FIRST QUADRANT

How To Beat The Currency Market Without (Much) Skill

January 2010

FQ Perspective

by Dori Levanoni and Juliana Bambaci

We've written about rebalancing strategies for nearly two decades.[1] We've done so for one fundamental reason: if you don't use them, you're leaving money on the table in one of the very few "free lunches"[2] available!

> *"...if you don't use them, you're leaving money on the table in one of the very few "free lunches" [2] available!"*

The common thread throughout these papers is that you don't have to believe in active management to improve investment returns. For those who have not yet adopted explicit active currency management, merely layering in a rebalancing discipline would be an appropriate step that not only provides for intentioned control of currency risk, but for better investment outcomes as well.

Are You Making The Most Of Your Currency Rebalancing Strategy?

Usually, rebalancing strategies pin down the frequency with which to rebalance by relying either on the calendar or past experience. For example, rebalance every month; or rebalance after the market exposure has drifted a certain percentage away from the benchmark. Those strategies generally provide some of the risk control benefits of rebalancing. Passive currency rebalancing strategies are no different.

However, another[3] possibility exists: use market information as a basis of these rebalancing decisions to improve them! That decision making process is known as Tactical Currency Rebalancing, which can provide both return enhancement as well as better risk management.[4]

The mechanics of Currency Rebalancing (either Passive or Tactical) are straightforward: it involves returning a portfolio back towards the policy mix after it has drifted away from it by differential performance of the various holdings. The idea of Tactical Currency Rebalancing is to rebalance frequently and fully during periods where we expect mean reversion to dominate, and less frequently or less completely during periods in which we believe that shorter term pressures will continue to push a currency away from its equilibrium.

Note that both Passive and Tactical Currency Rebalancing involve only rebalancing trades (i.e. moves toward benchmark); where they differ is in the timing and the degree of rebalancing.

First Quadrant's currency management process contains elements that understand the underlying drivers behind both trending behavior as well as mean-reverting behavior, so it is ideally suited to Tactical Rebalancing programs. For example, our case study simulation* shows that implementing Tactical Currency Rebalancing program since 1992, a $100M MSCI World mandate would have earned an additional $160,000, net of fees, a year while at the same time reducing risk (i.e. volatility) by 4bps per year.

This note has three main parts. First, it describes the essential tradeoff when rebalancing currency exposures. Then it discusses different approaches to rebalancing currencies. The third part presents a case study, followed by the conclusion.

I. The Tradeoffs

Finding the optimal policy mix is just a first step. Sooner or later, the market will push your carefully designed portfolio away from that equally carefully selected benchmark.[5] For example, the typical 60% stocks and 40% bonds portfolio will, after a few months of stocks outperformance be closer to 70% stocks and 30% bonds. In the case of global portfolios there is yet another layer to consider. Portfolios including foreign stocks, foreign bond holdings and foreign cash instruments are exposed to the changes in the value

*Please see Tactical Currency Rebalancing Simulation Disclosure at the end of this article for important information.

of the currencies in which these securities are denominated. These changes are not necessarily in tune with the fluctuations in the underlying stock or bond. The bottom line is, regardless of the specific composition, global portfolios are exposed to currency risk which pushes the portfolio's currency exposures away from the ideal.

The exposure of a portfolio to a currency changes with the value of the currency. That is, the exposure to appreciating currencies increases as the exposure to depreciating currencies decreases. The process, known as market drift, has very relevant implications over the risk and returns profile of the portfolio. To some extent, market drift is equivalent to a strategy according to which you buy more of the winner and sell losers. To put it in different words, "market drift" is a strategy according to which you buy high and sell low. Clearly not a winning strategy.

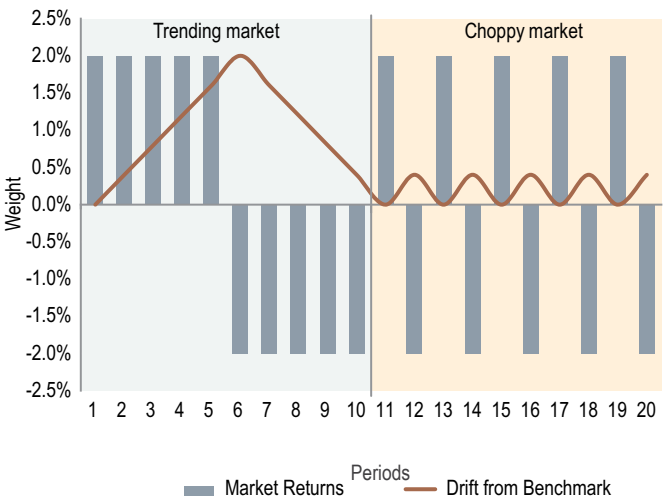
Consider first what happens with risk of that portfolio. First, the portfolio will be less diversified than the original mix. Secondly, if the outperforming currency is more risky, then the risk of the portfolio increases, otherwise you are not taking as much risk as you'd like to take. Lastly, the portfolio becomes more vulnerable to mean reversion. In any case, from a risk standpoint the changes in exposure alter the original intent.

Now, let's consider the issue from a return standpoint. Market drift systematically increases the portfolio's exposure to the currency that recently outperformed while decreasing it to the one that underperformed. But currency returns are not always driven by momentum, they are also driven by mean reversion[6], and this is precisely why currency rebalancing can add value.

Figure 1 illustrates the idea in a very stylized manner. In this example we track the exposures that result from different patterns of returns of a currency pair. For ease of exposition, we assume that those returns are +/-2%. The figure illustrates returns to one currency relative to the benchmark (red) and the weight of that position in time. There is no rebalancing in this example.

On the left side of the figure we see a trending market, driven in the first five periods by momentum (+2% returns in each period) and then mean reversion (-2% returns in each of the five periods). The right hand side of the figure illustrates a choppy market in which the currency alternates between +2% and -2% returns in each period. Note that for the first periods, the "momentum phase" the market drift contributes to returns, which quickly evaporate once the mean reversion process, occurs. Note as well that at the point of inflection the portfolio has maximum exposure to the mean reverting currency.[7] During the choppy market period the drift is systematically biased to the direction that hurts performance, as the weight of the currency is essentially backward looking.

FIGURE 1: ILLUSTRATIVE EXAMPLE



Source: First Quadrant, L.P.

A key factor in determining the impact of the rebalancing decision from an alpha perspective is the extent to which you can apply the 'best response' to each market environment. So here's the inevitable question. *What if you could let the portfolio drift with the market in those currencies that are going through a trending phase while reining in the ones that will mean revert?* The ability to do this would not only ensure that you adhere to your investment process, it would also render some additional return.

Hence, in choosing the rebalancing strategy you can also choose to enhance your return without taking any more risk. That is, you can improve risk adjusted returns of the portfolio. The extent to which you can succeed in this depends on how tactical you choose to be at the time of rebalancing your currency exposures.

II. Tactical Currency Rebalancing

We have discussed tactical rebalancing in a number of previous papers from the perspective of stock and bond exposures, but the same basic concerns affect currency exposures as well.[8] Let's first consider the passive options available.

> *"It seems unlikely that the Romans (and Pope Gregory) who designed our calendar had optimal rebalancing policy on their mind at the time."*

The most common choice is to rebalance based on the calendar, generally either monthly, quarterly or annually. Another possibility is range rebalancing, where rebalancing occurs only when the portfolio drifts some pre-specified limit away from policy. This is implemented either by bringing back the portfolio to the original mix or to the limit. A third alternative is letting the portfolio drift with the market.

The main issue with any of these choices is that they are arbitrary solutions. It seems unlikely that the Romans (and Pope Gregory) who designed our calendar had optimal rebalancing policy on their mind at the time. Among these three options, range rebalancing seems to be more reactive to the market than the others in that the rebalancing is subject to the magnitude of market movements. However, it begs the question of how much drift is enough to trigger a rebalance, and this is unclear. The best answer you can get to relies on historical experience, you choose the range to rebalance to that would have provided the best outcome in the past. The problem is the past is different than the future. Moreover, this alternative is particularly poorly suited during trending periods, as it would rebalance most frequently at specifically those times in which less frequent rebalancing might be profitable.[9]

Tactical Currency Rebalancing instead involves actively managing the frequency and degree with which currency exposures are rebalanced. In other words, it chooses a non-arbitrary time and extent to rebalance.

To do so, however, needs a currency process that understands both momentum and mean-reversion. Such a process would know when it is optimal to allow currency exposures to drift in the short-term and when it is best to rebalance frequently back toward benchmark exposure. The process itself is exquisitely simple: timing when and how fully to rebalance. But this simple decision can only be carried out when the long-term and short-term characteristics and causes of currency movements are intelligently integrated.

It may seem difficult to add value when such narrow allowances are made for risk. The argument for this quasi-passive strategy stems from our finding that it is possible to add value under these constrained conditions, as demonstrated by the high information ratio attained within our case study simulation*. There are processes that add significant value, but only when greater and greater risk is taken, and these are poorly suited to adoption for quasi-passive strategies. We believe that First Quadrant's currency management process and the signals of its proprietary models however, has the ability to add consistent, diversified alpha to a portfolio at the lower end of the risk spectrum, through a complex blend of long-term valuation and short-term demand indicators.

Furthermore, currency holdings are ideally suited to a tactical rebalancing approach, as they can be rebalanced at extremely low transaction costs. In fact, the transaction costs should be lower than for the passive, monthly rebalancing alternative, as rebalancing occurs less frequently and occasionally less fully.

III. A Case Study*

Let's be more concrete. This case study will show you exactly what Tactical Currency Rebalancing can do for your portfolio. Suppose that an investor has a MSCI World equity mandate. The MSCI World index gives this investor exposure to 23 equity markets in developed countries and their 13 currencies. Namely, the Australian dollar (AUD), the British pound (GBP), the Canadian dollar (CAD), the Danish krone (DKK), the Euro (common in 10 of the countries the index has exposure to), the Hong Kong dollar (HKD), the Japanese yen (JPY), the New Zealand dollar (NZD), the Norwegian krone (NOK), the Singapore dollar (SGD), the Swedish krona (SEK), the Swiss franc (CHF) and the US dollar (USD). In its unhedged version, the MSCI World index fluctuates both with changes in the price of equities as well as with the relative value of the currencies in which the assets that compose the index are denominated. Furthermore, and as a result of the fluctuations in the relative value of currencies, investors from different countries will perceive a different return from what (seemingly) is the same investment.

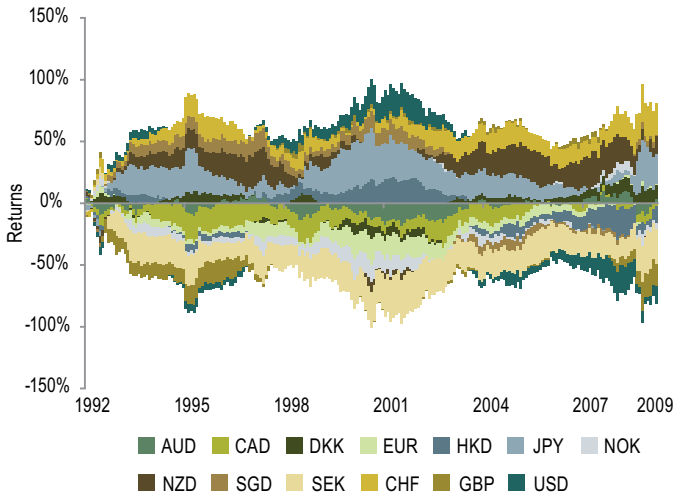
The case study addresses two main questions. How do currency fluctuations affect the returns to investment in global equities for an unhedged investor? How does the tactical rebalancing of currency exposure affect the risk and returns of the portfolio? For ease of exposition, and to help focus on the currency portion of the portfolio, we assume that the equity fluctuations are rebalanced monthly. We have run the simulations on the 13 currencies in the benchmark and averaged them out to make sure that these results were not biased by the currency we employed. Given the similarity of results across the board, we refer to the "average" currency in our analysis. For added robustness, the analysis spans the 1992-2008 time period. The bottom line: you can enjoy this enhanced alpha and reduced risk regardless of geographical location. First, let's see how this happens.

The Tactically Rebalanced Portfolio: Why does it exist?

Exchange rates among the basket of developed currencies in which the MSCI World equities are denominated, have varied pretty dramatically during the 1992-2008 period. The average level of volatility across these currencies is slightly over 20%. Currency volatility was at its highs during the early and late nineties, as well as in the last 18 months. Figure 2 shows the relative performance of these currencies during the period. Note that the chart is symmetric around zero. This indicates the relative nature of currencies. By definition, when one currency appreciates, other currencies depreciate in relation to it. Furthermore,

*Please see Tactical Currency Rebalancing Simulation Disclosure at the end of this article for important information.

FIGURE 2: CURRENCY RETURNS
March 1992 – March 2009



Source: First Quadrant, L.P.

the figure illustrates the two dynamics discussed above: mean reversion and momentum.

The Tactically Rebalanced Portfolio: What does it get you?

This tactical rebalancing strategy added 16bps, net of fees, above that earned by the unhedged benchmark (MSCI World Index). It did so at 4bps less risk relative to that of the unhedged benchmark. The tracking error of the tactical rebalancing strategy relative to the unhedged benchmark was 81bps, yielding an information ratio of 0.20, net of fees.

These results are for the "average investor", that is returns and risk numbers are averaged across all currencies involved. Notably, the dispersion around these numbers is small. The investor that is most benefitted from this strategy resides in Japan, where even though the excess returns are slightly lower than for the other investors (11bps, net of fees) the risk reduction is more than double than that of the average investor (9bps vs. 4bps). All of the other investors obtained a 16bps, excess returns, net of fees. There are only two cases in which the tactically rebalanced portfolio has a slightly higher risk level than the unhedged benchmark, and this is Australia and Canada (by 2bps and 5bps respectively).

TABLE 1: SUMMARY STATISTICS FOR THE AVERAGE INVESTOR *(SIMULATION)*

	Tactical Rebalance (Net of Fees)	MSCI World	Value Added (Net of Fees)
Return	6.5%	6.3%	0.2%
Volatility	15.2%	15.3%	0.8%
Return / Risk	0.4	0.4	0.2

While that improvement in portfolio performance (both in terms of return and risk) is modest compared to other sources of return and risk in the portfolio, it's coming from what is purely as rebalancing strategy!

IV. Conclusions

Exposure to market drift is unavoidable. Unless rebalancing is done instantly, the currency exposures in global portfolios will move away from the ideal mix. The question becomes how long to allow this risk to linger before rebalancing is triggered.

There are several well known options when it comes to choosing such triggers: the calendar, ranges and volatility. The main impetus behind most rebalancing mandates is risk control. All of these options achieve, almost by definition, the objective as rebalancing strategies actually reduce exposures (risk) that came about as a result of market drift.

Tactical Currency Rebalancing is different. In addition to controlling the risk in the portfolio, Tactical Currency Rebalancing provides an opportunity to enhance the return in the portfolio. Why? Instead of relying on arbitrary measures, Tactical Currency Rebalancing uses market and economic information to decide when a drifting currency must be reigned in. The main premise being that risk is allowed to linger for the drifting currencies that are likely to continue on the same trend. Tactical rebalancing maintains a totally passive approach toward taking on risk. Unlike a truly active process, tactical rebalancing will never take on risk, *as the only trades allowed are towards the benchmark*. Where tactical rebalancing makes a difference is in deciding when to offload this risk.

Tactical Currency Rebalancing can be used on a currency-only portfolio, or can be layered on top of an asset allocation strategy (tactical asset allocation or rebalancing) in order to address the risk and return patterns of currencies separately to those of the underlying assets. Either way, Tactical Currency Rebalancing offers a unique opportunity to manage one's currency exposure in a disciplined way that can enhance profitability of your portfolio.

Thus, as our case study shows, Tactical Currency Rebalancing is a strategy that can safeguard the strategic benchmark and can earn tactical alpha at a minimal (or even negative) cost in terms of overall portfolio risk.

In other words, it's one of the closest examples of a "free lunch" we've seen!

♦♦♦

Endnotes

[1] One of our earliest was "Lovell and Arnott, Asset Mix Rebalancing, FQ Investment Management Reflections, 1989 no. 5".
[2] Strictly speaking, we're really saying that you avoid losing some of your hard-earned lunch, but you know what they say: "A penny saved is a penny earned"! This is a somewhat different description than described in the "Free Lunch" paper by Perold and Schulman. Perold, André F. and Evan C. Schulman, "The Free Lunch in Currency Hedging: Implications for Investment Policy and performance Standards," Financial Analysts Journal, Vol. 44, No. 3, 1988, pp. 45-50.
[3] One we believe to be "better", but we'll spend the rest of this paper trying to describe both what it is and why we think so!
[4] See: "Gordian Knot"
[5] An alternative allocation that you deemed suboptimal in the first place.
[6] 2003 and 2008, for example, were years of very strong "mean reversion".
[7] A challenge that momentum-only strategies must overcome.
[8] See: Arnott and Lovell, "Rebalancing: Why, When, How Often?", The Journal of Investing 2, no. 1 (Spring 1993): 5. Goodsall and Plaxco, "Rebalancing to Benchmark", First Quadrant L.P., (1994) #4. Goodsall and Plaxco, "Tactical Rebalancing", First Quadrant L.P., (1996) #3. Plaxco and Arnott, .Rebalancing a Global Policy Benchmark., The Journal of Portfolio Management, vol. 28, no. 2, (Winter 2002). Levanoni and Plaxco, "Tactical Currency Rebalancing", First Quadrant L.P. (2003).
[9] This corresponds to the first five months in the example illustrated in Figure 1.

Disclosure

Tactical Currency Rebalancing Simulation Disclosure (Net of Fees)

Simulated performance is no guarantee of the future results in a live portfolio using the strategy. Potential for profit is accompanied by possibility of loss. General Disclosures: The simulated performance presented differs from live performance experienced using the strategy for the following reasons: • The simulation assumes all trading takes place once a month (on the last day of the month) whereas live portfolios may trade often during the month. • The simulation assumes that the guidelines are constant through the life of the portfolio, whereas the guidelines for live portfolios may have changed over the life of each portfolio. • The simulation assumes implementation of the strategy via forward contracts, whereas live portfolios may use other instruments (i.e. futures) with a different return or cost. • The simulations use a "synthetic Euro" for the period before January 1999, whereas live portfolios using this strategy before January 1999 would have used the "Legacy" currencies (ATS, BEF, FIM, FRF, DEM, IEP, ITL, NLG, PTE, ESP). Hypothetical or simulated performance results have certain inherent limitations. Unlike an actual performance record, simulated results do not represent actual trading. Also, since the trades have not actually been executed, the results may have under or over compensated for the impact, if any, of certain market factors, such as lack of liquidity. Simulated trading programs in general are also subject to the fact that they are designed with the benefit of hindsight. No representation is being made that any account will or is likely to achieve profits or losses similar to those shown. Disclosures Specific to Simulation: The simulation is based in US Dollars and uses a benchmark rate of return of zero. The simulation uses live historical signals and rebalancing ranges (based on MSCI World equity index drift) on active currencies (AUD, CAD, EUR, JPY, NZD, SEK, CHF, GBP and USD) with no active ranges on all other currencies. Per trade transaction costs were assumed to be 0%. Management Fees: Performance results presented do not include trading commissions. The FQ investment management fee schedule used in this simulation is 0.06 bp per annum. Market Impact On Returns: Certain material market or economic conditions can impact the returns of an investment strategy. We have provided below what we believe to be a fair, yet subjective, assessment of those outliers that have significantly and positively impacted the strategy's performance. During 1996 the Yen, Pound, and Deutsch Mark experienced pricing moves of greater than 10% against the Dollar. As our model was favorably positioned, we were able to take advantage of these significant pricing moves.

FIRST QUADRANT, L.P. | 800 E. COLORADO BLVD. SUITE 900, PASADENA, CALIFORNIA 91101
MARKETING SERVICES INFO@FIRSTQUADRANT.COM | OFFICE 626 683 4223 | WEB FIRSTQUADRANT.COM