

INSTITUTIONAL

# IMPROVING PORTFOLIO OUTCOMES ASSOCIATED WITH DYNAMIC CURRENCY HEDGING

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## 1. Summary

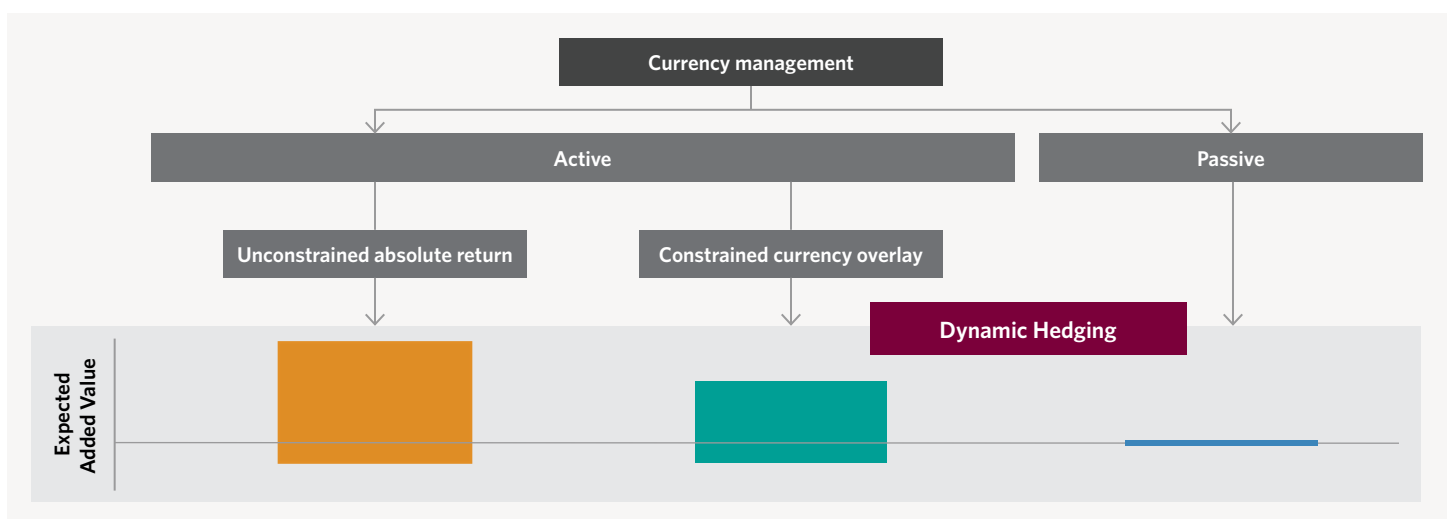
- Dynamic currency hedging incorporates aspects of passive hedging and active currency investing.
- Dynamic Hedgers seek to control the portfolio risk impact of currency exposure inherited from investments in global assets. Many Dynamic Hedgers also target a positive expected return.
- Dynamic Hedging mandates have typically not achieved a long-term reduction in portfolio risk. And average annualized returns have generally been low, sensitive to start date, and lumpy.
- We propose several enhancements, to improve risk-adjusted expected returns, and reduce unrewarded operational risk and transaction costs.
- Our proposed enhancements include an allocation to an absolute return active currency strategy.

## 2. Introduction

Currency Management encompasses a broad range of objectives and solutions (Figure 1). Strategic, passive hedging lies at one end of this range. It is typically considered a risk-control strategy designed to mitigate the portfolio impact of currency exposures inherited from investments in global assets. There is no associated expected return.

Active currency investing lies at the opposite end of the spectrum. It is a diversifying liquid alternative absolute return strategy that maintains long positions in undervalued, fundamentally attractive currencies against shorts in expensive currencies, to profit from expected convergence in relative value. Positions are often implemented as a capital efficient unfunded overlay to underlying portfolio exposures, or as an investment in a fully funded comingled vehicle.

Figure 1 – Spectrum of currency management solutions



Source: CIBC Asset Management Inc.

<sup>1</sup> Michael Sager, Client Portfolio Manager, and Nan Yang, Client Solutions Analyst, are members of CIBC Asset Management’s Institutional Management team. Our analysis and results focus on an investor with a Canadian dollar base currency perspective.

Dynamic Hedging is a third, compromise approach to currency management. There are two variants. First, as an extension of passive currency hedging. Typical passive hedging mandates incorporate a single, constant hedge ratio; for instance, 0%, 50%, or 100%.<sup>2</sup> By contrast, Dynamic Hedging mandates condition the amount of hedging upon the magnitude of domestic currency undervaluation; starting from an unhedged benchmark, the further the domestic currency weakens below its equilibrium value, the more the strategy hedges inherited foreign currency exposures.

Second, Dynamic Hedging mandates are sometimes more aligned with constrained active currency investing. Portfolio risk control remains important, but the investor also targets a positive return. The strategy is implemented as an overlay tied to underlying portfolio exposures, encompassing long/short currency positions often determined by a single investment style, typically Value. The opportunity to generate returns from a constrained overlay mandate is limited, given the concentrated currency composition of typical benchmarks.

There are at least four facets of Dynamic Hedging that can be improved to augment expected portfolio outcomes:

- Investment breadth is often constrained by use of a single investment style, such as Value. The persistence of Value misalignments limits the opportunity to add consistent returns.
- For mandates with an unhedged or fully hedged benchmark, Value misalignments are often only exploited on one side of equilibrium. The full potential of identified Value opportunities is neglected, further constraining investment breadth.
- Currency hedges are adjusted incrementally up and down, conditional on the gap between spot exchange rates and equilibriums. This approach increases unrewarded operational risk, and transaction costs.
- There is no forward-looking analysis. Currency equilibriums used to determine Dynamic Hedging decisions are typically calculated using a backward-looking assessment of historical price ranges or fundamental relationships.

We address each of these weaknesses, and demonstrate how a stepwise progression from a basic Dynamic Hedging mandate to an unconstrained absolute return active currency strategy is logically coherent, and demonstrably beneficial in terms of expected portfolio performance.

### 3. Dynamic Hedging

Parameters: Single Currency; Asymmetric Incremental Hedging; Single Investment Style (Value)

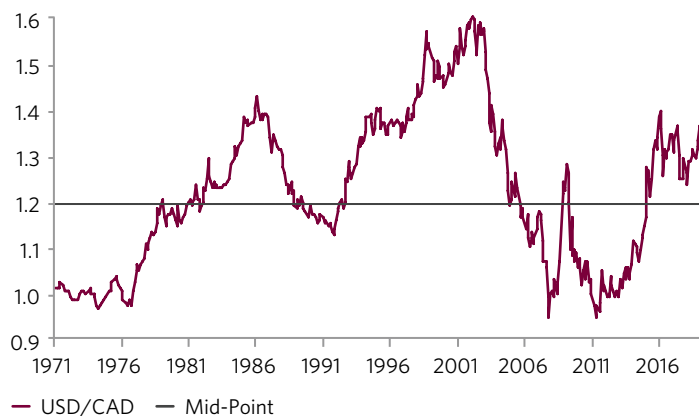
We begin by outlining the parameters and results of a basic Dynamic Hedging strategy, from the perspective of a Canadian dollar (CAD) based investor with exposure to US equities.<sup>3</sup> Portfolio risk control is assumed to be the primary strategy objective; positive returns are assumed to be of secondary importance.

The correlation between US equity and USD/CAD exchange rate returns has traditionally been negative for an investor with a CAD base currency perspective. This often motivates the choice of an unhedged benchmark. Although forward-looking correlations may differ, we follow this precedent, and assess the performance of a Dynamic Hedging strategy against this benchmark.

#### Step 1: Define equilibrium value of USD/CAD

Also consistent with many Dynamic Hedging mandates, we determine the equilibrium level of USD/CAD based upon an in-sample look-back analysis. Our in-sample period starts in January 1971 and ends in August 1992. This gives an equilibrium value of USD1/CAD1.20. We use this value to assess the performance of Dynamic Hedging over the period from September 1992 onwards. We adopt a more sophisticated Valuation methodology in a later section of this paper.

Figure 2 - USD/CAD historical exchange rate



The information was prepared by CIBC Asset Management Inc. using the following third party service providers' data: Thomson Reuters Datastream.  
Sample: January 1971-September 2019.<sup>4</sup>

<sup>2</sup>The choice of passive hedge ratio applied to global equity exposures is often dependent upon, inter alia, the base currency and investment horizon of the investor, as well as the cost of hedging. Currency exposures associated with global fixed income holdings are typically 100% hedged. The difference reflects the volatility of returns to the underlying asset classes, relative to the volatility of currency returns.

<sup>3</sup>We limit foreign exposures to US equities for simplicity.

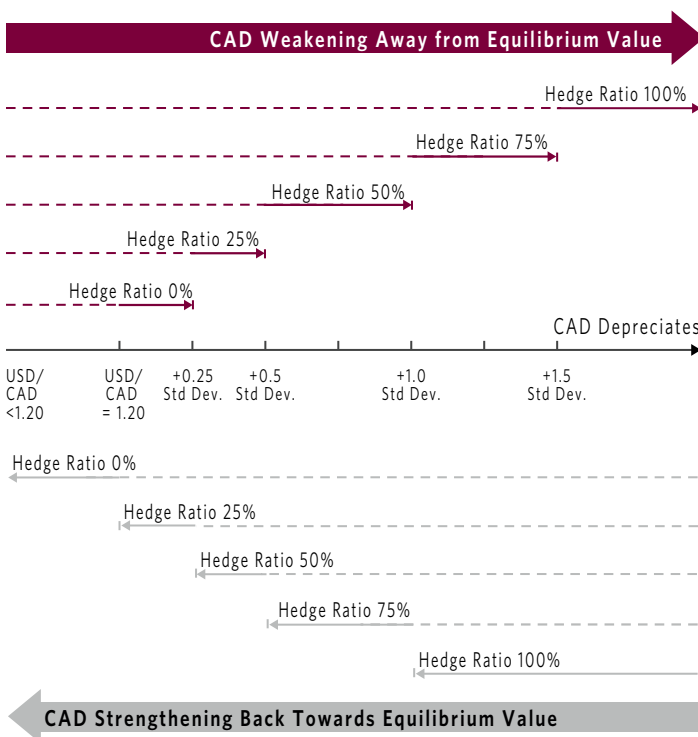
<sup>4</sup>We choose January 1971 as our in-sample start date as this corresponds to the adoption of the current floating exchange rate regime. Historical returns to Dynamic Hedging strategies are sensitive to sample start date. To minimize this distortion, we identify August 1992 as an appropriate end date for our in-sample period. At this time, USD/CAD was trading close to the mid-point of its historical range. The choice of August 1992 also allows for a reasonably long out-sample period; this runs from September 1992 to September 2019.

## Step 2: Dynamic Hedging rules

Our conditional – and asymmetric – Dynamic Hedging rules are detailed in Figure 3, and visualized in Figure 4. Hedge ratios for US equity exposure range from 0% (unhedged) to 100% (fully hedged), conditional on the size of USD/CAD deviations away from its equilibrium value. Hedging decisions are implemented on a monthly schedule.

Historical hedging episodes are infrequent, consistent with the persistence of exchange rate trends (Figure 4). But during hedging episodes, the number of decisions is typically relatively high. Since September 1992, there have been four discrete hedging episodes, and 18 incremental hedging decisions. Our stylized example includes only one foreign currency. In practice, mandates will include many more. This will significantly increase the number of hedging decisions, as well as associated operational complexity and risk.

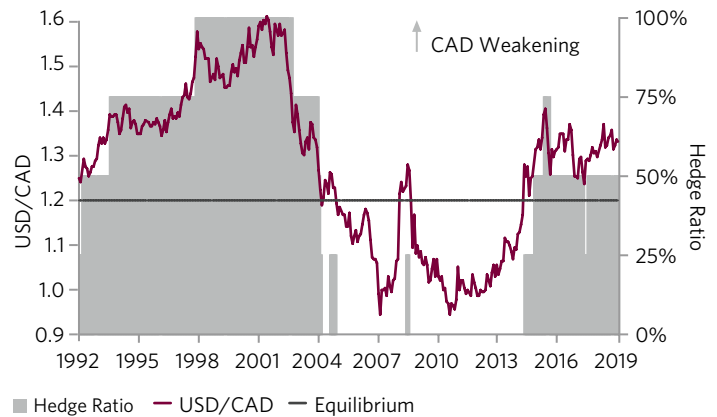
**Figure 3 – Dynamic Hedging conditional rules**



The information was prepared by CIBC Asset Management Inc. Standard deviations are calculated using an expanding sample beginning in January 1971.

<sup>5</sup>The standalone risk of the Dynamic Hedge strategy is 3.65% per annum. As we discuss below, this risk is higher, and less well rewarded, than a typical unconstrained active currency strategy. Consistent with a priori expectations, returns to the unhedged benchmark are not significantly different from zero; fully and priori hedged benchmarks generate negative returns on average for an investor with a CAD-base perspective.

**Figure 4 – Dynamic Hedging rules hedge foreign currency exposure when CAD weakens below equilibrium**

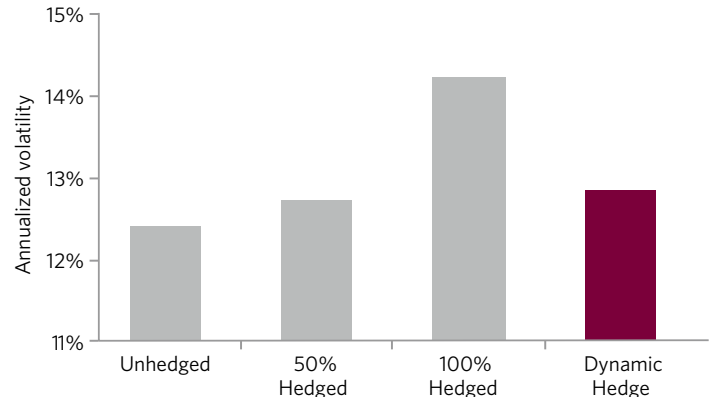


The information was prepared by CIBC Asset Management Inc. Standard deviations are calculated using an expanding sample. Sample: September 1992-September 2019.

## Results

Dynamic Hedging does not achieve our primary objective of lowering portfolio risk relative to an unhedged benchmark (Figure 5). Risk is also higher than a 50% hedged benchmark.

**Figure 5 – Portfolio risk associated with Dynamic Hedging is higher than an unhedged benchmark**

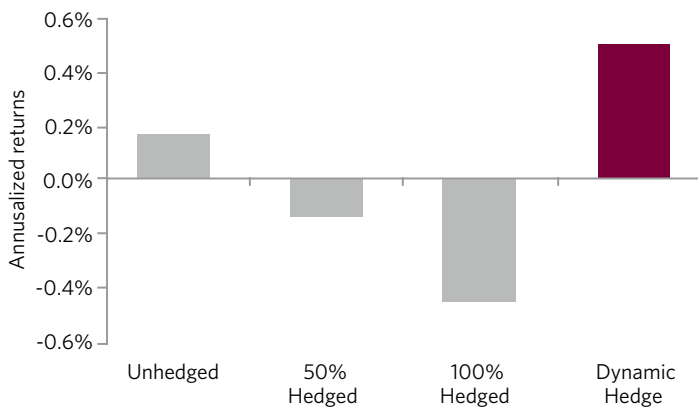


The information was prepared by CIBC Asset Management Inc. using the following third party service providers' data: Thomson Reuters Datastream. Sample: September 1992-September 2019.

Returns are often a secondary objective of Dynamic Hedging mandates. Our basic strategy generates an annualized gross return of 0.49%, and a return per unit of strategy risk (Information Ratio, IR) of just 0.13 (Figure 6).<sup>5</sup> This IR is not significantly different from zero. But the annualized returns may appear attractive to investors.

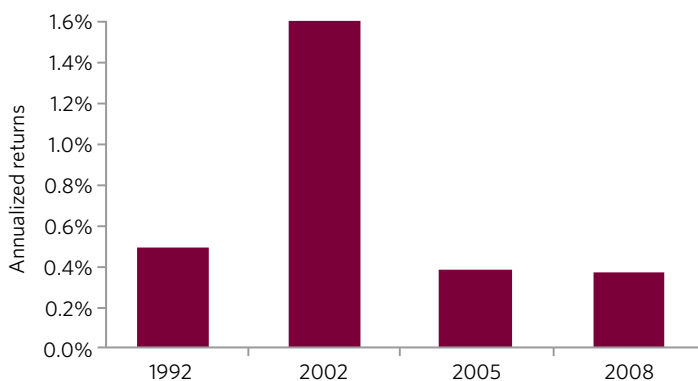
Are these returns achievable in the future? We think not. Backtested simulations are unreliable, with results conditional on the choice of start date (Figure 7). Perfect hindsight will encourage the choice of 2002, when CAD was trading at extremely cheap levels versus USD, and subsequently appreciated. Choosing more recent start dates leads to outcomes that are inferior, but which are probably closer to realizable results.

**Figure 6 – Portfolio returns to Dynamic Hedging**



The information was prepared by CIBC Asset Management Inc. using the following third party service providers' data: Thomson Reuters Datastream Sample: September 1992 - September 2019.

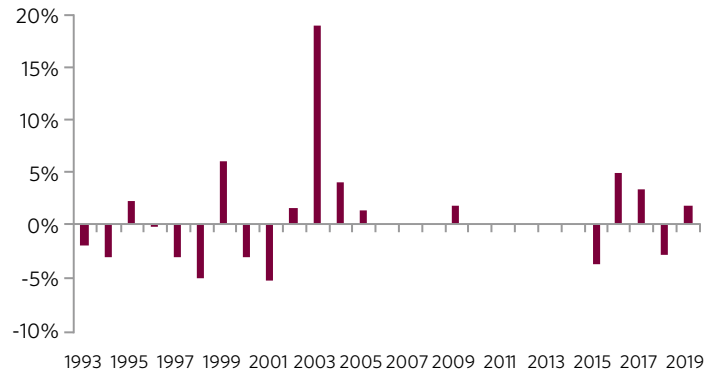
**Figure 7 – Annual returns to Dynamic Hedging are sensitive to start date**



The information was prepared by CIBC Asset Management Inc. using the following third party service providers' data: Thomson Reuters Datastream Sample: September 1992 - September 2019.

Annualized returns to Dynamic Hedging are also lumpy, reflecting the asymmetry of the strategy and the persistence of value misalignments (Figure 8).

**Figure 8 – Returns to Dynamic Hedging are lumpy**



The information was prepared by CIBC Asset Management Inc. using the following third party service providers' data: Thomson Reuters Datastream. Sample: September 1992-September 2019.

### Conclusion—Dynamic Hedging

For an investor with a CAD base currency perspective, Dynamic Hedging has not achieved its objectives. Historical portfolio risk is higher relative to an unhedged benchmark. Operational risk is also increased. Modest, poorly distributed, and unreliable returns represent insufficient compensation.

Our results only consider the performance of a Dynamic Hedging strategy for an investor with exposure to US equities. But USD is the dominant currency in most global portfolios. This reflects the weight of the US in equity and bond indexes, as well as the dollar's role as currency of denomination for many alternatives. Accordingly, USD will drive the performance of a Dynamic Hedge strategy even if other currencies are included.

## 4. Hold High Hedge (HHH)

Parameters: Single Currency; No Incremental Hedging; Single Investment Style (Value)

To mitigate some of these shortcomings we adopt a simplifying Hold High Hedge (HHH) strategy. As with Dynamic Hedging, HHH focuses primarily on portfolio risk control, rather than enhancing returns.

Dynamic Hedging assumes the existence of well-defined currency equilibria, around which spot exchange rates oscillate. And yet the common implementation of Dynamic Hedging contradicts this assumption, in two ways. First, Dynamic Hedgers incrementally change hedge ratios depending on the size of CAD undervaluation. Starting and ending at zero, the hedge ratio incrementally increases as CAD weakens away from Fair Value, and then incrementally declines as

CAD strengthens back towards Fair Value. A more consistent implementation would increase the hedge ratio as CAD weakens, but then hold the maximum hedge until CAD returns to equilibrium. This inconsistency is addressed and corrected by our HHH strategy.

Second, Dynamic Hedging often only exploits deviations from the strategic hedge ratio when CAD is undervalued, instead of exploiting periods of both CAD strength and weakness. We address this inconsistency in a subsequent section, by allocating to active currency.

### Step 1: Define equilibrium value of USD/CAD

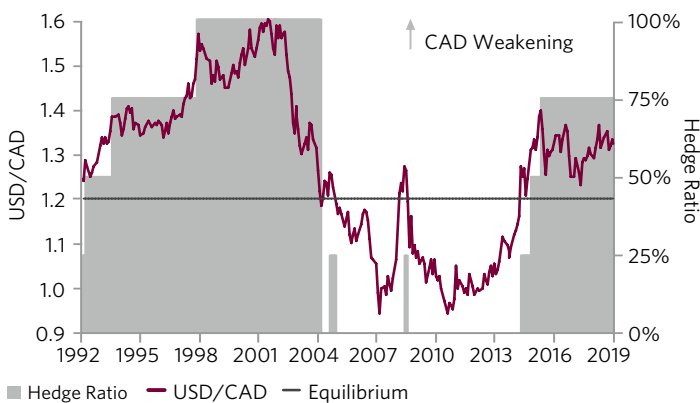
We again assume USD/CAD equilibrium to be 1.20.

### Step 2: HHH rules

We continue to hedge inherited USD exposure whenever CAD moves into undervalued territory, using the same entry levels as shown in the top panel of Figure 3 above. In contrast to Dynamic Hedging, we now hold the maximum hedge until CAD returns to Fair Value (Figure 9). For instance, if the hedge ratio reaches a maximum of 100%, we remain fully hedged until CAD strengthens all the way back to its equilibrium value of USD1/CAD1.20; under Dynamic Hedging, this hedge ratio would have reduced in steps (bottom panel of Figure 3, and Figure 4).

This is a small, but intuitive and important innovation. Maintaining the maximum hedge ratio appropriately leverages the assumption of mean reversion embedded in Dynamic Hedging mandates. It also minimizes the number of hedging decisions, operational risk and complexity, and transaction costs.

**Figure 9 - Historical hedge ratio - HHH strategy**

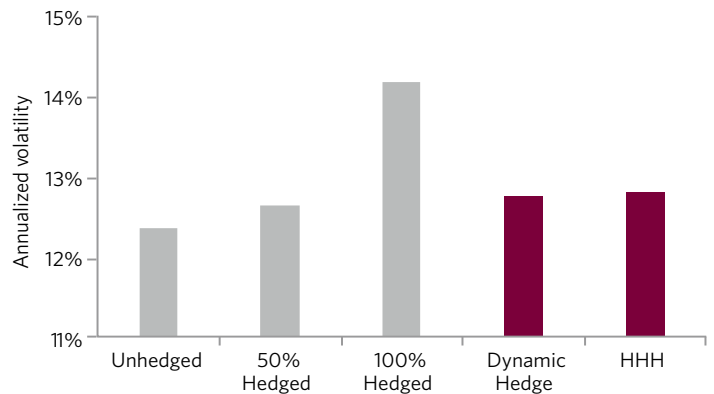


The information was prepared by CIBC Asset Management Inc. using the following third party service providers' data: Thomson Reuters Datastream. Sample: September 1992-September 2019.

## Results

Maintaining the maximum hedge ratio until CAD returns to equilibrium does not significantly alter total portfolio risk (Figure 10); the HHH strategy performs as well as Dynamic Hedging against this criterion.

**Figure 10 - Portfolio volatility is similar for Dynamic Hedging and HHH. Operational risk and costs are lower for HHH.**

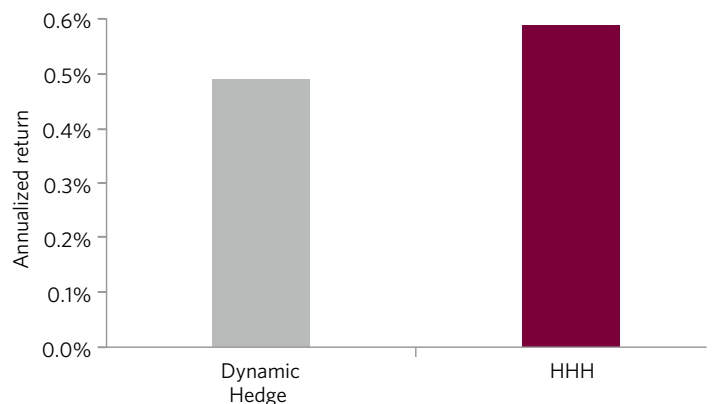


The information was prepared by CIBC Asset Management Inc. using the following third party service providers' data: Thomson Reuters Datastream. Sample: September 1992-September 2019.

But the HHH strategy does reduce operational complexity and cost; the number of hedging transactions falls by a third over our sample period. This is an important improvement, the benefits of which will grow as the number of foreign currencies increases beyond our single currency example.

HHH also achieves a 20% improvement in annualized returns over our sample period (Figure 11); albeit, returns remain similarly lumpy and dependent upon sample start date.

**Figure 11 - Historical portfolio returns have been higher for HHH**



The information was prepared by CIBC Asset Management Inc. using the following third party service providers' data: Thomson Reuters Datastream. Sample: September 1992-September 2019.

## Conclusion—Hold High Hedge strategy

With no increase in portfolio risk, less operational risk and complexity, and some evidence of higher returns than Dynamic Hedging, we recommend existing Dynamic Hedgers at least consider switching to an HHH strategy.

## 5. Unconstrained active currency

Parameters: Multiple Currencies; Standalone Risk Budget; Long/Short Positioning; Multiple Investment Styles.

Dynamic Hedgers often perceive currency primarily as an unrewarded risk, and seek to minimize its influence on portfolios. In the following analysis, we challenge this perception. By adding an active currency overlay to our existing equity portfolio, we maintain similar control of portfolio risk while embracing active currency investing as an additional source of significant and diversifying returns.

To perform this analysis, we need to address two additional shortcomings of Dynamic Hedging: low portfolio breadth that restricts diversification; and an absence of forward-looking time variation in estimates of currency equilibrium.

Portfolio breadth can be improved in three ways:

- Exploit Value opportunities symmetrically. Many Dynamic Hedging mandates implement hedges only when the domestic currency trades cheap to its estimated equilibrium value. A more efficient approach exploits opportunities whenever the domestic currency trades significantly away from its equilibrium value, in either direction.
- Include additional currencies that are not part of the underlying portfolio strategy. A broad cross section of Developed and Emerging Market currencies will typically exhibit significant value opportunities at different times to one another.
- Introduce other, diversifying investment styles, or factors. Popular currency factors in addition to Value include Carry, Cycle, and Momentum.<sup>6</sup>

In the following analysis, we adopt all of these enhancements, in the context of an unfunded active currency overlay.

<sup>6</sup>Further details on these factors are available on request.

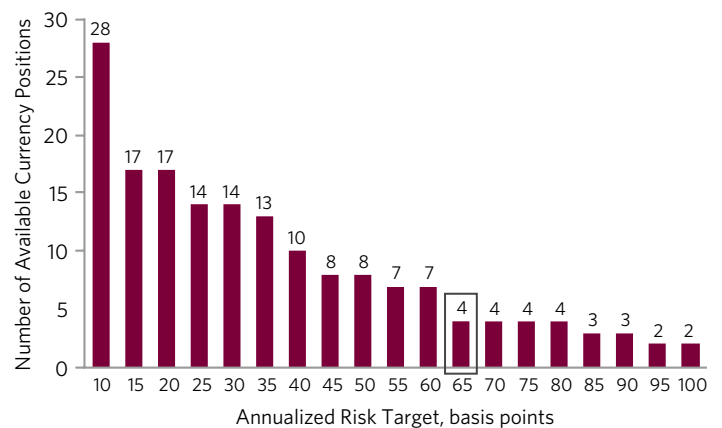
## Step 1: Define benchmark

In the early years of active currency investing, positions were typically tied to, and constrained by, underlying asset exposures in the investor's portfolio.

This approach is increasingly rare, reflecting the limited opportunity to add value, due to binding constraints. The composition of typical benchmark indexes is dominated by four currencies: USD, EUR, JPY, and GBP. This concentration limits the magnitude and breadth of feasible active currency positions, and associated risk and return targets, reflecting the small weight of other currencies within popular indexes such as the MSCI All-Country World (Figure 12).

As a result, the economic impact of feasible risk and return targets for a constrained active currency mandate is small within a broader portfolio context.

**Figure 12 - Constraints limit expected value-add from constrained active currency mandates**



The information was prepared by CIBC Asset Management Inc. using the following third party service providers' data: Thomson Reuters Datastream. Sample: September 1992- September 2019. Illustrative example based on MSCI All Country World Index benchmark.

Much more common are active currency mandates incorporating unconstrained, unfunded overlays to an existing portfolio strategy. Active long/short currency positions are no longer tied to underlying portfolio exposures; instead, the typical benchmark is zero. Higher, economically relevant risk and return targets are plausible, and have been achieved historically. We follow this approach below.



## Step 2: Define equilibrium value of CAD

CAD's equilibrium value must now be determined versus a range of currencies, and not just USD.

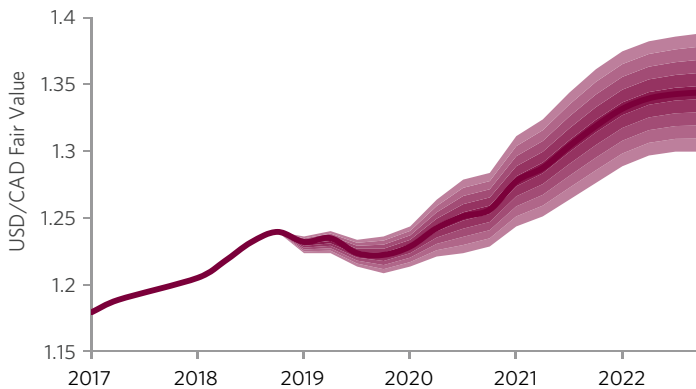
Currency equilibria change through time, depending upon the behaviour of macroeconomic fundamentals, and the evolution of country political and institutional characteristics. A simple lookback analysis has provided an acceptable historical proxy for USD/CAD equilibrium. But will this remain the case on a forward-looking basis, and for a broad universe of currencies?

There are a number of more rigorous ways to measure currency Value. The most well-known is Purchasing Power Parity (PPP). This states that the cost of an identical basket of goods should be equivalent in any two countries. Due to many complicating weaknesses, the persistence of PPP misalignments is often inconsistent with typical investor horizons.

A Behavioral Equilibrium Exchange Rate (BEER) framework incorporates additional fundamental exchange rate determinants, and results in PPP-augmented Value misalignments more consistent with investor horizons. We also incorporate rigorous, forward-looking discretionary analysis into our BEER Value assessment.

Figure 13 plots a time series of our USD/CAD BEER equilibrium, including an illustrative forward-looking assessment. Although not shown here, we calculate similar BEER equilibria for other CAD exchange rates in our investment universe, as well as implied cross exchange rate equilibria.

**Figure 13 - USD/CAD BEER equilibrium**



Source: The information was prepared by CIBC Asset Management Inc. using the following third party service provider data: Thomson Reuters Datastream. Illustrative only. The dark red line reports the central projection for CAD Fair Value. The width of the fan chart indicates the degree of uncertainty associated with forward-looking projections. Asymmetry indicates the balance of risks around the illustrative central projection.

<sup>7</sup> CIBC has active currency clients with return targets that vary from 0.35% per annum all the way to 6% per annum.

Using this methodology, the equilibrium value of CAD has weakened against USD in recent years. And based upon our forward-looking assessment of productivity and energy sector trends, as well as the continued high level of Canadian Private Non-Financial Sector Debt, CAD equilibrium may continue to weaken in coming years.

## Step 3: Define active currency sample period, risk budget, and currency universe

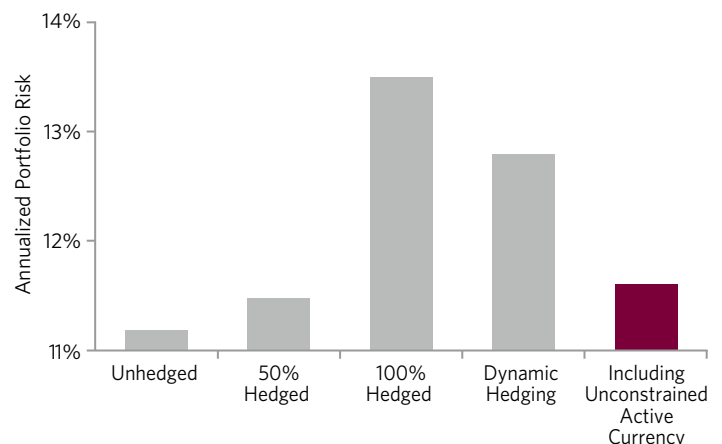
We adjust the start of our sample to December 2002. This corresponds to the inception date of the current CIBC Asset Management Active Currency portfolio management team. And we expand our investment universe to include 31 Developed and Emerging Market currencies in addition to CAD and USD.

We assume an annualized active currency risk budget of 2%. This is an increasingly popular choice amongst active currency clients, and has an associated 1% expected return.<sup>7</sup> This compares to an annualized return to a portfolio's strategic equity exposure since December 2002 of 8%; Active Currency is expected to generate an economically significant and diversifying return, but not one that dominates the performance of the strategic portfolio.

## Results

Over the sample period 2002-2019, total portfolio risk associated with a global equity portfolio including an unconstrained active currency overlay was only slightly higher than the underlying unhedged equity portfolio; it was also markedly lower than the previous Dynamic Hedging strategy (Figure 14). This reflects the low correlation of returns to Active Currency and global equity (Figure 15).

**Figure 14 - An allocation to active currency does not significantly increase portfolio risk of an unhedged global equity portfolio**



The information was prepared by CIBC Asset Management Inc. using the following third party service providers' data: Thomson Reuters Datastream. Sample: December 2002 - September 2019.

Figure 15 – Active currency offers attractive diversification

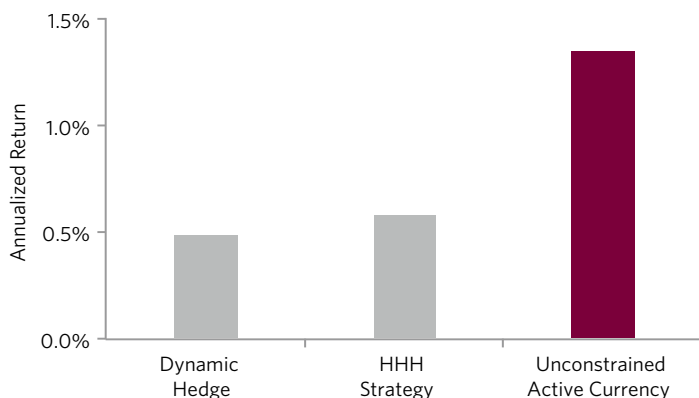
Asset Class	S&P 500	MSCI WORLD	EAFE <sup>8</sup>	Russell 2000	MSCI EMF	FTSE UNIV <sup>9</sup>	Barclays US AGG	Barclays Global AGG	Barclays Global HY	Commod.	Private Equity	Infra.	Real Estate	Hedge Funds	Emerging Markets	CIBC Active Currency
S&P 500 <sup>8</sup>	1	0.95	0.78	0.84	0.54	0.07	0.10	0.09	0.53	0.14	0.79	0.65	0.66	0.45	0.26	0.12
MSCI WORLD <sup>8</sup>		1	0.94	0.81	0.70	0.11	-0.01	0.04	0.56	0.23	0.77	0.77	0.73	0.38	0.25	0.16
EAFE <sup>8</sup>			1	0.66	0.77	0.15	-0.07	0.04	0.55	0.27	0.66	0.82	0.72	0.30	0.22	0.17
Russell 2000 <sup>8</sup>				1	0.52	-0.03	-0.10	-0.11	0.39	0.11	0.67	0.50	0.64	0.27	0.10	0.12
MSCI EMF <sup>8</sup>					1	0.14	-0.27	-0.16	0.38	0.33	0.50	0.65	0.61	0.08	0.18	0.26
FTSE UNIV <sup>9</sup>						1	0.46	0.54	0.36	0.05	0.09	0.37	0.32	0.23	0.17	-0.03
Barclays US AGG <sup>9</sup>							1	0.92	0.46	-0.04	-0.01	0.09	0.03	0.21	0.61	-0.27
Barclays Global AGG <sup>9</sup>								1	0.48	0.06	-0.04	0.23	0.12	0.22	0.53	-0.28
Barclays Global HY <sup>9</sup>									1	0.20	0.37	0.57	0.57	0.77	0.54	-0.04
Commodities <sup>10</sup>										1	-0.05	0.27	0.16	0.67	0.14	0.03
Private Equity <sup>10</sup>											1	0.47	0.42	0.64	0.15	0.13
Infrastructure <sup>10</sup>												1	0.76	0.19	0.26	0.10
Real Estate <sup>10</sup>													1	0.33	0.15	0.16
Hedge Funds <sup>10</sup>														1	0.78	-0.15
Emerging Markets <sup>10</sup>															1	-0.21

<sup>8</sup>Equity <sup>9</sup>Fixed income <sup>10</sup>Alternatives

The information was prepared by CIBC Asset Management Inc. using the following third party service providers' data: Thomson Reuters Datastream. Sample: December 2002-September 2019.

And unlike Dynamic Hedging, risk associated with active currency is rewarded with a positive and significant expected return that is not sensitive to sample start date (Figure 16).

Figure 16 – Annualized active currency returns are significant, and superior to Dynamic Hedging

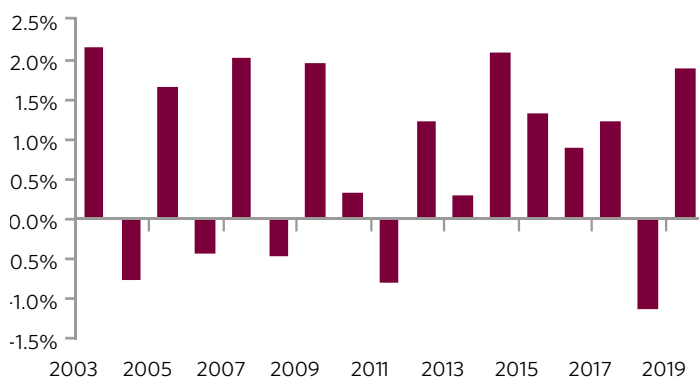


The information was prepared by CIBC Asset Management Inc. using the following third party service providers' data: Thomson Reuters Datastream. Sample: for Unconstrained active currency strategy, start date is December 2002, to coincide with the tenure of CIBC Asset Management's lead currency Portfolio Manager; for Dynamic Hedge and HHH strategies start date is September 1992. Both samples end in September 2019. As discussed above, we use a longer sample for Dynamic Hedging and HHH due to the sensitivity of results to sample start date.

The IR of our unconstrained active currency overlay is 0.7. Unlike Dynamic Hedging, this IR is associated with an economically meaningful return that adds to the performance of the underlying equity portfolio.

Consistent with increased investment breadth and diversification, the profile of returns to active currency is also much smoother and less episodic than Dynamic Hedging (Figure 17); active currency returns are positive in 61% of sample months, compared to just 23% for Dynamic Hedging.

Figure 17 – Annual returns to unconstrained active currency

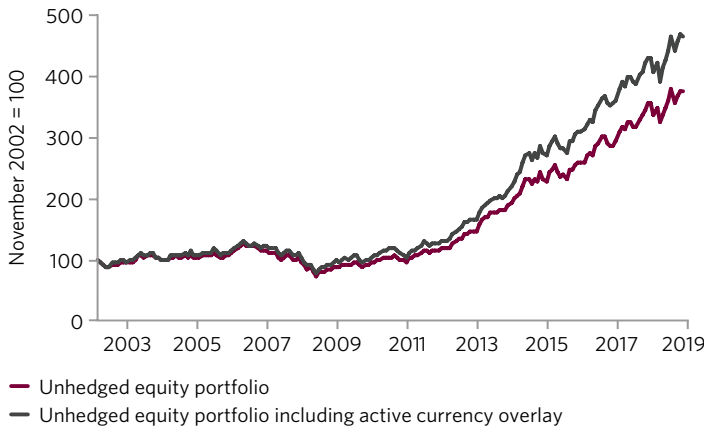


As at September 30, 2019. Performance data shown above is from an Absolute Return (Pure Active) representative account, with a benchmark of zero, an annual Value Added Objective of 1%, and a risk budget of 2%. Returns are before management and custodial fees. Actual performance results may vary from those presented for the representative account. Sources: CIBC Asset Management Inc.



As a result of these various attributes, the cumulative return performance of the original unhedged equity portfolio is meaningfully improved with the addition of an unconstrained active currency overlay (Figure 18); portfolio IR increases from 0.76 to 0.87.

**Figure 18 – Cumulative performance of unhedged equity portfolio including unconstrained active currency overlay**



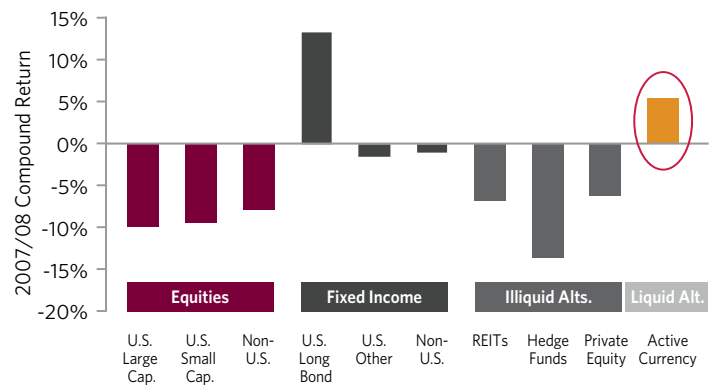
The information was prepared by CIBC Asset Management Inc. using the following third party service providers' data: Thomson Reuters Datastream. Sample: December 2002 - September 2019.

Another important feature of any investment strategy is its ability to protect the broader portfolio during periods of capital drawdown; this is an increasingly common measure of portfolio risk.

We can measure active currency performance against this criterion in two ways. First, the length and depth of the maximum historical capital drawdown experienced by the underlying equity portfolio. This is reduced by 5% through an allocation to active currency; a greater reduction would have been possible with a larger allocation to active currency than we assume.

Second, analysis of portfolio performance during the most difficult recent performance period for an equity-centric portfolio: the 2007/08 Global Financial Crisis (GFC). During this two-year period, returns to equities were negative (Figure 19). Many investors have embraced illiquid alternatives in an effort to diversify equity, and growth, risk. But these experienced similar losses during the GFC. By contrast, returns to Active Currency were positive; an allocation to this strategy did protect the portfolio when it mattered the most (Orange bar in Figure 19).

**Figure 19 – Asset class returns during 2007/08 Global Financial Crisis**



The information was prepared by CIBC Asset Management Inc. using the following third party service providers' data: CEM Benchmarking. All asset class volatilities normalized to 10% to facilitate comparison.

## Conclusion—Unconstrained active currency

Active Currency is a liquid alternative investment strategy. It offers standalone positive and diversifying returns, and can be implemented as a capital efficient unfunded overlay. Its expected portfolio contribution is particularly attractive in an environment of relatively low expected returns to traditional assets, as well as to many illiquid alternative assets and strategies.

## 6. Conclusion

Dynamic Currency Hedging has historically not achieved its primary goal of reducing portfolio risk relative to an unhedged portfolio. This reflects the strategy's lack of investment breadth, both in terms of investment style and currency universe. Associated returns are lumpy, and dependent on sample start date. The strategy also introduces unrewarded operational complexity and risks into investment portfolios. At a minimum, for those investors who have investment policy flexibility, we recommend making simple changes to mitigate these risks, as outlined by our HHH strategy.

We would go further. Unconstrained Active Currency investing is an attractive, liquid alternative to Dynamic Hedging. It has a history of generating significant risk-adjusted performance that diversifies returns to core and alternative asset classes, including during periods of significant capital loss to equity-centric portfolios.

Low expected returns to equities and bonds, as well as to many illiquid alternatives, underscore the importance of augmenting existing portfolios with diversifying sources of return. The unfunded feature of an active currency mandate makes the expected return from this strategy particularly appealing.

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One of the limitations of hypothetical performance results is that they are generally prepared with the benefit of hindsight. In addition, hypothetical trading does not involve financial risk, and no hypothetical trading record can completely account for the impact of financial risk in actual trading. For example, the ability to withstand losses or adhere to a particular trading program in spite of trading losses are material points which can also adversely affect actual trading results. There are numerous other factors related to the markets in general or to the implementation of any specific trading program which cannot be fully accounted for in the preparation of hypothetical performance results and all of which can adversely affect actual trading results.

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