SLJ MACRO PARTNERS

Active Currency Overlay: Carry & Momentum Trades

Stephen L Jen& Fatih Yilmaz

June 20, 2010

***Bottom line**: In this note, we make a case for active currency overlay and investigate the various characteristics of currency carry and momentum trades, and how these characteristics might change as the world evolves. In the 'new normal', the expected return on the underlying assets (equities) should be lower if the potential growth rate of the world is lower in the years ahead compared to the years before the Crisis. However, the volatility arising from the intrinsic currency exposure is likely to remain high if not rise further due to the multi-speed nature of global growth. The two 'spines' of currency hedging models – the (i) carry and (ii) momentum trades – have worked well in the past years, as they provide good hedging characteristics while producing an upward bias on the overall return. While there are some modifications that will need to be incorporated in the carry-momentum models, in order for them to keep up with the changing world, we remain convinced that active currency overlay could meaningfully enhance the performance of investment portfolios (by both enhancing the return and suppressing the volatility). We expect equity investors to struggle to ignore the possible 100-200 bp pickup in annual return and dampened volatility from active currency overlay.*

The changing Sharpe Ratio and the role of currencies. We believe there will be an enhanced role for active currency hedging for multi-currency investment portfolios. In the past 30 years, the average nominal annual return on equities was around 9% and the volatility was 16%. In our view, this implied Sharpe Ratio of 0.30 is unlikely to be the norm in the next decade.[1] Specifically, we

[1]This is calculated using MSCI World Equity Index. In the chart below, the dark and light blue lines show the excess returns on global equities (above the risk-free rate of return), and the rising volatility (red dotted line). The implied Sharpe Ratio has been extraordinarily volatile throughout the last three decades. The chart shows the changing averages from the last 30 years to the last 20 years, and down to the last 5 years. One can easily see the steady rise in the underlying volatility, and the violent swings in returns. In fact, the 5-year average Sharpe Ratio is close to zero, because the excess return on equities is close to zero. The evaporation of the 'equity risk premium' will need to be resolved somehow. Our best guess is that, instead of a recovery in the

believe the numerator (the expected return) to be lower while the denominator (the volatility) to rise in the future.

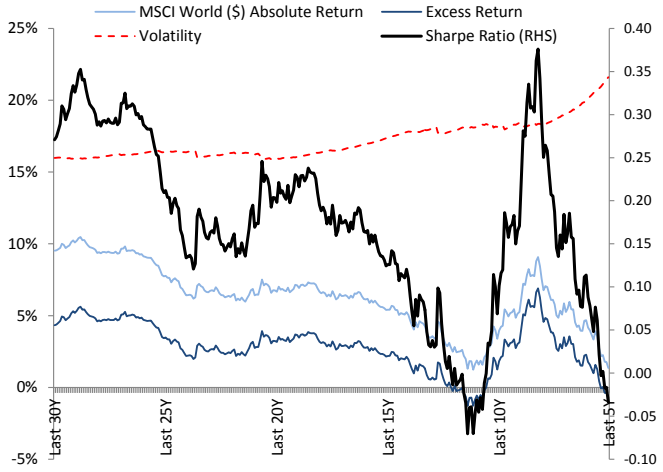
First, the potential growth rate of the global economy could be *lower* in the years ahead. The DM economic growth model, with services accounting for about three-quarters of the total GDP, its aging population, and its significant fiscal challenges, will likely struggle to grow in the years ahead. At the same time, as EM economies mature, their potential growth rate is expected to decline to more sustainable rates. China's having passed its 'Lewis Point,' the constraints on the global energy supplies, and the environmental concerns should lead to a deceleration in the rate of growth of EM economies.

Second, as we discussed in an earlier note ('*On the Colliding Economic and Financial Tectonic Plates*,' May 18, 2011) we expect global economic and financial volatility to be *higher*. As EM economies are projected to constitute more than half of the world GDP, the global GDP will necessarily mirror the EM growth characteristics. However, the global financial markets will likely not evolve fast enough to keep pace with the global economy. This expected structural 'stickiness' of the global financial markets reflects in part the inability – for various reasons - of some EM countries to nurture liquid, meaningful, and sustainable capital markets. In our note from last month, we discussed a shortage in the supply of safe assets in EM, some peculiar issues related to the dollar, and conflicts in policy making in the multi-polar world. In any case, the expected clash of the *economic* and the *financial* tectonic plates will likely keep volatility elevated.

Not only is the equity Sharpe Ratio for the coming decade likely to be inferior to that of the past few decades, we believe currencies could be even more volatile than before, adding to the overall volatility of an equity portfolio. As

---

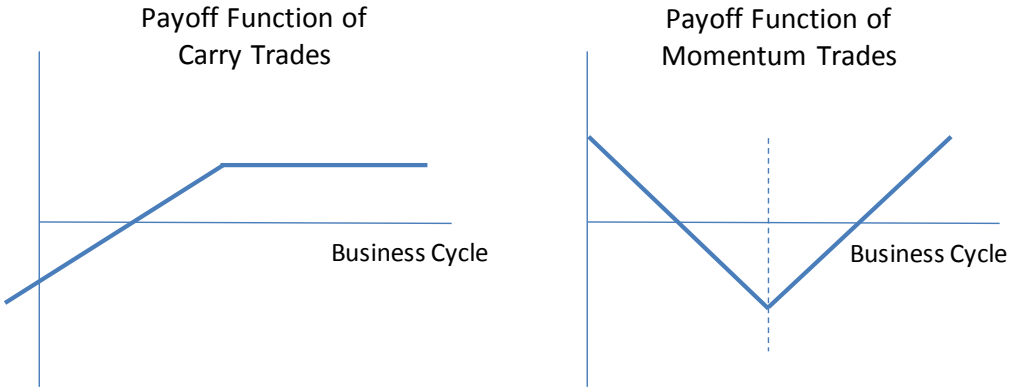
equities' absolute returns, bonds will under-perform in the years ahead, as they are undermined by inflation



and debt sustainability worries.

countries' economic growth diverges further, and as all of the G3 currencies have deepening structural problems – a scary tale could easily be told about the USD, the EUR, or the JPY, currency volatility should no longer be tolerated without pre-emptive actions taken by portfolio managers to, at a minimum, dampen out the volatility.

Carry trades. Currency carry trades take advantage of the yield differentials between countries. In 'peace time', carry trades offer steady income flows. However, in times of stress (i.e., periods of high volatility), the potential losses from carry trades could be, in theory, infinite. The diagram on the left below shows the payoff function of carry trades, as a function of the business cycle. What this diagram shows is that carry trades are like selling an out-of-the-money put on the economy. If the economy performs fine, then the holder of the carry trade enjoys a positive carry flow. However, if the economy falls into a recession, the stream of positive carry could be more than offset by the valuation losses. For example, in a recession, AUDJPY could collapse (the AUD weakens while the JPY strengths) that would more than offset the positive carry.



Momentum trades. In contrast to carry trades, momentum trades take advantage of persistent and predictable conditional autocorrelation patterns in prices, and add to positions that have worked. In terms of the payoff function relative to the business cycle, as shown in the right chart above, a momentum trade is like a straddle: the more the economy accelerates, or the more it implodes (i.e. during recessions), the momentum trade should generate more profits.

Carry + momentum. While the payoff functions of carry and momentum trades are very different, when combined, they yield powerful characteristics. If

one visually combines the two payoff functions in the diagram above, one can see that the combined payoff function would look somewhat like a 'call option' with the downside (left side of the payoff functions) well-hedged. Carry trades, therefore, should be run in conjunction with momentum trades, and this is why most quant currency models have carry and momentum trades as the two 'spines' in their frameworks.

Individually, the carry and momentum trades tend to have Sharpe Ratios of around 0.3-0.6. But the systems that have both carry and momentum models could generate Sharpe Ratios, typically in the 0.8-1.0 range, mainly due to this volatility-suppression characteristic described above.

Indeed, in the past two decades, the currency overlay industry as a whole has generated a positive average return, i.e., the overlay community has, as a whole, added to the returns of the benchmark portfolios.

Changes that need to be made in the future. The world has changed, and will continue to change. The models that may have worked well in the past decade will need to be modified in anticipation of the changes that will take place in the coming years. We have the following thoughts on carry and momentum trades.

- **Issue 1. Shorter business cycles**. The global recession was severe and sharp. Not only are there lingering structural problems (such as global imbalances, fragility of the banking systems, an international financial architecture that does not fit the multi-speed nature of the global economy, and pockets of housing market weakness), with the extreme Keynesian stimuli, new problems have been created that will need to be resolved over time.[2] The massive sovereign debts in some countries and the distortions associated with super-low interest rate policies are two key problems of this type. Business cycles in developed markets, in our opinion, will likely be shorter than before the Great Recession. But if the typical business cycle becomes 3-4 years in length rather than 8-9 years, it will be critical to get the call on the business cycle right in order to maximize the gains from a carry-momentum currency model. In other words, knowing when the switch the various models on and off will be absolute key. We like to use car analogies. Here we will use the choice

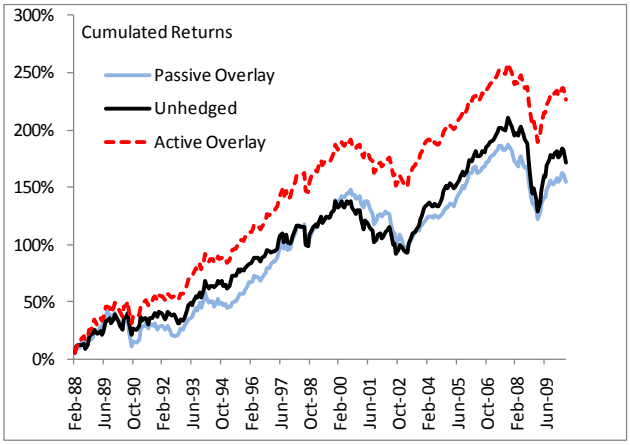
[2] The aggressive fiscal stimulus will have long-term consequences for the fiscal outlook of many countries. QE2 by the Fed is likely to have sowed seeds for future volatility not just in the US but in many EM economies. Furthermore, China's lax credit policies in the post-recession period will lead to NPLs and liabilities for the local governments.

of tires in Formula 1 as an example. Carry trades are like the standard tires, while momentum trades are the 'soft' and the 'full wet' option tires. Refining the performance of each type of tires will remain important, but perhaps being able to predict the changes in the weather so as to know *which* tire to use will be more important than ever, if indeed the weather will change more drastically and more frequently than it has in the past.

- **Issue 2**. **Currency interventions and carry trades**. One primary reason why the uncovered interest parity (UIP) theorem has persistently failed is the currency interventions by many EM countries in the past decades. UIP predicts that the yield differentials should, through arbitrage, be offset by the expected valuation changes in currencies. But if the exchange rates are not allowed to move to reflect market pressures, UIP could fail. This means that, due in part to central bank interventions, carry trades have been richer and safer in the past years than they should have been. On a similar point but taking a different perspective, the 'de facto dollar zone' could create yawning intra-zonal yield differentials if the member countries have divergent growth patterns, which is indeed the case now. An ultra-easy Fed and a rapidly growing Asia should lead to great conditions for carry trades as the Asian central banks continue to intervene to control the speed of the appreciation of their currencies, as their own interest rates rise.
- **Issue 3**. **The central role of the Fed**. In the years prior to the Crisis, the world was in a way a derivative of the Fed. But as the de facto dollar zone slowly breaks apart, there will come a time when the Fed will no longer have as dominant an international role as it has now. When planets no longer circle around the sun, there will be consequences; one of them is the changing nature of carry trades. Model builders need to deal with these impending changes.
- **Issue 4**. **Pay attention to the *reasons* for the positive carry**. With sovereign debt problems continue to mount in many countries, it will be important to understand the reasons behind the positive carry: long Greek or Irish bonds now may not be a great idea, despite the carry.
- **Issue 5**. **Distortions arising from QE**. We note that many near-zero-yielding assets have out-performed the dollar. Gold is technically a negative-interest rate product (due to the storage and insurance costs), but has performed extremely well in the past years. Similarly, despite the super-low yields, the JPY and the CHF have out-performed against most

currencies. Thus, the world, post the Great Recession, has not been driven by 'carry', even though carry trades have performed well in some crosses. Specifically, QE2 has artificially depressed the value of the dollar against virtually all currencies and assets in the world. In a way, QE2 'worked' on wealth and money illusion: making US consumers think that they are wealthier because of the buoyant stock prices when in fact their international purchasing power has been severely depressed, i.e., perversely, the US consumers have been made to feel wealthy as the Fed made them poorer. In thinking about carry and momentum trades, one needs to be aware of how the termination of QE might affect these models.

Benefits of active currency overlay. That the FX model-builders need to evolve with the global economy should not come as a surprise. As these currency overlay systems are 'kept current' with the changing world, they should continue to be a positive contributor to asset managers: by enhancing the overall return as well as dampening the volatility.



[1988-2010]	[1] Do Nothing Unhedged	[2] Passive Overlay 100% Hedged	[3] Active Overlay Dynamic Hedge
Return	7.7%	6.9%	10.1%
Volatility	16.0%	13.8%	14.6%
Skew	-0.92	-0.99	-0.90
Kurtosis	2.68	1.64	1.58
Max Loss	58.7%	50.1%	51.9%
Return/Risk Ratio	0.48	0.50	0.69
Return/Max Loss Ratio	0.13	0.14	0.20
Return/VaR Ratio	0.17	0.19	0.29

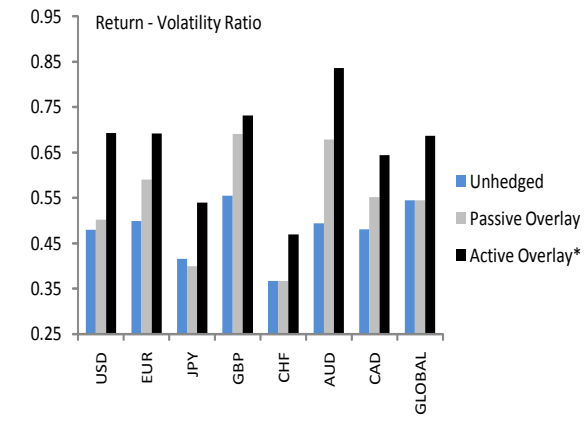
The chart above shows the performance of our active currency overlay model over the past quarter of a century. The black line shows the unhedged international equity portfolio denominated in US dollars, while the light blue line shows the cumulative return if the portfolio were fully, and passively, hedged. Finally, the red dotted line shows how *active* currency overlay could add to the cumulative return on the portfolio.

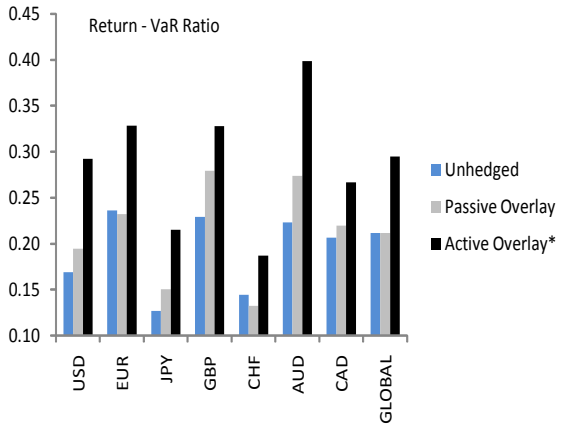
The table above shows the actual statistics. The average annual returns for the unhedged, passively hedged, and actively hedged portfolios are 7.7%, 6.9%, and 10.1%. In general, currency overlay helps dampen volatility (the denominator

of the Sharpe ratio), VaR (skew and kurtosis adjusted) and maximum drawdown statistics. The risk adjusted return statistics suggest passive overlay generates only marginally better performance ratios relative to the unhedged equity portfolio. For instance, while passive currency overlay reduces volatility from 16.0% to 13.8%, overall return of the portfolio is compromised by passive currency hedging (6.9% investment return rather than the 7.7% if the portfolio manager did nothing about the currency exposure).

On the other hand, Column [3] shows that, with active currency overlay, the investment return is enhanced significantly with a lower volatility – a double boost to the Sharpe ratio. Active currency overlay would have enhanced the underlying equity portfolio returns by more than 200bp a year, while at the same time lowering all risk statistics relative to the unheged equity portfolio. Thus, the portfolio manager could in theory run a higher leverage and generate a better risk-adjusted return with active currency hedging.

Even if the base currency is not the USD, active currency hedging should boost the risk-adjusted return of multi-currency equity portfolios. The chart on the right below shows the return-to-VaR ratio, which is highest for all currencies if active currency hedging is deployed.





* Active overlay strategies use momentum, carry and yield curve signals for hedging decisions

Bottom line. In this note, we make the case for active currency hedging for equity-based investors. In the 'new normal', the expected return on the underlying assets (equities) should be lower if the potential growth rate of the world will be lower in the years ahead compared to the years before the Crisis. However, the volatility arising from the intrinsic currency exposure is likely to remain high if not rise further due to the multi-speed nature of global growth.

The two ‘spines’ of currency hedging models – the carry and momentum trades – have worked well over the past decades, as they provide great hedging characteristics while preserving an upward bias on the overall return. Going forward, as the world changes, these models will need to be tweaked to reflect these changes. In any case, we believe equity investors can no longer ignore the possible 100-200 bp pickup in annual return and dampened volatility from active currency overlay.

Recent Notes

Active Currency Overlay: Carry and Momentum Trades, June 20, 2011
QE3 < QE2 < QE1: the Power of the ‘Bernanke Put’ to Wane, June 10, 2011
On the Colliding Economic and Financial Tectonic Plates, May 18, 2011
The ‘Global Funneling Hypothesis,’ May 5, 2011