



Society of Quantitative Analysts

**2015 FUZZY DAY CONFERENCE
“Facts that are Not Facts”**

**The US dollar Safe Haven Myth
and the
“United States Hedge Fund”**

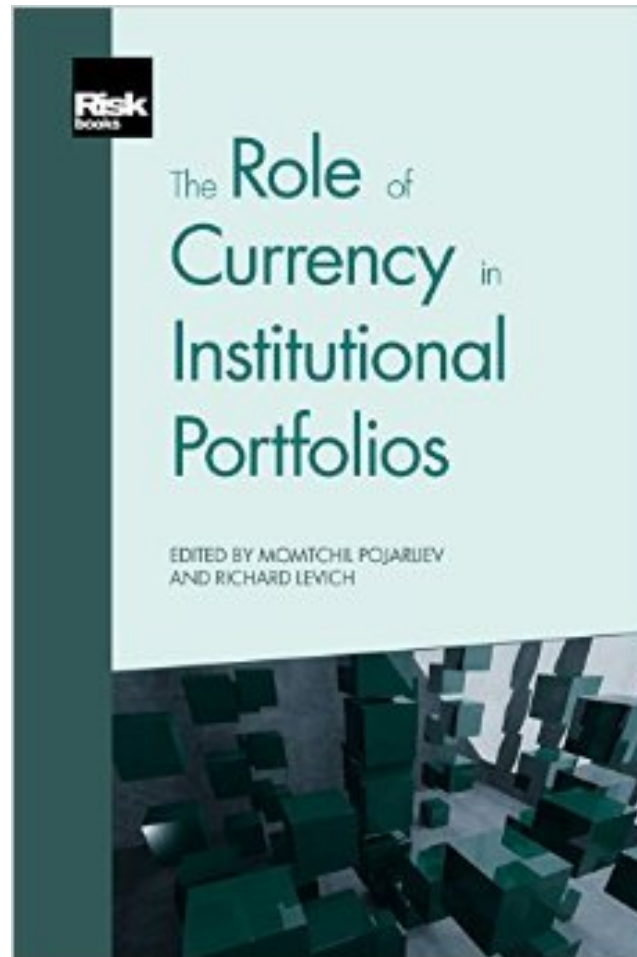
Alessio de Longis

The Role of Currency in Institutional Portfolios,

edited by Momtchil Pojarliev and Richard Levich, Riskbooks Incisive Media, 2014

Update to Chapter 7:

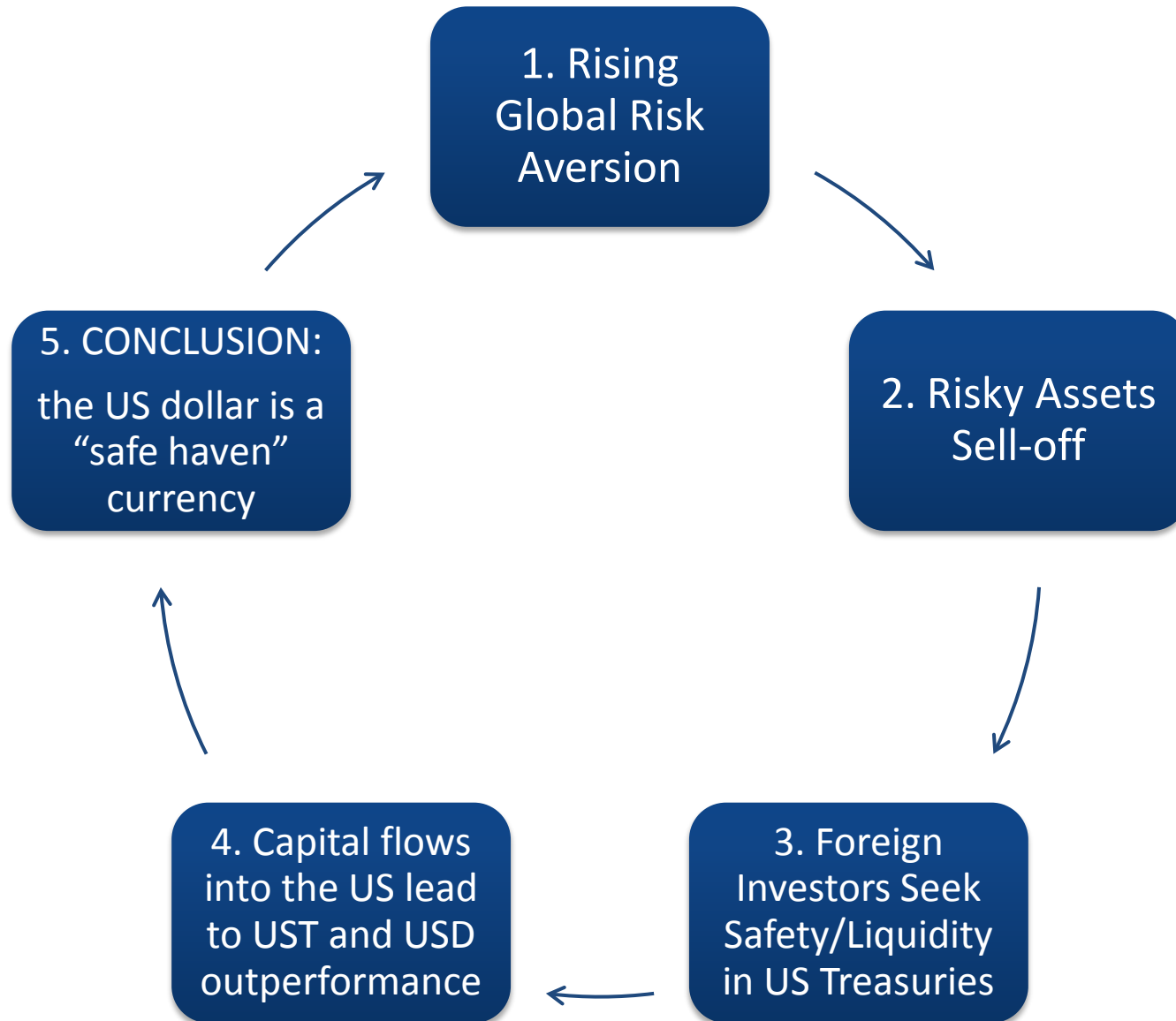
de Longis, A., and Tufekci, E., 2014, “Economic Data Surprises and Currency Alpha”,



Outline

- The US dollar “Safe Haven” Theory
- Empirical analysis of US capital flows
- The “United States Hedge Fund”
- Designing a simple, and economically intuitive, FX investment strategy

The US dollar “Safe Haven” Theory



Selecting Major Risk Aversion Events

- Looking for three criteria:

1. Equity sell-off
2. US Treasury rally
3. US dollar rally

<i>Risk Aversion Event</i>	<i>Start date</i>	<i>End date</i>	<i># months</i>	<i>PERIOD RETURNS</i>		
				<i>MSCI ACWI</i>	<i>UST 10Y</i>	<i>USD TWI</i>
Euro debt crisis/emergency summit	Mar-12	May-12	2	-10.60%	6.42%	1.33%
Euro debt crisis & US downgrade	Apr-11	Sep-11	5	-21.37%	14.36%	2.39%
Euro debt crisis / first Greece bailout	Apr-10	Jun-10	2	-12.72%	6.50%	4.83%
Global Financial Crisis (Lehman, etc)	Aug-08	Feb-09	6	-44.56%	8.48%	12.72%
Tech bubble unwind	Mar-00	Feb-02	23	-32.89%	16.74%	13.53%
Russian default / LTCM	Jun-98	Aug-98	2	-14.24%	3.94%	2.17%
Asian Financial Crisis	Jun-97	Dec-97	6	-1.81%	8.55%	5.18%

Are foreign capital inflows into US Treasuries driving this positive correlation with the US dollar?

Measuring the Change in Capital Flows: Foreign Investors

$$\Delta \text{flows}(t, t+s) = \underbrace{\left[\sum_{i=0}^s (\text{flows}_{t+i}) \right]}_{\text{sum of monthly flows during "risk aversion episode"}} * \underbrace{\left(\frac{12}{[(t+s)-t]} \right)}_{\text{annualization factor}} - \underbrace{\sum_{i=1}^{12} (\text{flows}_{t-i})}_{\text{previous 12-month cumulative flows}}$$

Risk Aversion Event	CHANGE IN FOREIGN INVESTORS' INFLOWS (% GDP)		
	UST bonds (private + official)	UST bonds (private)	US Corporate bonds + Agency bonds + Stocks
Euro debt crisis/emergency summit	1.80%	1.65%	-0.20%
Euro debt crisis & US downgrade	-0.02%	0.14%	-1.74%
Euro debt crisis / first Greece bailout	-2.87%	-2.49%	-1.26%
Global Financial Crisis (Lehman, etc)	-1.51%	-0.34%	-2.58%
Tech bubble unwind	-0.25%	-0.08%	0.42%
Russian default / LTCM	-2.34%	-1.23%	-1.30%
Asian Financial Crisis	-1.64%	-0.45%	0.36%

POSITIVE

Foreign Investor Inflows => **USD positive**

NEGATIVE

Foreign Investor Repatriation => **USD negative**

Measuring the Change in Capital Flows: US Investors

$$\Delta \text{flows}(t, t+s) = \underbrace{\left[\sum_{i=0}^s (\text{flows}_{t+i}) \right]}_{\text{sum of monthly flows during "risk aversion episode"}} * \underbrace{\left(\frac{12}{[(t+s) - t]} \right)}_{\text{annualization factor}} - \underbrace{\sum_{i=1}^{12} (\text{flows}_{t-i})}_{\text{previous 12-month cumulative flows}}$$

Risk Aversion Event	CHANGE IN US INVESTORS' OUTFLOWS (% GDP)		
	Foreign Bonds	Foreign Stocks	Foreign Bonds + Foreign Stocks
Euro debt crisis/emergency summit	0.69%	-0.24%	0.45%
Euro debt crisis & US downgrade	-0.17%	0.29%	0.12%
Euro debt crisis / first Greece bailout	1.85%	0.29%	2.14%
Global Financial Crisis (Lehman, etc)	0.79%	0.80%	1.60%
Tech bubble unwind	0.31%	-0.16%	0.15%
Russian default / LTCM	1.05%	0.29%	1.35%
Asian Financial Crisis	-0.20%	0.20%	0.00%

POSITIVE

US Investor Repatriation => **USD positive**

NEGATIVE

US Investor Outflows => **USD negative**

Risk Aversion Episodes: US versus Foreign Investors' Flows

US Investors' Repatriation

- Sell Foreign Assets, Sell Foreign Currency --> US dollar appreciation

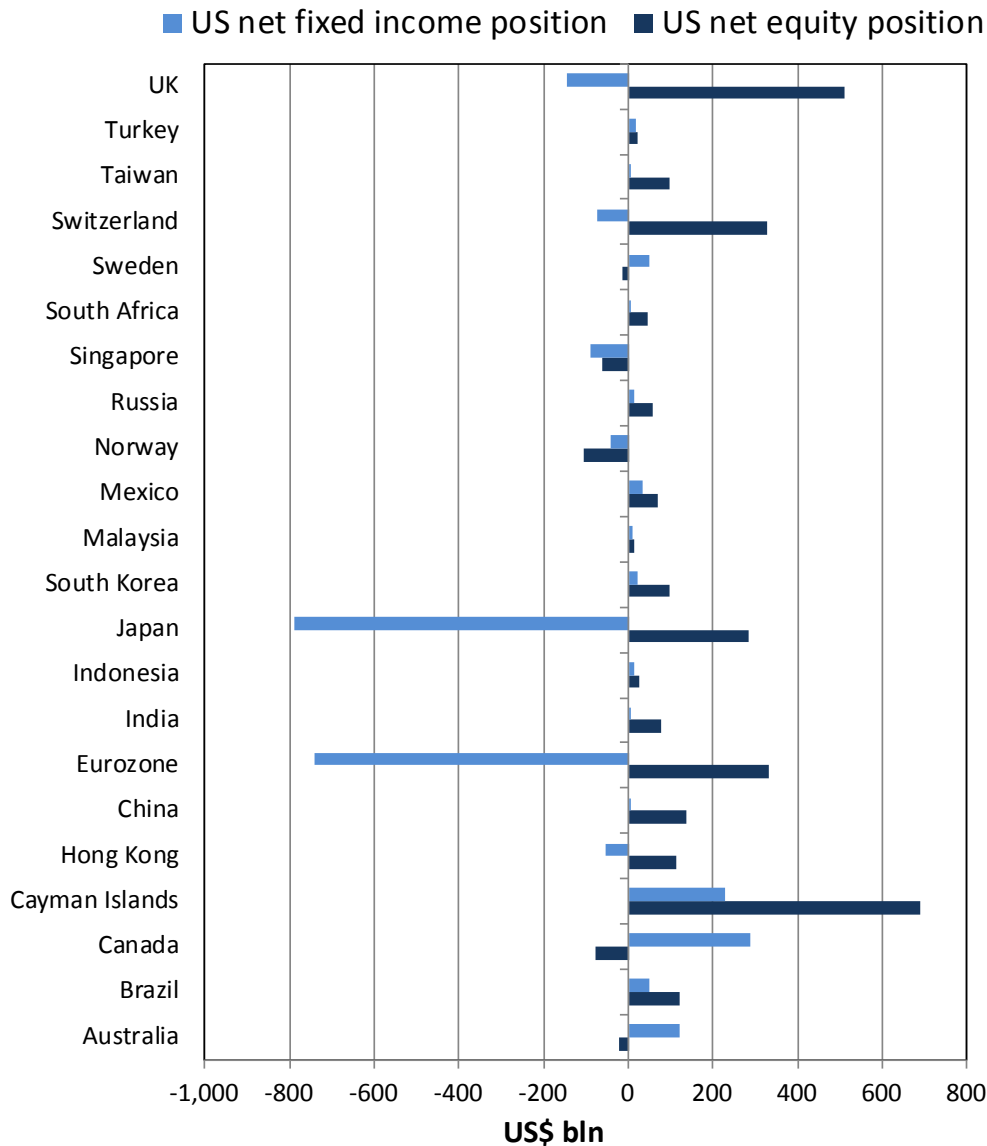
What About Foreign Investors?

- No evidence of foreign inflows into US Treasuries --> No "Safe Haven" demand
- Instead, empirical evidence suggests capital outflows --> Home Bias

Questions

- Why aren't capital outflows from the US having a negative impact on the US dollar?
- What drives US dollar appreciation during risk aversion episodes?

US International Investment Position: A Global Hedge Fund

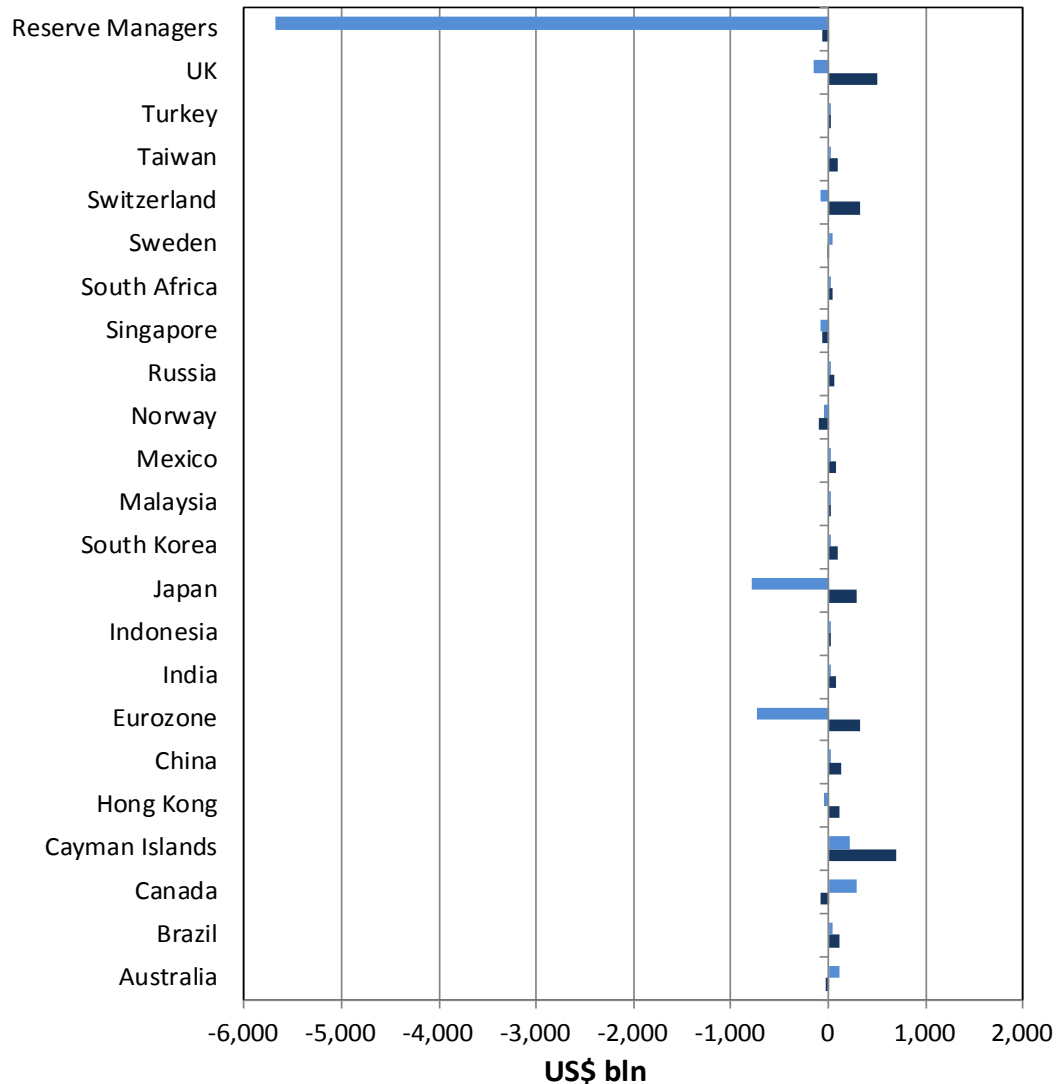


United States Net Foreign Asset Position
(private investors only)

Long Equities / Short Fixed Income
against almost every country

US International Investment Position: A Global Hedge Fund

■ US net fixed income position ■ US net equity position



United States Net Foreign Asset Position
(including reserve managers)

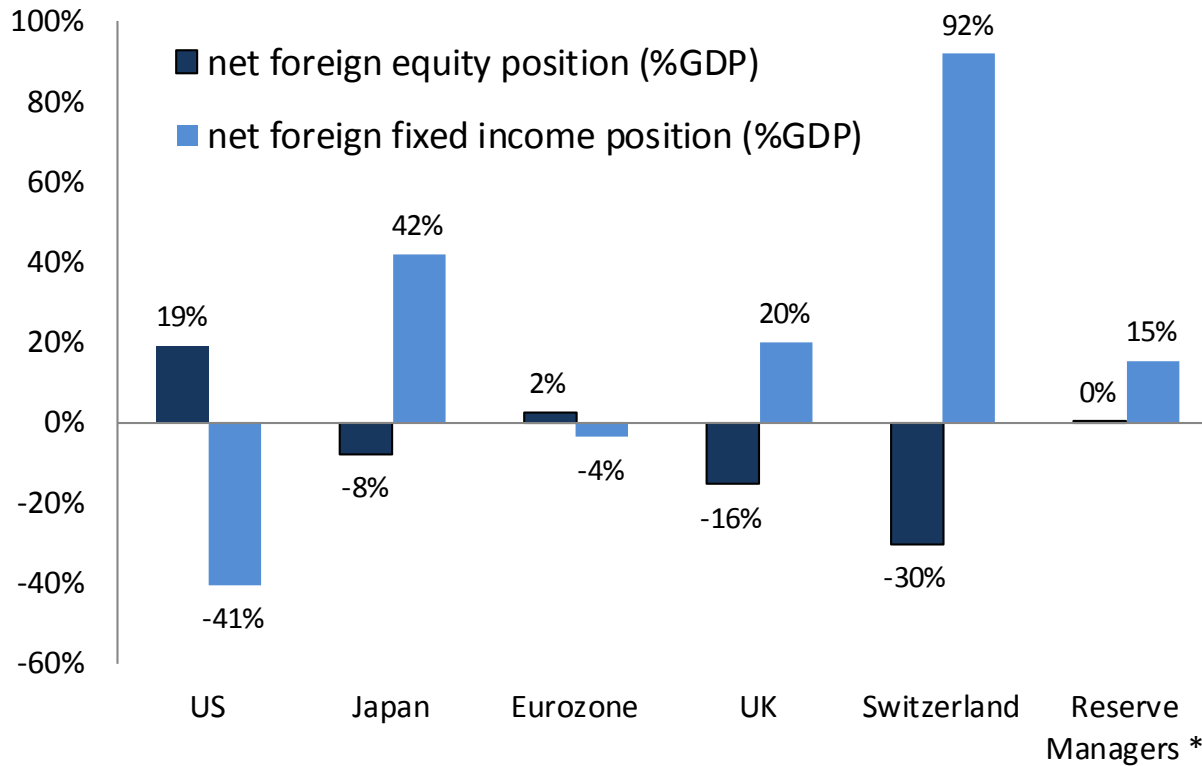
Long Equities / Short Fixed Income
against almost every country

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Data Source: IMF CPIS Survey (2013), including reserve managers, which include proxy allocation from China and Taiwan, countries not participating in CPIS survey. Author's calculations.

A Global Comparison: Who is Long Risk?

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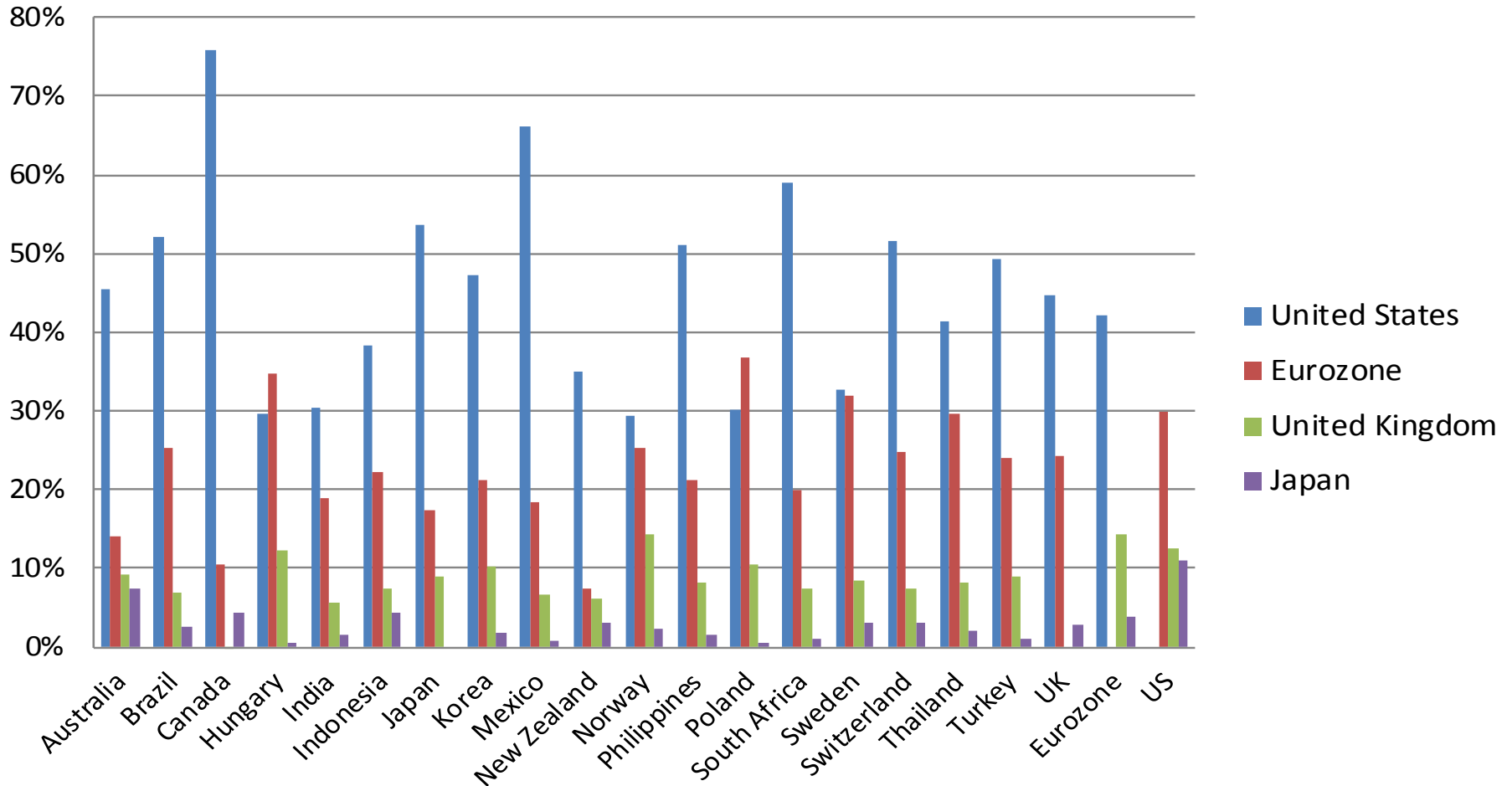


- The “United States Hedge Fund”: Long Equity / Short Sovereign Fixed Income.
 - The US dollar is the funding currency of global growth (i.e. global equity markets)
- Negative correlation between US dollar and global growth sentiment

Data Source: IMF CPIS Survey (2013). Reserve managers include proxy allocation from China and Taiwan, countries not participating in CPIS survey. Note: * as % of World GDP. Author’s calculations.

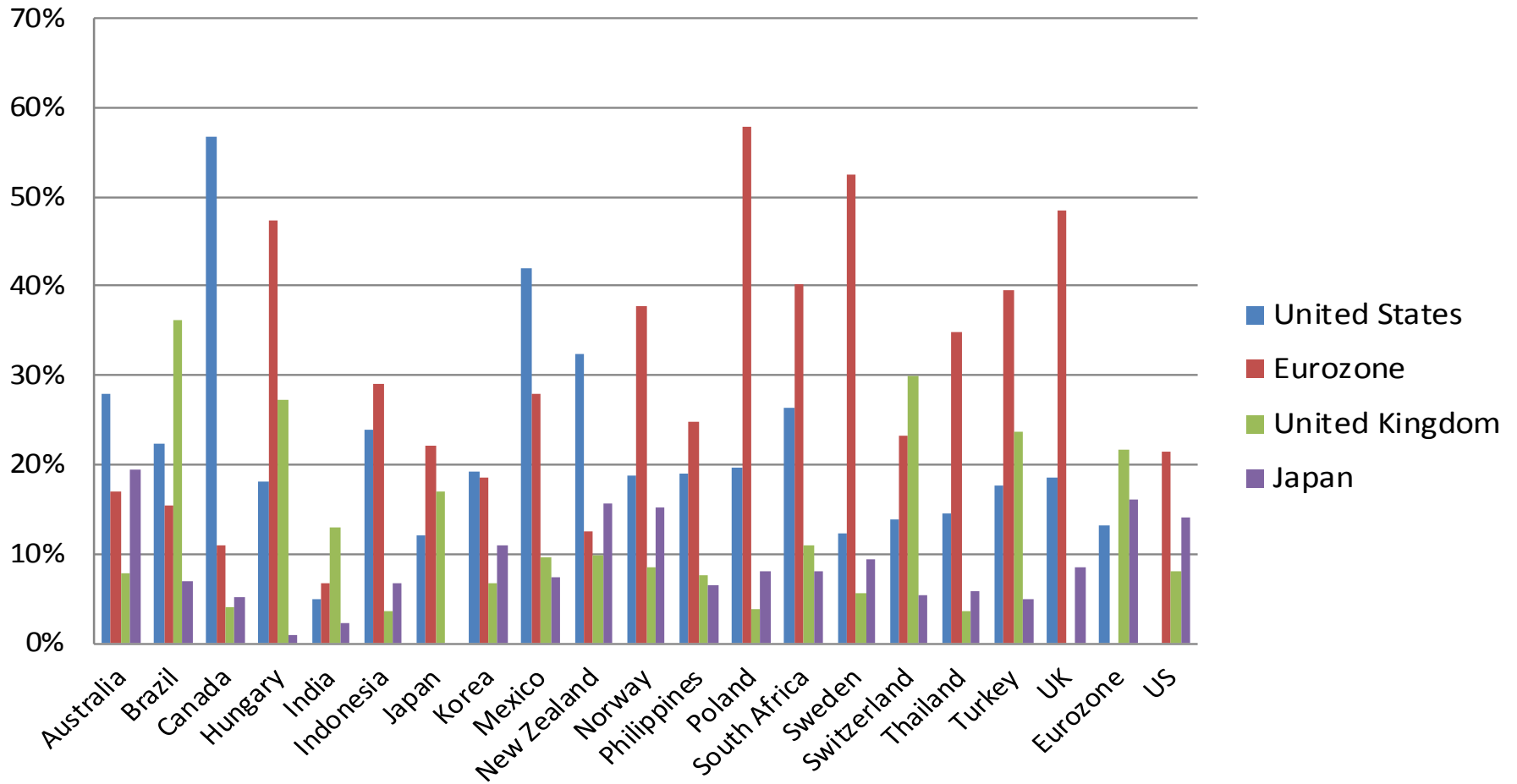
United States **Dominates** in Foreign Equity Markets...

Equity Market: Foreign Ownership by Source
(as % of total foreign ownership)

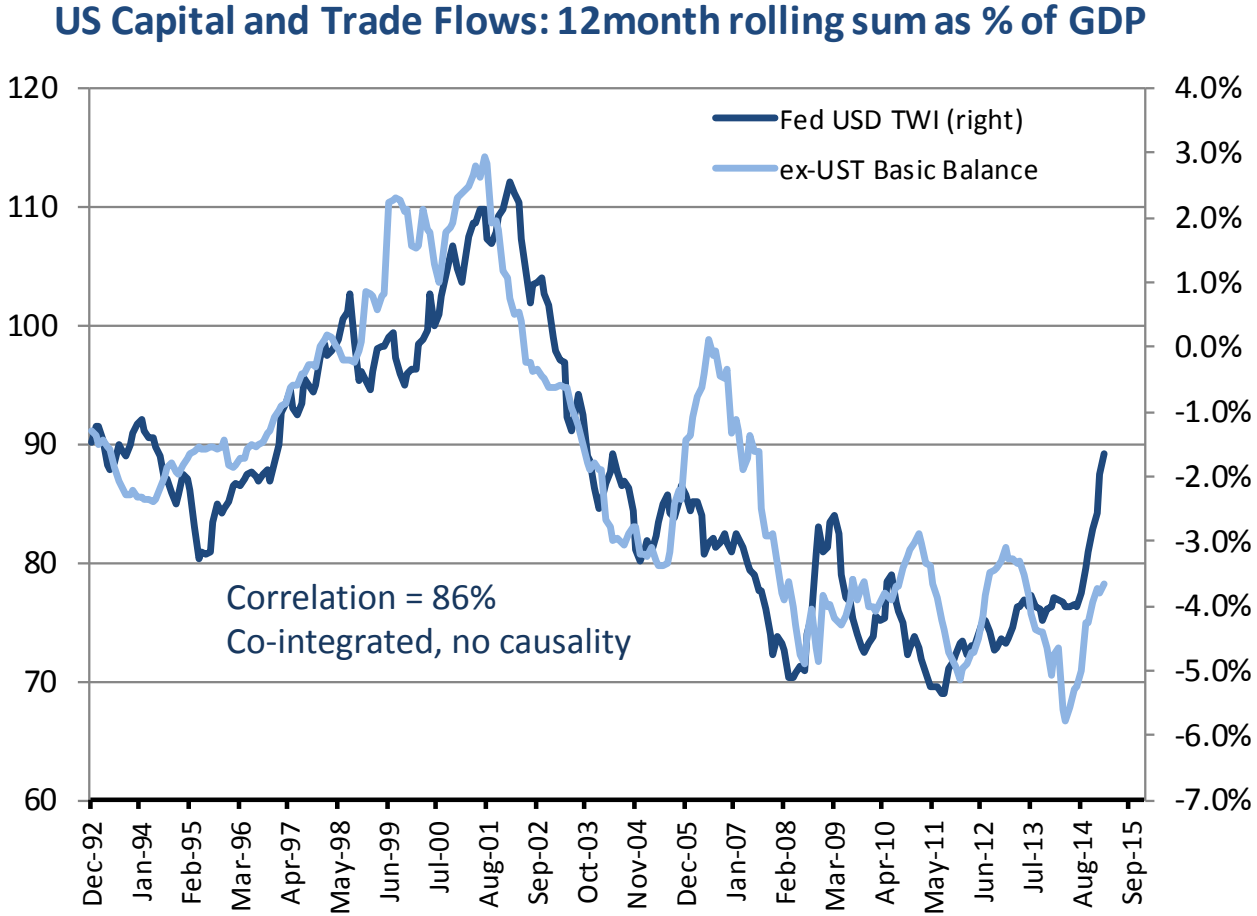


...But Not In Foreign Fixed Income Markets

Fixed Income Market: Foreign Ownership by Source (as % of total foreign ownership)



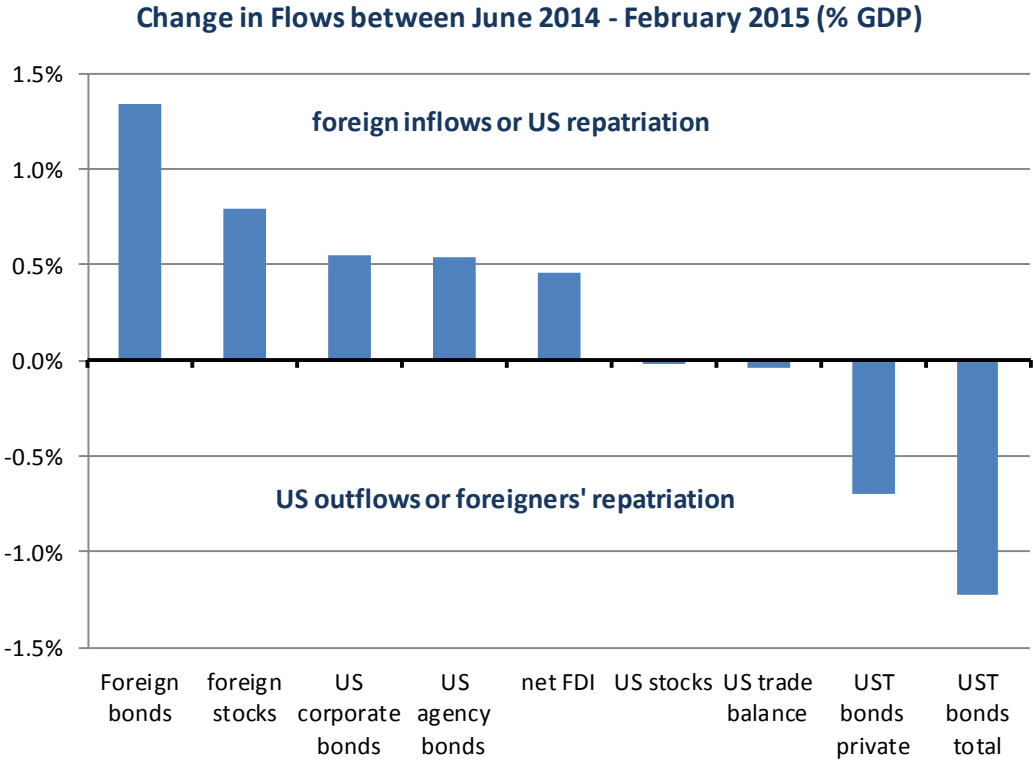
US dollar vs. Flows: Equilibrium Relationship, excluding US Treasuries



ex-UST Basic Balance = Trade balance + net FDI + net Equity + US corporate and agency bonds + Foreign bonds

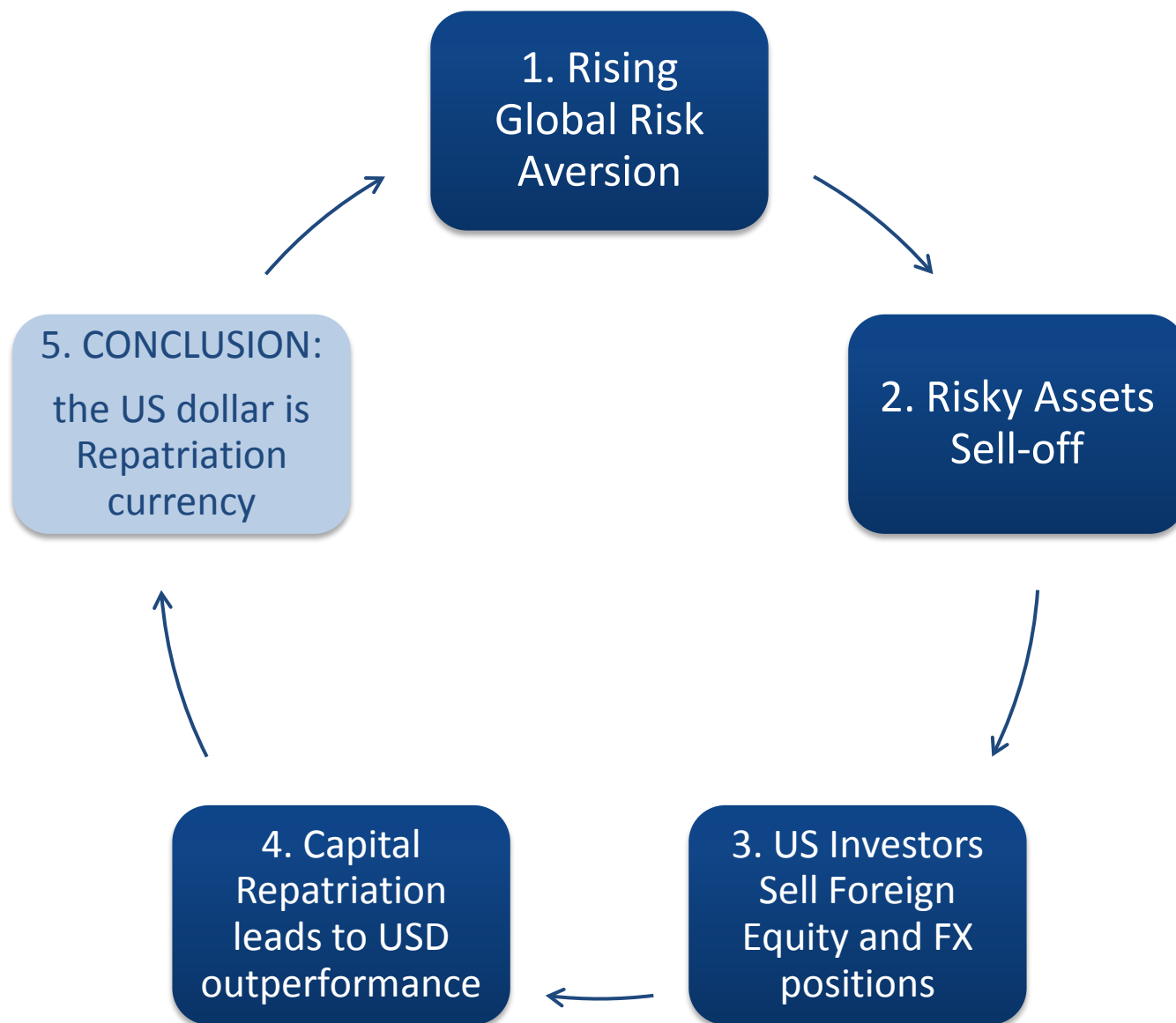
Explaining the Recent US dollar Rally

No evidence of foreign inflows into UST Treasuries due to attractive spreads over rest of QE/ZIRP bond markets



$$\Delta flows(t, t + s) = \left[\sum_{i=0}^s (flows_{t+i}) \right] * \left(\frac{12}{[(t + s) - t]} \right) - \sum_{i=1}^{12} (flows_{t-i})$$

The US dollar is a “Repatriation” Currency, Not a “Safe Haven”



Just Semantics or Does It Matter?

It matters to understand:

- Fundamentals behind a simple correlation
- How international investors' positioning drives price action
- Role of the US dollar as funding currency of global growth

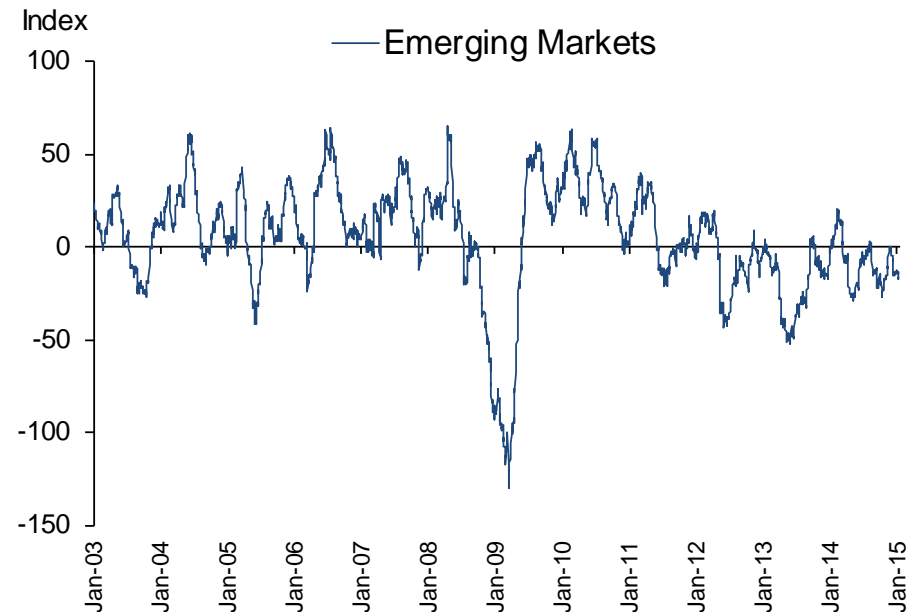
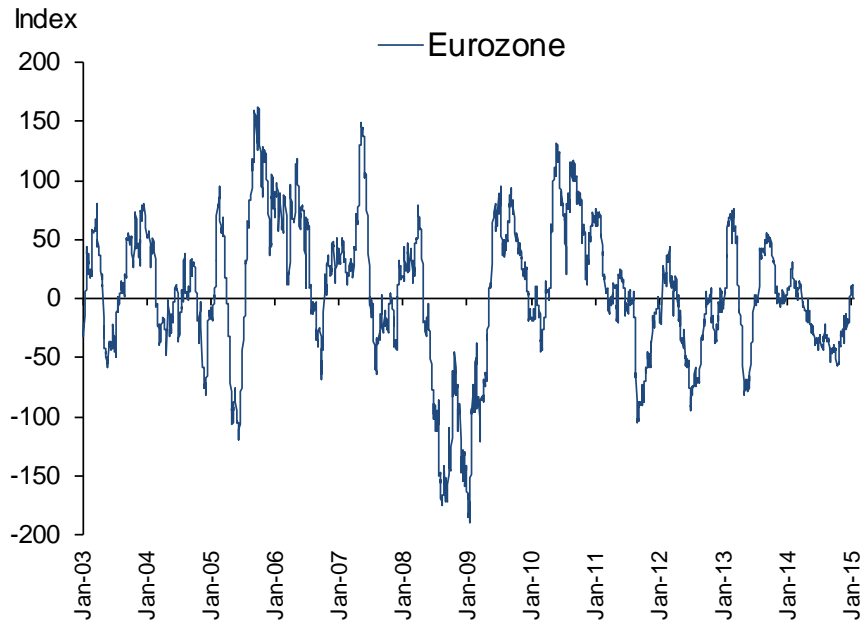


Design Investment Strategies Exploiting
the Link between Foreign Growth and US
Dollar Cycles.

Economic Surprise Indices (Citi): Methodology

Measuring International Growth Sentiment with Economic Surprise Indices

$$Index_t = 100 * \sum_{i=1}^I w_i * \sum_{j=1}^{90} \frac{\ln(j)}{\ln(90)} * \begin{cases} \frac{surprise_{i,j}}{\sigma_{i,j}}, & \text{if } datarelease_{i,j} = TRUE \\ 0 & \text{if } datarelease_{i,j} = FALSE \end{cases}$$



Source: Bloomberg, CitiFX QIS, Citigroup.

Notes : for more details on index construction methodology see Kasikov, K., A. Ermogenous, and S. Kumar, 2009, "QIS Focus: Economic Surprise Indices for Emerging Markets", April, CitiFX® Quantitative Investment Solutions, Citigroup Inc.

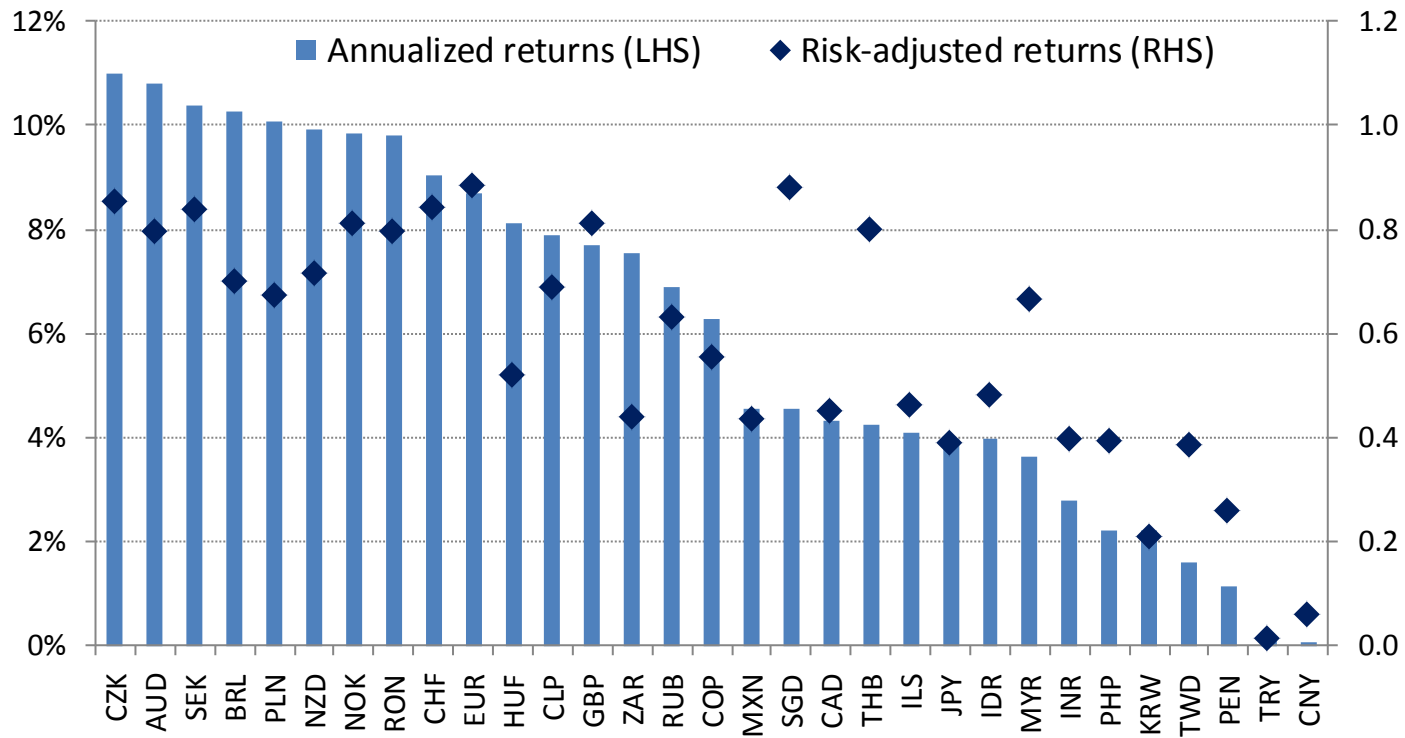
Back-testing Impact of Eurozone ESI on USD exchange rates

if $EU_ESI_{t-1} > 0 \Rightarrow Long\ CCY/USD_t$

if $EU_ESI_{t-1} < 0 \Rightarrow Short\ CCY/USD_t$

if $EU_ESI_{t-1} = 0 \Rightarrow Neutral\ CCY/USD_t$

Trading strategy based on Eurozone Economic Surprise Index



Source: Bloomberg, CitiFX QIS, Citigroup, authors' calculations.

Note: Average annualized returns, daily data from January 2003 to December 2014, including carry.

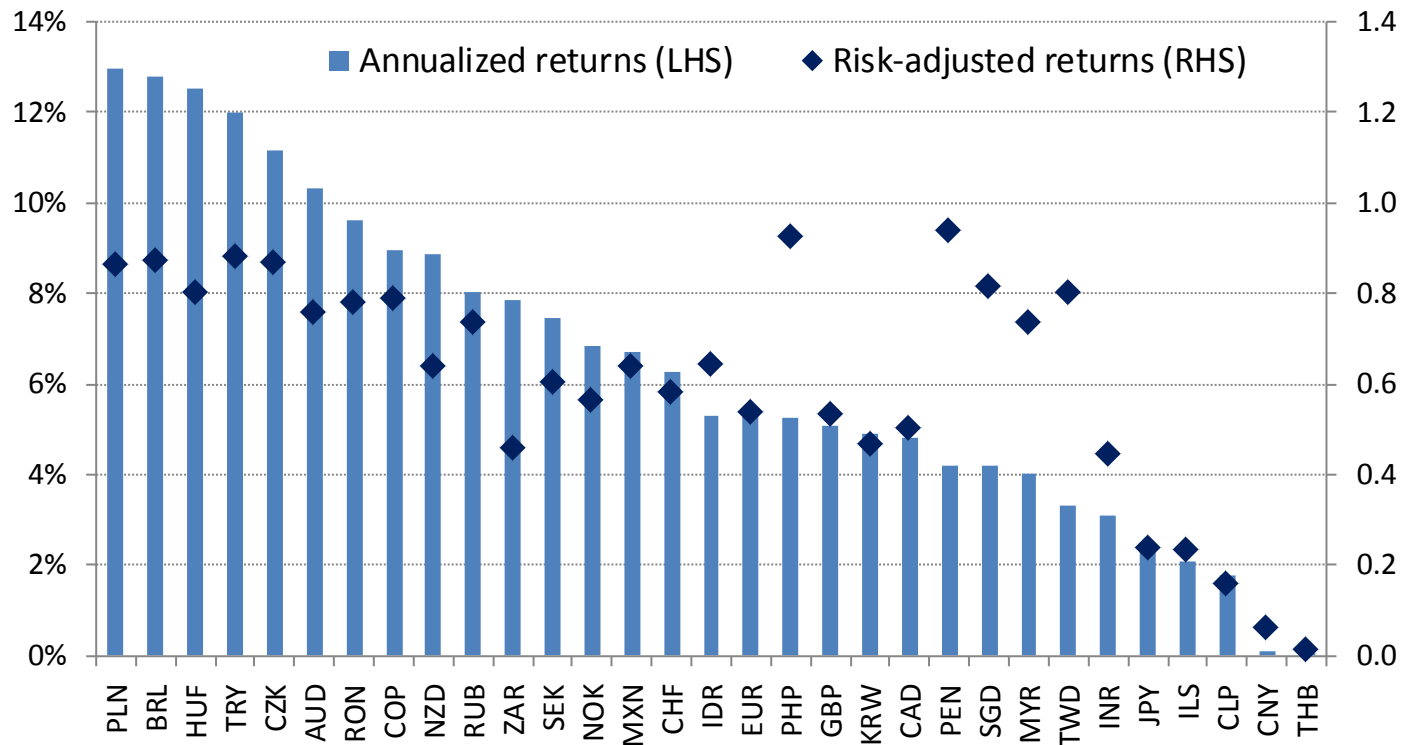
Back-testing Impact of EM ESI on USD exchange rates

if $EM_ESI_{t-1} > 0 \Rightarrow \text{Long } CCY/USD_t$

if $EM_ESI_{t-1} < 0 \Rightarrow \text{Short } CCY/USD_t$

if $EM_ESI_{t-1} = 0 \Rightarrow \text{Neutral } CCY/USD_t$

Trading strategy based on EM Economic Surprise Index



Source: Bloomberg, CitiFX QIS, Citigroup, authors' calculations.

Note: Average annualized returns, daily data from January 2003 to December 2014, including carry.

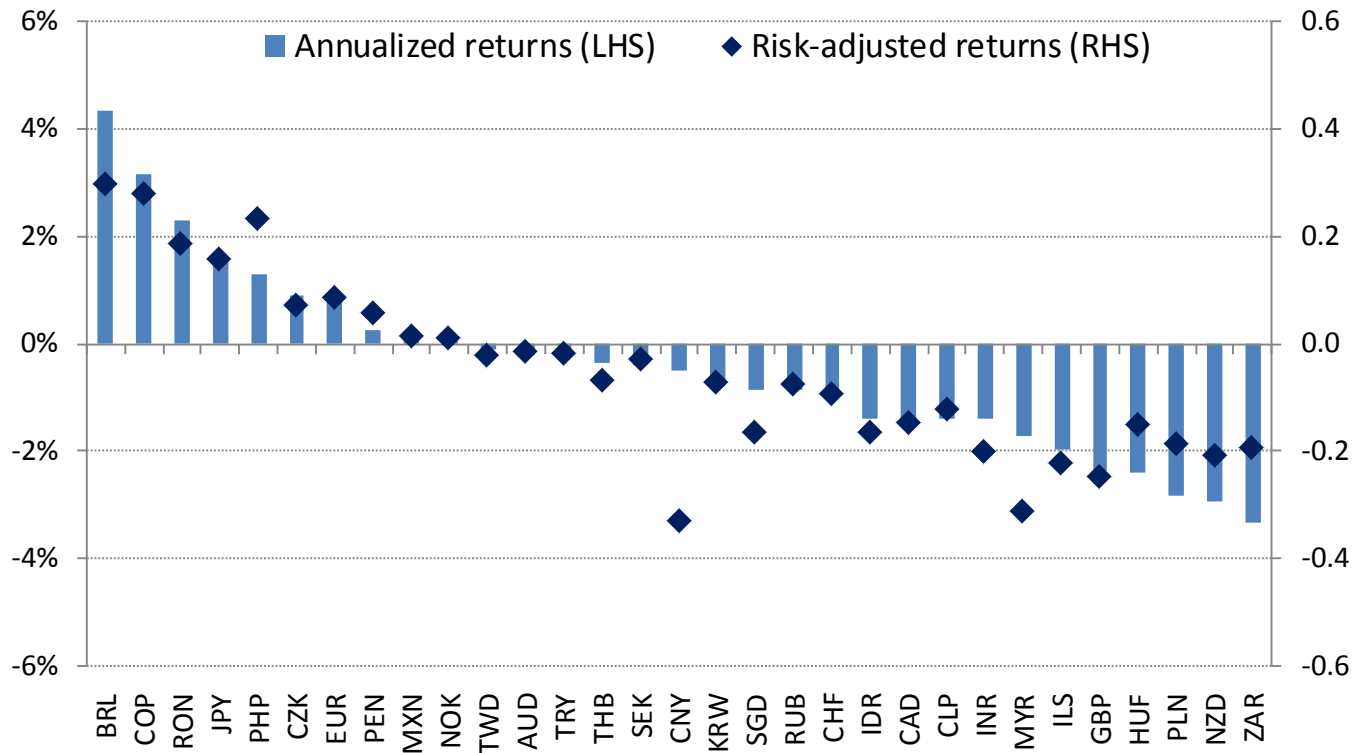
What About US data?

if $US_ESI_{t-1} > 0 \Rightarrow \text{Short } CCY/USD_t$

if $US_ESI_{t-1} < 0 \Rightarrow \text{Long } CCY/USD_t$

if $US_ESI_{t-1} = 0 \Rightarrow \text{Neutral } CCY/USD_t$

Trading strategy based on US Economic Surprise index



Source: Bloomberg, CitiFX QIS, Citigroup, authors' calculations.

Note: Average annualized returns, daily data from January 2003 to December 2014, including carry.

USD TWI Strategy based on Eurozone & EM Growth Sentiment

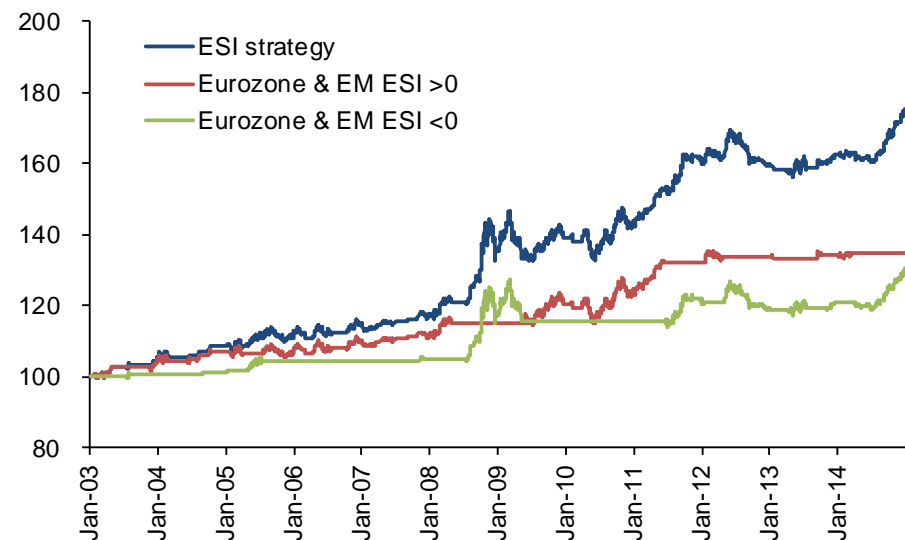
ESI Strategy*	Eurozone & EM ESI >0	Eurozone & EM ESI <0
Average annualized return	7.08%	8.75%
2003-2007	5.71%	14.32%
2008 - 2014	7.82%	8.05%
Standard Deviation	5.97%	7.06%
2003-2007	4.53%	4.97%
2008 - 2014	6.62%	7.28%
Information Ratio	1.18	1.24
2003-2007	1.26	2.88
2008 - 2014	1.18	1.11
% Profitable days	54%	56%
2003-2007	52%	59%
2008 - 2014	55%	56%
Largest daily loss	-2.09%	-2.09%
2003-2007	-0.81%	-0.77%
2008 - 2014	-2.09%	-2.09%
Risk Differential	0.96	0.92
2003-2007	1.07	0.98
2008 - 2014	0.93	0.92
Skewness	-0.18	-0.26
2003-2007	0.05	-0.16
2008 - 2014	-0.23	-0.25
Kurtosis	3.01	3.32
2003-2007	0.38	0.12
2008 - 2014	2.73	3.20
Downside Vol (left tail)	6.01%	7.31%
2003-2007	4.32%	4.92%
2008 - 2014	6.80%	7.55%
Sortino Ratio	1.18	1.20
2003-2007	1.32	2.91
2008 - 2014	1.15	1.07
Maximum drawdown	-9.63%	-10.24%
Return/Drawdown	0.74	0.85
Time Invested	67.66%	25.89%

if $EU_ESI_{t-1} > 0$ and $EM_ESI_{t-1} > 0 \Rightarrow Long\ CCY/USD_t$

if $EU_ESI_{t-1} < 0$ and $EM_ESI_{t-1} < 0 \Rightarrow Short\ CCY/USD_t$

otherwise $\Rightarrow Neutral\ CCY/USD_t$

Total Return Index



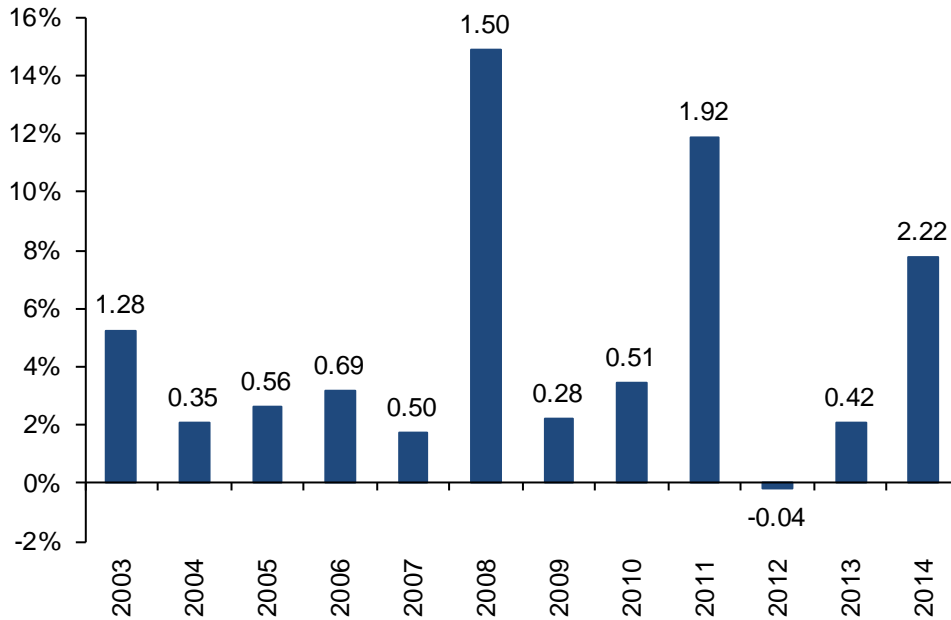
Source: Bloomberg, CitiFX QIS, Citigroup, authors' calculations.

Note: transaction costs and carry included; daily data from January 2003 to December 2014.

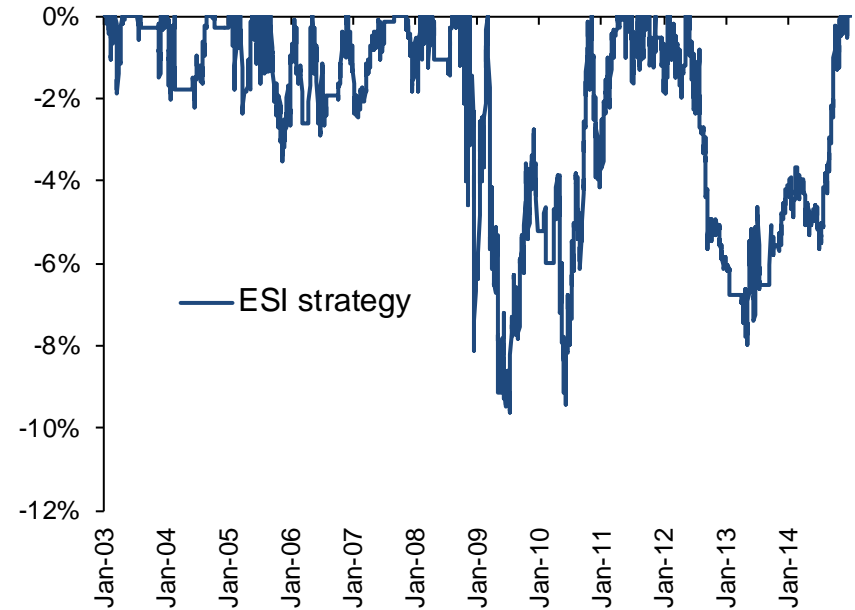
*Returns and statistics calculated for when the strategy is invested. When strategy is neutral, observations are not included as zero values.

ESI Strategy for the USD Trade Weighted Index

Annual Excess Returns and Information Ratios (in labels)



Drawdowns Analysis



Source: Bloomberg, CitiFX QIS, Citigroup, authors' calculations.

Notes: transaction costs and carry included, daily data from January 2003 to December 2014.

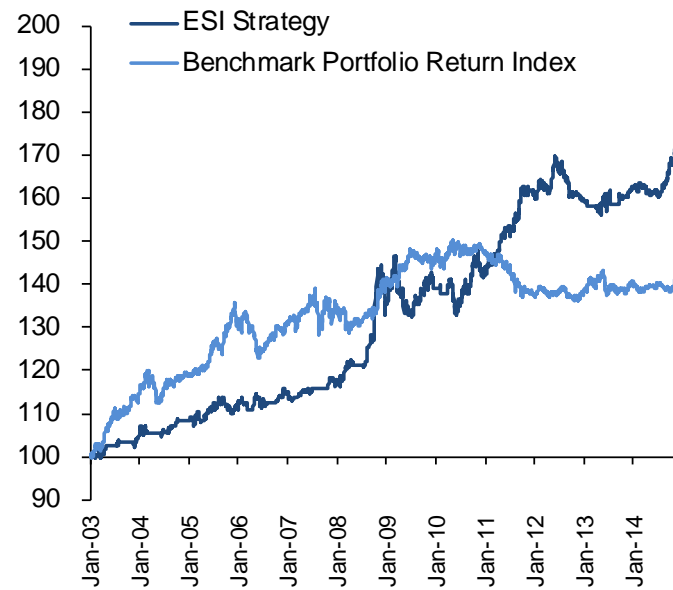
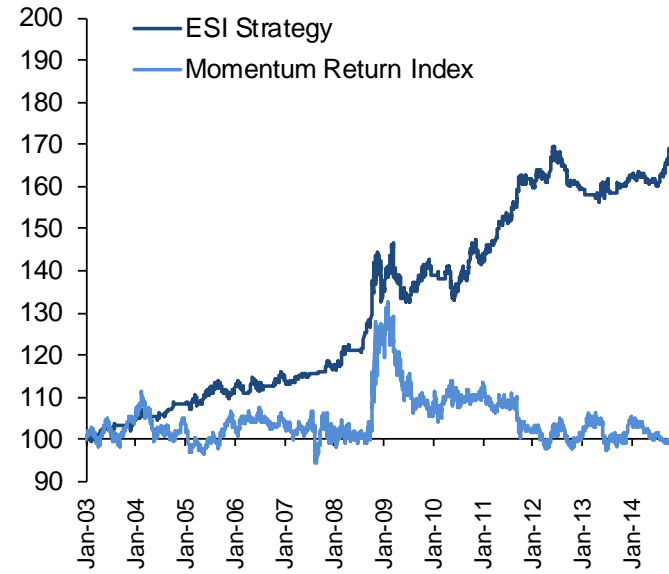
Comparison to Traditional FX Risk Premia

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	Momentum	Value	Global Carry	Benchmark Portfolio*	ESI Strategy**	Alternative Portfolio**
Average annualized return	1.22%	4.20%	4.21%	3.21%	7.08%	3.61%
2003-2007	0.87%	5.79%	11.96%	6.21%	5.71%	5.47%
2008 - 2014	1.48%	3.08%	-1.29%	1.09%	7.82%	2.28%
Standard Deviation	10.39%	7.69%	11.18%	4.86%	5.97%	3.92%
2003-2007	8.20%	7.42%	8.91%	5.55%	4.53%	4.20%
2008 - 2014	11.70%	7.87%	12.54%	4.29%	6.62%	3.70%
Information Ratio	0.12	0.55	0.38	0.66	1.18	0.92
2003-2007	0.11	0.78	1.34	1.12	1.26	1.30
2008 - 2014	0.13	0.39	-0.10	0.25	1.18	0.62
% Profitable days	52%	51%	54%	54%	54%	55%
2003-2007	53%	53%	58%	58%	52%	58%
2008 - 2014	51%	50%	52%	51%	55%	53%
Largest daily loss	-5.43%	-3.10%	-5.80%	-2.95%	-2.09%	-2.21%
2003-2007	-4.42%	-3.10%	-4.28%	-2.95%	-0.81%	-2.21%
2008 - 2014	-5.43%	-2.88%	-5.80%	-1.41%	-2.09%	-1.32%
Risk Differential	1.04	1.01	0.84	0.84	0.96	0.86
2003-2007	0.75	0.84	0.73	0.72	1.07	0.74
2008 - 2014	1.16	1.13	0.90	0.97	0.93	0.96
Skewness	0.74	-0.02	-0.49	-0.55	-0.18	-0.42
2003-2007	-1.01	-0.39	-0.80	-0.91	0.05	-0.83
2008 - 2014	1.14	0.20	-0.34	-0.03	-0.23	-0.01
Kurtosis	18.58	4.00	7.93	6.02	3.01	5.58
2003-2007	9.85	3.70	4.79	6.37	0.38	6.03
2008 - 2014	17.78	4.17	7.42	3.91	2.73	4.90
Downside Vol (left tail)	10.52%	7.68%	12.22%	5.21%	6.01%	4.15%
2003-2007	9.17%	7.86%	10.07%	6.33%	4.32%	4.72%
2008 - 2014	11.34%	7.57%	13.39%	4.38%	6.80%	3.76%
Sortino Ratio	0.12	0.55	0.34	0.62	1.18	0.87
2003-2007	0.10	0.74	1.19	0.98	1.32	1.16
2008 - 2014	0.13	0.41	-0.10	0.25	1.15	0.61
Maximum drawdown	-26.53%	-17.98%	-28.49%	-8.91%	-9.63%	-6.65%
Return/Drawdown	0.05	0.23	0.15	0.36	0.74	0.54
Time Invested	100.00%	100.00%	100.00%	100.00%	67.66%	100.00%

Source: Bloomberg, Deutsche Bank FX Indices, CitiFX QIS, Citigroup; authors' calculations. Note: transaction costs and carry returns included, *Equally weighted average of carry, momentum and value returns; ** Returns and statistics calculated for when the strategy is invested. When strategy is neutral, observations are not included as zero values. *** Equally weighted average of all 4 strategies' returns.

Comparison to Traditional FX Risk Premia



Conclusions

- The US dollar is a “Repatriation” currency, not a “Safe Haven”.
- No evidence of foreign investors’ “Flight to Quality” into US Treasuries and US dollar.
- Price action driven by US Investors’ “Run for the Exit”, i.e. Repatriation.
- United States long risk exposure reveals link between US dollar and foreign growth.
- Attractive USD directional strategies based on foreign growth (ignoring US data!).

Disclaimer and Special Thanks

The views are the authors' own and not the views of OppenheimerFunds, Inc. and its affiliates.

The authors would like to thank the CitiFX® Quantitative Investment Solutions team at Citigroup for their collaboration and support in understanding their indices. Finally, the authors would like to thank their colleagues in the global multi-asset group (GMAG) at OppenheimerFunds, Inc. for their valuable feedback.