Currency Risk in US Portfolios

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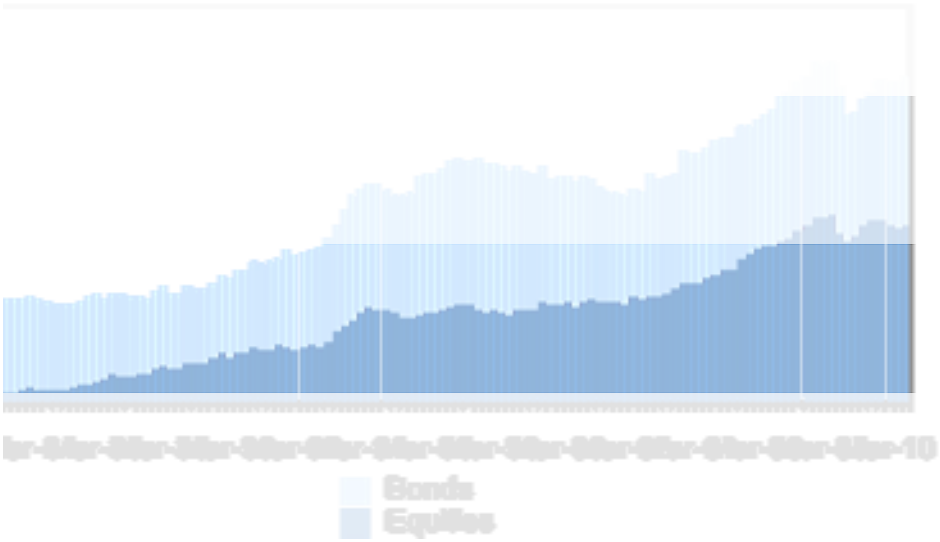
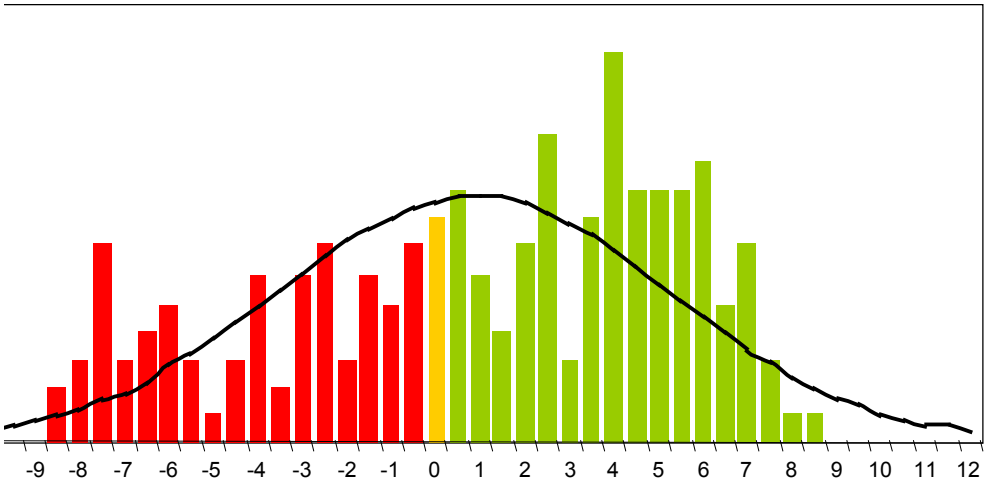
SSgA

stors have continued to diversify overseas



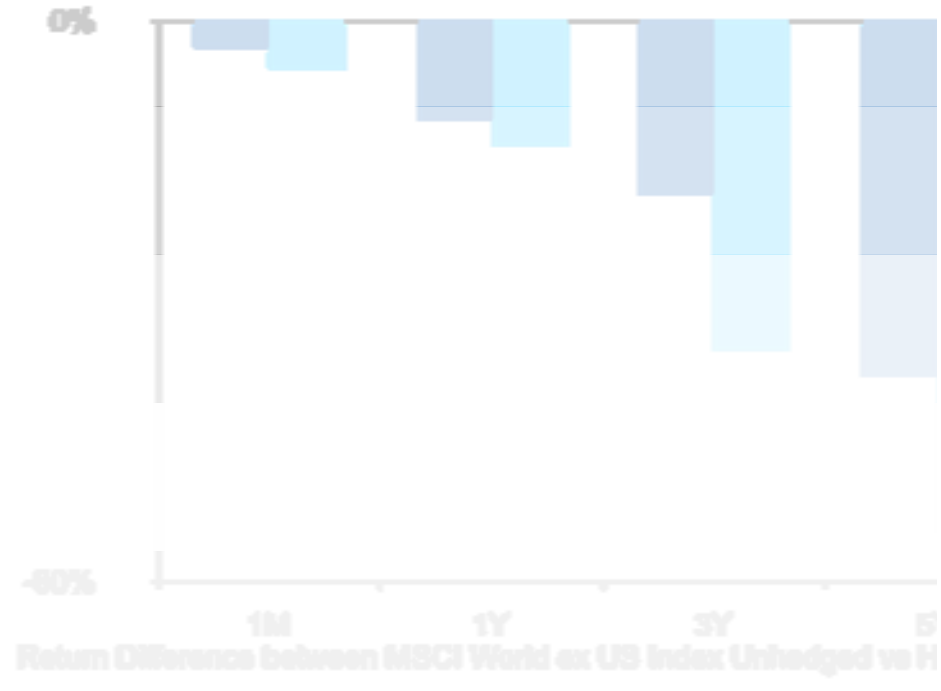
FX volatility is expected to remain high u other asset classes

currency risk is not symmetrical



lling 5 Year Currency Returns on MSCI World ex US Index, 1987-2009 (%)

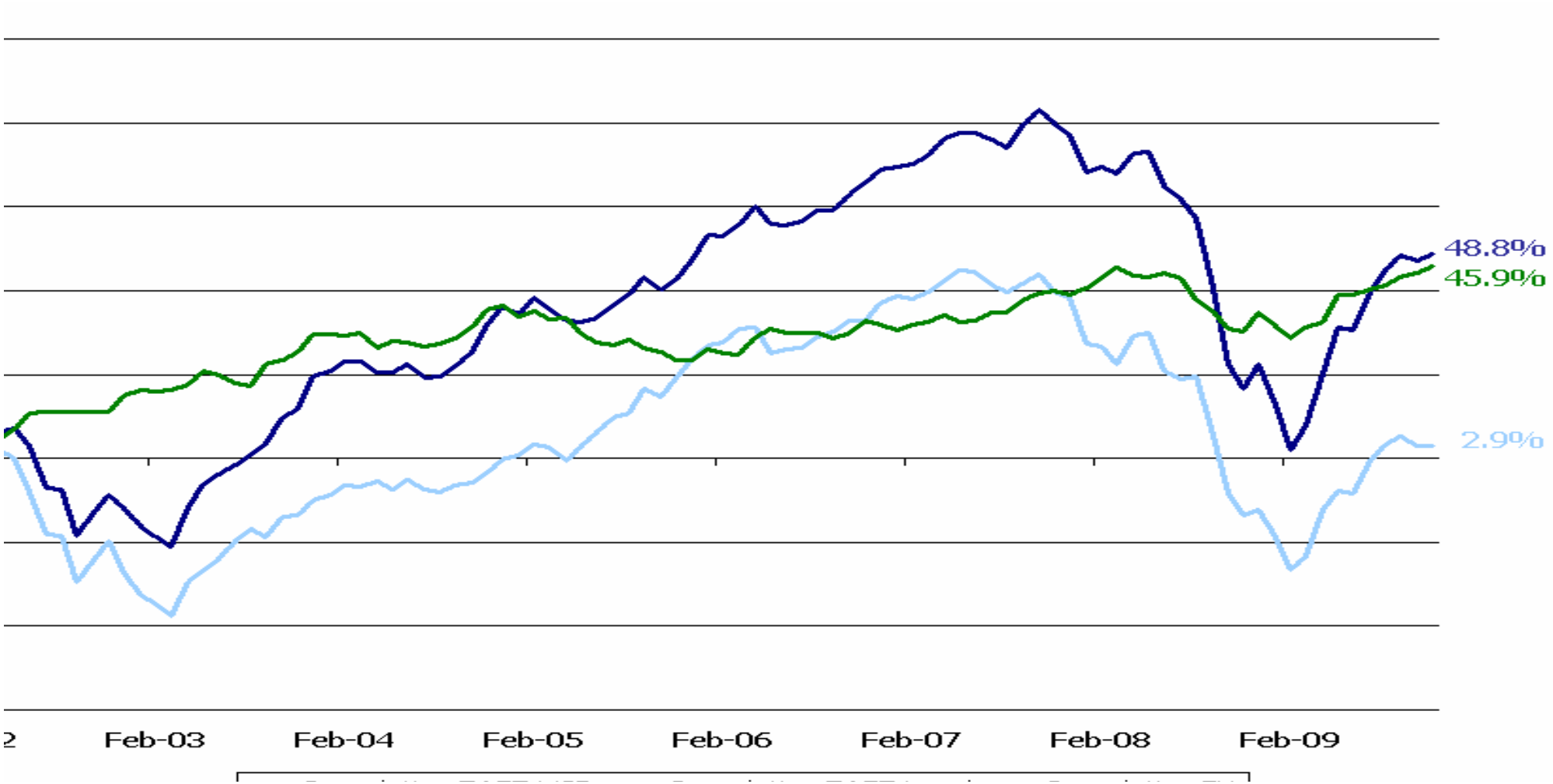
Left tail currency risk can be sizeable



February 2002 until November 2009, well over 90% of foreign equity returns were due
ency
de 45.9% from currency, only 2.9% from foreign equity!

goes up can come down…

Decomposition of MSCI EAFE Cumulative Returns



has come down historically

May 1995 until January 2002, currency eroded 40% of the 47% local equity return

ink we are nearing the end of the USD bear cycle and the fu ture will look like the chart below

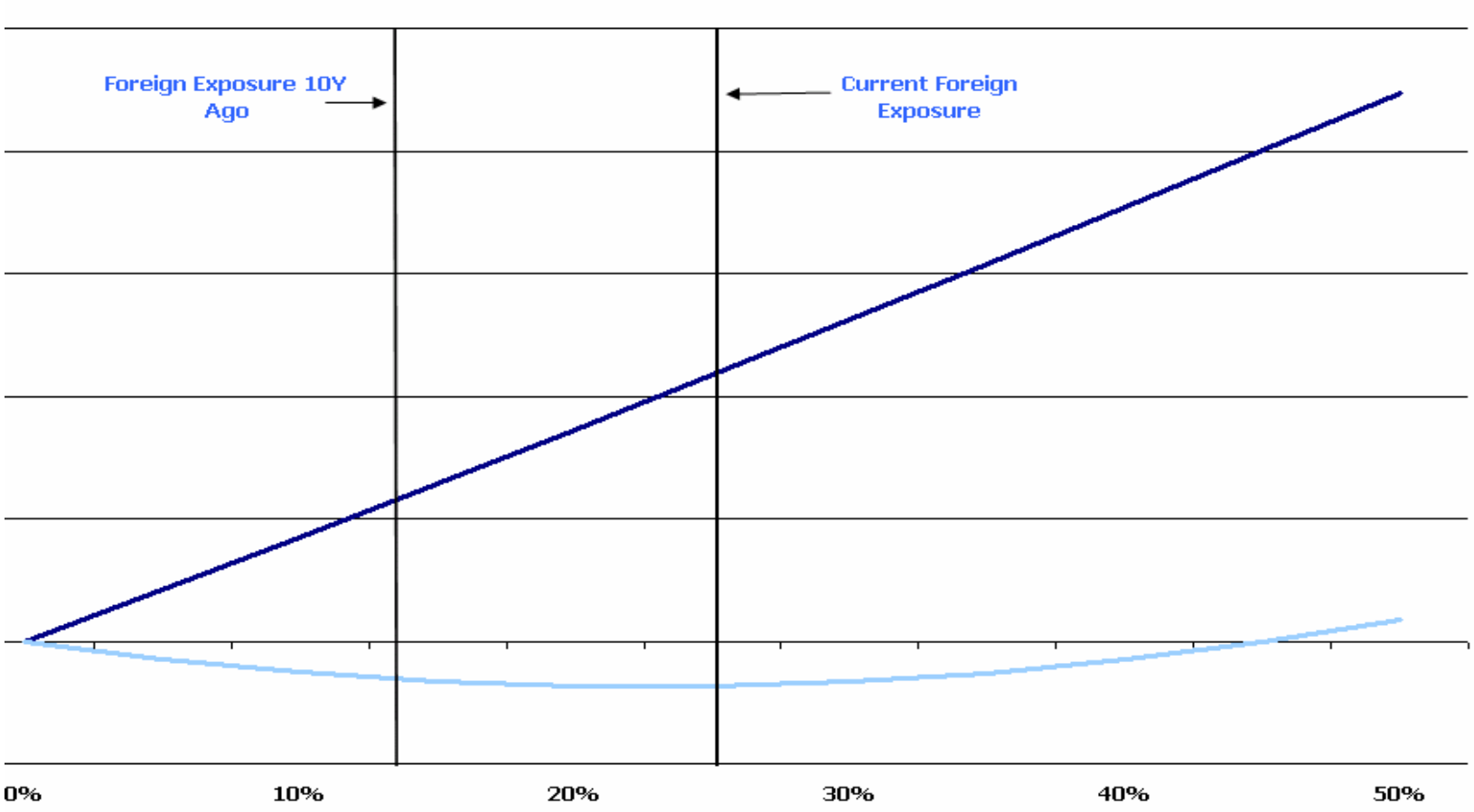
Decomposition of MSCI EAFE Cumulative Returns

00, currency exposures slightly decreased overall portfolio risk

10, currency exposures add significant risk

: changed? (higher currency volatility and – primarily – less diversification)

10-Year Currency Risk from a Global Equity Mandate for Varying Levels of Foreign Exposure: Today versus 10 Years Ago



rency Management Solutions

	Static Hedging	Dynamic Strategic Hedging	Active Currency Strate
t Objective	Reduce currency volatility i.e. smooth out fluctuations in currency gains and currency losses	Reduce maximum drawdown Reduce frequency and size of currency losses, without entirely eliminating the opportunity to add excess return versus a static hedge ratio Reduce currency volatility	Seeks to add excess returns
t Philosophy	Reduce currency risk in a portfolio in order to increase the risk budget available for other asset classes in a portfolio	Maximum drawdown and currency losses from static hedging can be reduced, and excess returns can be added versus a static hedge	Excess returns can be generat by exploiting inefficiencies in th currency market
Universe	Developed and Emerging Markets	Developed and Emerging Markets	Developed and Emerging Mark

ic Hedging

cates of holding unhedged currency exposures often rely on analysis by Froot (1
urrencies mean revert and provide a “natural hedge” for investors over the long
herefore hedging only benefits investors with 1 quarter – 1 year investment horiz
: this is a generalization of Froot’s limited analysis of the impact of US investments from the
spective of Sterling based investors based on data prior to Bretton Woods and free-floating
change rates

recent and far reaching research by the IMF (2010)[2] contradicts Froot’s findings
udes that the case for hedging generally does not decrease with the
tment horizon

F analyzed the impact of hedging the currency risk on foreign stock and bonds from the persp
JS dollar, Euro, Sterling and Japanese investors over 1975 to 2009

rrelations of currencies with other assets are unstable over time, for example, during the crec
2007 to 2009

F cautions against determining the optimal hedge ratios calibrated on historical data for
ctical purposes

dging currency risk is equivalent to replacing the very volatile and stochastic currency return
international investment returns with the ex ante, known and much less volatile forward prem
count

›n Volatility

Impact on Maximum Drawdown

amic Strategic Hedging

ative to manage currency risk but there are inherent limitations of static hedges

ated ‘optimal’ long term static hedge ratios can be inappropriate over the mediu
cially in periods of high volatility and/or when currencies have deviated significan
heir long term fair value

hedges are primarily designed to reduce currency volatility indiscriminately i.e.
th out the fluctuations in currency gains and currency losses but in practice the g
among clients is the risk of currency losses

mic Strategic Hedging is a valuation-based approach to currency management,
ned to provide three benefits

To reduce the significant tail risk of unmanaged currency exposures

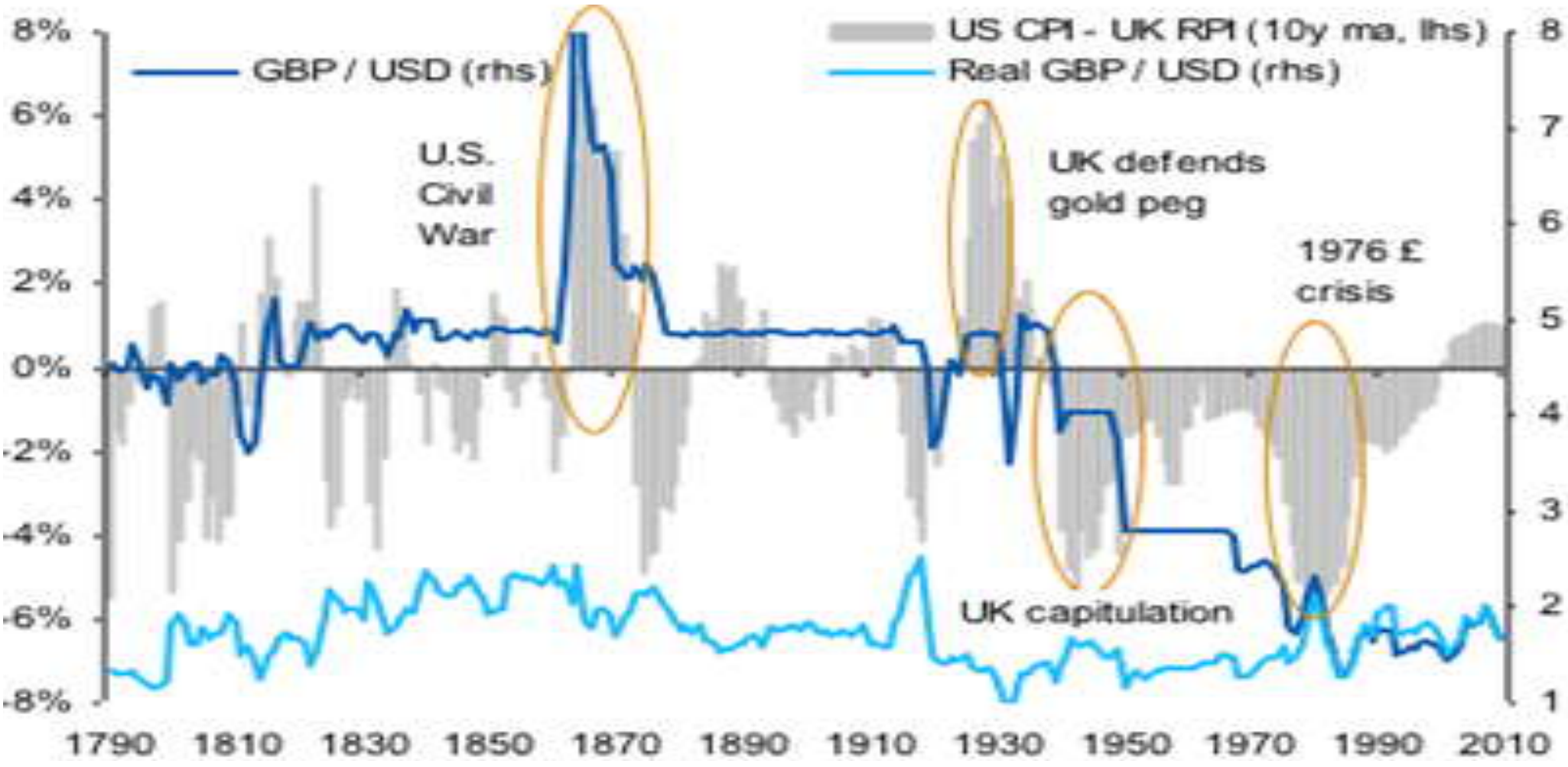
To allow for upside participation when foreign currencies appreciate

To provide diversification, particularly in risk averse market environments

chasing Power Parity (PPP) is a simple concept of equilibrium nominal exchange
ed on the idea that real exchange rates should be stable over time

historical evidence supporting PPP is remarkable (light blue line)

ninal exchange rate changes for a particular currency need not revert over time
k blue line)



Is USD/JPY Over or Under Valued?

- Fair value of currency pair is based on prop purchasing power parity model
- Assumption that the exchange rate change cumulative inflation differentials from select period

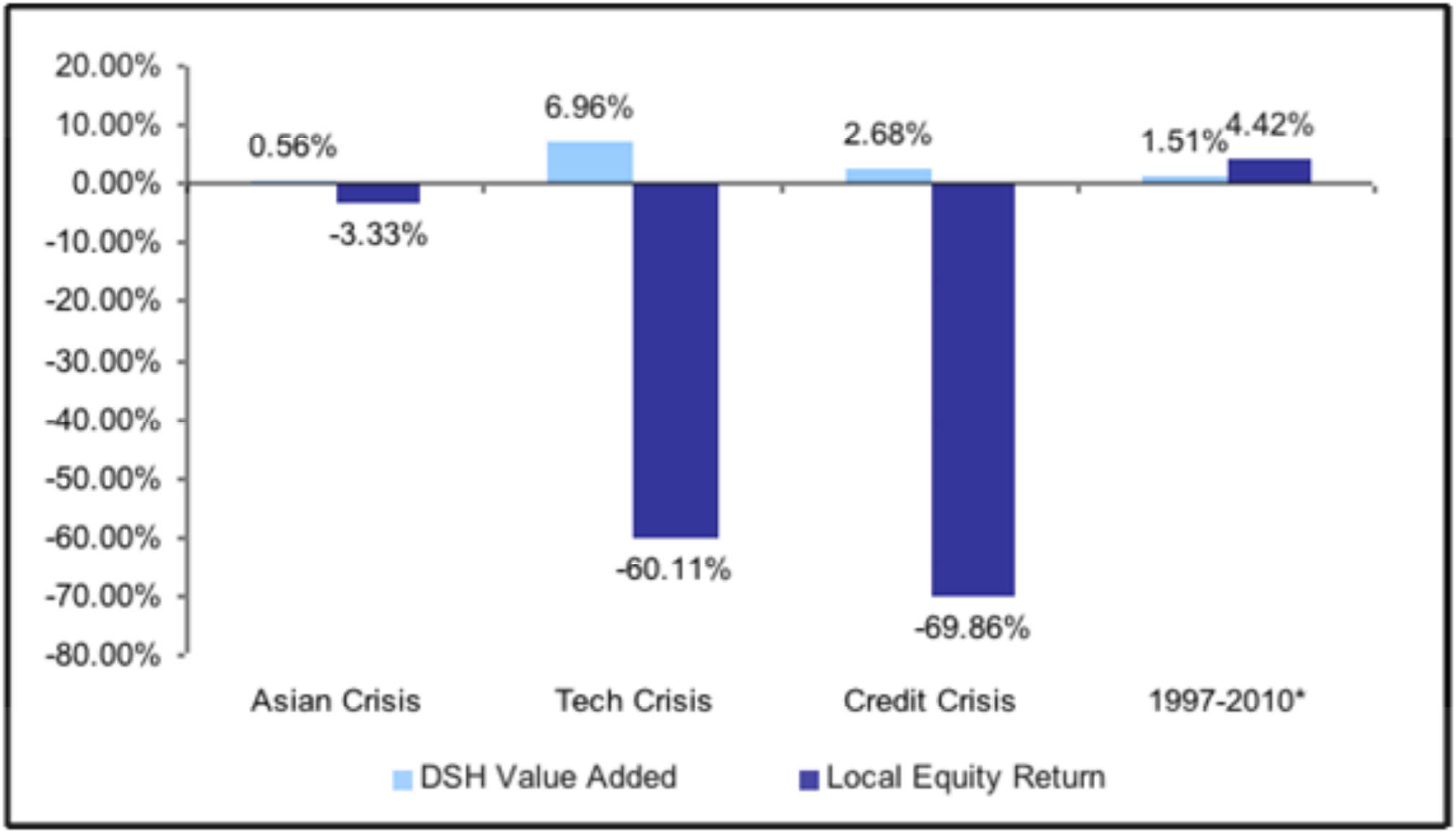
Expected Return on JPY

- Expected return has three components
  1. Magnitude of the misvaluation
  2. Duration of the misvaluation
  3. Interest rate differentials

Optimal Hedge Ratio

- Hedging model establishes larger currency positions when a currency pair's deviation f value is more extreme
- Hedge ratio moves inversely to the currenc expected return

ted Returns on MSCI ACWI and DSH



is defined here as the period over August 1997 – August 1998
is defined here as the period over April 2000 – March 2003
is defined here as the period over November 2007 – February 2009
SSgA as of 30 September 2010. Total currency returns on the Dynamic Strategic Hedge based on a benchmark static hedge ratio of 50%. Based on an uncons
e ratio of 0% to 100% with a benchmark of a 50% static hedge ratio. The hypothetical performance information is based upon the performance of SSgA's Dynar
vests primarily in forward foreign exchange contracts. These results are gross of transaction costs and fees.
performance shown was created by the SSgA Currency Team. Source MSCI/SSgA as of 30 September 2010. The hypothetical performance information is base
nconstrained US Dollar investor in the Dynamic Strategic Hedge with ratio limits of 0% to 100% and a benchmark of a 50% static hedge ratio. This strategy inve
ge contracts. The simulation was computed by the SSgA currency group and results are gross of transaction costs and fees. The results shown do not represe

Hedge Ratio on Foreign Currency

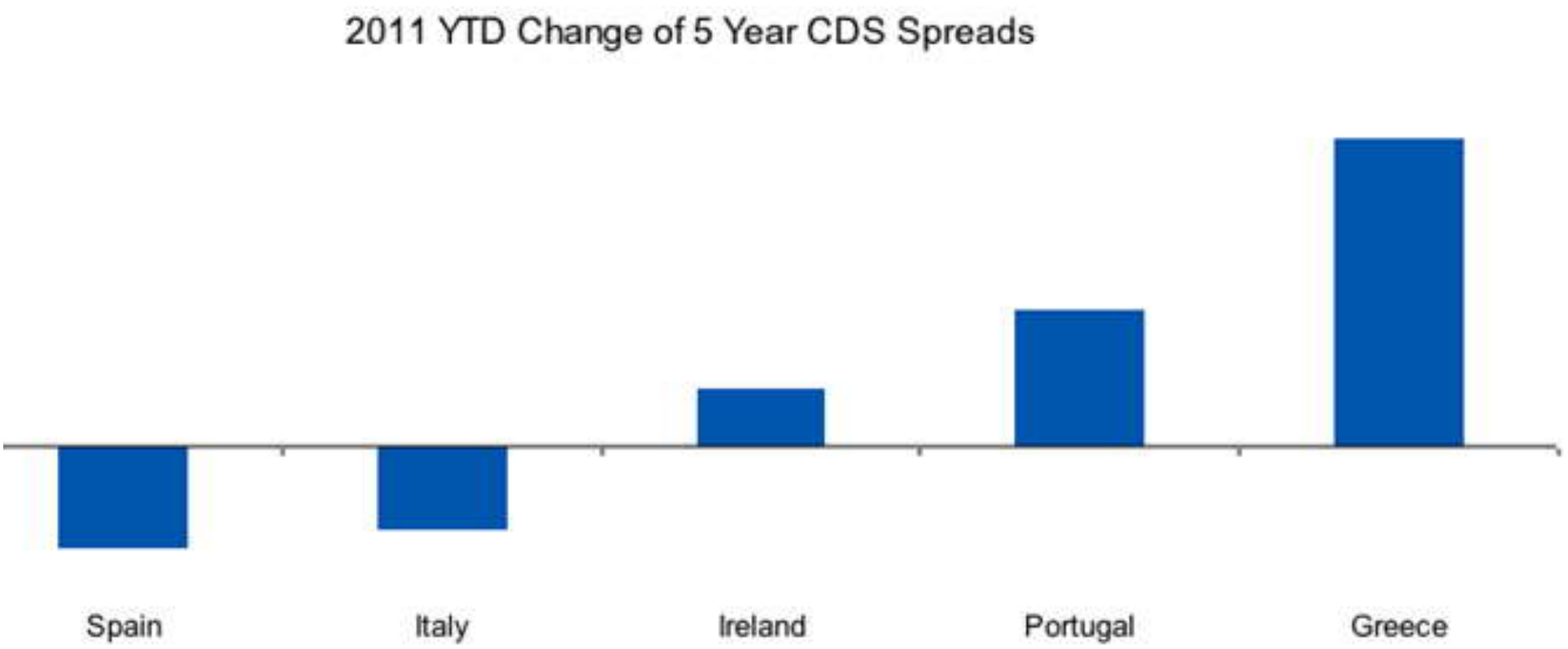
	AUD	CAD	CHF	EUR	GBP	JPY	NOK	NZD	SE
D		0.4	0.6	0.4	0.1	0.2	0.3	0.3	0.0
D	0.6		0.6	0.4	0.1	0.2	0.4	0.4	0.0
F	0.4	0.4		0.2	0.0	0.1	0.2	0.3	0.0
R	0.6	0.6	0.8		0.2	0.3	0.4	0.5	0.0
P	0.9	0.9	1.0	0.8		0.5	0.8	0.7	0.3
Y	0.8	0.8	0.9	0.7	0.5		0.7	0.7	0.4
K	0.7	0.6	0.8	0.6	0.2	0.3		0.5	0.0
D	0.7	0.6	0.7	0.5	0.3	0.3	0.5		0.1
K	1.0	1.0	1.0	1.0	0.7	0.6	1.0	0.9	
D	0.7	0.7	0.8	0.6	0.3	0.3	0.5	0.5	0.2

ets	0% Hedge Ratio	50% Hedge Ratio	Dynamic Strategic Hed
eturn %	1.66	0.75	
olatility %	7.63	3.80	
ı Loss %	-41.63	-16.40	
ıe at Risk, Annual	-11.09	-4.81	
on Ratio	N.A.	N.A.	

market viewed the Eurozone as having 2 tiers in 2010, the core and periphery

, a third tier is emerging as the credit risk premium of Spain and Italy de-couple from Ireland, Greece, a
ugal.

e-coupling suggests that the market believes that the bailout pack ages will successfully conta
ign credit crisis as a result the Euro has been one of the strongest currencies of 2011



cant risks remain

success of austerity measures designed to stabilize levels of sovereign debt are not expecte
ıe near future, we must wait and see. Success is not guarant eed.

e majority of Spanish home and property mortgages are variabl e rate and will be directly imp
3 rate hikes. That may further damage the housing market in Sp ain and further impair Spanis

e 2: Global Monetary/Fiscal Tightening and the Sustainability of Growth

etary and fiscal tightening has begun, or soon will, in many develop and emerging economies

tment Impact: Increased economic uncertainty. We are entering the moment of truth, will the very be self sustaining once the monetary accommodation is removed?

e 3: US Dollar Weakness? Or, Recovery?

JS Dollar is near the lows of it's 9 year bear market and is the sole funding currency for cross ncy carry trades. Yet, unlike 2002, the USD is cheap to long term fair value, relative growth is nt, structural problems abound but are not much worse than in the Eurozone, UK, and Japan

tment Impact: Beware of a US Dollar rally, especially in 2H 2011. There is a growing risk that me USD short positions will be closed if (when) the FED hints at policy normalization.

all be nimble and open minded, do not become too attached to short term trends

g 2011, global economic uncertainty and the sensitivity of currencies to that uncertainty will r ted relative to history.

, currency trends may reverse frequently and perhaps violently