

# OUT IN THE Open

Don't leave yourself exposed—  
active currency hedge can help.

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## ACCORDING

to the Top 100 Pension Funds Report published in the May 2006 issue of *Benefits Canada* (Cakebread, 2006), Canadian pension funds invest significantly in non-Canadian equities, with on average 11.9% of their portfolio directed toward U.S. equities and 11.4% directed toward the other developed markets' equities (data for the year 2005). One inevitable consequence of being exposed to foreign equities is the need to address the resulting currency exposure issue. Institutional investors exposed to foreign currencies have to decide whether to fully hedge this exposure, to leave it completely unhedged, or to settle in the middle of these two extremes.

There is no consensus among institutional investors around the world regarding the best policy to adopt when confronted with currency hedging decisions. Indeed, a survey conducted in 2004 by Mellon/Russell and reported in Michenaud and Solnik (2005) gave the following results: 39% of investors adopt a no-hedging policy, 34% of investors choose a 50% hedging policy, 14% of investors settle for a 100% hedging policy and 13% embrace other hedge ratios.

Beyond these passive strategic approaches, some investors might see the currency exposure as a potential avenue to further add value. They could rely on active strategies that choose to hedge or not at the beginning of each period, depending on some empirical models or rules.

In this paper, we examine different options available for an institutional investor when it comes to dealing with the currency exposure of the foreign equity portion of its portfolio. More specifically, we adopt the

perspective of a Canadian institutional investor who is anchored to the MSCI World ex-Canada equity index. We examine the performance of a conditional currency hedging strategy, namely the forward hedge rule (*FHR*), compared to the three currency benchmarks institutional investors use most: 100% unhedged, 50%/50%, and 100% hedged.

Results are presented for a one-month horizon at a country level (for the four major currencies: the Japanese yen, the U.K. pound, the Euro/German mark, and the U.S. dollar) over the 1976-2005 period and at a portfolio level (for the 22 developed markets of the MSCI World ex-Canada index) over the 1988-2005 period.

We first present the calculation of returns for the three aforementioned currency benchmarks, and then we present our conditional currency hedging strategy, namely the forward hedge rule (*FHR*).

A foreign stock market return contains two components, the local stock market return and the currency return. If the investor takes no action with regard to currency hedging, he will remain exposed to both of these components. This corresponds to the unhedged case. The (monthly) unhedged return in the domestic currency  $R_{D,U}$  is calculated as:

$$R_{D,U} = [R_F * S_1/S_0] + S_1/S_0 - 1$$

where:

$R_F$ : Foreign stock market return in local currency

$R_{D,U}$ : Foreign stock market return in the domestic (Canadian) currency of the investor

$S_0$ : Spot exchange rate at the initiation of the position (time 0)

$S_1$ : Spot exchange rate at the end of the month (time 1)

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## THE FULLY HEDGED BENCHMARK

An investor willing to eliminate the uncertainty associated with the currency return could decide to fully hedge its portfolio. Hedging a particular currency exposure means establishing an offsetting currency position such that any gain or loss on the currency exposure is offset by the change in value of the hedging position. For example, in the case of a Canadian investing abroad, his underlying position is long in the foreign currency. Therefore, to hedge this position, he will be required to take a short position in the foreign currency forward contract. The size of the hedging position is set equal to the size of the underlying position at the beginning of the holding period. The hedged return in the domestic currency ( $R_{D,H}$ ) at the end of the month is calculated as:

$$R_{D,H} = [R_F * S_1/S_0] + F_0/S_0 - 1$$

where:

$F_0$ : Forward rate at the initiation of the position (time 0)

## THE 50-50 BENCHMARK

Realizing that currency returns could sometimes turn positive and sometimes turn negative, some investors might be reticent to adopt either of the two extreme benchmarks, notably because of a fear of regret. Such investors will thus settle for a compromise partially hedged solution. In this case, the partially hedged return in the domestic currency ( $R_{D,P}$ ) at the end of the month is calculated as:

$$R_{D,P} = [R_F * S_1/S_0] + H * [F_0/S_0] + (1-H) * [S_1/S_0] - 1$$

where:

H: The hedge ratio chosen by the investor (50% in this paper)

## THE FORWARD HEDGE RULE

Active hedging strategies suggest revising the decision to hedge periodically based on information available to the investor at the beginning of each investment period. Specifically, we focus on the forward hedge rule (*FHR*)

which assumes that the current spot exchange rate gives a better forecast of the subsequent spot rate than does the forward rate. The strategy is in accordance with Meese and Rogoff (1983) and Eun and Resnick (1997) who stipulate that for a certain number of currencies, the random walk model performs as well as any estimated model over one- to twelve-month horizons. This suggests that the current spot rate is a better predictor of the future spot rate than is the current forward rate. If the forward rate is higher than the current spot rate, hedging has a positive expected return. Otherwise, if the forward rate is lower than the current spot rate, then hedging has a negative expected return. The *FHR* thus consists of hedging when the forward is at a premium and leaving the exchange risk unhedged when the forward is at a discount. According to studies by Eaker and Grant (1990) and Eun and Resnick (1997) and more recently Morey and Simpson (2001) and Vanderlinden, Jiang and Hu (2002), the *FHR* strategy outperforms the unhedged and hedged strategies in international equity investment.

**Table 1: PERFORMANCE OF THE FHR AND THE THREE PASSIVE HEDGING STRATEGIES**

This table presents the annualized mean and standard deviation of the return of the FHR and the 3 benchmarks: hedged, unhedged and 50-50. Results are presented for each currency and the portfolio MSCI World ex-Canada Index.

	FHR	Unhedged	Partially hedged (50%/50%)	Fully hedged
<b>Panel A: 1976-2005</b>				
<b>Germany</b>				
Return	13.3%	11.5%	11.5%	11.0%
Risk	19.9%	20.9%	19.8%	20.3%
Return per unit of risk	0.67	0.55	0.58	0.54
<b>Japan</b>				
Return	11.5%	11.1%	11.4%	11.3%
Risk	18.2%	22.2%	19.3%	18.2%
Return per unit of risk	0.63	0.50	0.59	0.62
<b>U.K.</b>				
Return	17.0%	14.2%	13.2%	11.8%
Risk	18.5%	18.7%	17.0%	17.0%
Return per unit of risk	0.92	0.76	0.77	0.70
<b>U.S.</b>				
Return	14.6%	13.0%	12.9%	12.7%
Risk	14.5%	14.4%	14.4%	14.9%
Return per unit of risk	1.01	0.91	0.90	0.85
<b>Panel B: 1988-2005</b>				
<b>Portfolio MSCI World ex-Canada</b>				
Return	11.1%	8.4%	9.0%	9.4%
Risk	13.1%	13.6%	13.2%	13.8%
Return per unit of risk	0.84	0.62	0.68	0.68

## DATA AND RESULTS

We conduct two types of analyses: first, we investigate the performance of our conditional rule at the country level, then, at the portfolio level. In both cases, we consider a one-month investment horizon. For the country level analysis, our sample covers the 1976-2005 period and includes four major currencies (Japanese yen, U.K. pound, Euro/German mark, and U.S. dollar). At the portfolio level, we consider a portfolio mimicking the MSCI World Excluding Canada index. This index includes 22 developed markets and is value-weighted. Since forward rates are not available for many of these countries before 1988, portfolio analysis is only conducted from that year.

We use two types of data in this paper: monthly returns of international equity indices which are sourced from Morgan Stanley Capital International (MSCI) and monthly exchange rates (spot and forward) which are extracted from Bloomberg.

### FHR AND PASSIVE HEDGING STRATEGIES

Panel A of Table 1 presents the return, risk and return per unit of risk for the four hedging strategies applied to the four major currencies over the 1976-2005 period. Panel B of Table 1 presents the same metrics at the portfolio level for the 1988-2005 period. All end-of-period returns are annualized geometric means. Consistent with Hazuka and Huberts (1994) and Vanderlinden, Jiang and Hu, (2002), we assume that the decision to hedge costs five bps per month for all currencies. At the country level, we note that the *FHR* leads to the highest return per unit of risk in all four countries. For the Euro/German mark, the U.K. pound and the U.S. dollar, the *FHR* has a return per unit of risk that is significantly higher than the best passive approach (partially hedged 50%/50% in all three cases). The returns per unit of risk are 0.67 vs. 0.58, 0.92 vs. 0.77, 1.01 vs. 0.90 respectively. The superiority of the *FHR* approach is much less apparent in the case of the Japanese yen where its return per unit of risk is almost equivalent to the best passive hedging strategy (fully

hedged). In all four countries, the increase in return per unit of risk is in large part due to a higher return. Indeed, while the *FHR* displays the highest return in all cases, it does not always reduce the risk. Accordingly, we note that the free lunch hypothesis associated with currency hedging (Perold and Schulman, 1988) is not always verified. In fact, the fully hedged approach posts the lowest risk among the three passive strategies for only one country (Japan).

At the portfolio level, the *FHR* approach posts the highest return and the lowest risk, which leads to a return per unit of risk that is higher than the fully hedged benchmark (0.84 vs. 0.68), which is the best passive approach during the 1988-2005 period. Here again, the alleged free lunch in terms of risk reduction is not observed. In fact, the fully hedged approach shows a higher standard deviation than its passive counterparts. Its higher return per unit of risk is thus attributable only to a higher return.

### FHR POSITIONS

In the previous section, we showed evidence of the dominance of the *FHR* over the three passive benchmarks. In this section, we take a closer look at the position that this strategy recommends each month: we observe for each country, the number of months per year where the *FHR*

**Table 2: FHR VERSUS THE THREE PASSIVE STRATEGIES**

This table presents the annualized mean and standard deviation of the excess return of the *FHR* versus the 3 benchmarks: hedged, unhedged and 50-50. Results are presented for each currency and the portfolio MSCI World ex-Canada Index.

<b>Panel A: 1976-2005</b>	<b>FHR versus unhedged</b>	<b>FHR versus partially hedged (50%/50%)</b>	<b>FHR versus fully-hedged</b>
<b>Germany</b>			
Excess return	1.4%	1.6%	1.9%
Active risk	10.1%	5.6%	5.0%
Information Ratio	0.14	0.29	0.38
<b>Japan</b>			
Excess return	-0.4%	-0.1%	0.3%
Active risk	12.8%	6.5%	1.3%
Information Ratio	-0.03	-0.01	0.20
<b>U.K.</b>			
Excess return	2.4%	3.6%	4.8%
Active risk	4.5%	5.5%	10.1%
Information Ratio	0.53	0.65	0.47
<b>U.S.</b>			
Excess return	1.4%	1.5%	1.6%
Active risk	4.6%	2.7%	2.7%
Information Ratio	0.31	0.57	0.58
<b>Panel B: 1988-2005</b>			
<b>Portfolio MSCI World ex-Canada</b>			
Excess return	2.3%	1.9%	1.5%
Active risk	5.2%	2.3%	2.8%
Information ratio	0.45	0.83	0.51

takes a fully hedged position. A value of 0 implies that the *FHR* was always unhedged in the year while a value of 12 suggests that the strategy was always fully hedged. We see that, at some point a long series of months (spanning many years), the *FHR* sticks to the same position. The case of Japan is the most striking, with the *FHR* remaining fully hedged from 1981 to 2005. In fact, the *FHR* takes a position other than the fully hedged in only five of the 360 months from 1976 to 2005. As such, the excess return of the *FHR* versus the fully hedged (about 0.2% = 11.5%-11.3% from Table 1) comes strictly from these five months in 1980. For Germany, the fully hedged position is held without interruption from 1976 to 1990. Finally, the longest streaks for the U.K. and the U.S. range respectively from 1996 to 2005 (unhedged) and 1985 to 1993 (fully hedged). These extended periods of perfect synchronisation with a passive benchmark have important implications in terms of ex-post information ratios. Information ratios from symmetric hedging currency mandates (partially hedged benchmarks) are expected to be higher than information ratios from asymmetric hedging currency mandates (fully hedged or unhedged benchmarks).

## FHR VERSUS PASSIVE HEDGING

In Table 2, we present the annualized arithmetic mean and standard deviation of the excess return of the *FHR* versus the three passive benchmarks. Table 2 also presents the information ratio which describes the consistency with which a currency manager could beat a benchmark. Information ratios are in line with results from Table 1. While the information ratios for the Japanese yen are mostly lacklustre, information ratios obtained for other currencies are more interesting.

For the Euro/German mark, the information ratio varies from 0.14 to 0.38 depending on the passive benchmarks. For the U.K. pound and the U.S. dollar, the information ratio fluctuates from 0.47 to 0.65, and from 0.31 to 0.58 respectively, depending on the benchmarks.

Results at the portfolio level (in Table 2, panel B) are, however, more conclusive. Although the information ratio for the *FHR* versus the two extreme benchmarks is in the same range (0.45 for the unhedged and 0.54 for the fully

hedged benchmarks), it is much higher for the *FHR* versus the partially hedged approach at 0.83. As expected, the *FHR* has more room to deviate from a symmetric hedging currency mandate (such as the 50-50 benchmark) than from asymmetric hedging currency mandates (fully hedged or unhedged). The previously discussed case of Japan represents the perfect example of a case where the *FHR* could not add value relative to the fully hedged because of a lack of room to move.

## FHR OVER SUB-PERIODS

Thus far, we have only examined the performance of the hedging strategies over a long horizon. For sake of robustness, we re-examine the performance of the *FHR* over all possible three-year and 10-year periods beginning in January of each year. Panel A and B of Table 3 summarize the comparisons of the *FHR* vs. passive benchmarks in terms of return per unit of risk for all possible three-year and 10-year periods. More specifically, we count the number of times (in percentage) the *FHR* has a strictly higher return per unit of risk than a given passive benchmark. This corresponds to the dominance test in Eun and Resnick (1988, 1994, 1997) and Vanderlinden, Jiang and Hu (2002).

Results for the three-year periods show that, in most cases, the *FHR* dominates the three other benchmarks more than 50% of the time. We note, however, an exceptionally low rate for Japan, where the *FHR* beats the fully-hedge benchmark

**Table 3: FHR VERSUS THE THREE PASSIVE STRATEGIES OVER DIFFERENT SUB-PERIODS**

This table presents the percentage of times the *FHR* dominates the 3 benchmarks—hedged, unhedged and 50-50—over three-year and ten-year periods. Results are presented for each currency and the portfolio MSCI World ex-Canada Index.

<b>Panel A: Three-year periods 1976-2005</b>	<b>Unhedged</b>	<b>Partially hedged (50%/50%)</b>	<b>Fully hedged</b>
Germany	64.3%	67.9%	39.3%
Japan	60.7%	60.7%	7.1%
U.K.	46.4%	78.6%	82.1%
U.S.	64.3%	75.0%	67.9%
<b>1988-2005</b>			
Portfolio MSCI World ex-Canada	75.0%	81.3%	93.8%
<b>Panel B: Ten-year periods 1976-2005</b>	<b>Unhedged</b>	<b>Partially hedged (50%/50%)</b>	<b>Fully hedged</b>
Germany	90%	95%	71%
Japan	67%	57%	24%
U.K.	67%	95%	100%
U.S.	81%	100%	100%
<b>1988-2005</b>			
Portfolio MSCI World ex-Canada	89%	100%	100%

only 7% of the time. This is simply due to the fact that the *FHR* has taken a fully hedged position for 25 consecutive years. It is therefore not surprising that both strategies post the same result most of the time over all the three-year periods. Results at the portfolio level are more striking, with the *FHR* beating the three benchmarks at least 75% of the time. According to panel B of Table 3, for the 10-year period results, the *FHR* dominates the three benchmarks at least 67% of the time with the single exception of Japan. Results at the portfolio level are even more outstandingly in favour of the *FHR*, with the latter dominating the partially hedged and fully hedged strategies all the time (100%) and the unhedged position 89% of the time.

## CONCLUSION

In this paper, we examine whether the *FHR* outperforms the fully hedged, unhedged and 50-50 currency benchmarks. We take the point of view of a Canadian investor with investments in the 22 countries that are part of the MSCI World ex-Canada Index. All currency hedging strategies are compared at both the country and portfolio levels. At the country level, we focus only on the four major currencies (Japanese yen, U.K. pound, Euro/German mark, and U.S. dollar), our sample covering the 1976-2005 period. At the portfolio level, our sample covers all 22 developed markets over the 1988-2005 period.

Our study provides further evidence of the benefits of active currency hedging strategies. More specifically, we show that the *FHR* outperforms the three passive approaches at the country level over the whole period. While information ratios are generally higher than 0.50 for the U.K. pound and the U.S. dollar, they are on average 0.27 for the Euro/German mark, and only 0.05 for the Japanese yen. We also show that at the currency level, because interest rates are sticky, the *FHR* can perfectly mimic one of the extreme passive benchmarks during long periods.

At the portfolio level, the *FHR* is more effective and benefits from diversification effects. It reaches an average information ratio of 0.60. The dominance of the *FHR* is also observed in most sub-periods: the *FHR* dominates the three passive benchmarks over three-year periods from 75% of the times for the unhedged benchmark to 94% of the times for the fully hedged benchmark.

We only present results of a currency mandate where the manager hedges relative to a reference currency (CAD) and a specific benchmark—the MSCI World ex-Canada Index. Results from symmetric currency mandates (vs. a partially hedged benchmark) are then more interesting than results from symmetric currency mandates (vs. a fully hedged or an unhedged benchmark). Further, our results

are more influenced by the currency results from the major countries in the index. Other variants of the *FHR* could be as promising as the framework examined. Overlay currency hedging strategies could use an equal-weighting scheme rather than a value-weighted scheme. They also could be long/short portfolios based on the relative importance of the currencies' premium or discount, and not only function of the currency being at a premium or at a discount. ■

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