



**Winner Global Pensions Magazine's
Currency Manager of the Year Ward
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HOW TO MEASURE CURRENCY OVERLAY MANAGERS

Executive Summary

Currency overlay managers are often evaluated using the “excess return approach.” This approach involves measuring the added value a currency overlay manager has achieved relative to an underlying currency benchmark.

Since the excess return a manager can achieve depends on whether a benchmark is 0%, 50%, or 100% hedged, excess returns are not comparable across managers unless the excess returns have been measured against benchmarks with the same hedge ratio, for the same time periods, and were achieved managing similar currency exposures with similar investment restrictions.

And, critically, a positive excess return does not actually indicate that a currency overlay manager has increased the real value of an underlying portfolio. It is possible to have a positive excess return while the value of the portfolio has been reduced.

Nor, does the excess return approach reveal how large the cash flows that are associated with a currency overlay strategy have been.

Cash flows are very important in a currency overlay. They must therefore be evaluated and understood by plan sponsors and pension consultant who select hedging strategies, benchmarks, and currency managers. Since the excess return approach does not provide information about cash flows, the excess return approach provides an incomplete picture of an overlay manager's results.

This paper discusses the excess returns and cash flows that are associated with the passive strategies to be 0%, 50%, or 100% hedged and it introduces a method to measure overlay returns relative to cash flows that presents a complete picture of how an overlay manager has performed – in real terms, relative to benchmarks, and how the cash flows of the returns relate to those of alternative passive benchmark strategies in various types of currency markets.

Introduction

It is difficult to compare currency overlay managers since currency overlay accounts are managed against benchmarks with different hedge ratios and the underlying currency exposures can vary substantially.

A common approach to evaluate an overlay manager's performance, which is used by several pension fund consultants, is to measure a manager's excess return relative to the benchmark and then compare it with the excess returns of other overlay managers to determine relative skill.

The excess return approach is useful since it reveals if a manager has outperformed the benchmark. However, because it does not clearly indicate if a currency overlay manager has actually increased the value of an underlying portfolio, the excess return approach provides an incomplete picture of a currency manager's results and can therefore mislead plan sponsors to believe a manager has increased a portfolio's total value.

This paper discusses several hedging strategies and presents an approach that links a currency overlay manager's returns with the cash flows that are associated with those returns for a complete picture of how much excess return a manager has achieved as well as whether a manager has increased the total value of an underlying portfolio.

The Excess Return Approach – Not a Complete Picture

The excess return approach is easy to understand and is easy to apply to equity managers who are measured against benchmarks like the S&P 500 and EAFE. A positive excess return indicates that a manager has skill and how much a manager has increased a portfolio's value.

The excess return approach is not as easily applied to currency overlay managers. Although a positive excess return indicates that a manager has outperformed the benchmark, the excess return is only comparable with those of other managers if they have managed against benchmarks with the same hedge ratio. An excess return achieved against a 50% hedged benchmark is not comparable with excess returns achieved against 0% or 100% hedged benchmarks.

And, a positive excess return for a currency overlay does not necessarily indicate that the excess return has increased a portfolio's value. It is possible for an overlay manager to have a positive excess return while the total value of a portfolio has been reduced!

Furthermore, the excess return approach does not provide any information about the cash flows that result from different active and passive hedging strategies. And, even though cash flows are very important in currency overlays, they have been largely unmeasured by consultants who evaluate overlay managers' performance records. Why? Probably because it is difficult to incorporate cash flows in traditional optimization strategies designed to reduce volatility and because it is often assumed that currencies have no long term return; gains and losses will "wash out" over the long term.

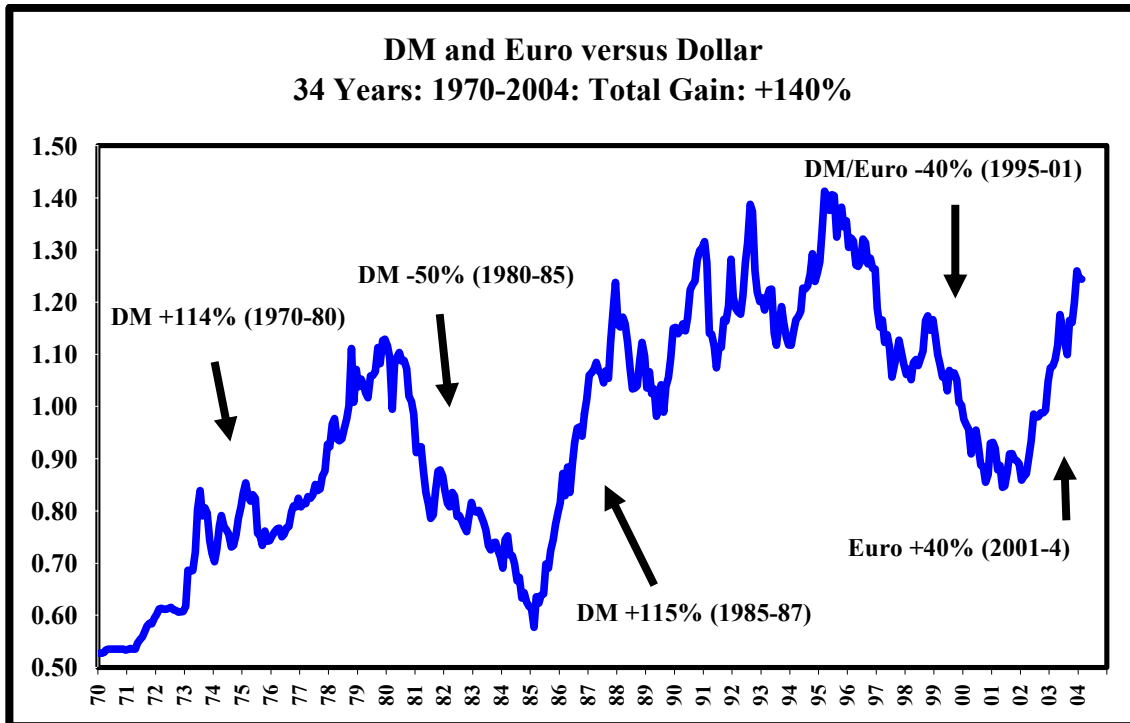
Currencies have Long Term Returns

It is often assumed that currencies have no expected return and that, therefore, currency losses will be offset by currency gains over the long term. With that assumption the passive strategies to be 0% or 100% hedged at all times are considered as equally acceptable, but they are not. The 0% hedged strategy is not associated with any cash flows from gains and losses on hedges while the 100% hedged strategy can have very large positive and negative cash flows.

Currencies do not have expected returns in the sense that they provide dividend or interest income. However, the major currencies that represent 80% to 90% of the currency exposure in most portfolios invested across borders have long histories of appreciating or depreciating.

From 1950 to 2000, the German Mark rose against the dollar at an annualized rate of +2.1%; the Japanese yen at an annualized rate of +3.3%; while the British pound declined at an annualized rate of -0.9%. These long term returns spanning fifty years are largely explained by differences in relative inflation rates. And, they are not trivial in today's low interest rate environment in which plan sponsors seek to boost total returns with various alpha strategies.

Currency returns are also large from year to year and over periods of two to three years in which major currencies often trend in one direction, producing large multi-year returns.



As illustrated in the chart, the DM and the euro have moved in very large trends against the dollar. This trending behavior must be a major consideration when a plan sponsor selects a currency hedging strategy and benchmark.

Passive Hedging Strategies

The choice of a passive currency hedging strategy is largely dictated by a plan sponsor's appetite or aversion to the risk of currency returns impacting a portfolio's total return.

A plan sponsor indifferent to currency returns impacting a portfolio's total return may choose to be unhedged at all times. The consequence of this choice is that currency returns will randomly impact a portfolio's total return over time. When currencies rise 10%, 20%, 30%, or more, the total return will be that much higher; when they decline 10%, 20%, 30%, or more, the total return will be that much lower. To be unhedged at all times is a risky strategy since currency losses often wipe out or seriously reduce the return of the underlying investments from year to year or over several years. That is why plan sponsors consider and adopt different hedging strategies. It is simply imprudent to leave the currency risk unmanaged.

A plan sponsor who prefers to avoid currency returns impacting a portfolio's total return may choose to be 100% hedged at all times. This strategy eliminates currency returns from a portfolio. However, the 100% passively hedged strategy does not remove the currency risk from a portfolio - it only moves the impact from one area to another.

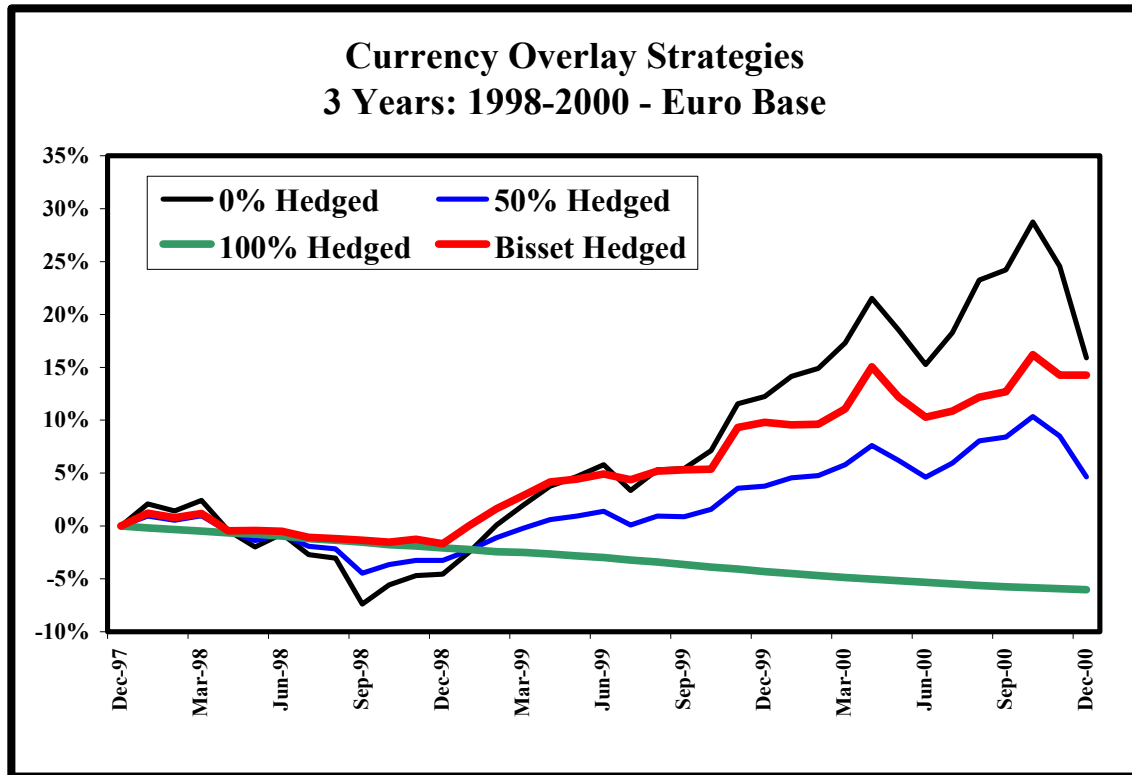
The Risk of a 100% Hedged Strategy

When currencies appreciate and they are unhedged, a portfolio's value is increased since the foreign holdings will be worth more in the investor's home currency. However, when currencies appreciate and they are 100% hedged, the hedge will incur a loss. That loss must be paid when the hedge matures. The loss can be settled in three ways: it can be paid using a cash reserve; it can be paid using a credit line; or it can be paid by selling some of the underlying investments.

When hedging losses are small, the impact of hedging losses is not that large. However, when they are 10%, 20%, 30%, or more, they become very troublesome and it is then very clear that the currency risk has not been eliminated from a portfolio even though it has been 100% hedged.

The significant risk of a 100% passive hedging strategy can be illustrated with what would have happened to a euro-based portfolio with investments in the U.S., the U.K., and Japan in 1998-2000. The currency exposure of a typical European pension fund is dominated by the dollar (usually more than 50%), sterling, and the yen.

The value of the currencies in the example portfolio rose 15.9% in the three years of 1998 through 2000 (see chart on next page). If the value of the portfolio was 100 million euro at its inception, the currency gain would have been 15.9 million euro. A 100% passive hedge during those three years would have incurred a loss of 6.0%. The loss relative to the unhedged strategy was 21.9%, or about 22 million euro. That hedging loss had to be paid.



It is unlikely that a 100 million euro portfolio would have had 22 million in cash to pay the hedging loss. As a result, underlying investments worth 22 million euro would have had to be sold to settle the hedging loss. That sale would have altered a plan sponsor's asset allocation and its future returns. After the sale, the portfolio would have held fewer shares of foreign companies and it would forgo the future return on those that were sold.

The 0% and 100% passively hedged strategies are both very risky since currencies have long histories of randomly rising and falling by 10%, or more, from year to year and have often changed in value by 50% to over 100% over periods of three to five years.

The unhedged strategy is deemed successful when currencies rise but it is undesirable when they decline. Likewise, a 100% passive hedging strategy is seen as successful when currencies decline and currency losses are avoided, but it is undesirable when currencies rise and hedging losses must be paid.

The polar nature of the 0% and 100% passive hedge strategies cause plan sponsors to regret having selected the wrong strategy in those years when the other strategy would have been better.

The 50% Hedge Alternative

Over the years, consultants, plan sponsors, and overlay managers have conducted numerous studies to determine the optimal hedge ratio; one that minimizes overall risk for a portfolio while the overall return is enhanced. These studies have found that there is no optimal hedge ratio. Thus, with an assumption that currencies have no expected long term return and that it is important to reduce currency risk and regret, the 50% hedged benchmark has become common for overlays in the United States.

The implementation of a 50% passive hedge cuts in half the impact currency returns have on a portfolio's total return relative to an unhedged strategy while it cuts in half the cash flows that are associated with a 100% passive hedge strategy. The 50% hedge is a compromise that reduces currency fluctuations, cash flows, and the regret that arises from the 0% or 100% passive hedge strategies.

However, since pension fund consultants like Frank Russell/Mellon CAPS, Mercer, and Watson Wyatt have found that currency overlay managers add value relative to 0%, 50%, and 100% hedged benchmarks an active currency overlay strategy is preferable to either one of the three passive strategies. An active overlay can add extra return while it can also improve the cash flow profile of the passive strategies.

Measuring Overlay Performance

Implementing an active currency overlay program involves selecting a currency benchmark, selecting a currency overlay manager or managers, understanding and managing the cash flows that result from the hedging strategy, and controlling the risk of the overlay program.

Performance is a very important factor in selecting investment managers. That is why it is crucial to clearly understand the pitfalls of using the excess return approach to measure and evaluate currency overlay managers.

The excess return approach is transparent for equity managers. With mandates to be fully invested they focus on selecting securities that will rise more than the benchmark in a bull market and that will decline less than the benchmark in a bear market. A positive excess return indicates that a manager has achieved that objective. The benchmark has been outperformed and the portfolio's total value has been increased relative to a passive investment in the benchmark index.

An active currency overlay is different. Its objective is to unhedge currencies when they rise and to hedge them when they decline to permit participation in currency gains while currency losses are reduced. The results of this process can be measured against a benchmark that is 0%, 50%, 100% hedged, or hedged to any other ratio.

In an unconstrained overlay program in which a manager is permitted to hedge exposures from 0% up to 100%, the excess return will be significantly influenced by the benchmark.

As shown in the example, the strategy to be unhedged in 1998 through 2000 resulted in a currency gain of 15.9% with no cash flows since there were no hedges. The 100% passively hedged strategy had a loss of 6.0%. (The difference of 21.9% was larger than 15.9% because the “cost” of the passive hedge included the interest rate differentials between the euro and the currencies that were hedged.) The payment to settle the passive hedging loss would have been 22 million euro for a portfolio of 100 million euro.

A plan sponsor who had implemented a 100% passive hedge strategy for the example portfolio would have seen the currency return removed from the investment portfolio but at the cost of foregoing a currency gain of 15.9% and incurring a real cost of 6.0%. That added up to a foregone return of 21.9% that would have required selling almost 1/5 or 20% of the portfolio’s assets to pay for the passive hedging losses.

If the example portfolio had been 50% passively hedged the currency return would have been 3.4% for the three years or 12.5 percentage points less than the unhedged strategy, but 9.4 percentage points more than the 100% hedged strategy. The 50% hedge would have required paying 11 million euro to settle hedging losses.

The selection of a 50% hedged benchmark is common in the U.S. since it is a compromise between the two polar strategies of 0% and 100% hedged. It is also accepted as a “good” benchmark by currency overlay managers and pension consultants since a skilled overlay manager will be able to produce an excess return against the 50% hedged benchmark regardless of whether currencies are rising or falling over periods of two to three years. However, a positive excess return relative to a 50% hedged benchmark does not necessarily indicate that a currency manager has increased the total value of the underlying portfolio.

Excess Returns Relative to a 50% Hedged Benchmark

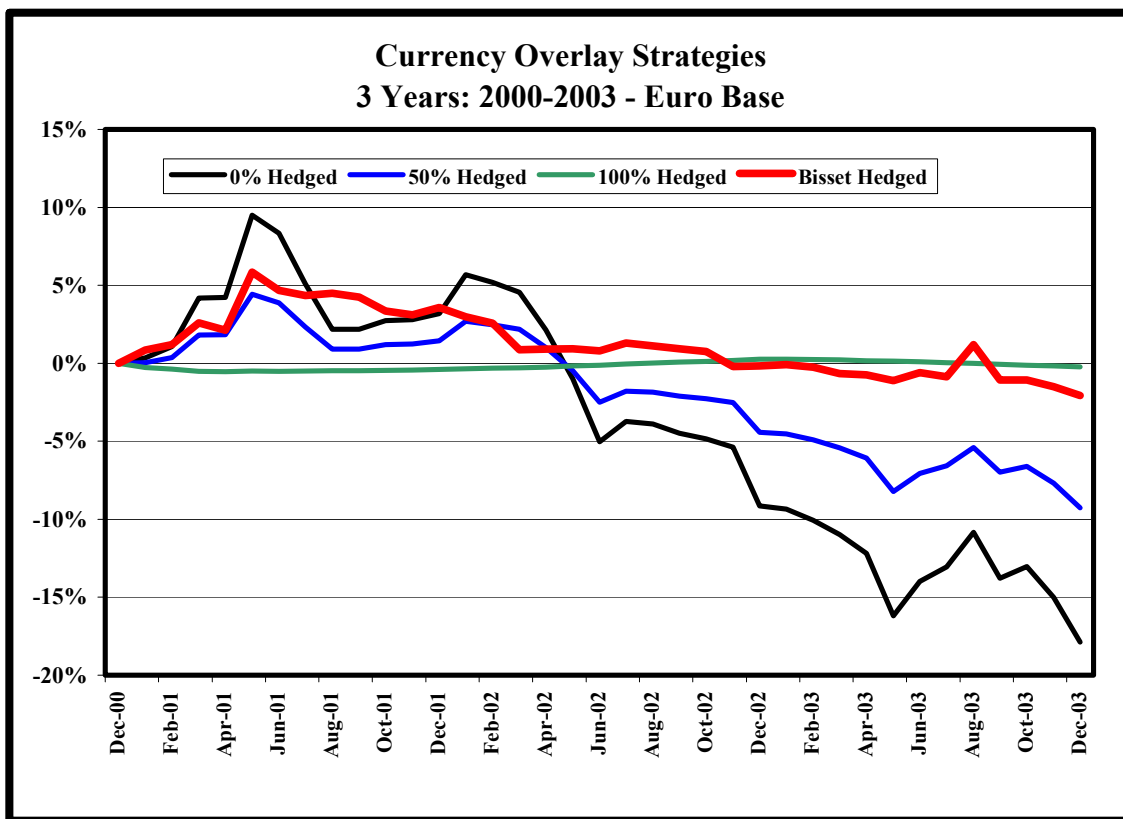
When a 0% hedged benchmark is used and currencies rise over two to three years, it is difficult for an overlay manager to produce any excess return relative to the benchmark. When unhedged, the manager can only match, but not exceed the benchmark return. Thus, if only excess return is considered as a measure of skill, one could conclude that a manager with little or no excess return in a period when currencies rise long term has little or no skill even though the best strategy is to be unhedged.

However, if a 100% hedged benchmark is used when currencies rise and the manager is unhedged, an excess return would be produced relative to the 100% hedged benchmark that indicates a manager has skill. But, assuming the manager employed the same strategy regardless of the benchmark the manager’s actual skill was the same as when no excess return was created relative to the unhedged benchmark.

The opposite is true when currencies decline over two to three years. At that time, it is easy for an overlay manager to achieve an excess return relative to a 0% hedged benchmark. Even a modest amount of hedging will produce an excess return when currencies decline. An excess return in those periods suggests a manager has skill. However, if the benchmark was 100% hedged and the manager was 100% hedged as

well, there would be no excess return relative to the 100% hedged benchmark and it would suggest that the manager had little skill even though the best strategy was to be fully hedged.

The two illustrations demonstrate that the excess returns overlay managers achieve are benchmark dependent and that they depend on whether currencies are generally rising or falling relative to the benchmark. In other words, excess returns are periodic. With an unhedged benchmark a successful overlay manager will produce little or no excess return when currencies rise but will achieve a potentially large excess return when they decline as illustrated in the chart below. It presents the results of the example portfolio in the three years of 2000 through 2003 in which the value of the currencies included declined almost 20%.



The periodic nature of the excess return is reduced with a 50% hedged benchmark. A skilled manager permitted to hedge exposures from 0% to 100% will be less than 50% hedged when currencies rise and will capture a gain that exceeds that of the 50% hedged benchmark. When currencies decline, the manager will be more than 50% hedged and will reduce the loss more than a 50% passive hedge would. A skilled overlay manager will therefore be able to produce an excess return against a 50% hedged benchmark regardless of whether currencies are rising or falling over the long term. **However, the key to understand is that the excess return is measured against a 50% hedged benchmark, and that, therefore, it is not a measure of whether a currency overlay manager has actually increased the value of a portfolio in absolute terms.**

Excess Return and True Added Value

In the example portfolio, the 0% hedged strategy returned 15.9% while a 50% passive hedge returned 3.4% in 1998 through 2000. Assuming an active manager placed and removed hedges that produced an overlay return that was equivalent to having had a 25% passive hedge, that return would have been 10.2% over the three years, or 6.8 percentage points more than the 50% hedged return. That is a very impressive excess return of more than 200 basis points per year, or more than most equity managers achieve over long periods of time.

However, despite a positive excess return, the manager reduced the value of the portfolio since the 0% hedged return was 15.9%. The 25% hedged return was 5.7 percentage points less than the unhedged return. The difference represents a reduction in the value of the portfolio of close to 190 basis points per year, or a payment of 5.5 million euro in hedging losses for the example portfolio of 100 million euro.

As the example illustrates, a positive excess return relative to a 50% hedged benchmark, or any other benchmark ratio, does not necessarily indicate that the total value of an underlying portfolio was actually increased.

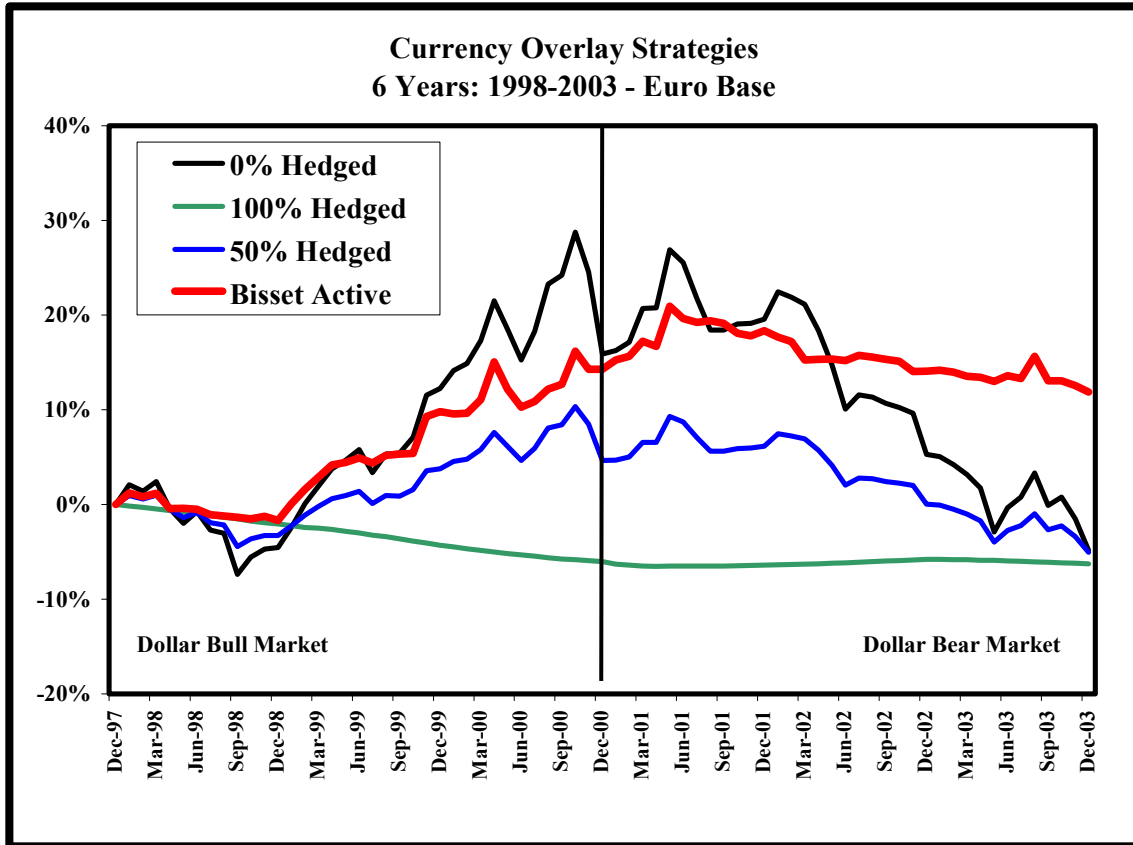
When overlay managers are compared for relative skill, they can only be compared using excess returns if they were achieved against benchmarks with the same hedge ratio, the underlying portfolios had similar currency exposures, the same base currency, the same restrictions on how much a currency could be hedged, and if the performance records span the same period of time. All other excess return comparisons are “apples to oranges” comparisons.

Since excess returns provide very little information on whether the real value of a portfolio has been increased by an overlay manager, plan sponsors must also examine the cash flows that are associated with overlay performance records.

Returns Relative to Cash Flows

All overlay managers know what their underlying currency exposures are. That is what they hedge. Thus, regardless of the benchmark they are measured against, they can provide the monthly returns of the unhedged currency exposure, those of the benchmark, and their overlay returns. As long as the benchmark is not 0% hedged, the three return series will permit a plan sponsor to create a graph in which the overlay returns, excess returns, and cash flows are plotted against each other. The chart will reveal how an overlay return relates to various benchmarks and the cash flows associated with those hedge ratios. It will also reveal if a manager has added real value to a portfolio.

The graph becomes even more useful in assessing a manager’s skill if the data is divided into periods when currencies generally rose, generally fell, and also presents the full measurement period.



The graph above plots the cumulative currency returns for 0%, 50%, and 100% passively hedged strategies for the example portfolio as well as the actual return A.G. Bisset & Company achieved. (The portfolio is an AIMR-PPS verified composite of three European pension fund mandates). The period covers six years; 1998 through 2003. In the first three years (1998-2000) the value of the dollar, sterling, and the yen rose persistently against the euro. The cumulative unhedged return was 15.9%. In the three years that followed (2001-2003), the cumulative, unhedged return was a loss of 17.9% caused by the dollar, sterling, and the yen declining against the euro. For the full six years, the unhedged return was a loss of 4.8%.

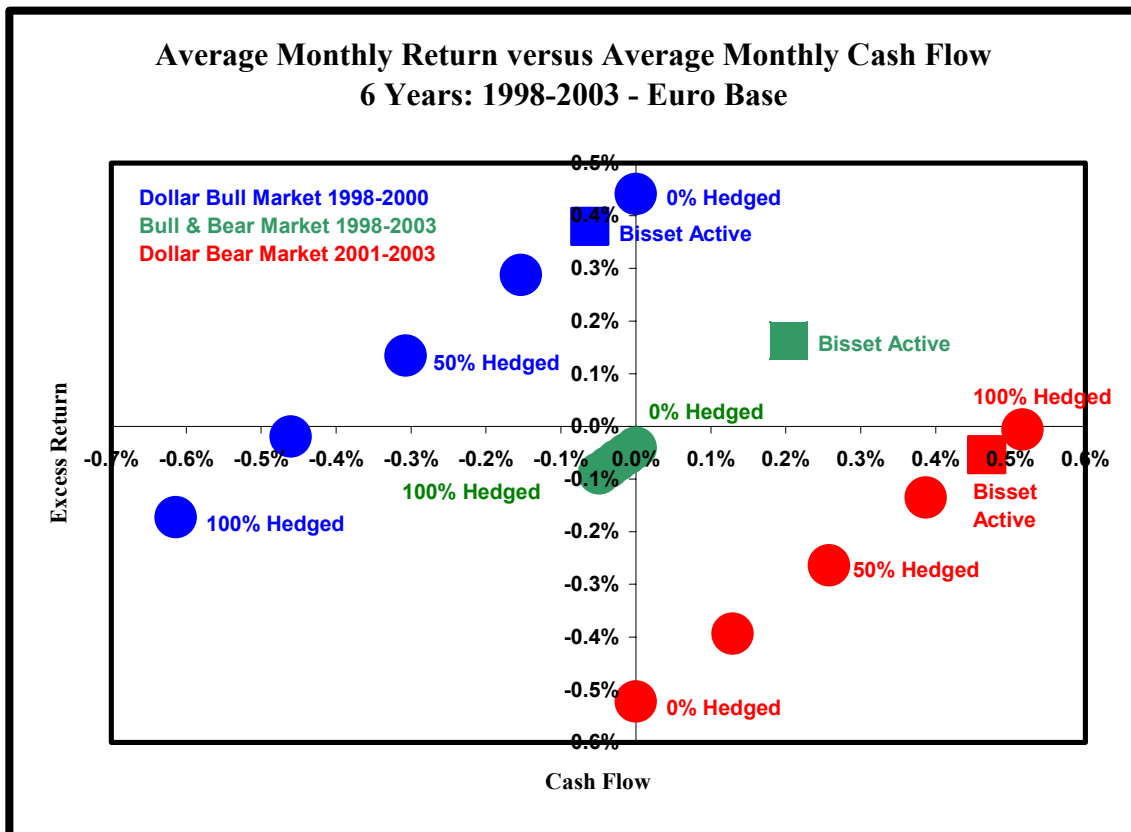
The fully hedged return was a loss of 21.9% in 1998 through 2000 relative to the 0% hedged strategy while it had a gain of 21.2% in 2001 through 2003 relative to the unhedged strategy. The cumulative return was a loss of 6.3% for the six years.

In the first three years (1998-2000), when currencies rose, Bisset achieved a return of 14.3%. That was 1.6 percentage points lower than the 0% hedged strategy, but 9.6 percentage points ahead of the 50% hedged benchmark and 20.3 percentage points ahead of the 100% hedged benchmark. Thus, Bisset's excess return depended on the benchmark used as the measuring stick. Bisset had a positive excess return relative to the 50% and 100% hedged benchmarks but not against the 0% hedged benchmark. If Bisset was judged by its excess return relative to the 50% hedged benchmark, one could conclude that Bisset had skill and that Bisset had added value to the portfolio. However, judged

against the 0% hedged benchmark, Bisset's negative excess return would suggest Bisset had little skill even though Bisset's strategy captured a large portion of the total currency return, 14.3% versus 15.9% for the 0% hedged benchmark. The difference of 1.6 percentage points represents the cash that had to be paid to settle hedging losses during the three years, or approximately 2.2 million euro for a portfolio of 100 million euro. (The amount is not 1.6 million euro since the payments were made over time on an increasing asset base).

In the next three years (2001-2003), Bisset's overlay return was -2.1% while the unhedged return was -17.9%. Bisset outperformed the unhedged benchmark by 15.8 percentage points. Since Bisset's excess return is positive relative to the 0% hedged benchmark it indicates, in this instance, that real value was added to the portfolio; it was worth more at the end of the three years than at the start.

The difference between an unhedged currency return and an overlay return is a measure of the cash flow associated with an overlay. Thus, one can measure the monthly cash flows as a percentage of the underlying exposure and plot them against the monthly overlay returns as shown in the graph below.



In the graph, the monthly average overlay return, in percent, is plotted against the vertical axis while the size of the average monthly cash flow, in percent, is plotted against the horizontal axis. The average returns and cash flows are plotted for the 0%, 25%, 50%,

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75%, 100% hedged benchmarks, and for Bisset's active currency overlay strategy. The graph shows the returns and cash flows for the various strategies during the dollar's bull market of 1998-2000 (in blue) and its bear market in 2000-2003 (in red) and for the six years spanning both periods of 1998-2003 (in green).

In the bull market period (1998-2000: blue dots) the average 0% hedged return is positive at 0.44% and is associated with a 0% cash flow. As the hedge ratio increases, the benchmark return decreases while the associated cash flow increases to reach an average loss of -0.17% for the 100% hedged benchmark associated with an average negative cash flow of -0.61%.

The blue square indicates that Bisset's active average monthly overlay return was 0.38% and was associated with a negative cash flow that averaged -0.06%. Bisset's strategy was equivalent to being roughly 90% unhedged in 1998-2000 when currencies rose. The 0% hedged strategy was the superior strategy.

In the next three years, (2001-2003: red dots) the worst strategy was to be 0% hedged. Although the 0% hedged benchmark had no cash flows, its average monthly return was a loss of -0.52%. As the passive hedge ratio was increased to 25%, 50%, 75%, and 100%, the benchmark return was reduced. It was almost zero percent for the 100% hedged benchmark. Since currencies fell, the passive hedges had gains that resulted in positive cash flows. The average hedging gains increased with the hedge ratio, from 0% for the 0% hedged benchmark to 0.5% for the 100% hedged benchmark.

The red square indicates that Bisset's active overlay strategy produced an average monthly loss of -0.05% that was associated with an average positive cash flow of 0.47%. Bisset's strategy was equivalent to being 90% hedged in those three years. Although Bisset did not outperform the 100% hedged benchmark, which was the best strategy in those years, Bisset's return was very close to the 100% hedged benchmark return.

Combining the results for the six years (1998-2003: green dots) the average returns and cash flows for the 0% to 100% hedged benchmarks have converged to near 0%. The gains from the 0% hedged benchmark in the first three years were lost in the next three years when the 0% hedged benchmark had large losses. The losses from the 100% hedged benchmark in the first three years were recovered by gains in the next three years when currencies fell and hedges produced gains.

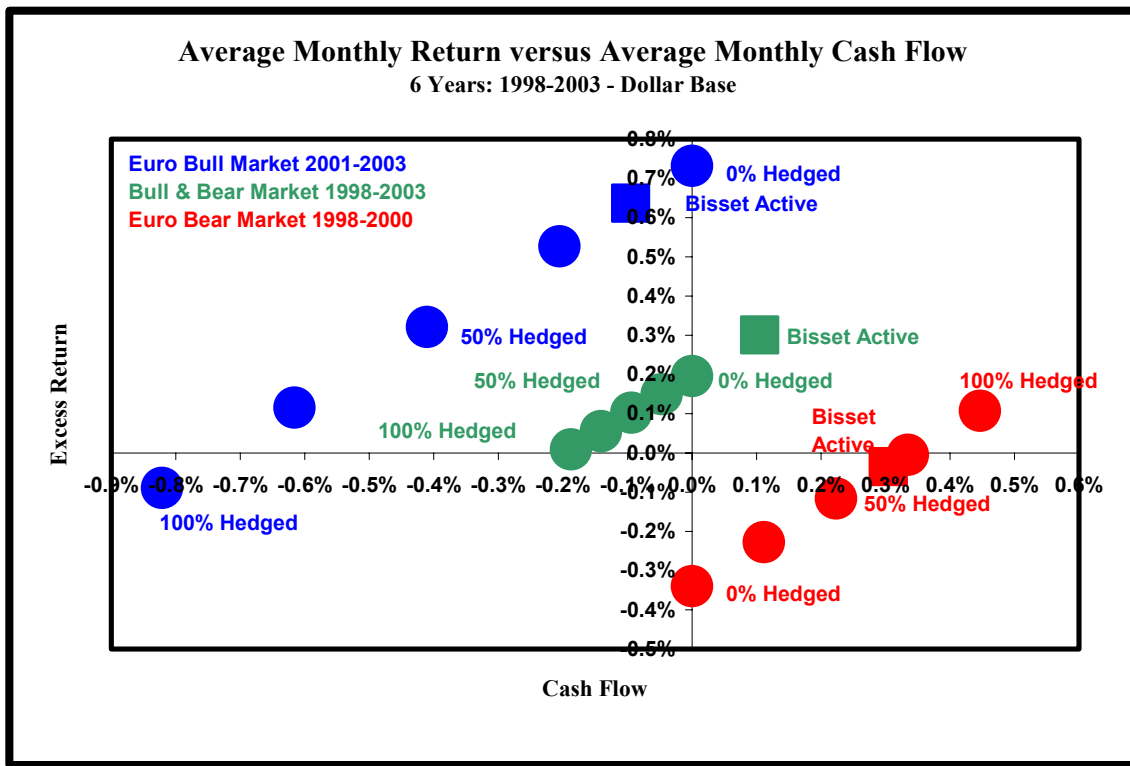
A plan sponsor that applied one of the polar strategies in 1998 through 2003 would have been happy and unhappy, experienced large gains and losses and large positive and negative cash flows for no real benefit at the end of the six years. However, an active approach like Bisset's, which produced returns that were close to those of the best passive strategy in each of the two periods, and which was associated with minimal cash flows compared to the other strategies would have been vastly preferable. For the six years, Bisset's average monthly active overlay return was dramatically ahead of all of the passive strategies at 0.16% while Bisset's cash flow profile was also superior with a positive monthly average cash flow of +0.20%. Since the cash flow was positive,

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Bisset’s strategy added real value to the underlying portfolio. It averaged close to 2.4% per year. The cash flows of the alternative passive strategies were zero or negative.

By graphing returns and cash flows against each other and for periods of rising and falling currency markets, a plan sponsor can quickly determine when a currency overlay manager has produced an excess return against any selected hedge ratio, the cash flows associated with the returns, and whether a manager has added real value (real cash) to an underlying portfolio. It will also demonstrate how a manager performed in the different environments that bull and bear markets in currencies represent.

As a second example of the usefulness of using the return versus cash flow approach to evaluate overlay managers the results of managing the currency exposures of a European equity portfolio against the dollar in 1998-2003 are shown in the chart below. The European currencies fell in the first three years against the dollar but then rose in the next three years. Bisset’s active return was close to the best benchmark alternative in both sub-periods, and it was superior to all strategies in terms of return and cash flows when evaluated over the six years.



Additional information on A.G. Bisset & Company’s overlay strategies and performance as well as AIMR-PPS disclosures can be found on www.AG Bisset.com.