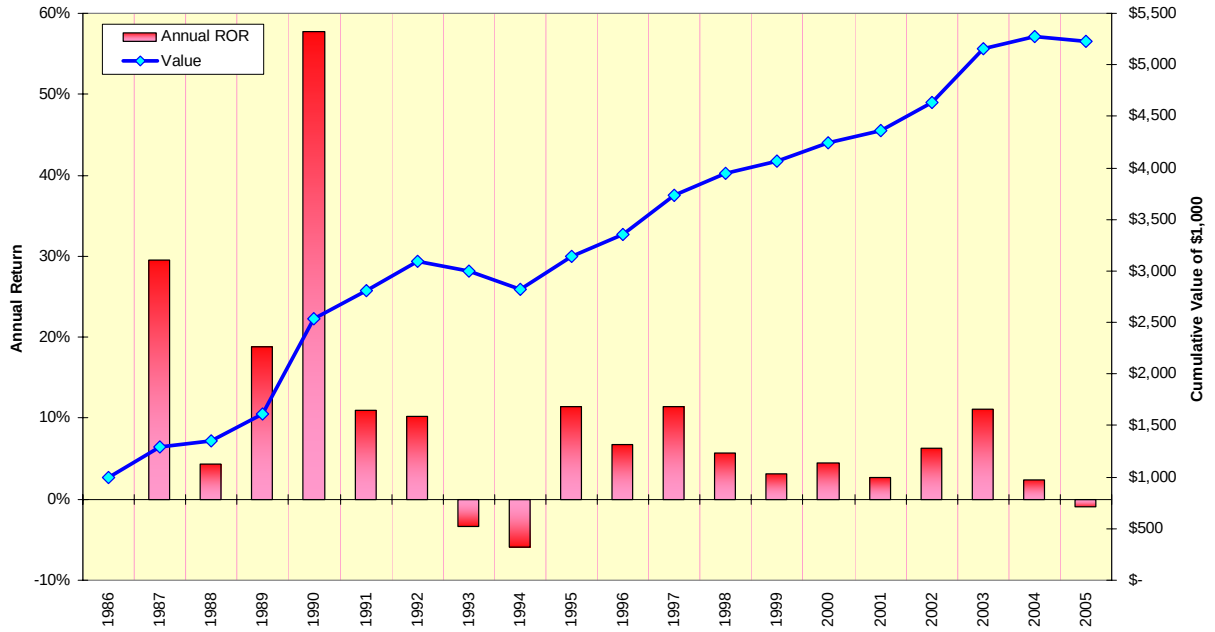
An Index Approach To Currency Risk Management

Would any people on the planet be happier to see a single currency world than global investment managers? Probably not; there is nothing more frustrating than to see the hard work of individual asset selection and portfolio creation get negated by currency volatility. Like it or not, all investors are currency speculators. The collective experience of, say, Americans investing overseas in 2003-2004 and gaining the benefit of dollar weakness was offset by the dollar's rally in 2005.

Worse, both portfolio managers and individual investors have to face the problem of which currency or basket of currencies to use if they decide to hedge. A second and equally daunting question, whether investors should hedge actively or passively; that is, should they try to trade or simply offset their initial currency exposure, comes into play.

The annual returns of the Barclay Currency Traders Index are instructive but by no means encyclopedic in this regard. Like all hedge fund indices – and in fairness, we can say the same thing about equity indices – this index has a massive survivorship bias. We lose the laggards and retain the winners for the succeeding year.

Active Currency Management: The Barclay Currency Traders Index



The compound annual rate of return for this index has been 10.12% with a Sharpe ratio of .41. By way of comparison, the average annual returns for the Merrill Lynch Treasury 5-10 Year Treasury index and the S&P 500 were 7.54% and 11.4626%, respectively, over this same period. We know which investment is the highest cost and has the greatest variability of return, so we should feel reasonably comfortable at this point turning our attention away from active and toward passive currency hedge management.

Which Currency To Overlay?

We have had more than three decades of experience with flexible exchange rates, and if we have learned anything it is cross-rates are as unpredictable as the outright transaction against the U.S. dollar (USD). We can see this in a correlation matrix of returns between the benchmark dollar index (DXY) and its six components. Any investor holding a multiple-currency investment portfolio seeking protection against a stronger dollar has a group of unsatisfying instruments in this regard.

The euro (EUR), 57.6% of the DXY, clearly is the most negatively correlated against the USD, but at -0.94, the tracking error could be considerable. The correlations drop off considerably after that, to where the Japanese yen (JPY) and Canadian dollar (CAD) provide negative correlations of only -0.501 and -0.381, respectively. Within the correlation table for the cross-rates, only the Swiss franc (CHF) and Swedish krona (SEK) provide correlations greater than 0.8. If we were to put these correlations in terms of the Financial Accounting Standards Board's

definition of a bona fide hedge, which requires an R^2, or correlation coefficient squared, of 0.80, we would find that only the EUR-DXY, CHF-DXY and EUR-CHF pairs would qualify as bona fide hedges for one another. The square-root of 0.80, or 0.894, is the number which needs to be exceeded. These pairs are highlighted in red in the matrix below.

Correlation of Daily Returns Since January 1999 Introduction of Euro

	DXY	EUR	JPY	GBP	CAD	CHF	SEK
Dollar Index	1.000						
Euro	-0.940	1.000					
Yen	-0.501	0.353	1.000				
Pound	-0.731	0.668	0.335	1.000			
Can. Dollar	-0.381	0.309	0.201	0.262	1.000		
Sw. Franc	-0.900	0.931	0.376	0.659	0.280	1.000	
Sw. Krona	-0.825	0.842	0.335	0.604	0.327	0.782	1.000

Given the difficulty active currency traders have had in beating standard financial benchmarks over time, why should we believe any currency overlay manager could make the proper selection of currencies to hedge any multi-currency fixed-income or equity portfolio? All it takes is a few missteps by the overlay manager, and currency volatility could turn a superior portfolio into a laggard quite literally overnight.

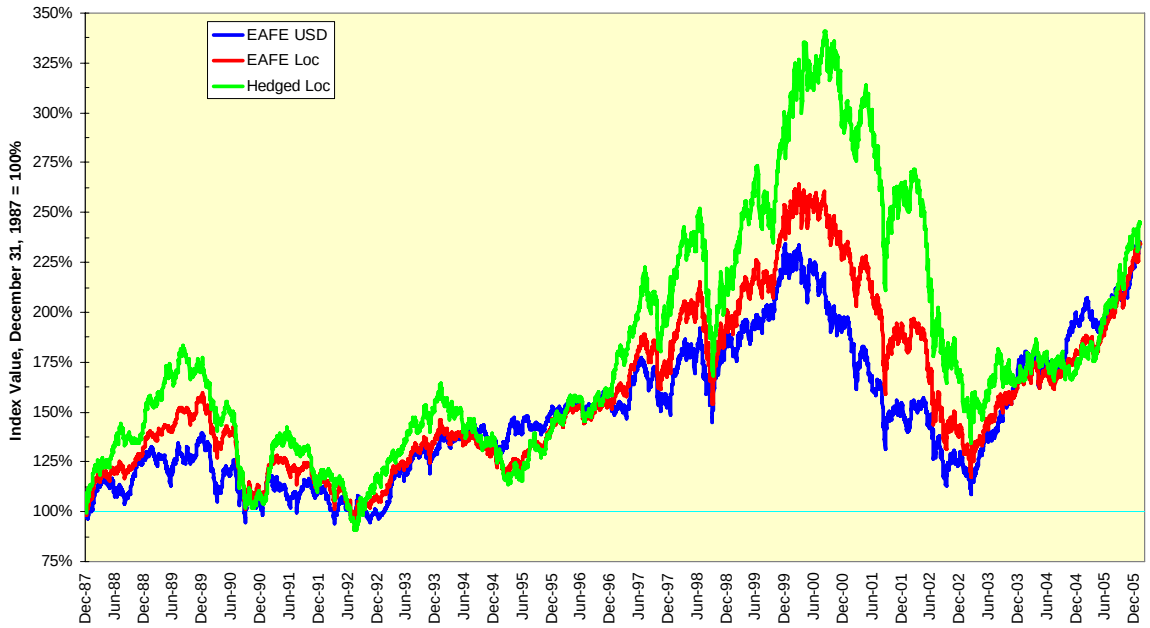
Index Hedging

Let's take a selection of global investment indices stated in both USD and local currency terms and see how their returns are affected by the selection of hedge instruments. Two dollar indices will be compared to see which produces the lowest tracking error in converting the local currency index back to USD terms, the DXY and the Citigroup USD Flow-Weighted index (CFWI).

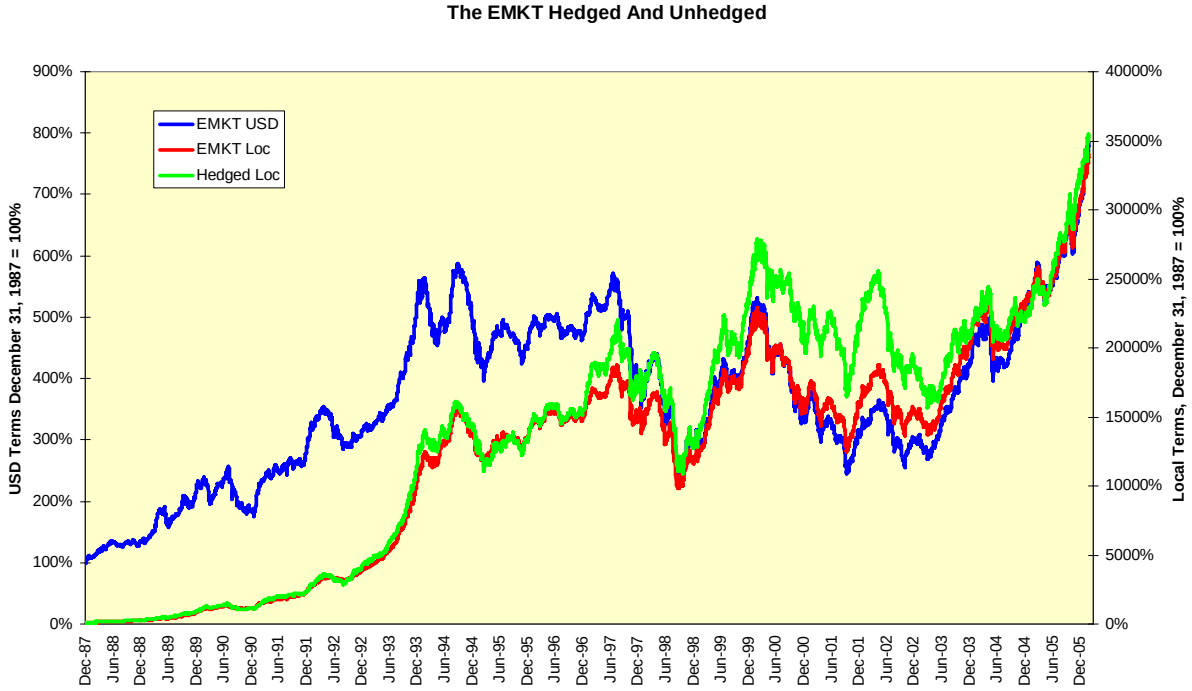
While the starting date for the comparison is limited to the January 4, 1999 introduction date of the EUR, an initial analysis of hedge effectiveness for the DXY can be started in January 1988. The earlier start date allows us to use the DXY futures traded on the New York Board of Trade's FINEX division as our hedge instrument; the contracts are rolled forward at the end of the month preceding expiration. The use of these futures also allows us to incorporate the net interest rate differentials between the U.S. and the DXY's member currencies.

The first market we can look at over the long-term sample is the Morgan Stanley Capital International Europe, Australasia and Far East (EAFE) index, a common benchmark for global fund managers. The EAFE in USD terms increased 232.2% over the period; its return in local currency terms was 234.0%. The hedged return was 245.2%.

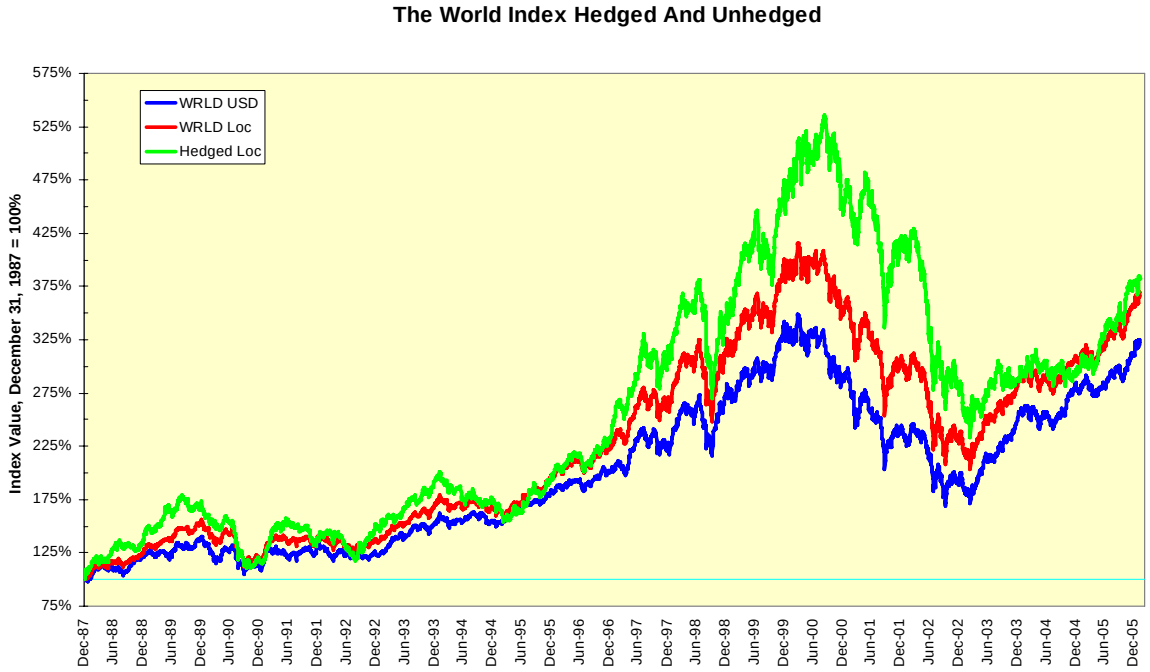
The EAFE Hedged And Unhedged



We can do the same comparison with the Morgan Stanley Emerging Market Free (EMKT) index. A dual scale is needed to accommodate the effects of large-scale currency devaluations in many emerging markets over the period in question. Significantly, the six components of the DXY do not represent any underlying emerging market asset and yet the DXY performs well in converting the EMKT in local currency terms into USD terms.



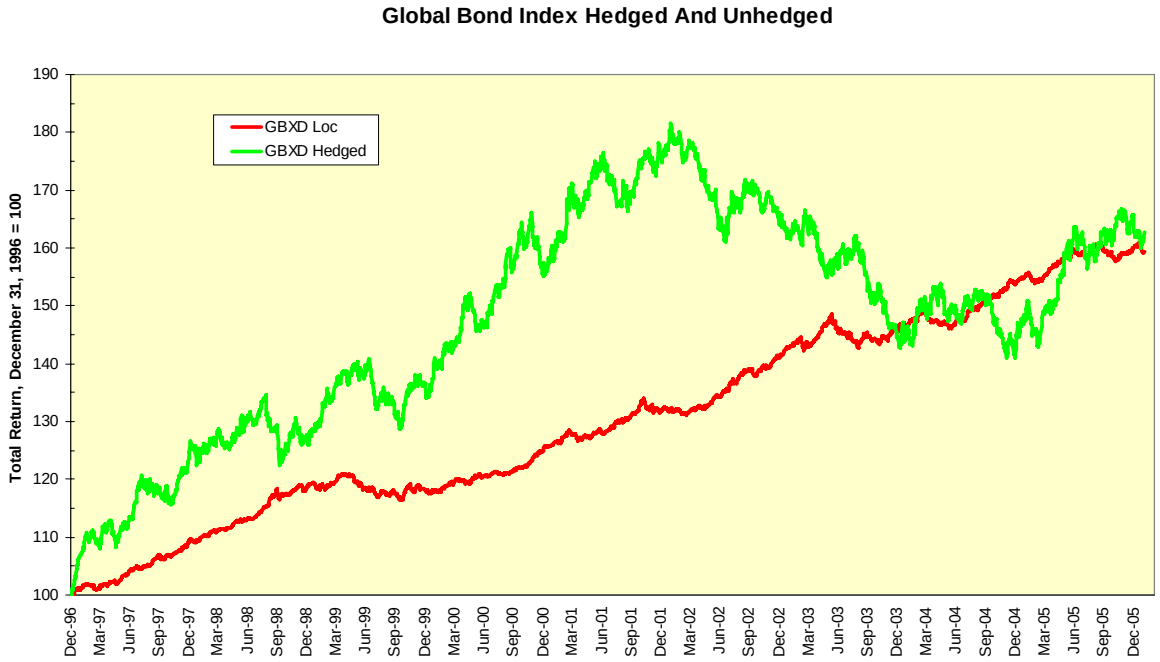
The final equity comparison can be made with the MSCI World index (MXWD). Once again, an equity index hedged with a long position in DXY futures provides superior results for an American investor.



Bond Market Comparison

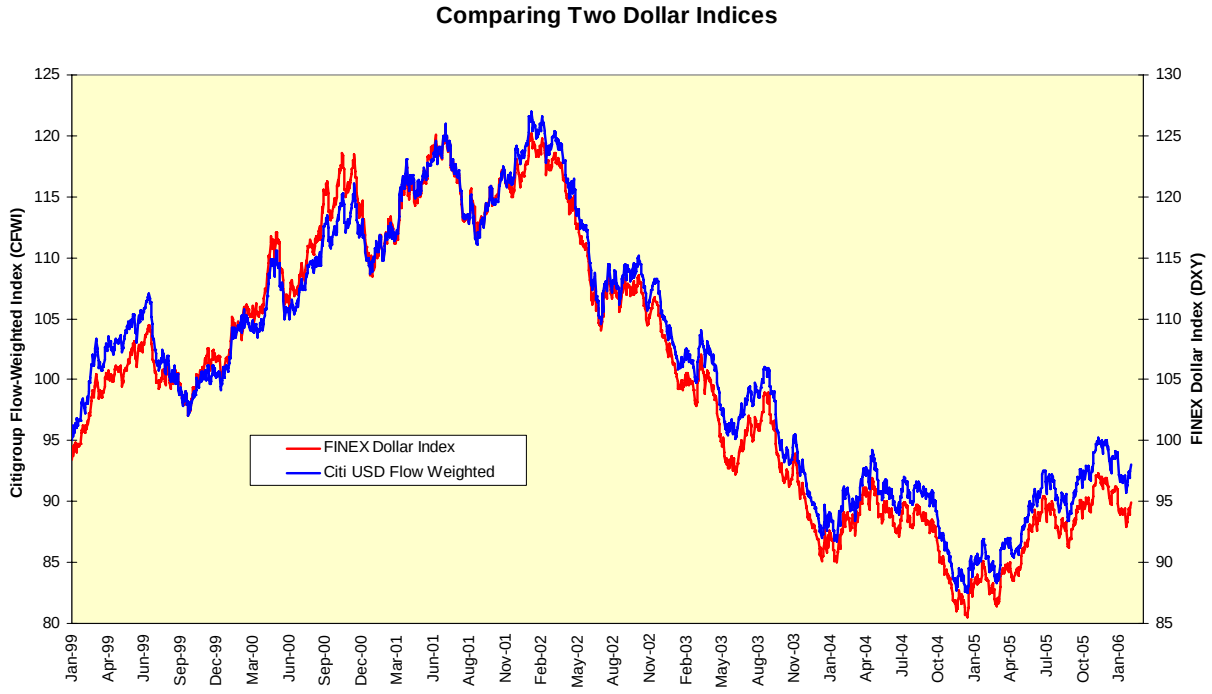
The ability of DXY futures to hedge broad market indices is not limited to equity indices. Let's take the Merrill Lynch Global Broad Market ex USD as a fixed-income index. This index combines senior corporate, government and supranational issues and has a duration of slightly over 6 years and a workout maturity of 7.86 years. The index' history began at the end of 1996.

As bonds represent a more direct currency play than do stocks – stocks' prospects can rise and fall as a function of currency fluctuations, while bond characteristics remain fixed – we should expect the hedged portfolio to have greater variance than the underlying index, and indeed it does. The relative gains accrued during the USD rally of the late 1990s dissipated by the end of 2003, but returned by late 2005.



Index Hedge Comparison

Now let's compare the DXY with the CFWI as instruments for hedging. The CFWI begins with the January 1999 introduction of the EUR and does not support futures contracts, so we will of necessity have to compare the two cash indices from that date forward. As hedging a non-USD portfolio back into USD involves borrowing in non-USD currencies and lending in USD currencies, and as U.S. short-term interest rates have been off-cycle with the rest of the world since 1999, this is a serious detriment. These interest rate differentials are real and will affect any and all derivatives, including swaps and options, used in portfolio hedges.



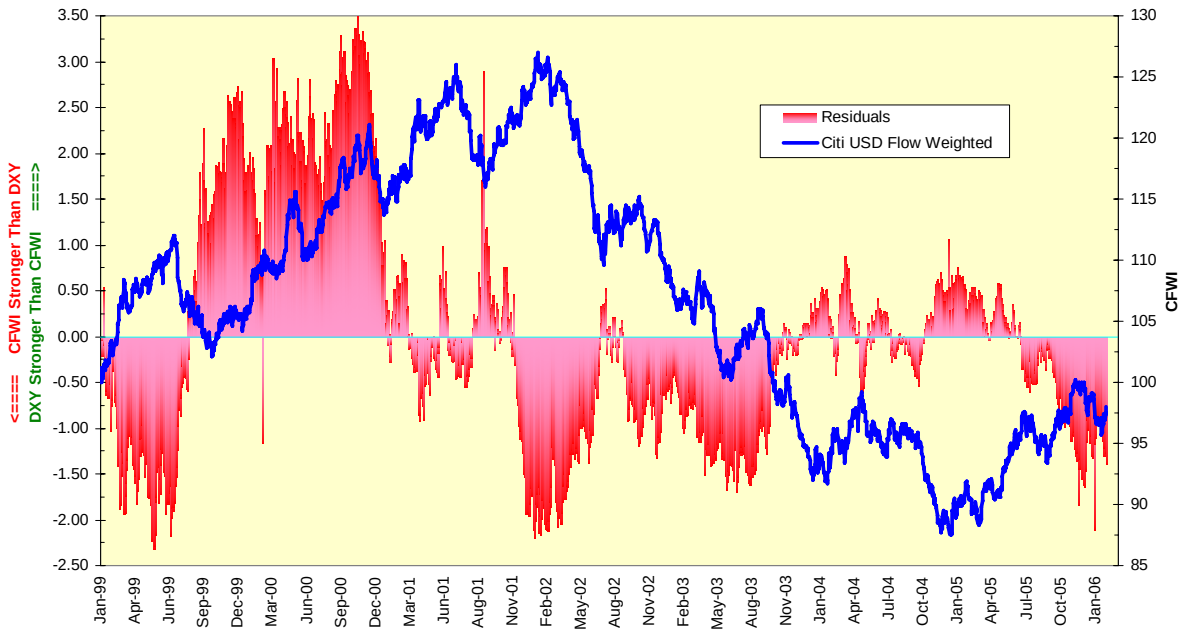
On first blush, we have to conclude the two indices track each other reasonably closely, as if "reasonable" has anything to do with finance. Statistics tell a better story. If we regress the daily returns of the DXY against those of the CFWI, we get the following:

DXY_{ret} = -.00000102 + .975 * $CFWI_{ret}$, r^2 = .876

Not only is this fit less than what we might expect, another way of saying the series are more different than we might expect, but the real story lies in the residuals, the portion we do not explain. A glance at the comparative chart reveals long periods, such as 2002-2004, when the DXY declined more rapidly than did the CFWI. The CFWI rose faster than did the DXY in the first half of 1999 and during 2005.

These long periods of out- and underperformance, or serial correlation, are highlighted in the chart below. For the statisticians reading this, the Durbin-Watson statistic of the regression of the DXY and the CFWI is .027, a rather extreme example of serial correlation. The comparative hedge performance is irregular. A holder of non-USD assets would have been better off with a DXY hedge during the second half of 1999 and throughout 2000, and then again in the first half of 2005, both periods of USD strength. During the USD decline from mid-2002 into mid-2003, the CFWI retained more strength; this probably is evidence that greater speculative DXY selling occurred than the flow fundamentals would have justified. Regardless, we cannot make a definitive statement on a full hedge accounting basis whether the CFWI would have been a superior hedge once interest rate differentials are included.

Where The Dollar Indices Mismatch



Conclusion

Given the information available, we can reach a single and quite valuable conclusion: Holders of non-USD portfolios can hedge their returns back into USD with futures contracts on the passively constructed DXY and enhance their performance relative to their benchmarks. This is true for three different measures of global equities on a consistent basis. It is true as well for a non-USD bond index over the index' life.