

## HOW HEDGING SUBSTANTIALLY REDUCES FOREIGN STOCK CURRENCY RISK

Possible losses from changes in currency exchange rates are a risk of investing *unhedged* in foreign stocks. While a stock may perform well on the London Stock Exchange, if the British pound declines against the U.S. Dollar, your gain can disappear or become a loss. And, currency fluctuations are more extreme than stock market fluctuations. In more than thirty years, the Standard & Poor's 500 Stock Index has declined on an annual basis more than 20% only twice, in the back-to-back bear market of 1973 and 1974. By contrast, the U.S. dollar/pound, U.S. dollar/deutsche mark relationship has moved more than 20% on numerous occasions. In the last twenty years, there was a four to five year period, during 1979 – 1984, when the U.S. dollar value of British, French, German and Dutch currency declined by 45% to 58%.

### THE COST OF HEDGING

A study by Lee Thomas, *The Performance of Currency – Hedged Foreign Equities*, examined the performance of equities in Germany, France, Canada, the United Kingdom, Japan and Switzerland from 1975 through 1988, comparing unhedged results to hedged results for a U.S. dollar investor. These six stock markets accounted for about 88% of the world market capitalization, excluding the United States. The study used FT-Actuaries Indices equity returns, included dividends and assumed that the beginning of each month the investor hedged by selling forward (for U.S. dollars) for one-month delivery the foreign currency value of his equity shares. Over the 1975 through June 1988 study period, the compounded annual returns on hedged and unhedged foreign equities were 16.4% and 16.5%, respectively.

Another study, *Asset Allocation with Hedged and Unhedged Foreign Stocks and Bonds* by Philippe Jorion, examined the hedged and unhedged results for an investment in the Morgan Stanley Capital International EAFE (Europe, Australia, Far East) Index from January 1978 through December 1988. This study, like the preceding study by Lee Thomas, assumed that at the beginning of each month, the foreign currency exposure is hedged through a one-month forward sale of the foreign currency value of the equity holdings. Over the January 1978 through December 1988 period, the average annual returns on hedged and unhedged foreign equities were 20.9% and 22.9%, respectively.

When considering the cost of hedging, it is important to remember that an investor whose net worth is counted in U.S. dollars really has only two investment alternatives: to be unhedged or to be hedged. The “cost” of being hedged should only be considered in comparison to the investment results, *after the fact*, of having been unhedged. The only way that an unhedged U.S. investor in British stocks can earn the same percentage return as the British owner of the same stocks is if the U.S. dollar/United Kingdom currency exchange rate is unchanged – which seldom happens.

In summary, over long measurement periods, studies have indicated that the compounded annual returns on hedged foreign stock portfolios have been similar to the returns on unhedged foreign stock portfolios. Hedged equity portfolios have been significantly less volatile than unhedged equity portfolios, and have avoided heart-stopping, multi-year 45% - 58% currency losses.

### CURRENCY HEDGING COSTS FROM A BARGAIN HUNTER'S PERSPECTIVE

Leaving aside comparisons of hedged investment returns versus unhedged investment returns, known hedging costs can be considered as part of the *net investment* to acquire a bargain stock. For example, if the known hedge cost is 3% per year, an investment at 60FFr per share in a French closed end mutual fund – whose cash and common stock holdings are worth 100 Francs per share – would cost 3% x 60 Francs/share = 1.8 Francs per year. Instead of paying 60FFr for 100 FFr of true value, the investment over a one-year period would work out to 61.8FFr for 100 FFr of value. In one year, the French mutual fund's asset value is likely to be worth more than 100 FFr. On a net investment basis, a purchase of

100FFr of true value at 60FFr, with an additional 1.8FFr cost gradually incurred over a twelve month period, is still an excellent bargain purchase.

## HOW CURRENCY HEDGING WORKS

Currency hedging is similar to selling short. For example, assume we transact to buy \$1,000,000 worth of British Steel shares when the exchange rate is: £1 = \$2. In order to pay the seller for the British Steel shares which we have agreed to acquire, we first use \$1,000,000 to purchase 500,000 British pounds at \$2.00 per pound, and then deliver the 500,000 British pounds to the seller in exchange for the British Steel shares which we have acquired. Now, we own a British stock which is denominated in pounds, not U.S. dollars. To hedge against the risk of the pound exchange rate declining below \$2.00, we agree to sell 500,000 pounds (which we do not own) in six months for \$1.97, or \$985,000. Assuming the price of British Steel's stock remained unchanged and the exchange rate of the pound declined to \$1.50, the U.S. dollar value of our holdings would decline 25%, from \$1,000,000 to \$750,000, or a \$250,000 loss of value. However, our contract to sell 500,000 pounds which we do not own at a fixed price of \$1.97 (or \$985,000) produced a gain of \$235,000 when we bought the 500,000 pounds at \$1.50 (or \$750,000 total) and delivered them to the buyer in exchange for the previously agreed upon \$1.97 per pound (or \$985,000 total). The \$235,000 hedge profit largely offset the \$250,000 currency loss on the British Steel holdings. In this example, if the pound had increased from \$2.00 per pound to, say, \$3.00 per pound in six months, the U.S. dollar value of the 500,000 pounds invested in British Steel stock would have increased from \$1,000,000 to \$1,500,000, a gain of \$500,000. Offsetting this \$500,000 currency gain would be a \$515,000 hedge loss on the contract to sell 500,000 pounds (which we do not own) at \$1.97 per pound. (The 500,000 pounds are purchased at the exchange rate at the end of six months, \$3.00 per pound, or \$1,500,000 total, and delivered to the buyer, who pays us the previously agreed upon price, \$1.97 per pound, or \$985,000 total, producing a \$515,000 hedge loss.)

Currencies are hedged primarily through forward and futures contracts. The cost to a U.S. investor of hedging foreign currencies through forward and futures contracts is approximately equal to the difference between interest rates in the United States and the particular foreign country over the contract period. For example, if interest rates in the United Kingdom are 6% for a one-year certificate of deposit versus 3% for a one-year certificate of deposit in the United States, the cost of selling \$1,000,000 worth of pounds forward for delivery in one year will be close to the difference between the one year interest rate in Britain, 6%, and the one year rate in the U.S., 3%, or a 3% cost, which would be \$30,000 on the hedging of \$1,000,000 worth of pounds.

The reason why the percentage cost of hedging through forward and futures contracts is approximately the difference between interest rates in Britain and the U.S. over the contract period is that the other party to the forward contract, typically a bank, must be reimbursed by the forward contract for the costs which the bank incurs. Those costs are determined primarily by the two countries' interest rates. Here is how it works: Going back to the British Steel example, assume that interest rates in Britain and the U.S. are 6% and 3%, respectively. The exchange rate of the pound on January 1 is \$2.00 and we agree to sell \$1,000,000 worth of pounds (or 500,000 pounds) forward for delivery in one year at \$1.94 per pound (or \$970,000). The other party to this forward sale transaction, typically a bank, agrees to buy 500,000 pounds from us in one year at a price of \$1.94 per pound, or \$970,000. The bank entering into this transaction would not want to be obligated to buy 500,000 pounds at \$1.94 in one year without protecting itself against currency risk. You can see that if the bank did not protect itself on this obligation, and the pound declined to \$1.00 in a year, it would suffer a \$470,000 loss. To cover its obligation to buy 500,000 pounds at \$1.94 in one year, the bank borrows 500,000 pounds on January 1 at an interest expense of 6% per year (or 30,000 pounds, which is \$60,000 at the January 1 exchange rate of \$2.00 per pound) and uses the 500,000 pounds to buy \$1,000,000 U.S. dollars at the January 1 exchange rate, \$2.00 per pound. Then, the bank invests the \$1,000,000 for one year at the U.S. interest rate, 3%, and earns \$30,000 in interest. Twelve months pass, and by December 31 the bank has paid \$60,000 in interest on the 500,000 pounds which it has now borrowed for one year, and earned \$30,000 in interest on the \$1,000,000 which was invested for one year. The net cost to the bank is \$60,000 interest expense less \$30,000 interest income, or a net cost of \$30,000. On December 31, our forward contract to sell 500,000 pounds to the bank at \$1.94 per pound, or \$970,000 total, comes due. We deliver 500,000 pounds to the

bank, which the bank uses to repay the 500,000 pounds which it has borrowed. The bank pays us the agreed amount, \$970,000, for the 500,000 pounds which we delivered. The \$970,000 paid to us by the bank is the \$1,000,000 which the bank had invested for one year, plus \$30,000 interest earned for one year, less \$60,000 interest cost on the 500,000 pounds which the bank borrowed at 6%. The bank is “whole” on acting as the counter party to our forward sale of 500,000 pounds.

In actual practice, the difference between the forward currency price and the current currency price would usually be a somewhat greater percentage than the bank’s net cost and the bank would earn a profit. In the above example, if the forward price for the pound had been \$1.938 (instead of \$1.94), the bank would have been obligated to pay 500,000 pounds x \$1.938, or \$969,000 on December 31. A \$1.938 forward rate would have generated a \$1,000 profit for the bank (broken down as follows: \$1,000,000 which the bank had invested for one year, plus \$30,000 interest earned for one year, minus \$60,000 interest cost on the 500,000 pounds which the bank had borrowed at 6% interest, minus \$969,000 which must be paid to us on December 31, which equals a \$1,000 profit).

If the pound had declined from \$2.00 to \$1.00, the bank does not suffer any loss, even though it is obligated to buy 500,000 pounds at \$1.94 – because on January 1 it set aside the dollars to pay this amount. If the pound had increased from \$2.00 on January 1 to \$3.00 on December 31, the bank would not benefit because the 500,000 pounds which it bought (at \$1.94 per pound) were owed to someone else. The bank is obligated to repay its loan of 500,000 pounds through actual delivery of the 500,000 pounds or the equivalent amount of market value, \$1,500,000.

Arbitraders make sure that the difference between the current price of a currency, referred to as the “spot rate,” and the price of the currency for future delivery, referred to as the “forward rate”, is not less than the interest rate differential. If the difference between the spot rate and forward rate results in hedging costs which are less than the interest rate differential, arbitradgers will, for example, borrow money in the U.S. for one year at 3% interest rate, buy pounds with that money, invest the pounds in risk free certificates of deposit to earn 6%, and protect against currency losses by selling the same amount of pounds forward one year.

As long as the hedge cost is less than the 3% difference between U.S. and British one year interest rates, arbitradgers will continue to do this transaction. Their significant sales of the pound in the one year forward market will have the effect of driving down the forward currency price until the difference between the spot price and the one year forward price is no longer less than 3%.

**This article was originally authored by the portfolio managers at Tweedy Browne Company, LLC.**