

Views: Use and abuse¹

Received: 22nd March, 2001

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Abstract There are several different types of investment managers in foreign exchange markets, including the major players who use fundamental strategies, technical strategies and volatility-based (or options replication) strategies. The size of the trade that they will enter into relative to their benchmark is also normally a reflection of the degree of confidence in that respective move. Therefore, whenever a currency overlay manager deviates from a benchmark (regardless of style), the nature of currency trades implies an implicit view on currency levels. In this paper, we look at the views implied from some hypothetical positions of four types of managers: risk-controlled, technical, fundamental and mixed. This allows us to evaluate whether the resulting implied views are consistent with the directional bets those managers take with respect to their benchmark. Overlay managers and clients need to do such analyses to make sure that their portfolios are appropriately aligned. We find that the absence of a position is not always equivalent to the absence of a view, and that a short position implies a bullish view on that currency in a portfolio setting, because of the presence of correlation among exchange rates. Additionally, the size of a position need not equate to the magnitude of a view in a complex multi-security portfolio.

Keywords: *currency; forwards; implied; managers; overlay; views*

Introduction

There are several different types of investment managers in foreign exchange markets, including the major players who use fundamental strategies, technical strategies and volatility-based (or options replication) strategies. The market for such services seems to be biased towards fundamental strategies if one looks at the league tables (James, 2000). More often

than not, these currency managers do have explicit views on currency levels (i.e. whether the Japanese yen will be 110 on 15th March, 2001) over either short or long horizons. The risk control managers generally claim not to be view based or do not have forecasts, as they are trading volatility. In order for these strategies to be profitable, however, the currency overlay managers need to be

Table 1

	Manager allocations (%)					
	Benchmark	FUND	FUND2	MIX	RISK	TECH
USD	10	12	23	-7	30	40
JPY	20	26	0	10	0	-20
EUR	50	40	65	86	50	65
GBP	20	22	12	11	20	15
CHF	0	0	0	0	0	0
AUD	0	0	0	0	0	0
NOK	0	0	0	0	0	0
SEK	0	0	0	0	0	0
CAD	0	0	0	0	0	0
Total	100	100	100	100	100	100
Ann. implied return	4.19	3.98	5.09	4.34	5.24	6.15
Tracking error		0.80	2.16	2.95	2.94	4.55

	Manager allocations relative to benchmark (%)				
	FUND	FUND2	MIX	RISK	TECH
USD	2	13	-17	20	30
JPY	6	-20	-10	-20	-40
EUR	-10	15	36	0	15
GBP	2	-8	-9	0	-5
CHF	0	0	0	0	0
AUD	0	0	0	0	0
NOK	0	0	0	0	0
SEK	0	0	0	0	0
CAD	0	0	0	0	0
Total	0	0	0	0	0
Ann. implied return	-0.21	0.90	0.15	1.05	1.96
Tracking error					

successful in predicting the direction of currency moves and their potential magnitude. The size of the trade that they will enter into relative to their benchmark is also normally a reflection of the degree of confidence in that respective move. *Therefore, whenever a currency overlay manager deviates from a benchmark (regardless of style), since they must have an explicit directional view, the nature of currency trades implies that they must have an implicit view on currency levels.*

In this paper, we look at the views implied from some hypothetical positions of four types of managers, one from each style — risk-controlled, technical, fundamental and mixed (described later). The analysis is conducted using market data as of 16th January, 2001 relative to a

hypothetical benchmark.² We impose no constraints on positions for simplicity (i.e. the fund can buy or sell more currencies than in the benchmark). Table 1 provides details on the assumed currency benchmark and positions of the managers as a percentage of their total portfolio.

For simplicity, we only consider trades in the major currencies — USD, JPY, EUR and GBP; however, we will examine the impact on the entire portfolio. Table 2 provides the spot rate, the 1-month interest rates for all the currencies and the market determined 1-month forward rate as of 16th January, 2001.

Our goal is to look at the views that different managers have relative to the forward rates in a portfolio of currencies. Since there are many managers under

Table 2

Rates at of 16 January, 2001				
	Spot	1-month interest (%)	1-month forward	Expected Apprec./deprec.
USD		0.479		
JPY	117.850	0.038	117.3323	Appreciate
EUR	0.9410	0.393	0.9418	Appreciate
GBP	1.4691	0.487	1.469	Depreciate
CHF	1.6359	0.285	1.6328	Appreciate
AUD	0.5545	0.497	0.5544	Depreciate
NOK	8.7376	0.595	8.7477	Depreciate
SEK	9.4897	0.336	9.4763	Appreciate
CAD	1.5016	0.454	1.5012	Appreciate

each of the four categories listed above, we assume that the hypothetical positions of one manager in each category are representative of that style. This is a strong assumption but needed, as we were unable to obtain such data on all managers.

The paper is structured as follows: we first review currency forwards (as these are the contracts used to implement trades), and different styles of currency overlay management. Thereafter, we provide a brief overview of the technique used to imply views and conclude with the results of this analysis.

Currency forwards

This is the most commonly used contract and is nothing but the spot exchange rate combined with the interest rate differential between two countries.

Assume that the 1-year interest rates in the US are 6.4 per cent and those in Japan are 0.4 per cent, and the JPY/USD spot exchange rate is 100. Therefore, the 1-year forward rate is 6 per cent (6.4 per cent to 0.4 per cent) stronger for the JPY or at a rate of 94. Shorter horizons imply a minor modification of this technique for the time period. A forward contract can be seen as borrowing in one currency to invest in another. As a consequence, if an overlay manager buys JPY/USD 1-year

forward, they must believe that the yen will appreciate by more than 6 per cent to make up for the negative interest rate differential and vice versa. Since the forward rate is an equilibrium rate established in the market, to deviate from one's benchmark by either buying or selling forwards implies a view on the expected depreciation or appreciation. Further, *a bigger position size may correspond to a greater expected appreciation (or depreciation)*. For example, to be 1 per cent long JPY/USD could imply an implicit view of 93.50, whereas a 5 per cent position may have an implicit view of 92.50 1-year forward. However, in a portfolio of bets this may not be true as one needs to look at how correlated the bets are and the resulting correlated implied views. This will provide some counter-intuitive examples as described later.

Currency overlay styles

A more detailed description of the various styles is provided in the AIMR conference proceedings entitled, 'Currency Risk in Investment Portfolios', November 1998. Many clients have multiple manager portfolios with some combination of managers from each of the categories (see Hersey and Ogunc, 2000; Tsumagari and Muralidhar, 1999).

We briefly summarise the major categories below.

Fundamental managers

These managers essentially use economic data on growth, trade, inflation, capital flows, interest rates etc. to determine whether a currency is overvalued or undervalued. Their positions can be complex in styles or simply correspond to trades based on an interest rate differential (Baz *et al.*, 1999). We look at a single manager with a complex strategy (FUND). (Data on another manager (FUND 2) is provided in Table 1 to show dispersion within styles.)

Technical managers

These managers attempt to capture momentum or trends in currency markets and may use simple moving average crossover rules or more sophisticated techniques such as Elliott waves. Trades are based largely on the price history of exchange rates. One manager denoted by TECH is reviewed here.

Dynamic hedgers

Under this style a profile of an option is replicated by changing the overall hedge ratio by implementing or lifting forward contracts. This strategy is largely one of trading volatility with the goal of changing the distribution of returns rather than changing the mean return. These firms would claim that they have no view on currency markets. This is shown in the tables as RISK.

Mixed managers

Some managers use a combination of styles that may include some element of the above three styles. This could include fundamentals plus technicals or

fundamentals plus volatility trading or a combination of all three. Clients can create mixed portfolios through either hiring mixed managers or hiring multiple managers from different categories. We look at a dedicated manager from this bucket as represented by MIX.³

Method for implying views

We use a variation of the Black-Litterman (BL) model to derive views on the expected behaviour of the currencies implied by the portfolio allocation selected by our representative currency managers (Black and Litterman, 1991). For a more complete overview of the BL model, we refer the reader to the lucid description provided by Satchell and Scowcroft (2000). In short, BL applies Bayesian analysis to optimisation problems in which the objective function is the mean-variance utility function to derive investors' beliefs. Traditionally, in a mean-variance framework, the investor provides assumptions about asset returns, and their covariance and the optimiser provides an optimal allocation across assets for either a chosen risk or expected return target. The attempt in the BL framework is to achieve the reverse — attempt to discern expected return views on assets for given asset allocations that are deemed to be efficient. This is achieved by using reverse optimisation. The difficulty of this technique is that we assume a random walk for currencies and that there are multiple possible solutions (i.e. equilibrium expected returns of assets) and hence the BL approach requires certain assumptions about the risk tolerance of the investor and confidence in deviations from benchmark to narrow the range of feasible portfolios.

In this paper, we focus on existing portfolio positions and assume that if a currency manager deviates from a

benchmark in terms of position size (and sign), then he/she has a view. Deviations from benchmark result in risk relative to the benchmark or tracking error (TE), where we define *ex-ante* tracking error as the estimated standard deviation of returns in excess of the benchmark.⁴ We work in a mean-TE setting, i.e. we assume that our currency overlay manager is not sensitive to the expected volatility of his/her portfolio *per se*, but to the expected relative volatility of that portfolio with respect to the benchmark.⁵ In relative risk space, the model starts with an equilibrium market return and then attempts to find a set of expected returns (different from equilibrium) that make the deviation portfolio optimal. The problem in applying the BL model is to establish what that future equilibrium expected return levels of the market should be, and what is the variance-covariance matrix for those returns. This is important, as it provides an anchor relative to which the view is taken and measured. Computing equilibrium returns for different categories of assets, such as equities, is usually a daunting task, and requires additional theoretical assumptions and/or empirical work. Fortunately, for currencies, the equilibrium market view for every point in the future is provided by the corresponding forward contract.

The variance-covariance matrix is then estimated using weekly currency returns over a time interval spanning the past 10 years (15th January, 1991 to 15th January, 2001). The variance-covariance matrix is provided in the Appendix. We conducted our analysis for estimates based over shorter time intervals, but none of our basic results was substantially affected. We assume that currency overlay managers have a 1-month horizon for their trades, but this horizon can be changed without impacting the framework of the discussion (it will only

change the horizon of the view and hence the absolute level of the view). Then, for the specified mean-TE problem and the given portfolio weights (w_A) and the estimated variance-covariance matrix (Σ), we search numerically for the vector of expected 1-month deposit returns in each currency (R_i) that would make those actual portfolio holdings in various deposit instruments w_A optimal, and then imply a new forward rate from the estimated deposit rates. More formally, we search for the vector R_i such that

$$\begin{aligned} w_A &= \operatorname{argmin}_w (w - w_B)'(w - w_B) \\ \text{subject to } w'R_i &= r_B \end{aligned} \quad (1)$$

where r_B is the expected benchmark portfolio 1-month return derived using the weights w_B . We find the vector R_i using the quasi-Newton method based on the generalised reduced gradient (GRG2) non-linear optimisation code.⁶ In order to avoid 'unreasonable' values for the managers' implied forecasts, we assume that our managers' views R_i would not be 'too distant' from the equilibrium forward points. In particular, we constrain the problem described above with the additional condition that the absolute difference between the equilibrium deposit rate and the implied deposit rate cannot be higher than 400 basis points. This is not unreasonable, as it would take an extreme market event for interest rates to change by 400 basis points over a 1-month horizon. Hence, we are effectively excluding unlikely market events from the solution set. Again, we find that this restriction does not significantly affect the results that follow in the next section.

Finally, we translate the estimated implied views R into currency forecasts (F_j) by using the forward spot parity, i.e.

$$F_j = S_j (1 + r_j^f) / (1 + r_s) \quad (2)$$

where S_j is the spot rate j , i.e. units of currency j for one dollar, r_j^1 is the corresponding implied view on a 1-month deposit, and r_s is the current 1-month deposit rate.

It is worth observing that many managers evaluate a currency in isolation (e.g. technical managers). Their portfolios, however, are aggregations of a number of trades in different currencies. Since exchange rates are correlated, with multiple trades in a portfolio, the implied view of the final portfolio may be different from the views resulting from each currency taken in isolation. If, for example, a number of trades are highly correlated, the implied view of the overlay manager may be a more aggressive depreciation or appreciation in, say, JPY/USD than the actual deviation from benchmark in that currency pair might instead suggest. In addition, the presence of correlation among exchange rates may also often induce the counter-intuitive results that the absence of a position is not always equivalent to the absence of a view, and that a short position implies a bullish view on that currency in a portfolio setting. These results will be highlighted in greater detail in the next section.

Results

We briefly summarise some of the important results here and the interested reader can evaluate more specific details from examining Tables 1–5. It is important to emphasise, as a caveat for the reader, that our results are dependent on (a) the data assumptions (especially correlations, the hypothetical benchmark and how the positions are modified for this study) and (b) that the method of optimising using spreadsheets provides appropriate solutions. One can critique the latter assumption for being a very

simple way of conducting these studies (as there are numerous possible optimal combinations of views although we have found a theoretically sound way to find a reasonable solution as highlighted above), but most clients do not have access to more complicated tools to conduct such analyses. In addition, these results are applied to all managers and hence relative/aggregate comparisons are probably more appropriate than individual results, especially if clients can input live positions (rather than the stale ones reported here).

- We highlight the carry (interest rate differential of long and short currency decisions) in Table 1 as the implied return for manager allocations relative to benchmark. One manager has negative carry (FUND), while all others have positive carry. Therefore, this manager should expect that foreign currencies appreciate beyond the forward rate to make their positions profitable.
- Tracking errors, computed as $[(w_A - w_B)' \Sigma (w_A - w_B)]^{1/2}$, range from as little as 0.8 per cent to over 4 per cent. It is interesting that the RISK manager has a high tracking error of approximately 3 per cent, even though he/she is called 'risk controlled'.
- Trade ranges are from as little as 0 per cent to as much as 40 per cent (JPY bet for the TECH).
- The number of bets ranges from one (RISK) to four. For managers with few bets, there is a concentration of risk.
- From Table 2, we find that interest rate differentials suggest that only three currencies (GBP, AUD and NOK) should depreciate versus the dollar if the forward is an accurate predictor of the future.
- From Table 3, we get interesting

Table 3

	Manager implied forward							
	Spot	Forward	FUND	FUND2	MIX	RISK	TECH	Consensus
USD								
JPY	117.85	117.3323	117.8695	117.99	117.965	118.09	117.5063	117.88416
EUR	0.941	0.9418	0.9414	0.9391	0.939	0.9737	0.9428	0.9472
GBP	1.4691	1.469	1.4692	1.461	1.4678	1.4598	1.4671	1.46498
CHF	1.6359	1.6328	1.6354	1.6394	1.6393	1.6418	1.6351	1.6382
AUD	0.5545	0.5544	0.5544	0.5541	0.5544	0.5529	0.5572	0.5546
NOK	8.7376	8.7477	8.7353	8.7658	8.7523	8.7754	8.735	8.75276
SEK	9.4897	9.4763	9.4864	9.5283	9.5075	9.5366	9.4893	9.50962
CAD	1.5016	1.5012	1.5016	1.5046	1.5025	1.5068	1.496	1.5023

results in terms of aggregate views.

First, we create a consensus view as the average of the various players.

This is a better consensus view than current measures because it is real and based on actual positions and not random forecasts of sell-side brokerage economists (with no money at risk).

- The aggregate investment management community's expectation, however, is that six currencies should depreciate (JPY, GBP, CHF, NOK, SEK and CAD) relative to the dollar.
- Also, where the forward may suggest an appreciation for a currency, the market views can be widely distributed. In the case of the euro, we can see views that envision both a weakening beyond the spot level and a strengthening beyond the forward. In the yen, the forward is the strongest estimate, though tests have shown that slight variations to positions could make the strongest view as low as 117.24 for the TECH manager.
- In the case of CHF, AUD, NOK, SEK and CAD, even though there are no positions, there are implied views. These views are a result of the correlations across currencies — a result highlighted by Black and Litterman (1991) and other observers. AUD is the only currency where for a number of managers 'no position' is

equal to 'no view'.

- The CHF is highly correlated with the EUR and, as a result, the views are largely identical in direction. In an interesting simulation not reported here, if the FUND manager had increased their EUR negative position slightly, it would have changed their GBP view from 'bullish' to 'bearish' because of the correlation of the EUR and GBP.
- Tables 4 and 5 go a step further and demonstrate that views may not always be directionally the same as positions. In Table 4, we highlight individual positions of managers and the expected depreciation/appreciation relative to the forward (view). Table 5 translates the same into 'bearish' and 'bullish' representations. Hence firms that construct simple positions based on currency pair evaluations in isolation risk having positions that do not capture the correlations of bets.
- The most interesting finding in this respect is that the FUND manager has a generally bearish view on currencies, which is not consistent with the initial negative carry.
- In this stylised example, the TECH, FUND and MIX managers are the ones with the least mismatch between positions and views (i.e. directionally consistent for four of the nine currencies including USD). Therefore,

Table 4

	FUND		FUND2		MIX		RISK		TECH	
	Position (%)	View (%)	Position (%)	View (%)	Position (%)	View (%)	Position (%)	View (%)	Position (%)	View (%)
USD	2		13		-17		20		30	
JPY	6	-0.46	-20	-0.56	-10	-0.54	-20	-0.65	-40	-0.15
EUR	-10	-0.04	15	-0.29	36	-0.30	0	3.39	15	0.11
GBP	2	0.01	-8	-0.54	-9	-0.08	0	-0.63	-5	-0.13
CHF	0	-0.16	0	-0.40	0	-0.40	0	-0.55	0	-0.14
AUD	0	0.00	0	-0.05	0	0.00	0	-0.27	0	0.51
NOK	0	0.14	0	-0.21	0	-0.05	0	-0.32	0	0.15
SEK	0	-0.11	0	-0.55	0	-0.33	0	-0.64	0	-0.14
CAD	0	-0.03	0	-0.23	0	-0.09	0	-0.37	0	0.35

-ve = depreciation; +ve = appreciation

Table 5

	FUND		FUND2		MIX		RISK		TECH	
	Position	View	Position	View	Position	View	Position	View	Position	View
USD	Bullish		Bullish		Bearish		Bullish		Bullish	
JPY	Bullish	Bearish	Bearish	Bearish	Bearish	Bearish	Bearish	Bearish	Bearish	Bearish
EUR	Bearish	Bearish	Bullish	Bearish	Bullish	Bearish	No position	Bullish	Bullish	Bullish
GBP	Bullish	Bullish	Bearish	Bearish	Bearish	Bearish	No position	Bearish	Bearish	Bearish
CHF	No position	Bearish	No position	Bearish	No position	Bearish	No position	Bearish	No position	Bearish
AUD	No position	No view	No position	Bearish	No position	No view	No position	Bearish	No position	Bullish
NOK	No position	Bullish	No position	Bearish	No position	Bearish	No position	Bearish	No position	Bullish
SEK	No position	Bearish	No position	Bearish	No position	Bearish	No position	Bearish	No position	Bearish
CAD	No position	Bearish	No position	Bearish	No position	Bearish	No position	Bearish	No position	Bullish

Using figures from Table 4, -ve = bearish; +ve = bullish

overlay managers and clients need to do such analyses to make sure that their portfolios are appropriately aligned.

- The RISK manager, with the lowest number of bets and high tracking error, is the manager with the most inconsistent views *vis-à-vis* positions, in that seven of the views are not aligned directionally.
- As previously mentioned, the size of a position does not need to equate to magnitude of view in a complex multi-security portfolio. This is shown in the case of the yen by comparing the TECH results (short 40 per cent for an implied 0.15 per cent depreciation versus the forward) with the MIX results (short 10 per cent for

an implied 0.54 per cent depreciation versus the forward).

Conclusions

To summarise, *all managers have views on currency levels when they deviate from benchmarks — whether they are explicit or implicit.* A sophisticated manager and client will recognise the same and make sure that, over the long-term, the positions are consistent with views on a portfolio basis. There will be periods when the implied view will be incorrect (because of correlations not being stable); however, over the long term it forces greater introspection on the overlay manager regarding the aggregation of individual positions. It also tells the client

how managers evaluate the correlated nature of bets. In addition, clients with multiple managers can evaluate the individual and aggregate implied views of their portfolio. By using this tool, a client can prevent abuse of the discretion they give to overlay managers.

Acknowledgments

We thank Harriett Richmond, Wai Lee, Brian Strange and an anonymous referee for helpful comments. All remaining errors are our own.

Notes

- 1 Paolo Pasquariello (PhD Candidate, New York University, Stern School of Business) contributed to this paper during an internship at JP Morgan Investment Management). The views expressed in the paper are primarily theoretical and academic in nature and do not represent the views of JP Morgan Chase & Co, or any of its affiliates. All opinions, theories and errors, as such, are purely those of the authors.
- 2 In the interests of confidentiality, we took stale directional positions provided by a few clients with similar benchmarks on a no-names basis. These were adjusted for an approximate size to produce reasonable positions for the size. As these are modified, the results are conditioned on the modifications. Clients can perform this exercise more effectively, but the emphasis is on method and implications rather than specific implied levels.
- 3 For details on mixed managers and use of multiple manager structures see Hersey and Ogunc (2000)

- and Tsumagari and Muralidhar (1999).
- 4 *Ex post* tracking error is calculated from actual returns in excess of benchmark.
 - 5 Since overlay managers are agents and are measured for their performance relative to benchmark, we believe that this assumption provides a more realistic representation of the activity of currency overlay managers, who typically face one or more benchmarks. Moreover, the mean-TE setting prevents the resulting optimal weights to be unreasonably positive or negative.
 - 6 For a review, see the comprehensive article by Golub and O'Leary (1989).

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Appendix: Var-Covar matrix (Σ) for the optimisation problem in Equation (1)

	USD	JPY	EURO	GBP	CHF	AUD	NOK	SEK	CAD
USD	0.01103	0.00153	0.00406	0.00254	0.00422	0.00081	0.00252	0.00363	-0.00067
JPY	0.00153	0.01361	0.00713	0.00228	0.00839	0.00118	0.00548	0.00515	0.00037
EURO	0.00406	0.00713	0.01175	0.00480	0.01166	0.00010	0.00854	0.00996	-0.00029
GBP	0.00254	0.00228	0.00480	0.00565	0.00482	0.00041	0.00396	0.00496	-0.00029
CHF	0.00422	0.00839	0.01166	0.00482	0.01448	0.00036	0.00775	0.00939	0.00036
AUD	0.00081	0.00118	0.00010	0.00041	0.00036	0.00870	0.00035	0.00090	0.00079
NOK	0.00252	0.00548	0.00854	0.00396	0.00775	0.00035	0.00933	0.00835	0.00055
SEK	0.00363	0.00515	0.00996	0.00496	0.00939	0.00090	0.00835	0.01230	0.00081
CAD	-0.00067	0.00037	0.00029	-0.00029	0.00036	0.00079	0.00055	0.00081	0.00182

Note: DEM has been used as a proxy for EURO before 1st January, 1999