An Introduction to Currency Management

1. Introduction

Millennium Global is a privately-owned alternative investment management firm with a key focus on active currency management. Established in 1994 by Michael Huttman, a pioneer in currency overlay management at JPMorgan and Goldman Sachs, Millennium Global is one of the longest-established, independent companies in the currency overlay industry.

Using a distinctive fundamental discretionary approach, Millennium Global manages currency overlay programs and currency absolute return products for a worldwide institutional client base.

2. What is currency risk?

In our opinion, currency risk is inherent in any portfolio where there is exposure to international assets. As modern portfolio theory recommends investing internationally to improve diversification and reduce overall portfolio risk, investors become subject not only to movement of the markets in which they have invested, but also to any movements in the currency exchange rates of those markets. So, while the volatility of the portfolio may initially be reduced through geographical diversification, additional risk of foreign exchange exposures will be introduced.

For example, a U.S. investor may decide to overweight his portfolio’s exposure to European equities. The actual returns received from the investment will not only be affected by the performance of the underlying asset, but also by any changes in the EUR/USD exchange rate. Any gain, therefore, from the exposure could be negated if the Euro has depreciated against the U.S. dollar.

We believe that, historically, it has been shown that countries with the best performing equity markets have tended to have the weakest currencies. But the impact of currency fluctuations on the value of a portfolio’s assets can be dramatic over certain periods of time. In Europe, investors who invested in the U.S. were subjected to huge underperformance between 2002 and 2004 and more recently between late 2005 and early 2008 when the Euro strengthened by more than 37%\(^1\).

Let’s take another example whereby a U.K. investor decided to add Microsoft stock to their portfolio in December 2005. We can see from the table in Figure 1 below that while the share price in USD increased in value by 36.1% over the two years between December 2005 and December 2007, the depreciation of the U.S. dollar meant that the total return achieved was reduced to 17.9%.

\(^1\) Source: Bloomberg
Figure 1: The effect of exchange rate movement on return*

<table>
<thead>
<tr>
<th></th>
<th>Share Price in USD</th>
<th>USD/GBP Exchange Rate</th>
<th>Share Price in GBP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec. 30, 2005</td>
<td>26.15</td>
<td>1.723</td>
<td>15.22</td>
</tr>
<tr>
<td>Dec. 31, 2007</td>
<td>35.60</td>
<td>1.985</td>
<td>17.95</td>
</tr>
<tr>
<td>% Return</td>
<td>+ 36.1%</td>
<td>- 15.2%</td>
<td>+ 17.9%</td>
</tr>
</tbody>
</table>

Source: Bloomberg.com, Federal Reserve Historical Exchange Rates

Currency movements can be significant and volatilities can make them difficult to predict. The chart below shows the fluctuations of the Australian dollar, Euro, pound sterling and Japanese yen against the U.S. dollar since May 1988. It can be seen that regardless of the currency, the exchange rate can change by more than 10% over any given period.

Figure 2: Monthly Average Spot Exchange Rate

Source: Bank of England to 31.03.08

Historically, currency risk has been underestimated or even ignored, with many investors believing that the effects of currency would “wash out” over time. While this may be true over the long term, many investors' time horizons are much shorter and the fluctuations that occur during this time may cause unacceptable losses and volatility in return streams.

*This example is for discussion purposes only. There can be no assurance that investments similar to the example will be available to investors in the future.

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3. How much currency risk is there in international assets?

The graph in Figure 3 shows the proportion of currency risk found in international assets (for a U.S. dollar investor). In equities, currency risk accounts for around 10% of the total risk, while for bonds, it accounts for almost 50%.

*Figure 3: Currency Risk in International Assets*

![Currency Risk in International Assets](image)

Source: Bloomberg. Data from July 1996 to December 2007

Similar results are observed if looking at international equities and international bonds in other base currencies, showing that all investors face similar risks associated to FX exposures.

4. How can currency risk be managed?

When managing currency risk, an investor has to deal with two parallel sets of issues:

First, how much currency risk does the investor wish to have in the international asset portfolio? The answer will determine the strategic exposure to currency risk within the international portion of the investor’s portfolio. By choosing a hedge ratio, the investor reflects the desired, “optimal” neutral currency exposure. This ratio can range from 0% (unhedged) to 100% (fully hedged). Any hedging will typically involve the rolling of currency forwards to maintain the chosen hedge ratio.

Second, does the investor wish to supplement this strategic policy (i.e., the chosen passive hedge ratio) with an additional tactical active currency management program? If the answer is “yes,” it means that an active currency overlay manager can manage the underlying currency exposures and seek to generate an excess return within pre-agreed guidelines.

Choosing the optimal hedge ratio

The extent to which currency exposure is left unhedged affects the returns and overall risk profile of a global portfolio. Several studies have shown that investors achieve optimal diversification from currency risk when the foreign currency exposure represents around 15% of the overall portfolio. However, when the exposure exceeds this amount, the additional volatility experienced begins to outweigh the diversification benefit and hence a hedging strategy becomes appropriate.

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The optimal hedge ratio is determined through the consideration of a number of points:

1. The proportion of the portfolio invested internationally and the currency mix of those assets
2. The investor’s risk tolerance
3. The cash flow implications of different hedging strategies

The optimal neutral hedge ratio has been the subject of many quantitative studies that have been carried out using historical data. However, a variety of conflicting conclusions have been drawn depending on the time period used for currency returns and the assumption that past currency behavior will be replicated in the future. A reasonable solution is to follow a pragmatic approach that takes into account the historical evidence but is not exclusively driven by it. The typical result is a benchmark that lies somewhere between 50% and 70% hedged.

A 50% hedged benchmark is often referred to as the ratio of “least regret.” In this scenario, if the base currency appreciates, a 50% hedged benchmark would benefit from half of that appreciation. Conversely, if it depreciates, the 50% hedged benchmark would only lose half as much.

Once the “benchmark” hedge ratio has been chosen, the investor can choose between a pure passive hedging strategy and/or an active currency overlay strategy.

**Pure passive currency overlay**

A pure passive mandate will involve implementing the chosen hedging strategy by looking at the underlying FX exposures in the portfolio and hedging them back into the investor’s base currency through the use of 1 to 3 month rolling FX forwards. No active views are taken.

It should be noted that the cash flow ramifications of running a high hedge ratio can be significant. A depreciation of the base currency could lead to a realization of hedging losses when the forward contracts are rolled. While this is likely to be offset by gains in the currency component of the underlying assets, the profit would be unrealized and therefore could not be used to fund the currency hedge in the case of a loss.

**Active currency overlay**

By implementing an active currency overlay strategy, the underlying portfolio of currency exposures are managed independently from the underlying assets. This strategy is often carried out by a specialist currency manager who will work with the portfolio manager to determine the most effective way to achieve this.

The active currency overlay manager on the one hand, implements the chosen hedge ratio (risk reduction) and uses it as the neutral position when there are no active views, and on the other hand seeks to add alpha from active currency exposures within pre-defined guidelines (return enhancement). The returns of the international portfolio with the chosen hedge ratio (benchmark) will serve as the basis for performance measurement for the active overlay strategy.

The guidelines for the active strategy must be set in such a way to ensure efficient excess return generation. In our view, this is best achieved with:

- Symmetric deviations around the benchmark hedge ratio (typically +/-30% to 50%, which enables the currency manager to actively reduce risk and add alpha during periods of base currency appreciation or depreciation)
A currency investment universe that allows adequate diversification of active exposures (the chosen currency universe can be wider than the underlying portfolio of currencies), should have at least G10 currencies, and may allow exposure to selected emerging market currencies.

Implementation tools that include both currency FX forwards and OTC currency options (the latter offering attractive risk/reward payoff profiles and risk management tools).

Active currency overlay strategies can be implemented in two ways:

1.  Passive plus active overlay segregated accounts

Currency overlays are typically unfunded currency management programs whereby the mandate incorporates both the investor’s desired benchmark hedge ratio (the passive component) and the excess returns target for the active component.

Prior to the inception of such a program, an overlay investment management agreement is signed by the manager and the investor. This specifies the chosen benchmark hedge ratio (the passive component) and sets parameters for the management of the active component of the overlay mandate. Such parameters may include target returns, permitted currencies, permitted instruments and leverage constraints.

Upon the inception of the program, there may be small cash requirement (normally between 5% and 8%, in which a prime broker is engaged to help operate the program) as a deposit to enable the account to operate. Where an investment manager is allowed to use options, the investor will be given advanced notice (typically 48 hours) of the relevant cash requirements.

In addition, when implementing the chosen hedging strategy (passive component), there may be a cash requirement when rolling the hedged positions. This is because the new spot rate is unlikely to be exactly the same as the maturing forward rate, and consequently this may result in a positive or negative cash flow.

2.  Passive overlay segregated account plus investment in a currency ‘alpha’ pooled vehicle

The segregated account is used for the implementation of the chosen hedge ratio (if there is one). Guidelines will determine whether the actual underlying portfolio’s currency exposures or that of the underlying asset benchmark ought to be hedged, what tools are used (e.g., 1 or 3 month FX forwards) and the tolerable tracking error and rebalancing rules.

Seeking currency alpha through a pooled vehicle allows those investors who might be constrained in the implementation of active overlay strategies from a regulatory perspective* to seek the benefits of active currency management. It is however, a funded investment, which has asset allocation implications for the investor.

The size of the investment in the currency pooled vehicle is generally calculated on a risk-adjusted basis. For example, should the investor seek a 2% excess return at overall portfolio level from active currency management with an anticipated volatility of 3%, the investment of 10% of the notional portfolio value in a currency pooled vehicle with a target volatility of 30% typically achieves the same result.

*Regulatory restrictions on the use of derivatives may vary from one region to another and some pension plans may not be permitted to use such instruments on a segregated account basis; a pooled fund solution may be an alternative solution. Investors should seek advise from their own legal advisers.
5. Can alpha be generated from active currency management?

It is often thought that because currency markets are among the largest and most liquid markets in the world, they are also one of the most efficient. While currency markets are indeed efficient in pricing in all information available at a given point in time (and from a transaction cost standpoint), inefficiencies can occur as a result of a distinct set of non-profit seeking participants:

- **Central banks**, whose aim primarily is to control inflation and who will often intervene in currency markets to strengthen or weaken their domestic currency and in some cases, defend a certain level or peg;
- **Corporate treasurers**, who are repatriating profits or hedging receivables and often do not have a choice of when to participate in currency markets;
- **Index equity and fixed income managers**, who are forced to buy and sell foreign currency every time the constituents of an index change;
- **Portfolio managers** buying and selling underlying fixed income, equity and other international assets;
- **Tourists**, who rarely choose their foreign holidays based on their view of the currency markets!

Through their actions, these participants leave opportunities that skilled currency managers can exploit. Historical data has shown that value can be extracted through the active management of currency risk, and given that these participants are likely to remain, it seems reasonable to believe that opportunities will continue to present themselves to active currency managers.

The BIS Triennial Central Bank Survey 2007 revealed that over the previous three years, there has been an "unprecedented rise in activity in traditional foreign exchange markets." From April 2004 to April 2007, the average daily turnover in these markets grew by 69% to $3.2 trillion.

Figure 4 demonstrates not only the considerable growth in overall FX volume over the past 15 years, but also the considerable percentage of flow that continues to be represented by non-profit seeking participants, i.e. non-financial institutions.

The increase in profit-seeking participants has led to a reduction in the overall proportion of transactions placed through reporting dealers, who are essentially the intermediaries between the financial and non-financial sectors. However, the percentage share of the turnover from non-financial institutions (the non-profit seeking participants) while increasing from 2004, remains the same as it was in 1998. This is a good indication that non-speculative world trade remains an important and stable proportion of FX markets.
6. Why choose an active currency overlay?

In recent years, the increase in global liquidity, rising valuations and modest/low volatility across asset classes, together with an increase in the transactions of structural volatility in FX markets, created an exceptional environment. However, the global credit crisis in 2007 triggered extensive deleveraging and a slowdown in the global growth of the major economies. As a consequence, the outlook for financial market volatility currently appears skewed to the upside and currency valuations seem more differentiated according to fundamentals. For carry traders, the environment is likely to remain challenging while for more adaptive active currency managers the increased volatility in FX markets will continue to present significant opportunities.

Figure 5 below demonstrates the change in volatility experienced across four major currency pairs and two “regional crosses” over the last decade – USD/JPY, EUR/USD and AUD/USD, EUR/GBP. It shows that throughout 2006 and part of 2007 volatilities were exceptionally low. It is also apparent that despite the turbulent financial conditions experienced since the summer of 2007, volatilities across all of these currency pairs have only returned to more “normalized” levels. These conditions are therefore favorable for the more adaptive currency manager community.

For asset managers, the need to manage the currency risk in their international portfolios has never been greater. Many are now realizing that through an actively managed overlay program they can manage their risk and potentially add an additional return stream at relatively low cost. By using currency FX forward contracts and OTC currency options, a currency overlay manager can hedge the currency risk or seek to add value without effecting the underlying asset allocation. This means that the asset managers are able to focus fully on stock picking without worrying about currency forecasting.
The ongoing analysis of a representative universe of 17 leading active currency overlay managers by BNY Mellon Analytical Services shows that currency overlay managers have added value over the longer term. For different time periods ranging from 1 to 10 years to June 30, 2008, it can be seen that the median manager achieved up to 50bp in excess return while the 25\textsuperscript{th} percentile manager returned up to 100bp.

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Benefits of active currency overlay strategy:

- Risk reduction through removal of unwanted FX risk in international portfolio by implementing the chosen hedge ratio
- Return enhancement of overall international portfolio through active management of tactical currency exposures as per investor specific guidelines

7. Segregated overlay or Pooled fund solution?

Over the last few years the approach to currency management has evolved. Investors have become increasingly aware of the diversification benefits of currency as an asset class in its own right. Active currency returns typically have a low correlation with other sources of alpha and can have information ratios that are equal or even more attractive. Consequently, currency alpha programs, where the passive and active currency management elements are separated, have become more commonplace.

Currency alpha programs can be implemented either through a segregated account or a pooled fund. A segregated account has several advantages. First, the account can be tailored to the investor’s requirements. The investor and the currency manager can work together to determine the most appropriate risk budget and constraints. Second, the account does not need to be funded except in the case of the cash margin required for forward rolls and option premium payments and any potential losses from the program. However, these can be equitized to minimise the effect on the underlying portfolio.

Pooled vehicles work in the same way as any other fund. An actual cash amount is required and the risk budget and constraints are pre-set. However, from an administrative point of view, there is less work for the investor in respect to lines of credit, settlement procedures or any need to manage cash.

<table>
<thead>
<tr>
<th></th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Segregated account</td>
<td>• Unfunded</td>
<td>• More administration</td>
</tr>
<tr>
<td></td>
<td>• Bespoke mandate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Can equitize cash requirement</td>
<td></td>
</tr>
<tr>
<td>Pooled vehicle</td>
<td>• Less administration</td>
<td>• Funded</td>
</tr>
<tr>
<td></td>
<td>• Can be combined with an equitization program</td>
<td>• Pre-set investment guidelines</td>
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8. Currency management styles

Today’s active currency managers adopt different styles in order to try and generate excess returns in this asset class. These styles can be categorized along two dimensions:

1. The “input” to the decision making process:

<table>
<thead>
<tr>
<th>Fundamental</th>
<th>This style uses the prediction of macro-economic factors as a basis. Strategies that use this style tend to focus more on macro economic factors and attempt to identify under and overvalued currencies from both a long-term valuation standpoint as well as from a cyclical point of view.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical</td>
<td>Technical currency managers use price history to determine future moves in currency rates. Various methods of analysis have been adopted ranging from Japanese Candlesticks to Elliott Waves and strategies can consider time periods ranging from minutes to several quarters.</td>
</tr>
</tbody>
</table>

2. The way decisions are made:

<table>
<thead>
<tr>
<th>Discretionary</th>
<th>A discretionary manager relies exclusively on a non-systematized decision making framework. Decisions are made through judgement over various factors that can be either fundamental or technical or a mixture of both. Market dynamics are often critical to this process and managers will consider aspects such as cross market signals, consensus observations, technical analysis and the risk environment.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantitative</td>
<td>As the name suggests, these strategies rely on models that use historical data to predict future currency movements. They tend to focus more on the short term and often have a higher turnover than fundamental-based strategies.</td>
</tr>
</tbody>
</table>

BNY Mellon Analytical Services represents this categorization using a grid (see Figure 7) in which the horizontal axis represents the inputs used and the vertical axis shows the decision making process. It can be seen that while the analysis of inputs varies among the currency manager universe, there is a strong bias towards strategies using a quantitative, rather than discretionary decision making process.

**Figure 7: Style differentiation**

Source: Mellon Analytical Services
Implementing a segregated active overlay program/practical considerations

Margin requirements

Establishing a currency overlay program does not typically involve a large cash outlay, just a modest cash requirement (deposit) for operating purposes. Traditionally, institutional investors have used a custodian to aid the operational management of a currency overlay program as this fits in with the way in which the underlying investments are held. An alternative to using a custodian is to use a prime broker.

The deposit paid to the custodian would not be used to meet realised losses on trading. In general, trading with all counterparties is carried out on a net settlement basis in order to minimise the cash flow requirements. The currency manager will book forward positions on a monthly basis and inform the investor two days prior to settlement of realized losses, should they occur.

Under a prime brokerage arrangement, all transactions are centrally cleared and cross margined and can be viewed online by the investment manager assisting the confirmation process. A prime broker will typically ask for a cash margin of approximately 5% to 8% of net open positions or alternatively the equivalent value in pledged assets. Variation margin will also be required to cover unrealized losses.

Prime Brokers versus Custodians

Using a prime broker can be an attractive alternative as it reduces the outstanding credit risk taken by the portfolio. Forward currency commitments between counterparties in the same currency will be netted to the same forward date, something that cannot be done through a custodian. In addition, all remittances of cash to settle currency trading obligations are routed through the prime broker and so the portfolio manager does not need to set up payment instructions with each of their counterparty banks.

Finally, most prime brokers offer a full on-line reporting facility that enables the tracking of all trading activity carried out by the currency manager, reconciliation of trading activity as and when necessary and performance monitoring. Figure 8 shows a comparison of the services offered by both prime brokers and custodians.

Figure 8: Prime Brokers versus Custodians

<table>
<thead>
<tr>
<th>Prime Broker</th>
<th>Custodian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduces credit risk on a net basis, however, the investor has exposure to one counterparty bank</td>
<td>Can increase risk on a gross basis but usually diversifies risk across more than one counterparty.</td>
</tr>
<tr>
<td>Full reconciliation with trading before payments are made</td>
<td>No reconciliation of payments and receipts</td>
</tr>
<tr>
<td>Full on-line reporting facility available</td>
<td>No on-line reporting available currently</td>
</tr>
<tr>
<td>Monitors trades and ensures compliance to guidelines</td>
<td>Does not monitor trades</td>
</tr>
<tr>
<td>Trading carried out in the name of the prime broker, thus ensuring complete confidentiality</td>
<td>Trading carried out in the company’s own name</td>
</tr>
</tbody>
</table>

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To trade OTC options, the client needs an International Swaps and Derivatives Agreement (ISDA) in place between itself and the prime broker. ISDAs are required between the client and every counterparty used for trading. Cash margin of around 5% to 8% of net open positions or equivalent value in pledged assets and variation margin (unrealized losses) if required. Typically no requirement for the client to set aside assets or cash as margin against positions placed in the market by the overlay manager. Client charged based on the value of trades being executed rather than the number of transactions. Again, netting will help by reducing multiple trades and hence costs. Client charged according to the number of trades executed and/or the number of payments made and received.

The use of prime brokers has grown substantially in recent years and although the use of a custodian is perfectly acceptable it is worthwhile considering the relative merits of each approach before making a final decision.

10. Summary

Any portfolio with international exposures will be subject to currency risks. The question for any investor is how to manage that risk. While it is possible to simply ignore the currency exposures inherent in an international portfolio, it is highly likely that the end result will be unmanaged risk and random returns. Implementing an active currency overlay program has two potentially favorable outcomes – first, reduction in underlying risk and, second, capturing an additional return stream through active management. Setting up an active currency overlay mandate is relatively straightforward and is unlikely to disrupt the management of the underlying portfolio. A custodian or prime broker can be used to assist with the operational side of the program and as mandates are unfunded, they can be very cost-effective.

Further information

Millennium Global is a privately-owned investment management firm that specializes in active currency management. Established in 1994 by Michael Huttman, a pioneer in currency overlay management programs, Millennium provides active currency management to institutional and high net worth investors through currency overlays and currency absolute return products. If you would like more information about currency management and the programs available at Millennium Global, please contact our business development teams below.

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