Passive Currency Overlay

How to effectively manage your currency risk?

June 2011
What is currency overlay?

- If a new layer of FX investment decision is taken, separated from the other investment decisions, which alters the risk profile of the investment portfolio, then this can be called an FX overlay.

- The overlay programme will have separate risk/return objectives, risk control parameters and performance measurement.

- Currency overlay can be motivated by seeking extra alpha and/or controlling portfolio risk.

- According to investment style, overlay can be either technical or fundamental; either systematic or discretionary.
Pros and cons of currency overlay

✓ Exposure to currency risks in a portfolio can be controlled and investment decisions can be un-bundled

✓ Specialist manager can seek returns and/or manage risk

✓ Administrative functions can be centralised at a higher level within a fund

✓ More choices are available to the investors, trustees and plan sponsors

✗ No a priori theoretical justification for active currency alpha (but same applies to all active management!)

✗ Additional administrative requirements across the overlaid assets

✗ Cost of hiring external manager or setting-up internal overlay (if not recoverable through alpha)

✗ Organisational resistance to separate FX profit/loss and cash flows. Currency management is more easily unloved when it is not working
Passive Hedging: Its key element is the **passive hedge ratio**. Namely, what percentage of the underlying exposures should be hedged on a routine basis.

- The commonly used passive ratios are: 0% (no hedge), 100% (full hedge) and 50% (minimum regret hedge)
- Some commentators argue that bond portfolios should have a different passive hedge ratio vis-à-vis equity portfolios
- Passive hedge ratio can be chosen out of a variety of criteria both in theory and in practice and it can be highly specific to a fund/investor.

Active Hedging: Its key elements are the **target hedge ratio (benchmark)** and the authorized deviation against this hedge ratio (“leeway”).

- **Tenor**: how long should the hedging horizon be?

- **Rebalancing frequency**: how frequent should the hedging portfolio be adjusted?
Interaction between various parties

**ASSET CLASSES**

**MANAGERS** (Mandates or Funds)

**CUSTODIAN(S)**

**Equities**
- Mger 1
- Mger 2
- Mger 3

**Bonds**
- Mger 1
- Mger 2
- Mger 3

**Others**
- Mger 1
- Mger 2
- Mger 3

**Overlay Manager**

**Custodian**

**Institutional Investor**

1-Identification and measurement of risk
- Netting positions vs Euro
- Mark to market valuation
- Value At Risk / Risk budgeting

2-Passive management of risk
- Passive Management (depending on strategic hedging benchmark)

3-Active Management of risk
- Active management
- (According total risk budget allocation vs strategic benchmark)
Operational procedures - framework

The investor and its external/internal managers, OAM, the custodian(s) and the various market counterparties interact the following way:

- Exposures
- Guidelines
- Performance
- Cash flow instructions

Verification

Cash flow instructions

Credit agreement

OAM can use the investor’s existing FX counterparties or one of the top 20 FX counterparties it currently deals with.

OAM endeavours to achieve the best execution for all of its investors.

OAM constantly watches pricing, spreads and execution efficiency.

FX confirmations are followed up by OAM and immediately transmitted to its investors’ middle office entities.
Summary of OAM's services

Pre-Selection
♦ Assist investor in optimising the hedging policy
♦ Providing market simulations
♦ Market intelligence

IMA Contract Negotiation
 Assist in counterparty selection
 Assist negotiation of ISDA and prime brokerage agreements and advice on the credit lines needed
 Advice on proxy hedging if needed
 Liaise with custodian(s)

Running of the Programme
 Ensure best execution
 Ensure all guidelines are followed
 Timely reporting to various parties
 Promptly deal with any enquiries

Reviews and Improvements
 Provide feedback and suggestions on improvement areas
 Provide necessary information to investors or their consultants on the running of the programme
Case study: Passive hedging by a public pension fund

- **End-user**: One of the largest APAC public pension fund (PPF).

- **Outsourced operational risk**: In mid-2005, the PPF decided to outsource the operational risks of FX hedging to an external currency manager.

- **Different asset classes**: The currency hedging programme covers all asset classes including timber and land.

- **Hedge ratio**: The hedge ratio is set by the PPF in consultation with the consultant and the currency manager.

- **Hedge ratio change**: Very infrequently changed (1-3 years)
The choice of passive hedge ratio

<table>
<thead>
<tr>
<th>Passive hedge ratio is the single most important choice to make</th>
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<tbody>
<tr>
<td>The outcome of currency risk management (both returns and portfolio risk) is largely a function of the passive hedge ratio.</td>
</tr>
<tr>
<td>Unfortunately there is no magic formula to choose one.</td>
</tr>
<tr>
<td>In practice, we see investors choosing anywhere between 0% to 100% with 50% being a popular choice.</td>
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<tr>
<td>Historically some investors adjust the passive hedge ratio after a prolonged period of base currency move, only to suffer more when the trend reversed.</td>
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<tr>
<th>Our recommended approach in setting the passive hedge ratio</th>
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<tr>
<td>Focus on longer-term risk reduction and longer-term currency movements.</td>
</tr>
<tr>
<td>Only infrequent changes by the investor (probably once every one to three years) based on macro-economic indicators, interest rate differentials and cashflow impact.</td>
</tr>
<tr>
<td>A base-line case could be around 50% (between 30% to 70% usually).</td>
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</tbody>
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<tr>
<th>Strategic vs. tactical hedge ratio</th>
</tr>
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<tbody>
<tr>
<td>We remain long-term bullish of the AUD and therefore would recommend a higher passive hedge ratio.</td>
</tr>
<tr>
<td>Short-term adjustments can be done via an active currency overlay programme.</td>
</tr>
</tbody>
</table>
Using a custodian as overlay manager: Pros and cons

**THE WALL STREET JOURNAL**

**BUSINESS | FEBRUARY 10, 2011**

Currency Charges Weren't Monitored

By LINGLING WEI, KATIE MARTIN, JEANNETTE NEUMANN and CAR

Public pension funds have ramped up currency trading in the past de
prices banks charge in making these trades—and in one case, appear
of being overcharged.

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**Custodian Bank**

- Reduced operational risk thanks to direct access to underlying currency exposure
- Might seem cheaper as usually no upfront charges and low management fees

**Independent Currency Overlay Manager**

- 100% focused on currencies
- Can usually execute FX deals with multiple counterparts
- No hidden costs

**Pros**

- Reduced operational risk thanks to direct access to underlying currency exposure
- Might seem cheaper as usually no upfront charges and low management fees

**Cons**

- Currency management is not the core-business
- Less detailed reporting
- Execution might not be optimal

**10 Years of Trading**

Pricing analysis of 9,400 trades that BNY Mellon processed for the fund over the past 10 years. Trades are plotted according to where they fell in each day’s interbank rate range.

**Buying foreign currency with dollars**

- Most fell in the top 30% of the price range
- Interbank trading range:
  - Days low
  - Days high

**Selling foreign currency for dollars**

- Most fell in the bottom 30% of the price range
- Interbank trading range:
  - Days low
  - Days high

*Note: Gray bars indicate trades priced outside of the interbank range.*

*Source: Wall Street Journal analysis of foreign-exchange trades by the Los Angeles County Employees Retirement Association; Daily high/low price data provided by Thomson Reuters.*
Thoughts on hedging AUD at the current level

● To hedge or not to hedge?
  - Will depend on the expected future trends in AUD against other currencies. In the past years, hedging was the good decision.
  - Will depend on the expected future value of interest rates differential between Australian money market rates and risk currencies money market rates. In the past years, hedging most developed market currencies has made money for AUD based institutions. And this is still true.

● We believe that there is still room for an increase of the AUD against most developed currencies on the back of strong commodities demand and steady growth in the Emerging Countries. Australia should continue to benefit from these growth and hence the AUD.

● From a interest rates differential point of view, even though we might witness a decrease in the positive carry we experience today, Australia’s growth and inflation should continue to support higher short term rates in the future.

● Hedging should therefore be seriously considered by AUD based institutions with global investments.
Appendix

Choosing the rebalancing frequency
Impact of rebalancing on tracking error and transaction cost

- The choice of the FX rebalancing methodology should be based on:
  - The expected **tracking error** due to the movements in value of the underlying assets and of the currencies
  - The estimation of **transaction costs** associated with the selected rebalancing frequency

- The **mismatch** between the hedges and the value of the underlying assets is a function of the volatility of the assets, the currency returns and the covariance between the two

- The **tracking error** from the hedging program is significantly impacted by the chosen frequency. We assume that tracking error for daily rebalancing has a tracking error of zero, the less frequent rebalancing would result in higher tracking errors.

- On the other hand, **trading costs increases with more frequent rebalancing**

- In the following chart, we take a look at a global equity portfolio based in AUD, and compared with other portfolios based on different currencies (EUR and JPY)
For MSCI-ex based currency portfolios, a fortnightly to monthly rebalancing would offer a reasonable trade-off.

Source: Reuters Ecowin Pro
Data from January 1990 to February 2011
Trading volume and turnover

- The transaction volume and number of deals are also important considerations, due to both transaction costs and the operational risk.
- In the table shown below, we have calculated some trading activity statistics for three rebalancing methods (periodical, triggered and a combination of both).
- A monthly rebalancing frequency combined with a 8% trigger would have a 15 rebalancing deals per currency per year with a total portfolio turnover from rebalancing at 50% - similar to monthly rebalancing without a trigger, however, the tracking error is significantly reduced from over 1.5% per annum to around 0.50%. We believe this is a reasonable compromise between transaction costs and operational risk.

<table>
<thead>
<tr>
<th>Periodical (Days)</th>
<th>Number of deals per year per currency</th>
<th>Yearly turnover</th>
<th>Trigger (%)</th>
<th>Number of deals per year per currency</th>
<th>Yearly turnover</th>
<th>Combination</th>
<th>Number of deals per year per currency</th>
<th>Yearly turnover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>251</td>
<td>2.0</td>
<td>1%</td>
<td>91</td>
<td>1.5</td>
<td>Reb:22 Tri:1%</td>
<td>97</td>
<td>1.5</td>
</tr>
<tr>
<td>2</td>
<td>129</td>
<td>1.4</td>
<td>2%</td>
<td>44</td>
<td>1.1</td>
<td>Reb:22 Tri:2%</td>
<td>52</td>
<td>1.1</td>
</tr>
<tr>
<td>3</td>
<td>87</td>
<td>1.2</td>
<td>3%</td>
<td>25</td>
<td>0.8</td>
<td>Reb:22 Tri:3%</td>
<td>35</td>
<td>0.9</td>
</tr>
<tr>
<td>4</td>
<td>65</td>
<td>1.0</td>
<td>4%</td>
<td>17</td>
<td>0.7</td>
<td>Reb:22 Tri:4%</td>
<td>26</td>
<td>0.7</td>
</tr>
<tr>
<td>5</td>
<td>52</td>
<td>1.0</td>
<td>5%</td>
<td>12</td>
<td>0.6</td>
<td>Reb:22 Tri:5%</td>
<td>21</td>
<td>0.7</td>
</tr>
<tr>
<td>10</td>
<td>26</td>
<td>0.7</td>
<td>6%</td>
<td>9</td>
<td>0.5</td>
<td>Reb:22 Tri:6%</td>
<td>18</td>
<td>0.6</td>
</tr>
<tr>
<td>15</td>
<td>17</td>
<td>0.5</td>
<td>7%</td>
<td>7</td>
<td>0.4</td>
<td>Reb:22 Tri:7%</td>
<td>17</td>
<td>0.6</td>
</tr>
<tr>
<td>22</td>
<td>12</td>
<td>0.5</td>
<td>8%</td>
<td>6</td>
<td>0.4</td>
<td>Reb:22 Tri:8%</td>
<td>15</td>
<td>0.5</td>
</tr>
<tr>
<td>66</td>
<td>4</td>
<td>0.3</td>
<td>9%</td>
<td>5</td>
<td>0.3</td>
<td>Reb:22 Tri:9%</td>
<td>14</td>
<td>0.5</td>
</tr>
<tr>
<td>252</td>
<td>1</td>
<td>0.2</td>
<td>10%</td>
<td>4</td>
<td>0.3</td>
<td>Reb:22 Tri:10%</td>
<td>14</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Source: Reuters Ecowin Pro
Data from January 1990 to February 2011

15
Impact of the recent financial crisis

- Trigger rebalancing has been more reactive during the crisis, resulting in much lower tracking errors over the whole sample period compared to the periodical rebalancing.
- However, the left hand side chart shows that pre-crisis results and we can see that results were comparable. We believe a calendar-day based rebalancing coupled with a trigger is a better alternative to pure trigger based rebalancing for operational reasons.

Before the crisis (1990-2007)

Source: Reuters Ecowin Pro
Data from January 1990 to February 2011

Whole period (1990-2011)
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