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C O M M E N T A R Y

Currency Hedging Policy Formulation for Canadian Investors

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EXECUTIVE SUMMARY

For the past few years many Canadian investors have seen the darker side of a stronger Canadian dollar as their foreign investment returns, whether equities or bonds, have been negatively impacted by the decline in many foreign currencies, i.e., the rising Canadian dollar. The purpose of this commentary is to identify and analyze the important factors to consider when developing a currency hedging policy and to discuss how these factors can be employed to determine a passive policy that is appropriate for a specific investor over the long term.

It is not the intention of this commentary to discuss whether active currency management is a potential source of additional return. Once an investor decides to put a portion of their assets to work outside their domestic market they face currency risk and must decide how to manage it. This is a long-term policy decision that is entirely different from a decision on whether to try to make money in the currency markets.

Looking back over the data from the last quarter century gives mixed signals about how one should think about currency hedging. The results and conclusions are remarkably different depending on the specific time period selected. So, like many other

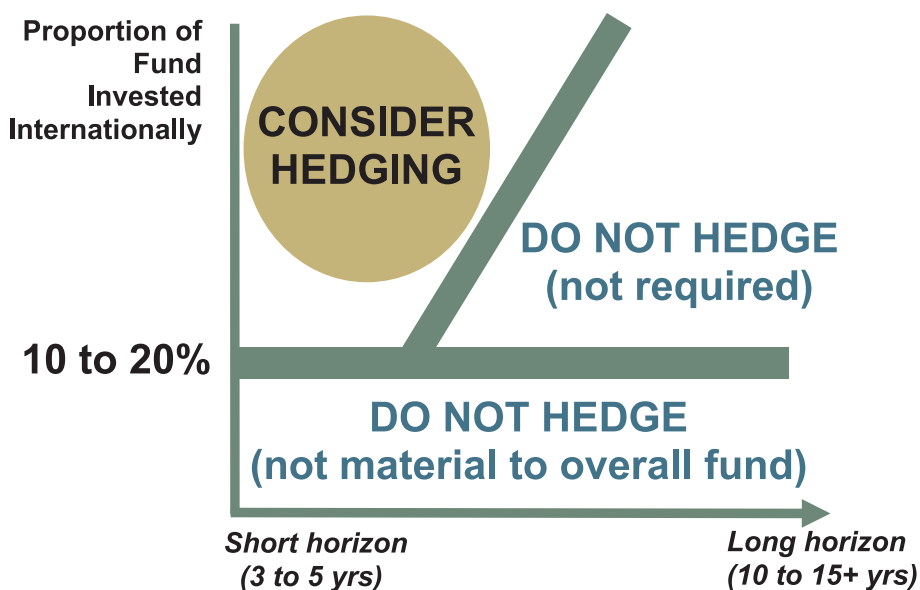
areas in investing, we cannot simply rely on analysis of historical data to guide future actions.

Keeping in mind that each investor's time horizon, risk tolerance and investment objectives will lead to different decisions, our commentary comes to the following conclusions:

- The largest factors in considering a hedging policy are the proportion of equities invested outside of Canada and the investor's time horizon, as outlined in Exhibit 1;
- The appropriate long term hedging strategy may produce disappointing short term results with disturbing frequency;
- Well documented beliefs surrounding currency policy should be put in place to ensure a policy is not abandoned after any such short-term disappointments;
- The true impact of currency exposure is best measured by separating the return derived from change in the spot rate into two components, the forward premium and currency surprise;

- In the absence of analytical support for an "optimal" hedge ratio, investors wishing to minimize after-the-fact regret of having an unfavourable outcome over short periods should adopt a 50% hedge ratio for foreign equity; and

- Additional considerations may apply to foreign currency bond exposures. Bonds represent a risk control 'anchor' for most pension funds and will lose some of this attraction if foreign currency bonds are held unhedged. The relationship between bond and currency return behaviour also makes hedging less attractive than for other asset classes. A near 100% hedge ratio is appropriate for non-domestic bond investments.

EXHIBIT 1 | Currency Hedging Policy Framework

INTRODUCTION

There are two return streams associated with any investment by a domestic investor in a foreign (non-domestic) security:

- 1) the gain or loss on the foreign security itself (generally the primary focus); and
- 2) the gain or loss on the foreign currency used to purchase the foreign security (generally a secondary focus).

In some cases, the latter may swamp the gain or loss on the foreign security over shorter time periods. This was particularly evident for the domestic Canadian investor in the US equity market in the calendar year 2003 (Exhibit 2). The return on the S&P 500 that year for the local US investor was 28.7%, yet the return for the domestic Canadian investor, fully exposed to currency fluctuations in the US dollar, was only 5.3%*. The difference was due to the currency loss on the depreciation of the US dollar spot market (-18.2%) relative to the Canadian dollar.

EXHIBIT 2 | Annual Returns, 2003 and 1998

Year	US INVESTOR	CANADIAN INVESTOR			
	In \$ US	Unhedged		Hedged	
		Return on US Dollars	Canadian Unhedged Return	Interest Rate Differentials	Canadian Hedged Return
2003	28.7%	-18.2%	5.3%	1.4%	30.5%
1998	28.6%	7.3%	38.0%	-1.5%	26.7%

* $(1+28.7\%)\times(1-18.2\%)-1=5.3\%$

Of course any domestic investor in a foreign security could choose to eliminate the foreign exposure by fully hedging the currency via forward contracts or various other derivative strategies. Going back to Exhibit 2, the return on the S&P 500 that year on a fully hedged basis would have been 30.5%, significantly greater than the domestic Canadian investor fully exposed to currency fluctuations. Notice however that the return of the hedged Canadian investor of 30.5% is slightly greater (+1.4%) than the return of the local US investor of 28.7%. This difference in returns is related to the interest rate differentials between the two countries (during that period Canadian interest rates were higher than US interest rates).

This simple example demonstrates how the domestic investor, even when fully hedged, does not earn the same overall rate of return as the local investor (unless interest rates in both countries are equal). Forward currency rates to hedge the currency are simply a mathematical calculation based on the currency spot rates and the respective interest rates of the two currencies in question, not forecasts of future spot exchange rates. The greater the interest rate differential between the two countries and/or the greater the time to forward delivery, the greater will be the difference between the spot and forward currency rates. Exhibit 2 also illustrates that foreign investments provide two exposures – one to

the underlying foreign security and the other to the foreign currency – and that these exposures are separable through currency hedging.

But the decision to fully hedge the currency exposure or retain it is a double-edged sword. Once again, this was quite evident for our Canadian investor in the US equity market in the calendar year 1998. The return on the S&P 500 that year for the local US investor was 28.6% (almost identical to 2003), yet the return for the domestic Canadian, investor fully exposed to currency fluctuations, was substantially greater at 38.0%. The difference was due to the currency gain on the appreciation of the US dollar (+7.3%) relative to the Canadian dollar. Fully hedging the currency exposure via forward contracts, the Canadian investor would have received only 26.7%, significantly underperforming the Canadian investor who retained the currency exposure. Again, the fully hedged domestic Canadian investor did not receive the same return as the local US investor due to interest differentials between the two countries. This time, however, US interest rates were higher than domestic Canadian interest rates so the impact was unfavourable (-1.5%).

The key lesson from both of these examples is that while many investors measure their currency returns by reference to the movement in the spot exchange rates, this methodology is incorrect. The spot exchange rate can be volatile over short periods of time and is not investable with any certainty, because if left unhedged, it creates currency gains and losses for the investor. To create certainty the domestic investor must fully hedge currency exposure at the time of security purchase.

That brings us to the point of this commentary. Canadian investors need to evaluate the costs and benefits of hedging and decide whether they should hedge currency exposures or not.

There are three primary motivations for hedging currency exposures:

- 1) To optimize asset allocation over the long term – we refer to this as a *policy* hedge;
- 2) To avoid regret that the optimal policy hedge performs poorly in the short run – we refer to this as a *strategic* hedge; and/or
- 3) To add value or generate alpha (an *active* hedge).

This commentary is intended to provide assistance for the Canadian investor in formulating a currency hedging policy, for the first two of these motivations.

Determining the appropriate currency policy is anything but straight-forward. The optimal policy hedge ratio will differ for each investor, based on investment portfolio allocation, the asset composition, base or domestic currency, the investor's risk tolerance and/or return objectives and beliefs. Once the policy is determined, the investor who decides to hedge currency exposure must then determine how it will be implemented: which foreign assets (stocks and/or bonds) to hedge, and whether those currency exposures will be partially or fully hedged. While a policy hedge is by definition assumed to be static (or effectively,

passively managed) the investor needs to decide in the implementation of the policy whether active currency management should be undertaken.¹ Finally, manager research, selection and monitoring are important considerations in the effective implementation of a currency management programme.

BACKGROUND

The foreign property rule in Canada limited a registered plan's foreign property book value to 10% in 1971. The limit was raised in 2% increments per year to a maximum of 20% over the period 1990 to 1994 and subsequently raised to a maximum of 30% in two stages over the period 2000 to 2001. In its 2005 budget, the Federal government completely eliminated foreign content restrictions (effective June 28th, 2005).

Currency exposure is becoming an increasingly important component of investment returns to Canadian investors. By December 31, 2004 the average foreign exposure, at market value, of Canadian plans was 28.4% according to the annual Benefits Canada Survey of the top 100 funds (May 2005). Further, unhedged US investments held by Canadian investors lost substantial value over the past two years as a result of the decline of the US dollar. These two factors have recently moved currency management to the forefront of Canadian investment issues.

Most Canadian investors do not have thoughtful, researched and well documented beliefs for their currency hedging policies. The majority of institutional investors do have some form of currency policy, but Russell's experience is that many do not hedge currency risk directly and do not articulate their rationale effectively. Perhaps it's because they often adopt unhedged benchmarks, such as the MSCI World Index, where no adjustments are made to the index for hedging. A significant proportion of currency hedging has been carried out indirectly by funds who made foreign equity investments through futures (to maintain the foreign content of tax-exempt funds within the previous 30% permissible limit) which were backed by Canadian money market instruments as collateral.

This commentary addresses currency hedging policy from a Canadian investor's perspective, focusing on the decision to hedge the currency independently of the decision to make foreign investments. Moreover, it deals with passive currency hedging where the hedge ratio, the percentage of the total currency exposure hedged (0% to 100%) is set optimally or strategically for the long term and kept essentially constant, rather than varied according to a manager's assessment of a currency's future prospects. In particular, it reviews the Canadian experience between 1978 and 2004.² This is the period after the breakdown of fixed exchange arrangements under the Bretton Woods agreement, when most major currencies were allowed to float freely with lesser central bank intervention. It also extends the period (1978 to 1992) covering some pivotal Russell research on currency risk management.

¹ This commentary will not address the subject of active currency management, which can be used in conjunction with or independently of a passive policy or strategic hedge. Active currency management focuses on return enhancement as opposed to risk reduction. In the policy setting framework discussed in this commentary, the authors have assumed any currency hedging is done passively.

² Based on hedged equity returns provided by index data providers and, for years where such information is not available, historical data on currency forward premiums and differences between US and Canada short-term rates of interest.

PRIOR RESEARCH

Russell's position with respect to strategic currency hedging was established in 1994. The initial research was conducted from a US client's perspective. It showed that based on the relationship between exchange rate behaviour and asset returns it was impossible to choose a passive "normal currency exposure", or hedge ratio that optimizes the risk-reward performance of the fund over the long run. Even if the true value of the normal currency exposure (the correct hedge ratio) was known, few US fund sponsors would be very satisfied with the results of a passive currency risk management policy based on the normal exposure, due to regret.³ With a large allocation to foreign equities and/or a short time horizon, this suggests a normal exposure of 50% regardless of the value of the mean-variance optimal exposure. The evidence was reviewed in a 2004 Practice Note which reaffirmed this policy and noted that since non-US equity allocations had increased and investment time horizons had shortened, currency hedging had become even more appropriate.

The research in 1994 was also extended to non-US investors, using the same approach for institutional investors in the UK, Japan, Australia and Canada. This analysis concluded that Canadian investors, contrary to US investors, should choose a completely unhedged currency approach. That is, the optimal hedge ratio was found to be zero as foreign currency exposure provided diversification benefits that reduced portfolio risk. These findings were considered to be indicative only, as they depended on a number of assumptions, including the investor's risk tolerance. Investor-specific analysis is required to determine the optimal strategy for any particular investor. Faced with uncertainties and the likely short term disappointments from any optimal currency policy, the selection of a hedge ratio that may be attractive for reasons other than portfolio optimization is entirely reasonable. For example, if a fund wished to minimize the after-the-fact regret of having the wrong hedging strategy over short periods, a 50% hedge ratio may be the rational response.

Given the increase in foreign content limits and in recognition of the much smaller size of the domestic market, Canadian institutional investors have tended to commit a greater proportion of their assets to foreign equities than their US counterparts. Their typical allocation presently stands close to 30% of total assets, about twice the foreign commitment of US investors. Moreover, at least half of it is typically exposed to the all-important and widely publicized Canada/US exchange rate. Since foreign content limits have been eliminated, Canadians may now have greater motivation to manage currency risk.

³ As explained in "The Regret Syndrome In Currency Risk Management: A Closer Look", regret is a behavioural aspect of investing. Regret occurs when an alternative hedging strategy outperforms the normal hedge ratio. Given the randomness of asset class and currency returns, the likelihood and magnitude of out performance can be large – leading to regret.

CURRENCY SURPRISE

Investors tend to assess the impact of currency by focusing on the change in spot exchange rates. This naive approach assumes that the gain (loss) from hedging a foreign currency is equal to the decrease (increase) in its spot exchange rate over the measurement period. According to the CFA Institute however, the approach is misleading since it fails to reflect the actual returns that can be obtained by a hedged forward currency position and ignores the effect of the forward currency premium.⁴

The examples in the Introduction demonstrate how currency hedging through the use of forward contracts can result in gains or losses versus naive spot rate changes. The differences are essentially explained by interest rate differentials between the domestic and foreign countries. The differences or “forward premium” can be positive if interest rates in the foreign currency country are lower than the domestic Canadian market, or negative if interest rates in the foreign currency country are higher. Recognizing the influence of interest rate differentials is much more than a refinement as the effect can be significant. Over the past decade (1995 to 2004), for instance, when Canadian interest rates were substantially higher than those in Japan, the MSCI Japan Index cumulative total return was -17.6% to the local Japanese investor but +23.8% to the domestic Canadian investor who hedged the Yen.

We obtain better information about the true effect of currency if we split the return derived from the change in spot exchange rates into two separable components:

- 1) The *forward premium*, which is known in advance and is driven by short-term interest rate differentials; and
- 2) The component of the change in spot exchange rates not accounted for by the forward premium, which is commonly called the *currency surprise*.

The CFA Institute recommends identifying the two components separately as they help explain an important fact.⁴ Domestic investors cannot eliminate currency effects entirely and earn the local return of the foreign market. They can only eliminate the currency surprise component. Thus, the hedged return is different from the local return and is the return the domestic investor will earn in a foreign market free of currency risk. Currency surprise can be calculated* and is the difference between the unhedged foreign security return and the hedged foreign security return:

⁴ www.cfainstitute.org/standards/pps/benchmark.html

$$* CS[T] = \frac{S[T+1] - F[T]}{S[T]}$$

Where...

CS[T] is the currency surprise for period T

F[T] is the forward rate at the start of period T

S[T] is the spot rate at the start of period T

S[T+1] is the spot rate at the end of period T

It is called a currency surprise because the hedged forward exchange rate is investable and therefore anticipated while any deviation of the spot exchange rate one period later is a currency surprise. For an investor, the issue is whether or not currency surprises are desirable. That is: Do currency surprises improve the risk-reward trade-off in an investor's portfolio? They are effectively assumed by investors who do not hedge foreign currency exposure.

Currency Surprise = Unhedged Return - Hedged Return

Hedged Return > Unhedged Return = Hedge Profit or Negative Currency Surprise

Hedged Return < Unhedged Return = Hedge Loss or Positive Currency Surprise

RETURN

For Canadian investors, Russell estimates that from 1978 to 2004 currency surprises averaged -0.9% per year for the US dollar S&P 500 Index and +0.6% per year for the basket currencies represented by the countries in the MSCI EAFE Index. These results are confirmed in Exhibit 3, as currency surprises decreased returns for the S&P 500 and increased returns for the MSCI EAFE Index over this period.

EXHIBIT 3 | Annualized Monthly Returns (1978 to 2004)

	S&P 500	EAFE	PORTFOLIO*	SURPLUS**
Without currency surprises (hedged returns)	14.7%	11.8%	12.1%	0.3%
With currency surprises (unhedged returns)	13.8%	12.4%	12.1%	0.3%

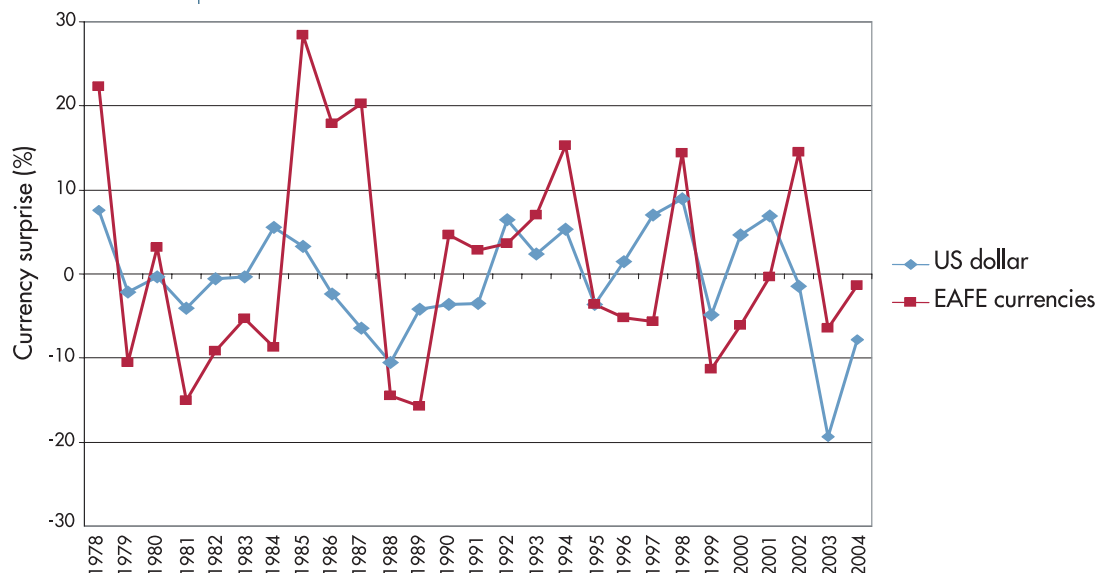
*Portfolio is representative of typical policy allocations for Canadian defined benefit pension funds: 40% Canadian bonds (SC Universe Bond Index); 30% Canadian stocks (S&P/TSX Composite Index); 15% US stocks (S&P 500 Index); 15% International stocks (MSCI EAFE Index)

**The difference between the Portfolio (as defined above) and 100% Canadian long bond (SC Long Bond Index) returns, where long bonds are used as a proxy for pension liabilities.

When viewed at a total portfolio level however, assuming currency surprise (i.e., not hedging) resulted in effectively no difference in returns for a typical 60% equity/40% fixed income policy. Consequently, currency surprise also had no impact on surplus returns over the period.

Exhibit 4, on page 10, provides annual currency surprises for the US dollar and EAFE currencies over each of the last 27 years. It clearly demonstrates how variable currency surprise was from year to year. The annual standard deviations of these return series were 5.2% for the US dollar and 9.7% for the EAFE currencies. Given the high volatility of currency surprise relative to the sample average during the period, these average figures do not provide very meaningful insight into the expected currency surprise in any given year. Furthermore, the sample average can be expected to vary greatly over different time periods. For example, excluding 2003 and 2004, currency surprises averaged +0.3% and +1.0% for the US dollar and EAFE currencies respectively, demonstrating end date sensitivity.

EXHIBIT 4 | Currency Surprises



Further analysis of the two currency surprise series in Exhibit 4 show that, as might be expected, they are positively correlated but only moderately so (a correlation of 0.3). This suggests that investors should not be indifferent between them, and that viewing these currencies in combination, on a world basis, could mute volatility.

Moreover, while US dollar currency surprises exhibit some positive serial correlation from year to year, none shows up with respect to EAFE currencies and negative serial correlation is found over two and three year lags for EAFE currencies. This suggests that the prospects of reacting to recent trends are not particularly promising.

RISK

Given such return uncertainty, the case for eliminating currency surprise (hedging foreign currency) rests on its expected impact on risk (which, for the purpose of this commentary is defined as the volatility of returns). In Exhibit 5, we show the standard deviation of returns with and without currency surprise.

The desirability of currency surprise hinges on its correlation with hedged returns. Using the relationship shown in Equation 1, we can determine the variance of unhedged returns as follows:

EQUATION 1

$$\begin{aligned}
 & \text{Variance (Unhedged Return)} \\
 &= \text{Variance (Hedged Return)} \\
 &+ \text{Variance (Currency Surprise)} \\
 &+ 2 \times \text{Covariance (Hedged Return, Currency Surprise)}
 \end{aligned}$$

where

$$\begin{aligned}
 & \text{Covariance (Hedged Return, Currency Surprise)} \\
 &= \text{Correlation (Hedged Return, Currency Surprise)} \\
 &\times \text{Standard Deviation (Hedged Return)} \times \text{Standard Deviation (Currency Surprise)}
 \end{aligned}$$

EXHIBIT 5 | Annualized Standard Deviation of Monthly Returns (1978 to 2004)

	S&P 500	EAFE	PORTFOLIO*	SURPLUS**
Without currency surprises (hedged returns)	15.4%	14.7%	9.6%	9.6%
With currency surprises (unhedged returns)	14.7%	16.2%	9.3%	9.6%

*Portfolio is representative of typical policy allocations for Canadian defined benefit pension funds: 40% Canadian bonds (SC Universe Bond Index); 30% Canadian stocks (S&P/TSX Composite Index); 15% US stocks (S&P 500 Index); 15% International stocks (MSCI EAFE Index)

**The difference between the Portfolio (as defined above) and 100% Canadian long bond (SC Long Bond Index) returns, where long bonds are used as a proxy for pension liabilities.

Looking at the terms of the equation, the importance of the correlation between the hedged return and the currency surprise is evident. Generally for small exposures, if the correlation is sufficiently negative, the third term could more than offset the second term, and the unhedged portfolio would then have a lower volatility.

Over the full period examined in our study, we found that for S&P 500 returns, currency surprises (unhedged returns) reduce risk, although somewhat moderately. The correlations of the hedged returns with the currency surprises was -0.30 over the entire period.

The outcomes for EAFE returns however, differ as currency surprise (unhedged returns) increased risk by 10%. The correlation between the hedged returns and the currency surprise was -0.18 over this period. This turned out to be insufficiently negative to justify assuming currency surprise, as total risk increased. In fact, a correlation of approximately -0.33 would have been needed to reduce the risk of the unhedged returns to a hedged return level.

These figures are quite different from those confronting foreign investors and especially US investors (whose perspective underlies most of the literature on currency hedging). We estimate that for US based investors the correlation between EAFE currency surprises and EAFE hedged returns for that period was -0.05 making currency surprises significantly less desirable. Such divergence should not come as a great surprise considering the difference between the structure of the Canadian and US economies.

While the long-term results in Exhibit 5 indicate that currency surprise (not hedging) lowered the risk of investments in US equities, over certain shorter term periods the preferred approach would have been to hedge. Exhibit 6A on page 12, shows the standard deviation of S&P 500 returns over rolling 5-year time periods. In 60 out of the 265 monthly rolling 5-year periods, the standard deviation of hedged returns was lower than that of unhedged returns.

Exhibit 6B, also on page 12, shows the rolling 5-year standard deviation of MSCI EAFE returns over the same period. While the long-term results in Exhibit 5 indicated that hedging was preferable, over shorter time periods, most notably since 1997, the risk-reducing strategy would have been not to hedge.

EXHIBIT 6A | 5-Year Rolling Monthly Return Standard Deviation

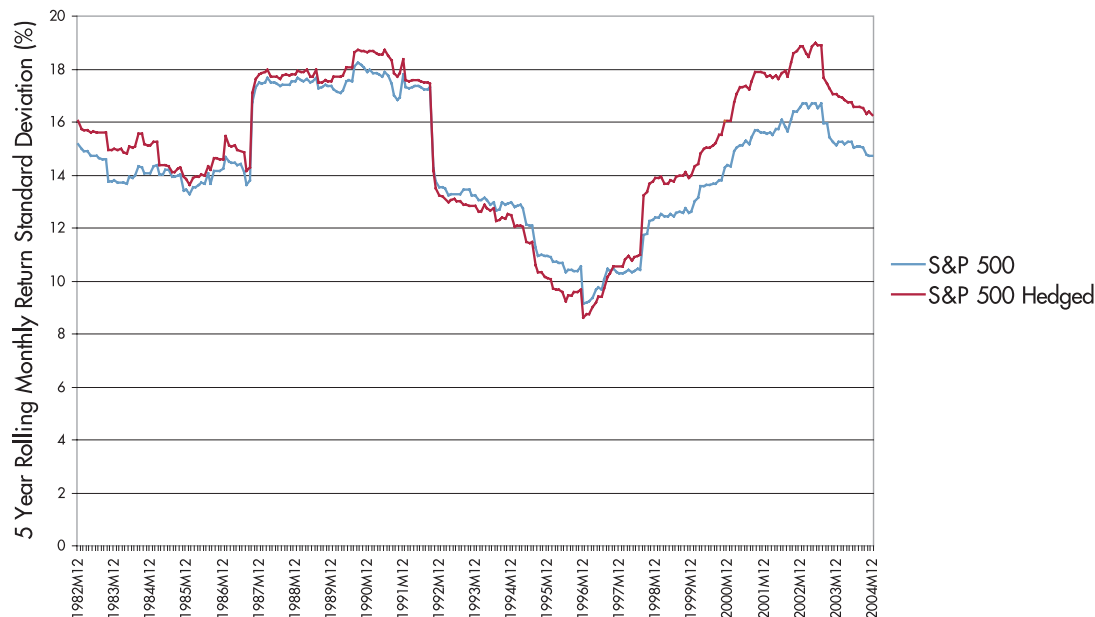


EXHIBIT 6B | 5-Year Rolling Monthly Return Standard Deviation



From a portfolio and surplus perspective, assuming currency surprises did not change risk or somewhat decreased it. In these cases, correlations between currency surprises and hedged returns were negative enough to neutralize their effect or make them marginally desirable. This is explained by the fact that, since diversified portfolios and surplus are less volatile than foreign equities, their returns would have to be significantly more negatively correlated with currency surprises. Moreover, the correlation between currency surprises and Canadian equities and bonds is much less negative than with foreign equities.

Given the importance of correlations in the decision to hedge, it is instructive to observe their evolution over time. As Exhibits 7A & 7B demonstrate, moving 5-year correlations are quite unstable. In general, currency surprises would have added risk (and returns) in earlier periods and decreased it in more recent ones. Therefore an optimal hedge ratio over the long term may not be suitable over shorter time periods.

EXHIBIT 7A | Moving 5-Year Period Correlations Between US Currency Surprises and (Hedged) Returns

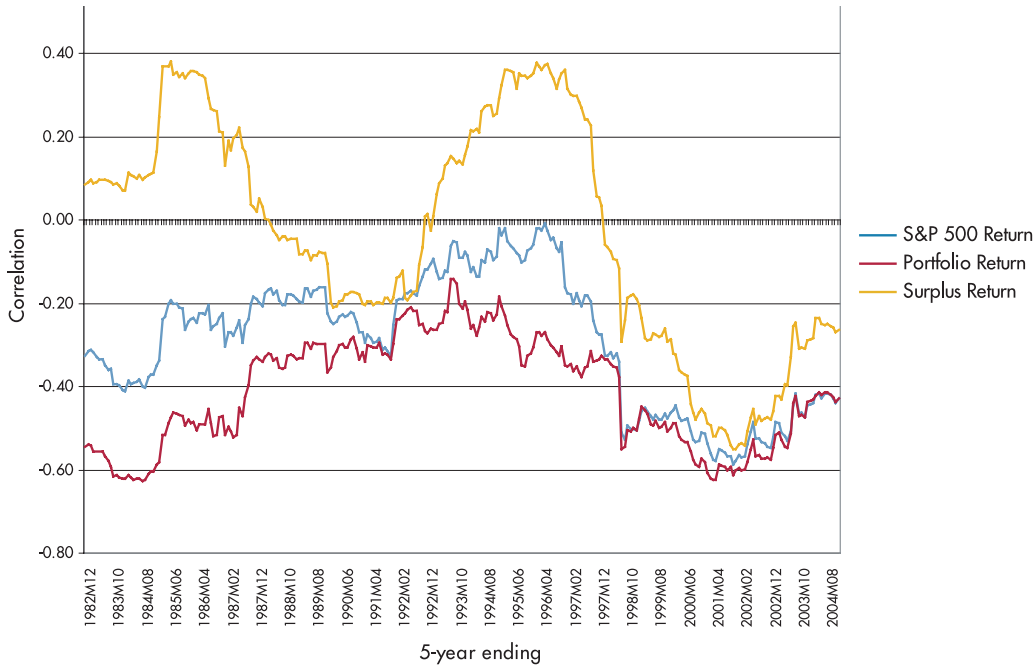
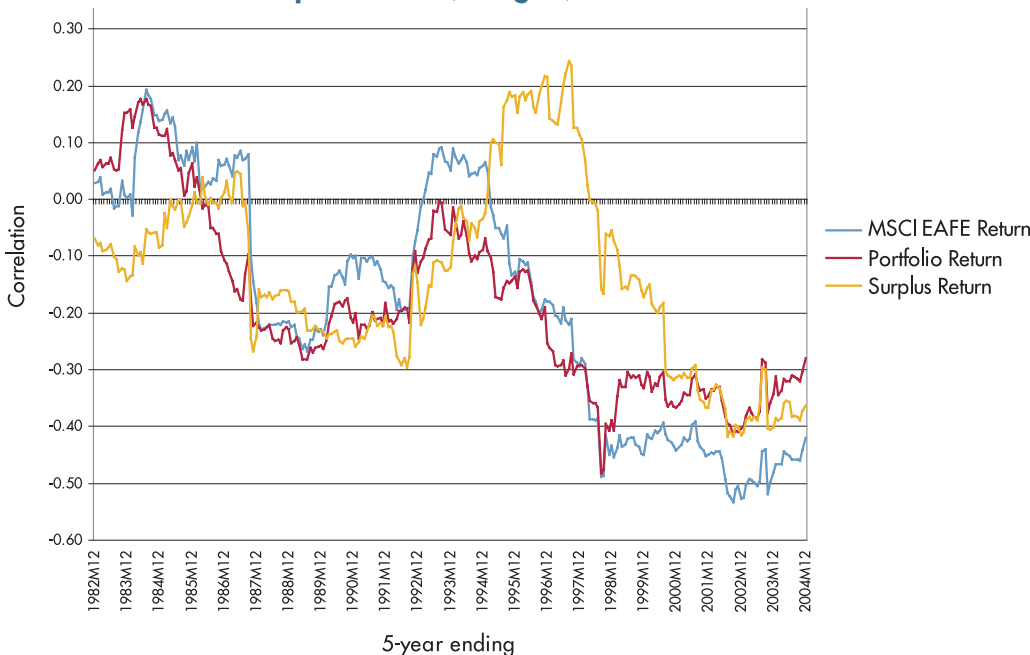


EXHIBIT 7B | Moving 5-Year Period Correlations Between EAFE Currency Surprises and (Hedged) Returns



HIGHER FOREIGN CURRENCY EXPOSURE

With the elimination of the foreign property rule, Russell's advice to our clients and evidence based on allocations of unconstrained investors lead us to expect higher total foreign exposure in the future. As Canadian investors consider increasing their allocations to foreign asset classes, it is natural to ask if higher foreign allocations would materially change the observations thus far. Therefore using the same data underlying Exhibit 5, we created a portfolio with 40% foreign equity exposure, with the results shown in Exhibit 8. Comparing Exhibits 5 & 8 suggests that increasing foreign equity exposure reduces the total portfolio risk and confirms that over this time period, currency surprises added portfolio diversification, thus reducing risk.

Interestingly however, from the point of view of surplus, currency surprises did not materially alter volatility for portfolios with a varying exposure to foreign equities.

EXHIBIT 8 | Annualized Standard Deviation of Monthly Returns (1978 to 2004)

	S&P 500	EAFE	PORTFOLIO*	SURPLUS**
Without currency surprises (hedged returns)	15.4%	14.7%	9.4%	9.5%
With currency surprises (unhedged returns)	14.7%	16.2%	9.0%	9.5%

*Portfolio consists of: 40% Canadian bonds (SC Universe Bond Index); 20% Canadian stocks (S&P/TSX Composite Index); 20% US stocks (S&P 500 Index); 20% International stocks (MSCI EAFE Index)

**The difference between the Portfolio (as defined above) and 100% Canadian long bond (SC Long Bond Index) returns, where long bonds are used as a proxy for pension liabilities.

BEHAVIOURAL PERSPECTIVE

While the impact of currency surprises on portfolio risk and return may be too uncertain to warrant hedging from a prospective standpoint, it may not be so easy to ignore from a retrospective point of view. Over 10-year moving periods, the impact of currency surprises on total portfolio returns has mostly fallen within a range of plus or minus 60 basis points, as shown in Exhibit 9, on page 15. This amount can hardly be considered irrelevant considering that the difference between median and first quartile returns in balanced fund universes typically may hover around 60 basis points for similar periods.

Adopting shorter time horizons emphasizes the relative impact of currency surprises on historical returns. For instance, over annual periods the absolute difference between hedged and unhedged portfolio returns averaged 210 basis points.

Moreover, as portfolio returns are disaggregated into asset class returns, absolute numbers magnify the impact of currency surprises. While the 2003 US dollar currency surprise (-25%) is still on investors' minds, it is important to remember that from 1985 to 1987, currency surprises increased EAFE returns from 81% to 228%.

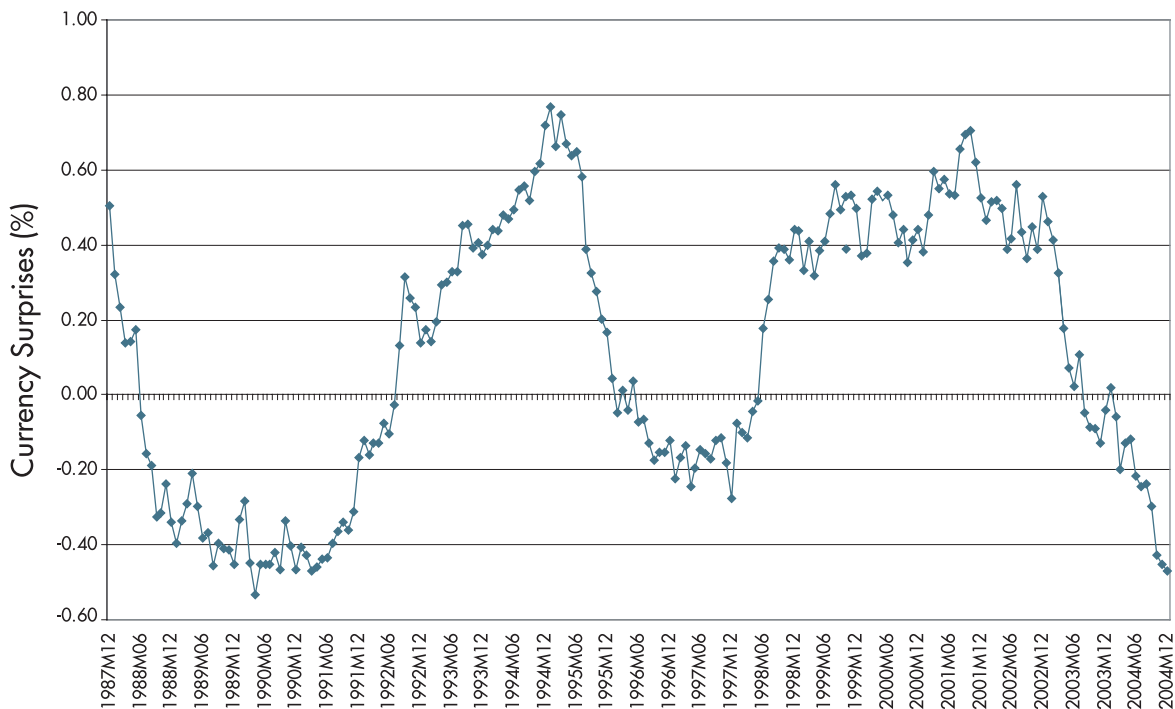
Furthermore, Canadian investors may be inclined to concentrate on US dollar currency surprises because of their greater visibility and recent experience. This is not generally recommended. Over the long-term currency is a near zero return asset

class – as confirmed by the data in Exhibit 3. Deciding to hedge after a recent large appreciation in the value of the Canadian currency could prove to be sub-optimal timing. It might be like ‘closing the proverbial barn door after the horse has bolted’.

Focusing on recent past performance can blur one’s vision and curtail the great advantage enjoyed by truly long-term investors. Being able to manage second guessing is instrumental in avoiding expensive policy reversals. Regret refers to a behavioural aspect of investing. An investor who decides on a passive currency policy may not be happy with the short term performance of this strategy after the fact, even when it is correct for the long term, and thus experience “regret”. From such a behavioural standpoint, hedging 50% of currency exposure may be seen as a way of minimizing regret since it ensures a 50% success rate, so long as it can be implemented at a low cost.

There are various factors influencing the potential importance of managing regret. They include the commitment to foreign equities, the investment beliefs and risk tolerance of decision-makers, the objectives, the time horizon for evaluation and the importance attached to relative performance. In addition, how the investor evaluates and determines success also comes into play, whether from an individual asset class perspective or by total fund results. Investors who tend to focus more broadly at the total fund level are generally less subject to regret. Investors who have a narrower focus on foreign asset class exposure may want to minimize regret by hedging 50% of the currency exposure.

EXHIBIT 9 | 10-Year Moving Currency Surprises at the Total Portfolio Level



FOREIGN BONDS

There are many uses for bonds in an investment portfolio ranging from risk reduction (traditional bonds held to better match liabilities) to return enhancement (high yield bonds or emerging market debt). However the majority of bonds in Canadian institutional investment portfolios, such as pensions or endowments, are used for the former reason: to provide stability through safety of principal and as a steady source of income. In fact, most rational investors with substantial bond weightings are either sensitive to short term risk or are conservative long term investors. Many regard bonds as their least risky asset. Bonds are often used in a diversified portfolio as an offset to the greater risk of equities and provide downside protection. Given that the risk (standard deviation) of bonds is generally less than 25% of equities, the relative effects of unhedged currencies on foreign bonds would be substantially greater than for foreign equities and therefore would be generally contrary to the objectives of most institutional bond investors. As such, it is difficult to see how unhedged foreign bonds would meet the institutional investor's requirements and that is probably why the usual hedge ratio is near 100%.

One other reason often cited for a fully hedged position in bonds is the stronger causal link between currency and interest rates than currency and equities. As real domestic interest rates rise and bond prices fall correspondingly, the domestic currency may also become attractive. This often causes the value of unhedged foreign bonds to decline. An analysis conducted on four, base currencies showed that the volatility of currency returns is more than twice as high as the volatility of hedged bond returns. If the volatility of currency surprise is more than twice the volatility of hedged bonds, then it would need a correlation of less than -1 to produce diversification. As correlation coefficients are bounded by -1 and +1, it is impossible under any circumstance for currency exposure to be diversifying. This makes the case for fully hedging foreign bonds compelling.

IMPLEMENTATION

Investors who decide to passively hedge a given currency exposure must determine what hedge ratio they wish to maintain. Even where decisions are made for fundamental (rather than behavioural) motives, hedge ratios are typically determined arbitrarily (and often set at 50%). This recognizes the fact that analytically derived optimal hedge ratios are quite sensitive to underlying data and assumptions.

A passive currency hedge policy should be clearly articulated, with a sound rationale that is well documented in the fund's Statement of Investment Policies and Procedures or beliefs statement. Investment guidelines must then be drafted. These need to address the benchmark to be utilized and acceptable levels of tracking error. There should be consistency between the benchmark and the currency policy adopted. Lower tracking errors instill more discipline but generate more trading and therefore greater costs and, more importantly, more cash flows with which to deal. Trading issues, such as acceptable bank diversification and counterparty risk, reporting, custodial reconciliation, due diligence and performance measurement must also be addressed.

On top of the resources required to assess the desirability of currency hedging and set appropriate investment guidelines, transaction costs of about 10 basis points may be expected for a mandate with assets of \$500 million. These costs relate to cash flow management (7 basis points), rolling currency forwards (2 basis points) and rebalancing (1 basis point). Management fees, for their part, can be expected to represent a further 5 basis points.

CONCLUSIONS

- Over the last 27 years (1978 to 2004) the differences in passively hedged and unhedged portfolio returns for a Canadian investor have been minimal and endpoint sensitive. Given such results, the case for passive currency hedging or adopting an optimal hedge ratio rests on an analysis of risk.
- From a long term perspective, currency surprises did not change risk at a surplus level and actually lowered portfolio risk marginally. Factoring in the costs of currency hedging and implementation may lead Canadian investors to assume the full currency exposure (a 0% hedge ratio). This concurs with Russell's 1994 research on currency risk management for Canadian investors.
- Although a 0% hedge ratio for equities may be appropriate over a long time horizon, it may not be suitable for certain investors over shorter time periods. The two key factors to focus on are the proportion of the fund invested in foreign assets and the time horizon for evaluation. The Currency Hedging Policy Framework outlined in the Executive Summary can assist investors in formulating an appropriate passive policy for equities. The shorter the time horizon and the greater the proportion invested in foreign securities, the greater should be the investor's propensity to hedge currency exposure.
- If investors are subject to after-the-fact regret they should consider a hedge ratio between 0% and 100%.
- A 50% hedge ratio minimizes regret for equities.
- Given that bonds are often considered the least risky asset and are generally utilized by conservative institutional investors to offset the greater risk of equities and provide downside protection, the usual hedge ratio for foreign bonds should be near 100%.

F P O

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