

FX Alpha Chartpack

For use on business:

June 25, 2019

Contents:

Summary	2
Carry	3-4
Economic momentum	5
Interest rate momentum	6-11
Positioning/ IMM	12
Mean reversion: short term value	13
Mean reversion: long term value	14
Positioning	15-16

Contacts:

jpmorganmarkets.com

Meera Chandan +44 207 1342924
Arindam Sandilya +65 68827759

Global FX Strategy

Daily FX Alpha Chartpack: model summary and fund manager performance

See last three slides for explanatory notes on these models/ indicators. The note "Introducing Daily FX Strategy Analytics" published August 10, 2012 contains more detail

Current FX alpha model signals and recent performance

Strategy	Current Basket	Returns, %								Risk-adjusted returns, %	
Risk Adjusted Carry		1W	1M	3M	12M	YTD	5Y*	10Y*	15Y*	5Y*	10Y*
G10 carry	USD vs CHF;NZD vs EUR	-1.2	-1.8	-2.1	-1.0	-0.5	0.3	2.3	2.2	0.2	0.4
EM carry	TRY vs HUF;IDR vs KRW;INR vs ILS	-0.1	1.6	2.4	3.5	4.9	2.6	2.1	4.7	0.4	0.4
Global carry	RUB vs JPY;TRY vs SEK;PEN vs ILS;IDR vs CHF;INR vs EUR	-0.1	0.9	-0.3	2.6	4.2	4.3	3.6	5.3	0.6	0.6
Momentum											
Economic Momentum (FRI)	BUY SEK JPY HUF NOK IDR ; SELL INR SGD MXN CAD GBP	0.5	0.3	-0.1	0.2	0.5	5.2	5.4	5.3	0.8	0.9
G-10 Interest rate momentum (USD pairs)	Short USD vs JPY; CHF; SEK; CAD; NOK; EUR; GBP; AUD and NZD	1.7	1.9	0.0	1.9	-0.1	3.2	3.5	2.7	0.6	0.7
G-10 Interest rate momentum (EUR crosses)	Long EUR vs AUD; NZD and USD Short EUR vs CAD; CHF; GBP; JPY; NOK and SEK	0.4	0.7	1.0	1.4	-0.2	2.0	1.1	0.8	0.6	0.3
EM Interest rate momentum (USD pairs)	Long USD vs BRL TRY Short USD vs MXN; CNY; KRW; INR; ZAR; CZK; HUF; RUB and PLN	0.9	1.5	0.4	-1.0	1.0	0.3	1.4	-0.1	0.0	0.2
EM Interest rate momentum (EUR crosses)	Long EUR vs CNY; KRW; INR; TRY; ZAR; HUF and RUB Short EUR vs MXN; PLN and CZK	-0.6	-0.3	-1.0	-7.0	-3.5	-1.3	-0.7	-0.9	-0.2	-0.1
Carry plus rate momentum	JPY vs EUR; NOK vs EUR; SEK vs EUR	0.4	-0.8	-0.3	0.3	0.6	-2.1	-0.1	0.3	-0.3	0.0
Spot momentum	CHF vs EUR; CHF vs USD; EUR vs GBP; EUR vs NOK; EUR vs SEK; JPY vs EUR; JPY vs USD; USD vs AUD	-0.8	-0.9	1.2	0.4	0.6	0.6	-0.9	-0.5	0.2	-0.2
	USD vs CAD; USD vs EUR; USD vs GBP; USD vs NOK; USD vs NZD; USD vs SEK										
Spot plus rate momentum	CHF vs EUR; CHF vs USD; JPY vs EUR; JPY vs USD	1.0	1.1	3.8	3.5	2.1	2.4	0.9	1.9	0.5	0.2
Mean reversion											
Positioning (IMM)	Long BRL vs USD Short RUB vs USD	0.3	2.0	1.4	5.6	-0.9	-5.9	1.0	-0.8	-0.3	0.2
Short-term fair value (USD pairs)	BUY USDCHF;BUY USDNOK;	-2.3	-1.9	-1.0	-5.8	-1.6	-1.2	-0.8		-0.1	0.0
Short-term fair value (ALL pairs)	BUY USDCHF;BUY USDNOK;SELL EURUSD	-1.3	-1.4	0.7	3.8	4.3	2.2	3.1		0.4	0.5
Long-term value (REER-PPI)	BUY PHP;TRY;MYR;SEK;GBP;SGD;;SELL THB;IDR;ILS;USD;CNY;RUB;	0.4	1.4	0.5	5.9	0.4	2.8	2.5		0.5	0.5
Currency funds											
HFR Currency (monthly)		0.1	-0.8	-0.8	-0.8	0.9	-0.1	0.2		0.0	0.1
Barclay Currency (monthly)		0.0	-0.3	-0.2	3.3	0.1	3.1	2.3	2.2	0.9	0.8
Barclays BTOP (daily)		0.6	0.8	-1.3	-2.3	-4.0	-1.0	-0.5	-0.3	-0.6	-0.4
Hedge funds											
HFR Macro (monthly)		-0.1	-1.1	2.0	-0.1	2.8	1.1	1.1	3.2	0.3	0.3
HFR Macro/CTA (daily)		1.2	3.4	2.7	2.4	2.7	0.6	-1.0	0.6	0.1	-0.3
HFR Emerging Markets Total (monthly)		-0.4	-2.8	-0.9	-5.7	2.9	2.2	4.0	6.0	0.3	0.5
HFR Emerging Markets Composite (daily)											
HFR Fixed Income - Sovereign (monthly)		-0.2	-0.2	0.1	2.9	2.7	3.9	3.8		1.2	1.0
HFR Equity Long/Short (daily)		0.4	1.1	0.1	-4.9	6.5	0.8	1.4	0.5	0.1	0.2
HFR Commodity (monthly)		-1.2	-1.2	-1.1	-1.5	1.1	-1.1	-2.4		-0.2	-0.5
HFRI Macro: Systematic Diversified Index		0.1	-1.9	3.2	-0.3	3.2	0.9	0.6	4.5	0.2	0.1

Global FX Strategy

FX Carry: Outright Yield Levels

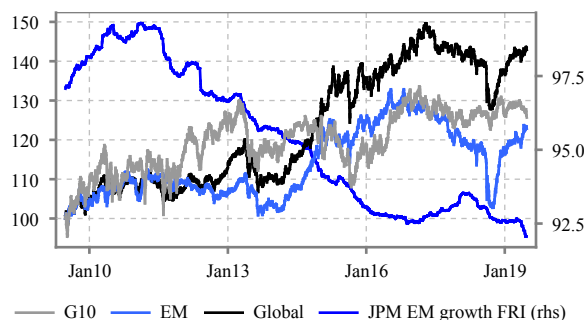
Table 1: Current holdings*

G10 Currencies	Long vs Short	Carry, %	Carry-to-risk
	USD vs CHF	3.4	0.46
	NZD vs EUR	2.2	0.18
EM Currencies			
	TRY vs KRW	22.2	1.30
	MXN vs HUF	7.8	0.47
	IDR vs ILS	6.5	0.74
Global Currencies			
	TRY vs SEK	23.6	1.35
	MXN vs JPY	8.5	0.67
	IDR vs CHF	7.8	0.72
	ZAR vs EUR	7.7	0.47
	RUB vs HUF	7.4	0.59

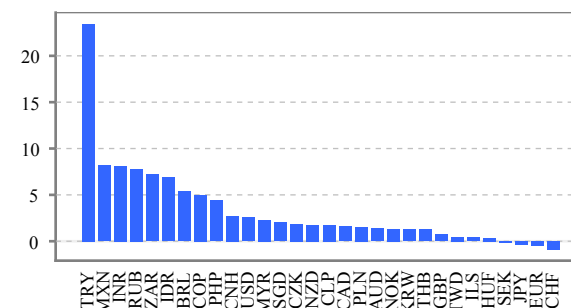
Table 2: Current rankings (based on previous day close)

G10 Currencies	Lowest	Carry (%)	Highest	Carry (%)
	CHF	-0.88	USD	2.55
	EUR	-0.45	NZD	1.77
EM Currencies				
	HUF	0.35	TRY	23.44
	ILS	0.41	MXN	8.20
Global Currencies				
	CHF	-0.88	TRY	23.44
	EUR	-0.45	MXN	8.20

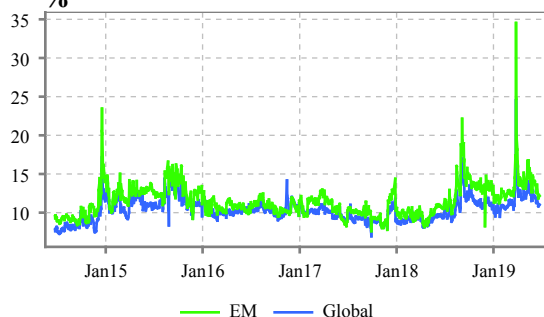
Performance of G-10, EM and global carry baskets. Indexed to T-10Y = 100



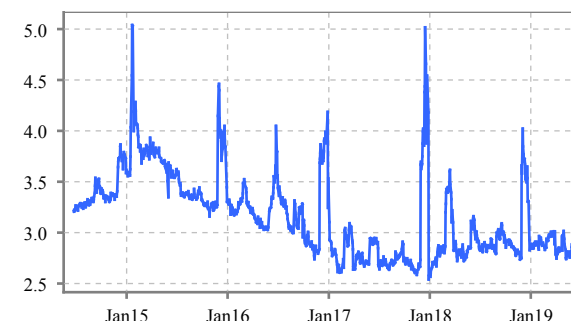
Current 1-mo implied yield ranking; %



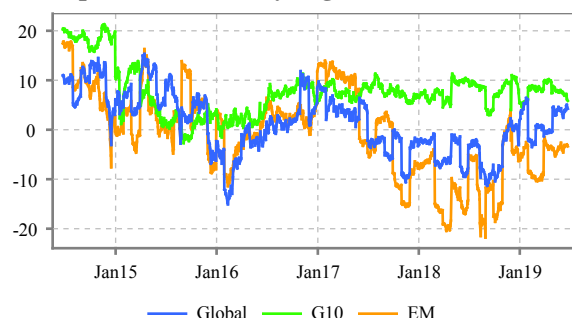
Net yield on global and EM carry portfolios; %



Net yield on G10 carry portfolio; %



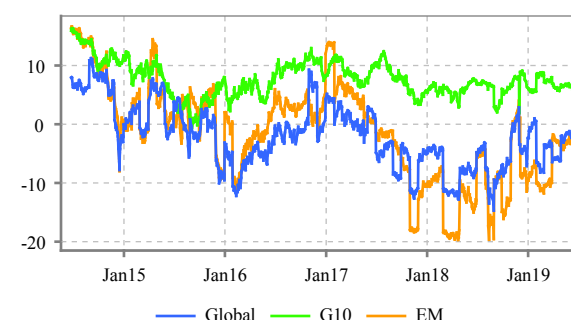
Long-term valuations: REER-PPI deviation of net portfolio from 15y avg (%)



EM-G10 yield on carry portfolios; %



Long-term valuations: REER-PPI deviation of longs only from 15y avg (%)



* Strategy involves buying (selling) the currencies with the highest (lowest) 1-month implied yield calculated from FX forwards vs. USD in equally weighted amounts. A position can be taken on USD if it qualifies in the top (lowest) ranking. Em US swap rate used for USD yield. Rebalances at the end of every month. All exhibits except table 2 relate to end of month portfolio.

Global FX Strategy

FX Carry: Risk-Adjusted

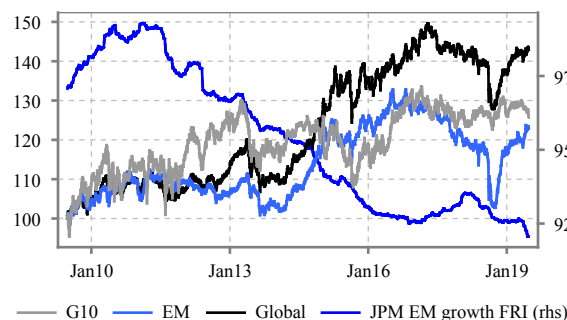
Table 1: Current holdings*

G10 Currencies	Long vs Short	Net Carry*; %	Long vs USD	Short vs USD
	USD vs CHF	3.43	0.00	-0.56
	NZD vs EUR	2.22	-0.10	-0.54
EM Currencies				
	TRY vs HUF	23.09	1.25	-0.29
	INR vs ILS	7.70	1.1	-0.42
	IDR vs KRW	5.62	0.65	-0.19
Global Currencies				
	TRY vs SEK	23.63	1.25	-0.38
	INR vs EUR	8.57	1.10	-0.54
	RUB vs JPY	8.12	0.65	-0.45
	IDR vs CHF	7.77	0.65	-0.56
	PEN vs ILS	3.78	0.49	-0.42

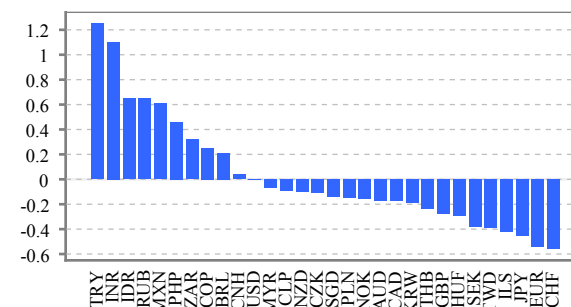
Table 2: Current rankings (based on previous day close)

G10 Currencies	Lowest	Carry (%)	Highest	Carry (%)
	CHF	-0.56	USD	0.00
	EUR	-0.54	NZD	-0.10
EM Currencies				
	ILS	-0.42	TRY	1.25
	TWD	-0.39	INR	1.1
Global Currencies				
	CHF	-0.56	TRY	1.25
	EUR	-0.54	INR	1.1

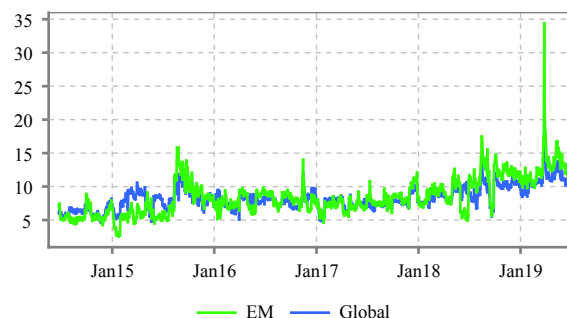
Performance of G-10, EM and global carry baskets. Indexed to T-10Y = 100



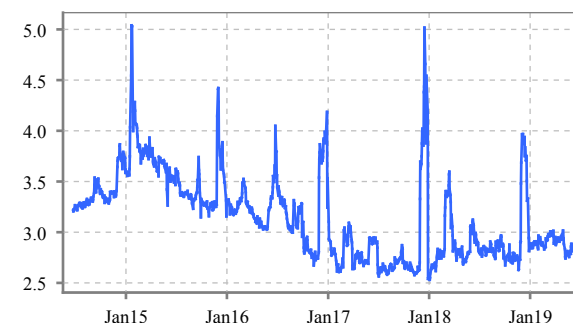
Current risk-adjusted carry (1m implied yield/1m implied vol)



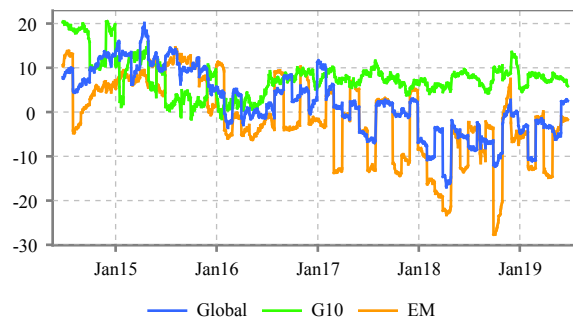
Net yield on global and EM carry portfolios; %



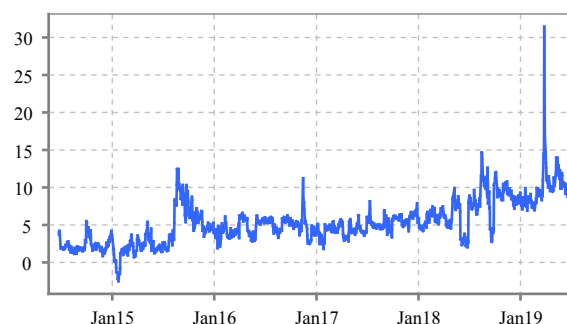
Net yield on G10 carry portfolio; %



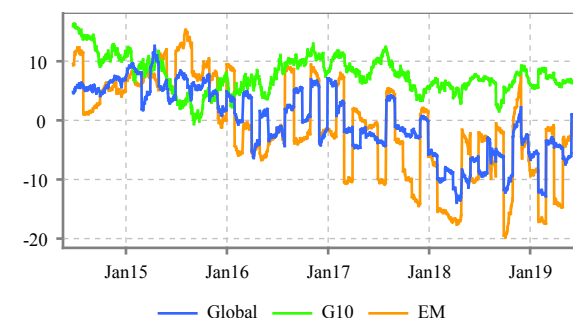
Long-term valuations: REER-PPI deviation of net portfolio from 15y avg (%)



EM-G10 yield on carry portfolios; %



Long-term valuations: REER-PPI deviation of longs only from 15y avg (%)

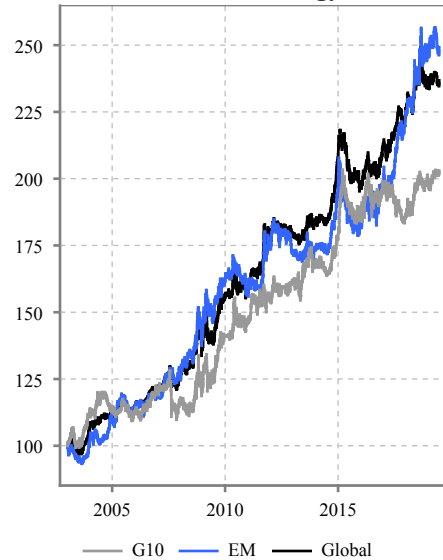


* Strategy involves buying (selling) the currencies with the highest (lowest) risk-adjusted carry (1-month implied yield vs. USD/1m ATM implied vol) in equally weighted amounts. A position can be taken on USD if it qualifies in the top / lowest ranking. Rebalances at the end of every month. All exhibits except table 2 relate to end of month portfolio.

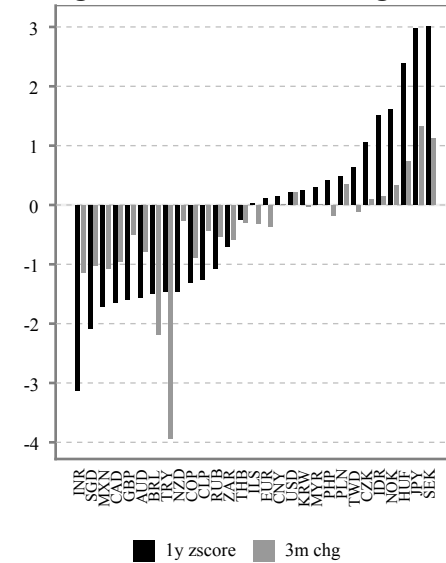
Global FX Strategy

Economic Momentum

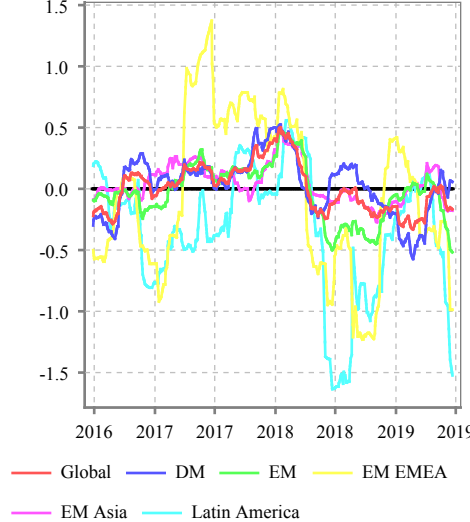
Total return index of strategy*



JPM growth forecasts; 3m change

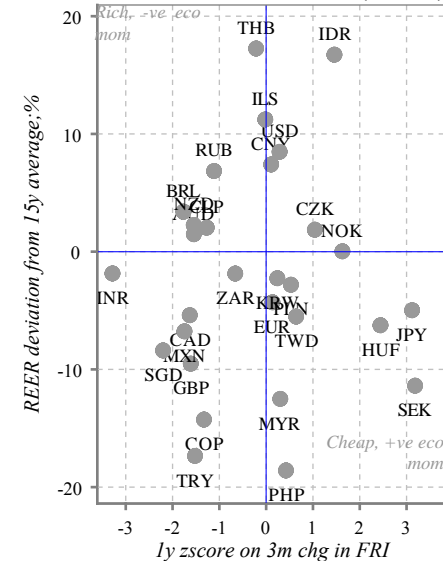


JPM growth forecast revisions; 3m rolling chg (%pts)

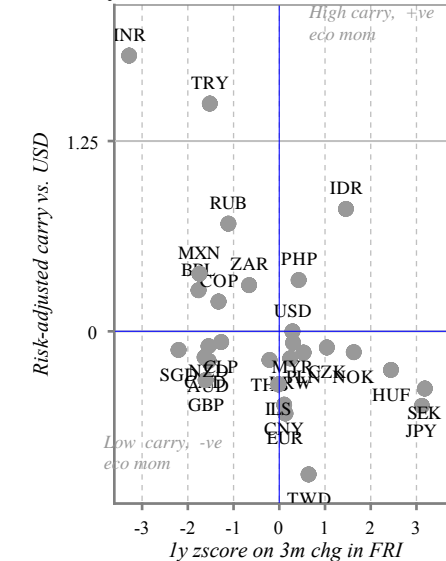


Currency	JPM FRI		JPM EASI		Manu PMI	
	1Y zscore	3m chg(%pt)	6wk avg	Latest	3m chg	Level
USD	0.2	0.2	-7	-3		49.8
JPY	3.0	1.3	-12	-9	0.9	
EUR	0.1	-0.4	-3	7		
GBP	-1.6	-0.5	12	0		
CHF			-17	0	-6.8	48.6
SEK	3.0	1.1	0	-8	0.5	53.1
NOK	1.6	0.3	-10	25	-1.6	54.4
AUD	-1.6	-0.8	-37	-56	-1.3	52.7
NZD	-1.5	-0.3	-41	-50	-0.4	53.0
CAD	-1.6	-1.0	41	33		
BRL	-1.5	-2.2	-42	-29	-3.2	50.2
MXN	-1.7	-1.1	15	0	-2.6	50.0
CLP	-1.3	-0.4	-26	-27		
COP	-1.3	-0.9	4	0		
CNY	0.1	0.0	-32	-33	0.3	50.2
IDR	1.5	0.1	-14	-33	1.5	51.6
INR	-3.1	-1.1			-1.6	52.7
KRW	0.2	0.0	-17	-29	1.2	48.4
MYR	0.3	0.0			1.2	48.8
PHP	0.4	-0.2			-0.7	51.2
SGD	-2.1	-1.0	-3	0	-0.5	49.9
THB	-0.2	-0.3	13	14	0.8	50.7
TWD	0.6	-0.1	0	14	2.2	48.4
CZK	1.1	0.1	11	10	-2.0	46.6
HUF	2.4	0.7	43	43	2.4	57.9
ILS	0.0	-0.3			2.3	51.9
PLN	0.5	0.3	23	28	1.2	48.8
RUB	-1.1	-0.5	-16	-13	-0.3	49.8
TRY	-1.5	-3.9	58	22	-1.1	45.3
ZAR	-0.7	-0.6	6	-18	-0.8	45.4

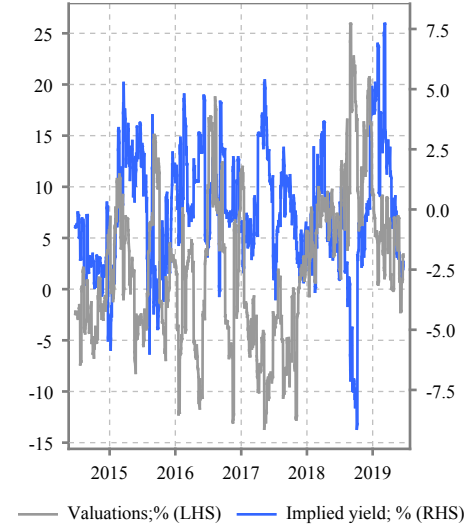
Value vs. economic momentum(zscore)



RA carry vs. economic momentum



Valuations and implied yield of recommended global portfolio**



Suggested portfolio:		Regional EASIs	
BUY	SELL		
SEK	INR		
JPY	SGD		
HUF	MXN		
NOK	CAD		
IDR	GBP		

— Global — G10 — EM

* Strategy involves buying (selling) the five currencies with the best (worst) economic momentum ranked on the 1y zscore of 12-wk (60 bd) change in JPM growth FRI (forecast revision index) subject to 1.0 sigma threshold (USD is used if currencies don't meet this criteria). Risk is allocated to five pairs in the global basket, two in G10 and three in EM. We allow two business days for implementation of strategy

** Valuations defined as average mispricing (% deviation of REER from 15Y average) of recommended longs minus shorts in global basket. Carry defined as average implied yield of recommended longs minus shorts in global basket.

Global FX Strategy

G-10 Interest rate momentum (using 1M swap rates 3M forward)

Table 1: Trade Selection

USD pairs										
	USD	JPY	EUR	GBP	CHF	NOK	SEK	CAD	AUD	NZD
Current signal vs USD	NA	Buy	Buy	Buy	Buy	Buy	Buy	Buy	Buy	Buy
Change in spds over past month(bp; column ccy minus USD)	NA	48.2	43.0	51.2	49.1	59.4	42.1	71.4	21.3	36.2
Change in spds YTD (bp; column ccy minus USD)	NA	63.6	55.9	55.1	63.3	114.2	72.5	221.6	-22.2	11.7
Signal return over past 1W(%)	NA	1.2	1.4	1.3	2.8	2.7	1.9	1.5	1.5	1.7
Signal return over past 3M(%)	NA	4.0	2.5	-2.0	7.2	1.5	7.5	2.2	5.0	2.0
Signal return over past 12M(%)	NA	5.4	4.6	1.2	11.9	2.7	0.2	3.2	15.2	16.4

EUR pairs										
Current signal vs EUR	Sell	Buy	NA	Buy	Buy	Buy	Sell	Buy	Sell	Sell
Change in spds over past month(bp; column ccy minus EUR)	-43.0	5.2	NA	8.2	6.2	16.4	-0.9	28.5	-21.7	-6.8
Change in spds YTD (bp; column ccy minus EUR)	-55.9	7.7	NA	-0.8	7.4	58.4	16.6	165.8	-78.0	-44.2
Signal return over past 1W(%)	1.4	-0.3	NA	-0.1	1.4	1.2	1.0	0.0	-0.1	-0.3
Signal return over past 3M(%)	2.5	0.1	NA	2.7	3.5	0.4	1.7	4.2	0.7	2.6
Signal return over past 12M(%)	4.6	-3.5	NA	-5.1	1.9	0.6	0.1	1.0	-4.3	-4.3

Table 2: Current signals and recent performance

Strategy	Current Basket	Returns, %				
		1W	1M	3M	12M	YTD
Interest rate momentum (USD pairs) Short USD vs JPY; CHF; SEK; CAD; NOK; EUR; GBP; AUD and NZD		1.8	2.2	3.3	6.8	3.4
Interest rate momentum (EUR crosses) Long EUR vs AUD; NZD; SEK and USD Short EUR vs CAD; CHF; GBP; JPY and NOK		0.5	0.9	2.1	-0.9	-0.9

Chart 1: Performance of interest rate momentum model on baskets of USD and EUR pairs. Indexed to Jan 1998 = 100



Chart 2: USD TWI (%) vs. US minus global J.P. Morgan growth forecast revision indices (%pts); 3-mo change*

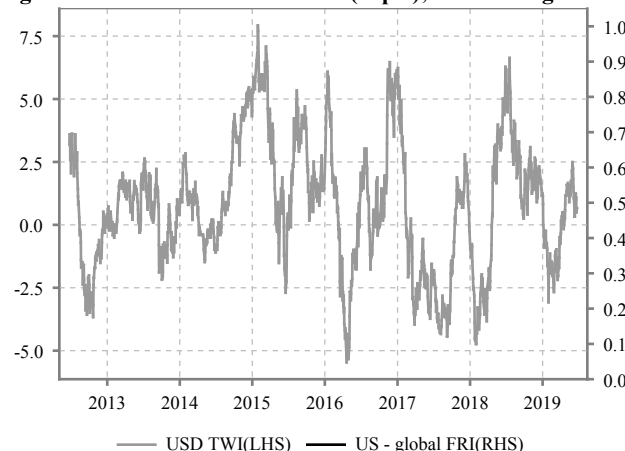
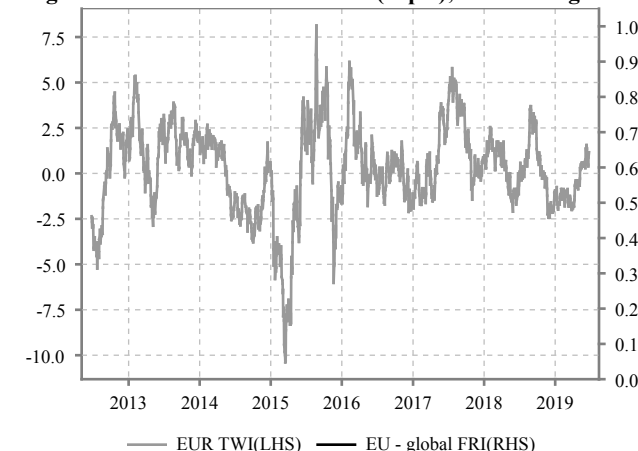


Chart 3: EUR TWI (%) vs. EMU minus global J.P. Morgan growth forecast revision indices (%pts); 3-mo change*



* Performance of interest rate momentum typically improves when supported by economic momentum. See When models fail: on why USD could keep undershooting rates. https://markets.jpmorgan.com/research/email/-5t58q1m/qNGmSy_PajZVxkNHPPNDow/GPS-2263675-0

Global FX Strategy

G-10 Interest rate momentum (using 1M swap rates 12M forward)

Table 1: Trade Selection

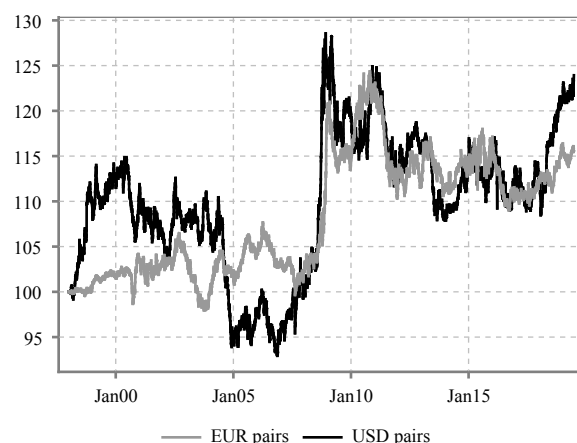
USD pairs										
	USD	JPY	EUR	GBP	CHF	NOK	SEK	CAD	AUD	NZD
Current signal vs USD	NA	Buy	Buy	Buy	Buy	Buy	Buy	Buy	Buy	Buy
Change in spds over past month(bp; column ccy minus USD)	NA	35.7	35.1	41.4	36.1	33.9	27.4	27.8	15.2	25.9
Change in spds YTD (bp; column ccy minus USD)	NA	87.5	81.0	65.9	76.6	121.4	81.2	46.2	-2.4	24.1
Signal return over past 1W(%)	NA	1.2	1.4	1.3	2.8	2.7	1.9	1.5	1.5	1.7
Signal return over past 3M(%)	NA	2.3	3.2	-2.1	4.2	5.0	6.3	-0.2	2.9	1.9
Signal return over past 12M(%)	NA	5.1	6.6	-0.9	10.3	9.8	11.7	0.4	7.4	6.5

EUR pairs										
Current signal vs EUR	Sell	Buy	NA	Buy	Buy	Sell	Sell	Sell	Sell	Sell
Change in spds over past month(bp; column ccy minus EUR)	-35.1	0.6	NA	6.2	1.0	-1.3	-7.7	-7.4	-20.0	-9.2
Change in spds YTD (bp; column ccy minus EUR)	-81.0	6.6	NA	-15.1	-4.4	40.4	0.2	-34.8	-83.3	-56.9
Signal return over past 1W(%)	1.4	-1.2	NA	-1.5	-1.0	-1.2	-0.4	0.0	-0.1	0.0
Signal return over past 3M(%)	3.2	1.0	NA	3.8	3.8	-2.2	-0.6	-1.5	0.7	3.2
Signal return over past 12M(%)	6.6	-2.4	NA	-1.3	0.6	-2.5	7.0	-0.6	11.0	10.9

Table 2: Current signals and recent performance

Strategy	Current Basket	Returns, %				
		1W	1M	3M	12M	YTD
Interest rate momentum (USD pairs) Short USD vs JPY; CHF; SEK; CAD; NOK; EUR; GBP; AUD and NZD		1.8	2.2	2.6	6.4	2.4
Interest rate momentum (EUR crosses) Long EUR vs AUD; CAD; NOK; NZD; SEK and USD Short EUR vs CHF; GBP and JPY		-0.4	0.0	1.3	3.3	-0.8

Chart 1: Performance of interest rate momentum model on baskets of USD and EUR pairs. Indexed to Jan 2000 = 100



Global FX Strategy

EM Interest rate momentum (using 1M swap rates 3M forward)

Table 1: Trade Selection

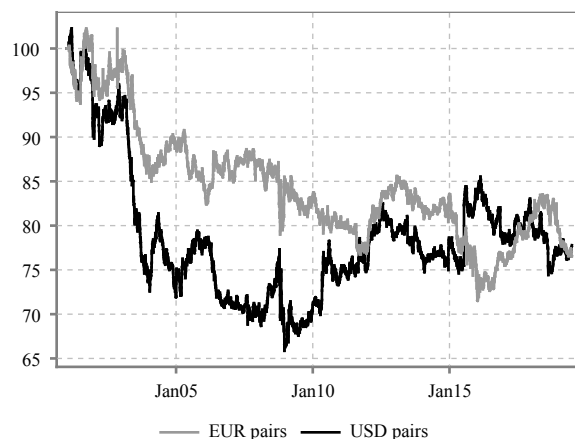
USD pairs	MXN	BRL	CNY	KRW	INR	TRY	ZAR	CZK	HUF	RUB	PLN
Current signal vs USD	Buy	Sell	Buy	Buy	Buy	Sell	Buy	Buy	Buy	Buy	Buy
Change in spds over past month(bp; column ccy minus USD)	44.4	-87.6	34.1	39.6	24.0	-449.2	29.6	56.1	42.2	23.0	56.6
Change in spds YTD (bp; column ccy minus USD)	34.2	-119.7	67.4	44.6	-29.1	11.8	24.8	88.4	73.1	-76.8	74.5
Signal return over past 1W(%)	1.5	-1.9	0.6	2.6	-0.4	-1.5	3.3	1.4	1.0	2.2	1.7
Signal return over past 3M(%)	5.8	-3.7	-2.0	5.8	-2.9	-9.9	2.5	2.5	0.4	2.4	2.5
Signal return over past 12M(%)	0.5	-23.7	0.6	13.4	-9.2	-28.5	-2.0	4.9	3.0	14.3	6.1

EUR pairs	Buy	Sell	Sell	Sell	Sell	Sell	Sell	Buy	Sell	Sell	Buy
Current signal vs EUR	Buy	Sell	Sell	Sell	Sell	Sell	Sell	Buy	Sell	Sell	Buy
Change in spds over past month(bp; column ccy minus EUR)	1.4	-41.3	-8.8	-3.3	-19.0	-492.1	-13.4	13.1	-0.8	-20.0	13.6
Change in spds YTD (bp; column ccy minus EUR)	-21.6	-34.3	11.5	-11.3	-85.0	-44.0	-31.1	32.6	17.2	-132.7	18.6
Signal return over past 1W(%)	0.6	-1.1	-1.9	-2.0	0.3	0.0	-1.8	0.0	-0.4	-0.8	0.3
Signal return over past 3M(%)	5.4	-0.4	-3.6	-0.8	-0.9	-10.1	-1.4	-2.4	1.6	-2.3	2.4
Signal return over past 12M(%)	3.2	-22.2	-7.3	2.3	-21.0	-28.3	-3.8	-2.3	-0.1	-8.0	1.5

Table 2: Current signals and recent performance

Strategy	Current Basket	Returns, %				
		1W	1M	3M	12M	YTD
Interest rate momentum (USD pairs)	Long USD vs BRL TRY Short USD vs MXN; CNY; KRW; INR; ZAR; CZK; HUF; RUB and PLN	1.0	1.5	0.3	-2.2	0.5
Interest rate momentum (EUR crosses)	Long EUR vs CNY; KRW; INR; TRY; ZAR; HUF and RUB Short EUR vs MXN; PLN and CZK	-0.6	-0.2	-1.1	-8.0	-3.3

Chart 1: Performance of interest rate momentum model on baskets of USD and EUR pairs. Indexed to Jan 2000 = 100



Global FX Strategy

EM Interest rate momentum (using 1M swap rates 12M forward)

Table 1: Trade Selection

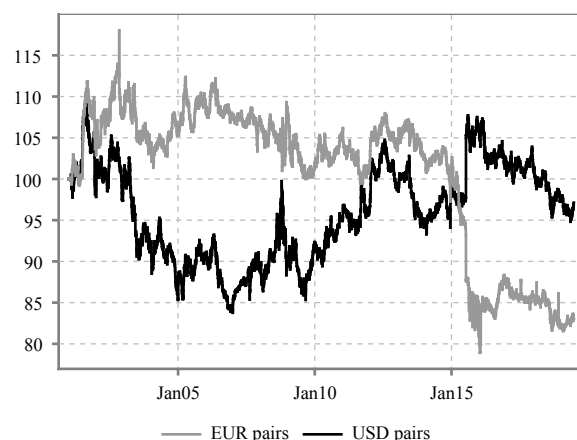
USD pairs											
	MXN	BRL	CNY	KRW	INR	TRY	ZAR	CZK	HUF	RUB	PLN
Current signal vs USD	Buy	Sell	Buy	Buy	Buy	Sell	Buy	Buy	Buy	Buy	Buy
Change in spds over past month(bp; column ccy minus USD)	26.5	-87.6	32.1	30.6	34.5	-516.6	31.1	37.7	21.3	24.8	48.6
Change in spds YTD (bp; column ccy minus USD)	16.7	-119.7	110.1	63.5	28.8	208.3	29.8	89.2	64.6	-118.6	104.8
Signal return over past 1W(%)	-0.6	-1.9	0.6	2.6	-0.1	-1.5	3.3	1.4	1.0	2.2	1.7
Signal return over past 3M(%)	9.7	-3.7	-2.6	-0.4	-1.9	-9.9	13.7	2.6	-0.8	2.8	4.3
Signal return over past 12M(%)	-0.2	-23.7	0.5	3.3	-8.5	-35.9	45.1	1.9	3.6	-3.0	8.4

EUR pairs											
Current signal vs EUR	Sell	Sell	Sell	Sell	Sell	Sell	Sell	Sell	Sell	Sell	Buy
Change in spds over past month(bp; column ccy minus EUR)	-17.0	-41.3	-11.4	-12.9	-9.0	-560.1	-12.4	-5.8	-22.2	-18.7	5.1
Change in spds YTD (bp; column ccy minus EUR)	-72.1	-34.3	21.3	-25.3	-60.0	119.5	-58.9	0.5	-24.1	-207.3	16.0
Signal return over past 1W(%)	-2.3	-1.1	-0.2	-1.1	1.0	0.0	-1.8	0.0	0.4	-0.8	0.6
Signal return over past 3M(%)	8.8	-0.4	0.4	-0.1	-2.6	-8.7	6.9	-1.7	-0.9	1.9	-0.3
Signal return over past 12M(%)	0.9	-22.2	-4.3	13.8	-7.2	-31.9	29.3	-2.1	0.9	-3.2	1.5

Table 2: Current signals and recent performance

Strategy	Current Basket	Returns, %				
		1W	1M	3M	12M	YTD
Interest rate momentum (USD pairs)	Long USD vs BRL TRY Short USD vs MXN; CNY; KRW; INR; ZAR; CZK; HUF; RUB and PLN	0.8	1.9	1.2	-1.9	0.0
Interest rate momentum (EUR crosses)	Long EUR vs MXN; CNY; KRW; INR; TRY; ZAR; HUF; RUB and CZK Short EUR vs PLN	-0.5	0.4	0.3	-2.8	1.3

Chart 1: Performance of interest rate momentum model on baskets of USD and EUR pairs. Indexed to Jan 2000 = 100



Global FX Strategy

Carry plus rate momentum

Table 1: Pair Selection

Carry-to-risk selection				Rate-momentum		Carry plus rate-momentum
Long vs Short	Carry, %	Vol, %	Carry-to-risk ratio	Changes in rates over past month, bp, difference between (1st ccy - 2nd ccy)	Rate momentum signal	Position
USD vs EUR	2.9	5.3	0.5	-43.0	Sell	Neutral
USD vs JPY	2.8	5.8	0.5	-48.2	Sell	Neutral
USD vs CHF	3.2	7.5	0.4	-49.1	Sell	Neutral
USD vs SEK	2.6	6.6	0.4	-42.1	Sell	Neutral
NOK vs EUR	1.7	5.1	0.3	16.4	Buy	Buy
GBP vs EUR	1.2	3.8	0.3	8.3	Buy	Buy
USD vs GBP	1.7	5.6	0.3	-51.2	Sell	Neutral
USD vs AUD	1.0	5.9	0.2	-21.3	Sell	Neutral
USD vs CAD	0.9	5.6	0.2	-71.4	Sell	Neutral
USD vs NOK	1.1	8.6	0.1	-59.4	Sell	Neutral
USD vs NZD	0.7	7.9	0.1	-36.2	Sell	Neutral
EUR vs CHF	0.3	4.2	0.1	-6.1	Sell	Neutral
SEK vs EUR	0.3	4.0	0.1	-0.9	Sell	Neutral
JPY vs EUR	0.1	5.8	0.0	5.2	Buy	Buy

Chart 1: Performance of G10 carry, rate momentum and carry plus rate-momentum baskets. Indexed to Jan 2000 = 100

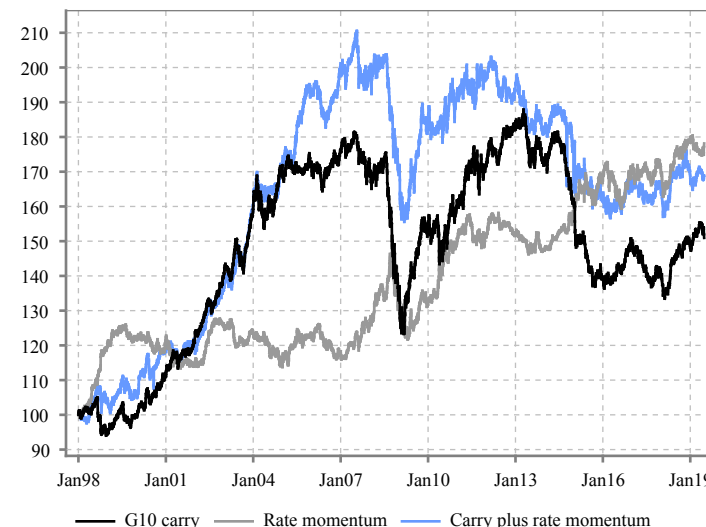


Table 2: Current signals and recent performance

Strategy	Current Basket	Returns, %				
		1W	1M	3M	12M	YTD
G10 carry	NOK vs. EUR; USD vs. CHF; USD vs. EUR; USD vs. SEK	0.9	2.3	2.3	2.8	3.4
Interest rate momentum (USD pairs)	Short USD vs JPY; CHF; SEK; CAD; NOK; EUR; GBP; AUD and NZD	1.0	1.6	2.4	5.9	2.8
Interest rate momentum (EUR crosses)	Long EUR vs AUD; NZD and USD Short EUR vs CAD; CHF; GBP; JPY; NOK and SEK	0.4	1.2	1.8	-1.1	-0.9
Carry plus rate momentum	JPY vs EUR; NOK vs EUR; SEK vs EUR	0.4	-0.9	0.1	0.3	0.2

Global FX Strategy

Spot momentum plus rate momentum

Table 1: Pair Selection

Spot momentum			Rate momentum		Spot plus Rate momentum
Pair	Change in FX rate over past year, %	Spot momentum Signal	Changes in rates over past month (1st ccy - 2nd ccy), bp	Rate momentum signal	Position
USD vs EUR	2.8	Buy	-44.0	Sell	Neutral
JPY vs USD	2.6	Buy	51.6	Buy	Buy
CHF vs USD	1.2	Buy	47.5	Buy	Buy
USD vs SEK	6.8	Buy	-44.6	Sell	Neutral
EUR vs NOK	2.5	Buy	-17.6	Sell	Neutral
USD vs GBP	3.9	Buy	-53.7	Sell	Neutral
EUR vs GBP	1.2	Buy	-9.8	Sell	Neutral
USD vs AUD	6.2	Buy	-28.1	Sell	Neutral
USD vs CAD	0.5	Buy	-63.3	Sell	Neutral
USD vs NOK	5.4	Buy	-61.5	Sell	Neutral
CHF vs EUR	3.9	Buy	3.5	Buy	Buy
USD vs NZD	2.8	Buy	-40.4	Sell	Neutral
EUR vs SEK	3.9	Buy	-0.6	Sell	Neutral
JPY vs EUR	5.3	Buy	7.6	Buy	Buy

Chart 1: Performance of Spot momentum, Interest rate momentum (USD pairs) and Spot plus rate momentum baskets. Indexed to Jan 2000 = 100



Table 2: Current signals and recent performance

Strategy	Current Basket	Returns, %				
		1W	1M	3M	12M	YTD
Spot momentum	CHF vs EUR; CHF vs USD; EUR vs GBP; EUR vs NOK; EUR vs SEK; JPY vs EUR; JPY vs USD; USD vs AUD	-0.8	-0.9	0.6	0.7	1.1
	USD vs CAD; USD vs EUR; USD vs GBP; USD vs NOK; USD vs NZD; USD vs SEK					
Interest rate momentum (USD pairs)	Short USD vs JPY; CHF; SEK; CAD; NOK; EUR; GBP; AUD and NZD	1.8	2.2	3.3	6.8	3.4
Interest rate momentum (EUR crosses)	Long EUR vs AUD; NZD; SEK and USD Short EUR vs CAD; CHF; GBP; JPY and NOK	0.5	0.9	2.1	-0.9	-0.9
Spot plus rate momentum	CHF vs EUR; CHF vs USD; JPY vs EUR; JPY vs USD	1.0	1.2	3.3	4.1	2.3

Global FX Strategy

Mean reversion based on IMMs

Table below shows backtest results for a simple contrarian rule. A long/short position in the currency is initiated if the IMM position exceeds a pre-determined threshold level (one and two standard deviations) around a 12-month trend. For example if non-commercial net longs on euro versus the dollar is greater than one standard deviation of the 12-month moving average of non-commercial net EUR longs then sell EUR/USD currency pair. The tables show backtest results for a 1-month holding period using weekly 1-yr z-score signals

Pair-by-pair returns from a contrarian IMM based trading rule

		1-mo Holding Period (1 sigma threshold)												1-mo Holding Period (2 sigma threshold)											
		EUR	JPY	GBP	CHF	CAD	AUD	NZD	MXN	BRL	RUB	Gold	DXY	EUR	JPY	GBP	CHF	CAD	AUD	NZD	MXN	BRL	RUB	Gold	DXY
Current 1-yr z-score of IMM Position		-1.00	0.95	-0.15	0.31	-0.01	-0.94	-0.09	0.74	-1.10	1.43	2.25	0.46	-1.00	0.95	-0.15	0.31	-0.01	-0.94	-0.09	0.74	-1.10	1.43	2.25	0.46
		BUY						BUY																	
1999->present	Return	-4.4%	0.8%	-0.3%	0.1%	-0.2%	0.7%	-1.0%	-0.3%	-1.1%	-4.5%	-0.6%	-1.8%	-1.5%	0.6%	0.9%	-1.1%	-0.0%	-0.2%	-0.7%	-0.3%	-2.3%	-1.3%	-0.2%	-0.5%
	Info Ratio	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	-0.1	0.1	0.1	-0.1	0.0	0.0	0.0	0.0	-0.2	-0.1	0.0	-0.1
	Success Rate	39%	56%	50%	47%	51%	49%	46%	48%	43%	43%	46%	38%	33%	64%	67%	29%	51%	50%	42%	41%	35%	41%	30%	47%
	# of Trades	457	335	434	359	346	389	373	393	202	255	249	149	112	72	95	83	82	84	90	86	51	61	61	30
Last 5 years	Return	-4.7%	2.8%	-0.3%	-0.3%	3.4%	1.2%	0.1%	1.6%	-2.1%	-8.3%	0.0%	0.0%	-2.3%	0.3%	0.3%	-1.1%	0.7%	1.1%	0.5%	0.5%	-4.4%	-0.9%	-0.0%	0.0%
	Info Ratio	-0.2	0.2	0.0	0.0	0.2	0.1	0.0	0.1	-0.1	-0.2	0.0	0.0	-0.3	0.0	0.0	-0.2	0.1	0.1	0.1	0.0	-0.2	-0.1	-0.1	0.0
	Success Rate	35%	60%	46%	45%	66%	51%	44%	49%	42%	36%	52%	0%	19%	50%	58%	29%	62%	75%	52%	41%	27%	44%	31%	0%
	# of Trades	181	113	156	110	111	128	111	125	122	121	130	0	36	28	31	24	21	12	25	32	45	36	36	0
Last 2 years	Return	-2.8%	6.6%	-0.2%	2.8%	2.0%	-1.1%	4.4%	6.3%	2.5%	-0.6%	0.0%	0.0%	-1.1%	1.1%	1.2%	-0.1%	-0.4%	1.0%	0.6%	3.4%	-6.4%	0.1%	0.0%	0.0%
	Info Ratio	-0.2	0.5	0.0	0.2	0.1	-0.1	0.2	0.2	0.1	0.0	0.3	0.0	-0.2	0.2	0.2	0.0	-0.1	0.1	0.1	0.2	-0.3	0.0	0.2	0.0
	Success Rate	38%	84%	44%	66%	70%	42%	54%	58%	53%	41%	70%	0%	36%	67%	67%	56%	50%	100%	62%	58%	7%	47%	82%	0%
	# of Trades	87	37	63	41	33	60	39	52	59	54	50	0	14	6	12	9	2	4	8	19	14	17	11	0

Cumulative returns from a contrarian IMM-based trading rule

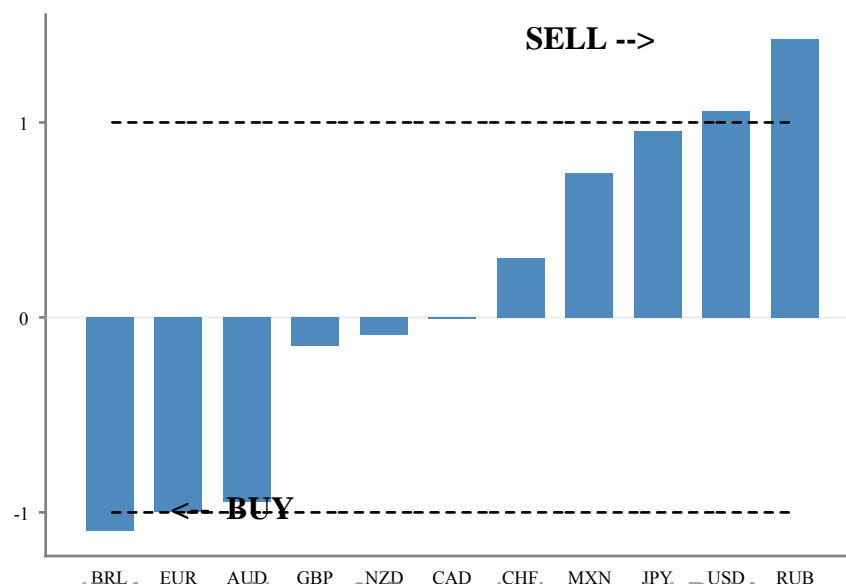
Trading rule buys the most oversold currency and sells the most overbought currency every week based on 1-yr Z-score of IMM positions, subject to the condition that the absolute value of z-score is >=1. If oversold / overbought conditions do not meet the 1-sigma threshold, the strategy has no open positions that week



Full Sample		G10	G10+EM
Avg. Ret.		0.4%	0.9%
Stdev.		6.1%	6.2%
IR		0.07	0.14
5%-ile weekly loss		-1.2%	-1.2%
Sortino Ratio		0.08	0.20
Rolling 1-yr Sample		G10	G10+EM
Avg. Ret.		-2.1%	-0.4%
Stdev.		2.7%	2.8%
IR		-0.78	-0.13
5%-ile weekly loss		-0.7%	-0.7%
Sortino Ratio		-0.80	-0.13

G10 ccy's = EUR, JPY, GBP, CHF, CAD, AUD, NZD
EM ccy's = G10 ccy's + MXN, BRL, RUB

Current 1-yr Z-scores of IMM positions



Global FX Strategy

Mean reversion based on short-term fair value models

Pair-wise return from the mean reversion trading rule*

Currency	Resid (%)	Zscore	Signal	P/L (%; avg)	Info Ratio	Success Rate	Avg. Holding Period***	# of trades
EURUSD	2.2	2.4	SELL	-0.33	-0.34	52 %	15	23
USDJPY	-0.9	-1.9	BUY	-0.94	-0.60	50 %	20	16
GBPUSD	-0.7	0.8	-	0.09	0.05	72 %	22	18
AUDUSD	-2.7	-0.7	-	0.68	0.48	73 %	13	22
NZDUSD	-1.6	0.0	-	0.18	0.11	73 %	12	26
USDSEK	-2.5	-2.2	BUY	-0.98	-0.48	56 %	30	16
USDNOK	-3.5	-2.5	BUY	0.78	0.49	67 %	17	18
USDCHF	-3.4	-3.3	BUY	1.32	0.80	69 %	25	13
USDCAD	-0.9	-2.0	BUY	0.59	0.57	72 %	9	25
EURGBP	2.3	1.6	SELL	0.23	0.17	76 %	16	21
EURNOK	-0.9	-1.7	BUY	0.02	0.02	67 %	11	18
EURSEK	1.2	0.0	-	0.45	0.36	64 %	14	22
EURCHF	-1.9	-2.2	BUY	0.26	0.29	84 %	13	19
AUDNZD	1.2	1.0	SELL	-0.10	-0.07	50 %	32	10
NOKSEK	-0.1	-1.2	-	-0.08	-0.06	54 %	18	13
EURJPY	-0.1	0.6	-	0.23	0.13	73 %	20	11
EURAUD	1.4	0.8	-	0.80	0.61	86 %	12	14
EURNZD	2.2	1.4	SELL	-1.30	-0.53	40 %	26	15
EURCAD	-0.3	0.3	-	0.08	0.06	64 %	16	14
GBPCHF	-4.0	-1.3	-	2.30	1.09	78 %	19	18
GBPJPY	-2.4	-0.4	-	0.37	0.14	85 %	24	13
GBPAUD	-2.3	-1.4	-	0.26	0.14	56 %	16	16
GBPNZD	-1.1	-0.5	-	-1.01	-0.44	69 %	21	16
GBPCAD	-0.4	0.7	-	0.11	0.07	56 %	18	16
GBPSEK	-1.4	-1.6	-	0.47	0.23	72 %	19	18
AUDCAD	-0.5	0.3	-	0.57	0.47	74 %	13	19
AUDJPY	-0.2	0.2	-	1.02	0.44	76 %	17	21
NZDJPY	-1.1	-0.8	-	0.15	0.07	53 %	13	15
NZDCAD	-2.4	-0.8	-	-0.47	-0.19	62 %	23	13

Summary: pair-wise returns from trading rule*

	Avg P/L per trade	Avg Hit Rate
Average: USD pairs	0.15 %	64.9 %
Average: Non-USD crosses	0.22 %	66.9 %
Average: All crosses	0.20 %	66.3 %

Summary: Diversified basket approach +

1Y	Avg returns (% annualized)	IR
USD pairs		
non-USD pairs		
All pairs		
5Y	Avg returns (% annualized)	IR
USD pairs	-1.0	-0.11
non-USD pairs	4.8	0.85
All pairs	2.1	0.33

*This pair-wise strategy is based on using the 1-year z-score of the residual from JPM 1-year short-term fair value models as a mean reversion signal. The pair is bought (sold) if the signal < -1.75 (>+1.75) and then held till the z-score reverts back to -1.0 (+1.0). Statistics shown are total holding period returns based on 5-year rolling history.

+The basket strategy allocates risk to the 3 pairs that are most mispriced (basis: absolute value of 1-year z-scores) with a diversification overlay which limits exposure of each currency (but USD) to one unit. ** Cross-sectional average of absolute value of z-score mispricing across pairs on J.P. Morgan's short-term fair value models. A higher number suggests larger FX dislocations relative to rate markets. *** Average holding period is in business days

Signals from basket approach:

BUY USDCHF BUY USDNOK SELL EURUSD

Chart 1: Dislocation metric on short-term fair value models**

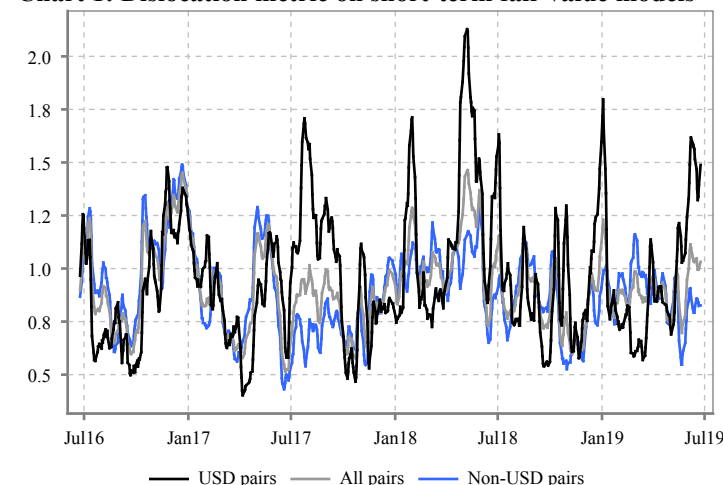
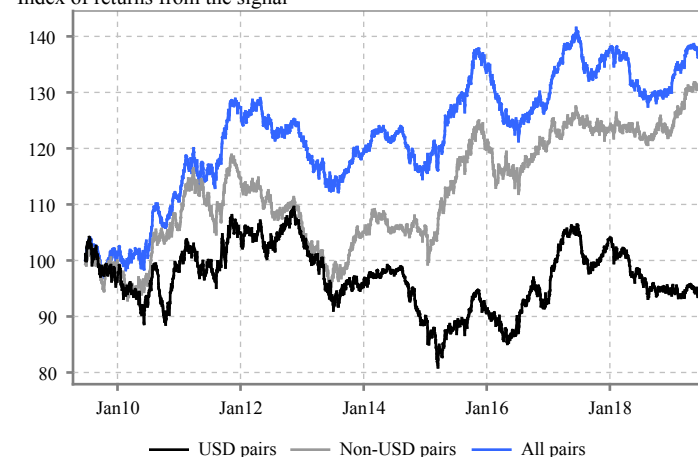


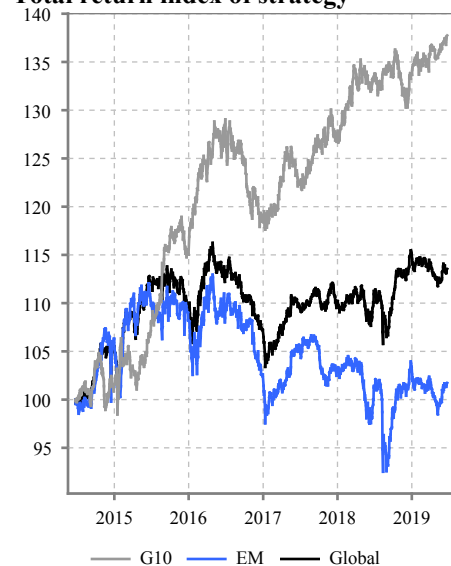
Chart 2: Performance of diversified basket approach +
Index of returns from the signal



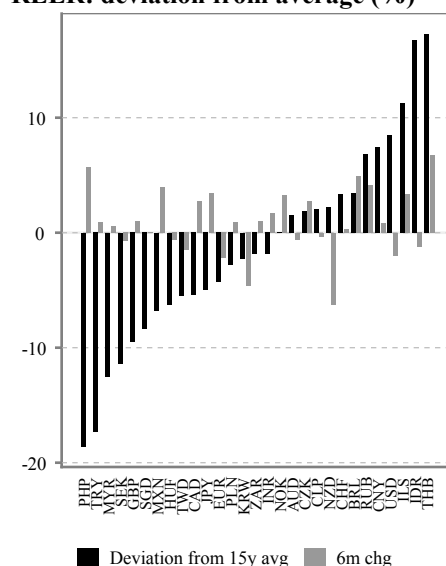
Global FX Strategy

Long-term value: mean reversion based on REER-PPI

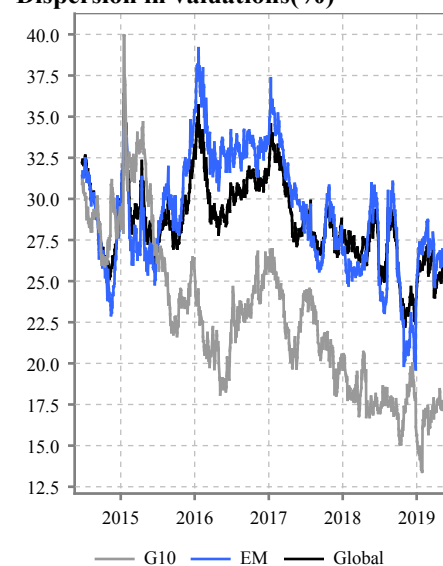
Total return index of strategy*



REER: deviation from average (%)



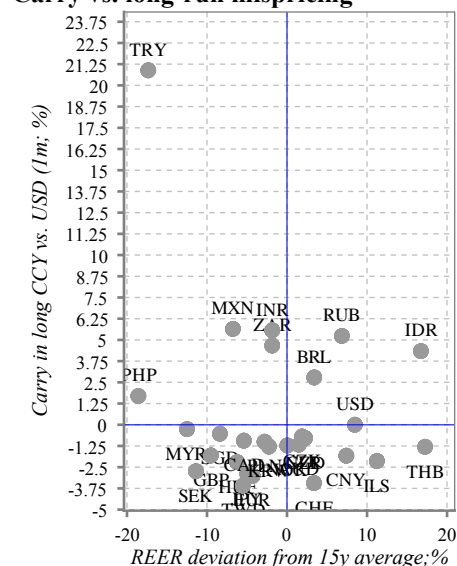
Dispersion in valuations(%)**



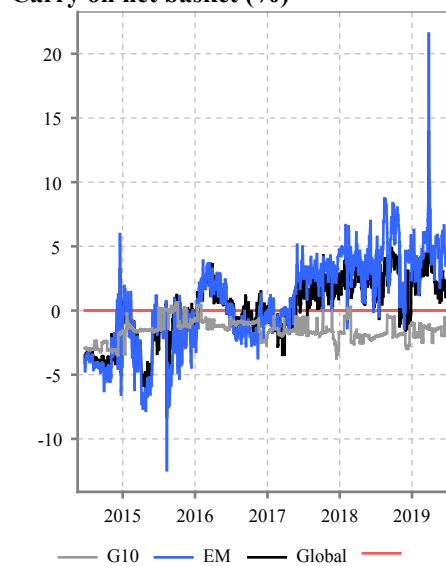
Average mispricing of value basket



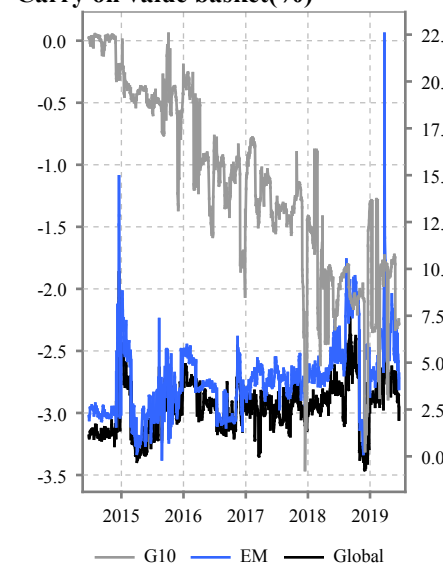
Carry vs. long-run mispricing



Carry on net basket (%)



Carry on value basket(%)



Current mispricing vs. 25Y History

'Buy' Basket	Current Mispricing	Percentile	Largest Historical Mispricing
PHP	-19%	9	-28%
TRY	-17%	6	-43%
MYR	-13%	4	-23%
SEK	-11%	35	-21%
GBP	-10%	34	-27%
SGD	-8%	17	-18%

'Sell' Basket	Current Mispricing	Percentile	Largest Historical Mispricing
THB	17%	75	33%
IDR	17%	50	41%
ILS	11%	79	19%
USD	8%	81	18%
CNY	7%	53	24%
RUB	7%	45	69%

* Strategy involves buying (selling) the six cheapest (richest) currencies ranked on the percent deviation of their REER-PPI from its 15-year average. Risk is allocated to six pairs in the global basket, two in G10 and four in EM.
** Average mispricing of cheap basket minus rich basket.

Global FX Strategy

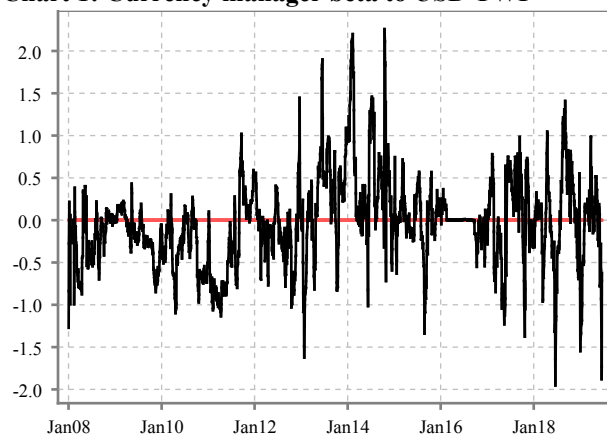
Mean reversion based on extreme spot moves

CCY	5-day % change	Zscore of 5-day % change	1-yr Trade Direction	Past year									5 year									10 year								
				1 Sigma			2 Sigma			3 Sigma			1 Sigma			2 Sigma			3 Sigma			1 Sigma			2 Sigma			3 Sigma		
				Conv- iction	Success Rate	Avg- 5-day P/L	Conv- iction	Success Rate	Avg- 5-day P/L	Conv- iction	Success Rate	Avg- 5-day P/L	Conv- iction	Success Rate	Avg- 5-day P/L	Conv- iction	Success Rate	Avg- 5-day P/L	Conv- iction	Success Rate	Avg- 5-day P/L	Conv- iction	Success Rate	Avg- 5-day P/L	Conv- iction	Success Rate	Avg- 5-day P/L	Conv- iction	Success Rate	Avg- 5-day P/L
USDARS	-3.52 %	-1.06	Buy	MED	56 %	0.30 %							R.HI	66 %	0.69 %							MED	68 %	0.34 %						
USDZAR	-3.11 %	-1.33	Buy	LOW	29 %	-0.40 %							LOW	36 %	-0.42 %							LOW	39 %	-0.26 %						
USDCHF	-2.81 %	-3.60	Buy	LOW	33 %	-0.18 %	MED	100 %	0.44 %				LOW	37 %	-0.17 %	LOW	44 %	0.16 %				LOW	35 %	-0.34 %	LOW	29 %	-0.30 %			
USDCLP	-2.78 %	-1.81	Buy	LOW	33 %	-0.11 %							LOW	35 %	-0.27 %							LOW	37 %	-0.25 %						
USDNOK	-2.63 %	-2.39	Buy	LOW	50 %	-0.23 %	R.HI	100 %	0.50 %				LOW	38 %	-0.27 %	R.LOW	50 %	0.05 %				LOW	35 %	-0.29 %	LOW	41 %	-0.12 %			
USDKRW	-2.53 %	-3.13	Buy	MED	64 %	0.35 %	R.HI	100 %	0.66 %				LOW	43 %	-0.20 %	R.LOW	59 %	0.16 %				LOW	41 %	-0.24 %	R.LOW	60 %	0.22 %			
USDCOP	-2.52 %	-1.64	Buy	LOW	24 %	-0.56 %							LOW	37 %	-0.34 %							LOW	34 %	-0.38 %						
USDRUB	-2.09 %	-1.32	Buy	LOW	35 %	-0.59 %							LOW	42 %	-0.37 %							LOW	41 %	-0.36 %						
USDSEK	-1.89 %	-1.81	Buy	R.LOW	68 %	0.23 %							LOW	40 %	-0.17 %							LOW	39 %	-0.28 %						
NZDUSD	1.75 %	1.53	Sell	LOW	36 %	-0.21 %							LOW	44 %	-0.10 %							LOW	38 %	-0.33 %						
CHFJPY	1.65 %	2.01	Sell	LOW	42 %	-0.13 %	LOW	17 %	-0.44 %				LOW	34 %	-0.36 %	LOW	30 %	-0.16 %				LOW	35 %	-0.39 %	LOW	29 %	-0.43 %			
USDTHB	-1.57 %	-2.07	Buy	LOW	32 %	-0.23 %	LOW	25 %	-0.20 %				LOW	32 %	-0.27 %	LOW	28 %	-0.29 %				LOW	33 %	-0.28 %	LOW	31 %	-0.31 %			
AUDUSD	1.53 %	1.58	Sell	LOW	52 %	0.09 %							LOW	46 %	-0.10 %							LOW	39 %	-0.25 %						
GBPCHF	-1.50 %	-1.34	Buy	LOW	34 %	-0.44 %							LOW	36 %	-0.45 %							LOW	40 %	-0.37 %						
EURUSD	1.49 %	1.95	Sell	LOW	56 %	0.15 %							LOW	47 %	-0.17 %							LOW	41 %	-0.29 %						
USDCAD	-1.47 %	-1.80	Buy	LOW	35 %	-0.20 %							LOW	36 %	-0.18 %							LOW	35 %	-0.21 %						
NOKJPY	1.47 %	1.17	Sell	LOW	31 %	-0.19 %							LOW	34 %	-0.40 %							LOW	35 %	-0.40 %						
USDPEN	-1.40 %	-2.76	Buy	LOW	52 %	-0.02 %	R.HI	100 %	0.57 %				LOW	47 %	-0.15 %	LOW	36 %	-0.45 %				LOW	36 %	-0.22 %	LOW	25 %	-0.42 %			
USDCZK	-1.39 %	-1.45	Buy	LOW	42 %	0.01 %							LOW	40 %	-0.19 %							LOW	35 %	-0.36 %						
CHFCAD	1.38 %	1.43	Sell	LOW	65 %	0.10 %							LOW	46 %	-0.09 %							LOW	42 %	-0.45 %						
EURCHF	-1.36 %	-2.20	Buy	LOW	30 %	-0.22 %	R.LOW	67 %	0.14 %				LOW	38 %	-0.27 %	LOW	44 %	-0.23 %				LOW	33 %	-0.49 %	LOW	35 %	-0.47 %			
GBPUSD	1.35 %	1.36	Sell	LOW	31 %	-0.53 %							LOW	38 %	-0.31 %							LOW	39 %	-0.29 %						
CHFAUD	1.34 %	1.11	Sell	LOW	27 %	-0.38 %							LOW	33 %	-0.40 %							LOW	35 %	-0.54 %						
GBPNOK	-1.32 %	-1.30	Buy	LOW	33 %	-0.22 %							LOW	33 %	-0.45 %							LOW	35 %	-0.37 %						
USDIDR	-1.22 %	-1.25	Buy	LOW	45 %	-0.62 %							LOW	41 %	-0.42 %							LOW	40 %	-0.37 %						
USDJPY	-1.20 %	-1.44	Buy	LOW	38 %	-0.47 %							LOW	48 %	-0.08 %							LOW	45 %	-0.13 %						
EURNOK	-1.19 %	-1.58	Buy	LOW	41 %	-0.25 %							LOW	38 %	-0.20 %							LOW	39 %	-0.15 %						
USDSGD	-1.17 %	-2.39	Buy	R.LOW	57 %	0.04 %	LOW	50 %	-0.16 %				LOW	44 %	-0.12 %	R.LOW	65 %	0.09 %				LOW	38 %	-0.19 %	R.LOW	62 %	0.08 %			
AUDNOK	-1.15 %	-1.27	Buy	LOW	29 %	-0.40 %							LOW	35 %	-0.44 %							LOW	34 %	-0.46 %						
USDMYR	-0.72 %	-1.78	Buy	LOW	23 %	-0.27 %							LOW	31 %	-0.38 %							LOW	32 %	-0.36 %						

Global FX Strategy

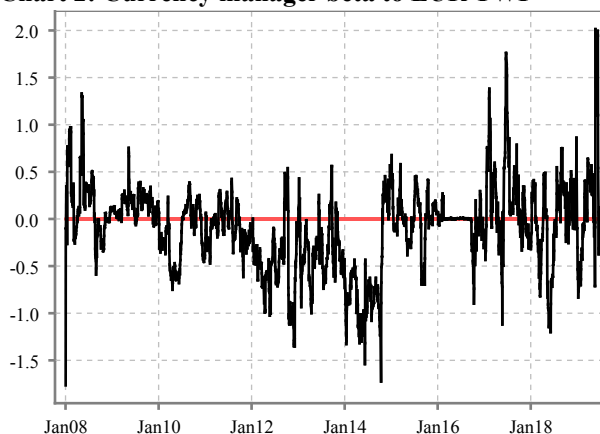
Positioning proxies and style indicators

Chart 1: Currency manager beta to USD TWI



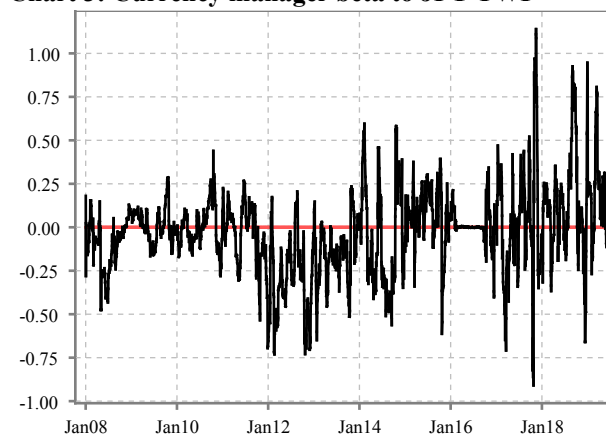
Rolling 1-month partial reg. beta of BTOP on USD TWI, controlling for exposure to JPY and EUR TWIs

Chart 2: Currency manager beta to EUR TWI



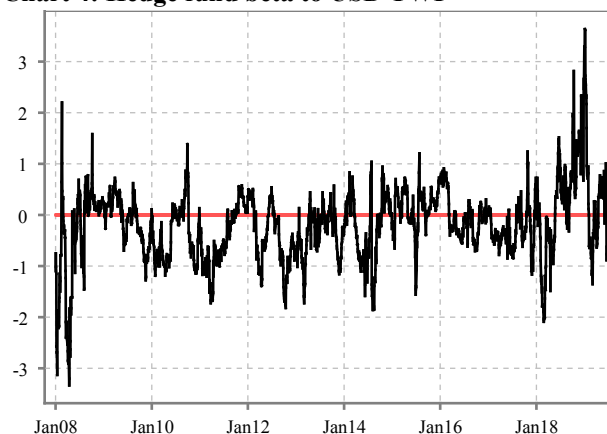
Rolling 1-month partial reg. beta of BTOP on EUR TWI, controlling for exposure to USD and JPY TWIs

Chart 3: Currency manager beta to JPY TWI



Rolling 1-month partial reg. beta of BTOP on JPY TWI, controlling for exposure to USD and EUR TWIs

Chart 4: Hedge fund beta to USD TWI



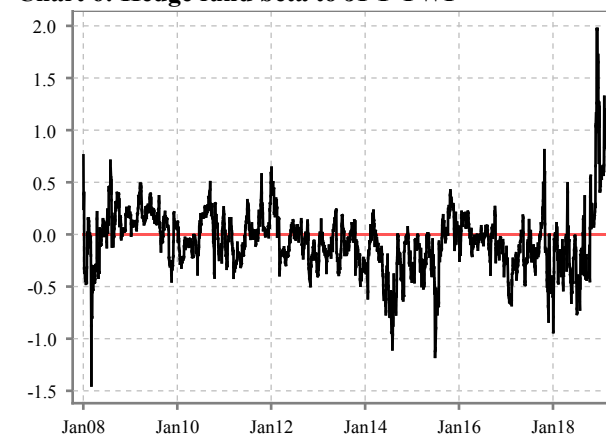
Rolling 1-month partial reg. beta of HFR MacroCTA (daily) on USD TWI, controlling for exposure to JPY and EUR TWIs

Chart 5: Hedge fund beta to EUR TWI



Rolling 1-month partial reg. beta of HFR MacroCTA (daily) on EUR TWI, controlling for exposure to USD and JPY TWIs

Chart 6: Hedge fund beta to JPY TWI



Rolling 1-month partial reg. beta of HFR MacroCTA (daily) on JPY TWI, controlling for exposure to USD and EUR TWIs

Note: BTOP stands for Barclays BTOP

The plots end at (today-2d).

Global FX Strategy

Positioning proxies and style indicators

Chart 7: Currency manager beta to Global FX carry

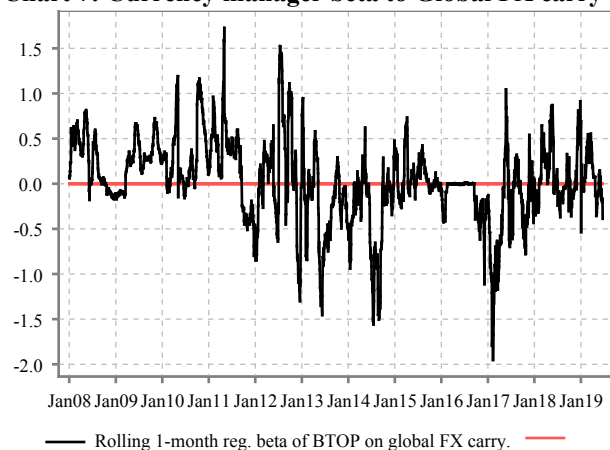


Chart 8: Macro hedge fund betas to global FX carry

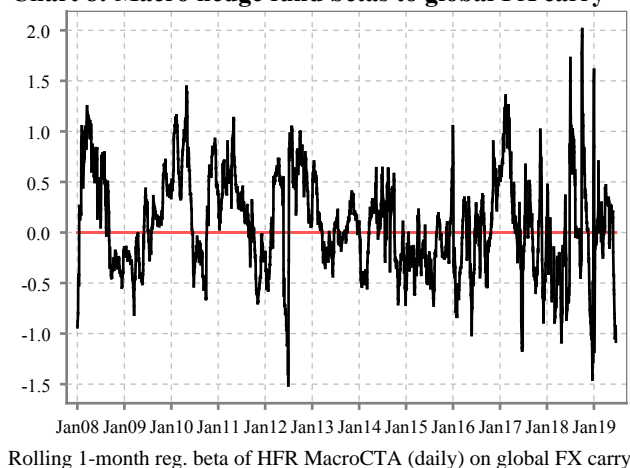


Chart 9: Currency manager beta to G10 FX carry

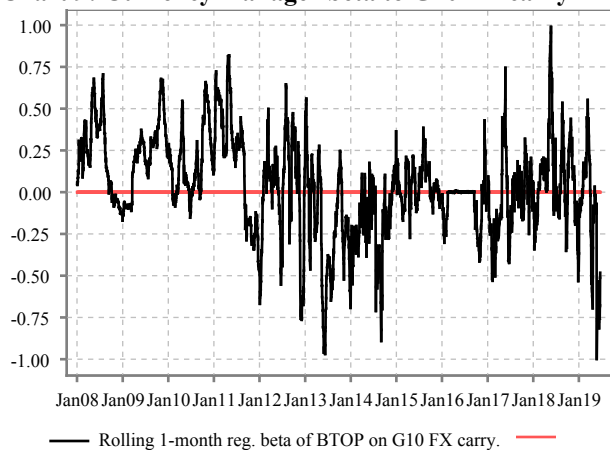


Chart 10: Currency manager beta to EM FX carry

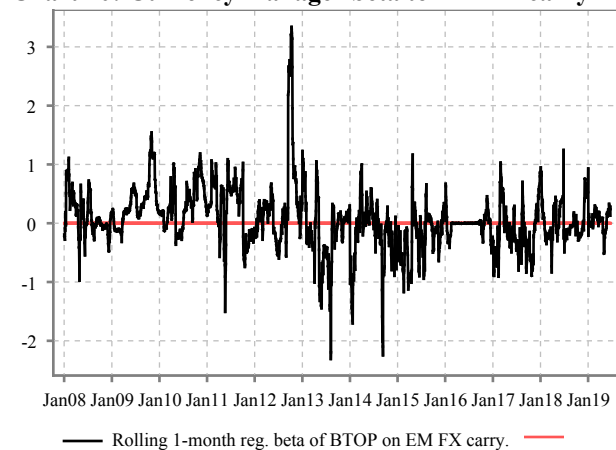
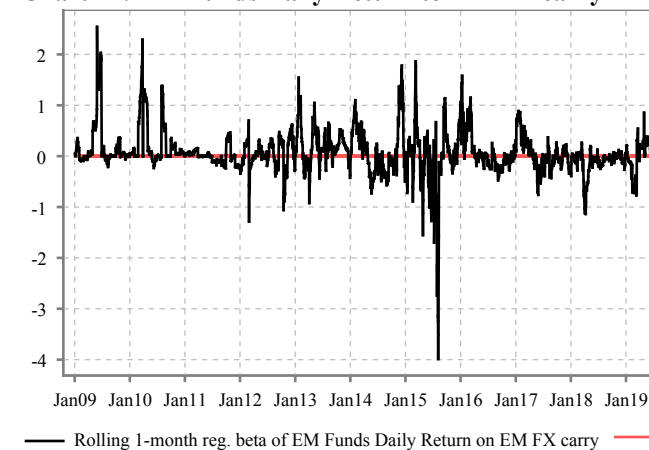


Chart 11: EM Funds Daily Return to EM FX carry



Note: BTOP stands for Barclays BTOP

The plots end at (today-2d).

Global FX Strategy

Explanatory notes on J.P Morgan Daily FX Strategy Analytics

This daily chart packet details signals for four FX tactical trading models: (1) carry for G-10, emerging markets and global currency baskets; (2) interest-rate momentum applied to currencies; and (3) interest-rate momentum as an overlay to standard G-10 carry described in model 1; and (4) interest-rate momentum as an overlay to standard price momentum.

All models tracked in these reports are discussed in three previous J.P. Morgan research notes available on jpmorganmarkets.com/GlobalFXStrategy in the Quantitative Research Notes section: JPMorgan's FX Barometer (Normand, September 22, 2004); Rotating Between G-10 and Emerging Markets Carry (Normand, Jul 9, 2007) and Alternatives to standard carry and momentum in FX (Normand, Aug 8, 2008).

1. Global FX carry

- The global FX carry report provides pair selection and performance statistics on baskets of G-10 and emerging markets currencies.
- Each basket comprises the four currency pairs offering the highest carry-to-risk. Carry-to-risk, or volatility-adjusted carry, is calculated as the 1-mo interest rate differential divided by the annualised daily volatility of spot (for G10) or 1M forwards/NDFs (for EM currencies) over the past 20 trading days, so is equivalent to an ex-ante Sharpe ratio on the currency pair. Rate differentials are based on implied yields from 1-mo FX forwards/NDFs.
- The G-10 universe comprises 15 eligible pairs: AUD, CAD, CHF, EUR, GBP, JPY, NOK, NZD and SEK vs USD; CHF, GBP, NOK and SEK vs EUR; and EUR and USD vs JPY.
- The emerging markets universe comprises 22 pairs, all versus USD:
ARS, BRL, CLP, COP, MXN, PEN, CNY, IDR, INR, KRW, MYR, PHP, SGD, THB, TWD, CZK, HUF, ILS, PLN, RUB, TRY and ZAR.
- The baskets are rebalanced monthly on the last business day of the month. Currencies in the G-10 and EM universes are ranked by carry-to-risk rather than absolute carry, and the four pairs in each universe with the highest CTR are purchased for the G-10 and EM strategies. The global carry basket also comprises four currencies – two each from the G-10 and EM universes. This restriction is imposed to control for liquidity differences between G-10 and EM currencies, since an unconstrained basket would almost always favour EM pairs for their higher carry.

2. Interest-rate momentum

- The interest-rate momentum strategy derives signals for currencies from changes in short-term interest rate expectations between two countries. The intuition is that currencies respond as much to changes in rate expectations as they do to current rate differentials (the standard carry strategy). For example, rising rates relative to the rest of the world usually signal cyclical strength which draws capital inflows and sponsors currency appreciation, even in a low-yielding currency. In previous J.P. Morgan reports, we referred to this concept as Forward Carry since changes in rate expectations could be viewed as investors' forward-looking view of FX carry.
- A simple strategy to capture this spread dynamic would be to buy the currency in whose favor rates have moved over some defined period, and to sell the currency when that rate momentum reversed. This rule would apply regardless of whether the focus currency were a high or a low-yielder, since funding currencies can rally as their yield deficit diminishes.
- The model involves three parameters: (1) the reference interest rate used to capture monetary policy expectations over the near term (we use 1-month swap rates 3 months forward); (2) the lookback period over which the change in spread is measured (we use past month, or 21 trading days); and (3) The rebalancing frequency indicating how often the change in spreads is calculated and trades executed (we use daily).

- The table on the following page provides signals for the dollar versus all major currencies (top half) and for the euro versus all major currencies (bottom half). For each bloc, the top line indicates the signal followed by the change in spread (in basis points) over the past month and performance statistics for each pair (in percent unannualised) over the past week, three months, one year and year-to-date.

3. Carry plus rate momentum

- This report combines the concepts of standard carry (model 1) and interest-rate momentum (model 2) in an attempt to better time entry into and exit from carry trades.

- The traditional approach employs so-called risk appetite measures, which are composites – and often overfitted jumbles – of volatility, credit spreads and sometimes commodity prices. J.P. Morgan's alternative focuses on more regular cyclical shifts which undermine carry trades too. That is, if currencies show an empirical tendency to rise and fall with changes in spread momentum – the conclusion from the previous interest-rate momentum model – the riskiest carry trades are those which hold high-yielders where cyclical conditions are softening, the central bank easing and interest rates falling. The safest trades would be holding the high-yielders where the economy is accelerating and/or rates rising.

- The strategy uses interest rate momentum as a simple overlay to standard carry and is employed as follows: (1) each month, rank currencies by their carry-to-risk ratio as described in the Global FX Carry Report; (2) for each currency, also measure the change in rate expectations over the past month as described in the Interest-rate Momentum Report; and (3) hold only higher-yielding currencies that also exhibit interest-rate momentum.

- Table 1 presents the daily calculations for carry-to-risk and interest-rate momentum, for investors who wish to track and position on a daily basis. To minimise transaction costs, the J.P. Morgan overlay model only rebalances once per month, when the standard carry basket rebalances. Table 2 shows current positions and returns for that monthly basket.

4. Spot momentum with rate momentum

- Spot momentum with rate momentum overlay is a variant on the typical price momentum strategies employed in all financial markets. Typical momentum frameworks involve two parameters: the momentum measure (simple price momentum, exponentially-weighted moving average) and the rebalancing frequency.

- The momentum measure can be based on simple momentum, which calculates equally-weighted performance over a previous lookback period, or an exponentially-weighted moving average, which places more emphasis on recent observations. The rebalancing frequency can be of any length – intraday, daily, weekly, monthly. For simplicity, and to fit the approach of most investment managers, we focus on daily, weekly and monthly models rather than on intra-day ones more common to algorithmic accounts.

- Previous J.P. Morgan research determined that simple spot momentum performed as well as exponentially-weighted moving averages and that medium-term momentum (1-year lookback) performed better than shorter-term model (see Alternatives to Standard Carry and Momentum in FX, Normand, August 2008).

- As a refinement on the standard spot momentum strategy which buys currencies which have outperformed recently, we add one refinement based on the interest-rate momentum model described earlier and detailed elsewhere in this chartpack of daily FX alpha models. If the interest-rate momentum model has served as useful filter for identifying carry trades which benefit from cyclical conditions as their rates rise relative to other economies, then the same concept could be used as a conditioning variable on price momentum rules. So rather than hold all currencies exhibiting positive price momentum over the medium term, this model holds those currencies which have appreciated over the past year (they exhibit positive spot momentum) and have witnessed increases in rate expectations over the past month (they exhibit interest rate momentum too).

- Table 1 outlines the pair selection process. Column # 2 and 3 identify pairs with positive spot momentum, defined as the change in the spot rate over the past 12 months. The next two columns confirm which pairs also exhibit rate momentum, defined as the change in rate spreads (1mo rates 12mos forward) over the past month. Currencies which meet both criteria are selected for inclusion in the basket. Basket returns are plotted in chart 1 and compared to those from a raw (without rate momentum filter) price momentum strategy.

5. Spot mean reversion model

- The model tests the profitability of trading mean reversion in currency markets following extraordinary spot moves in either direction. Extraordinary moves are defined as spot gains or losses of 1-sigma, 2-sigmas or 3-sigmas over the prior 5 trading days.
- If such a move has been posted based on London closing spot rates, the trading rule is to position in the opposite direction to profit from potential mean reversion. The position is held over the next 5 trading days and performance statistics such as spot return and success rate (ratio of profitable trades to total trades) calculated. Trading signals generated within that 5-day holding period are ignored for the purpose of return statistics calculations; fresh signals contribute to performance statistics only if they are generated after the 5-day holding period elapses.
- The daily report highlights those pairs which have posted 1, 2 or 3-sigma moves over the past five days. It also provides performance statistics for the contrarian trading rule over three sample periods of the past year, five years and ten years. Based on success rates and profitability, the grid characterises conviction on a high-to-low scale:

High: 70%+ success rate and 1.00% average profit.

Relatively High: 60%+ success rate and 0.5% average profit.

Medium: 51%+ success rate and 0.25% average profit.

Relatively low: 50%+ success rate and 0% average profit & below medium.

Low: all others.

6. IMM mean reversion model

- The new IMM report tracks returns from contrarian FX investing conditioned on extremes of IMM positioning. Net non-commercial positions reported weekly by CFTC are considered by many market participants to be indicative of short-term speculative investor positioning, and crowded trades to be ripe for reversal.
- For individual currencies, the backtesting rule conditions forward looking returns on ex-ante extreme thresholds of IMM positions e.g. buying EUR/USD when 1-yr z-score of positions is below -1, and selling if z-score exceeds 1.
- For the IMM-based contrarian basket, the trading rule sorts ten currencies (EUR, JPY, GBP, CHF, CAD, AUD, NZD, MXN, BRL and RUB) on 1-yr z-scores of their IMM positions every week, and buys the most oversold currency (lowest z-score) while selling the most overbought (highest z-score), subject to the restriction that z-scores in both cases satisfy the one-sigma threshold. If the latter condition is not met, over-bought/sold conditions are considered to be absent and no positions are held in the strategy basket that week.

7. J.P. Morgan short term fair value mean reversion model

- This exercise uses the mispricing from J.P. Morgan's 1-year short-term fair value models as a signal (1y z-score is used). These short-term fair value models are produced everyday in the Daily FX Fair Value Regressions Report available on jpmorganmarkets.com and model spot rates to several cyclical variables such as short-term interest rate spreads, commodity prices, VIX and sovereign spreads to determine if the pair is rich or cheap.
- Results from two strategies are presented: pair-wise approach and diversified basket approach.
- The pair-wise strategy involves buying (selling) the cross when the 1-year z-score of the residual from the short-term fair value models is 1.5 sigma or more below (above) and holding the trade till the mispricing had been reduced to 1 sigma. The table summarizes performance by trade based on a 5-year history.
- The diversified basket approach allocates risk daily to the 3 pairs that are most mispriced (basis: absolute value of 1-year z-scores) with a diversification overlay which limits exposure of each currency (but USD) to one unit. For example, if the three most mispriced pairs are dominated by GBP crosses, then only the one that is most dislocated is picked. In this case, the second and third pairs picked by the strategy will be mispriced pairs that do not involve GBP (diversification rule applies to all G10 currencies but the dollar). The Index in chart 2 is based on the basket approach summarized separately for USD and non-USD pairs.