MACKENZIE

ORANGE BOOK

2023 LONG-TERM CAPITAL MARKETS OUTLOOK

ORANGE BOOK

2023 LONG-TERM CAPITAL MARKETS OUTLOOK

Contents

Introduction

Todd Mattina, PhD
Co-Lead, Multi-Asset Strategies Team

Nelson Arruda, MFin., MSc., CFA
Co-Lead, Multi-Asset Strategies Team

Jules Boudreau, MA
Economist, Multi-Asset Strategies Team

Mackenzie presents the 2023 Orange Book, our long-term outlook on domestic and global markets. Here, we highlight our expectations for the average return of stocks and bonds over the coming decade.

Day-to-day moves in financial markets make the headlines. But what really matters for long-term investors is their total portfolio return over longer investment horizons. The return estimates presented in the Orange Book help investors look through short-term market movements to stay focused on the long term.

Our capital market assumptions are also appropriate for sophisticated institutional investors, such as pension funds and endowments. Long-term risk and return expectations are key inputs for strategic allocations.

In the second section, starting on page 10, we cover four topics relevant to institutional investors: funding risk management, fund allocation, currency hedging and macro risk management.

ORANGE BOOK

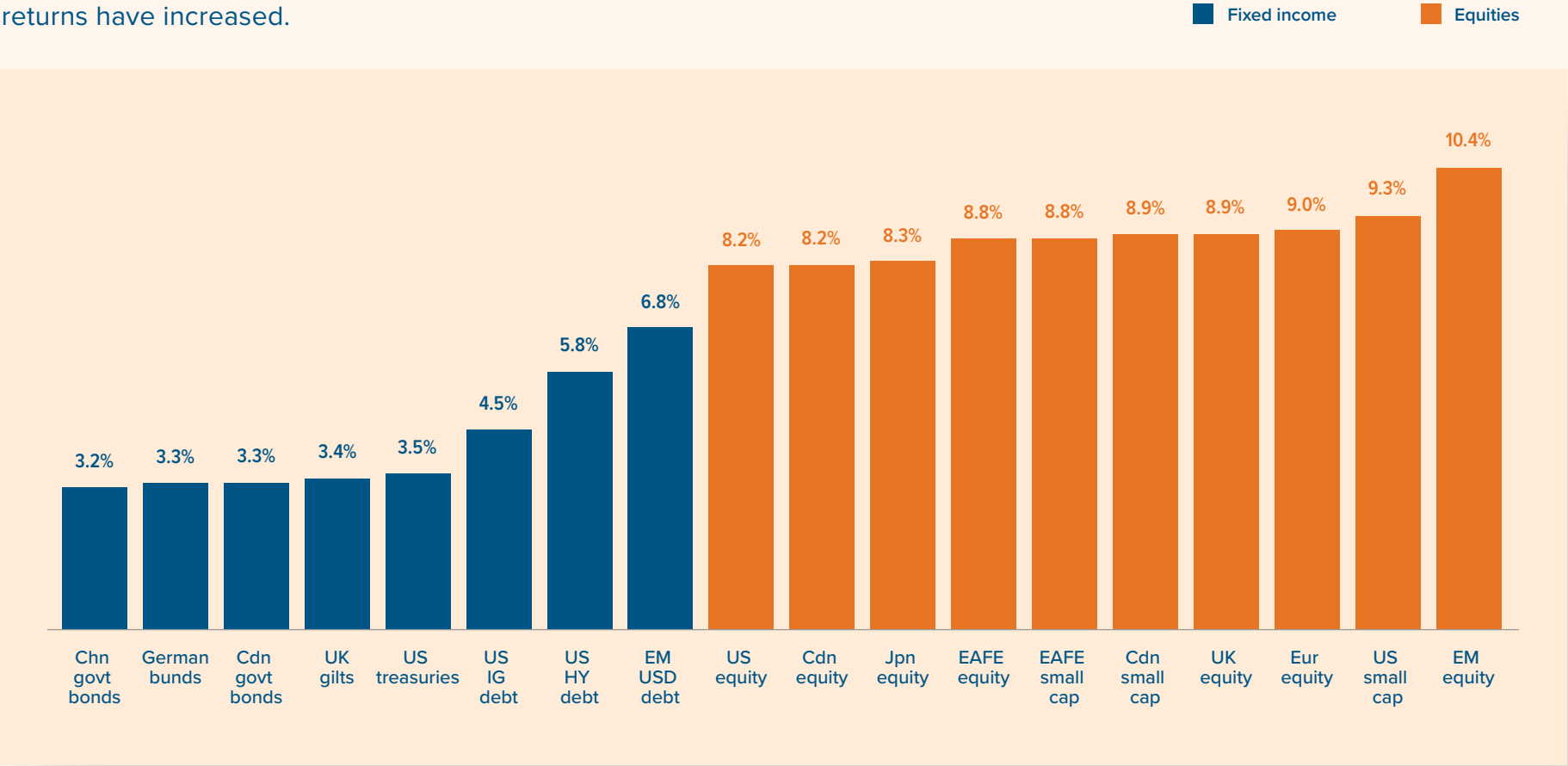
2023 LONG-TERM CAPITAL MARKETS OUTLOOK

Capital market assumptions

- 10-year expected returns
- 5-year expected returns
- 10-year expected returns vs. risk
- Expected asset class volatility and correlations
- Currency valuations
- How we estimate expected returns

10-year expected returns (FX hedged)

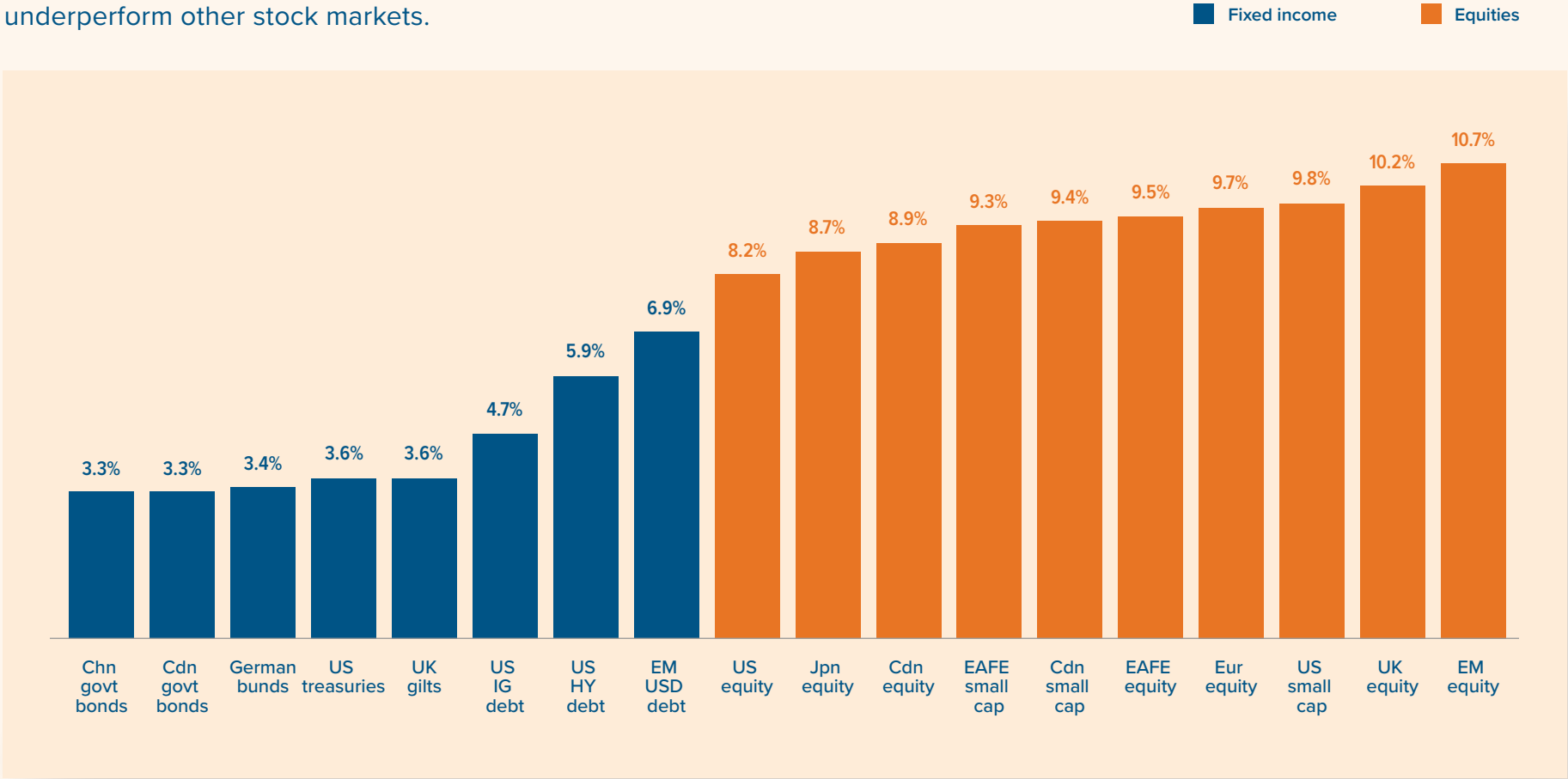
Long-term expected returns have risen for all assets in our universe from last year's edition of the Orange Book. Both risk-free rates and expected excess returns have increased.



Expected geometric returns are shown on a nominal basis, before fees for all asset classes. Please refer to the following page for our five-year expected annual returns, where the active expected return component based on our value, macro and sentiment models play a greater role in shaping expected returns. Developed-market sovereign bond returns shown here reflect the expected return to investing in a constant-maturity 10-year government bond. Estimated using data as of November 30, 2022.

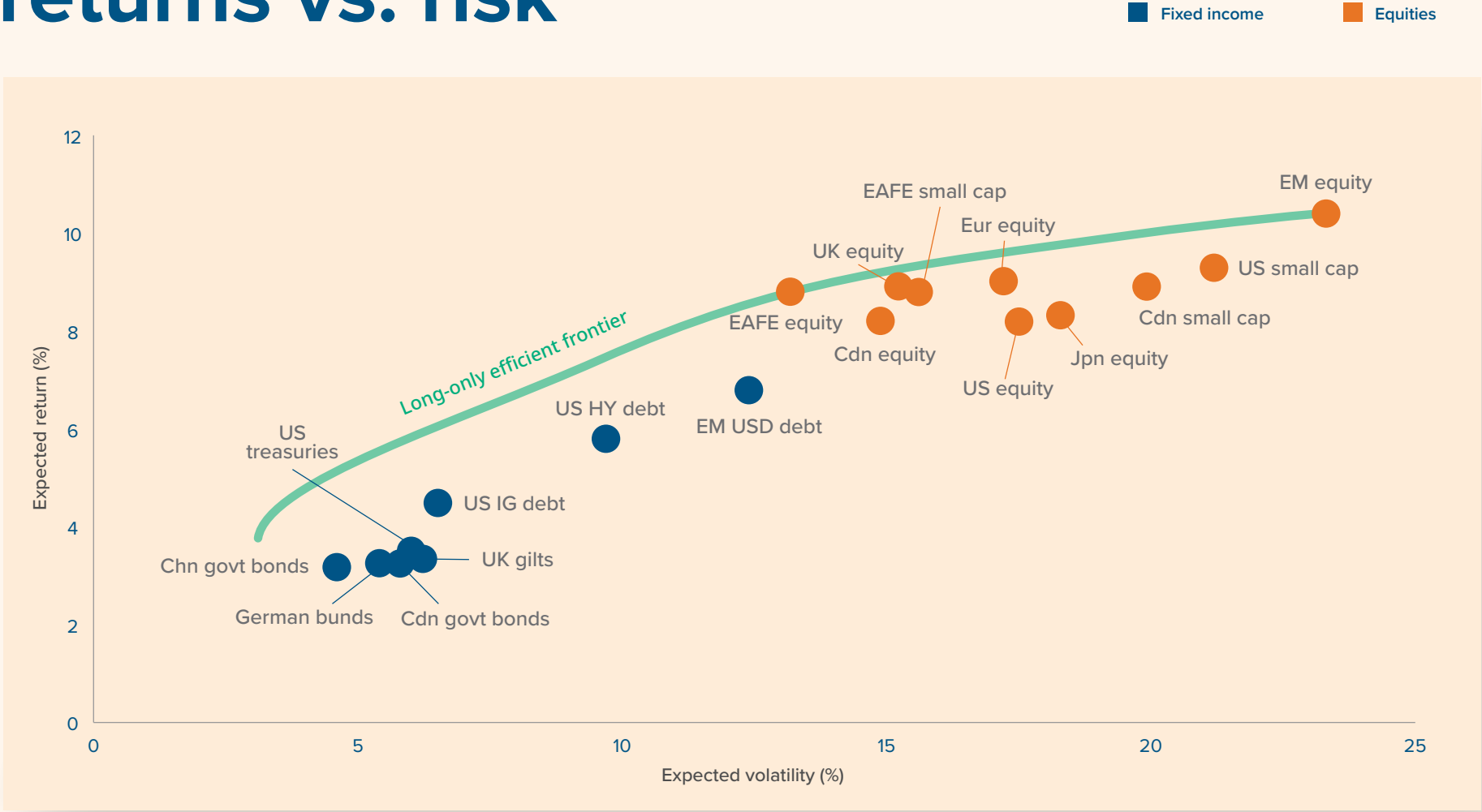
5-year expected returns (FX hedged)

Over a five-year horizon, expected returns are driven significantly by starting asset valuations and economic conditions. We expect relatively expensive US stocks to underperform other stock markets.



Expected geometric returns are shown on a nominal basis, before fees for all asset classes. The five-year return expectations have a greater weight in our own active views, which will have more weight over a five-year horizon than over 10 years. Estimated using data as of November 30, 2022.

10-year expected returns vs. risk



Expected geometric returns are shown on a nominal basis, before fees for all asset classes. These are contrasted with each asset's expected monthly annualized volatility. Estimated using data as of November 30, 2022

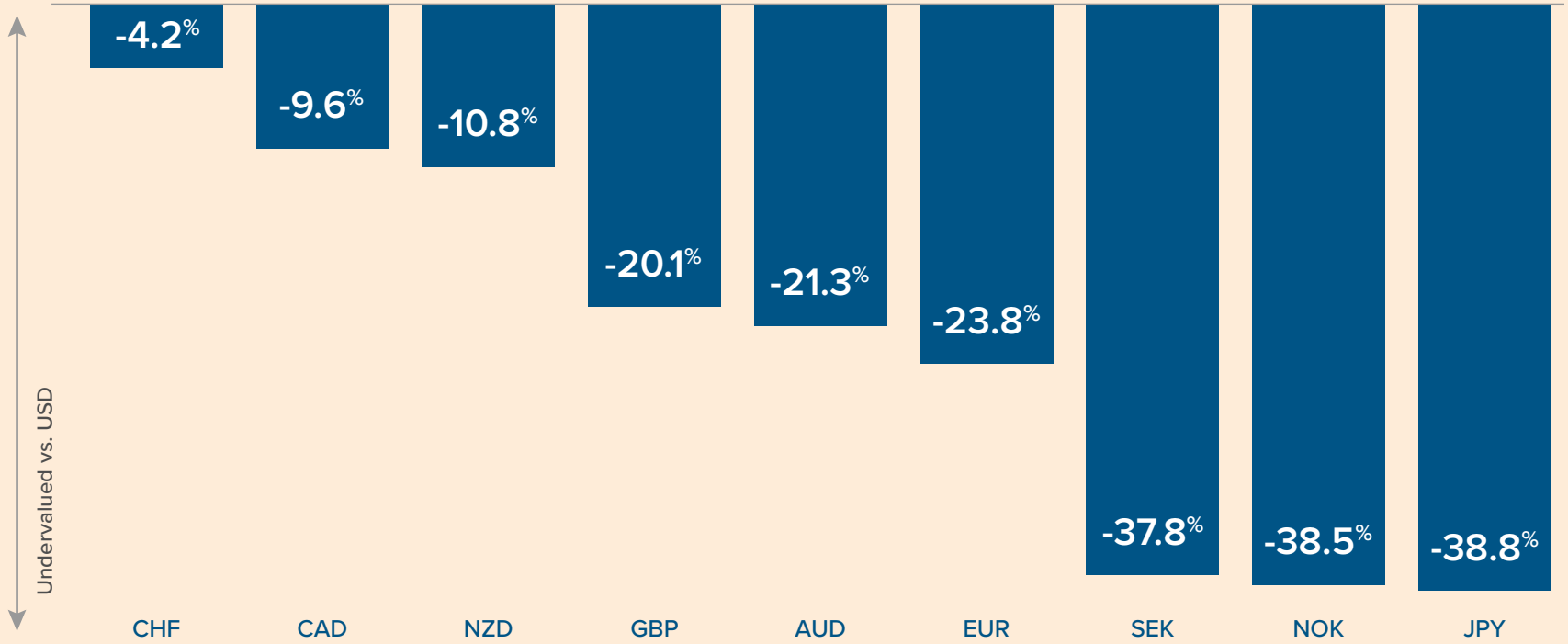
Expected asset class volatility and correlations

	Volatility	US treasuries	Cdn govt bonds	German bunds	UK gilts	US IG debt	US HY debt	EM USD debt	Chn govt bonds	US equity	Cdn equity	Jpn equity	UK equity	Eur equity	EM equity	US small cap	Cdn small cap	EAFE small cap	EAFE equity
US treasuries	6.0%	1.0																	
Cdn govt bonds	5.8%	0.8	1.0																
German bunds	5.4%	0.7	0.7	1.0															
UK gilts	6.2%	0.7	0.7	0.8	1.0														
US IG debt	6.5%	0.7	0.6	0.6	0.5	1.0													
US HY debt	9.7%	0.0	0.1	0.1	0.1	0.6	1.0												
EM USD debt	12.4%	0.3	0.3	0.3	0.3	0.6	0.7	1.0											
Chn govt bonds	4.6%	0.1	0.2	0.2	0.2	0.0	-0.2	-0.2	1.0										
US equity	17.5%	0.0	0.0	0.0	0.1	0.4	0.7	0.6	-0.1	1.0									
Cdn equity	14.9%	-0.1	0.0	0.0	0.0	0.4	0.6	0.6	-0.2	0.8	1.0								
Jpn equity	18.3%	-0.2	-0.2	-0.2	-0.1	0.2	0.5	0.4	-0.3	0.6	0.5	1.0							
UK equity	15.2%	-0.1	0.0	0.0	0.1	0.3	0.5	0.5	0.0	0.7	0.7	0.5	1.0						
Eur equity	17.2%	-0.1	-0.1	0.0	0.0	0.3	0.6	0.5	-0.1	0.8	0.7	0.6	0.8	1.0					
EM equity	23.3%	0.0	0.0	-0.1	0.0	0.4	0.6	0.7	-0.2	0.7	0.7	0.6	0.6	0.6	1.0				
US small cap	21.2%	-0.1	-0.1	0.0	0.0	0.3	0.7	0.5	-0.1	0.9	0.8	0.6	0.6	0.7	0.7	1.0			
Cdn small cap	19.9%	-0.1	0.0	0.0	0.0	0.4	0.6	0.6	-0.2	0.7	0.8	0.5	0.6	0.5	0.7	0.7	1.0		
EAFE small cap	15.6%	-0.2	0.0	-0.1	0.0	0.3	0.6	0.5	-0.2	0.7	0.7	0.8	0.7	0.7	0.7	0.7	0.7	1.0	
EAFE equity	13.2%	-0.2	-0.1	-0.1	0.0	0.3	0.6	0.6	-0.2	0.8	0.7	0.8	0.8	0.9	0.7	0.8	0.6	0.9	1.0

Expected monthly annualized volatility and monthly returns correlations. Estimates are based on exponential decay-weighted monthly returns over the 1900-2022 period, adjusted for an unbalanced sample.

Currency valuations

Among G10 currencies, the US dollar is the most overvalued, while the Japanese yen is the cheapest relative to long-term fair value. We expect the US dollar to depreciate against all currencies over the coming decade.



These measures of over- and undervaluation incorporate four of our assessments of long-term and medium-term currency valuation. We assess valuations based on a proxy for absolute purchasing power parity, real effective exchange rates, a behavioural terms-of-trade adjusted currency valuation model, and another behavioural model that adjusts balance-of-payments outcomes based on structural economic factors. Estimated using data as of November 30, 2022.

How we estimate expected returns

Long-term expected asset return

=

Excess returns

Excess returns compensate investors for bearing risk and can vary as investors' risk appetite fluctuates with economic and financial conditions.

+

Risk-free rates

Risk-free rates are determined from the current yield curve and reflect the central bank's policy interest rate, expected inflation and growth.

Excess returns

=

Risk premiums

Risk premiums represent a systematic source of excess return linked to the asset class volatility and its correlation to the global capital market portfolio.

+

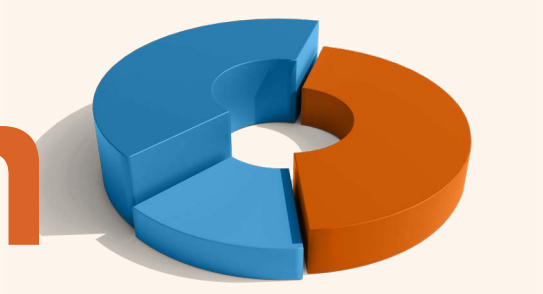
Expected active returns

Expected active returns are expected shifts in the asset return from its long-term risk premium. Expected active returns reflect proprietary insights about valuation, macro conditions and investor sentiment.

ORANGE BOOK

2023 LONG-TERM CAPITAL MARKETS OUTLOOK

Asset allocation



- Pension plans and funding risk
- Canadian pension landscape
- Currency hedging and overlays
- Macroeconomic factors

Pension plans and funding risk

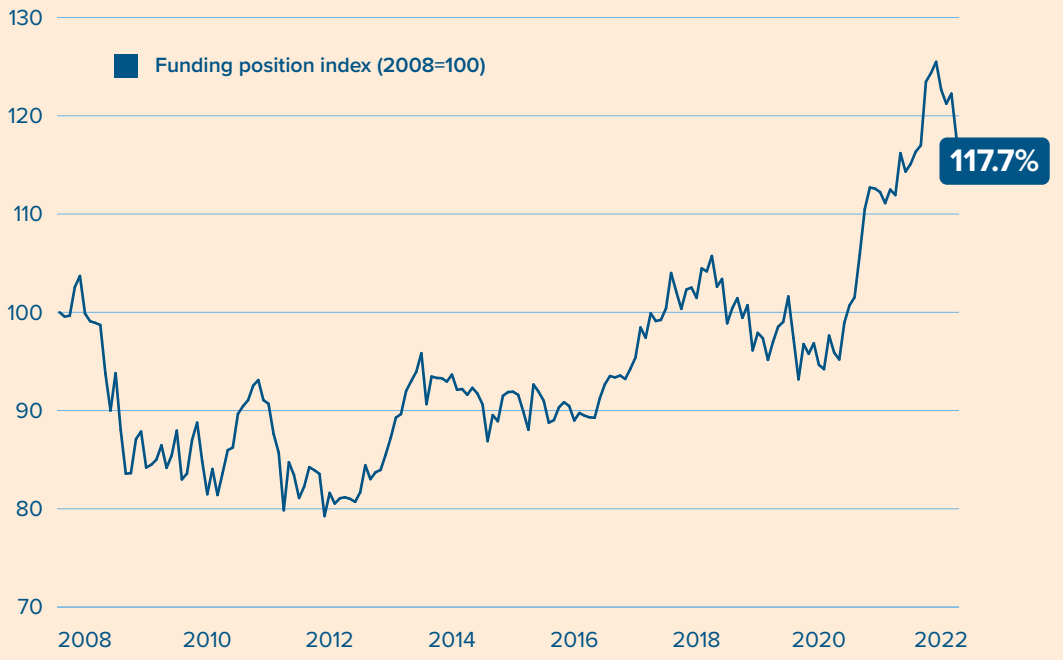
Improved funding position for the average Canadian pension plan

Pension plans had a surprisingly positive year in 2022, despite a challenging period in capital markets. While asset prices generally fell, the dramatic rise in long-term interest rates reduced the present value of future pension liabilities by even more than the fall in assets (see chart). With funding ratios (solvency basis) exceeding 100% for many pension funds, plan sponsors will soon need to decide how to manage surplus positions.[1] They have three main options:

- De-risking their asset allocation.
- Using their plan surplus to enhance benefits.
- Enhancing the asset mix to reduce surplus risk and improve risk-adjusted expected returns.

Each option has merits and pitfalls. Overall, we see a compelling case for plans to enhance their asset mix, reduce surplus risk to "lock-in" improved long-term funding positions, and leave critical plan parameters unchanged, such as the inflation indexation of benefits, given the uncertain economic environment in 2023 and 2024.

Canadian pension plans: Model-based index of funding position[2]



1 According to FSRA, the median funding ratio in Ontario is about 109% with 78% of plans reporting a solvency ratio above 100%. Mercer reports similar findings in its database of pension clients nationally.
2 Calculations for the funding risk index by the Mackenzie Multi-Asset Strategies Team, using Canadian wage growth data via the Bank of Canada, duration-adjusted corporate spreads via Bloomberg, and asset mix data via the Pension Investment Association of Canada. Based on a solvency basis approach.

1. De-risking asset allocation:

For sponsors in a comfortably fully funded position, de-risking the plan may be an attractive option. De-risking can take different shapes. One approach is to transfer the plan's liabilities and assets via a "pension risk transfer" (PRT).[1] For fully funded plans, PRT can reduce the sponsor's risk of unexpected special payments and better align changes in asset values with changes in future pension liabilities. The PRT market has expanded in recent years with pricing dependant on multiple factors, including composition of assets (i.e., equity, high yield bonds, etc.) and assumed longevity of the pensioners.

For plans with internal management capabilities, expanding interest rate sensitivity on the asset side is an alternative approach to de-risk the portfolio. In this way, the portfolio can be customized to match the inflation and interest rate sensitivity of the plan's own pension liabilities. Expanding interest rate sensitivity typically involves the use of both leverage and derivatives, such as interest rate swaps, so it is critical for plans to manage liquidity effectively. As made clear by the aftermath of the UK mini-budget debacle, a sudden surge in interest rates can require pension funds to raise liquidity abruptly to cover losses in leveraged positions. A key lesson is that liability-aware pension strategies can reduce long-term surplus risk but also increase short-term liquidity risk. De-risking effectively requires that plans balance this trade-off effectively.

Liability-aware pension strategies can reduce long-term surplus risk but also increase short-term liquidity risk

2. Enhancing pension benefits:

Given the breakout in inflation in 2022, sponsors could also face pressure to enhance pension benefits, including by increasing inflation indexation. A comfortable surplus position could provide room to enhance benefit policies. However, as elaborated below, long-term funding positions can reverse quickly with a change in economic conditions. For instance, an unexpected hard landing in the economy next year could both lower long-term interest rates and depress asset values, reversing recent gains in funding positions. Inflation could also be stickier than expected, raising the long-term cost of inflation indexation provisions. Consequently, we believe that plan sponsors should maintain a modest-to-moderate surplus position as a precautionary buffer in 2023.

An unexpected hard landing in the economy next year could both lower long-term interest rates and depress asset values

1 Pension Risk Transfer in Canada and the US, B. Simmons, SOA Research Institute, February 2022.

3. Enhancing asset allocation:

While long-term funding positions have improved this year, many pension plans are one recession away from renewed challenges. In a typical hard landing for the economy, equities and other risk assets decline in value as investors require wider risk premiums, and long-term interest rates fall as investors demand the safety of government bonds. Lower long-term rates imply a higher present value of future pension liabilities, just as asset valuations are falling. A surplus position can evaporate quickly in this scenario.

To monitor and control this risk, sponsors should evaluate the sensitivity of long-term funding ratios to a hard landing in 2023 when stress-testing alternative scenarios. Many economists expect a short and shallow recession in 2023 as the base case, however a hard landing with high and sticky inflation remains a feasible alternative scenario in our view. In advanced economies, the historical track record of reducing inflation from high levels suggests that it could take several years to bring inflation down from high single-digit rates to 2%.[1] A prolonged period of high interest rates could be needed to cool labour markets and prevent a wage-price spiral. Notable economists argue that the US unemployment rate may need to rise from a near record low of 3.7% in late 2022 to over 5% to quell inflationary pressures.[2]

Enhancements to a plan's asset mix can set the stage for a more durable improvement in long-term funding positions. Potential enhancements include:

Adding **interest rate sensitivity** on the asset side to better match the factors driving changes in liabilities, reducing the plan's surplus risk.

- Adopting modest leverage allows for greater interest rate sensitivity without sacrificing market exposure to return-seeking asset classes, such as equities.

Reducing **risk concentrations** on the asset side, such as "home bias" in equity allocations and under-allocations in international equities (i.e., UK, Europe, Japan and EM stocks) relative to country weights based on market capitalization (see p. 15).

Expanding allocation to **alternative assets and investment strategies** to broaden the range of return drivers in the portfolio, expand the opportunities to add value and adopt risk-diversifying strategies that can compete with equities.

Enhancing **FX management** to reduce total portfolio risk (see p. 17).

- Maintain long USD exposure to balance foreign equity risk.
- Hedge pro-cyclical and commodity currencies that are correlated to CAD.

Balancing **long-term funding risk with short-term liquidity risk** — avoid suffering the same fate as UK pension plans with LDI strategies.

- For private assets, smoothing is a key advantage for sponsors at risk of special payments if funding ratios decline.
- Leverage, FX management and liquid alt strategies require use of derivatives that require cautious liquidity management.

1 "History Lessons: How 'Transitory' Is Inflation", R. Arnott, November 2022. https://www.researchaffiliates.com/publications/articles/965-history-lessons
2 See L. Summers, June 20, 2022, Bloomberg. https://www.bnnbloomberg.ca/larry-summers-says-us-needs-5-jobless-rate-for-five-years-to-ease-inflation-1.1781433.

Canadian pension landscape

Pension plans face three key risks in funding long-term liabilities:

1. Short duration, because of a mismatch between the risk factors driving asset returns and liability growth.
2. Concentrated equity risk on the asset side.
3. Currency risk.

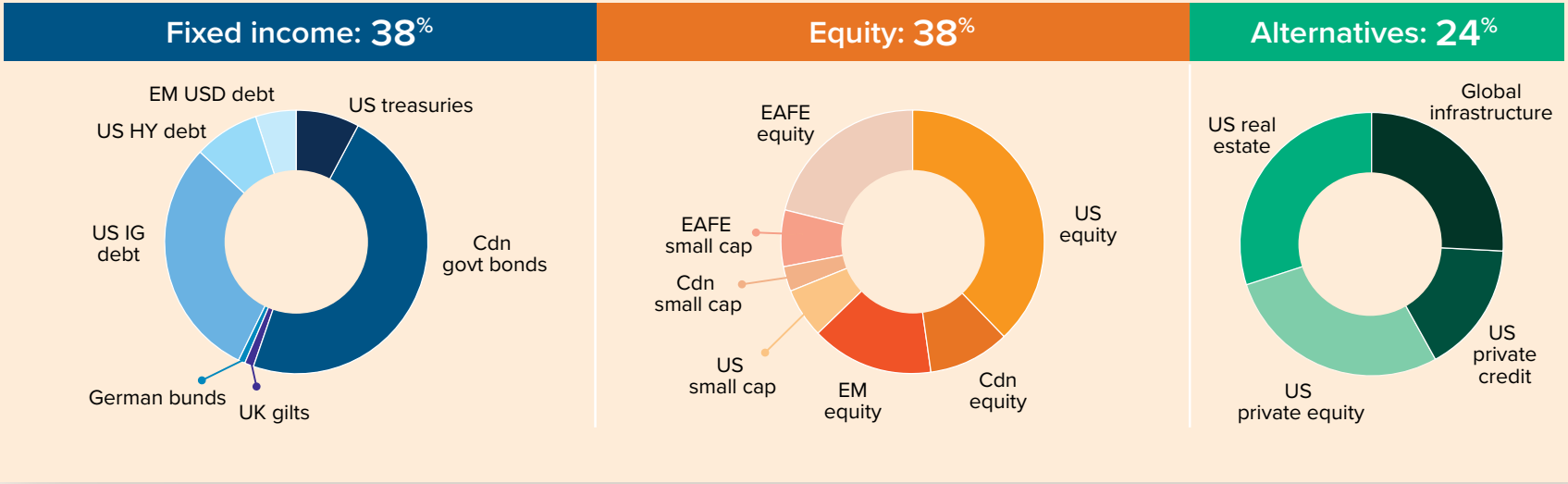
Pension plans have transitioned their strategic asset allocations to manage these risks:

1. Higher allocations to alternative assets.
2. Lower allocations to public market equities.
3. Greater diversification within asset class categories.
4. Leverage to increase interest rate sensitivity, balancing portfolio exposures while improving risk-adjusted expected returns and asset-liability surplus risk.

The average DB plan also maintains a significant allocation to liquid fixed income securities.

1. A liquidity buffer provides room for covering capital calls from private asset managers, FX hedges and rebalancing.
2. However, modest leverage limits room to extend interest rate sensitivity.

Average portfolio weights



Benchmark pension portfolio, shown in capital space, constructed by the Mackenzie Multi-Asset Strategies Team using our universe of asset classes, based on the Pension Investment Association of Canada's (PIAC) report on average Canadian pension plan holdings.

60/40 vs. PIAC average

The average Canadian pension fund's allocation deviates significantly from a vanilla 60/40 portfolio. The average pension fund allocates 25% to alternatives, retains a sizable "home bias" in Canadian equities, underweights EM equities and maintains a smaller allocation to bond duration.

The average pension portfolio has a higher expected return than a 60/40 and lower volatility. The pension portfolio is also expected to exhibit a lower surplus risk, i.e., lower volatility in the difference between the value of pension assets and liabilities.

The average pension fund adopts modest leverage. Increasing leverage could allow pension funds to better match their assets to their liabilities and to manage FX exposures efficiently. But in choosing a leverage ratio, funds must balance long-term funding risk with short-term liquidity constraints (see p. 13).

For private asset classes, the observed volatility will tend to be lower than the "true" mark-to-market volatility. Given that many alternatives are only valued periodically, observed volatility is artificially smoothed compared to public market assets. Because pension sponsors should care about both the observed volatility and the mark-to-market volatility of their portfolio, we use a 50/50 blend of observed and modeled volatilities for our private assets' risk estimates.

Asset class	60/40	PIAC average
US treasuries	0.0%	3.0%
Cdn govt bonds	22.4%	19.3%
German bunds	0.0%	0.3%
UK gilts	0.0%	0.5%
IG debt	16.8%	12.0%
HY debt	0.8%	3.1%
EM USD debt	0.0%	1.9%
US equity	25.4%	15.4%
Cdn equity	1.8%	4.0%
Jpn equity	3.5%	2.2%
UK equity	1.9%	1.2%
Eur equity	7.9%	5.0%
EM equity	13.8%	5.9%
US small cap	2.4%	2.5%
Cdn small cap	0.2%	1.2%
EAFE small cap	3.0%	2.7%
Global infrastructure	0.0%	6.5%
US private credit	0.0%	3.9%
US private equity	0.0%	7.0%
US real estate	0.0%	7.4%
Proportion fixed income	40.0%	40.1%
Proportion equity	60.0%	40.0%
Proportion alts	0.0%	24.8%
Expected return (10-year average)	7.0%	7.5%
Volatility	10.7%	9.4%
Sharpe	0.38	0.48
Surplus risk	11.8%	10.1%
Tracking error vs. 60/40	–	1.9%
Total exposure (including leverage)	100.0%	104.8%

Calculations by the Mackenzie Multi-Asset Strategies team based on our estimates of expected returns, volatilities, and correlations. Benchmark pension portfolio, shown in exposure space, constructed by the Mackenzie Multi-Asset Strategies Team using our universe of asset classes, based on the Pension Investment Association of Canada's (PIAC) report on average Canadian pension plan holdings, making reasonable assumptions as to the decomposition of global holdings. Asset returns are shown gross of fees, including for alternative assets, which typically exhibit high fees. For private asset classes, we use a 50/50 blend of observed (smoothed) and modeled (de-smoothed) volatilities.

Currency hedging and overlays

Fully hedging currency risk in portfolios with foreign assets is rarely optimal for risk minimization. For example, exposure to reserve currencies, such as the US dollar, can reduce total portfolio risk in local currency terms.

Investors can exploit the correlation of a currency with foreign asset returns and other currencies to identify an optimal FX hedge ratio based on risk minimization of the total portfolio. Optimal currency hedge ratios will depend on an investor's investment horizon (p. 18), their home currency, their risk aversion, and the composition of their portfolio.

Going a step further, investors can dynamically hedge their FX exposures to take advantage of time-varying expected returns for currencies. Historically, active investment strategies in the currency space have generated excess returns, providing a diversifying source of value-add in the portfolio. In particular, models based on relative valuation, macroeconomic factors and investor sentiment have a good track record at delivering risk-adjusted active returns.

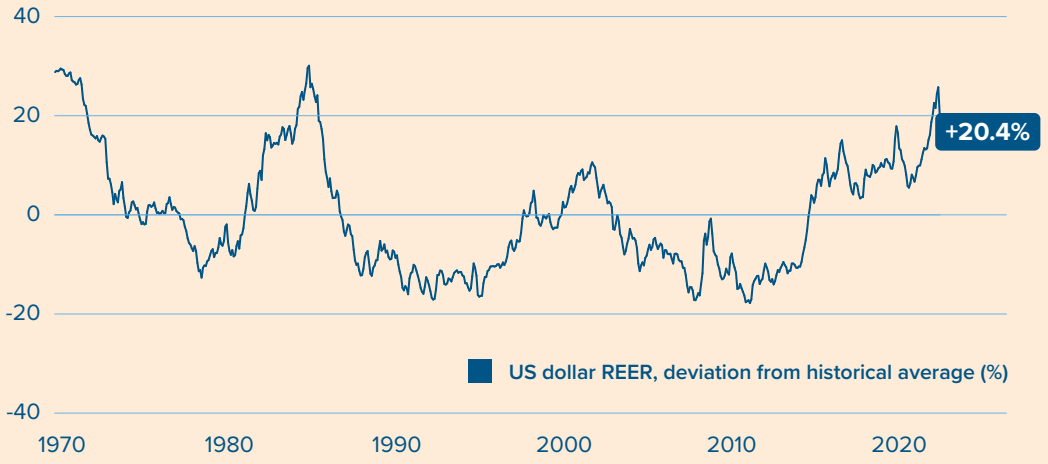
Currency management can be outsourced to specialized managers using a portable overlay strategy. In this way, FX management goes from a problem to solve to an independent source of expected active return. By using derivatives as part of an overlay strategy, investors can also expand the universe of currencies in their portfolios, over and above their asset-related exposures. By expanding the breadth of currencies in an overlay, expected value-add improves as the manager has a better chance of finding opportunities.

Implications of an overvalued USD

After surging in 2022, the US dollar is now well above its long-term fair value versus peers. By our estimates, it stands at its most overvalued level against G5 currencies since the 1980s. Against the Canadian dollar, we estimate the USD to be 10% above fair value (see page 8).

We expect US inflation to stick above target as the labour market remains resilient to higher interest rates, forcing the Fed to keep rates "higher for longer" and putting a soft floor under the USD. But over the course of next year and beyond, the US dollar's extreme overvaluation should drag it lower — it can only fight gravity for so long. Plus, in the unexpected event that the Fed pivots, the US dollar could quickly revert lower towards its fair value.

Given the large US share of global equity markets — US stocks make up about 60% of the MSCI All-Country World Index — the USD's current overvaluation has major implications for non-US investors. Investors may wish to consider dynamically hedging FX exposures to take advantage of an expected long-term weakening of the US dollar from its current over-valued level.

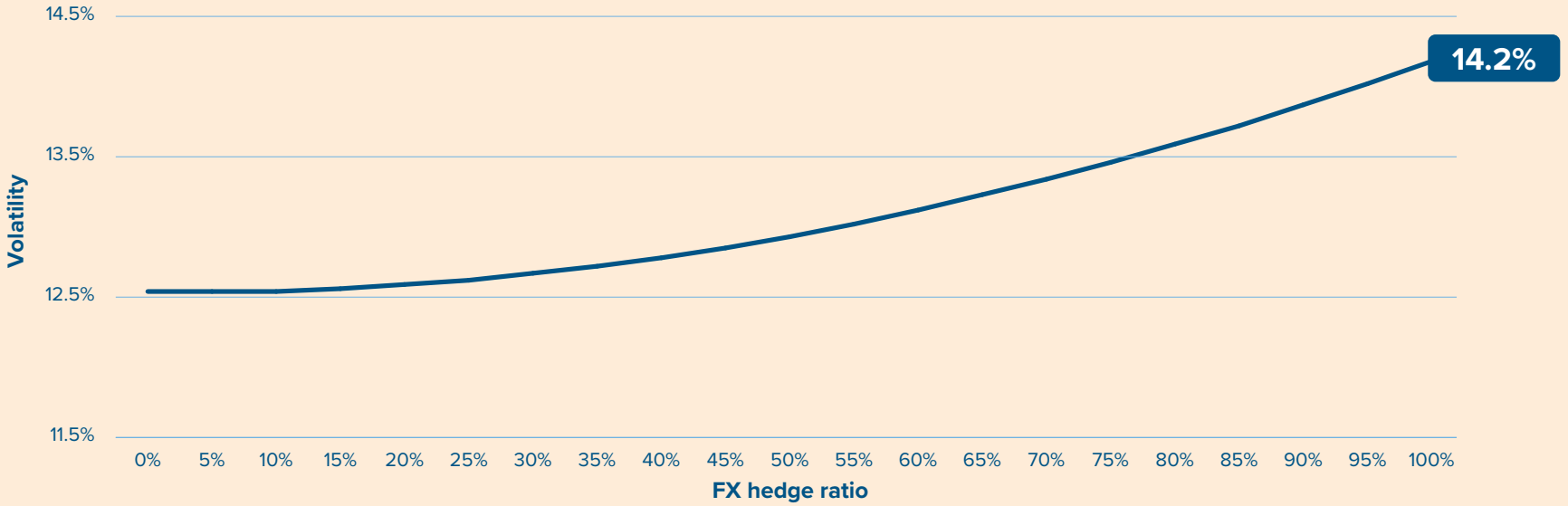


Optimal strategic hedging

Currency hedging decisions can impact the volatility of a diversified global equity portfolio for Canadian-resident investors. Historically, a low hedge ratio for the US dollar (below 30%) has tended to minimize total risk of a foreign equity portfolio.

Volatility of MSCI World Index

based on different FX hedge ratios for Canadian investors

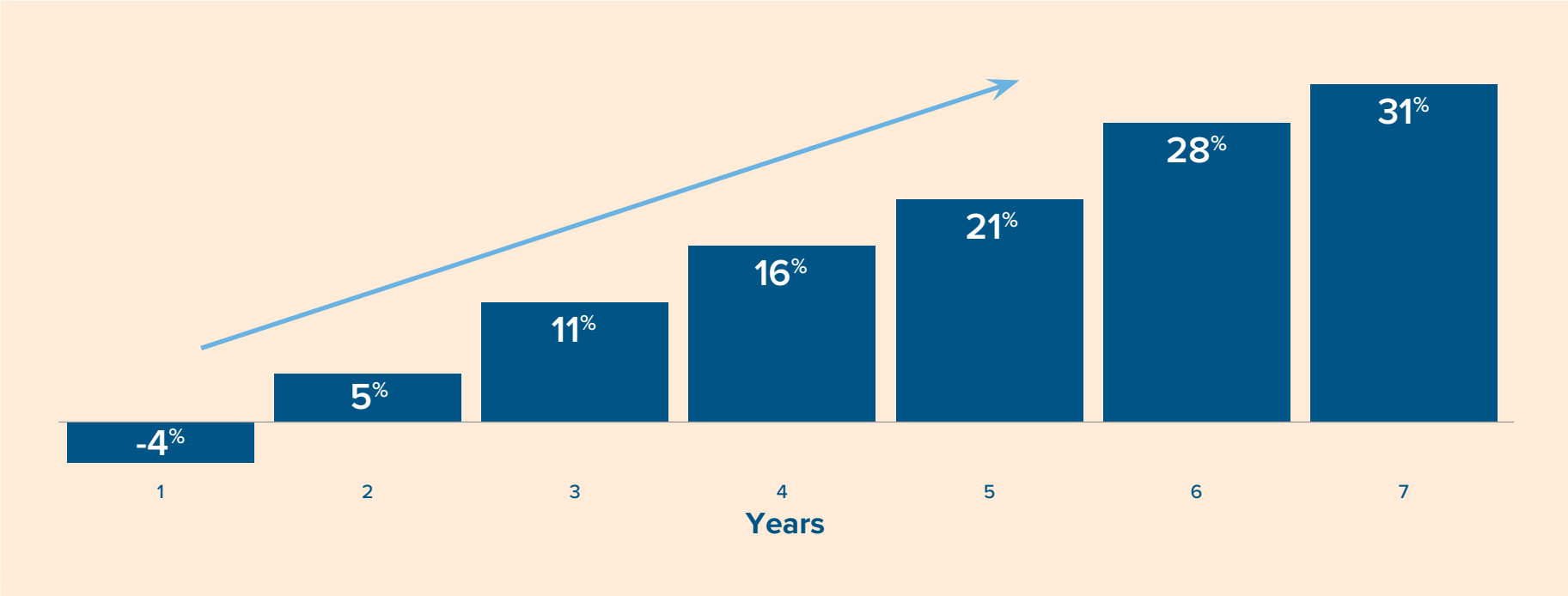


Calculations by the Mackenzie Multi-Asset Strategies Team. Based on Arruda, Bergeron and Kritzman, “Optimal Currency Hedging: Horizon Matters”, Journal of Alternative Investments, 2021.

The optimal FX hedge ratio may depend on the horizon. Over a two-to-seven-year measurement horizon, an unhedged portfolio had greater risk than a hedged one. For investors with short investment horizons, an unhedged portfolio is optimal, while partial hedging can be risk-reducing for investors with longer investment horizons.

Percentage of portfolio risk due to currencies over various measurement horizons

Canadian investor in unhedged international equity



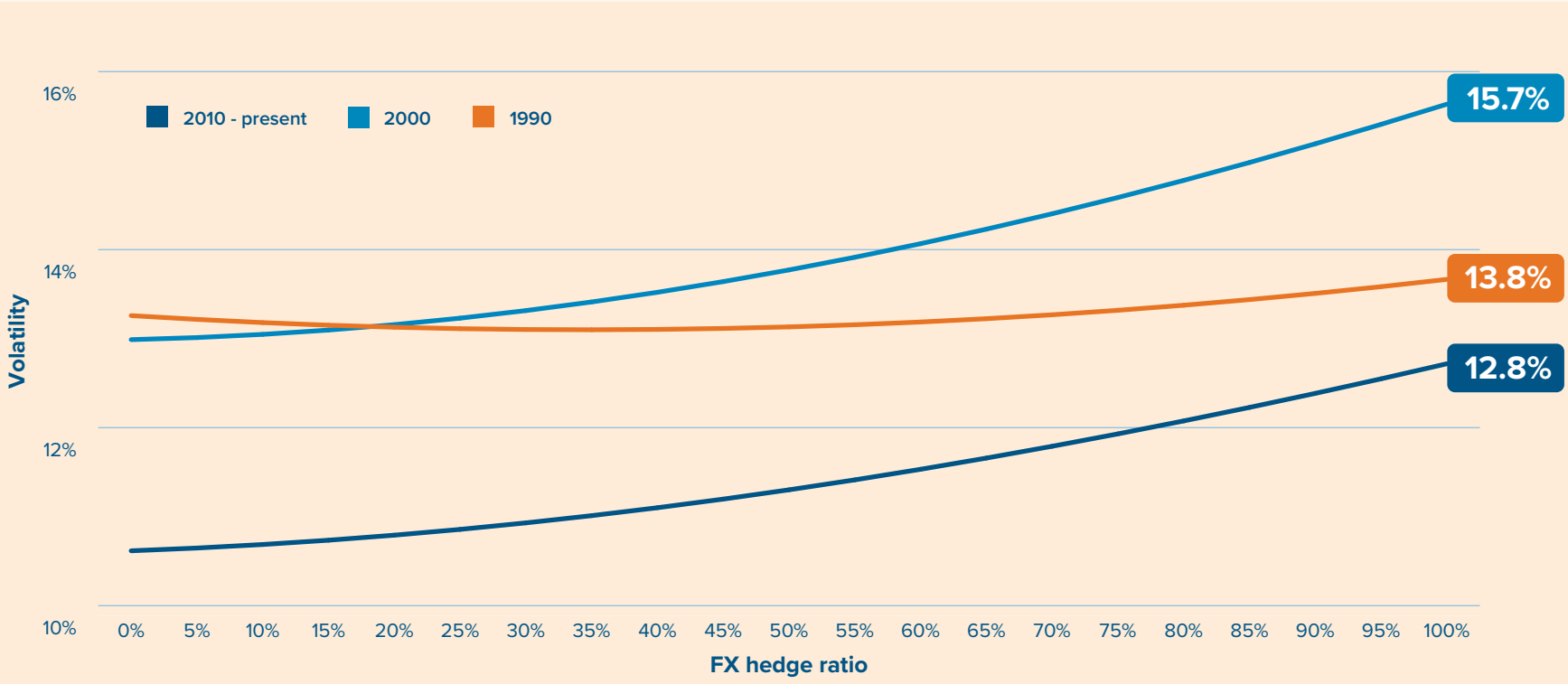
Calculations by the Mackenzie Multi-Asset Strategies Team. Based on Arruda, Bergeron and Kritzman, "Optimal Currency Hedging: Horizon Matters", Journal of Alternative Investments, 2021.

Dynamic FX hedging

Optimal currency hedging decisions have evolved through time, as correlation regimes change. Currency correlations have differed by decade as macroeconomic conditions in certain countries evolved over time.

Volatility of MSCI World Index for Canadian investors

based on different FX hedge ratios, by decade

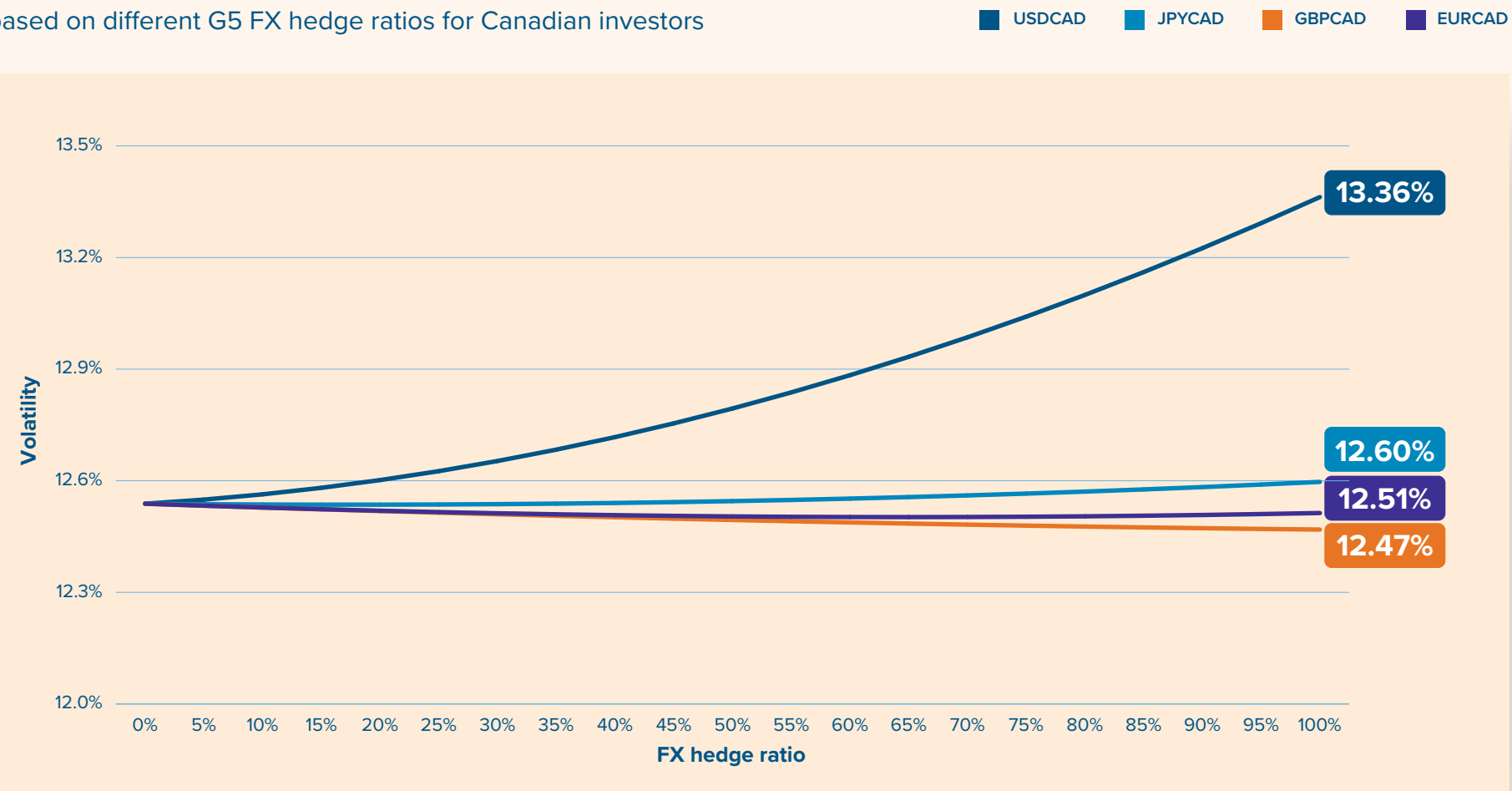


Calculations by the Mackenzie Multi-Asset Strategies Team.

The optimal currency hedge ratio also depends on the specific currency being hedged, as each currency brings different risk characteristics to a portfolio. Unhedged US dollar exposure generally reduces risk for a stock portfolio, while exposure to a more cyclical currency, like the British pound, will tend to increase overall portfolio volatility.

Volatility of MSCI World Index

based on different G5 FX hedge ratios for Canadian investors

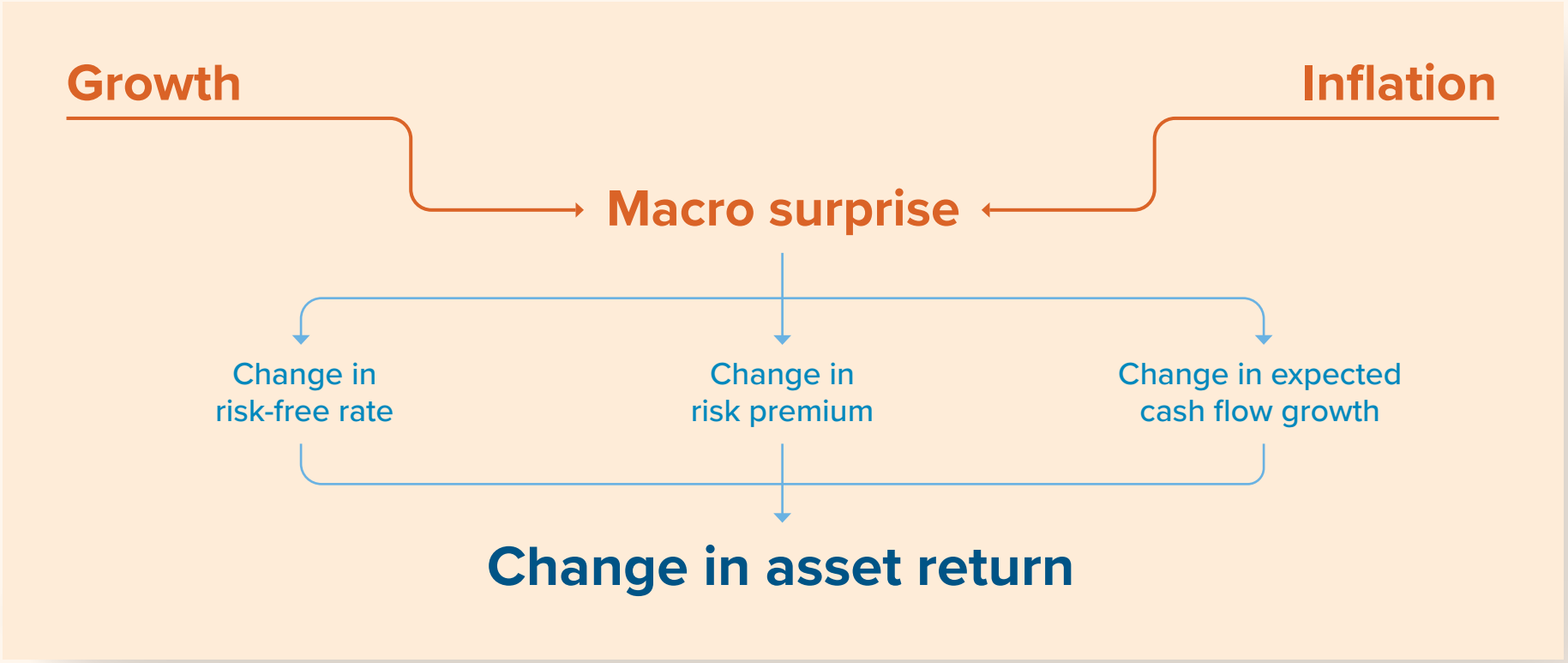


Calculations by the Mackenzie Multi-Asset Strategies Team.

Macroeconomic factors

Long-term expected returns are mainly explained by risk-free rates, unconditional (long-term) risk premiums and starting valuations. But a significant portion of realized expected returns are driven by macroeconomic shocks. For example, China's demand slowdown, commodity oversupply and USD strength were the primary explanation for the disappointing realized EM equity returns in the 2010s.

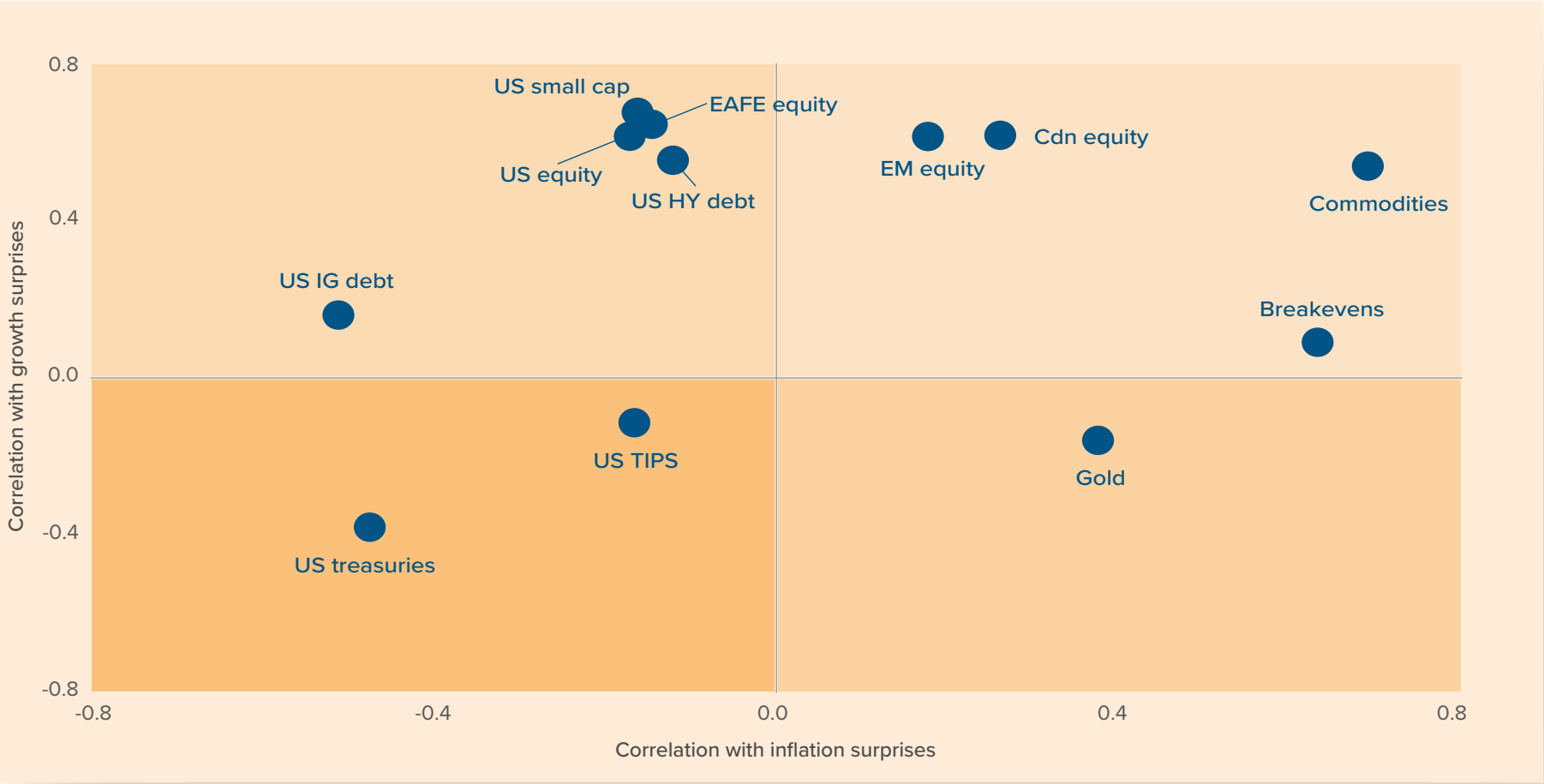
While changes in these macro trends are always difficult to forecast with certainty, we can still estimate the conditional response of asset returns given a macroeconomic shock. This framework for conditional returns, or scenario analysis, can be useful to investors seeking to understand the magnitude of macro risk exposures in their portfolios; help size an active view about macro factors;[1] or inform asset allocation for investors with future liabilities linked to macro factors (such as inflation-adjusted pension payouts).



1 See Alain Bergeron, Mark Kritzman and Gleb Sivitsky. "Asset Allocation and Factor Investing: An Integrated Approach", The Journal of Portfolio Management, Vol. 44, Issue 4, Quantitative Special Issue 2018.

To capture causality, our model uses macro "surprises" — shocks to consensus forecasts of macro variables — rather than current readings of the variables.[2] This framework reflects the intuition that while macro views contribute modestly to long-term unconditional expected returns, macro surprises can and do drive a large portion of realized returns over a cycle.

Correlation with macro factors



2 We use an average of two methods: errors in forecasts from the Survey of Consumer forecasters (as in Thapar et al. (2021), "When Stock-Bond Diversification Fails") and changes in the one-year ahead growth and inflation forecasts from Consensus Economics.

Macro scenarios and returns

Asset class sensitivities or betas to inflation and growth shocks allow investors to estimate the exposure of their portfolio to different economic scenarios.
For example, a one standard deviation positive growth shock would cause the average pension portfolio (see p. 14) to gain 5.8%, while a positive inflation shock would cause it to lose 3.3%.

	Shock to growth expectations (sds)	Shock to inflation expectations (sds)	US treasuries	US TIPS	US IG debt	US HY debt	US equity	US small cap	Cdn equity	EAFE equity	EM equity	Gold	Com-modities
Positive growth	+1	no shock	-1.0%	-0.1%	0.5%	4.5%	9.0%	12.1%	9.0%	8.2%	11.2%	-3.2%	9.8%
Positive inflation	no shock	+1	-4.8%	-2.4%	-6.1%	-2.7%	-3.4%	-3.6%	3.2%	-2.5%	2.5%	9.2%	18.4%
Demand-led growth	+1	+1	-5.8%	-2.4%	-5.6%	1.8%	5.5%	8.5%	12.2%	5.7%	13.7%	6.0%	28.2%
Stagflation	-1	+1	-3.8%	-2.3%	-6.6%	-7.1%	-12.4%	-15.6%	-5.8%	-10.6%	-8.8%	12.4%	8.6%
Disinflationary growth	+1	-1	3.8%	2.3%	6.6%	7.1%	12.4%	15.6%	5.8%	10.6%	8.8%	-12.4%	-8.6%
Recession	-1	-1	5.8%	2.4%	5.6%	-1.8%	-5.5%	-8.5%	-12.2%	-5.7%	-13.7%	-6.0%	-28.2%

Our methodology employs the historical beta of asset returns with macro surprises, which we interpret as exogenous shocks to returns. We use an average of two methods: errors in forecasts from the Survey of Consumer forecasters (as in Thapar et al. (2021), "When Stock-Bond Diversification Fails") and changes in the one-year ahead growth and inflation forecasts from Consensus Economics.

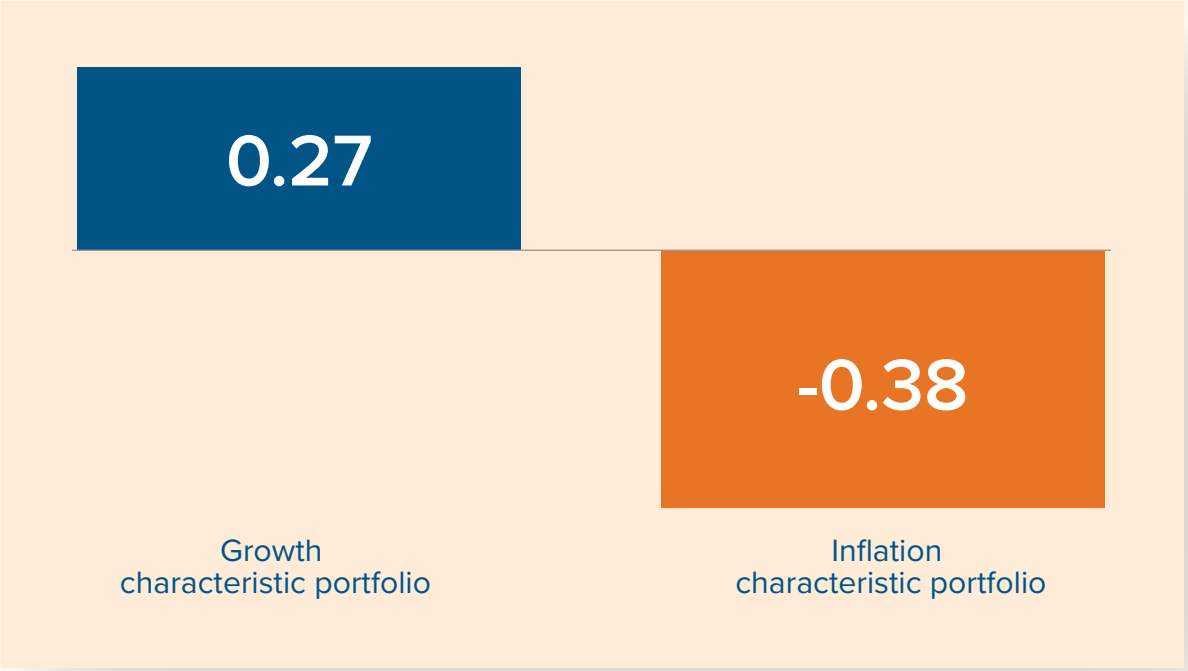
Portfolios of macro factors

In addition to monitoring a portfolio's macro exposures and preventing unwanted risk concentrations, macro factor betas allow investors to explicitly implement macro views in their portfolios. Suppose an investor thinks economic growth will be higher than the market expects. By including a growth factor in the covariance risk matrix, they can size the growth exposure based on their conviction and risk budget. The same framework can be employed to hedge an inflation-sensitive liability, such as pension benefits.

We can also construct a long-short "characteristic" portfolio to represent a pure unit exposure to a macro factor. For example, the returns on the inflation characteristic portfolio on a given day represent shocks to the market's inflation expectations.

The returns of the growth and inflation characteristic portfolios give a hint as to the compensation investors should expect for taking on macro risks. Consumption-based asset pricing theory suggests that assets whose returns exhibit higher correlations with consumption shocks should have higher expected returns. Given consumer utility is positively correlated to growth and negatively to inflation, we would expect a growth characteristic portfolio to have a positive risk-adjusted return and an inflation characteristic portfolio to have a negative risk-adjusted return — that is, investors must "pay for inflation protection". Historical returns support the theory.

Historical Sharpe ratio (1960-today)

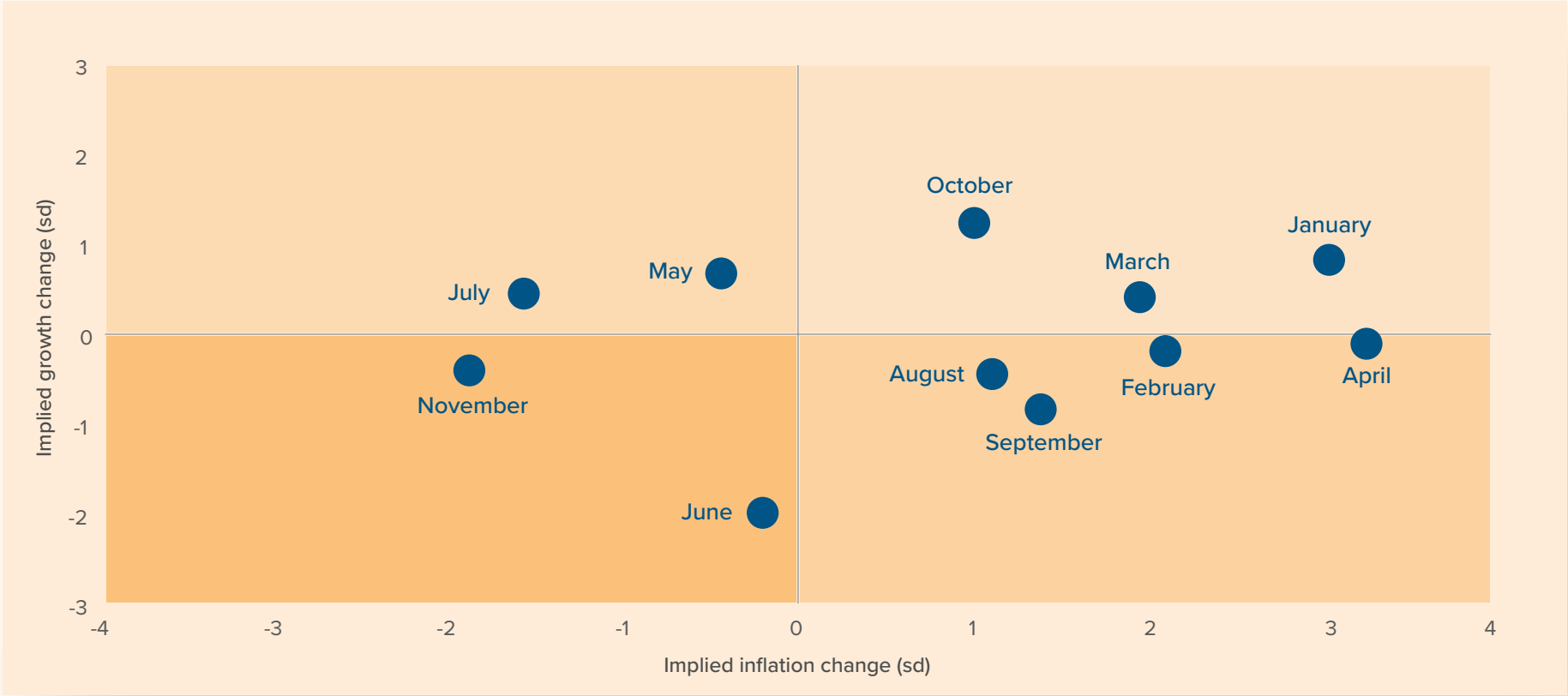


Calculations by the Mackenzie Multi-Asset Strategies Team. The unit characteristic portfolios for growth and inflation are constructed by optimizing the exposure to the macro factor: $h_f = \frac{\Sigma^{-1} f}{f^T \Sigma^{-1} f}$ where Σ is the asset covariance matrix and $f = [f_1, \ldots, f_N]$ is a vector representing each asset's exposure to a given macro factor.

Data for the chart via Bloomberg as of November 30, 2022.

The characteristic portfolios for growth and inflation can also act as higher frequency proxies for economic surprises. Economic indicators move slowly and changes in investors' expectations of growth and inflation cannot be observed directly. The returns on the growth and inflation characteristic portfolios can be seen as real-time proxies for shocks to expectations, providing useful information about market expectations as implied by current asset prices.

In 2022, markets were driven more by inflation shocks than growth shocks



Calculations by the Mackenzie Multi-Asset Strategies Team. The unit characteristic portfolios for growth and inflation are constructed by optimizing the exposure to the macro factor: $h_f = \frac{\Sigma^{-1} f}{f^T \Sigma^{-1} f}$ where Σ is the asset covariance matrix and $f = [f_1, \cdots, f_N]$ is a vector representing each asset's exposure to a given macro factor.

Data for the chart via Bloomberg as of November 30, 2022.

Team background

Mackenzie's Multi-Asset Strategies (MAS) Team is co-led by Todd Mattina, Senior Vice President and our in-house Chief Economist, and Nelson Arruda, Senior Vice President and Portfolio Manager. The team has deep expertise across a broad range of strategies including:

Multi-asset portfolios

A suite of dynamic currency hedging approaches based on valuation, sentiment and macro conditions developed and maintained in-house

Liquid alternative strategies that include global macro, commodities, currencies, CTA, and market neutral equity factor portfolios

Long only, multi-factor equity portfolios (smart beta)

Members of the team engage with institutional investors across Canada on strategic and tactical asset allocation, currency management and engage in academic partnerships to produce thought leadership. The group's pedigree fits naturally with the thinking of institutional investors, and that perspective is reflected in the consideration of risk and return in everything we do.

"The MAS Team manages a broad range of portfolios, including multi-asset funds, dynamic FX hedging strategies, alternatives and multi-factor equity funds.

- Nelson Arruda & Todd Mattina

Todd Mattina
PhD
Co-Lead, Multi-Asset Strategies Team

Nelson Arruda
MFin., MSc., CFA
Co-Lead, Multi-Asset Strategies Team

ORANGE BOOK

2023 LONG-TERM CAPITAL MARKETS OUTLOOK

MACKENZIE