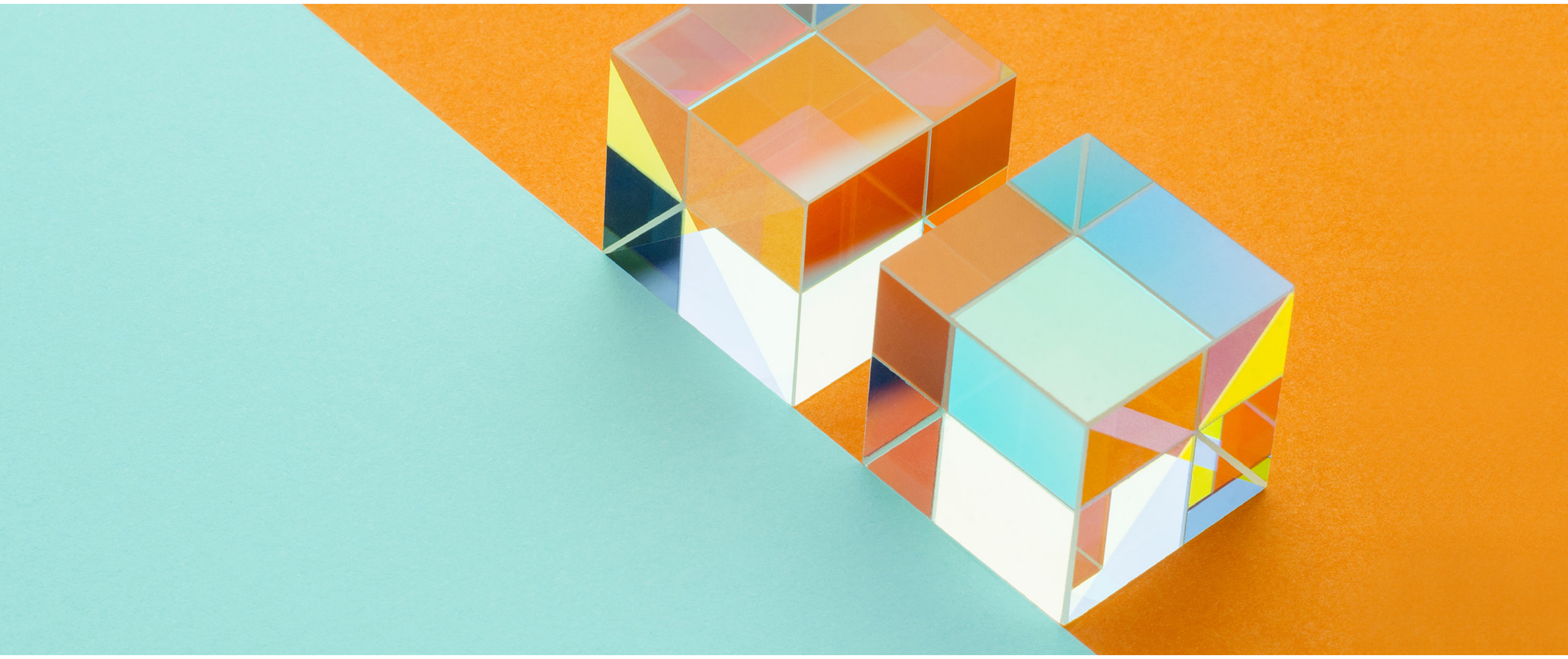
TD Global Investment Solutions

Investor Knowledge 20 Minutes



Assess Inflation's Impact on Your Portfolio with 2 ALM Perspectives

By The TDAM Asset Liability Management Team

In 2022, investors got a powerful reminder of the importance of managing inflation risk, as surging prices globally resulted in aggressive rate hikes from central banks against a backdrop of choppy economic growth, volatile markets and rising geopolitical tensions.

After two decades of relative price stability, inflation has firmly reasserted itself as a key source of risk for investors. On the institutional side, in addition to being exposed to wage inflation, Canada's defined benefit pension plans now have to spend more to offer their members post-retirement inflation protection. Rising prices are also boosting health benefit and claims costs for insurers - and foundations and endowments are struggling to maintain spending without eroding their capital.

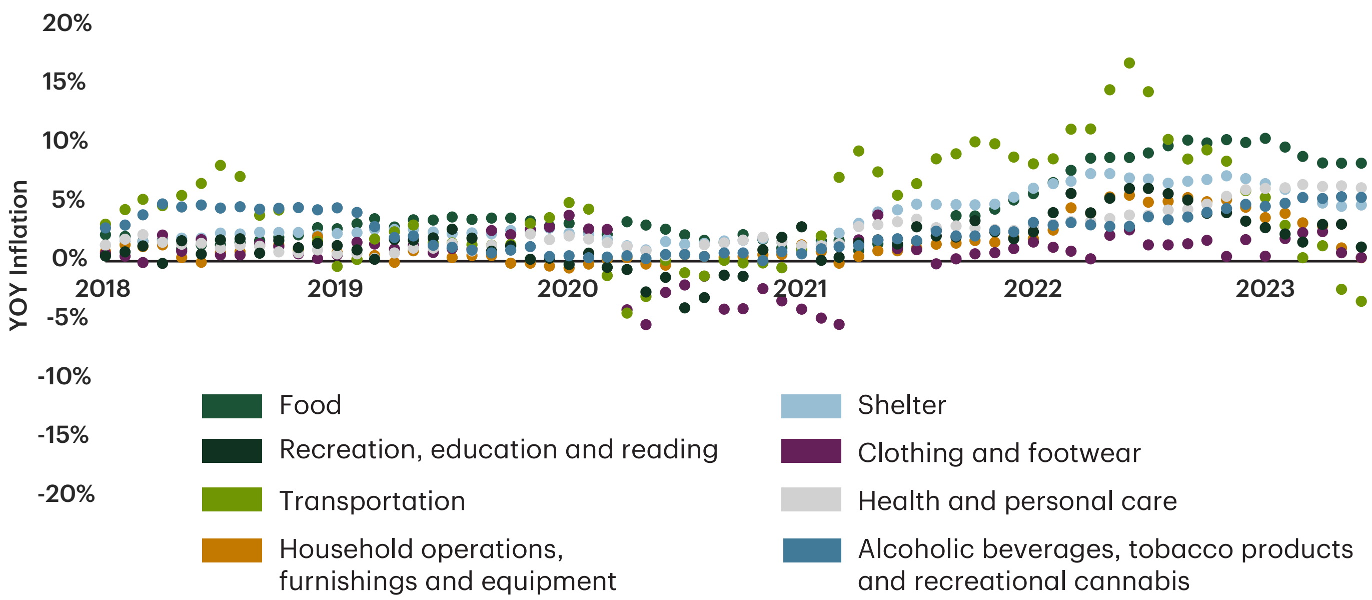
Even Canadian Real Return Bonds (RRBs) – which are indexed to inflation and designed to hedge inflation risk - are being challenged. In 2022, some commentators in the financial press noted that RRBs are not doing their job. So why did even inflation-indexed instruments such as RRBs fall short in 2022? In fact, they didn't. But to see that requires a different analytical framework.

As Asset Liability Management (ALM) practitioners at TD Global Investment Solutions, we look at markets and inflation through a different lens. We start by focusing on what drives liability cash flows and their present values, and then evaluate asset price movements in relation to these drivers. From this more holistic perspective, which links both sides of the balance sheet, we draw different conclusions about how to manage the impact of inflation on investment portfolios.

Which kind of inflation matters?

In Canada, as in most developed markets, the main economic indicator for measuring inflation is the consumer price index (CPI). Although quoted as a single figure, it is an aggregate of prices for a wide range of goods and services, which are grouped into broad categories. Statistics Canada's CPI has eight major categories, which behaved very differently over time.

Figure 1: Sources of CPI - breakdown



Source: TD Asset Management Inc. As of June 30, 2023.

Institutional investors' projected benefit payments – their liability cash flows – are sensitive to different types of inflation, reflecting the business they operate in. For example, pension plans are subject to wage inflation and have indexation formulas tied to the broad CPI measure. Insurers' health benefit costs will be driven primarily by the 'health and personal care' CPI component. Auto repair costs for property and casualty insurers' car repair costs will be influenced by wage trends (i.e., increased labor costs) as well by higher prices for automotive parts, which in turn may be affected by supply chain disruptions.

Benefit

Inflation risks – two perspectives

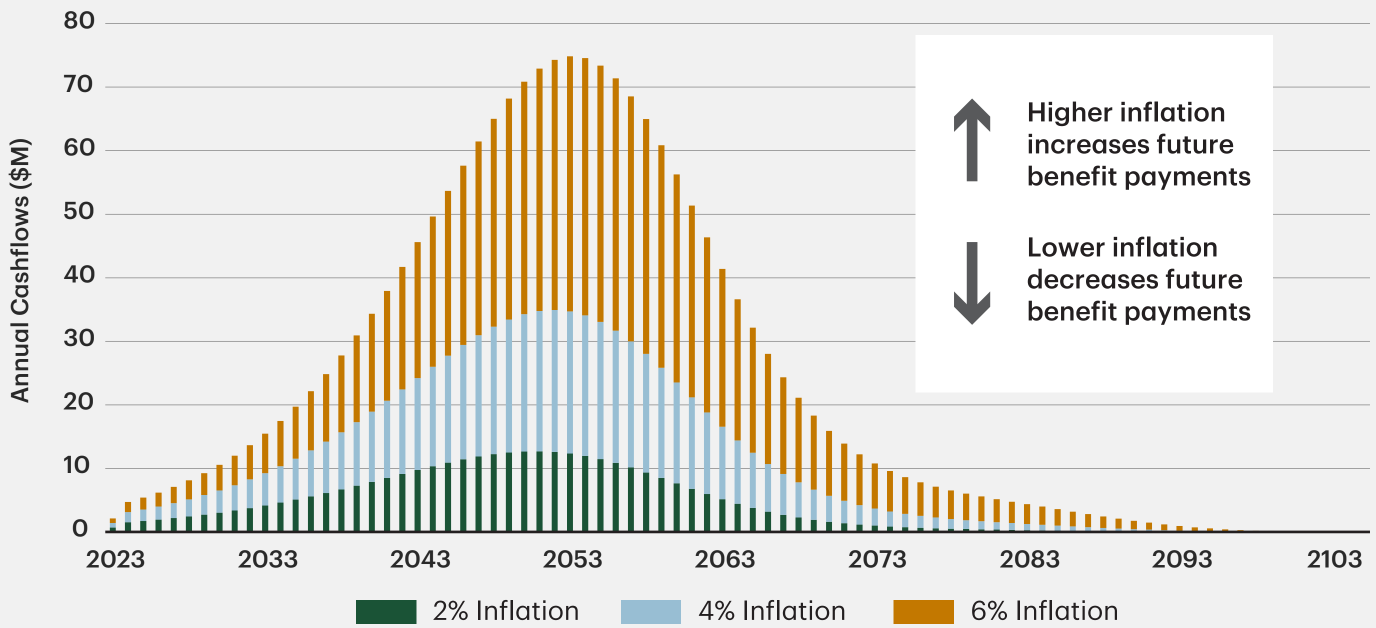
Within an ALM framework, institutional investors should ask themselves two questions regarding the impact of inflation on their portfolios. The first is longer-term in nature: have my investments rewarded me with incremental inflation-adjusted cash flows? The second is more focused on the short term: on a year-over-year basis, how will the value of my assets fluctuate compared to the value of my liabilities?

PERSPECTIVE 1 PERSPECTIVE

Taking a long-term cash flow view

Plan sponsors and corporations that provide inflation-linked benefits face larger payouts over time. To hedge these growing liabilities, they can choose assets that generate higher expected cash flows or liquidate larger expected capital gains, in part driven by higher realized inflation.

Figure 2: Benefits linked to inflation



Source: TD Asset Management Inc. As of June 30, 2023.

Let's see how different types of securities can deliver on this expectation.

Nominal fixed income instruments

Federal, Provincial and Corporate bonds pay regular non-indexed coupons and principal, which do not respond to inflation, but already embed the inflation level anticipated by the market at the time of purchase. As securities mature and renew at higher nominal interest rates, they will benefit from a higher inflation environment contributing to that increase. Shorter-term securities and floating rate instruments, such as commercial mortgages and rate reset fixed income securities, will therefore benefit from higher nominal rates more rapidly.

> **In Canada, Real Return Bonds pay semi-annual coupons that are fully indexed to CPI as is their maturing principal.**

Inflation-Linked Securities (ILS)

ILS are the purest form of financial instruments used to generate future cash flows directly tied to inflation. In Canada, Real Return Bonds pay semi-annual coupons that are fully indexed to CPI as is their maturing principal. The market value of the RRBs represents the discounted value of future real cash flows using real rates[1].

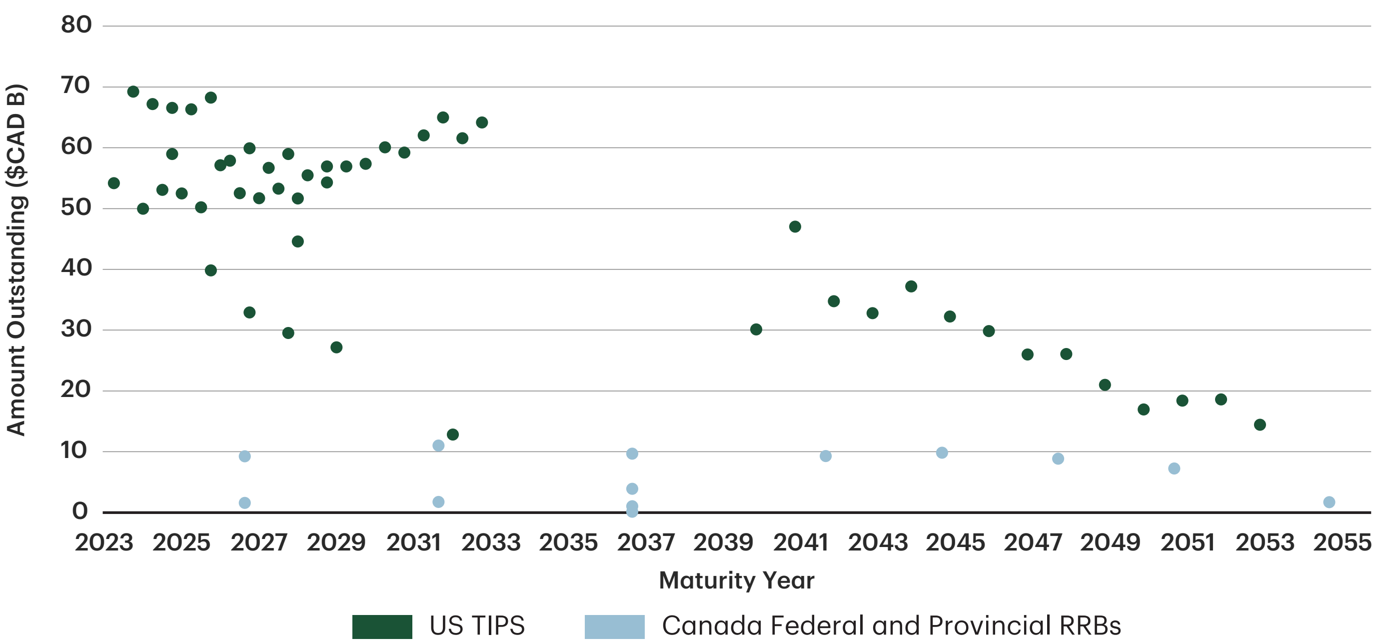
The RRB market in Canada is relatively small, with eight federal government securities and five provincial bonds for a total market value of $75 billion in outstanding issuances. This represents only about 4% of the total Canadian public bond market, which is worth $2.1 trillion[2].

The Canadian Department of Finance's announcement in November 2022 that it would cease issuing RRBs caught the market by surprise, exacerbating existing supply constraints. While the industry continues to hope that Finance Canada will reverse its decision, it is worth exploring the use of US Treasury Inflation-Protected Securities (TIPS) as a complement to RRBs. The following graph compares the depth and breadth of the markets for Canadian RRBs and US TIPS.

[1] The market value of RRBs can also be calculated by discounting the future nominal cash flows adjusted by implicit break-even inflation using nominal rates.

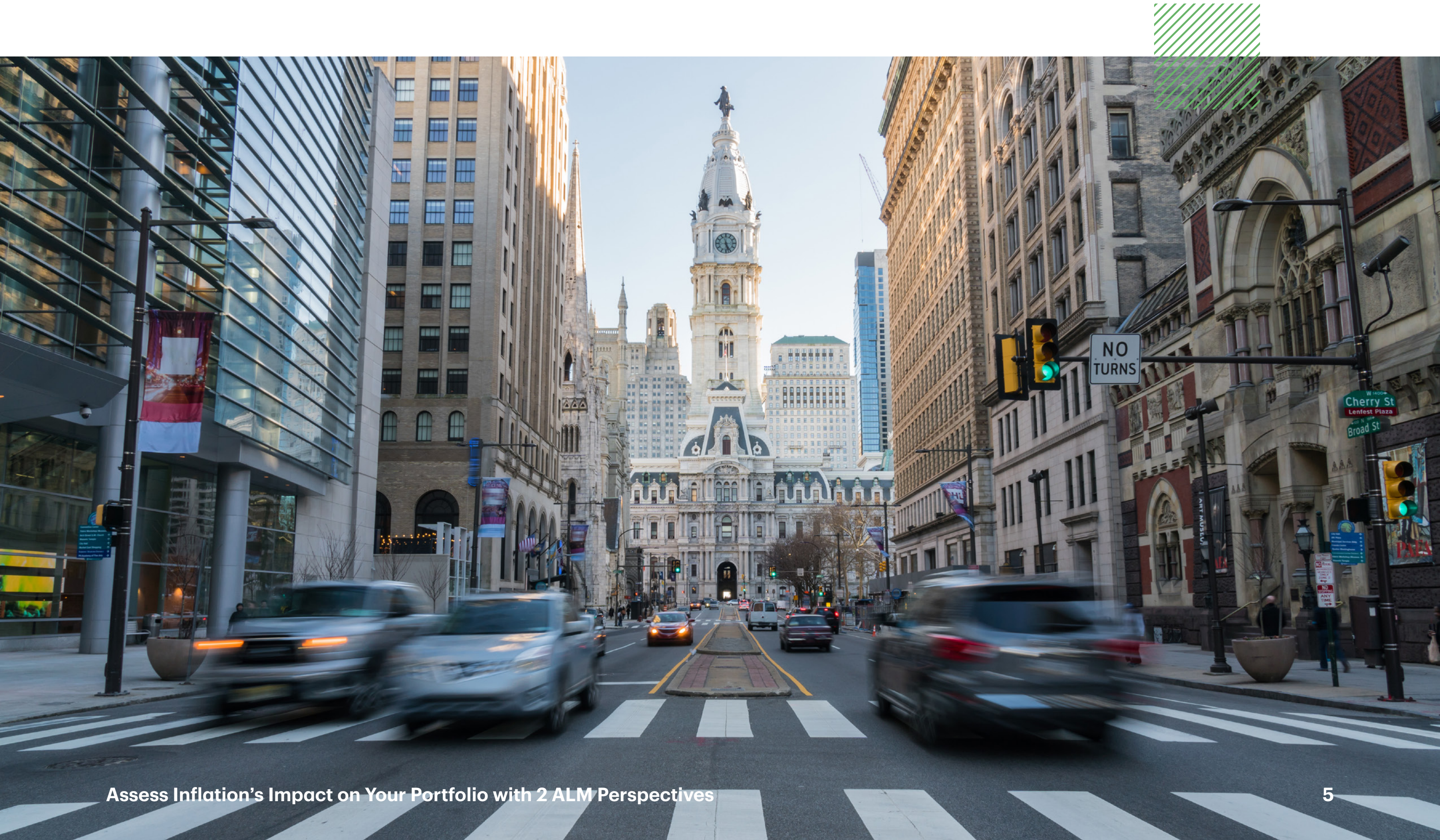
[2] TD Asset Management Inc. As of June 30, 2023.

Figure 3: Canadian federal and provincial RRBs vs US TIPS



	Number of Issues	Market Value ($CAD B)	Market Value % of Total Market
Canada Federal and Provincial RRBs	13	75	4%
US TIPS	51	2,378	9%

Source: TD Asset Management Inc. As of June 30, 2023.



Real estate and infrastructure

Alternative investments such as real estate and infrastructure offer some level of inflation protection. Many have mechanisms that tie revenues to realized inflation, either directly (embedded in contractual agreements) or indirectly:

Real estate properties held by our TD Greystone Real Estate Funds and limited partnerships often have CPI-linked leases and rental rate agreements with annual step-ups.

Infrastructure investments have three types of revenue agreements:

- **Contractual:** These agreements are explicitly linked to inflation, though the cadence varies by contract.
- **GDP-linked:** Also called merchant revenues, GDP-linked agreements depend on current market prices, so will increase with inflation.
- **Regulated:** In regulated agreements, a pass through for inflation is built into the cost structure charged to the end client. For instance, a power plant's revenue stream is a function of the price of the commodity, electricity in this case, which is a fundamental component of inflation.

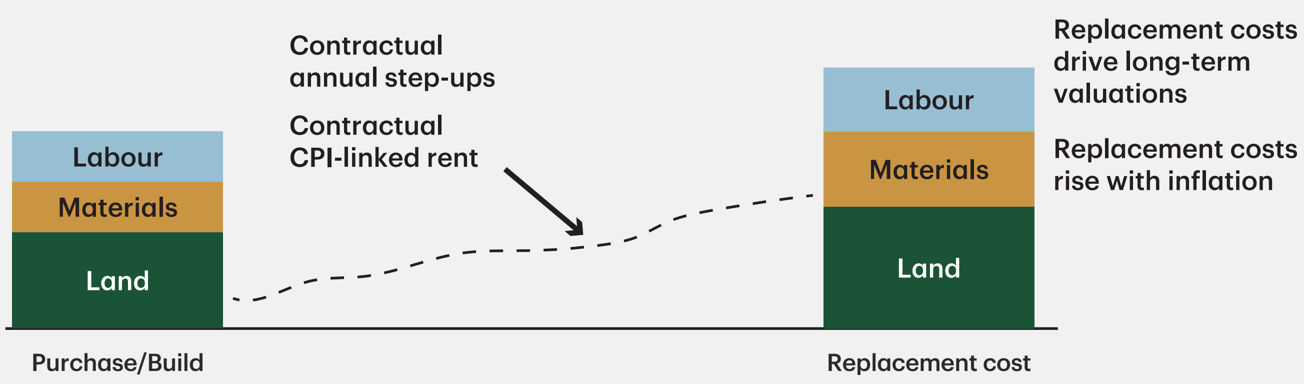
The TD Greystone Infrastructure Fund offers exposure to all of these revenue streams, as shown in the table below:

Revenue Profile	Percentage
Contractual	53%
Regulated	5%
GDP-Linked	42%

Source: TD Asset Management Inc. As of June 30, 2023.

Looking beyond cash flows to asset values, inflation can boost real estate and infrastructure valuations over longer periods, as markets price in the impact of higher property replacement costs, including land, material, labour and other soft inputs.

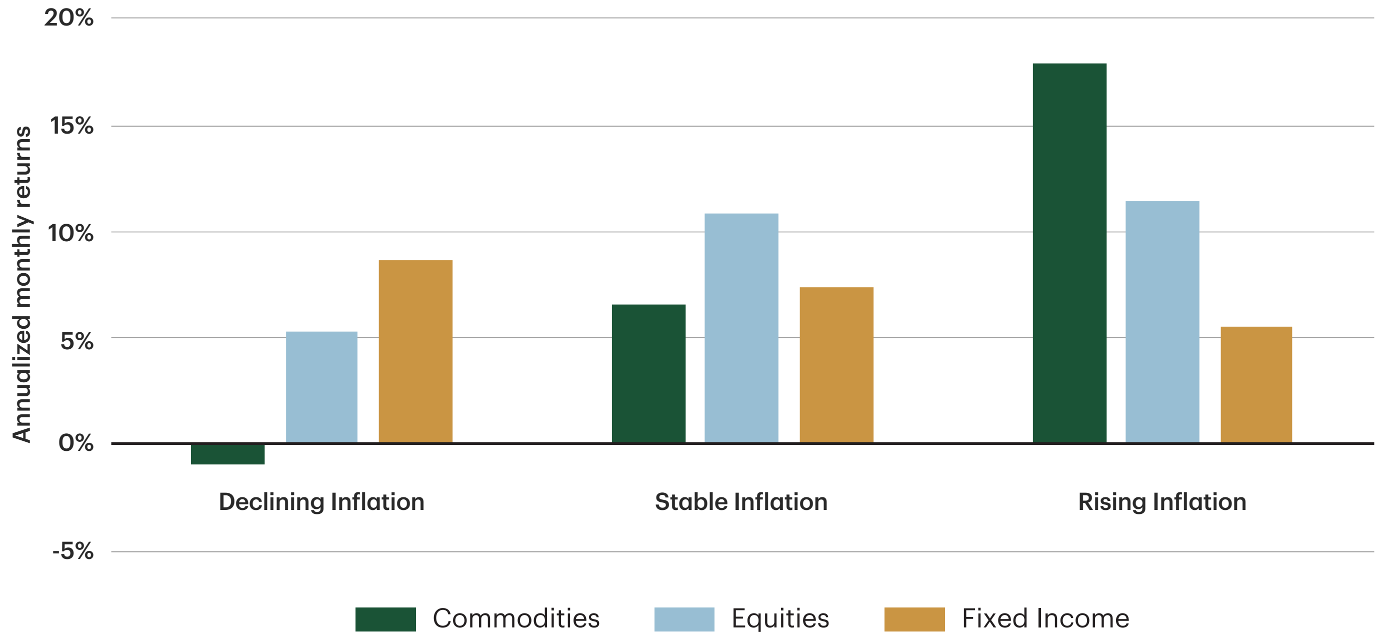
Hedging inflation with commercial real estate



Commodities

Historically, commodities have performed well in a stable and rising inflation environment, as shown in **figure 4** — Asset Class Returns in Different Inflation Environments. While commodities do not produce any direct income, over longer holding periods they are highly correlated with inflation. This is purely a mechanical effect as certain commodity sectors are significant components of the inflation gauge. The inflation-hedging benefits of commodities over the long term therefore arises chiefly from higher asset values at liquidation rather than incremental cash flows.

Figure 4: Asset class returns in different inflation environments



Source: Bloomberg Finance L.P., Federal Reserve Economic Data (FRED), Data since January 1977. As of July 31, 2022.

Equities

Broadly speaking, over different inflation regimes equities do not produce strong periodic inflation-linked income through dividends or incremental liquidation values attributable to inflation pass-through. However, companies paying high dividends within specific industry sectors offer better prospects of passing on higher inflation costs to their customers due to their better pricing power.

In summary, under **perspective 1**, most asset classes offer investors some ability to hedge inflation-sensitive liabilities. Direct inflation-linked instruments (RRBs and TIPS) have coupons and principal directly tied to the CPI, providing an immediate and ongoing hedge for liability cash benefit payments. The inflation-hedging benefits of other asset classes are more evident over time, rewarding investors with higher cash flows and higher liquidation values, as economic growth and inflation boost asset prices.

Taking a short-term present value view

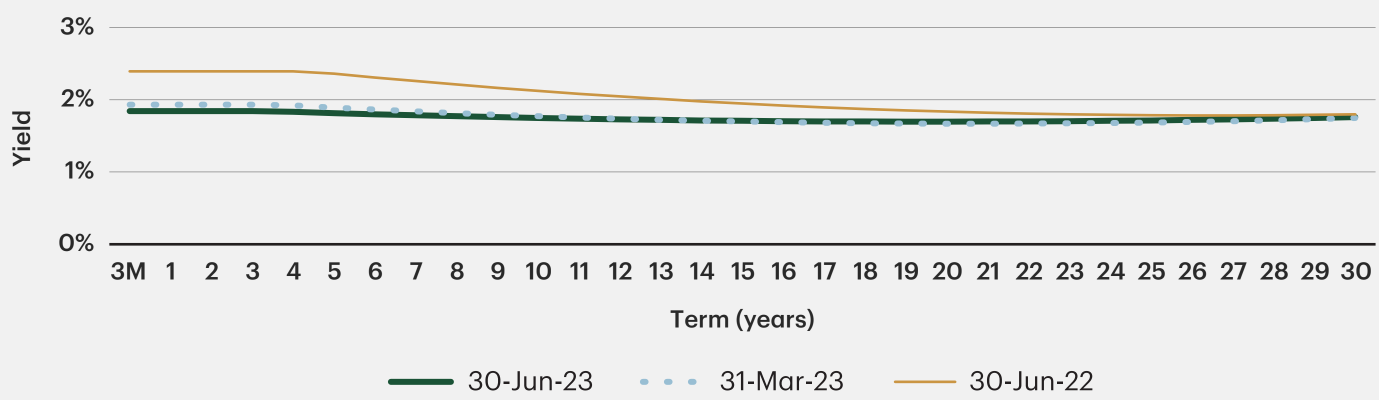
Institutional investors with liabilities linked to inflation must also consider the impact of inflation on their balance sheets, earnings, solvency or capitalization levels. These investors also need to consider contribution requirements from short-term fluctuations between the market value of their assets and the present value of their liabilities. Such fluctuations are influenced, to varying degrees, by the level of future inflation expectations.

There are two main methods for predicting inflation: forecasts of **expected inflation** and **implicit inflation**.

Forecasts of expected inflation are made by economists, typically for periods of up to five years. For example, as of July 2023, the Bank of Canada forecasted inflation rates for Canada of 3.7% for 2023, 2.5% for 2024 and 2.1% for 2025.

Implicit inflation or break-even (BE) inflation is measured using financial market instruments. In Canada, implied inflation expectations can be calculated by comparing the yield on RRBs with the yield on nominal federal bonds of similar terms. Based on the range of RRBs available in the market, and using interpolation methods, a full curve of implicit inflation can typically be constructed 30 years out. This is illustrated in the chart below. It shows, for example, that the implied five-year BE stood at 2.0%[3] as of June 30, 2023.

Figure 5: Canada BE curve



Source: TD Asset Management Inc. As of June 30, 2023.

[3] Bloomberg.

Present value of liabilities

We find that depending on the pricing and valuation standards of the business segment companies operate in, their liability sensitivity to inflation risk may cover a wide spectrum.

Property and casualty insurance companies can achieve partial protection of future claim levels from inflation risk by passing price increases onto customers – for example, by incorporating a buffer in pricing and a premium adjustment mechanism on policy renewal. This leaves only a portion of the present value of their liabilities exposed to unexpected inflation.

Defined benefit plans can achieve partial protection against inflation risk by limiting indexation of benefits – in effect, transferring part of the risk of inflation to their members. For fully indexed plans – those with a direct pass through of inflation to indexation, with no caps and floors – the present value of their long-term benefits is essentially their real projected cash flows, which, discounted under solvency valuation standards, is much more sensitive to changes in long real interest rates and implicit inflation than realized year-over-year inflation.

> **Defined benefit plans can achieve partial protection against inflation risk by limiting indexation of benefits – in effect, transferring part of the risk of inflation to their members.**

Market value of assets

Not all asset classes respond directly or even in the same direction as inflation expectations.

Nominal fixed income instruments

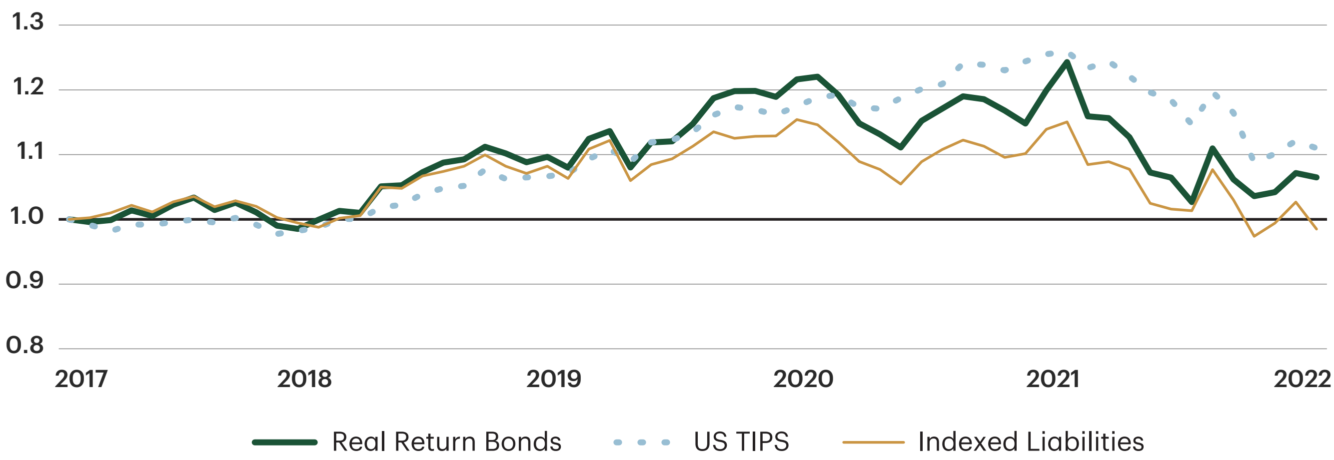
The market value of nominal fixed income instruments will most likely be negatively affected by rising prices, as higher inflation expectations push nominal rates up. The magnitude of the effect will depend on bonds' tenor and how the curve shifts. Central bank actions primarily affect the short end of the curve, while market expectations drive the long end.

Inflation-linked securities

Real rates drive the discounting mechanism and associated present values of direct inflation-linked instruments by design. Consequently, Inflation-Linked Securities (ILS) market prices respond directly to changes in real rates via changing implicit inflation expectations, making them ideal to hedge the present value of inflation-sensitive liabilities. As shown in the chart below, that relationship led to a sharp decline in RRB and TIPS prices in 2022.

Although RRBs and TIPS offer the advantages of directly passing through CPI increases, they do not provide the benefits of higher yields through credit spreads as they are issued mostly by federal governments.

Figure 6: Normalized market value growth over time



Source: TD Asset Management Inc. As of December 30, 2022.

Real estate and infrastructure

The discounting of future cash flows from real estate and infrastructure assets is influenced by a range of factors beyond inflation expectations, bringing substantial noise to the valuation. This makes these alternative investments a less than perfect hedge for inflation-linked liabilities on a shorter-term basis.

Real estate

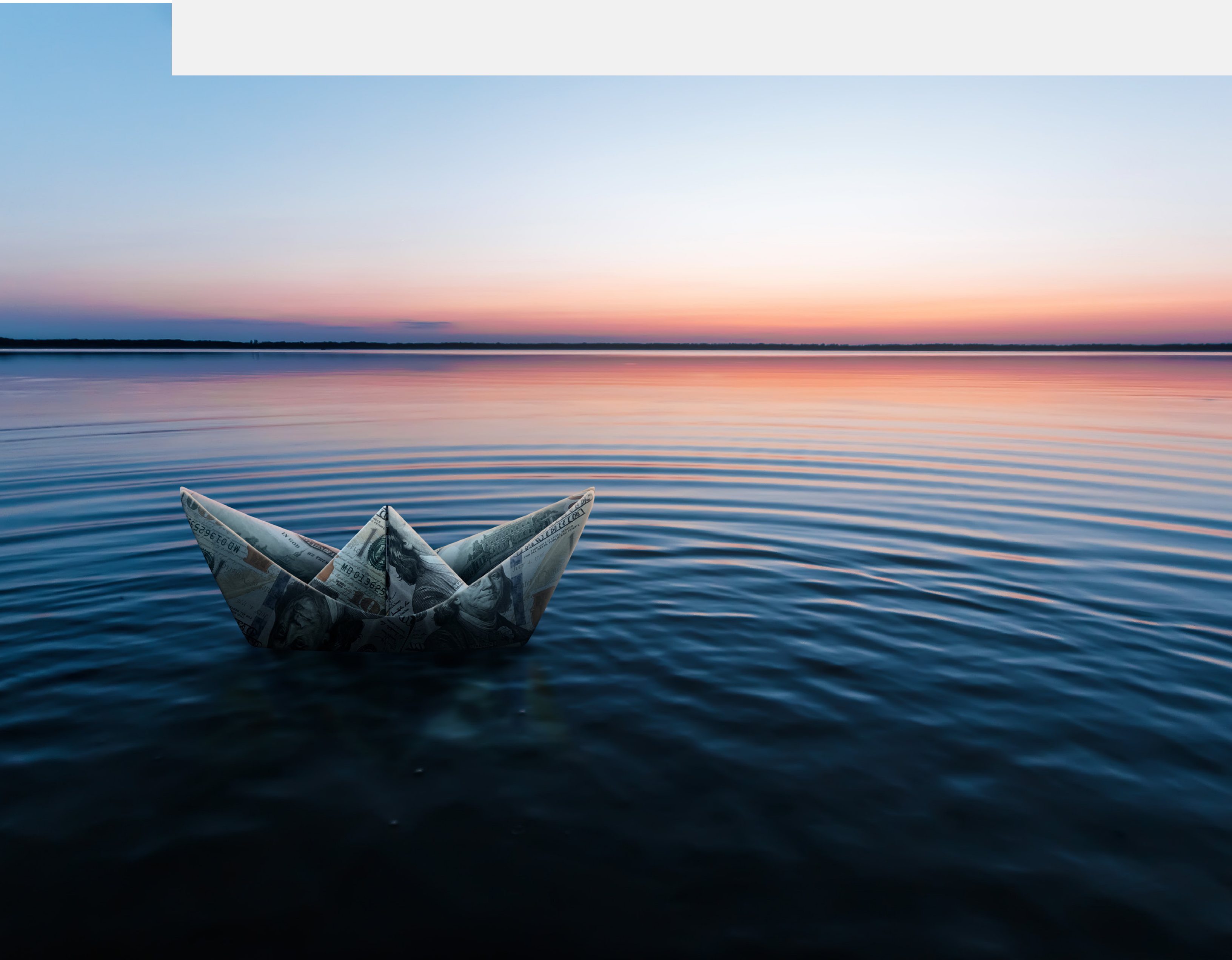
Commodities

While commodities are a good long-term liability hedging vehicle in inflationary environments, they are generally less effective over the short term, as prices might fluctuate for reasons unrelated to movements in inflation.

Equities

Although some companies operating in specific sectors are better equipped to pass on inflation costs to their customers to the benefit of their investors, in general, equities also struggle to provide an effective and reliable short-term inflation hedge.

In summary, under **perspective 2**, the impact of inflation on asset and liability values will depend on the nature of the liabilities, how they are priced and discounted, and how financial markets value the securities backing them. Securities whose market values are affected by factors other than expected inflation will correlate imperfectly with inflation-linked liabilities.



Conclusion

As institutional investors navigate an increasingly complex investment landscape, the recent surge in inflation has necessitated a reassessment of portfolio risk exposures.

An asset-only perspective can lead investors to draw the wrong conclusions about the benefits of certain asset classes in mitigating inflation risk. An ALM framework, which incorporates analysis of liability-related risks in setting investment objectives, can help investors make better decisions. We propose two ALM-based perspectives for assessing inflation risk. **Perspective 1** is about taking a long-term cash flow view and evaluating the capacity of financial instruments to address inflation-linked benefit payments through higher cash flow generation or liquidation values. **Perspective 2** is about taking a short-term present value view and comparing the present value of inflation-sensitive liabilities to the market value of assets backing them.

The Canadian RRB market provides a prime example of the need to frame inflation risk analysis properly. In a year with high realized inflation and increasing real rates, RRBs will provide higher coupon payments that help offset growth in inflation-linked liability cash flows. They will also experience a decline in market values, which may be troubling to those taking an asset-only view. However, investors schooled in ALM will recognize that the drop in asset values will be accompanied by a decline in the present value of the liabilities, resulting in lower funded status volatility – the appropriate goal for most institutional investors.

TDAM has been helping clients implement ALM strategies for many years using an approach that's inspired by innovation and strengthened by expertise. A focus on risk-management from more than one perspective can help investors achieve their funding goals while balancing multiple objectives.

Appendix

Summary – Response to higher realized inflation

	Perspective 1 Long-term cash flow view	Perspective 2 Short-term market value view
Inflation Sensitive Liabilities	• **Strong** ↑ • Benefit payments directly linked to realized inflation.	• **Good** ↓ • Present value driven lower by higher real rates. • Market value may increase if real rates decrease due to higher BE inflation expectations while nominal rates remain constant.
	Securities	
Nominal bonds	• **Mixed** ↑ • Benefit from higher rates on renewal. • Shorter term to maturity accelerates renewal effect while longer maturities will struggle to keep up.	• **Strong** ↓ • Market value driven lower by higher nominal rates.
Inflation-Linked Securities (RRBs, TIPS)	• **Strong** ↑ • Coupons and principal directly linked to realized inflation.	• **Good** ↓ • Market value driven lower by higher real rates. • Market value may increase if real rates decrease due to higher BE inflation expectations while nominal rates remain constant.
Canadian and Global Real Estate	• **Moderate** ↑ • CPI linked leasing & annual step ups.	• **Mixed** ↑ • Higher valuations correlate with rising construction costs (land, material, labor and soft intrants). • Other factors introduce variability in valuation.
Infrastructure	• **Good** ↑ • Contract pricing linked to inflation/CPI	• **Mixed** ↑ • Higher valuations correlate with rising construction costs (land, material, labor and soft intrants). • Other factors introduce variability in valuation.
Commodities	• **Good** ↑ • Historically outperform in inflationary environments. • New commodity super-cycle. • Higher asset values at liquidation.	• **Mixed** ↑ • Less effective over the short term.
Equities	• **Weak** − • Ability of some businesses to pass on cost inflation through pricing power to benefit investors receiving dividends.	• **Weak** − • Struggle to provide an effective and reliable short-term inflation hedge. • Other factors introduce variability in valuation.

ALM Perspectives

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