change materially?

Likely a cause for review, but comes with additional considerations

- What is material?
- Are the changes structural or fleeting?
- What caused the assumptions to change?

What if a change is made solely because of new assumptions?

	Old	New
Expected return assumption[1]	**6%**	**8%**



1 **Initial decision**

Implement asset mix expected to achieve ***6%*** long-term return

2 **Stay the course**

Higher expected return (***8%***) after downside event required to reach initial objective

3 **Change asset mix**

Without considering market value change, 6% not enough to achieve desired long-term outcome

[1] Refer to appendix for modelling assumptions and disclosures.
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Investment policy review case studies

Case A	Case B	Case C
Pension plan	**Charitable trust**	**Pension plan**
Corporate defined benefit plan	Changing spending policy	Target benefit plan

Case A – Corporate defined benefit plan

A

Situation	
Description	• $400M closed, mature, corporate defined benefit pension plan • Approximately 90% funded on a solvency basis
Fundamental objectives	• Mitigate asset-liability risk in the plan's investment policy to manage contribution volatility with a short/medium investment horizon • Liquidity was important given the desire to annuitize
Asset mix	60% custom fixed income, 20% equities and 20% annuity buy-ins

Circumstances changed in 2019

A

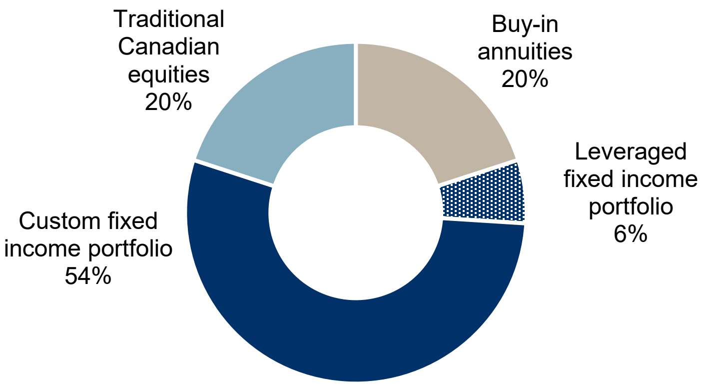
Change in investment objectives and/or risk tolerance	✓	Focus on minimizing contributions, but still asset-liability framework
Change in investor circumstances	✓	Desire to delay further annuitizations and manage plan to longer-term time horizon Split up of the Master Trust
Change in regulatory backdrop	✓	There was a change in liability definitions and funding rules for solvency deficits which resulted in increased ability to take risk
Different investment opportunity set under consideration	✓	Willingness to include new asset classes and take liquidity risk
Significant time has passed since the last review	✗	
Material change to long-term return forecasts	✗	

Sample hibernation portfolio

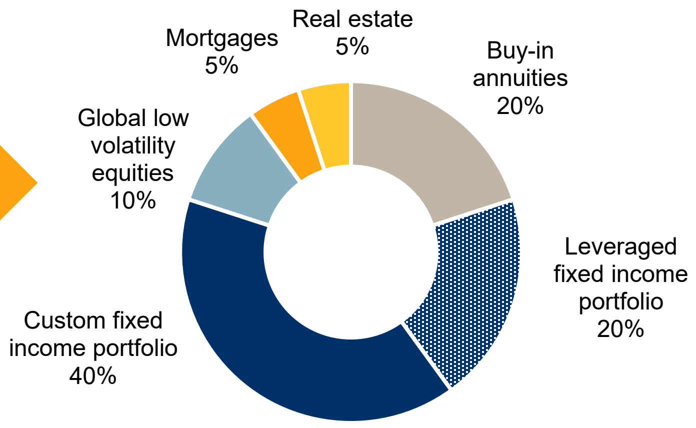
Investment policy changes from the review

A

Previous portfolio



Current portfolio



	Previous portfolio	Current portfolio
Key characteristics	• Short/medium investment horizon	• **Long-term** investment horizon
	• Cover return on liabilities	• **Exceed** return on liabilities
	• Low/Medium risk tolerance	• **Similar** risk tolerance
	• Liquidity is important	• Liquidity is **less** important
	• Minimize interest rate risk	• Minimize interest rate risk

Assessing the need for an investment policy review following 2022

A

Change in investment objectives and/or risk tolerance	X	Objective remains to generate an incremental return above the liabilities to incrementally earn way out of funded status deficit
Change in investor circumstances	X	Same demographic profile Funded status estimate only a little higher
Change in regulatory backdrop	X	No change
Different investment opportunity set under consideration	X	Several asset classes recently added – no desire for further change at this point in time
Significant time has passed since the last review	X	Latest detailed review of investment policy was in 2019
Material change to long-term return forecasts	–	The increase in expected return for the portfolio is similar to that of the liabilities, so no further review needed.

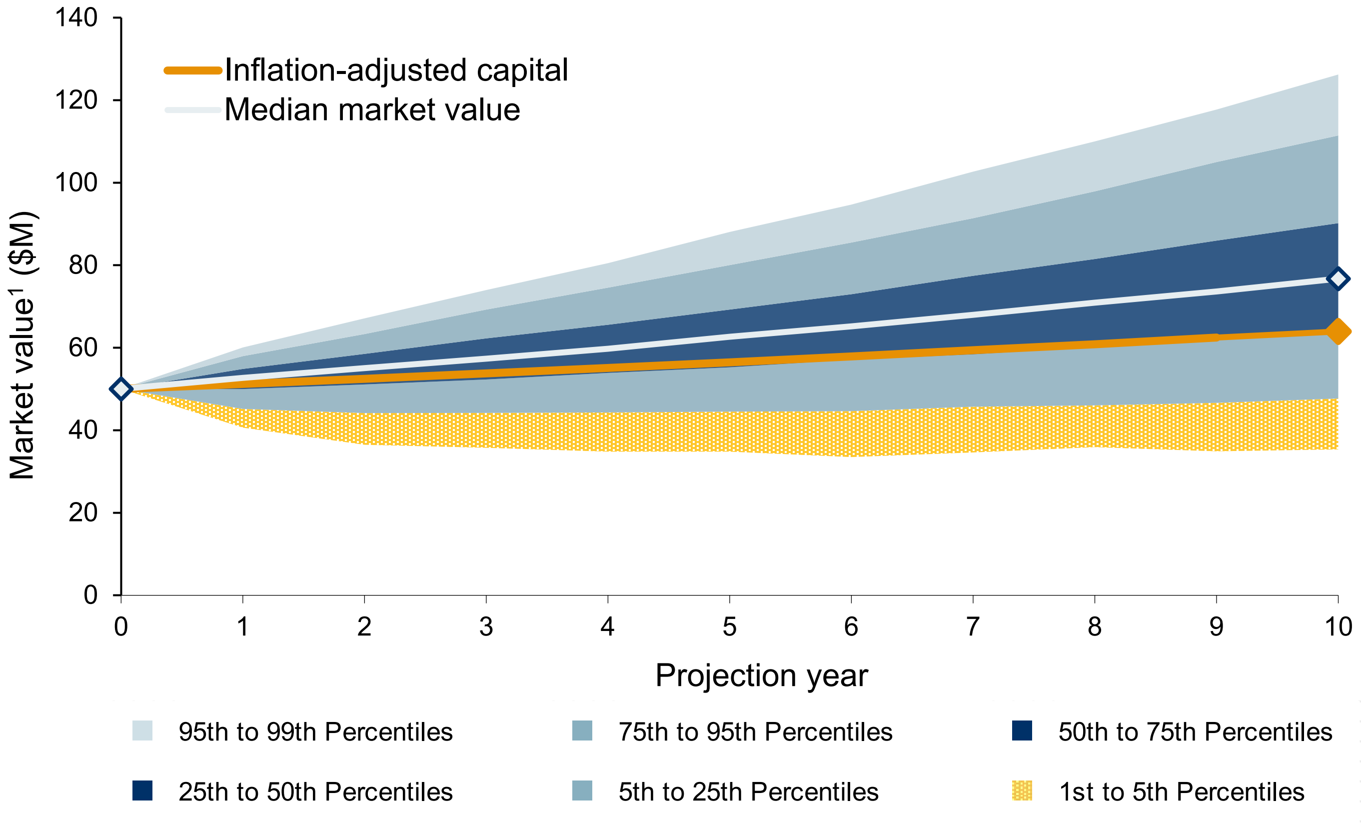
Case B – Charitable trust

B

Situation	
Description	$50M Charitable trust
Fundamental objectives	Meet spending commitments (3.5% of year-end-market value) while maintaining intergenerational equity (IGE)
Asset mix	35% bonds, 55% equities, and 10% alternatives

Current asset mix supports fundamental objectives

B



- Well diversified across several asset classes, which limits downside risk

- Well positioned to maintain purchasing power and intergenerational equity (74% probability)

[1] Refer to appendix for modelling assumptions and disclosures.
Hypothetical performance analyses are for illustrative purposes only and there is no guarantee that hypothetical returns or projections will be realized.

Assessing the need for an investment policy review following 2022

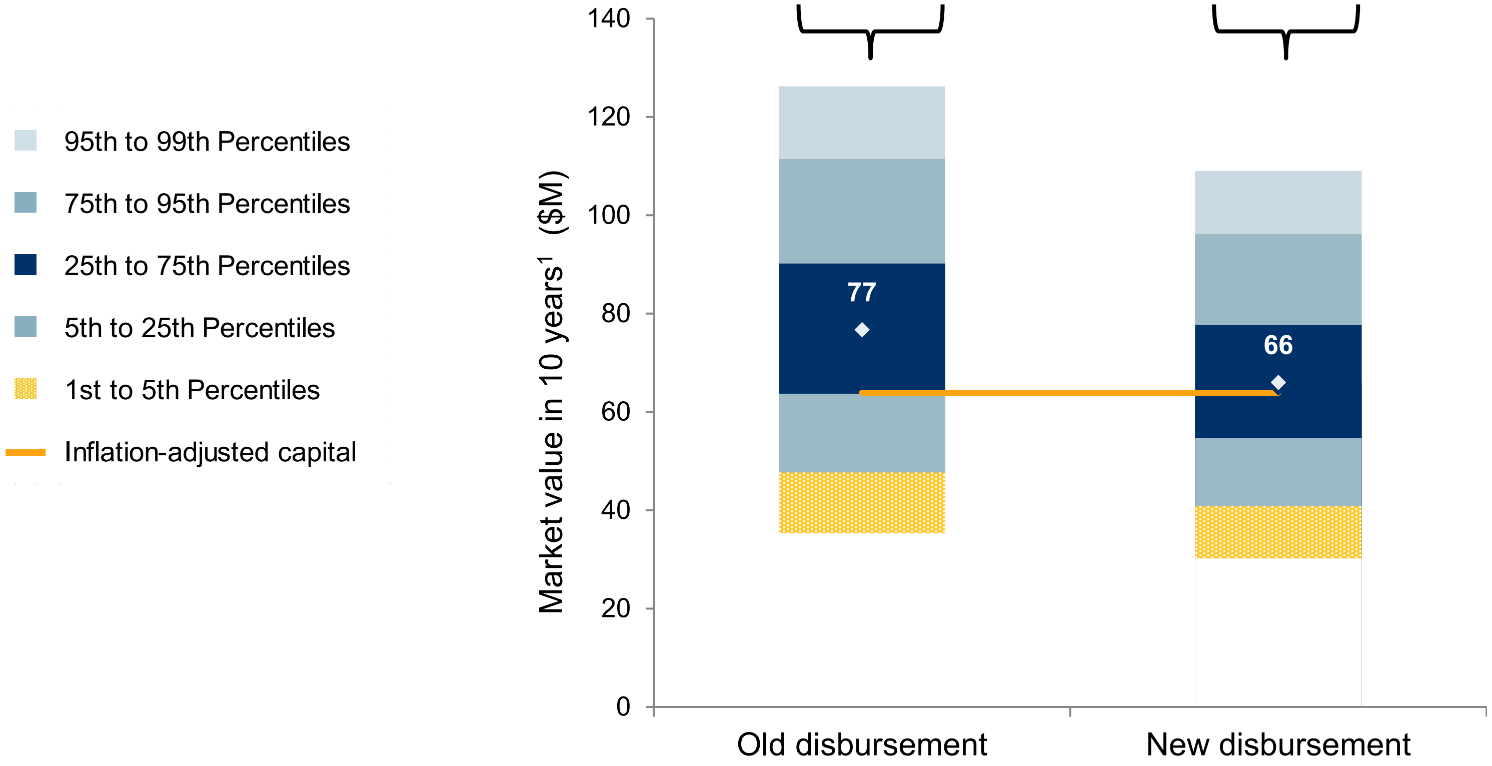
B

Consideration	Applies	Comment
Change in investment objectives and/or risk tolerance	✓	Return objective is higher (higher disbursement needs & higher inflation expectations)
Change in investor circumstances	✗	
Change in regulatory backdrop	✓	Disbursement quota to maintain tax-exempt status increases from 3.5% to 5%
Different investment opportunity set under consideration	✗	
Significant time has passed since the last review	✗	
Material change to long-term return forecasts	✓	Expected returns are significantly higher

Implications for investment policy decision

B

Likelihood that the market value is sufficient to maintain purchasing power and intergenerational equity[1]	74%	54%



- Existing asset mix significantly less likely to support long-term objectives
- Revising asset mix policy is likely necessary
- New asset classes might need to be considered

[1] Refer to appendix for modelling assumptions and disclosures.
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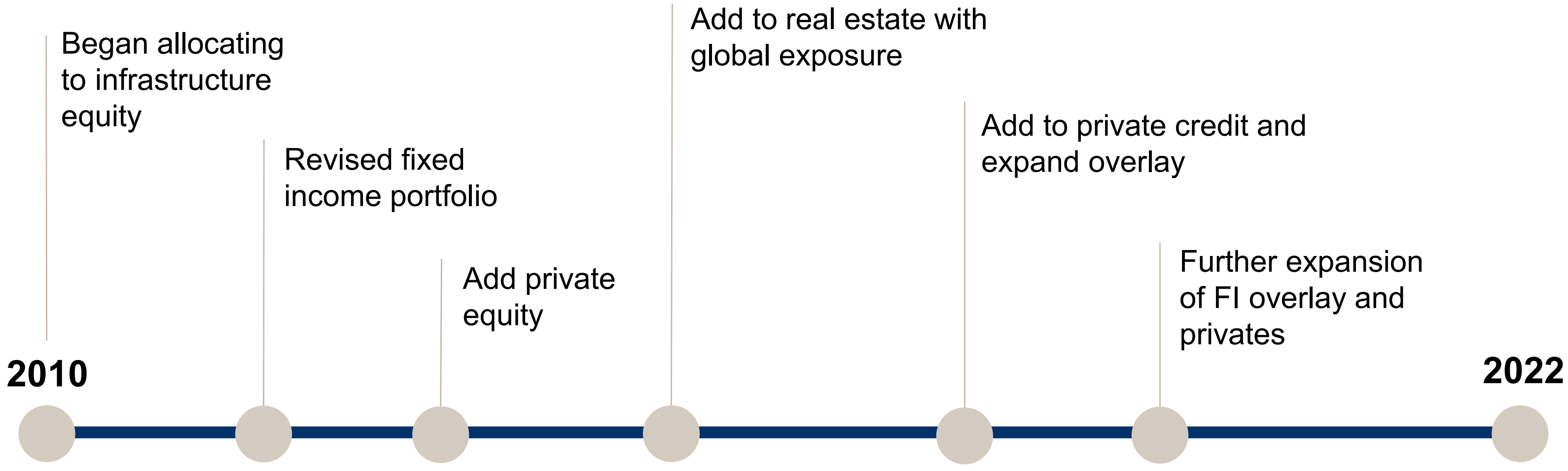
Case C – Target benefit pension plan

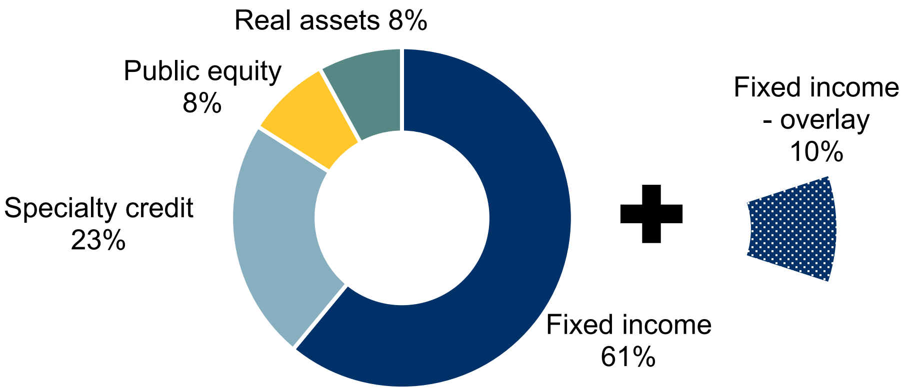
C

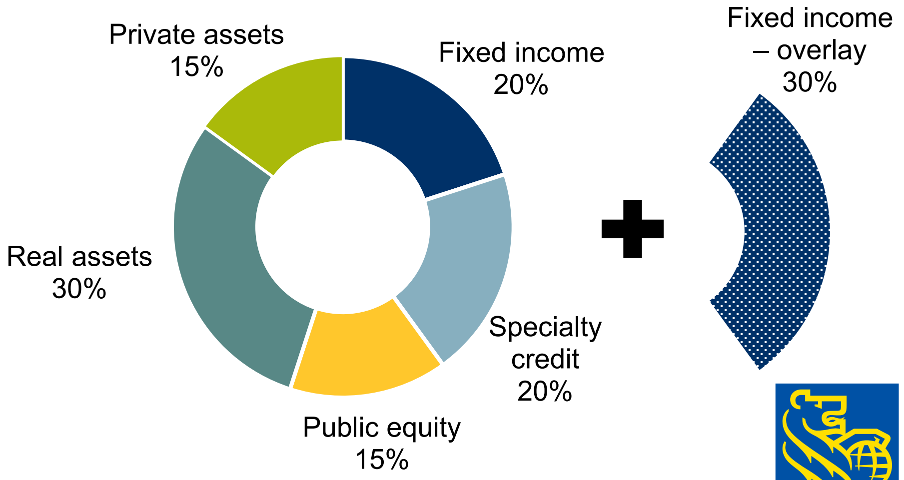
Situation	
Description	>$1B open, target benefit pension plan
Fundamental objectives	Generate returns that are sufficient to meet the plan benefits with a high degree of likelihood while aiming to maximize benefit levels
Asset mix	20% fixed income (levered 2.5:1), 20% specialty fixed income, 15% equities, and 45% alternatives

Evolution of portfolio

Slow and thoughtful expansion of portfolio







Assessing the current situation following the 2022 experience

C

The investment policy has worked and is working

- Funded status increased
- Ability to provide benefit improvements

2022 was an extremely volatile market environment

- Higher yields led to pressure on the liquid capital to support the fixed income overlay
- Reassessment of the liquidity budget (to support overlay, fund future private commitments, evolving plan demographics)

New Target Benefit Pension Plan Provisions that lowered the minimum funding requirement (PfAD)

- **Change in investment objectives and/or risk tolerance**
- **Change in investor circumstances**
- **Change in regulatory backdrop**
- Different investment opportunity set under consideration
- Significant time has passed since the last review
- **Material change to long-term return forecasts**

Conclusion

- Prior to 2021, many investors were “forced” to consider specialty strategies in order to achieve return objectives while maintaining reasonable risk
- Poor returns in 2022 set up better expected returns going forward
- Higher expected returns for traditional asset classes today may provide an opportunity to reassess
- Despite the shift higher in return expectations, a portfolio that includes specialty strategies still makes sense
- Revisions should largely be driven by factors specific to individual investor circumstances

Appendix

Capital market assumptions (2021)

Asset classes	Representative data series	Expected long-term return	Expected annual volatility	Expected annual downside risk
Universe Bonds	FTSE Canada Universe Bond Index	1.2%	4.3%	-8.4%
Core Plus Bonds	Custom Index[2]	2.2%	4.8%	-9.5%
Multi-Asset Global Credit (MAC)	Custom Index[3]	4.6%	9.4%	-19.1%
Private Debt	Credit Suisse Leveraged Loan Index (USD)	4.5%	6.0%	-16.2%
Canadian Equities	S&P/TSX Composite Index	6.1%	17.0%	-27.8%
Canadian Low Volatility Equities	S&P/TSX Composite Low Volatility Index	5.5%	13.1%	-27.6%
Global Equities	MSCI World Index (CAD)	5.7%	14.4%	-25.0%
Global Low Volatility Equities	MSCI World Minimum Volatility Index (CAD)	5.1%	11.6%	-18.2%
ACWI Equities	MSCI ACWI Index (CAD)	6.0%	14.7%	-26.1%
Emerging Market Equities	MSCI Emerging Markets (EM) Index (CAD)	7.7%	23.3%	-33.9%
Private Equity[1]	Refinitiv Private Equity Buyout Index (USD)	6.9%	27.8%	-41.7%
Infrastructure[1]	EDHEC Infra 300 Index (Local)	6.0%	13.0%	-20.0%
Real Estate[1]	MSCI RealPac Property Index	4.8%	8.0%	-11.4%
Inflation	Canadian CPI (Non-Seasonally Adjusted)	2.0%	1.5%	-0.2%

[1] Expected long term annualized return net of fees.

[2] 7.5% FTSE Canada Federal Bond Index, 20% FTSE Canada Provincial Bond Index, 40% FTSE Canada All Corporate Bond Index, 7.5% PH&N Mortgage Strategy, 5% ICE BofA US High Yield Master II (CAD-H), 5% ICE BofA Global High Yield Index (CAD-H), 10% J.P. Morgan Emerging Market Bond Index (CAD-H) and 5% PH&N Private Placement Corporate Debt Strategy.

[3] 7.5% ICE BofA 3 Month US T-Bills (CAD-H), 35% ICE BofA Global High Yield Index (CAD-H), 11.25% J.P. Morgan Emerging Market Bond Index (CAD-H), 11.25% J.P. Morgan Corporate Emerging Markets Bond Index (CAD-H), 7.5% J.P. Morgan Government Bond Index-Emerging Markets (GBI-EM) (CAD-H), 7.5% Credit Suisse Leveraged Loan Index (CAD-H) and 20% Thomson Reuters Convertible Global Focus Index (CAD-H).

Capital market assumptions represent the views of PH&N Institutional for the purposes of illustrating and understanding the potential risk-reward trade-off of different portfolio decisions and are established by considering a variety of qualitative and quantitative sources of information including: different forecasting models; internal and external research; existing and implied future conditions as priced by capital markets; and internal views of our fund managers. Expected long term annualized returns are for a 10 year forecast time horizon. Volatilities, downside risk and correlations are estimated from historical data and adjusted as required to reflect future market conditions. Investors should be aware of the limitations using forward-looking assumptions in that there is absolutely no guarantee that future performance will occur according to any ex-ante expectation.

Capital market assumptions (2021)

Correlations

	Universe Bonds	Core Plus Bonds	Multi-Asset Global Credit (MAC)	Private Debt	Canadian Equities	Canadian Low Volatility Equities	Global Equities	Global Low Volatility Equities	ACWI Equities	Emerging Market Equities	Private Equity	Infrastructure	Real Estate	Inflation
Universe Bonds	**1**													
Core Plus Bonds	0.9	**1**												
Multi-Asset Global Credit (MAC)	0.2	0.6	**1**											
Private Debt	0.0	0.4	0.8	**1**										
Canadian Equities	0.1	0.4	0.7	0.5	**1**									
Canadian Low Volatility Equities	0.2	0.5	0.6	0.5	0.7	**1**								
Global Equities	0.1	0.3	0.5	0.3	0.7	0.5	**1**							
Global Low Volatility Equities	0.4	0.4	0.2	0.2	0.4	0.5	0.8	**1**						
ACWI Equities	0.1	0.3	0.5	0.4	0.7	0.6	1.0	0.8	**1**					
Emerging Market Equities	0.1	0.4	0.6	0.4	0.7	0.5	0.6	0.5	0.7	**1**				
Private Equity	-0.1	0.3	0.7	0.5	0.8	0.6	0.7	0.4	0.7	0.6	**1**			
Infrastructure	-0.2	-0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.0	**1**		
Real Estate	-0.1	-0.1	0.0	0.0	0.0	0.2	0.1	0.1	0.0	-0.1	0.0	0.3	**1**	
Inflation	-0.1	0.0	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	**1**

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Multi-Asset Global Credit (MAC)	Custom Index[3]	8.0%	8.5%	-16.4%
Private Debt	Credit Suisse Leveraged Loan Index (USD)	8.0%	6.0%	-15.4%
Canadian Equities	S&P/TSX Composite Index	9.4%	17.0%	-27.0%
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Global Equities	MSCI World Index (CAD)	8.8%	14.4%	-24.5%
Global Low Volatility Equities	MSCI World Minimum Volatility Index (CAD)	7.9%	11.6%	-17.9%
ACWI Equities	MSCI ACWI Index (CAD)	9.1%	14.5%	-25.5%
Emerging Market Equities	MSCI Emerging Markets (EM) Index (CAD)	10.8%	22.3%	-33.2%
Private Equity[1]	Refinitiv Private Equity Buyout Index (USD)	10.4%	27.9%	-41.6%
Infrastructure[1]	EDHEC Infra 300 Index (Local)	7.0%	11.5%	-16.1%
Real Estate[1]	MSCI RealPac Property Index	5.8%	8.0%	-10.5%
Inflation	Canadian CPI (Non-Seasonally Adjusted)	2.5%	1.5%	-0.1%

[1] Expected long term annualized return net of fees.

[3] 7.5% FTSE Canada Federal Bond Index, 20% FTSE Canada Provincial Bond Index, 40% FTSE Canada All Corporate Bond Index, 7.5% PH&N Mortgage Strategy, 5% ICE BofA US High Yield Master II (CAD-H), 5% ICE BofA Global High Yield Index (CAD-H), 10% J.P. Morgan Emerging Market Bond Index (CAD-H) and 5% PH&N Private Placement Corporate Debt Strategy.

[4] 7.5% ICE BofA 3 Month US T-Bills (CAD-H), 35% ICE BofA Global High Yield Index (CAD-H), 11.25% J.P. Morgan Emerging Market Bond Index (CAD-H), 11.25% J.P. Morgan Corporate Emerging Markets Bond Index (CAD-H), 7.5% J.P. Morgan Government Bond Index-Emerging Markets (GBI-EM) (CAD-H), 7.5% Credit Suisse Leveraged Loan Index (CAD-H) and 20% Thomson Reuters Convertible Global Focus Index (CAD-H).

Capital market assumptions represent the views of PH&N Institutional for the purposes of illustrating and understanding the potential risk-reward trade-off of different portfolio decisions and are established by considering a variety of qualitative and quantitative sources of information including: different forecasting models; internal and external research; existing and implied future conditions as priced by capital markets; and internal views of our fund managers. Expected long term annualized returns are for a 10 year forecast time horizon. Volatilities, downside risk and correlations are estimated from historical data and adjusted as required to reflect future market conditions. Investors should be aware of the limitations using forward-looking assumptions in that there is absolutely no guarantee that future performance will occur according to any ex-ante expectation.

Capital market assumptions (2022)

Correlations	Universe Bonds	Core Plus Bonds	Multi-Asset Global Credit (MAC)	Private Debt	Canadian Equities	Canadian Low Volatility Equities	Global Equities	Global Low Volatility Equities	ACWI Equities	Emerging Market Equities	Private Equity	Infrastructure	Real Estate	Inflation
Universe Bonds	**1**													
Core Plus Bonds	0.9	**1**												
Multi-Asset Global Credit (MAC)	0.3	0.7	**1**											
Private Debt	0.0	0.4	0.8	**1**										
Canadian Equities	0.1	0.4	0.7	0.5	**1**									
Canadian Low Volatility Equities	0.2	0.4	0.7	0.5	0.7	**1**								
Global Equities	0.2	0.3	0.5	0.4	0.7	0.5	**1**							
Global Low Volatility Equities	0.4	0.4	0.3	0.2	0.4	0.6	0.8	**1**						
ACWI Equities	0.2	0.4	0.6	0.4	0.7	0.6	1.0	0.8	**1**					
Emerging Market Equities	0.1	0.4	0.7	0.4	0.6	0.5	0.7	0.4	0.7	**1**				
Private Equity	0.2	0.4	0.7	0.4	0.6	0.5	0.7	0.5	0.7	0.5	**1**			
Infrastructure	0.4	0.4	0.1	-0.1	-0.1	0.2	0.0	0.3	0.0	0.0	0.0	**1**		
Real Estate	-0.1	-0.1	0.0	0.0	0.0	0.2	0.1	0.1	0.1	-0.1	0.0	0.3	**1**	
Inflation	-0.2	-0.1	0.0	0.1	0.1	0.1	-0.1	-0.1	-0.1	0.0	0.0	-0.4	-0.1	**1**

Capital market assumptions represent the views of PH&N Institutional for the purposes of illustrating and understanding the potential risk-reward trade-off of different portfolio decisions and are established by considering a variety of qualitative and quantitative sources of information including: different forecasting models; internal and external research; existing and implied future conditions as priced by capital markets; and internal views of our fund managers. Expected long term annualized returns are for a 10 year forecast time horizon. Volatilities, downside risk and correlations are estimated from historical data and adjusted as required to reflect future market conditions. Investors should be aware of the limitations using forward-looking assumptions in that there is absolutely no guarantee that future performance will occur according to any ex-ante expectation.

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