Finding the Sweet Spot
Determining an appropriate allocation to commodities

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At a glance

- Commodities can play an important role in portfolio construction with the potential to offer inflation protection, portfolio diversification and positive expected returns over time.

- We anticipate commodity returns to outperform our long-term capital market assumptions in the coming years as commodity supply is constrained, following years of underinvestment. Historically, commodity returns have exceeded long-term averages through the investment phase of the commodity cycle.

- From an allocation standpoint, there is no single answer defining the optimal commodity allocation, which can depend on existing portfolio structure, overall risk appetite and most importantly, capital market assumptions on asset class returns and risk.

- Assuming an expected long-term commodity return of 5%, our modelling shows that risk-adjusted return for a traditional 60/40 portfolio can be improved with a commodity allocation of 4.3% Importantly, if returns average 8%, the optimal commodity allocation increases to 9.4%.

At TD Asset Management Inc. (TDAM), we believe commodities play an important role in portfolio construction, with the potential to offer inflation protection, portfolio diversification and positive expected returns over time. Against the backdrop of elevated inflation uncertainty, recent challenges in the performance of the traditional 60/40 portfolio and valuation concerns of other asset classes, we have had a strong focus on commodities as an option in this environment. The key question is what would be the appropriate allocation to commodities?

It all depends

There is no single correct answer for the optimal commodity allocation. Instead, it depends on several key factors and assumptions, including existing portfolio structure, overall risk appetite, and most importantly the capital market assumptions on asset class returns and risk.

To examine the effect of adding a commodity exposure to different portfolio structures, we use a set of balanced portfolios to show expected results. As shown in Table 1, the starting portfolios range from conservative to aggressive, with more aggressive portfolios having a higher allocation to equities (the equity allocation ranges from 17% in the most conservative portfolio to 92% in the most aggressive). In terms of risk appetite, for each sleeve, we keep the overall risk of each portfolio largely unchanged after adding commodities.

Table 1: Starting point of different sleeves of the balanced portfolios*

	Conservative Income	Balanced Income	Balanced	Balanced Growth	Growth	Aggressive Growth
Equity: Canadian	7%	10%	15%	20%	25%	30%
Equity: Global	10%	22%	32%	42%	52%	62%
FI: Treasury	43%	36%	29%	21%	14%	7%
FI: Corporate	40%	32%	24%	17%	9%	1%
Total	100%	100%	100%	100%	100%	100%

For the capital markets assumptions, we use our own long-term assumptions for asset classes as illustrated in Tables 2 and 3.

Table 2: Long-term return and volatility assumptions for various asset classes*

	Commodities	Canadian Fixed Income	Canadian Corporate Bonds	US Fixed Income	Canadian Equity	US Equity	International Equity
Expected Return	5.0%	4.2%	5.2%	4.8%	7.4%	5.8%	7.1%
Risk	16.0%	4.1%	3.9%	3.8%	14.1%	12.6%	12.8%

Table 3: Correlation assumptions for various asset classes*

	Commodities	Canadian Fixed Income	Canadian Corporate Bonds	US Fixed Income	Canadian Equity	US Equity	International Equity
Commodities	1.00						
Canadian Fixed Income	-0.14	1.00					
Canadian Corp. Bonds	0.00	0.95	1.00				
US Fixed Income	-0.13	0.82	0.71	1.00			
Canadian Equity	0.15	0.23	0.34	0.16	1.00		
US Equity	-0.02	0.19	0.25	0.18	0.65	1.00	
International Equity	0.06	0.17	0.23	0.13	0.52	0.59	1.00

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The verdict

The results of our optimization exercise are outlined in Table 4 below. It reveals an optimal commodity allocation, through time, ranging from 1% and 5.4%. Generally, we see a lower allocation in more risk averse portfolios and a higher allocation in more risk seeking portfolios – reflecting the higher expected volatility of commodities. The typical 60/40 portfolio, which is close to the "Balanced Growth" portfolio below, reveals an optimal allocation of 4.3%.

Table 4: Commodity allocation results for different sleeves*

	Conservative Income	Balanced Income	Balanced	Balanced Growth	Growth	Aggressive Growth
Equity: Canadian	7%	10%	14%	19%	24%	29%
Equity: Global	10%	21%	31%	40%	50%	59%
FI: Treasury	43%	35%	28%	20%	13%	6%
FI: Corporate	40%	31%	23%	16%	8%	1%
Commodity	1.0%	2.6%	3.6%	4.3%	4.8%	5.4%
Total Weight	100%	100%	100%	100%	100%	100%
Δ in Return (bps)	7.5	4.0	2.5	1.4	1.0	2.2

Importantly, these results are highly dependent on capital market assumptions. As noted, our long-term commodity return assumption is 5%. Table 5 illustrates how the optimal commodity allocation for a balanced portfolio is impacted by this return assumption. It should not come as a surprise that a higher/lower expected return results in a higher/lower commodity allocation.

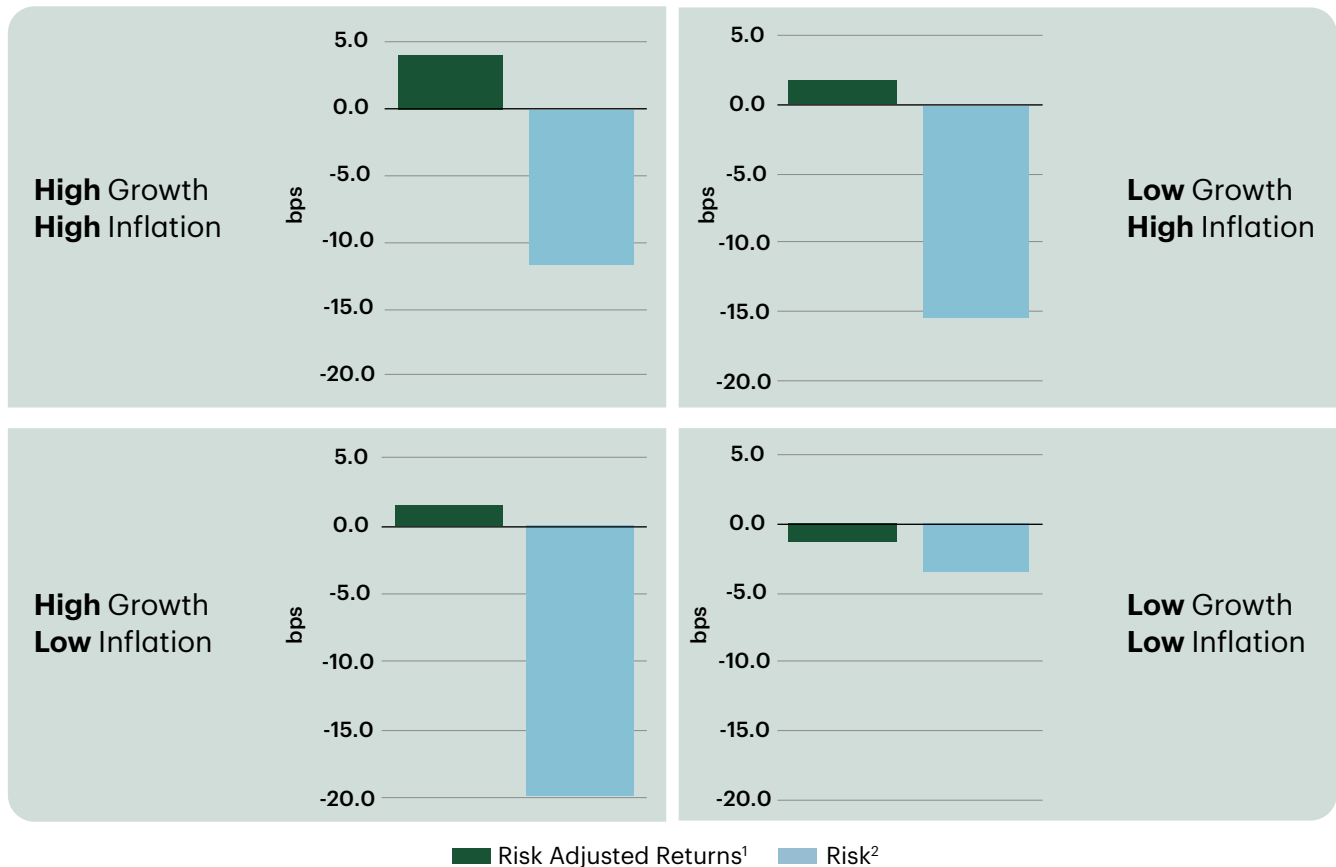## Table 5: Commodity allocation results for different sleeves*

Commodity Expected Return	Allocation: Balanced Growth
2%	0.0%
5%	4.3%
8%	9.4%

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Different environments, different dynamics

Our optimization exercise focuses on the optimal allocation to commodities and represents the average experience over time. However, the benefit and efficacy of adding commodities to a portfolio is more pronounced in certain economic environments. Specifically, as equities and fixed income tend to not perform as well in higher inflation environments, the addition of commodities in those environments is more accretive (vs. low inflation environments).

Chart 1: Commodity allocation in growth-inflation quadrants

High Growth High Inflation | **Low Growth High Inflation**

High Growth Low Inflation | **Low Growth Low Inflation**

Legend: ■ Risk Adjusted Returns[1] ■ Risk[2]

[1] Risk Adjusted Returns are measured using Sharpe Ratio.
[2] Risk is measured using standard deviation.
Note: For illustrative purposes only. Data from March 31, 1976 to March 31, 2023. High inflation = periods with inflation above its 3-year moving average. High Growth = periods with GDP growth higher than its 5-year moving average. The charts compare the risk and return profile of a portfolio with 4.3% allocation to commodities relative to a 60/40 portfolio. The commodity exposure in the portfolio is funded with Equities. Asset class assumptions correspond with TD Asset Management's Long Term Asset Class Assumptions.

It is also useful to keep in mind that our 5% expected commodity return is a long-term average assumption. At any given time, however, commodity returns can noticeably deviate from the baseline (see Chart 2). These deviations will result from where we are in both the business cycle (shorter-term, impacting demand) and commodity cycle (longer-term, impacting supply).

From a commodity cycle perspective, we believe that we are in the early stages of an investment phase which should result in higher commodity returns than exhibited in the last 10-15 years when we exploited the investments made in the last investment cycle that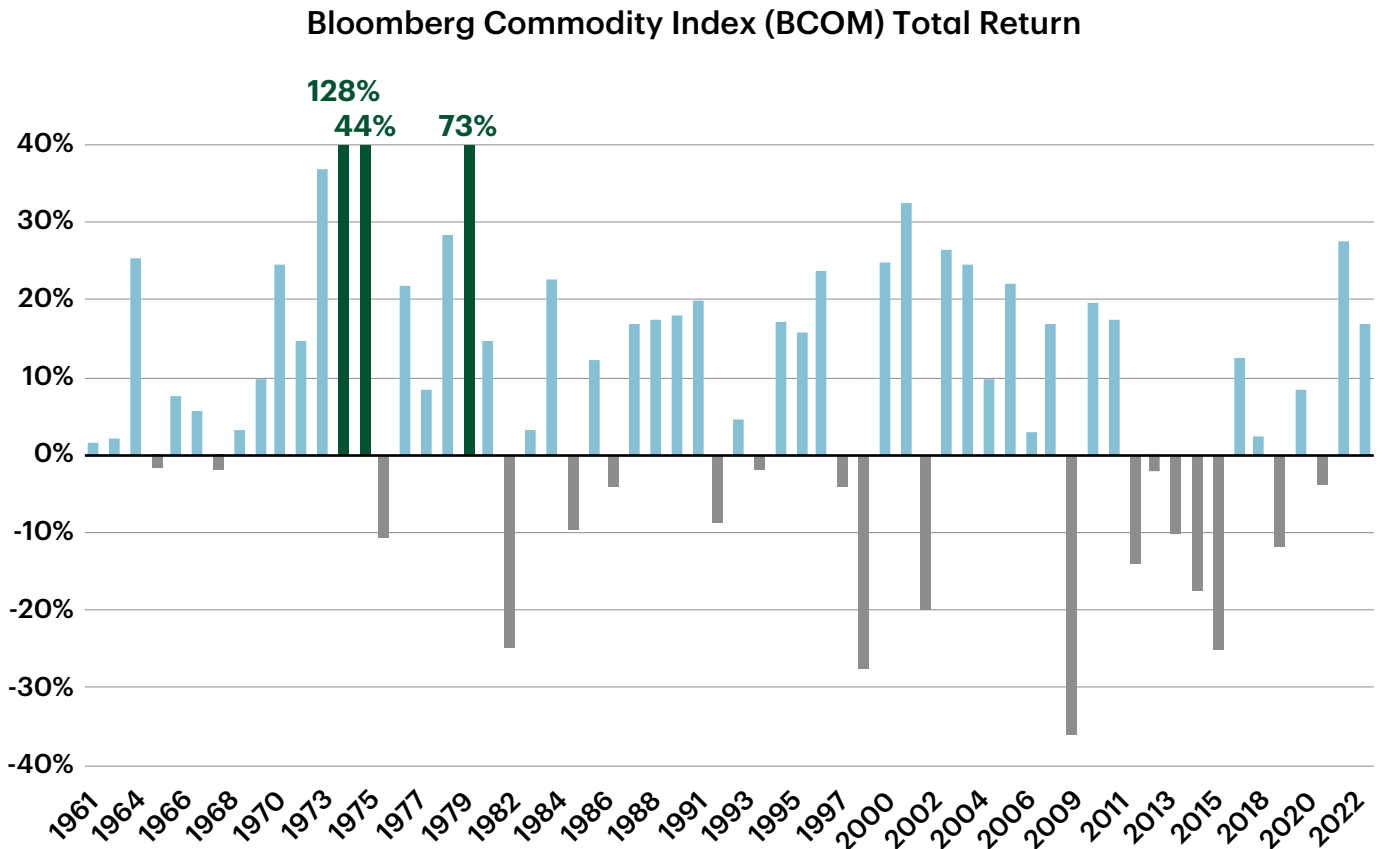 started in the early 2000s. From a business cycle perspective, we believe we are currently in the later stages. Demand concerns, reflecting worries about a looming recession, we believe, have been partially responsible for the weakness exhibited in commodity prices through the first half of 2023. In the coming years, we anticipate returns to outperform our long-term assumption as demand rebounds and supply constraints become more obvious.

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Chart 2: The Commodity Cycle

Investment Phase

- Demand > Supply; Inventory Decreases
- Improved ROI on higher commodity prices despite increased cost inflation
- Commodity FX strengthens
- End-user inventory increase as scarcity hedge
- Productivity declines

Exploitation Phase

- Supply > Demand; Inventory Increases
- Challenged/negative ROI on weaker commodity prices despite cost deflation
- Commodity FX weakens
- End-user inventory decreases as scarcity fades
- Productivity increases

Age of Capital Stock (y-axis)

25 to 30 years on Average

For illustrative purposes only.

Chart 3: Volatile annual commodity returns

Bloomberg Commodity Index (BCOM) Total Return

128%
44% 73%

Source: Bloomberg Finance L.P. Data as of December 31, 2022.

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An improvement of risk adjusted returns

In summary, we see the allocation to commodities improving portfolio risk adjusted returns through time, especially in environments where inflation is elevated. Commodities can provide inflation protection, afford low correlation and positive expected returns over time. Our work, which assumes a long-term commodity return of 5% annually, shows an allocation of 4.3% to a traditional 60/40 portfolio as optimal. This optimal allocation depends on many factors and inputs including existing portfolio structure, risk appetite and importantly return and risk assumptions. Moreover, we believe that we are likely going to be in an environment where commodity returns exceed our the long- term assumptions and anticipate inflation to be more volatile than in recent history, which would make the benefit of adding commodities even more pronounced. ■

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