

HEDGED GLOBAL INVESTING: A CANADIAN PERSPECTIVE

BY HARRY MARMER

From a total portfolio perspective, currencies are a much larger component of return and risk for global bond portfolios than for global stock portfolios. Hence, on the surface, it may appear that only global bond managers need to focus on managing currencies. However, over different subperiods representing specific foreign exchange regimes, currency hedging significantly improved the risk-return tradeoff for global stock mandates. Therefore, global equity managers should also consider managing currency.

For Canadian pension plan sponsors evaluating global investment managers, currency does matter. With the typical performance evaluation period lasting only four to five years, the specific currency regime existing over that period can significantly impact the manager's results. Hence, performance attribution should include a currency component.

Sponsors who employ global managers that lack currency skills or claim to be "bottom up" or "hard currency managers" should reevaluate these managers to determine the "luck factor" in performance results. In other words, how much of value added is due to unmanaged currencies?

Several studies have shown that diversifying outside the local market provides for superior risk-return opportunities¹. In the United States, pension fund foreign investments totalled 6% in 1991 and this amount is expected to increase to 13% by 1996².

In contrast, Canadian sponsors are aggressively jump-

ing on the global investing bandwagon. In 1991, 10.8% of Canadian pension assets were invested outside of Canada and, by 1994, this amount is expected to increase to 17.3%³.

Given the significance that non-Canadian investments are, and will continue to be, play for Canadian sponsors, Canadian and non-Canadian managers are deluging sponsors with offers for global mandates. How important is currency for global bond and stock managers? Should these global mandates consider hedging currency risk? Specifically, from a mean-variance perspective, has currency hedging been an optimal decision for global bond and equity mandates?

GLOBAL BOND INVESTING: THE HISTORICAL RECORD

From a Canadian investor's perspective, unhedged bonds displayed higher returns than hedged bonds, with the exception of the US market where hedged returns were marginally higher than unhedged returns (Table 1). These results suggest that foreign currencies, excluding the US dollar, systematically appreciated against the

Canadian dollar by an amount that, on average, exceeded the forward premium or discount.

Over the past 15 years, unhedged Japanese bonds had the highest return and level of risk of all fixed income

Currency hedging should be an integral component of the portfolio management process for both global fixed income and equity managers catering to Canadian sponsors. If global money managers are going to excel in the marketplace, they should explicitly establish and implement currency management strategies, as currency returns and risks can significantly impact portfolio results.

Harry Marmer, CFA, is a Partner with Mercer Asset Planning Services, William M. Mercer Limited in Toronto. This research is based on a study prepared for the CIBC Foreign Exchange.

HEDGED GLOBAL INVESTING

sectors. In contrast, hedged Japanese bonds were the second lowest returning foreign market, implying a significant portion of return was due to the appreciating Yen.

Correlation coefficients preview which asset classes may provide diversification benefits. The largest positive correlation coefficient was between the US and Canadian market reflecting the close economic ties between these two countries.

Hedging increased the correlation coefficients with the Canadian bond market. This supports the viewpoint that exchange rate movements are generally unrelated to movements in asset prices and are, thus, diversifiable to some degree ⁴.

Risk was meaningfully reduced in Japan, Germany and the UK with the most significant decrease in risk occurring in the Japanese bond market where volatility was reduced by 57% (Figure 1). In both Japan and Germany, currency risk was even larger than local interest rate risk.

Hedged risks were also very close to local market risks. Hence, hedging currency risk allows for a "pure play" on the specific local market risk.

However, for the US market, hedged risk actually increased relative to unhedged risk. If the correlation between the foreign asset's return and the exchange rate

Table 1

International Bond Performance 1978-1992

	Unhedged (Cdn.\$)					Hedged			
	Cdn.	Ger.	Jap.	UK	US	Ger.	Jap.	UK	US
Average Return (%)	12.3	10.5	13.6	13.2	12.0	9.5	10.7	10.9	12.3
Volatility (i.e., Risk) (%)	14.2	17.4	18.1	17.6	13.8	7.7	7.8	11.6	14.4
<i>Correlation with</i>									
Canada (Cdn.\$)*	1.00								
Germany (Cdn.\$)	.35	1.00							
Japan (Cdn.\$)	.39	.74	1.00						
UK (Cdn.\$)	.37	.50	.54	1.00					
US (Cdn.\$)	.83	.47	.42	.38	1.00				
Germany (Hedged)	.58	.55	.45	.22	.55	1.00			
Japan (Hedged)	.58	.43	.66	.41	.54	.60	1.00		
UK (Hedged)	.48	.13	.27	.67	.41	.43	.55	1.00	
US (Hedged)	.90	.42	.38	.38	.95	.57	.57	.47	1.00

*Scotia McLeod (SML) Long Term Total Return Index. The foreign indexes are proxied by the representative Ibbotson Bond Total Return Index

TABLE ONE

Efficient Frontier Analysis

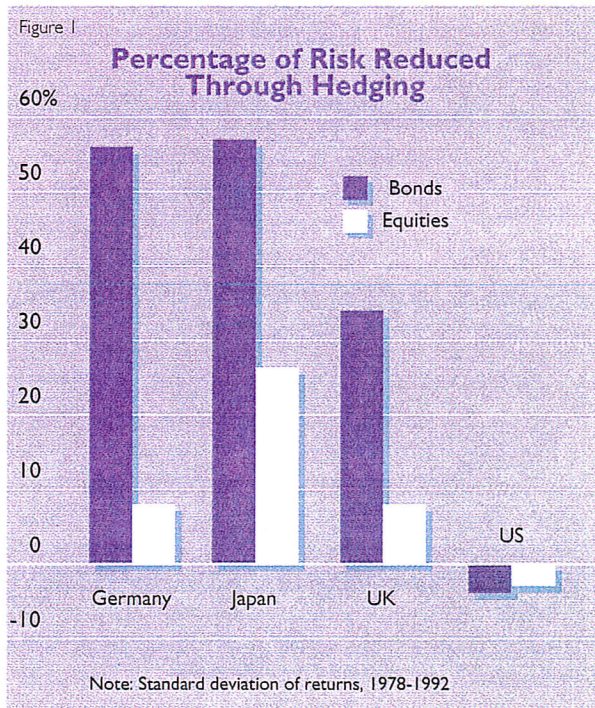
The efficient frontiers for both hedged and unhedged global bonds were derived from the statistics in Table 1. Including global hedged bonds in the optimization model in Figure 2 extends the efficient frontier curve significantly to the left of the efficient frontier without global hedged bonds. Thus, hedging global bonds broadens the investor's opportunities as portfolios containing significant lower levels of risk can be achieved. Points A through B represent the range of the efficient frontier containing hedged bonds where superior risk reduction opportunities can be reached.

Figure 2 shows that opportunities for higher return and lower risk can be also be achieved by considering hedged bonds.

For example, point D on the efficient frontier including hedged bonds and point C on the efficient frontier without hedged bonds both have the same expected return of 12.16%. However, the risk associated with point D is 170 basis points lower than the risk associated with point C.

Hedged bonds play a major role in reducing risk in the optimal portfolios as they enter most mixes across the efficient frontier, up to a maximum of 67% of total bonds.

FIGURE ONE



return is negative, then the asset's unhedged risk may be lower than its hedged risk³.

The negative correlation between US bond returns and Canadian dollar returns explains the increase in hedged risk relative to unhedged risk for US bonds.

The general results of this study are that hedging in the global bond market reduced risk and return, and increased the correlation with the Canadian bonds. Does the reduction in return and increase in correlation

ing global markets. Hence, the return, risk and correlation statistics suggest that there are only minor benefits in hedging currency risks for global stock portfolios.

HEDGING EFFECTIVENESS OVER WEAK AND STRONG CANADIAN DOLLAR REGIMES

The study's results suggest that from a Canadian investor's perspective, hedging currency risk in global bond portfolios can provide for superior risk-return opportunities. For global stock portfolios, hedging does not appear to provide any distinct advantages.

However, these results are constrained for two reasons. First, from an asset mix modelling perspective, these results are limited by the time period sensitivity of efficient frontier modelling; as model inputs shift with fluctuating economic conditions, so do the model outputs⁷. Efficient frontiers based on return, risk and correlation statistics determined over a long period can be inefficient over shorter timeframes for the same data period.

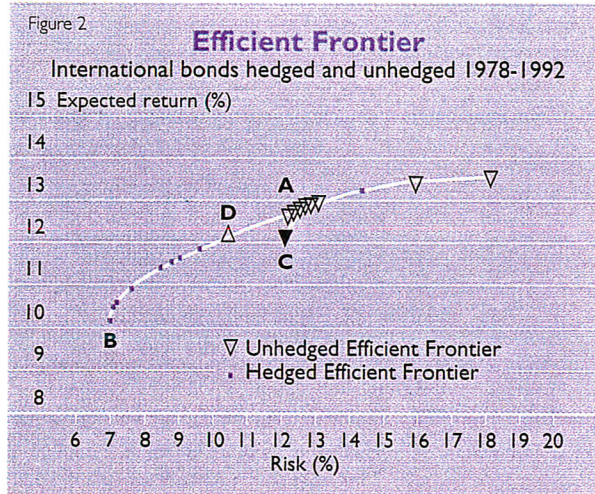
Second, from a currency management viewpoint, recent research has found that currency movements follow a trending pattern⁸. More specifically, there is strong evidence for both trending behaviour and for questioning the efficiency of the foreign exchange market with respect to the Canadian dollar versus the US dollar⁹.

Over the past 15 years, the Canadian dollar exhibited two distinct trends relative to the US dollar. The 1978-1985 period was a weak Canadian dollar period, as the Canadian dollar depreciated, on average, 3% a year against the US dollar. In contrast, the period 1986-1991, was a strong Canadian dollar period, as the Canadian dollar gained on average 3.8% a year against the US dollar. How sensitive is the efficient frontier to these two distinct Canadian dollar regimes?

OPTIMIZATION FOR WEAK AND STRONG CANADIAN DOLLAR PERIODS

During the weak Canadian dollar period, the efficient frontier results were similar to the overall period results; by including hedged foreign bonds, the efficient frontier was extended and provided for higher return and lower risk opportunities (Figures 3 and 4).

FIGURE TWO



suggest that from a global mandate perspective, hedging is not worthwhile? This question is examined next to determine if hedging currency risk was an optimal decision from a global fixed income portfolio perspective.

The study's results (see sidebar on page 24) support other research which has found that, from a mean-variance perspective, hedged global bonds can provide for improved return to risk opportunities relative to unhedged bond portfolios⁷. For Canadian investors contemplating global fixed income mandates, it is clearly inefficient to consider only unhedged foreign bonds.

GLOBAL STOCK INVESTING: THE HISTORICAL RECORD

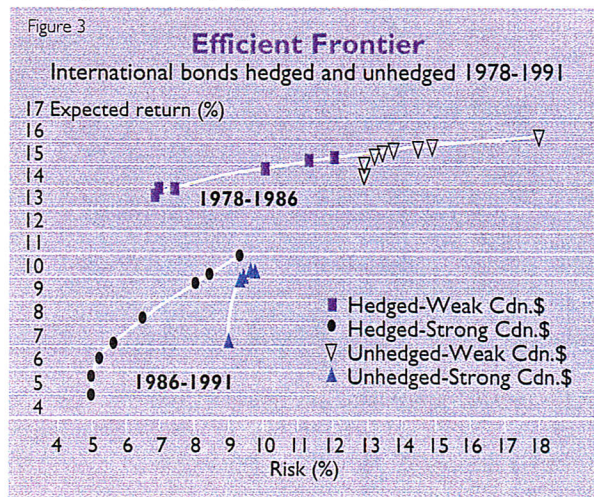
From a Canadian investor's perspective, both hedged and unhedged foreign equity markets displayed higher returns than the Canadian market with unhedged Japanese stocks being the top performing equity market over the past 15 years (Table 2). With the exception of the US equity market, both hedged and unhedged foreign equity markets also displayed higher levels of risk than the Canadian stock market.

While currency hedging generally decreased returns in foreign equity markets, it also reduced the risk of foreign markets. The exception to this was the United States where hedging both increased return and risk.

While risk was reduced in each of the foreign equity markets, excluding the US, the reduction in risk was less dramatic than in foreign bond markets (Figure 1).

The negative correlations between Germany, UK and US stock markets and their respective currencies partially explains the weak risk reduction capabilities in hedg-

FIGURE THREE



HEDGED GLOBAL INVESTING

FIGURE FOUR

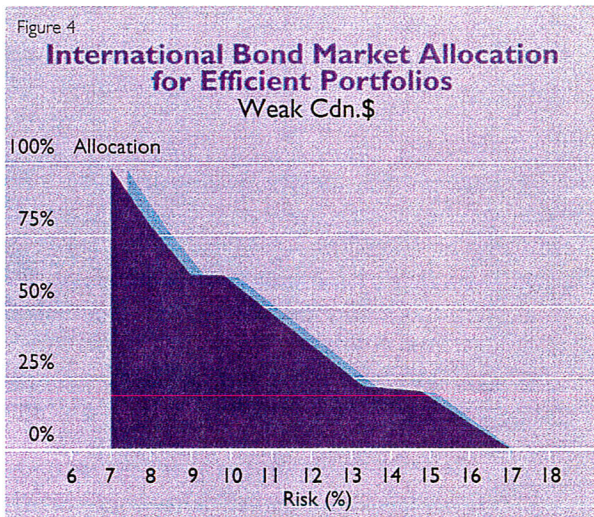


FIGURE SEVEN

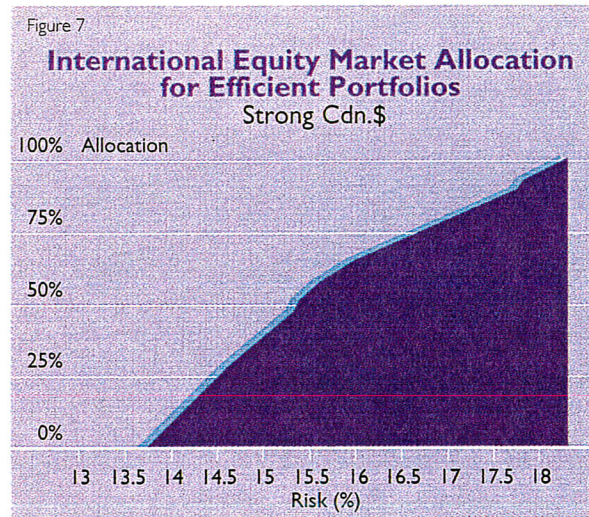


FIGURE FIVE

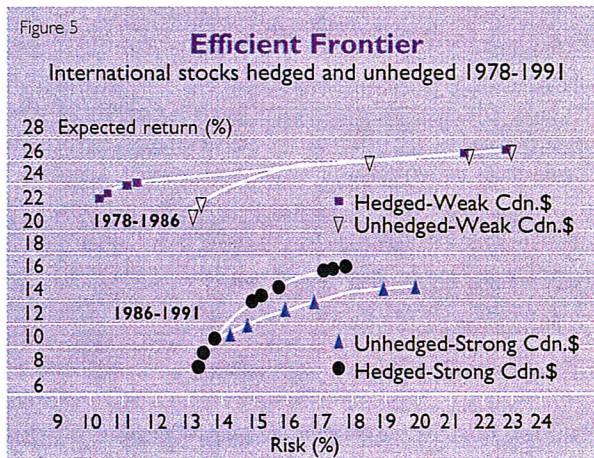
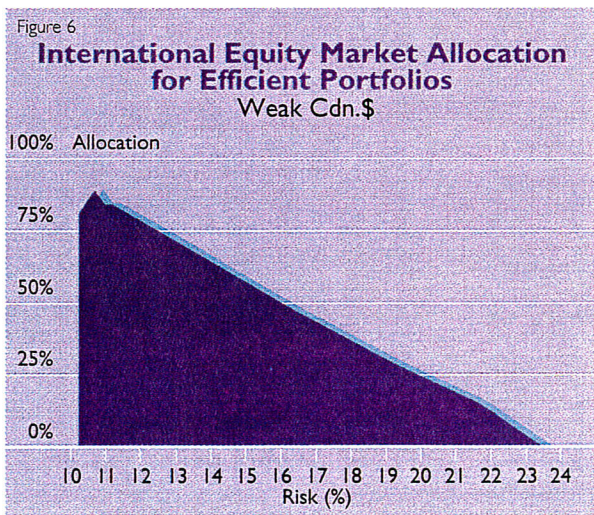


FIGURE SIX



Over the strong Canadian dollar period, the efficient frontier that included hedged global bonds completely dominated the unhedged efficient frontier. The optimal

portfolio allocations were dominated by hedged bonds with up to 100% of the efficient frontier in hedged bonds, specifically US bonds. Canadian investors in hedged US bonds were paid a forward premium for an appreciating currency, the Canadian dollar.

During both the weak and strong Canadian dollar periods, hedged global equities provided for superior return to risk opportunities and dramatically improved the efficient frontiers (Figures 5,6 and 7).

During the weak Canadian dollar period, up to 85% of the efficient portfolios were allocated to hedged stocks. The maximum return point was entirely invested in unhedged Japanese stocks. The hedged efficient frontier dominates the unhedged frontier. Moving down the curve, hedged Japanese stocks provide for a low risk substitute for unhedged Japanese stocks. Hedged equities provided for lower risk portfolios.

Similar to the global fixed income optimization, global equity results during the strong Canadian dollar period were driven by the foreign exchange returns paid to Canadian investors in US stocks, as US stocks become the maximum return - maximum risk point.

INVESTMENT MANAGEMENT IMPLICATIONS

These results suggest that currency hedging should be an integral component of the portfolio management process for both global fixed income and equity managers catering to Canadian sponsors.

In the long term, although currency returns vary, currency risk always exists.

From a total portfolio return to risk perspective, currencies are a much larger component of return and risk for global bond portfolios than for global stock portfolios. Hence, on the surface, it may appear that only global bond managers need to focus on managing curren-

cies. However, over different subperiods representing specific foreign exchange regimes, currency hedging significantly impacted and improved the risk-return tradeoff for global stock mandates. Therefore, global equity managers should also explicitly manage currency.

For global stock managers focusing on local market factors to determine investment decisions (for example, bottom up managers), hedging is the only way to replicate local market risk characteristics.

Investment managers attempting to add value through strategically hedging currencies, should consider the specific currency regime period in relation to the correlation of returns between the currency and the local asset class¹⁰.

For Canadian sponsors evaluating global investment managers, currency does matter. With the typical performance evaluation period lasting only four to five years, the currency regime existing over that period can significantly impact the manager's results. Hence, performance attribution of global managers should include a currency component.

Sponsors who employ global managers that lack currency skills or claim to be "bottom up" or "hard currency managers" should determine the "luck factor" in perfor-

Table 2

International Stock Performance 1978-1992

	Unhedged (Cdn.\$)					Hedged			
	Cdn.	Ger.	Jap.	UK	US	Ger.	Jap.	UK	US
Average return (%)	13.1	14.8	19.2	19.0	16.9	13.8	16.3	16.7	17.2
Volatility (i.e., Risk) (%)	17.3	21.9	25.7	19.5	15.1	20.2	21.3	18.0	15.6
<i>Correlation with</i>									
Canada (Cdn.\$)	1.00								
Germany (Cdn.\$)	.24	1.00							
Japan (Cdn.\$)	.36	.30	1.00						
UK (Cdn.\$)	.50	.33	.39	1.00					
US (Cdn.\$)	.76	.38	.39	.62	1.00				
Germany (Hedged)	.37	.76	.10	.45	.49	1.00			
Japan (Hedged)	.46	.21	.83	.33	.45	.30	1.00		
UK (Hedged)	.58	.20	.33	.76	.69	.45	.54	1.00	
US (Hedged)	.82	.32	.37	.62	.96	.46	.46	.71	1.00

T
A
B
L
E

T
W
O

mance results. In other words, how much of value added is due to unmanaged currencies?

In evaluating and selecting global bond and stock managers, Canadian pension sponsors need to better understand both the currency returns and risks these money managers are taking and set appropriate policies to guide and evaluate them. Otherwise, as management guru Peter Drucker stated with respect to managing currency exposure, "to do nothing, might be more speculative still ¹¹."

ENDNOTES

1. Odier, P. and B. Solnik, "Lessons for International Asset Allocation," *Financial Analysts Journal*, March-April 1993; H. Marmer, "Optimal International Asset Allocations Under Different Economic Environments: A Canadian Perspective," *Financial Analysts Journal*, Nov-Dec 1991; P. Jorion, "Asset Allocation with Hedged and Unhedged Foreign Stocks and Bonds," *The Journal of Portfolio Management*, Summer 1989.

2. Futures, pg. 36, June 1993.

3. *Benefits Canada*, Greenwich Reports, Survey of Canadian Pension Funds, 1992.

4. Jorion, P. "Asset Allocation with Hedged and Unhedged Foreign Stocks and Bonds," *Journal of Portfolio Management*, Summer 1989.

5. Benari, Y. "When is Hedging Foreign Assets Effective?" *Journal of Portfolio Management*, Pg. 69, Fall 1991.

6. Filatove, V., K. Murphy, P. Rappaport

and R. Church, "Foreign Bonds in Diversified Portfolios: A Significant Advantage," *Financial Analysts Journal*, July-August 1991; and M. Fox, "Different Ways to Slice the Optimization Cake," *Financial Analysts Journal*, July-August 1991.

7. Marmer, H. "International Asset Allocation Under Different Economic Environments: A Canadian Perspective," *Financial Analysts Journal*, Nov-Dec. 1991; Y. Benari, "Optimal Asset Mix and Its Link to Changing Fundamental Factors," *Journal of Portfolio Management*, Winter 1990; J. Farrell Jr., "A Fundamental Forecast Approach to Superior Asset Allocation," *Financial Analysts Journal*, May/June 1989; P. Jorion, "International Portfolio Diversification with Estimation Risk," *Journal of Business*, No. 3, 1985; and R. Merton, "On Estimating the Expected Return on the Market," *Journal of Financial Economics* 8 (1980).

8. Weijel, E. "Are There Really Trends in Foreign Exchange Returns?" *The Journal of*

Investing, Summer 1993.

9. Kodres, L. "Tests of Unbiasedness in the Foreign Exchange Futures Markets: An Examination of Price Limits and Conditional Heteroscedasticity," *Journal of Business*, Vol. 66, #3, 1993; L. Leachman and M. Shazly, "Cointegration Analysis, Error Correction Models and Foreign Exchange Market Efficiency," in the *Journal of International Financial Markets, Institutions and Money*, Vol. 2, #1, 1991; E. Weijel, "Are There Really Trends in Foreign Exchange Returns?" *The Journal of Investing*, Summer 1993.

10. Ramaswami, M. (in "Active Currency Management," The Research Foundation of the ICFA, 1993) suggests that there may be opportunities in strategically managing currencies as a separate asset class, as currency returns appear to exhibit strong nonlinear dependence.

11. Drucker, P. *The Frontiers of Management*, Pg. 69, Fitzhenry & Whiteside, Toronto.