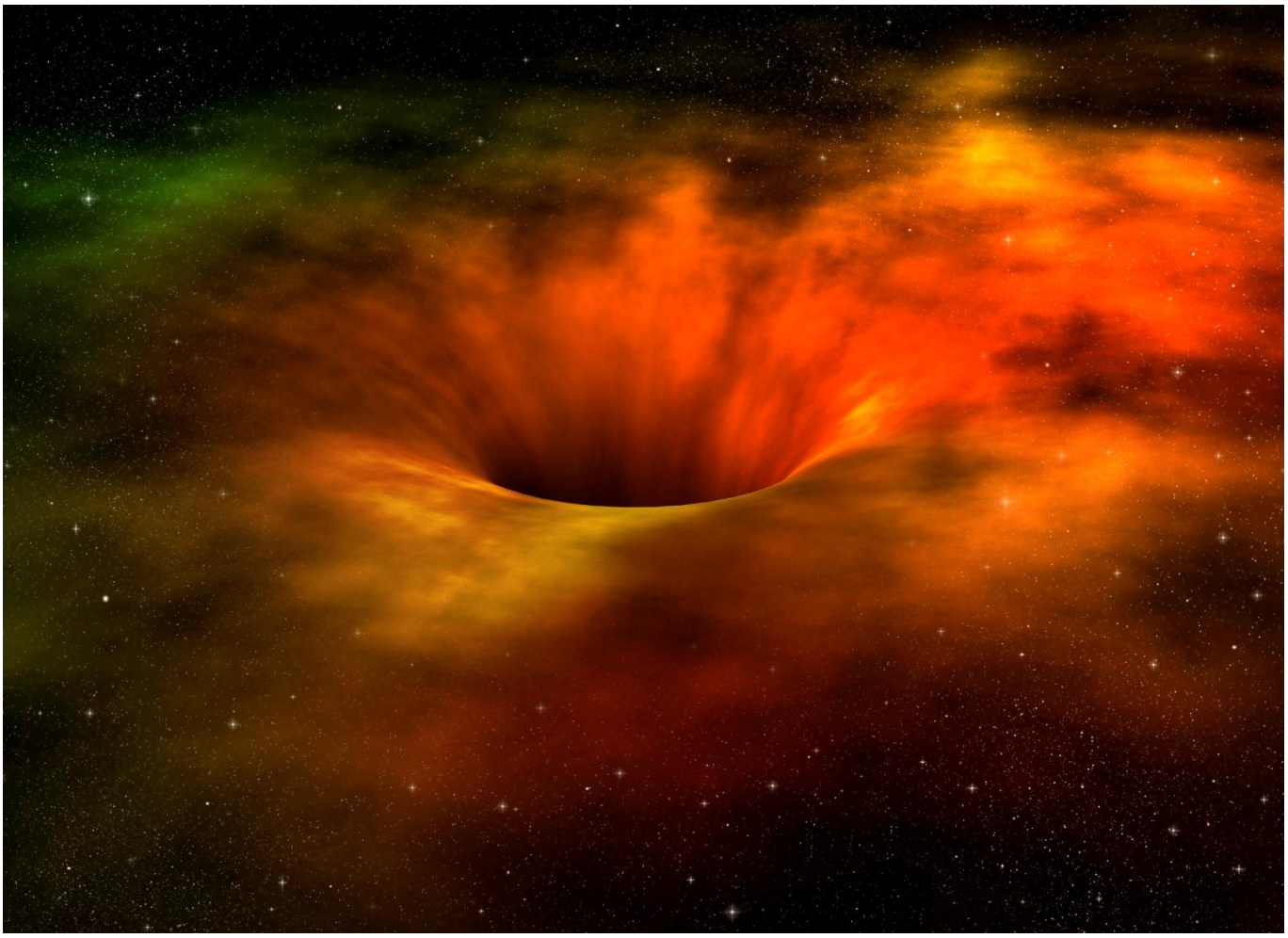
FX Outlook 2016

Don't look down



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■ The currency stars that shone brightest in the years of easy Fed policy are being dragged, one by one, into a black hole. Recession will eventually drag the US dollar down too, but not in 2016. Just don't look down! For now, volatility and more frequent corrections are inevitable.

■ The imminent start of the Fed rate-hiking cycle will be sugar-coated in dovish reassurances about the speed of tightening. The market expects as much, but history warns us that the dollar rallies ahead of the first rate hike and often weakens afterwards. This presents a chance to buy, as monetary policy divergence will still be the big theme of 2016.

■ The last currency star to fall will be the renminbi. The Chinese authorities will allow gentle depreciation through the months ahead. Can stars fall gently? The risks are clear.

■ Oil-sensitive currencies have a better chance of rebounding than (mostly Asian) ones dependent on stronger Chinese demand. Sell AxJ vs USD and selected EMEA and Latam.

■ The yen is cheaper than the euro, while sterling is vulnerable to MPC reluctance to tighten and the threat of Brexit. The SEK and NOK are the safest European bets for 2016.

See complete list of analysts on back page

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CONTENTS

Report completed on 4 December 2015

TRADE RECOMMENDATIONS

1. Buy USD on dips in Q1

We remain bullish on the USD in 2016, albeit not as strongly as in 2014 and 2015. As valuations become more stretched, we expect more volatility and frequent consolidation (e.g. in Q1 as the Fed takes a pause). We expect CAD and SEK to be most resilient in 2016, while NZD and CHF will be the biggest losers.

2. Long CAD/CNH

The CAD is the only G10 currency we expect to outperform the USD in 2016. We are looking for 6% CNH depreciation vs the USD as the authorities' more flexible FX regime allows it to correct overvaluation vs trading partners. The trade carries negatively; trades 15 and 16 look at cheaper bearish CNH structures.

3. Short GBP/USD

Less volatile than EUR/USD, normally, but with a much bigger (Brexit-related) tail risk. EU exit could see GBP/USD at 1.30.

4. Timely Brexit hedge: Buy EUR/GBP 1Y call strike at 0.80, Sell 7M call strike at 0.80

GBP/USD would fall more than EUR/GBP would rise in a Brexit scenario. But a hedging solution via options is more optimal in EUR/GBP due to the complacency in forward volatility and skew, while cable puts are already expensive. Our forward hedge would be profitable in seven months between 0.75 and 0.87; if EUR/GBP is below 0.80 at end-June, investors would be left long a 5M call paid at a lower premium with full topside and vega exposure**.** Indicative offer: 0.65% *(spot ref: 0.7070)*

5. Short NZD/CAD or...

Long an eventual oil recovery, short Kiwi, as RBNZ still has scope to cut rates and NZD remains vulnerable to China weakness.

6. ... Long JPY and CAD vs CHF and NZD

We recommended this long-term trade six months ago, and it remains relevant after minor gains in H2 2015. NZD and CHF are still richly valued, while JPY and CAD are cheap. The basket is well balanced from a risk perspective, with one funding currency and one investment currency on each side.

7. Long NOK and SEK vs GBP and EUR

Long NOK (oil) and SEK (undervalued, strong growth, huge current account surplus); short EUR (QE, negative rates) and GBP (slowing growth, slow-moving BOE and 'Brexit' tail risk). Very cheap basket on a long-term valuation basis.

8. Short select EM currencies through a cheap basket

A set of bearish EM outcomes (Fed tightening, Chinese growth, yuan depreciation and a rise in EM corporate defaults) suggests that correlations in the EM space will stay elevated and could rise further in 2016. Taiwan and Chile have the biggest export exposure to China. In G10, our bullish USD/JPY view is moderate, but a disorderly CNY fall would revive fears of an Asian currency war and support a larger move. Markets are still pricing these joint macro risks as diversified, offering the opportunity of a cheap worst-of option. **Buy 6M worst-of CNH, JPY, TWD, CLP ATMS puts / USD calls.**

9. Monetize high odds at zero cost

The AUD and CAD are very tightly correlated, while higher AUD volatility since 1999 strongly suggests that any AUD fall should exceed a CAD fall. We recommend buying an AUD/USD 3M ATMS put financed by a USD/CAD 3M ATMS call. Setting a knock-out at 0.6450 on the AUD put makes the trade costless, securing potential extra gains on the AUD side. Over the decade, AUD/USD did not lose more than 12% over a quarter, apart from the 2008-09 crisis. **Buy AUD/USD 3M ATMS put with RKO 12% lower / Sell USD/CAD 3M ATMS call.** Zero cost (Indicative. Strikes at 0.7320 and 1.3315).

10. Regional EM: Short Asia against EMEA and LATAM

Against the backdrop of growing concerns about EM corporate credit quality and higher US rates, downside risks to Chinese growth (SGe 6.0% vs consensus 6.5%) coupled with RMB depreciation (USD/CNY moving at 6.80 by year end) will see Asia underperform EMEA and LATAM on a total return basis. **Buy RUB, BRL vs sell KRW, MYR.**

11. Short EM exposure: Long USD vs TWD & KRW

Korea and Taiwan are both highly exposed to weaker Chinese growth through the direct export channel and from RMB depreciation through the indirect channel by having relatively high export similarity. Both currencies could be increasingly used as proxy trades for the China story given more favourable carry characteristics.

12. Long EM exposure (against EUR): Short EUR vs PLN and CZK

Despite a challenging environment for EM FX, the CEE currencies will do well against the EUR on strong basic balances, robust domestically generated growth dynamics, and suppressed inflation. The CNB is expected to abandon the floor in EUR-CZK in Q3, though the risks of a later exit have increased.

13. Long EM exposure (against USD): Short USD vs RUB and INR

The RUB is expected to do well next year as domestic factors coupled with modestly higher oil prices proves beneficial. For a second year in a row, the INR is attractive on a carry-adjusted basis due to improvement in external balances, higher FII limits and the RBI limiting large movements in either direction.

14. EM relative value: Short TWD-INR, long RUB-MYR

Two positive carry structures with appealing qualities related to China and commodity exposure. India has the lowest direct export exposure to China in the region, while Taiwan has the highest, and for the sizeable positive carry (6.5%) to be eroded, it would probably require a sustained risk-on rally. Stable to higher oil prices would be beneficial for long RUB-MYR, and if oil prices fall, further the positive carry (approximately 9% per annum) provides a significant downside buffer.

15. Bearish China trade I: Long USD-CNH call spread

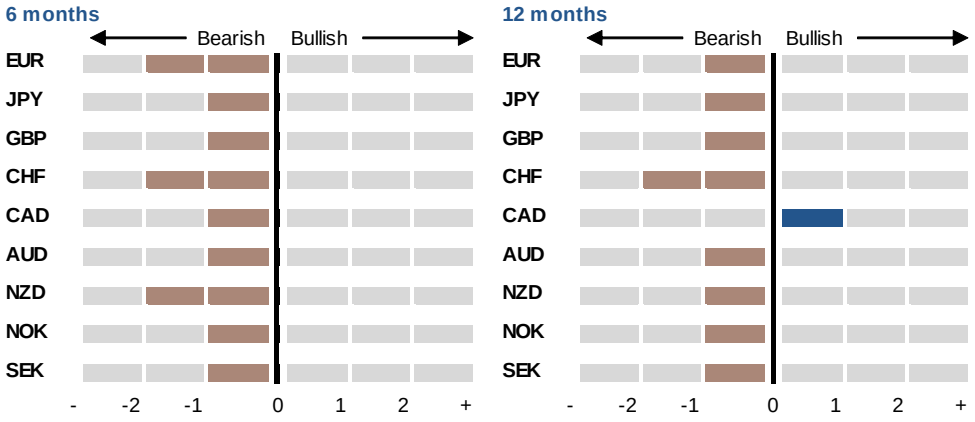
A gradual and controlled depreciation in USD-CNY toward 6.80 is our baseline scenario, but there are risks of a larger move if trade-weighted appreciation is too much for policymakers to bear relative to growth and employment objectives. Substantial negative carry (-3.8% over 12M) and unfavourable breakeven levels in plain vanilla call options leaves a USD-CNH call spread as the most attractive structure to position for either orderly or disorderly depreciation.

16. Bearish China trade II: Long CNH vs TWD and KRW

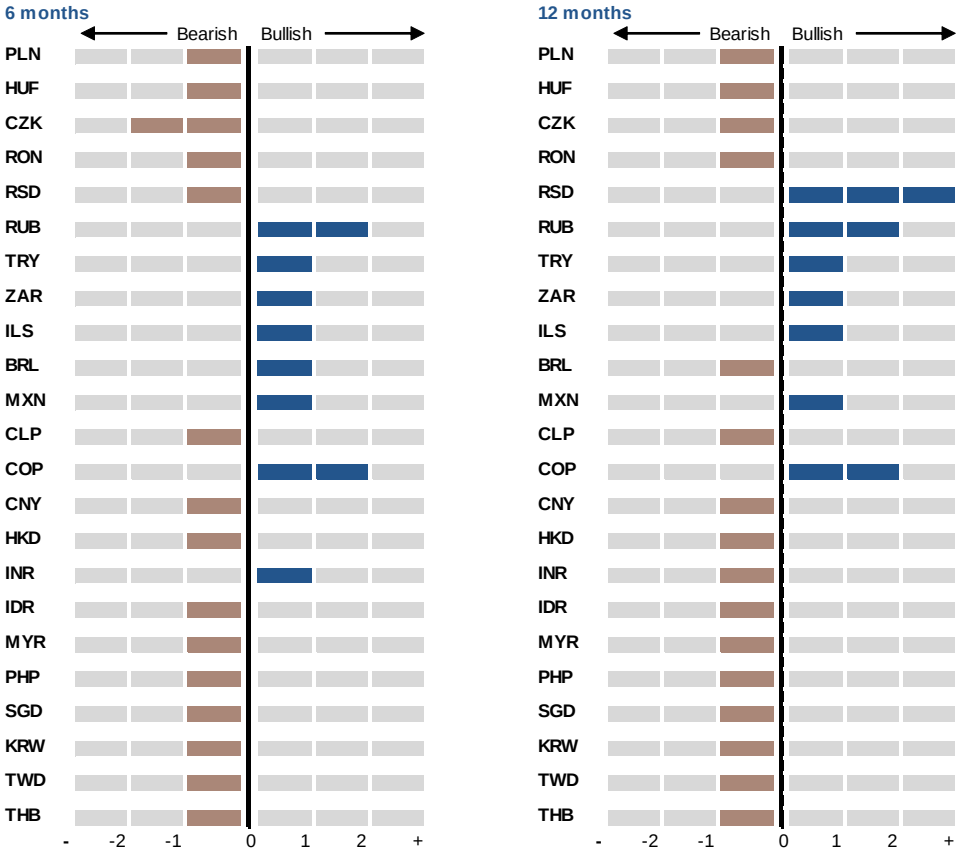
Given the unfavourable risk-return characteristics of being long USD-CNH, relative value structures against regional low yielders has some appealing qualities. First, long CNH against KRW and TWD has decent positive carry (+3.7% on an equally weighted basket). Second, these crosses have been positively correlated to higher USD-EM. Third, investors are likely to seek proxy trades for gaining exposure to the RMB depreciation story, and as such, KRW and TWD depreciation should at least match, or more likely exceed, that of CNH at different points throughout the year.

2016 VIEWS*

G10 (against USD)



EM (against USD)



* We calculate total return expectations vs. USD by comparing our 3M and 12M currency forecasts to the forward rate, and normalise these expected returns by the respective implied volatilities. The charts above classify the results according to sign and absolute value (below 1.0, between 1.0 and 2.0 and above 2.0).

MACRO AND FINANCIAL FORECASTS

G10 FX forecasts

	3-Dec-15	Mar-16	Jun-16	Sep-16	Dec-16
EUR/USD	1.06	1.05	1.01	0.99	1.00
USD/JPY	123.5	123.0	124.0	124.0	125.00
GBP/USD	1.49	1.48	1.49	1.41	1.45
USD/CHF	1.02	1.05	1.11	1.15	1.14
USD/CAD	1.33	1.34	1.35	1.36	1.31
AUD/USD	0.73	0.69	0.68	0.66	0.67
NZD/USD	0.67	0.62	0.60	0.58	0.57
USD/NOK	8.67	8.71	8.81	8.84	8.70
USD/SEK	8.71	8.67	8.71	8.69	8.55
EUR/JPY	130.26	129.15	125.24	122.76	125.00
EUR/GBP	0.71	0.71	0.68	0.70	0.69
EUR/CHF	1.08	1.10	1.12	1.14	1.14
EUR/CAD	1.41	1.41	1.36	1.35	1.31
EUR/AUD	1.44	1.52	1.49	1.50	1.49
EUR/NZD	1.58	1.69	1.68	1.71	1.75
EUR/NOK	9.15	9.15	8.90	8.75	8.70
EUR/SEK	9.19	9.10	8.80	8.60	8.55
DXY	100.44	100.86	103.50	105.51	104.25

EM FX forecasts

	3-Dec-15	Mar-16	Jun-16	Sep-16	Dec-16
EUR/PLN	4.31	4.15	4.12	4.08	4.08
EUR/HUF	312.26	310	312	315	316
EUR/CZK	27.07	27.05	27.02	26.00	26.00
EUR/RON	4.47	4.42	4.42	4.43	4.42
EUR/RSD	121.42	120	121	121	121
EUR/RUB	73.89	66.15	64.14	61.28	59.80
RUB/BASK	70.72	64.42	63.79	61.62	59.80
USD/RUB	68.11	63.00	63.50	61.90	59.80
USD/TRY	2.89	2.95	3.02	3.05	3.10
USD/ZAR	14.38	14.50	14.80	15.10	15.45
USD/ILS	3.85	3.85	3.80	3.75	3.75
USD/BRL	3.78	3.95	4.00	4.05	4.10
USD/MXN	16.72	16.90	16.90	16.95	17.00
USD/CLP	701.38	717.00	720.00	722.00	725.00
USD/COP	3152	3000	2800	2750	2600
USD/CNY	6.40	6.60	6.65	6.70	6.80
USD/HKD	7.75	7.75	7.75	7.75	7.75
USD/INR	66.66	67.20	67.50	68.00	68.20
USD/IDR	13845	14400	14700	14900	15300
USD/KRW	1164.55	1200	1210	1220	1230
USD/TWD	32.78	33.50	33.80	34.10	34.40
USD/THB	35.88	36.60	36.80	37.00	37.10

For full SG economic forecasts please see our Global Economic Outlook: Cycle is alive ... ticking away in 2016!

Table 1. SG economic growth forecasts (%)

	2014	2015f	2016f	2017f	2018f	2019f	2020f
World (Mkt FX weights)	2.9	2.8	3.1	3.2	2.8	2.4	3.2
World (PPP weights)	3.4	3.1	3.5	3.7	3.5	3.2	3.8
Developed countries (PPP)	1.8	1.9	2.3	2.2	1.6	0.9	2.0
Emerging countries (PPP)	4.6	4.0	4.5	4.8	4.9	4.7	4.9
North America							
US	2.4	2.5	2.8	2.7	1.3	0.0	2.6
Europe							
Euro area	0.9	1.5	1.6	1.5	1.3	1.0	1.0
Germany (nsa)	1.6	1.6	1.8	1.5	1.4	1.0	0.6
Germany	1.6	1.5	1.6	1.6	1.4	1.0	0.6
France	0.2	1.2	1.4	1.5	1.3	1.0	1.0
Italy	-0.4	0.7	1.2	0.9	0.8	0.5	0.6
Spain	1.4	3.1	2.5	1.7	1.5	1.2	1.3
Netherlands	1.0	1.9	2.0	1.6	1.3	1.0	1.1
Slovakia	2.4	3.2	2.9	3.0	2.8	2.8	2.3
UK	2.9	2.4	2.0	1.8	1.6	1.3	1.1
Switzerland	1.9	1.0	1.3	1.7	1.4	0.7	1.0
Asia							
China	7.3	6.9	6.0	6.0	5.5	5.0	5.5
Japan	-0.1	0.6	1.7	1.0	1.2	1.5	1.6

Source: SG Cross Asset Research/ Economics

Table 2. SG inflation growth forecasts (%)

	2014	2015f	2016f	2017f	2018f	2019f	2020f
World (Mkt FX weights)	2.7	2.2	3.0	3.5	3.3	3.1	2.9
World (PPP weights)	3.6	3.7	4.1	4.3	4.0	3.8	3.6
Developed countries (PPP)	1.4	0.3	1.4	2.3	2.2	2.0	1.7
Emerging countries (PPP)	5.3	6.2	6.1	5.7	5.3	4.9	4.8
North America							
US	1.6	0.1	1.8	3.2	2.9	2.5	1.6
Europe							
Euro area	0.4	0.1	1.1	1.5	1.4	1.5	1.6
Germany (nsa)							
Germany	0.8	0.2	1.3	1.6	1.5	1.5	1.5
France	0.6	0.2	1.1	1.5	1.4	1.5	1.7
Italy	0.2	0.2	1.1	1.6	1.4	1.4	1.6
Spain	-0.2	-0.7	0.7	1.1	1.1	1.3	1.5
Netherlands	0.3	0.3	0.9	1.1	1.3	1.3	1.5
Slovakia	-0.1	-0.2	0.5	2.1	2.3	2.0	2.0
UK	1.5	0.0	1.1	2.1	2.2	2.0	1.8
Switzerland	0.0	-1.1	-0.4	0.5	0.8	0.8	0.6
Asia							
China	2.0	1.5	2.0	2.4	2.2	2.0	2.5
Japan	2.7	0.8	0.5	2.3	1.9	2.1	2.1

Source: SG Cross Asset Research/ Economics

Table 3. SG forecasts – Monetary policy rates (%)

	Nov 24	Dec 2015	Mar 2016	Jun 2016	Sep 2016	Dec 2016	Neutral rate	2015	2016	2017	2018	2019	2020
North America													
US	0.13	0.38	0.63	0.88	0.88	1.13	**3.5**	0.2	0.8	1.9	2.6	0.8	0.1
Europe													
Euro area	0.05	0.05	0.05	0.05	0.05	0.05	**2.5**	0.1	0.1	0.1	0.1	0.1	0.1
UK	0.50	0.50	0.50	0.50	0.50	0.75	**3.5**	0.5	0.5	1.3	2.3	2.3	1.8
Switzerland	-0.75	-0.72	-0.75	-0.75	-0.75	-0.75	**2.0**	-0.6	-0.7	-0.6	0.1	0.5	0.5
Asia													
China	1.50	1.50	1.50	1.50	1.25	1.25	**3.0**	2.0	1.4	1.3	1.0	0.6	1.0
Japan	0.08	0.07	0.07	0.07	0.07	0.07	**1.5**	0.1	0.1	0.1	0.1	0.1	0.2

The "neutral rate" for key rates and the "trend fair value" for bond yields give our estimate of "fair value" given an output gap of 0 and trend inflation

More forecasts available at www.sgmarkets.com

EDITORIAL – DON'T LOOK DOWN

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The currency stars that shone brightest in the years of easy Fed policy are one by one being sucked into a black hole. The move may be more muted than over the past 18 months but the dollar will rise further in 2016 - because it can. The US economy is best positioned to withstand a strong currency, which will help contain home-born inflation. Buy the USD on dips in Q1. Don't look down: when the (US) recession shows its ugly head, the dollar too will crash. We don't see that happening in 2016, though inevitably as valuations become more stretched, we should expect more volatility and frequent consolidation.

Asia ex Japan currencies have been the most resilient. This is about to change. Sell AxJ vs USD and even CEEMEA. Our central scenario sees a controlled 7% CNY fall, but the PBoC will struggle to keep it orderly. A long CAD/CNH offers long-term value. Expect FX vols to stay elevated in 2016: we still have cold feet about the G10 FX carry trade. In a singular way, we expect the two currencies at the extreme ends of the risk spectrum – the NZD and CHF - to deliver the worst G10 returns in 2016. Where to hide when it gets stormy? We prefer the JPY to the EUR and CHF. We see recent euro gains as a dead-cat bounce, and still expect the sell-off to end near parity. The SEK and NOK are the safest European bets for 2016. We expect oil-related currencies such as the CAD, NOK and RUB to find their feet.

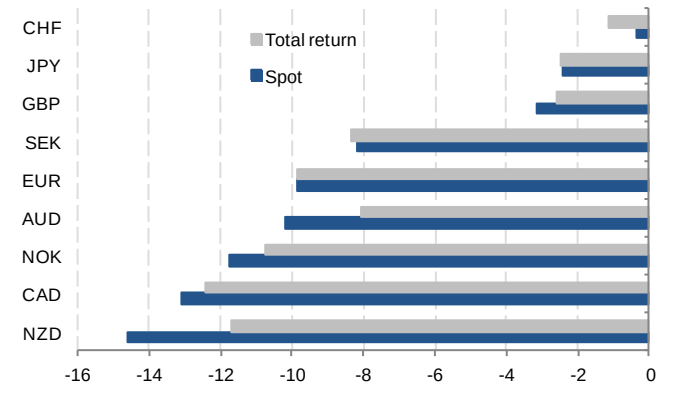
A year ago...

Source: SG Cross Asset Research/Forex

It's not over till it's over

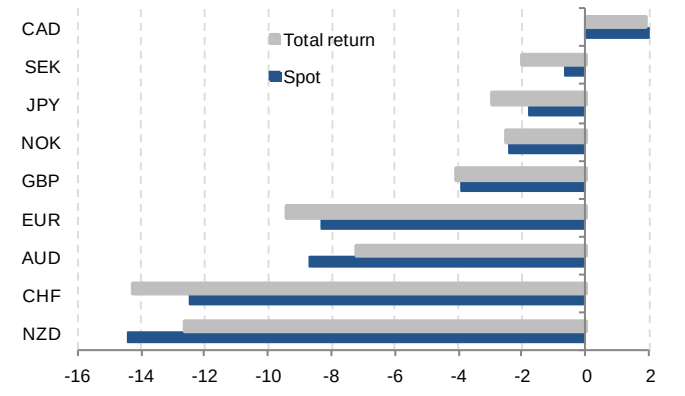
We often hear that the bulk of US dollar strength is behind us. We find the subliminal message (no longer worth being long) *misleading*. It's not over till it's over. We have been bullish the USD for the past *two* years – see "The reluctant dollar" (Dec. 2013) and "Life below zero" (Dec. 2014). We still are, if less so. The rally will slow and may even reverse temporarily in Q1 (as the Fed pauses) following the sharp moves of the past 18 months. But it is not over just yet. Graph 1 shows that the JPY, GBP and CHF (as the SNB abandoned the EUR/CHF floor in January) offered resilience in 2015. The rest of the G10 crashed. Graph 2 shows our total return expectation for the coming year. **This time we expect the CAD, SEK, JPY and NOK to offer resilience. The NZD and CHF face a tough year.**

Graph 1. 2015 year-to-date* G10 performance vs USD



Source: SG Cross Asset Research/Forex * From 31/12/14 to 3/12/15

Graph 2. 2016 expected performance, based on SG forecasts*



Source: SG Cross Asset Research/Forex * and spot levels on 3 Dec. 2015

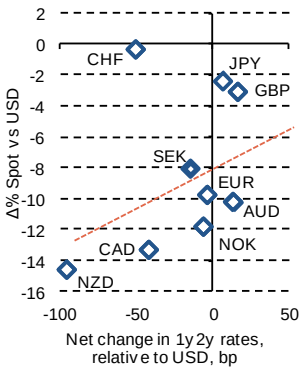
The dollar is strong... because it can be

Because of its position in the cycle, the US economy, more than any other, can withstand a strong currency right now (the SG Global Economic Outlook offers an insightful analysis of

relative cycle positions). And we don't think that is about to change in 2016. Not until extreme dollar strength (among other things) starts to raise fears about a US recession or the rest of the world economy gets on stronger footing. Don't hold your breath.

- **Policy divergence** will still be a factor in 2016. It is remarkable that the US dollar has rallied so much *before* the Fed pressed the rate hike button. The dollar even surged while Fed hike expectations retreated[1]. To an extent it did so because other central banks eased.

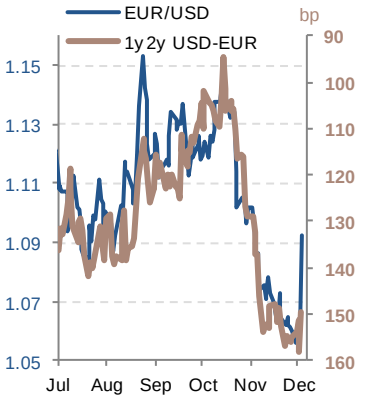
Graph 3. Year-to-date change in G10 1y2y rates (relative to USD rate) vs change in USD crosses



Source: SG Cross Asset Research/Forex

Graph 3 gives a big-picture view of the G10 rates/FX complex in 2015. Except for the NZD, CAD and CHF, short-term rate differentials vs USD actually did not move much from end-2014 to late-2015. It is not just the price of money that matters for FX, but also its quantity. The front running of the ECB QE hurt the euro badly in Q1. The QE factor somewhat distended the rates/FX link, but the latter has reasserted itself in H2 (Graph 4 – note the post ECB meeting knee-jerk overshooting on 3 Dec.). Looking forward, non-US central banks are less likely to surprise (on the dovish side) in 2016. But a **proactive Fed, as wages pick up and challenge the Fed's patience, would support further dollar strength**. Our economists are looking for three hikes in 2016, one per quarter after a pause in Q1. That is one more than the market; they are also more sanguine about the 2017 Fed path.

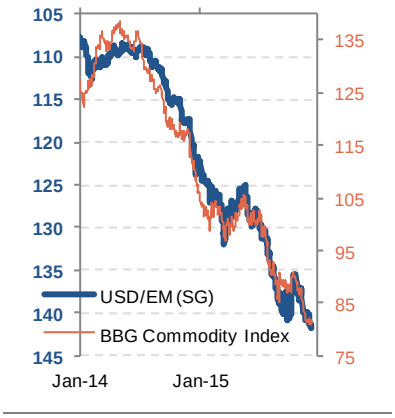
Graph 4. Short rates back in the driving seat of EUR/USD



Source: SG Cross Asset Research/Forex

- Another major driver of dollar strength has been the *self-sustained*[2] **downward spiral between commodity prices and EM currencies**. That spiral has caused considerable collateral damage to the G10 commodity currencies (NZD, AUD, CAD, NOK). Spirals eventually die out. Our commodity analysts see some stabilisation in oil prices over H1, and a slow pick-up in H2. They also see a turn in base metals, though we are less keen to position for that in FX given the risk of ongoing EM growth disappointment. Our multi-asset portfolio team is keen to increase allocation on commodity-linked assets. In the FX space, we expect oil-related currencies to find their feet in 2016. Our portfolio of trades however isn't heavily skewed in that direction, given that near-term risks are skewed towards the EM complex – and the commodity one along with it – staying wobbly.

Graph 5. Will the commodity/EMFX downward spiral be dying soon?



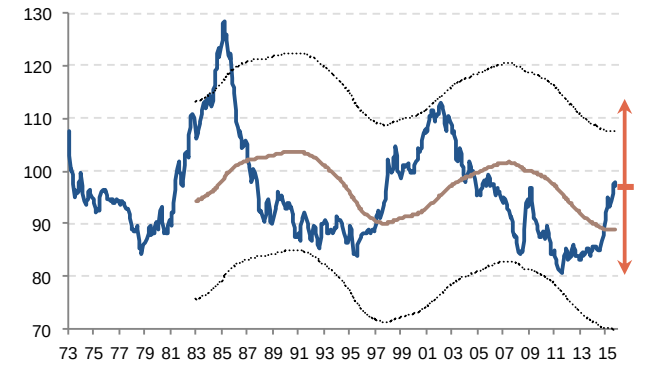
Source: SG Cross Asset Research/Forex

➔ In all, the case for further dollar strength is not as compelling as it was twelve months ago, but still valid. In G10, we expect **dollar strength to be best played against currencies that are still on the rich side from a valuation basis**, e.g. the CHF, GBP and NZD and **currencies where central banks are still tilted towards easing** (EUR, CHF) and/or **most exposed to trouble in Asia-ex-Japan** (AUD, NZD).

[1] For example, 2-year USD swap rates are trading some 50bp below what the forward 1y2y rate suggested a year ago.

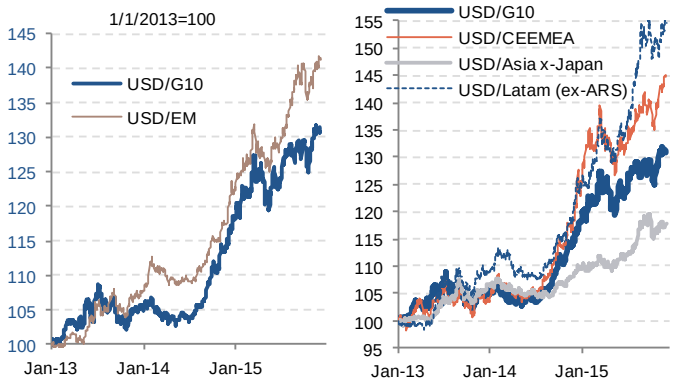
[2] The fall in EM currencies cuts the marginal (local) cost of production in USD, lowering the producers' breakeven. In turn, the fall in commodity prices hurts the economy of (EM) producers, and their currency.

Graph 6. Real Effective Exchange Rate (REER) of the USD



Source: SG Cross Asset Research/Forex

Graph 7. USD Dollar vs G10 and EM (SG baskets)

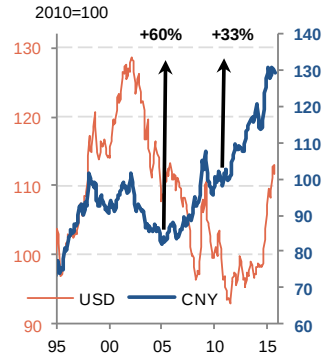


Source: SG Cross Asset Research/Forex

US dollar not stretched yet

The Real Effective Exchange rate (REER) of the US dollar is up 20% since the mid-2011 low, i.e. it has recovered just over half of the ground lost from 2002 to 2011 (Graph 6). Completing the journey would require another 15% gain from here. That looks very difficult, though not impossible (it would still leave the EUR, CAD and CNY well within historical ranges). But the **US dollar isn't at stretched levels just yet**. Graph 7 provides deeper insight about the dollar rally, from a different angle. Looking at equal-weight aggregated (nominal) FX baskets, Latam has had the worst performance, followed by CEEMEA, G10 and Asia-ex-Japan (AxJ).

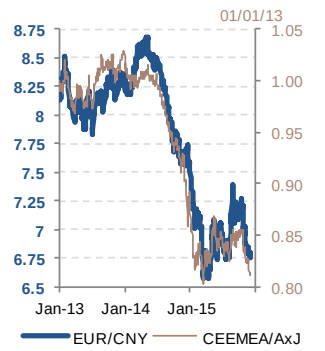
Graph 8. CNY REER has surged



Source: BIS, SG Cross Asset Research/Forex

The resilience of AxJ is baked in the relative stability of the CNY (down just 3% year to date vs USD). CNY has acted as an anchor, if not for all AxJ currencies (e.g. not for MYR). It is **questionable how solid the CNY anchor is**. Quasi USD/CNY stability implies that broad dollar strength translates into CNY strength on a trade-weighted basis. The real effective exchange rate (REER) of the CNY is up 60% over the past ten years, and some 33% over the past five (Graph 8). Add in wage growth and it is no wonder the Chinese manufacturing sector is in trouble. Can corporate China afford further trade-weighted CNY strength? As the economy struggles, the PBoC still has much room to ease, through both rate and reserve ratio cuts. That may lead USD/CNY up and contribute to a more stable CNY EER.

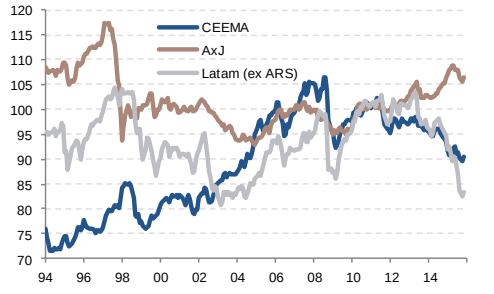
Graph 10. EM regional FX blocs** driven by the 'majors'



Source: SG Cross Asset Research/Forex
** Composition of equally-weighted baskets: **AxJ**: CNY, HKD, INR, IDR, MYR, PHP, SGD, KRW, THD, TWD. **CEEMEA**: CZK, HUF, ISK, PLN, RON, RUB, SKK, ZAR, TRY

➔ We forecast that the USD/CNY will rise towards 6.80 in 2016, a **near 7% CNY depreciation**. Our forecasts show a smooth path higher, but there is no guarantee about the process being orderly. The risk is that capital outflows, and a lower appetite from the PBoC to burn FX reserves, will make it occasionally disorderly, and that **both CNY weakness and rising regional FX volatility will de-anchor AxJ currencies**. Despite the Chinese slowdown and the risk associated with a massive increase in the region's corporate leverage, AxJ currencies are valued far more richly than other regional EM indices (Graph 9). **The bias is for AxJ to partially catch up with the downside**, and this will facilitate a further rise of the USD EER. The **EUR/CNY is probably past its lows, and that means the underperformance of CEEMA currencies relative to AxJ is over** (Graph 10).

Graph 9. REER of regional FX baskets (2010=100)



Source: BIS, SG Cross Asset Research/Forex

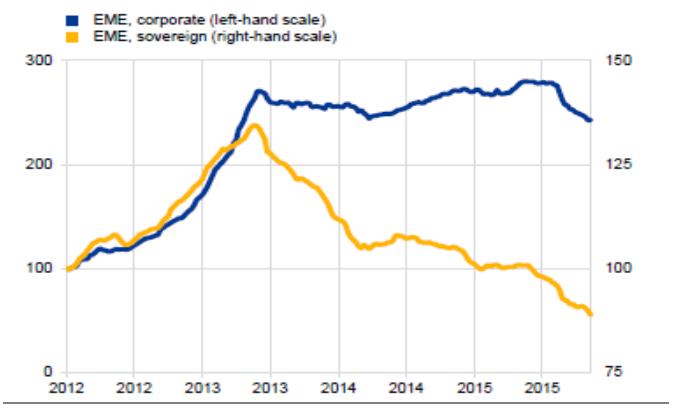
AxJ exposed to deleveraging

The consensus, on the heels on the IMF, predicts a small pick-up in EM growth over 2016, and we see little room for positive surprise there, given the deleveraging under way. Arguably, market positioning is not as buoyant; economic stabilisation may suffice to lift cheaply valued EM assets. This is the toughest question for the year ahead and has been at the heart of our cross-asset strategic brainstorming. The outflows from EM markets, heavy over summer 2015, are well documented, e.g. by the IIF. EM allocations are now slightly below their 2008-15 average, both for bonds and equities. In some cases, however, like EM corporate bonds, foreign allocations have only slightly retreated from the 2009-13 boom (Graph 11). Our main concerns, on top of a potentially disorderly CNY depreciation, lie precisely in EM corporate leverage. This is important because the roots of EM crises have most often been in credit booms and currency overvaluation.

EM non-financial debt has increased by some 45pp of GDP over the past five years to 160% on the back of super easy monetary policy in the DM world. This is mostly **corporate debt** – to which the IMF's GFSR dedicated a whole chapter (October 2015) – with **Asia** being by far the biggest sinner (Graph 12). At *best*, debt trends are set to flatten out, turning off a major engine of EM capex (and global growth). At *worst*, the rise in corporate defaults, already in the making, will start to lead EM corporate spreads wider. This is our view for H1 16. So far, EM corporate spreads have been well behaved, thanks to government support in China (at the price of delaying the cleanup) and the quest for return. This may be the next shoe to drop, in which case the whole EM complex will stay wobbly.

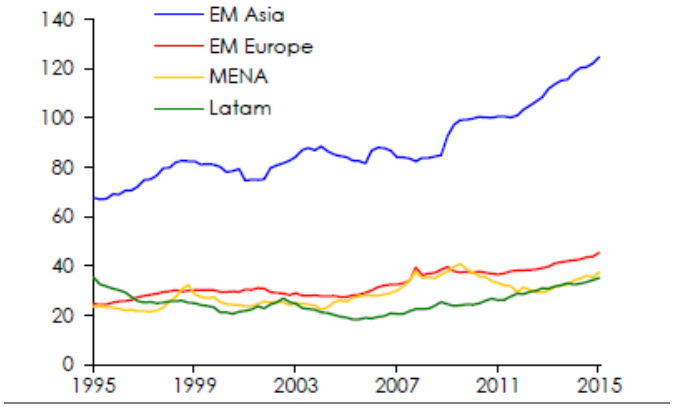
AxJ is more exposed, for three reasons: 1) This is where leverage has built up most, and not just in local currency but also in US dollars. Deleveraging may thus cause **capital outflows**. 2) Deleveraging will tend to support easier **monetary policy** in the region to support growth. 3) AxJ **valuations** are relatively rich.

Graph 11. Cumulative global flows to EM bond funds (1/1/12=100)



Source: ECB Financial Stability Report, Nov. 2015

Graph 12. EM non-financial corporate debt, % of GDP



Source: IIF

➔ **The elephant in the room is China**. The rapid rise of the CNY EER and procrastination on bad loans are leading investors to ponder whether China is the new Japan[3]. We suspect those concerns will remain acute, at least in the next six months, **keeping EMFX in general and AxJ in particular wobbly** (prefer EMEA dollar bloc, and to a lesser extent EMEA euro bloc).

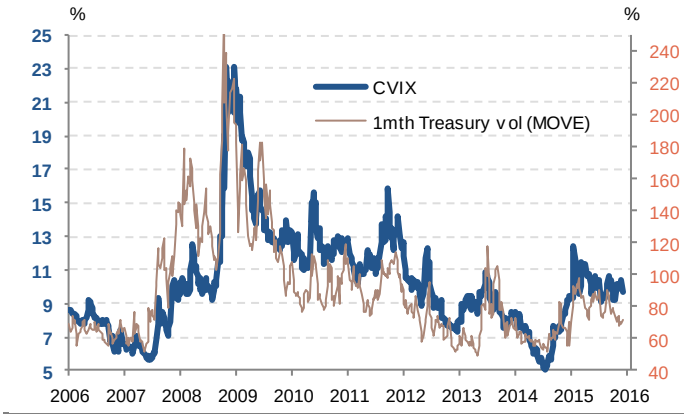
[3] http://blogs.ft.com/gavyndavies/2015/11/16/is-china-the-new-japan/

What if, to our surprise, sentiment about EM economies and markets soon turns positive? A major risk to the global financial outlook in our view lies in an unexpectedly fast improvement in EM sentiment. While that would be life-changing (particularly bearish) for DM bonds (see 2016 FI Outlook – The Butterfly Effect), it would not necessarily turn the FX outlook immediately. **Lesser concerns about EM would clearly support a steeper Fed path, initially adding to broad dollar strength**.

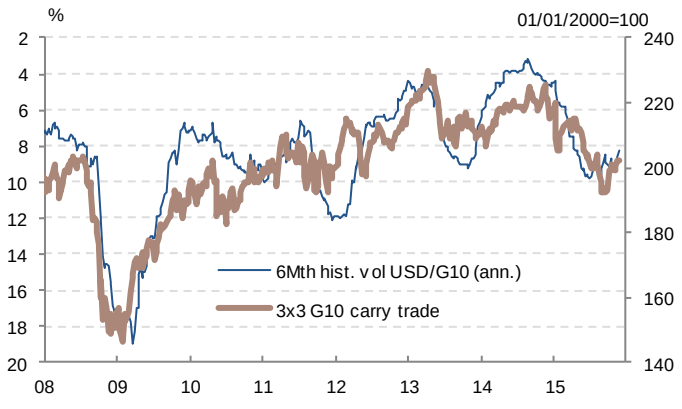
Where to hide in a storm

What if, instead, risk sentiment blows up, either because of the Fed hikes, CNY depreciation, EM corporate defaults or anything else? These are not mere tail risk events. Our 2016 FI Outlook highlights the micro-structure fragilities that are likely to support more volatile market conditions in 2016. A year ago we recommended going long FX volatility vs rates volatility and indeed FX vols have outperformed, as they prove resilient after jumping higher through the turn of the year (Graph 13). We don't see much of a retreat in 2016, though we see less value now relative to rates volatility (which is set to pick up). The **G10 FX carry trade** has enjoyed a dead-cat bounce in Q4 but has still had a bad year (Graph 14). It **offers limited appeal over 2016** (see our quant section dedicated to G10 FX carry). Our total return forecasts however show that we don't expect risk sentiment to be the primary driver of performance over the whole year; typically we see the NZD (the highest G10 yielder) and CHF (the lowest yielder) delivering the worst G10 returns over 2016. Because those two crosses (vs USD) usually have a weak correlation, consider a **worst-of basket (CHF and NZD puts, USD call)** over 2016.

Graph 13. G10 FX implied volatility beats Treasury volatility



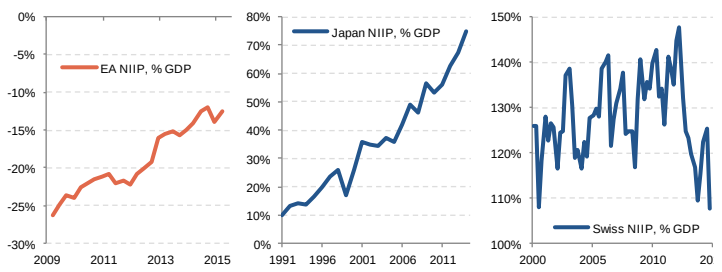
Graph 14. G10 3x3 carry trade still struggling



Source: SG Cross Asset Research/Forex

Should risk conditions take a turn for the worse, **where to hide?** In summer 2015 the euro seemed to have gained the status of a safe-haven, as it performed well as risk soured. The euro, with a large current account surplus and deep negative rates, definitely ticks some boxes for funding currency status. But the euro area still has a **negative Net International Investment Position (NIIP)**; the latter has been improving

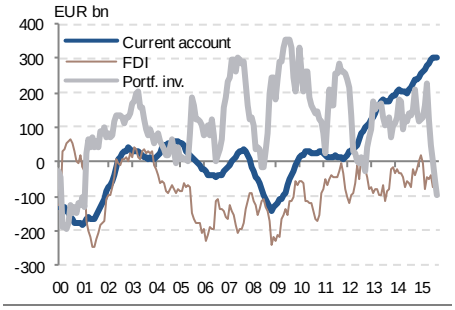
Graph 15. Net International Investment Position



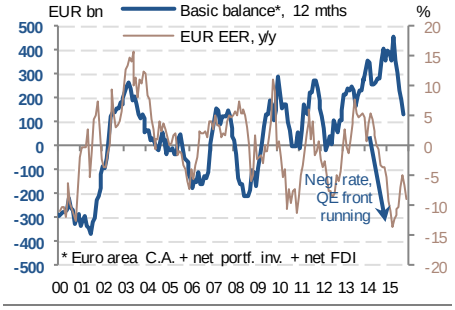
Source: SG Cross Asset Research/Forex

(Graph 15), as European investors gobble up foreign assets (especially bonds), while foreign investors turn less keen on European assets (Graph 18). Those flows have pushed the net portfolio balance into negative territory (Graph 16), taking the basic balance well off its high (Graph 17). The latter remains very positive, keeping us confident that the **EUR/USD will not revisit the lows of 2000**.

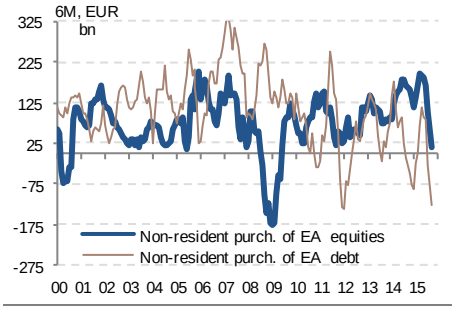
Graph 16. EA basic off peak as net portfolio flows turn negative



Graph 17. Monetary policy has decoupled the euro from the EA basic balance



Graph 18. Non-residents shun euro assets



Source: SG Cross Asset Research

In contrast, Japan and Switzerland have a very positive NIIP (Graph 15). That means Japanese and Swiss investors own far more assets abroad than foreign investors own in Switzerland and Japan; this tends to support repatriation flows in crisis time, hence JPY and CHF strength. The CHF's Achilles' heel is valuation (still rich, see below). The JPY ticks all the safe-haven boxes (positive current account and NIIP, cheap valuation) but one (still positive short-term rates).

➔ **The JPY will be our preferred G10 low yielder in 2016** (with the SEK, but it isn't a safe haven). It offers slightly better carry than the EUR and CHF, is much more cheaply valued and a safe-haven of choice when risk appetite takes a turn for the worse. In quiet times the yen weakens, but not much unless the BoJ surprises with a late move to negative rates (less unlikely if an Asian currency war develops, a risk Olivier proposes to hedge through a 'worst-of' in the section 'Trading converging EML paths').

What about the USD's relationship to risk? With the Fed hiking rates, the dollar will ride up the carry rankings, further losing out its funding currency status. Hence it will tend to become less popular through risk-off episodes. Of course it will still do well if and when risk aversion is sourced in the fear of Fed hikes.

Valuation-based long-term FX ideas

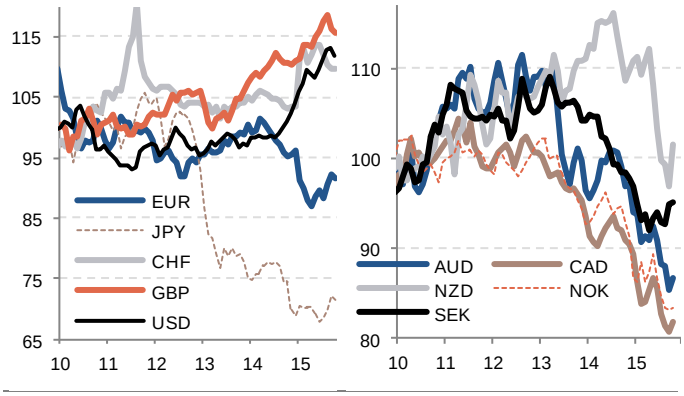
Our favourite one is long **CAD/CNH**. Contrast the REER of China (Graph 8) to that of the CAD (Graph 19). The CAD of course is exposed to lower oil prices, but they will not fall much more without worse news from China.

Other favourite long-term trades reiterate ideas advertised six months ago. We like to be long **JPY and CAD vs CHF and NZD** – a basket that is fairly balanced from a risk perspective. The trade made 5% in the 3 months following inception, and is now back to just +2%. It remains compelling from a long-term standpoint.

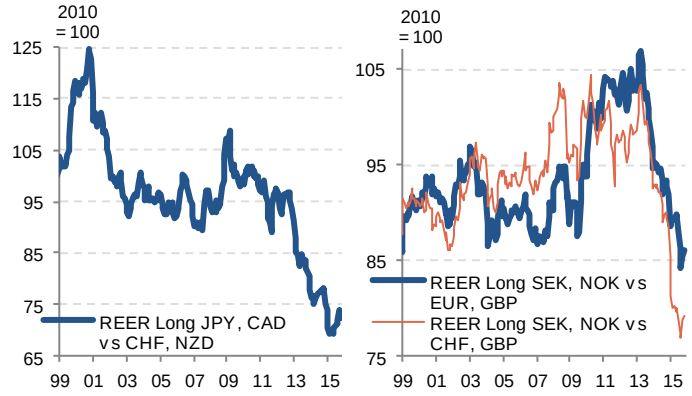
Within the European bloc, the **SEK and NOK offer good value vs the EUR (or CHF) and GBP**, both from a valuation and growth angle. That trade has lost some 2% over the past six months (flat when funding through CHF rather than EUR), mostly because the oil price

collapse has knocked the NOK down. This basket is likely to perform better when the USD stops rallying, which is not the central view for 2016 but enhances diversification in our trade portfolio.

Graph 19. Real Effective Exchange Rates (REER)



Graph 20. FX baskets through the REER angle



Source: BIS, SG Cross Asset Research

BLACK SWANS IN FX-LAND

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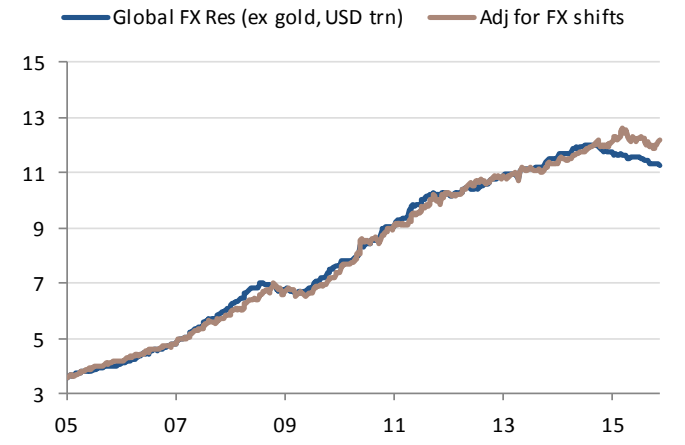
What isn't priced in but isn't that unlikely either? A disorderly currency adjustment in China, Brexit in the UK, another sharp spike lower in global commodity prices and a significant fall in global FX reserves all qualify.

Global FX reserves are no longer growing. A stronger US dollar, weaker capital inflows into countries with pegged FX rates and the fall in the oil price are all to blame. As the Fed finally starts to raise rates, it could drag reserves lower. A sharp fall, sending Treasury yields higher, credit spreads wider and emerging market currencies lower, might constitute a Black Swan for markets – it's not part of our central scenario, but it isn't unlikely enough to ignore.

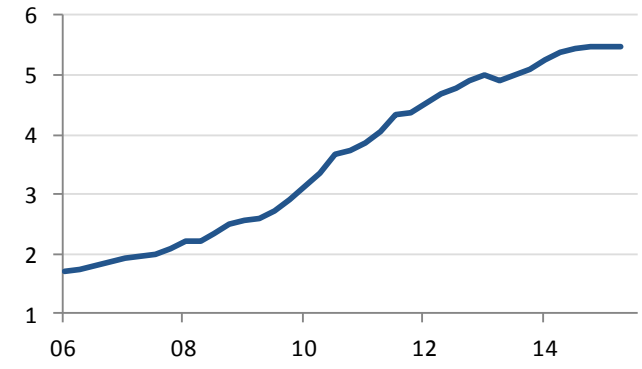
"By our estimates, if foreign official inflows into U.S. Treasuries were to decrease in a given month by $100 billion, 5-year Treasury rates would rise by about 40-60 basis points in the short run. But once we allow foreign private investors to react to the yield change induced by the shock to foreign official inflows, the long-run effect is about 20 basis points". This quote is from the summary of a paper written by Fed staffers in January 2012: Foreign Holdings of U.S. Treasuries and U.S. Treasury Yields, Beltran, Kretchmer, Marquez & Thomas. As of June 2015, that figure had increased to $5.47trn, but it was $9.7bn lower than at end-2014, the first six-month fall since the series starts in 2006. If $100bn in a month would drive yields up 40-50bp, $9.7bn in six months isn't going to make much difference, but FX reserves are rolling over and official holdings of Treasuries come in at around 50% of non-gold FX reserves. Official holdings aren't all counted in reserves, so that doesn't mean 50% of reserves are in Treasuries, but it could infer that a $200bn fall in reserves in a month would push Treasury yields up 40bp, at least temporarily. A 40bp rise in Treasury yields might be needed to lure other US investors from mortgages, agencies and corporates (or equities) into Treasuries, but what would that do to those markets? And what, crucially, would it do to the appetite of US investors to buy foreign (emerging market) assets. Low US yields drove US investors into higher-yielding currencies, and this trend is already being reversed. A central bank-inspired jump in Treasury yields would be very dollar-supportive and EMFX-negative.

Global FX reserves ($trn). They have peaked



Source: SG Cross Asset Research/Rates

Foreign official holdings of US Treasuries have also peaked



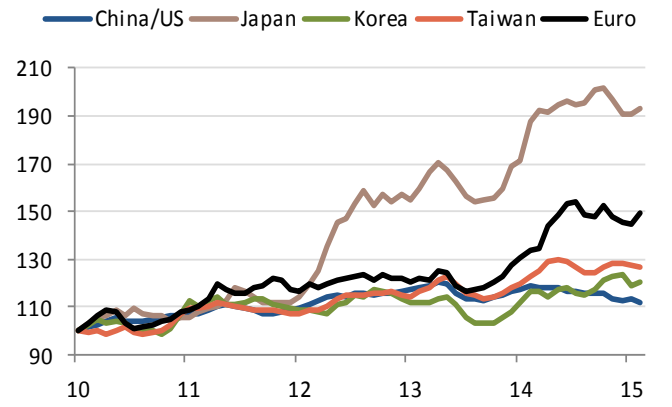
Source: SG Cross Asset Research/Rates

China – what if depreciation doesn't go smoothly?

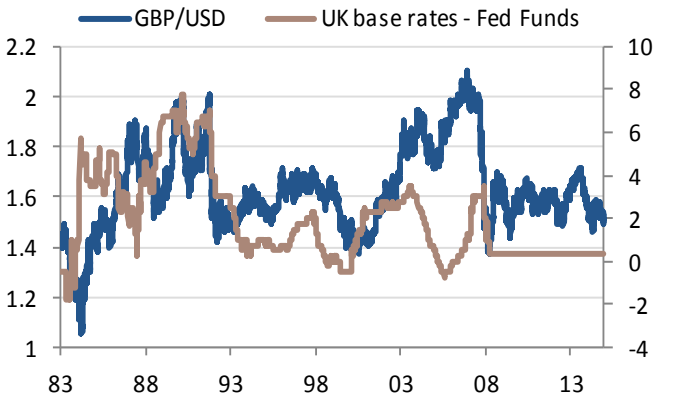
We expect gradual renminbi deprecation to take USD/CNY to 6.8 by end-2016, a move of just over 6%. But countries that go from a fixed or managed-peg currency regime to a more free-floating one are at risk of disorderly capital flows and overshoots. An overshoot in USD/CNY to 7.5 on its way to 6.8 isn't likely, but if it happened, would we really be all that surprised?

Modest USD/CNY appreciation is enough to encourage our Asian FX Strategist, Jason Daw, to recommend short CNH vs DXY, as well as USD/CNH call spreads on a six-month view, and longs in USD/KRW and USD/TWD. If those are attractive trades on a 6% CNY devaluation, they are worth having for the outside risk of a much bigger move.

How China's real FX rate has moved vs trading partners



'Brexit' could cause major MPC/Fed policy divergence

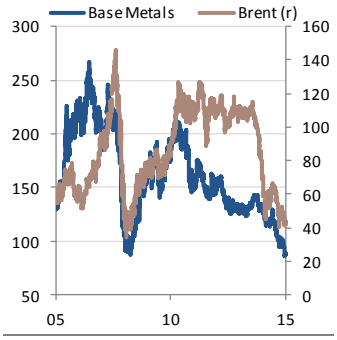


Source: SG Cross Asset Research

Brexit – a 45% chance of a big GBP negative

We reckon there may be as much as a 45% chance of the UK voting to leave the EU. This won't affect markets until we know the date of the referendum, but it would probably reduce growth by a cumulative 4% or more over the following five years. If the vote happened before the MPC raises rates (we look for that in Q4) it could prevent a move. If the UK economy grows at around 1% per annum and rates don't rise, where would the pound trade? The last time UK policy rates were more than 1% below US ones was in 1984, when GBP/USD was falling towards 1.05. This is not a central forecast, but a perfectly good reason to be short GBP.

Commodity prices could de-couple



Source: SG Cross Asset Research

Commodities – what if oil prices bounce but base metals don't?

Our commodity outlook looks for prices of both base metals and oil to recover through 2016 (see here) But the dynamics of the markets are – it seems to us – very different. The oil market needed and still needs a rebalancing to correct excess supply, but that is already happening. Crucially, demand is rising and will continue to do so. A final drop in prices in response to excess inventories isn't impossible (though our commodities team reckon storage is adequate), but thereafter, we look for a move back up towards $60/b for Brent. By contrast, base metal prices were hit by a sharp fall in demand from China, which we only expect to be reversed extremely slowly. Add to that the drop in production costs that comes about partly as a result of the fall in base metal exporters' currencies, and the risk of an overshoot to the downside in base metal prices is pretty clear.

OIL VS CHINA IN COMMODITY FX

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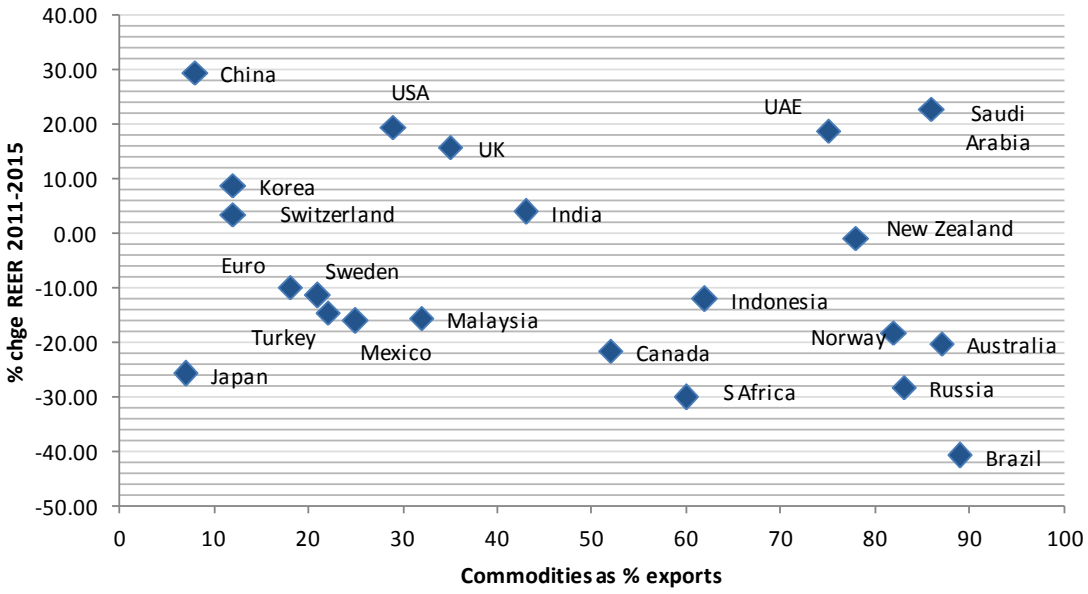
The biggest 'misses' in FX this year relative to the forecasts we published in our 2015 Outlook were in commodity-sensitive currencies. Notably, the Norwegian krone and Canadian dollar performed worse than expected. With commodities as a main driver of currency trends, our commodity research colleagues' views are crucial, and so is understanding the links between commodities and currencies, which clearly go both ways.

The chart below compares moves in real effective exchange rates since the peak of the commodity cycle in 2011 with the percentage share of commodities in the exports of the various countries. It's not worth putting a best-fit line through this chart, but it does show that a country like Brazil, with its really high reliance on commodity exports, has seen the biggest fall in its currency versus other major EM currencies, while the RMB has been the strongest. So far, so good. We have deliberately included some outliers in the form of the yen (big fall in the currency despite no reliance on exports) and the Saudi riyal and UAE dirham. Take those out and the chart looks more conventional: The more a country relies on commodities, the weaker its currency.

The riyal and the dirham are obviously outliers, and while they aren't currencies we focus on, you don't have to be a genius to figure out that the fall in oil prices causes a balance of payments deterioration, and in Saudi Arabia's case, a sharp deterioration in the fiscal position. Will either or both respond by adjusting FX pegs?

The period in which commodity prices have been falling includes the yen's fall from autumn 2012. That's mostly coincidental, though you could argue that a really sharp devaluation in Japan played a role in the slowdown in China. Still, even if it's just a coincidence, Japan is a beneficiary of a sharp fall in oil and other commodity prices, and this is just another chart that makes the yen look cheap – particularly against the Chinese RMB.

Comparing real FX adjustments to commodity-reliance – asking questions of the Saudi riyal

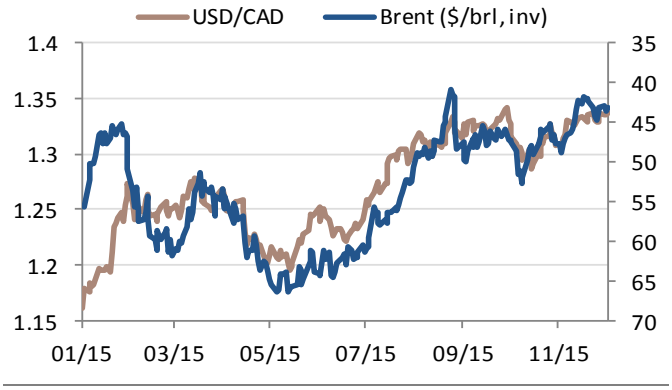


Source: SG Cross Asset Research/Forex

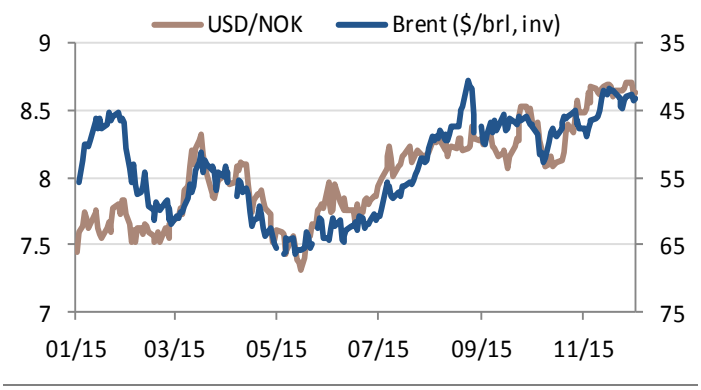
It looks, too, as though the New Zealand dollar has held up too well relative to the Australian and Canadian dollars (even if iron ore prices have fallen marginally more over the last year than oil prices, which in turn have fallen a bit more than dairy prices). It may also be worth pointing out that on this basis alone, the Mexican peso looks attractive relative to the other major EM currencies too.

Next year, we forecast a recovery in oil and base metal prices, with Brent crude up to USD 60/bbl, copper to USD 5400/t, and aluminium to USD 1550/t, though we look for a further fall in gold prices to USD 955/oz, while most agricultural commodity prices are expected to fall (except coffee, annoyingly). On that basis, commodities won't be a drag on major commodity-sensitive currencies (though you could go on worrying about the ZAR) and higher oil prices 'ought' to deliver gains to the CAD and NOK in G10 and to the RUB in EMFX. As for the AUD and NZD, it won't be the trend in commodity prices that matters as much as the trend in USD/CNY.

USD/CAD and crude – a bounce to $60/bbl helps CAD



Crude and USD/NOK



Source: SG Cross Asset Research

One theme that we do pick up from our colleagues, however, is the reaction to falling commodity prices. If South Africa allows the rand to fall as fast as the price of gold, exports in rand terms are supported and there is no pressure for a supply cut. Likewise for Brazilian sugar, Chilean copper and so on. But while Russia has devalued in the face of cheaper oil, most of the world's oil (OPEC plus the US) comes from dollar-based countries. That increases the pressure for supply to be cut back in the face of weaker demand, and this is what we are starting to see in the US. The downside risk to oil prices is a near-term one, tied to excess supply and fears of a shortage of storage. Michael Wittner estimates (here) that a stock-build of roughly 155Mb of combined crude and product in the OECD between now and mid-2016 comes well short of 264Mb available storage, after which supply/demand are expected to be in balance. **This mean that there is more danger of a sustained overshoot to the downside in base metals prices, than in oil prices.** Since Chinese growth and monetary/FX policy will play a bigger role in the outlook for currencies of exporters to China, **we are more comfortable looking for rallies in the oil-sensitive NOK, CAD and RUB than in hoping for a turnaround in China-sensitive ones (the AUD and NZD in G10 and much of Asia/Africa/Latam in EM).**

FEERS, REERS AND IPAD PRO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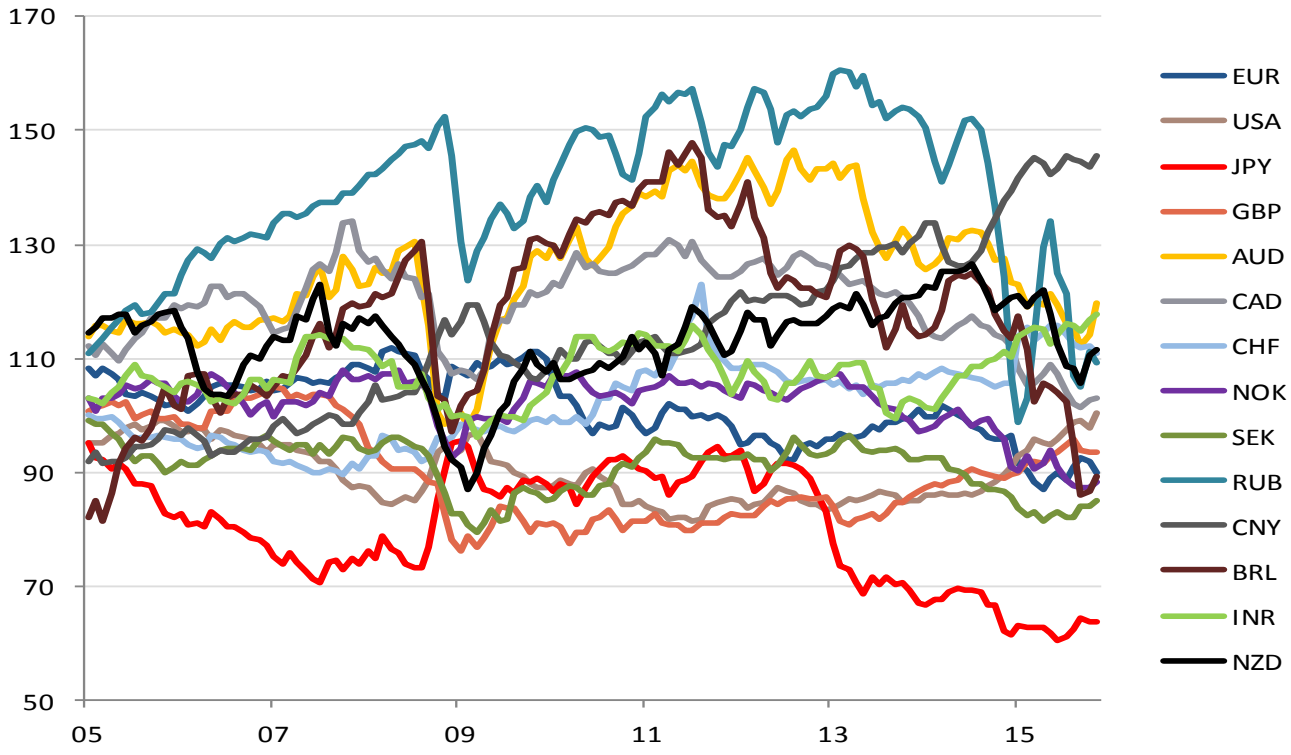
Some extreme FX valuation misalignments have been resolved in the last year as commodity and China-sensitive currencies were dragged down (e.g., AUD, NZD, NOK, CAD, BRL and RUB). Two anomalies remain – the Chinese renminbi has appreciated dramatically, too dramatically, in recent years, and the Japanese yen is very cheap by any measure. We look at real effective exchange rate shifts, FEER model values and purchasing power parity calculations, with which we like to have fun from time to time.

Real effective exchange rates – two main outliers

An 'Outlook' should have a few absurdly complicated charts. This one shows BIS-calculated real effective exchange rates, updated with the latest moves. REERs show how valuations change but tell us nothing about absolute value. Furthermore, a 'fair value' of a currency should rise as real GDP/capita increases. We haven't solved this problem, but have rebased the indices to 100 for the average of the 1995-2005 period, hoping to smooth out the effects of the EM crisis in the late 1990s and the start of China's commodity cycle. Even doing that, the main conclusions are pretty straightforward. 1) The biggest outliers are the RMB, which has gained hugely in value, surely more than is justified by the rise of GDP/capita, and the yen, which has fallen a long way, particularly in real terms. 2) The most extreme commodity-related overvaluations have largely been corrected (the RUB, BRL and AUD falling sharply) though the AUD still looks expensive rather than cheap. 3) The SEK is still the cheapest of the European currencies, largely thanks to Riksbank policies to keep it there. No wonder they have got a housing boom.

Real effective exchange rate indices, rebased to 100 = average of 1995-2005



Source: SG Cross Asset Research

Fundamental equilibrium exchange rates – weighing on the dollar, perhaps

The Peterson Institute of International Economics, which publishes widely used calculations of fundamental equilibrium exchange rates (FEER), sent out its latest semi-annual policy brief on the subject this month and concluded that the dollar was about 10% overvalued on this basis. It estimates that its rise over the past year will knock 0.5% off GDP growth annually for the next five years. FEERs are interesting rather than useful from a forecasting perspective, but the FOMC's view of the impact of dollar strength will inform Fed policy.

Interestingly, both the euro and yen were found to be at fair value on a real effective basis. The real mispricing occurred among those currencies with big current account surpluses – the Singapore dollar is 23.5% undervalued, the Swiss franc 10.4% undervalued, and the Swedish krona 7.1% undervalued.

Developed currency FEERs

	Spot Rate	FEER consistent	% change
EUR	1.06	1.24	17
JPY	122.72	108	12
CAD	1.33	1.26	5.3
NZD	0.66	0.71	7
SEK	8.72	7.13	18.2
GBP	1.51	1.68	10.1
NOK	8.64	7.49	13.3
AUD	0.73	0.81	9.9
CHF	1.02	0.81	20.6
SGD	1.4	1.03	26.5
KRW	1147	998	13

Source: SG Cross Asset Research/Forex, Peterson Institute

EM FEERs – Turkish valuation shows importance of BOP

MYR	4.22	3.72	11
CNY	6.39	5.74	10.2
ZAR	14.23	12.5	12.2
CZK	25.5	21.9	14.1
HUF	294	252	14.3
PLN	4.02	3.44	14.4
RUB	65.8	58.1	11.7
TRY	2.91	2.94	-1
BRL	3.76	3.54	5.9
CLP	712	628	11.8
COP	3086	2802	8.9
MXN	16.5	15.9	3.6

Source: SG Cross Asset Research/Forex, Peterson Institute

The trouble with using FEERs as a gauge of fair value for currencies is that you would have to define 'fair value' as being the currency levels that bring the world into medium-term (say five years) internal and external balance. The euro's valuation is a case in point. It's cheap because there is a chronic lack of domestic economic demand that generates a huge current account surplus. A reasonable policy response might be a completely different fiscal policy than is possible in the euro area. But the actual policy response is QE and rate cuts, which drive the currency down. The FEER-consistent EUR/USD level only comes about with a completely different euro area policy mix. That doesn't really tell us how far the euro can fall given the current (and ongoing) policy restraint. If it tells us anything at all, it is that monetary policy is likely to be increasingly useless when it comes to tackling domestic imbalances, and that Europe, like Japan, needs more structural reform rather than ever-easier monetary policy.

Even so, in order to bring all the countries in the Petersen model into internal and external balance, there are significant adjustments required in FX rates, including the euro and yen. The two tables above show the FEER-consistent rates versus the US dollar for developed and emerging economies. The only currency that 'should' fall against the dollar on this basis is the Turkish lira. This poses a broad question about how much further the dollar can/will rally, and while we wouldn't read too much into any of the individual results given the broad conclusion that the dollar is overvalued, we do think we can conclude from the Petersen estimates that the **highest-valued of the European currencies is sterling, while the 'cheapest' of the G10 is the Swedish krona.**

And in case you were thinking about buying the new iPad Pro...

Most people understand the principles of purchasing power parity, from the Economist's Big Mac index to the anecdotes we all pick up and carry. I update a Starbucks latte index as I travel (the cheapest coffee is in Toronto and the most expensive in Geneva), and time-permitting, I like to indulge in a Grand Hyatt Martini Index (Tokyo is cheapest, Paris the most expensive), but neither are complete enough. The table below shows the OECD's version, which is more rigorous than mine, and a quick wander through the Apple website tells me prices of the new over-sized iPad Pro, with no consideration of local taxes. I chose Paris for the euro area.

The only currencies that are cheaper than the dollar on both the iPad and OECD measures are the yen and the Canadian dollar. That tallies with my anecdotal observations. The euro is either very cheap on the OECD measure or hideously expensive for iPads, coffee or martinis. As for the Swiss franc, well that's the stuff of legend, but it isn't clear how long it will take to sort out.

Comparing PPP measures vs USD

	Spot	OECD PPP	% Over/Under val	Ipad pro PPP	% Over/under val
EUR	1.06	1.29	-21.83	0.87	21.8
JPY	123.3	105.27	-17.1	119	-3.5
CAD	1.34	1.26	-6	1.31	-2.2
NZD	0.66	0.68	-3	0.57	16
SEK	8.72	8.95	2.6	11.26	29
GBP	1.5	1.41	6.4	1.18	28
DKK	7.04	7.59	7.2	8.75	25
NOK	8.63	9.45	8.7	11.25	30
AUD	0.73	0.65	12.3	0.64	14
CHF	1.03	1.37	24.6	1.13	9.7

Source: SG Cross Asset Research

FX AND REAL INTEREST RATES

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Currencies at the lower bound in nominal interest rates have a bias to strengthen. At the lower bound, real interest rates are primed to rise from either deepening deflation expectations (as the demand shock worsens) or rising monetary tightening expectations (as growth revives), and higher real rates will buoy the currency. Both the BoJ and ECB are mired at the NLB, and the less activist BoJ is likely to find Japanese real rates moving more in support of the yen relative to the euro. The yen is also extremely cheap. These factors will drive EUR/JPY lower over 2016.

The nominal lower bound

The nominal interest rate lower bound (NLB) has important implications for currencies. It is real interest rates that ultimately affect economic activity because economic agents are interested in how much the return on their savings and investments will be worth in terms of actual goods and services. The real interest rate also influences currency trends, with those currencies enjoying higher real rates tending to outperform.

However, central banks can only control nominal short-term interest rates directly, and so they conventionally attempt to influence real rates indirectly through the manipulation of nominal short-term rates. The NLB acts as a barrier to the transmission of monetary policies on exchange rates because it prevents the downward adjustment of nominal rates by policymakers. More worrisome is that the NLB can exacerbate disinflationary pressures.

A temporary demand shock would cause relative inflation and output to fall in the afflicted country. A central bank with policy interest rates operating well above the NLB would be able to cut nominal policy rates (and indirectly lower real rates) to counter the shock. This would drive the currency lower in both nominal and real terms too. The subsequent drop in the terms of trade would help to support growth through higher net exports and limit disinflationary pressures.

However, if the demand shock occurred when the country is at or near the NLB, then the drop in relative inflation could transform into outright deflation. With the nominal policy rate constrained by the NLB, it would not be possible for the central bank to affect real interest rates via the nominal rates lever anymore. Relative deflation would then gradually drive real rates higher. This then leads to a nominal and real appreciation of the currency. The higher currency in turn exacerbates the relative deflation and relative output decline, and the real interest rate climbs even higher.

The implication is that a central bank at the NLB facing a deflationary threat needs to undertake forward guidance and/or unconventional policies that spur currency depreciation. Otherwise, its currency could undergo higher relative real appreciation that would exacerbate the deflationary impulses. In other words, central banks at the NLB need to lean against natural forces that could drive the currency higher and thereby worsen the demand shock.

A number of central banks have indeed lowered nominal interest rates (marginally) to below zero, with the Swiss National Bank's sight deposit interest rate sitting at -0.75% currently. Swiss 1Y bond yields have also fallen temporarily under -1% several times this year. While the hard limit of the bound may not apply, it nonetheless remains limiting.

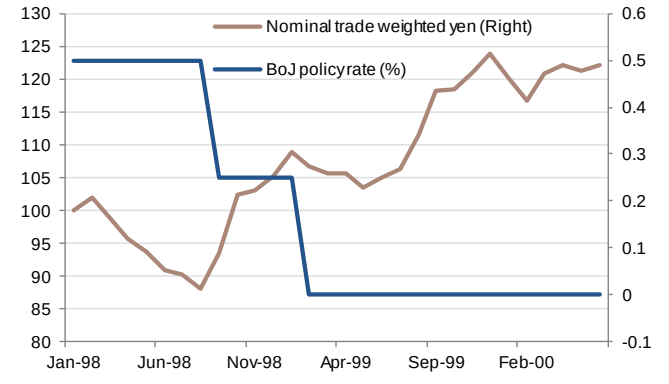
There is a clear asymmetry of policy options at the zero nominal level, so while it is easy to imagine a short-term interest rate of, say, +3%, it much more difficult to imagine a -3% rate, at least for an extended period. The problem is that cash is a zero-interest bearing instrument, so if nominal rates extend too deeply into negative territory, then the economy will become increasingly cash based. Moreover, negative rates are a tax on banks, and if the tax gets too onerous, banks might decide to pass some of the cost on to their depositors. A Swiss bank (*Alternative Bank Schweiz*) has announced that it will impose negative rates on new retail deposits from January 2016, in what is believed to be the first case of a bank applying negative deposit rates on retail depositors.

The imposition of taxes on banks and depositors would mean that monetary easing is being confounded by quasi-fiscal tightening. Banks that are nervous about the stability of their deposits would also be more careful about issuing credit. A more cash-based economy would make it difficult to affect monetary easing by the central bank. These developments would be counterproductive to policymakers looking to stimulate economic activity. So technically, the lower bound on nominal short-term rates is below zero, but it exists not far below it. Conventional policy becomes considerably more constrained at zero, with the costs rising the more nominal rates are driven deeper into negative territory.

Yen in 1998-2000

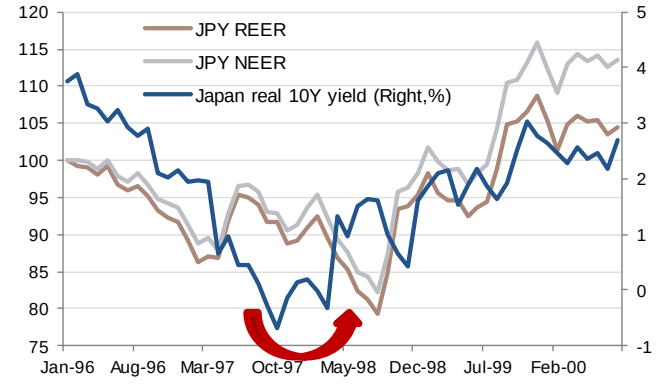
Real interest rates are properly obtained by subtracting nominal interest rates from the *anticipated* inflation rate. It is not easy to obtain accurate estimates of expected inflation, and a typical proxy for the historical real rate is to subtract nominal rates from actual inflation rate.

Graph 1. Yen rose as BoJ hit the zero level



Source: SG Cross Asset Research/Forex

Graph 2. Rising real rates buoyed yen



Source: SG Cross Asset Research/Forex

An example of the economic forces at work might be glimpsed from the yen's strength as the BoJ approached the zero nominal level in late 1998, before finally hitting it in February 1999. The nominal trade-weighted yen rose over 20% in the six months to zero rates being reached, and then rose another 10% over the next year (Chart 1). What is interesting is that the nominal Japanese 10Y yield was higher in February 1999 than in August 1998. To be specific, the Japanese 10Y yield averaged 1.05% in Q4 1998 but averaged 1.8% in 1999.

The clearly more important factor was that Japan started to tumble into persistent deflation in early 1999. August 1999 was the last month that Japanese CPI inflation was in positive yoy territory until late 2004. It was the slide into deflation and the corresponding climb in real yields that buoyed the yen from late 1998 through 2000 (Chart 2).

Euro in 2012-14

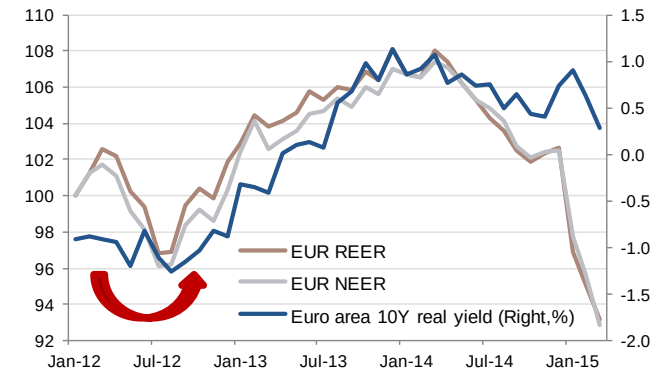
A nearer illustration of the relationship between the exchange rate and real interest rates is the experience of the euro in 2012-14, when the nominal trade-weighted euro appreciated 12%. The ECB cut its benchmark refinancing rate to under 1% for the first time ever in July 2012, and subsequently brought it down to 0.05% in August 2014. But the nominal eurozone 10Y yield fluctuated around 1.5% without a trend over the whole period, while the nominal trade-weighted euro climbed.

More important was the simultaneous drop in eurozone inflation from 2.7% in early 2012 to zero by November 2014. The drop in inflation lifted the real interest rate, and this drove the euro higher despite the ECB easing measures (Chart 3). The rate cuts so close to the zero bound were clearly not having a substantive impact on the exchange rate. The ECB did finally manage to drive the euro lower in H2 2014 after taking the deposit rate into negative territory and promising an expanded asset purchase programme, which was announced on January 2015.

Sterling post-2009

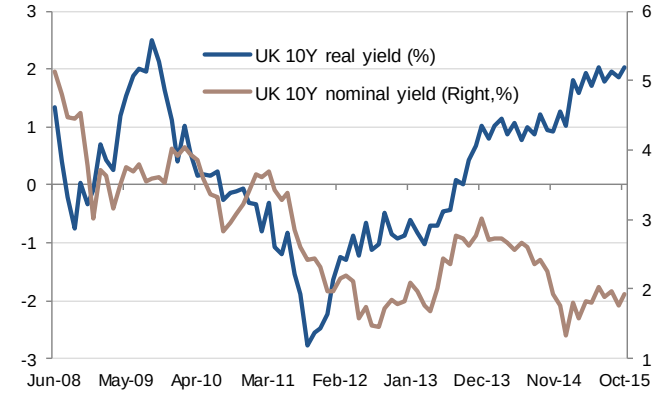
Another example of a strengthening currency once the zero bound was reached is sterling, which is the best performer among G10 after the US dollar since October 2011. October 2011 was the low in the UK 10Y real yield, though the low in the nominal yield was not reached until early 2015 (Chart 4). It was falling inflation that lifted UK real rates. Higher real rates coincided with the sterling real trade-weighted exchange rate rising 15% over the past four years, with a similar performance in the nominal exchange rate (Chart 5).

Graph 3. Euro got a lift from higher real rates from mid-2012



Source: SG Cross Asset Research/Forex

Graph 4. UK real yields turned higher in October 2011



Source: SG Cross Asset Research/Forex

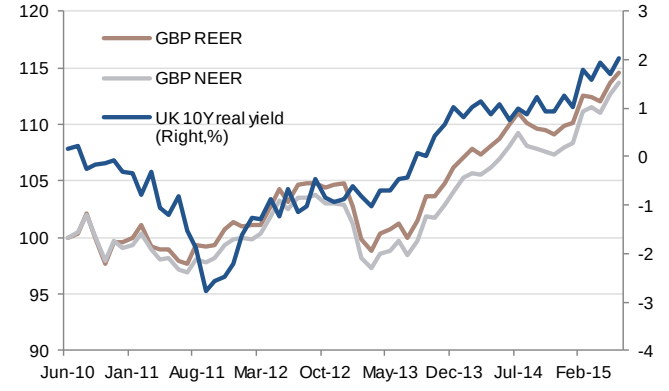
The currency had largely traded sideways for the previous three years to October 2011, despite the BoE's cutting its bank rate to 0.5% (where it has stayed) and embarking on quantitative easing on March 2009. By July 2012, the BoE had increased its QE programme to £375bn. None of these easing measures weakened the currency on a durable basis.

The sterling example is yet another showing a currency's upward bias at the NLB. A near-zero policy rate and escalating asset purchases were unable to force sterling on a downward trajectory, and it promptly rose when real interest rates turned higher. The extreme cheap levels to which sterling had been driven by early 2009 likely contributed to its resiliency in the face of the BoE's unconventional easing policies, in contrast to the euro in H2 2014 (Chart 6).

Perhaps if the BoE had pursued unconventional policies with as much vigour as the ECB, it might have managed to weaken sterling, but the growth upturn in the UK precluded that.

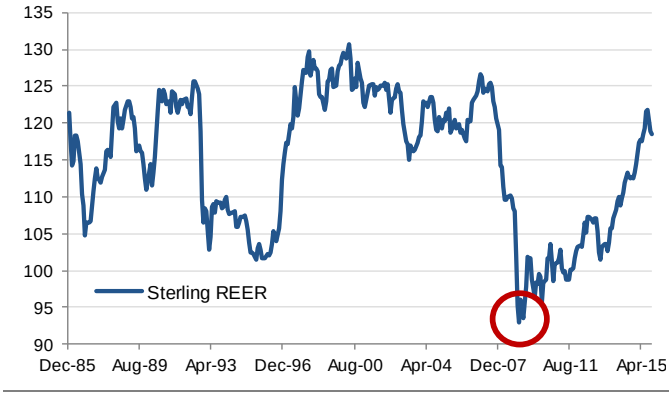
The UK example adds another reason why a currency has a bias to strengthen at the NLB. A growth recovery will put a floor on nominal interest rates, which facilitates real interest rates trending higher. Therefore at the NLB, real rates are primed to rise from either deepening deflation expectations (as the demand shock worsens) or rising monetary tightening expectations (as growth revives).

Graph 5. Sterling lifted higher by rising real rates



Source: SG Cross Asset Research/Forex

Graph 6. Extreme sterling valuation in late 2008



Source: SG Cross Asset Research/Forex, BIS

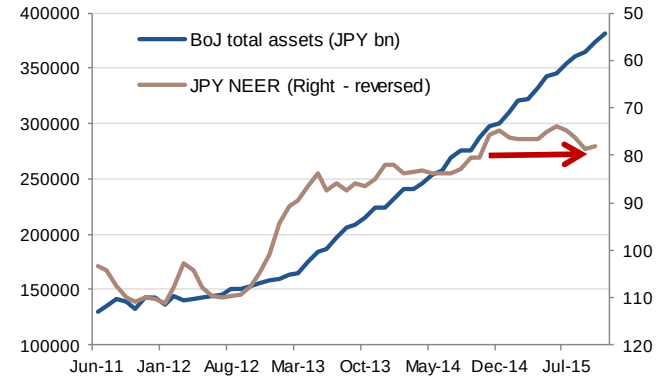
EUR/JPY prospects

Both the BoJ and ECB are mired at the NLB, with the BoJ still not experimenting with negative rates. While the BoJ is persisting with its asset purchase programme, it is not expected to enact additional stimulus in the coming months. It is even questionable if more asset purchases will weaken the yen significantly from here given that the currency has stopped depreciating on a trade-weighted basis for almost a year despite the BoJ's total assets approaching ¥400trn (Chart 7).

The BoJ's expected steady policy should be juxtaposed against a more activist ECB. The likely lack of additional measures by the BoJ suggests that Japanese real rates are likely to drift higher than those in the eurozone over the course of the coming year. At this stage, the Japanese 10Y real yield is at +0.19% versus the European one of +0.44% (using the average CPI inflation of the past three months). But our forecasts in the Global Economic Outlook are for the Japanese 10Y real yield to be -0.10% by end-2016, and the eurozone real yield to e -0.40%. We thus expect real yields to move against the euro relative to the yen.

Another factor analogous to the sterling example above is that the yen has cheapened to rather extreme levels. It is questionable how much further it can cheapen without additional easing measures by the BoJ (Chart 6). The combination of expected higher real rates and extreme valuations are favourable factors supporting the yen. Therefore, we expect the yen to outperform the euro over the medium term, with the EUR/JPY 120 level likely to be tested over the course of 2016.

Graph 7. BoJ asset purchases have stopped affecting yen



Source: SG Cross Asset Research/Forex, BIS

Graph 8. The yen's valuation is at extreme levels

Source: SG Cross Asset Research/Forex

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TIMELY HEDGING OF BREXIT RISK

GBP/USD would fall more than EUR/GBP would rise in a Brexit scenario. However, this does not imply that the optimal hedging solution is expressed in cable. We have devised a directional forward hedge that takes advantage of the complacency in EUR/GBP forward volatility and skew. The area of profitability in seven months is between 0.75 and 0.87, and if EUR/GBP is below 0.80 at end-June, investors would be left long a 5M call paid at a lower premium ahead of the referendum, with full topside and vega exposure.

Buy EUR/GBP 1Y call strike at 0.80, Sell 7M call strike at 0.80

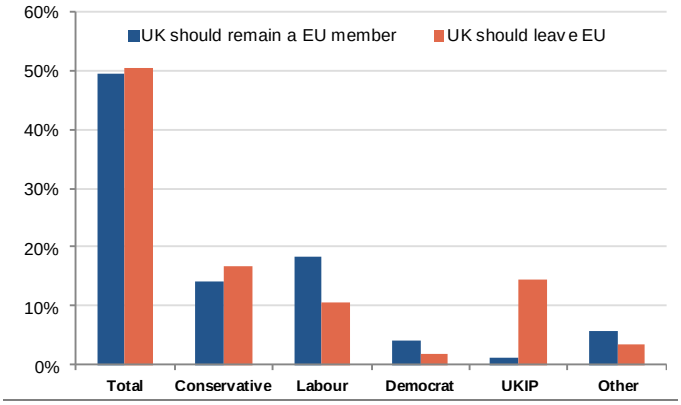
Indicative offer: 0.65% *(spot ref: 0.7070)*

Risks: Early EUR/GBP appreciation. *The risk of the calendar call structure is limited to the premium paid up to seven months (expiry of the short option). Beyond this date, investors could face unlimited topside risk if EUR/GBP trades above the 0.80 strike at the 7M intermediate expiry but below it at the 1Y final expiry. In that event, the long option would be out of the money, realising the loss supported five months earlier on the short option.*

Brexit – A key risk for 2016 and beyond

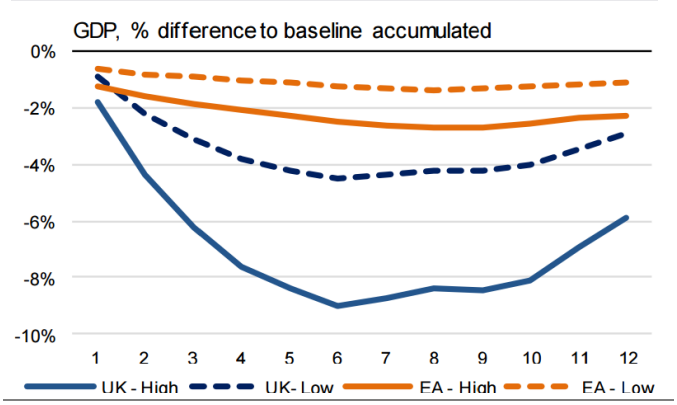
The possibility that the UK leaves the EU is a concrete risk that will increasingly capture market attention in 2016. Uncertainty should stay high until the referendum, and the outcome is too close to call. A recent poll shows that the "out" camp is still making all the running (Graph 1). The stakes are substantial because Brexit would have damaging consequences for UK growth and would also durably hurt the European economy via the trade and financial transmission channels (Graph 2). Our economists still see a **45% probability of Brexit.**

Graph 1. Too close to call (18-19 November poll)



Source: ORB International, SG Cross Asset Research/Forex

Graph 2. Brexit would be very bad news for the economy



Source: SG Cross Asset Research/Economics/NiGEM

EUR/GBP or GBP/USD?

A severe downgrade to UK growth prospects would severely hurt sterling. Capital outflows accelerated by a dismal investment outlook would worsen the UK's external position (the current account deficit has reached a record high of 5.1% of GDP) and fuel a negative GBP spiral, as the economy relies on capital inflows. The BoE would respond by staying accommodative for a longer time, which would weigh more on the currency.

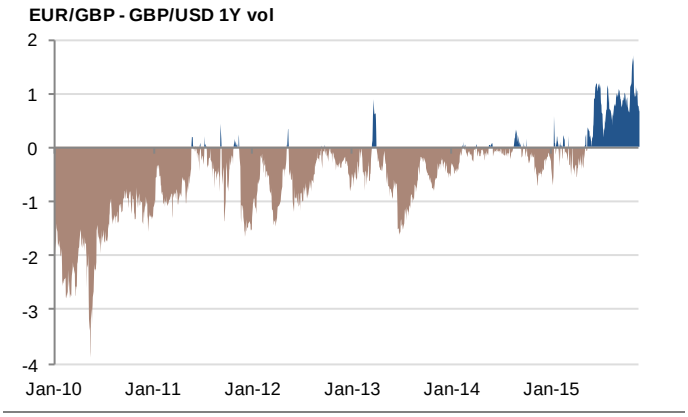
Although the domestic impact would be the greatest, the openness of the UK economy would also result in a significant international fallout. In terms of the external shock, Brexit would damage the UK's European neighbours much more than the US, which would be only marginally hit. All things being equal, the dollar would outperform both the euro and sterling.

➔GBP/USD would fall more than the EUR/GBP would rise in a Brexit scenario. However, this does not imply that the optimal hedging solution is expressed in cable.

What is priced by FX options?

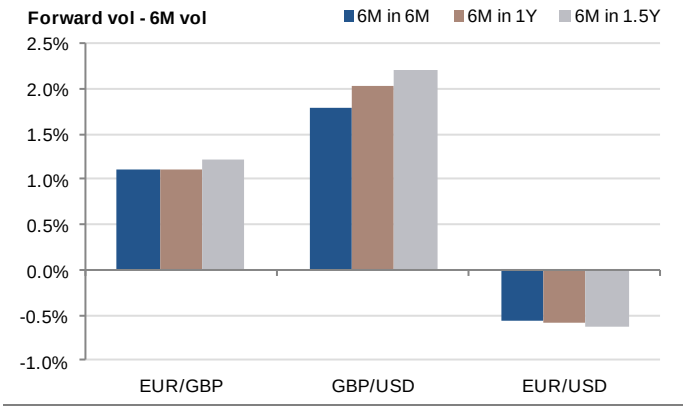
Although GBP volatilities are not trading at historical highs, **the FX options market is already heavily positioned on the Brexit risk.** EUR/GBP volatility has been discounting a fair amount of euro risk since June, as it has been trading over cable since then (Graph 3). This is a significant and seemingly lasting regime change, as cable volatility had been more expensive most of the time previously. But counter-intuitively, the fact that EUR/GBP options currently integrate both European and UK risks makes them a more attractive hedge than cable options. This is because **the real cost of the hedge is reflected in the forward volatility**, since the referendum won't be held before autumn 2016.

Graph 3. EUR/GBP volatility has discounted much more euro risk since June such that...



Source: SG Cross Asset Research/Forex

Graph 4. ...the forward premium in cable volatility is twice as large



Source: SG Cross Asset Research/Forex

Complacency in EUR/GBP forward volatility

We define the 6M forward premium as the difference between the 6M forward volatility at a given forward date and the current 6M volatility. Forward volatilities in EUR/GBP and GBP/USD are extremely close, but the current 6M volatilities differ significantly. So, similar levels of forward volatility do not reflect the same future risk priced by the option market. It turns out that the **6M forward premium is twice as large in GBP/USD than in EUR/GBP** (Graph 4). **The market (like us) expects the largest disruptions in cable in the event of Brexit.**

EUR/GBP forward volatility is cheaper because EUR risk (shifting the entire curve higher) somewhat offsets future GBP risk (causing the steepness of both GBP curves). But EUR risk is more imminent than GBP risk and should be concentrated in the front end, consistent with the inverted EUR/USD curve (the EUR/USD 6M forward premium is negative). Options are also discounting a large EUR risk on a forward basis (European fallout of a Brexit), reducing the EUR/GBP forward premium.

If Brexit risk becomes a reality, EUR/GBP will become almost idiosyncratically GBP driven, and EUR risk will appear secondary to markets. In this context, the much lower EUR/GBP forward premium compared to cable is probably complacent.

EUR/GBP risk reversals set to turn positive

The negative EUR/GBP risk reversal (RR) shows that EUR downside volatility is expected to exceed GBP downside volatility, consistent with the spread of ATM volatilities (Graph 3). But the difference between EUR/GBP and GBP/USD RR is plainly due to the EUR/USD RR. The GBP/USD RR discounts a purer GBP risk and as an approximation, the EUR/GBP RR should trade close to the spread between EUR/GBP and GBP/USD RR (Graph 5). However, **the EUR/GBP 1Y RR is currently too negative and should be already flat.**

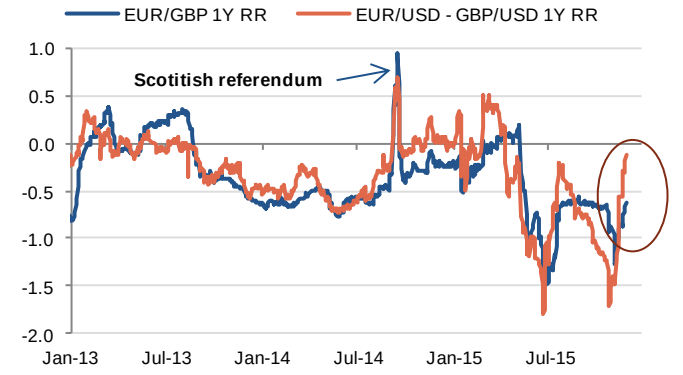
The EUR/GBP skew switched to positive territory ahead of the Scottish referendum, and we expect a similar or greater reaction in H2 16. Its repricing should induce larger dislocations than in GBP/USD, as it is lagging at excessively negative levels.

Buy EUR/GBP topside calendar call

Go for a directional hedge instead of a volatility hedge

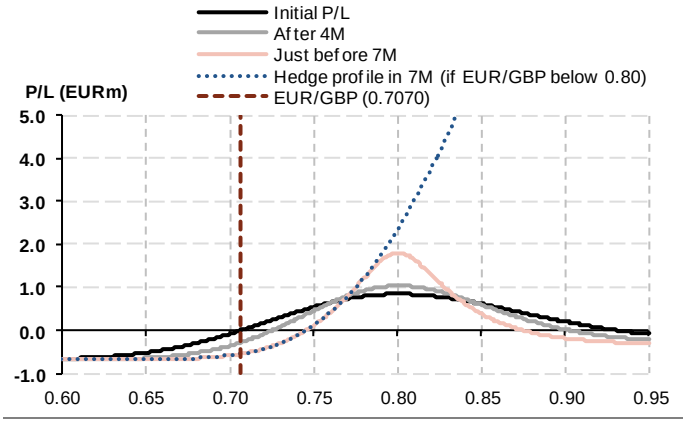
The 6M forward volatility in 6M, 1Y and 1.5Y is about 10.5 in EUR/GBP, GBP/USD and EUR/USD. That would be the approximate level at which a Forward Volatility Agreement would be traded to obtain future volatility exposure. That would be the purest hedge, but this entry level is already very expensive: GBP 3M volatilities peaked below 10 in last September 2014 (Scottish referendum) and traded above 10 only briefly this year for the first time since 2012. So, a pure volatility hedge is not attractive. **We prefer to take advantage of complacent EUR/GBP forward volatility and skew to set up a directional sterling hedge.**

Graph 5. Negative EUR/GBP skew should be already flat and is likely to turn positive in 2016



Source: SG Cross Asset Research/Forex

Graph 6. Area of profitability in seven months between 0.75 and 0.87, and then full upside and vega if the spot is below 0.80



Notional: EUR100x100m. Source: SG Cross Asset Research/Forex

A forward directional hedge

We recommend Buying a calendar call with a strike at 0.80, long on the 1Y expiry and short on the 7M (Graph 6). In current market conditions, the package costs 0.65%. We set the forward date in seven months, making the hedge fully effective from the start of summer 2016, as we highly suspect that any GBP dislocation will happen a few months or weeks before the referendum date, expected in October 2016 at the earliest. In the meantime, the structure **generates time value around 0.80**. The 0.80 strike defines **the area of profitability**

in seven months between 0.75 and 0.87, which is a relatively wide zone for this kind of calendar structure.

The best scenario at the forward date would see EUR/GBP trading at 0.80 or below. The ideal scenario would be exactly 0.80, as it offers the possibility to either unwind the package at maximum profit or keep the long call during its residual expiry. More generally, EUR/GBP trading below 0.80 at this time would be a nice development as it would leave the short option unexercised. **Investors would be long a 5M EUR/GBP call paid at a smaller premium and would enjoy full topside and vega exposure.**

MONETIZING ODDS AT ZERO COST

Revisiting pair trading via FX options

We present a pair trading concept designed to build very high risk-reward options strategies. It takes advantage of the relative moves of two currency pairs with different volatilities, although they are strongly correlated.
This framework can be extended to virtually all asset classes, including cross asset opportunities. In the FX space, we identify AUD vs CAD as a lasting attractive opportunity:

Buy AUD/USD 3M ATMS put with RKO 12% lower
Sell USD/CAD 3M ATMS call

Zero cost *(Indicative. Strikes at 0.7320 and 1.3315, RKO at 0.6450)*

Towards a statistical arbitrage

We assume **two currency pairs, A and B, as strongly correlated** and sharing a pivot currency. Ideally, this relationship is robust in the sense that A and B are cointegrated over a long period through different market regimes.

We then assume that **A is more volatile than B** over the long run. If we go short on both currency pairs via spot positions with equal sizes in terms of the pivot currency, and both subsequently fall (they are strongly correlated), the trade is very likely to be profitable. This is because A should depreciate more than B, as it is the most volatile. But in the opposite scenario where both A and B appreciate, the loss on A is likely to exceed the loss on B, prompting a net loss. Now we look at how we can overcome this asymmetry by **using options**.

We buy an ATMS put option on pair A and sell a similar put on B. In the bearish scenario, the positive payoff on A should exceed the negative payoff on B (as A should still fall more). This time, the bullish scenario is neutral with both options expiring out of the money. But, unlike a spot trade, the option variant involves the payment of a premium since the long option is more expensive than the short option (the implied volatility of A should be higher than B). If market pricing is fair, repeating such a trade over the long run should not be profitable on average, because the premium paid to avoid the painful bullish scenario should cancel out the average extra gain on pair A.

What if this option trade becomes zero cost? That would be a quasi arbitrage (actually a statistical arbitrage) because the average payoff would be positive. In the bearish scenario a net profit would be very likely, while the bullish scenario would be neutral.

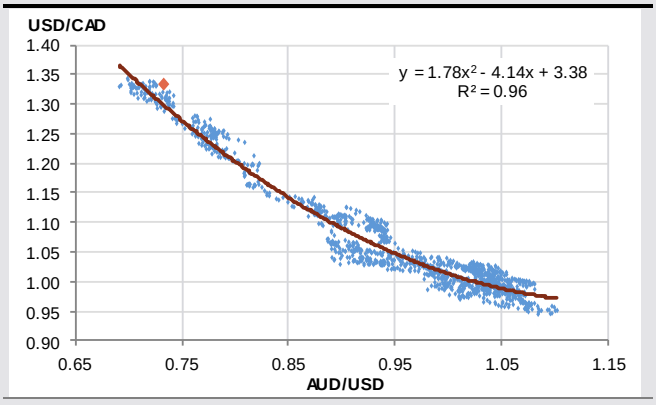
If we want to modify the payoff of the long/short puts in order to lower its cost (or make it costless) while keeping ATMS strikes, this requires **taking additional risk.** That would also cancel out the arbitrage situation.

➔While the risk sold is unlikely to materialize, the option short trade would be an appealing statistical arbitrage.

A real world trade: AUD vs CAD

We propose a real world and zero cost implementation of the abstract trade presented above, obtained by selling a tail risk with an extremely low probability.

Graph 1. Very strong relationship between the AUD/USD and USD/CAD since September 2010 (daily data)



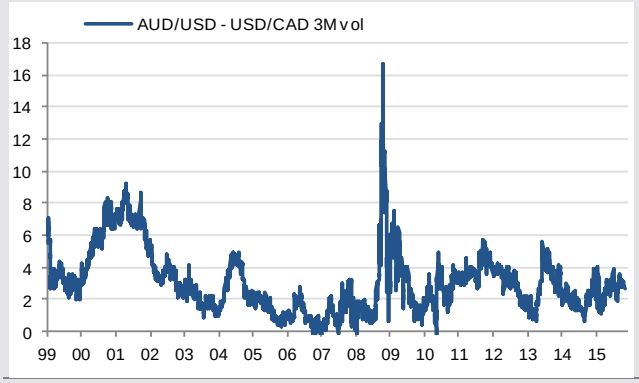
As of 3 December 2015. Source: SG Cross Asset Research/Forex

The Australian and Canadian dollars have been very **strongly correlated** for some time. A polynomial fit between them since September 2010 produces an R^2 of 96% (Graph 1). The AUD/USD and USD/CAD belong to the commodity block and are sensitive to common factors like Fed policy, commodity prices and China growth. The relationship is currently not linear, meaning that one pair reacts more than the other to their common drivers. **The AUD/USD has been**

more volatile than the USD/CAD since 1999 (Graph 2), partly because of its larger carry which justifies a higher level of risk. Therefore, **a fall in the AUD is very likely to exceed a fall in the CAD**, provided that their positive correlation holds.

Buying an AUD/USD ATMS put financed by a USD/CAD ATMS call has always been a costly strategy given the positive volatility differential (Graph 2). This net cost is justified by the higher expected gain on the AUD leg, so fair market pricing is supposed to offset extra gains.

Graph 2. AUD/USD volatility has exceeded USD/CAD volatility since 1999

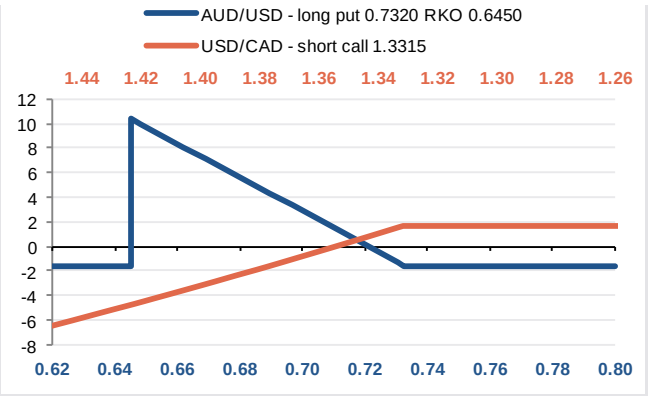


Source: SG Cross Asset Research/Forex

In current market conditions, investors selling a 3M USD/CAD ATMS call (strike 1.3315) would receive a premium of 1.7%. However, buying a 3M AUD/USD ATMS put (strike 0.7320) would cost 2.5% (both premiums in USD), so that the net cost of the package would be 0.8%.

Reducing the cost by lowering the AUD/USD strike would alter the directional profile of the trade. If we make it zero cost that way, the difference between the strikes of the two options would directly offset the potential extra AUD gains since the AUD put would require a larger currency depreciation to be in the money. Instead, we **keep ATMS strikes and cheapen the long put via a distant downside knock-out** (Graph 3). Thanks to the negative skew, the market value of this barrier option is significantly discounted compared to its Black-Scholes value. Setting the barrier at 0.6450 lowers its cost to 1.7%, which is the amount of the premium received in selling the USD/CAD option, making the structure **zero cost.**

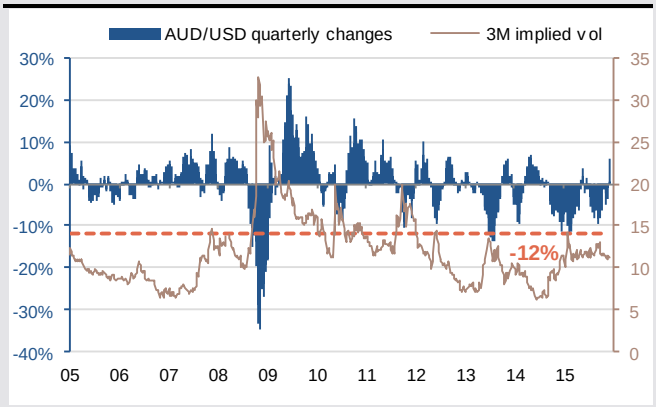
Graph 3. Zero cost conditional trade – profitable as long as the AUD falls more than the CAD (and does not hit 0.6450)



Notional: $100/leg, P/L denominated in USD. Spot ref: 0.7320 and 1.3315 (as of 3 December 2015). Source: SG Cross Asset Research/Forex

A 12% fall in the AUD/USD over a quarter is the tail risk that we sell (the 0.6450 barrier level is 12% below the current spot level). Such an event would be painful for our trade as the CAD would very likely depreciate too, and investors would be left short of a USD/CAD naked call, while the AUD/USD put would be cancelled. However, over the past decade, the AUD/USD has not lost more than 12% over a quarter, except during the exceptional environment of the 2008-2009 financial crisis (Graph 4).

Graph 4. The AUD/USD has not lost more than 12% except during the 2008-2009 financial crisis



Source: SG Cross Asset Research/Forex

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G10 FX FUNDAMENTAL VIEWS

Dollar – Fed vs ECB, Fed vs PBoC

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Forecasts	Mar-16	Jun-16	Sep -16	Dec-16
DXY Index	**100.86**	**103.50**	**105.51**	**104.25**
US GDP (% q/q annualised)	2.9	2.8	2.6	2.7
Fed Funds (%)	0.63	0.88	0.88	1.13
10Y Treasury yield (%)	2.45	2.55	2.65	2.75

Source: SG Cross Asset Research

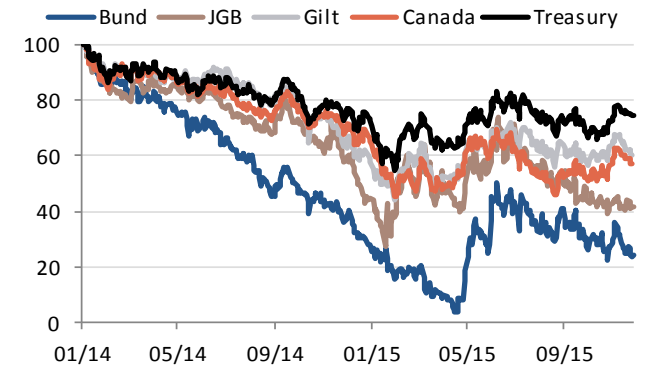
■ **Fed vs ECB, Fed vs PBoC.** The drivers of dollar strength in 2014/2015 have been slow growth and easy monetary policy elsewhere more than expectations of tighter Fed policy. That increases the risk of a temporary correction (weaker dollar) once the Fed finally pulls the trigger and hikes rates for the first time. Thereafter, **an extension of the dollar rally will rely on US/European economic divergence driving Treasury/Bund yield differentials wider while easier monetary policy and a weaker RMB extend the sell-off in Asian currencies.**

■ **EUR/USD** should, despite a possible Q1 correction, break below parity at some point in H2 16. Even so, a significant break below parity will only be seen if the spread between 10-year Treasuries and Bunds widens significantly more, something our yield forecasts (180bp differential at end-2016 with 10-year Treasuries at 2.75%) do not point to.

■ **DXY vs TWI.** While euro weakness remains the main counter-weight to dollar strength, the Dollar Index (DXY) has been rising faster than the broad trade-weighted index (TWI). This year, the DXY surged as the euro slipped in Q1 before the broader TWI caught up on the back of EM FX weakness. Both have further to go, but the DXY will continue to outperform.

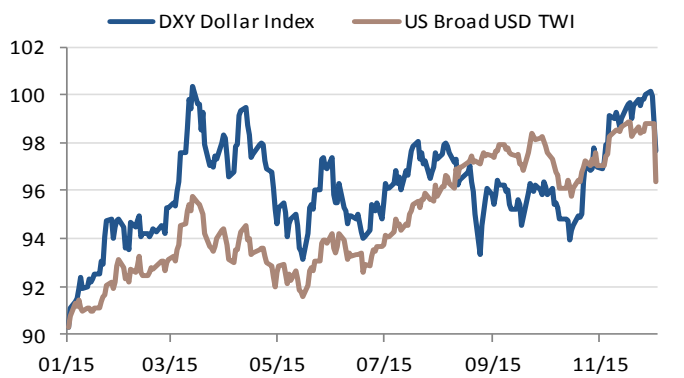
■ **Further CNY weakness, feeding through to the Asian currency bloc, is a feature of the EM FX outlook and an additional driver of dollar strength**. By contrast, we look for a bounce in oil prices through 2016 to support the RUB (the best of the EM currencies) and the CAD (the pick in non-USD G10 FX) as well as the NOK (the pick in European G10 FX).

Graph 1. 10-year Bond yields, re-based: sll down, US down least



Source: Bloomberg, SG Cross Asset Research/Forex

Graph 2. DXY led the way for the dollar in Q1 and is taking over again



Source: BoE, SG Cross Asset Research/Forex

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Euro – Beyond zero: ECB scares capital away

Forecasts	Mar-16	Jun-16	Sep -16	Dec-16
EUR/USD	**1.05**	**1.01**	**0.99**	**1.00**
Eurozone GDP (% q/q ann)	1.6	1.7	1.7	1.7
ECB depo rate (bps)	-40*	-40	-40	-40
10Y Bund yield (%)	0.50	0.65	0.80	0.95

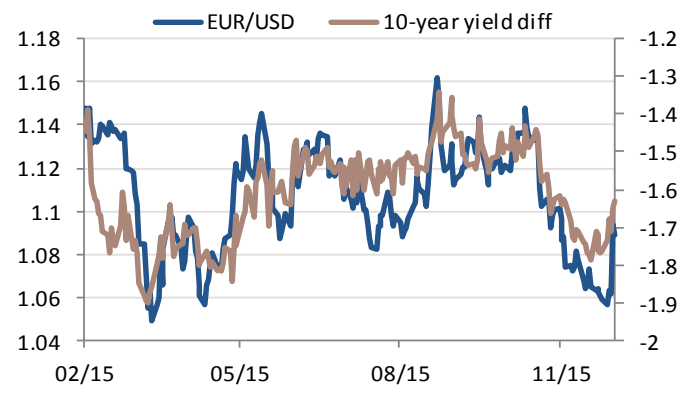
Source: SG Cross Asset Research *Our economists forecast a depo cut from -30bp to -40bp in March-2016

■ **The correlation between EUR/USD and short-term rate differentials, peripheral yield spreads and volatility broke down at the end of 2014** as the market started to price in further unconventional ECB easing. The shift to negative interest rates has triggered a regime shift in the way the euro trades, and the upshot is that this year, it tracks longer-dated yield differentials much more closely than short-term rates. Bund yields troughed below 10bp in April before bouncing to almost 1% and are now trending lower again. From 0.6%, there is some downside, but the Bund/Treasury spread will only widen significantly on the back of higher US yields – reflecting expectations of continued US recovery and a more protracted cycle of rate hikes than some expect.

■ **Negative rates, capital outflows. The cocktail of QE and negative rates were the drivers of the euro's fall, the main symptom of which has been a sharp increase in long-term capital outflows** as investors went in search of less unattractive yields. The second chart below shows that the euro area current account balance (EUR300bn in the last year) is almost entirely offset by portfolio outflows (mostly bonds). The 'basic balance' is the sum of current account, direct and portfolio flows, and it has improved dramatically since the end of 2014. This makes the euro much more of a funding currency than it was, benefitting from periods of risk aversion as investors forego additional yield abroad for the safety of home but falling whenever risk appetite is strong. In that sense, the euro has been 'Japanified'. Will even more negative yields exacerbate this trend and send the euro even lower than we expect or has the big step change now taken place, with a more modest reaction likely to further policy changes?

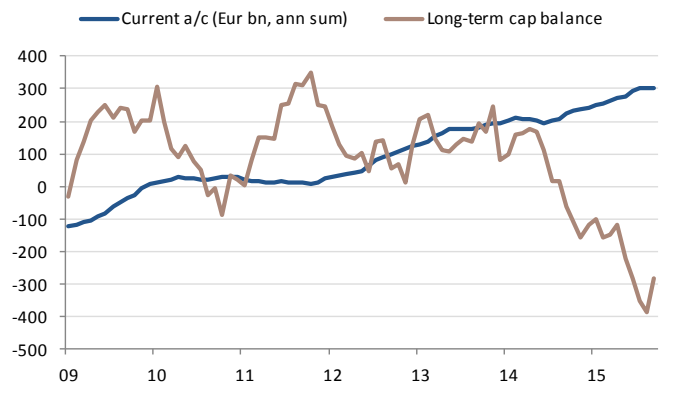
■ For those who are nervous about having too many eggs in the 'strong dollar' basket, the euro remains a Sell against other European currencies. We like Selling EUR/RUB (not for the faint-hearted), EUR/CZK, EUR/PLN, EUR/SEK and EUR/NOK. EUR/GBP valuations are stretched, and EUR/CHF will probably go on edging ever-so-slowly higher.

Graph 1. EUR/USD is tracking yield differentials now



Source: Bloomberg, SG Cross Asset Research/Forex

Graph 2. European current account finally recycled



Source: BoE, SG Cross Asset Research/Forex

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Yen – Almost too cheap to sell

Forecasts	Mar-16	Jun-16	Sep -16	Dec-16
USD/JPY	**123.00**	**124.00**	**124.00**	**125.00**
EUR/JPY	**129.15**	**125.24**	**122.76**	**125.00**
Japan GDP (% q/q/ ann)	2.1	2.6	2.7	2.1
Key rate (%)	0.07	0.07	0.07	0.07
10Y JGB yield (%)	0.35	0.40	0.45	0.50

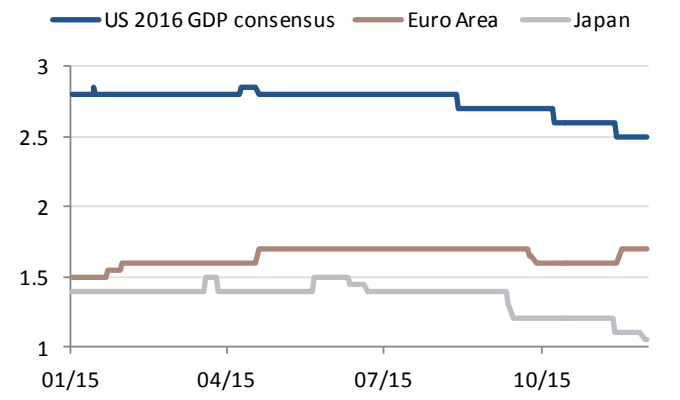
Source: SG Cross Asset Research

■ **EUR/JPY down.** There's a lot of talk of economic and policy divergence, most of it centred around the prospect of the FOMC finally raising rates at the same time as the BOJ continues its bond-buying programme and the ECB announces further easing measures. But **the biggest divergence in growth expectations in the major economies is between the euro area, where 2016 growth forecasts have been edging higher, and Japan, where they've been falling even lower.** This shift in forecasts may prove to be right, but only at the expense of the SG forecast for euro area GDP growth of 1.6% being too pessimistic and the Japanese forecast of 1.7% being too optimistic). As the ECB presses on with easing and the BOJ stays put, we expect to see a significant fall in the coming months in EUR/JPY.

■ **BoP and valuation are supportive.** Apart from the fact that growth may not underwhelm gloomy expectations next year, **the yen has two other potential sources of support in 2015.** The first is the balance of payments, which is improving very quickly with the help of a very sharp drop in import prices, fuelled by cheaper oil. The improvement in the balance of trade may be overstated by the price effect, but even so, the current account surplus is back to 3% of GDP. The second source of support is valuations, which have seen the real effective exchange rate fall by 40% vs the USD and 24% against the euro over the last five years.

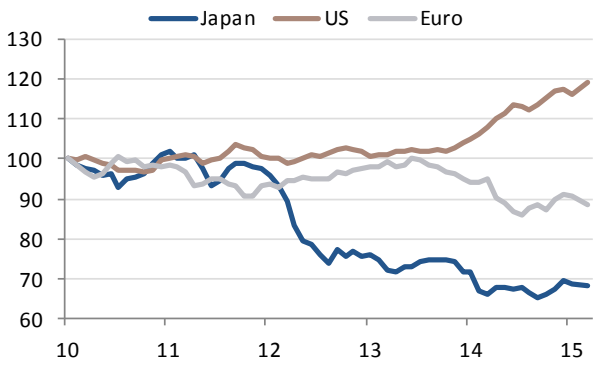
■ **USD/JPY.** As long as the BOJ maintains super-easy policy and the Fed is in tightening mode, the 'cheapness' of the yen won't help it much. But valuations, and the prospect of fiscal policy and structural reform doing more of the work for Abenomics in the months ahead, **suggest the peak in USD/JPY is not that far away.** The yen, too, is likely to maintain its status as a funding currency that strengthens in times of financial market volatility. We may end up with USD/JPY rising modestly this year, but with a few brief periods when it trades significantly lower.

Graph 1. 2016 real GDP consensus forecasts: Japanese gloom



Source: Bloomberg, SG Cross Asset Research/Forex

Graph 2. G3 real effective exchange rates: the yen is cheaper



Source: BoE, SG Cross Asset Research/Forex

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Sterling – Procrastinating MPC and Sword of Brexit

Forecasts	Mar-16	Jun-16	Sep -16	Dec-16
GBP/USD	**1.48**	**1.49**	**1.41**	**1.45**
EUR/GBP	**0.71**	**0.68**	**0.70**	**0.69**
GDP (% q/q/ annualised)	1.9	1.9	1.7	1.7
BoE key rates (%)	0.50	0.50	0.50	0.75
10Y Gilt yield (%)	2.00	2.20	2.40	2.50

Source: SG Cross Asset Research

- **We remain bears of GBP/USD**, as the MPC is procrastinating, the 'Sword of Brexit' is hanging over confidence, and EUR/GBP valuations look stretched. We expect to see GBP/USD fall below 1.40 by Q3 2016 and EUR/GBP struggling to break below 0.70, even as EUR/USD falls.

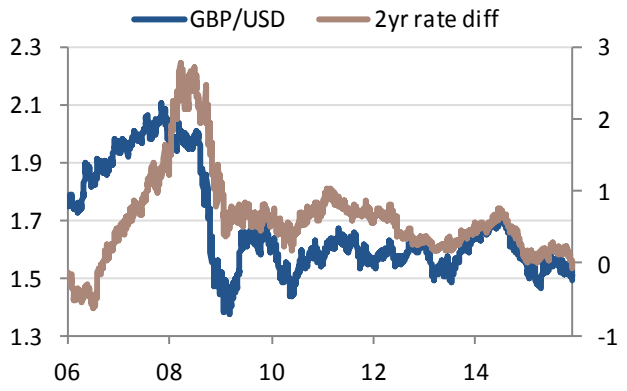
- **BoE slower than Fed**. By end-2016, we expect policy rates to be 1pp higher than they are today in the US, but only 25bp higher in the UK. With GBP/USD tracking short-term (2Y) rate differentials, we see no support for the pound against the dollar unless the US Fed is more dovish than markets expect, or the chances of an MPC hike increase dramatically.

- **The challenge for EUR/GBP is more one of valuation**, which is tricky to judge, though most estimates of PPP suggest significant sterling overvaluation, while the UK's real effective exchange rate has risen by more than a third since end-2008, to its highest level since 2003 (though FEER estimates are higher, at 0.74).

- **Brexit remains a big tail risk**, even if it won't be a factor until the date of the referendum is known. We estimate the risk of Brexit at 45% and the accumulated negative shock to the economy at 4-8% over five years. This would take eurozone GDP down 1-2% over the same period, but that still implies UK real GDP growth averaging around 1% per annum for the five years after the decision to leave the EU.

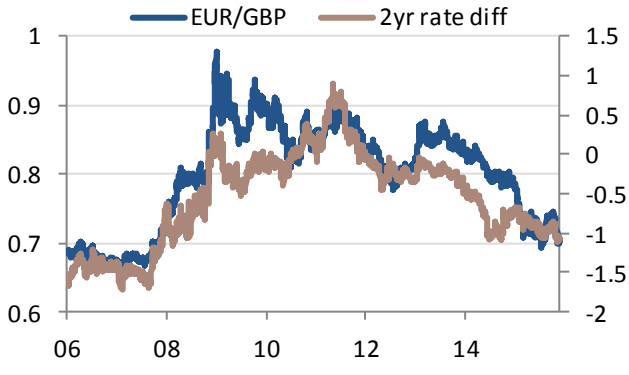
- UK growth is not really the issue – we expect 2% real GDP growth in 2016, well above the eurozone's 1.6%, even if it is below the 2.8% we forecast for the US. And the current account deficit looks to have peaked, or at least to have been revised down by the ONS as it recalculates the investment balance. But growth does not prevent MPC/Fed divergence, and a 3% GDP current account deficit would still be excessive in the event of Brexit.

Graph 1. GBP/USD and 2Y rate differentials



Source: Bloomberg, SG Cross Asset Research/Forex

Graph 2. EUR/GBP and 2Y rate differentials



Source: BoE, SG Cross Asset Research/Forex

Swiss Franc – Drifting lower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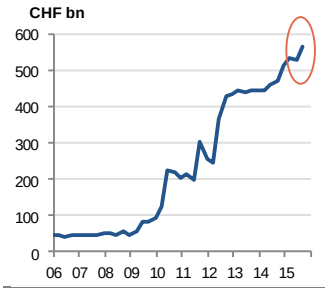
Forecasts	Mar-16	Jun-16	Sep -16	Dec-16
EUR/CHF	**1.10**	**1.12**	**1.14**	**1.14**
USD/CHF	**1.05**	**1.11**	**1.15**	**1.14**
Switzerland GDP q/q ann	1.3	1.6	1.7	1.8
SNB key rate	-0.75	-0.75	-0.75	-0.75

Source: SG Cross Asset Research

Graph 1. SNB balance sheet increasing again



Source: SNB, SG Cross Asset Research/Forex

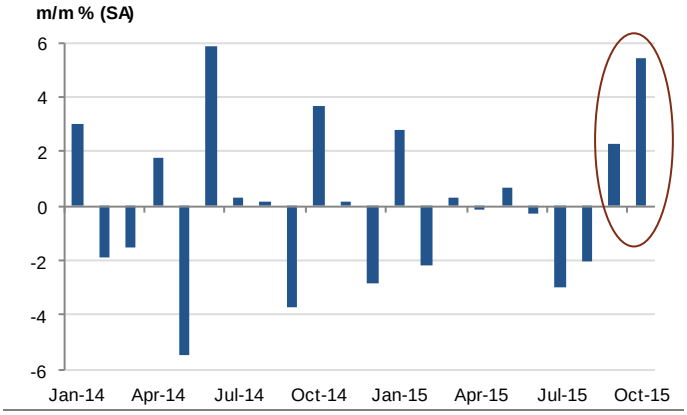
■ **Watch out for the quiet ones.** Since the removal of the EUR/CHF floor at the beginning of the year, the SNB has remained relatively silent. Foreign reserves however climbed by 6.9% in CHF terms in Q3 (Graph 1), while the Swiss Franc lost more than 4% against both the euro and the dollar. At the same time, the share of dollar assets increased at the expense of euro assets, while the EUR/USD remained unchanged and US yields dropped. **Presumably, the central bank began stacking FX reserves again in the second part of the year.**

■ **Option market nervous for good reason.** CHF volatility finally normalised in March after the market earthquake of January. In H2, the EUR/CHF 3M implied volatility has been on average one point above the realised, whereas in EUR/USD it was one point higher. This CHF specific risk premium suggests that the market remains cautious that the SNB can still act, and not only at meeting dates but potentially anytime. The ECB refrained from cutting the deposit rate by more than 10bp in December, but the pressure is likely to return in 2016 and **the SNB may have to ease policy again to prevent further CHF overvaluation.**

■ **Recovering export volumes.** Switzerland still enjoys a large NIIP which elects the Franc as a safe haven currency. Investors could bid the CHF as EM risks gain momentum, adding pressure on the SNB. In addition, exported volumes bounced in H2 despite currency strength (Graph 2), suggesting that **the country may face both financial and trade inflows.**

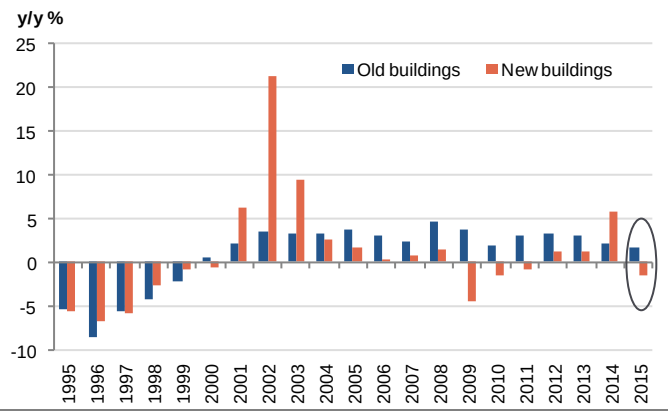
■ **Housing market cooling down.** Accommodative monetary policy is viable as long as inflation remains under control. The CPI plunged to a -1.4% all time low this year, but the genuine risk in Switzerland is the real estate bubble (the mortgage/GDP ratio is the highest among OECD countries). The macro prudential policy is delivering at the best time, as the housing market is cooling: **new building prices fell for the first time since 2011** (Graph 3), and the OECD confirmed that housing market risks are stepping back. **The economy is therefore in a better configuration to afford (more) negative rates for long.**

Graph 2. Switzerland export volumes recovered in H2 2015 despite strong CHF



Source: Bloomberg/Federal Customs Administration, SG Cross Asset Research/Forex

Graph 3. Real estate prices are finally cooling thanks to macro prudential policies



Source: Source: SNB/Indices of Wüest & Partner AG, SG Cross Asset Research/Forex

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Canadian dollar – Favour among commodities FX

Forecasts	Mar-16	Jun-16	Sep -16	Dec-16
USD/CAD	1.34	1.35	1.36	1.31

Source: SG Cross Asset Research

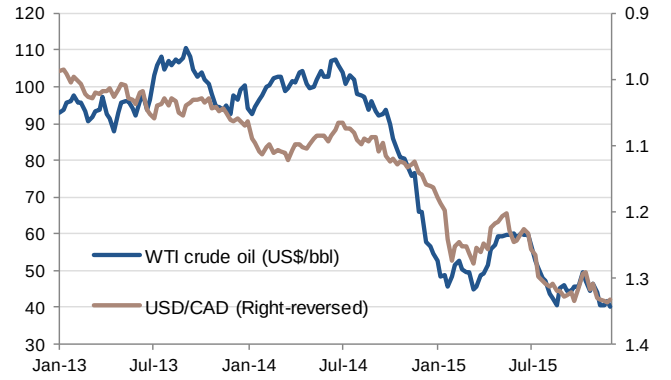
■ **Crude oil link.** The Canadian dollar has been heavily affected by crude oil price fluctuations in recent years (Graph 1). There has been an average correlation of -0.55 on USD/CAD spot versus WTI front-month prices year-to-date. Our commodity strategists expect crude oil prices to stay subdued until H2 2016, so the CAD will not be getting a lift from oil until late 2016.

■ **Bank of Canada to lag Fed cycle.** The weakness in oil prices have also hit the Canadian economy badly, but household consumption and net exports have provided support. The geographical closeness and tight economic links between the two countries generate a persistently high positive correlation between Canadian and US yields, so Fed tightening will have a large spillover effect on Canada. The BoC will need to lean against the tightening of Canadian monetary conditions amid Fed hikes. Given the domestic economic fragility, the Bank of Canada will lag the Fed policy cycle significantly and is unlikely to hike before 2017 (Graph 1).

■ **CAD has cheapened considerably.** The Fed-BoC policy divergence and weak oil prices suggest further upside in USD/CAD in coming months, but the climb will likely be very gradual and choppy given the extent of the Canadian dollar's losses over the past year. The CAD is currently trading well below both its 15-year and 25-year average real trade-weighted exchange rates.

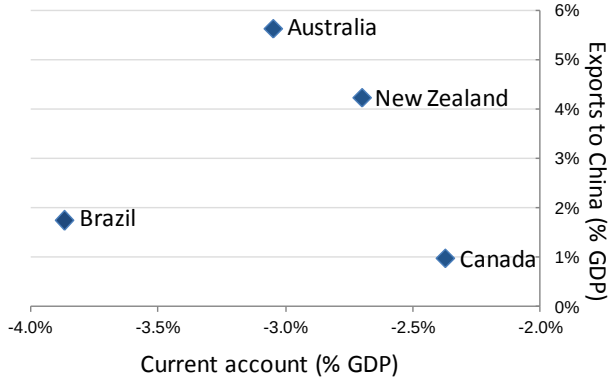
■ **Favour CAD among commodities FX.** We find the CAD attractive against other commodity currencies because of its valuation and its smaller exposure to China. Canada stands to benefit from the ongoing US economic recovery. Canada also has a smaller current account deficit relative to the Antipodean currencies in particular.

Graph 1. Tight link between CAD and crude oil prices



Source: SG Cross Asset Research/Forex

Graph 2. CAD less exposed to China with a smaller CA deficit



Source: SG Cross Asset Research/Forex

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Australian dollar – Still under pressure

Forecasts	Mar-16	Jun-16	Sep -16	Dec-16
AUD/USD	**0.69**	**0.68**	**0.66**	**0.67**
AUD/NZD	**1.11**	**1.13**	**1.14**	**1.17**
GDP (% q/q annualised)	2.9	2.7	3.1	3.1
RBA key rate (%)	2.00	2.00	2.00	2.00

Source: SG Cross Asset Research

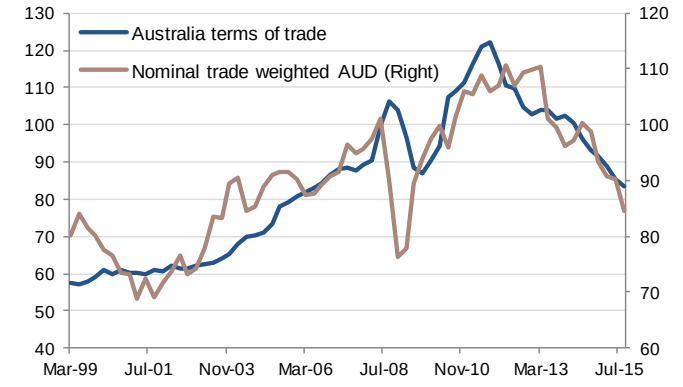
■ **Terms of trade still falling.** The Australian dollar has fallen significantly following the end of the commodity super-cycle. The RBA's proactive policy has facilitated the AUD's adjustment, and this has provided an important buffer to the economy. The downward momentum on Australia's terms of trade has persisted with the Chinese slowdown still underway, and this should continue to drag down the AUD over the coming months (Graph 1).

■ **Cheap currency necessary for longer.** The trade-weighted AUD has arguably slid back into its long-term fair value range, so further weakness ahead is likely to be more gradual (Graph 2). The economy has become dependent on household consumption and net exports to support growth amid the retrenchment in business investment. The structural economic transition away from the resources sector is ongoing and will take time. A cheap currency will be an important ingredient in a successful transition process.

■ **RBA warily on the sidelines.** The tension between muted inflation pressures and a robust housing sector should keep the RBA on the sidelines. The RBA will continue to monitor external developments closely, in particular the Chinese growth outlook and commodity prices, as these will have a direct bearing on the Australian economy.

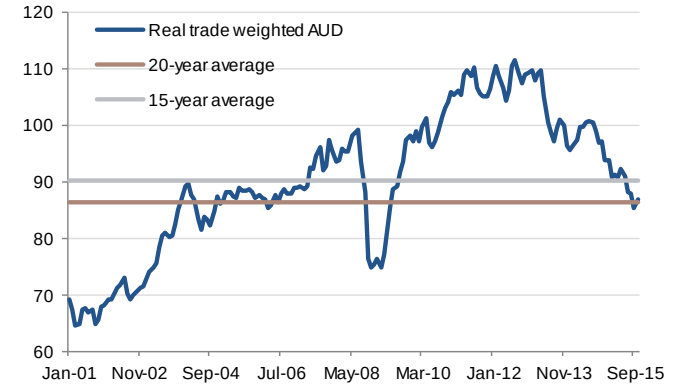
■ **Value against NZD.** Fed tightening over 2016 should maintain downward pressure on AUD/USD, as would weaker iron ore prices. Implied volatility in AUD/USD has been higher this year on average compared to the previous three years due to growing policy divergence among the G10. The higher implied volatility environment is likely to persist next year, which will help keep pressure on AUD/USD. Nonetheless, we see value in the Australian dollar against the neighbouring New Zealand dollar.

Graph 1. Persistent terms of trade a drag on the currency



Source: SG Cross Asset Research/Forex, BIS

Graph 2. AUD has adjusted back to long-term fair value



Source: SG Cross Asset Research/Forex, BIS

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New Zealand dollar – Becoming less expensive

Forecasts	Mar-16	Jun-16	Sep -16	Dec-16
NZD/USD	0.62	0.60	0.58	0.57
AUD/NZD	1.11	1.13	1.14	1.17

Source: SG Cross Asset Research

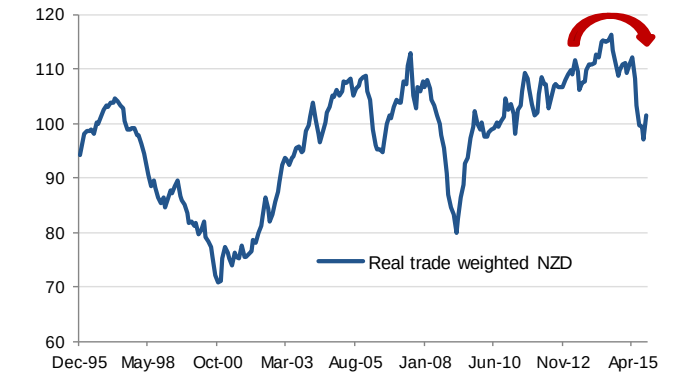
■ **Valuation adjustment underway.** A combination of low inflation, fading growth momentum and weak milk auction prices has undermined the NZD this year, making it the worst G10 performer. The valuation adjustment in the New Zealand dollar is underway and expected to continue. The currency remains overvalued (Graph 1).

■ **More RBNZ easing ahead.** The low interest rate environment has spawned a housing boom, which appears to have been gaining momentum lately. Business and household confidence indicators have also bounced higher recently. This has reduced expectations of an RBNZ rate cut near term, and provided support to the NZD. Disinflationary pressure however allows the RBNZ to maintain a dovish bias, as inflation has remained below the RBNZ's band for a year now (Graph 2). The peak in growth momentum also appears to have passed definitively. More easing is forthcoming, which will sharpen the policy divergence with the Fed.

■ **El Nino adding to milk price woes.** The major El Nino weather pattern is expected to cause a severe summer drought in New Zealand. This could be a serious hit to growth on top of sharply lower payouts to dairy farmers.

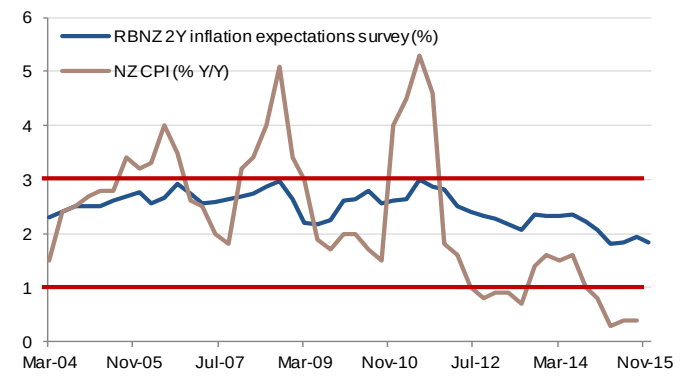
■ **NZD underperformance continuing.** We expect the underperformance of the NZD to be repeated over 2016, and favour both short NZD/USD and long AUD/NZD. Elevated implied volatility in the FX market will also weigh on the New Zealand dollar.

Graph 1. Ongoing NZD valuation adjustment



Source: SG Cross Asset Research/Forex, BIS

Graph 2. Disinflation is a problem in New Zealand



Source: SG Cross Asset Research/Forex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Swedish krone – Lifted by robust fundamentals

Forecasts	Mar-16	Jun-16	Sep -16	Dec-16
EUR/SEK	**9.10**	**8.80**	**8.60**	**8.55**
USD/SEK	**8.67**	**8.71**	**8.69**	**8.55**
NOK/SEK	0.99	0.99	0.98	0.98

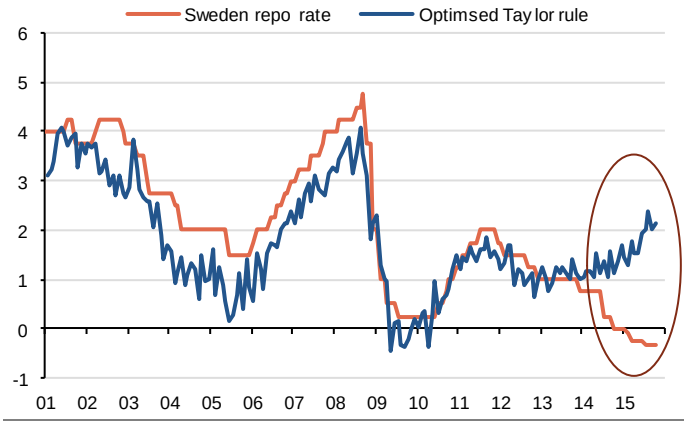
Source: SG Cross Asset Research

■ **Booming growth.** With its 3.9% y/y Q3 GDP growth largely beating Street expectations, Sweden does not have serious competitors among developed countries. After a year of consolidation that saw EUR/SEK trading sideways around the 9.40 pivot, **the Swedish krone is set to take off and do better than both the euro and dollar in 2016.**

■ **Is the Riksbank's package finally working?** The Riksbank's reaction function has been very readable in the past, strictly targeting inflation. The parameters of our Taylor rule estimation accurately reproduce the path of the repo rate between 2001 and 2014 and now suggest that **financial conditions have become extremely accommodative** (Graph 1). The Riksbank embraced negative rates in H1 15 and introduced a QE package (extended in October to reach SEK200bn by June 2016) in an effort to escape from a liquidity trap and head off looming deflation risks. After three rate cuts in 2015 saw the key rate fall to -35bp, **the underlying inflation rate eventually printed above 1% for the first time since 2013** and unemployment fell below 7% for the first time since the financial crisis. While the central bank downgraded its inflation outlook, **the CPIF is still expected to reach the 2% target in 2016.** This time, the board did not 'lean against the wind' and is unlikely to do so as price stability remains the top priority. Even if it is ready to do more (explicitly mentioning new cuts and more QE and FX interventions), **the market will focus on the better economic fundamentals rather than central bank dovishness.**

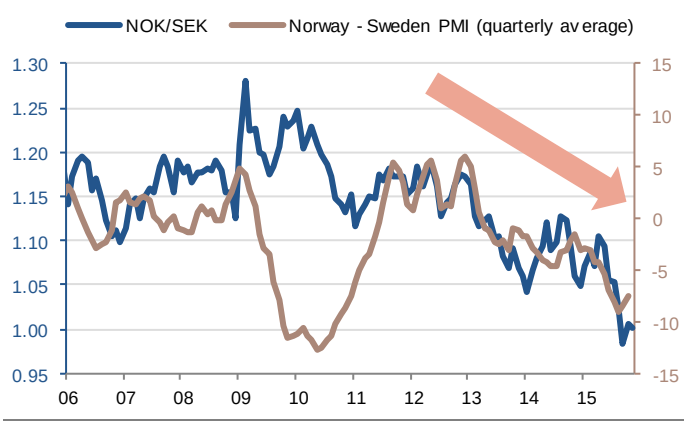
■ **Favour SEK over NOK.** The NOK/SEK bearish trend that started at the 1.30 peak in 2009 and pressured the cross to parity this year is probably not over. Despite diverging inflation trends justifying the Riksbank's stronger easing bias, the market has not responded by favouring the NOK to the SEK. Since 2011, **NOK/SEK has been driven by relative business conditions in Sweden and Norway** (Graph 2). In this regard, and on the back of booming growth (Graph 2 in NOK section), the **SEK remains the more attractive of the two currencies.**

Graph 1. CPIF rebound making financial conditions extremely accommodative



Source: SG Cross Asset Research/Forex

Graph 2. NOK/SEK path pressured by deterioration in relative business conditions



Source: SG Cross Asset Research/Forex

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Norwegian krone – Recovering from bottom

Forecasts	Mar-16	Jun-16	Sep -16	Dec-16
EUR/NOK	**9.15**	**8.90**	**8.75**	**8.70**
USD/NOK	**8.71**	**8.81**	**8.84**	**8.70**
NOK/SEK	0.99	0.99	0.98	0.98

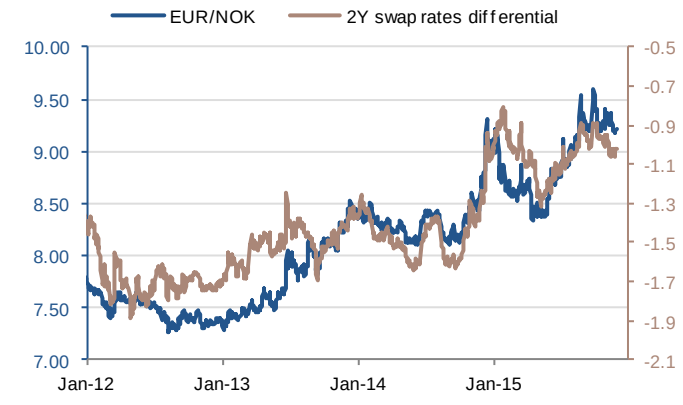
■ **Rates still dominate.** After a 30% fall against the euro since 2013 drove the Norwegian krone to multi-year lows, the currency should gradually recover throughout 2016. EUR/NOK should remain essentially driven by short-term interest rate differentials (Graph 1). The ECB is committed to a very monetary accommodative stance to curb poor inflation expectations, which will keep the euro under steady pressure, while Norges Bank should prove less dovish.

■ **Norges Bank on hold.** At its 4 November meeting, the executive board assessed economic developments and the NOK as being weaker than expected. This currency weakness should provide more support than the central bank expected. In a subsequent speech, Governor Olsen stated that currency weakness has helped the competitiveness of the export industry. In terms of monetary policy, the board did not discuss negative rates, though it said it was "well aware of the mechanisms". **After having lowered rates by 50bp to 0.75% in 2015, the current stance does not suggest new cuts**

■ **Oil prices bottom out.** After a spectacular fall, Brent oil is stabilising. NOK rates follow oil prices very closely because the local economy relies heavily on the energy sector. **Oil prices are now unlikely to come under significant pressure in the near term and will weigh less on the NOK in 2016** (read our oil outlook - we forecast Brent averaging $53.75/bbl over the year)**.**

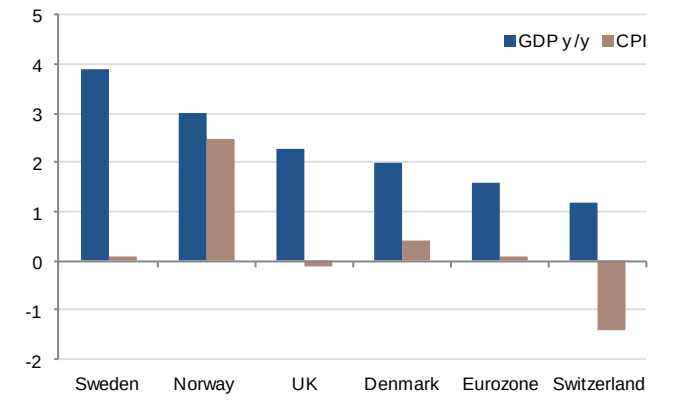
■ **Robust in Europe by process of elimination.** Facing poor euro area growth, an SNB that threatens CHF strength, and a UK facing low inflation and Brexit risk, FX investors will struggle to pick up attractive European currencies in 2016. Scandinavian economies are still outperforming, and Norway has so far been spared the deflationary spiral (Graph 2). In that context, SEK and NOK are likely to do well, offering an increasingly bullish alternative.

Graph 1. EUR/NOK still driven by relative rates



Source: SG Cross Asset Research/Forex%

Graph 2. Scandinavian economies outperforming, Norway inflation still supported



Source: SG Cross Asset Research/Forex

G10 FX CARRY–ANY APPEAL LEFT?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Falling commodity prices and the slowing Chinese economy have made for a challenging environment in front of the G10 carry trade in 2015. We briefly review the performance of the various versions of the G10 carry trade that we have in place and conclude that while not dismal, the performance has been dissatisfactory. We look into the current carry income embedded in the strategy from a historical and cross-asset perspective. While the level of the carry income can be considered poor in a historical context, it fares well from a cross-asset perspective. Unfortunately, we find that the statistical measures of fair valuation do not point to any significant dislocation in the G10 carry trade. Still, diversification remains an inherent benefit of investing in G10 carry. In the end, investors can look at alternative sources of income in the FX space, like the vol of vol premium.

G10 carry in 2015: not a year to boast about

The ongoing pressure on commodities, the economic slowdown in China and the overall low-yield environment have posed insurmountable difficulties in front the G10 carry strategy in 2015. The high yielders, as represented by the Aussie and Kiwi, have been adjusting downwards to align with the economic reality. While some respite came from the funding side via the short EUR position, the overall G10 carry basket had another bad year.

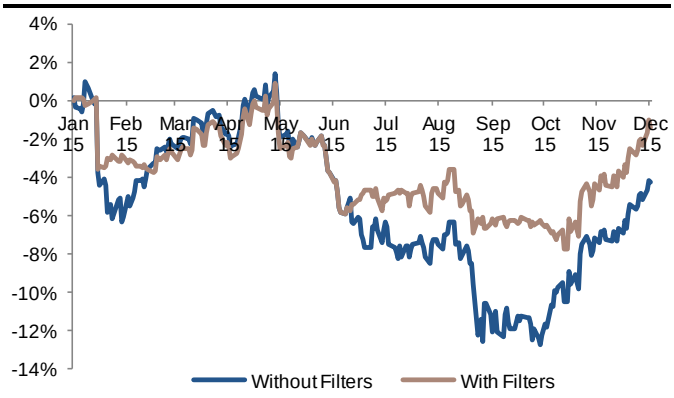
The standard G10 carry strategy that ranks the currencies by carry return and invests in the top-three and shorts the bottom-three currencies has returned around -4% in its pure version and -1.4% when the SG Sentiment Indicator filter has been applied[4]. The optimized G10 carry strategy has lost some 7% before filters and around 5% after filters are applied[5].

Table 1. FX carry performance

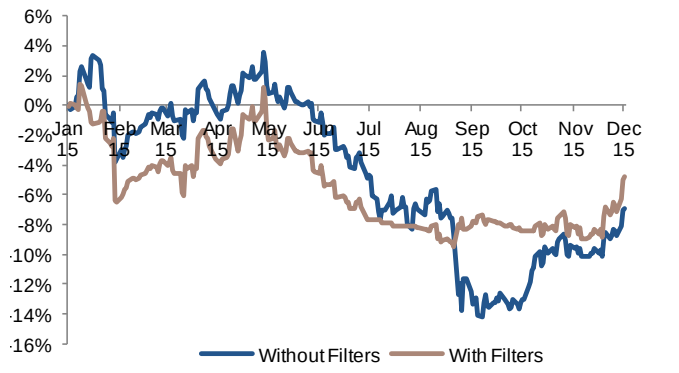
G10 carry strategies	2014	H1 15	H2 15	YTD
Standard	+3%	-6.7%	+2.5%	-4.2%
Standard with a filter	-3.1%	-5.1%	+3.7%	-1.4%
Optimized	+4%	-4.9%	-2%	-6.9%
Optimized with a filter	-1%	-7.6%	+2.8%	-4.8%

Source: SG Cross Asset Research

Graph 1. G10 standard carry strategy (with and without filters)



Graph 2. G10 optimized carry strategy performance (with and without filters)



Source: SG Cross Asset Research

The optimized carry strategy aims to neutralize the USD exposure, which is quite important in a world of a strengthening USD that has turned out only marginally beneficial, as it was rarely a funding currency in 2015. The choice of the right funding currencies turned out to be the

[4] Please refer to the SG research paper "SG Adaptive sentiment indicators – Analysis of performance by asset class" for a more detailed explanation of the filter applied.

[5] You can find more information about the optimized G10 carry strategy in the SG research paper: "SG FX Quant Fund : Profiting from opportunities in the worldwide currency markets"

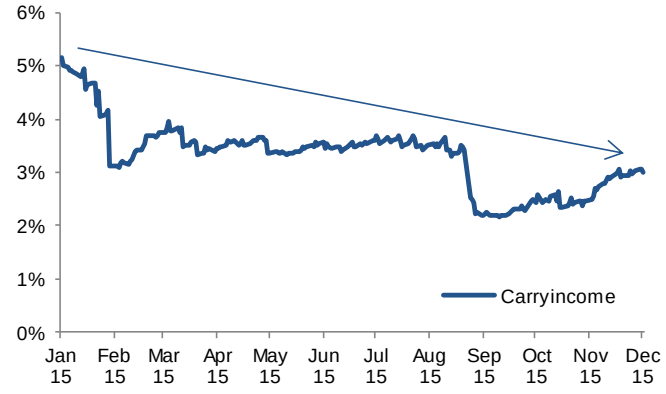
crucial ingredient for successfully navigating the G10 carry strategy in 2015. It should also be noted that while our filters did not enhance performance in 2014, they were beneficial in 2015.

Still some carry to pick up in G10

The carry income embedded in the G10 carry basket has trended downwards in 2015. Similarly to the price developments, the main reason for that has been the continuous downward pressure on the rates of the high-yielding currencies. With the rates of the funding currencies anchored around zero that has naturally led to a decrease in the carry income that can be harvested via the G10 carry strategy. The carry income currently stands at 3% and it has averaged 3.3% in 2015. For comparison, the average carry income in the 2000-14 period was 5.3%.

Note that for a carry income of that magnitude, an investor has to accept 10% annualized volatility[6]. While in absolute terms that might not seem appealing, it fares better from a cross-asset perspective. Among several major assets, just 10Y Treasuries have exhibited a better carry-to-vol ratio over the past year. Hence, in the current low-yield environment, the income that can be extracted from the G10 carry basket can still be considered adequate. Unfortunately, given the current volatility of financial markets, it might turn out insufficient to offset the negative headwinds in terms of price developments.

Graph 3. Carry income has trended downwards in 2015



Source: SG Cross Asset Research

Graph 4. Comparison of carry-to-vol ratio in various assets

	Income (dividend, carry, yield)	Volatility (historical or target)	Carry-to-vol ratio
S&P500	2.10%	15.20%	0.14
EuroStoxx 50	3.35%	23%	0.15
10Y Treasuries	2.19%	6%	0.36
Bunds	0.47%	5.40%	0.09
G10 carry	3%	10%	0.3

No valuation pressure built in for the G10 carry basket

We look at two alternative fair-value measures of the G10 carry strategy. The first considers the valuation of the basket solely with respect to the drivers within the G10 universe. In that respect it highlights whether the high-yielding currencies are cheap or expensive versus funding currencies. The second looks at the valuation of the G10 carry basket from a cross-asset perspective, considering a wide range of assets in equities, fixed income & credit, commodities and FX[7]. While the former measure considers a longer 10Y period, the latter uses a 5Y history.

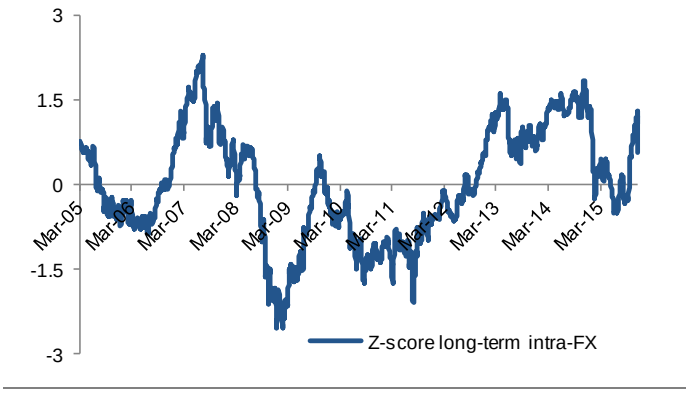
[6] This is the target annualized volatility of our G10 carry basket.

[7] The technical details approach can be found in the SG research paper: "Cross-asset factors, fair values and dislocations: A bird's eye view of market dynamics".

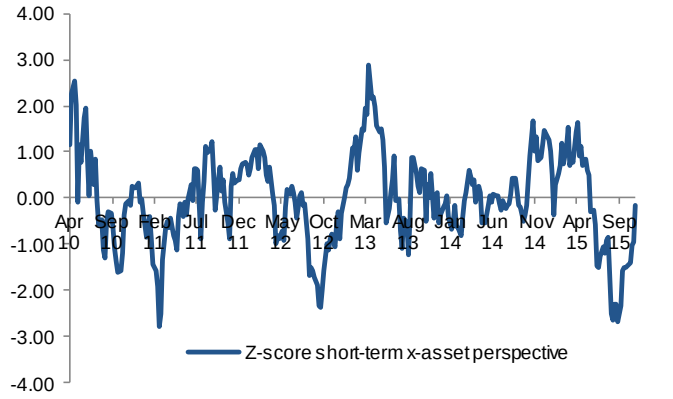
The valuation dislocation has been illustrated as a Z-score. A positive Z-score points to overvaluation, while a negative one signifies relative cheapness[8]. The x-asset valuation measure points to a neutral valuation stance (Z-score of -0.15) while the FX one even suggests a slight overvaluation (Z-score of 0.6). Hence, we see no imminent catalysts for the G10 carry performance on valuation grounds.

It is interesting to note that from a cross-asset perspective, the G10 carry basket bottomed in early September 2015 after the late summer selloff and has since recovered. From an FX perspective, the G10 carry basket was the cheapest post the GFC.

Graph 5. Z-score of the carry basket from a longer-term intra-FX perspective



Graph 6. Z-score of the carry basket from a shorter term cross-asset perspective

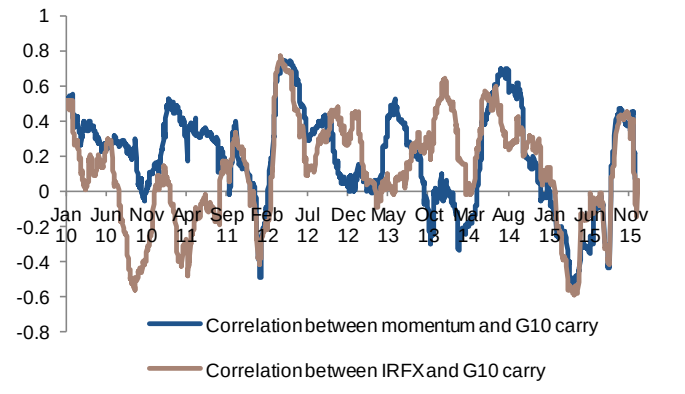


Source: SG Cross Asset Research

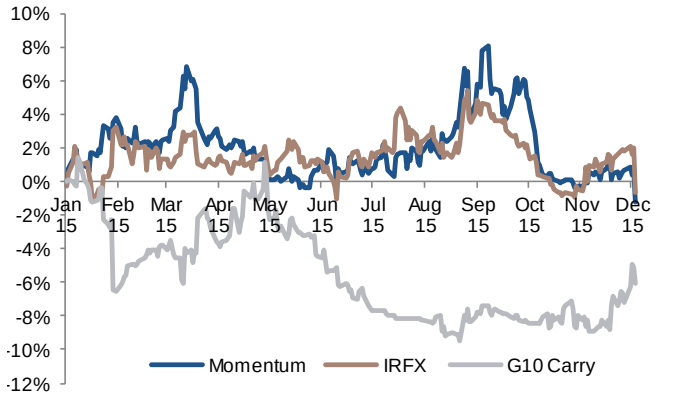
A reason to keep G10 carry in your portfolio: diversification

While many investors might find the carry income return unattractive and the macroeconomic landscape unsupportive, especially for high-yielders, the carry strategy remains desirable as a diversifier within a broader portfolio of systematic strategies.

Graph 7. Rolling 3M correlations



Graph 8. Cumulative performance of momentum, carry & IRFX



Source: SG Cross Asset Research

[8] As rule of tumb we consider the dislocations significant when the absolute value of the Z-score is bigger than 1.5.

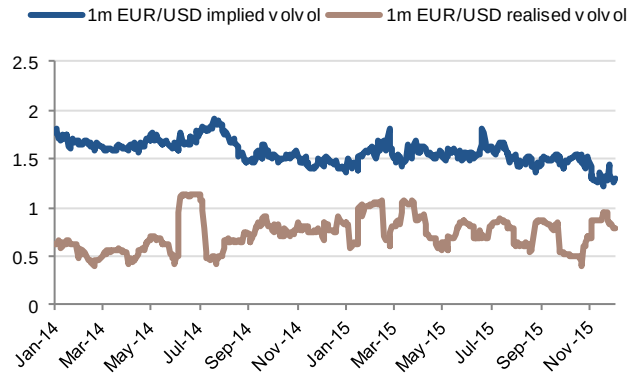
The graphs above aim to illustrate that point by showing the 3M rolling correlation between the G10 carry strategy and the other two systematic strategies that form part of the SG FX Enhanced Risk Premia strategy, and also the respective track records in 2015.

On average, G10 carry is almost uncorrelated to the rest of the strategies: the average correlation to momentum since 2010 is 0.2, and to IRFX 0.11. It is natural to assume that carry will be positively correlated during expansion times, when high-yielders appreciate. But conversely, correlation can flip to negative when high-yielders are falling and the momentum and IRFX strategies take short positions on those currencies. That has actually been the situation for most of 2015. Looking forward, we would expect G10 carry to compensate (at least partially) for the losses in the momentum strategy if the downward trend in the high-yielding currencies eventually reverses. Conversely, if both the exchange rates and the interest rates of the high-yielding currencies continue their downward trajectory, we would expect the short positions in momentum and IRFX strategies to more than offset the G10 carry losses.

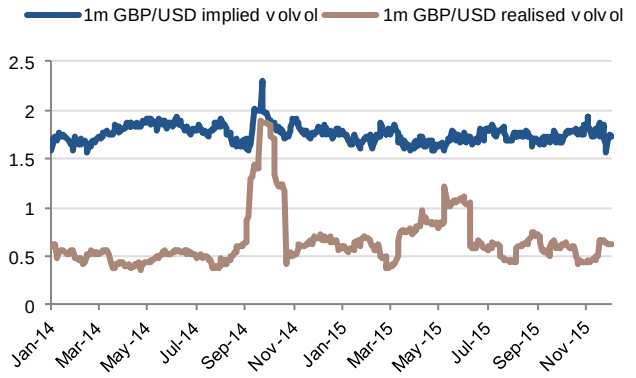
Alternative income sources in FX: the vol of vol premium

In an article published last year, we highlighted the presence of a large risk premium on FX volatility of volatility, and that such premium is related to the statistical overvaluation of out-of-the-money against at-the-money options. The article was recently published on Risk.net and will appear in the December issue of Risk Magazine.

Graph 9. Implied and realised 1M volvol for EUR/USD



Graph 10. Implied and realised 1M volvol for GBP/USD



Source: SG Cross Asset Research

As we used data until early 2014 in our article to support our findings, it is interesting to assess whether the features we had highlighted have remained valid over the past couple of years. In the two charts above, we display the time series of implied and realised vol of vol for EUR/USD and GBP/USD, and we can see that in both cases, implied vol of vol has always stayed higher than realised vol of vol over the period. On EUR/USD, the premium has somehow compressed over the past month, as realised vol of vol rose sharply since late October and implied vol of vol has drifted lower. On GBP/USD, realised vol of vol rose sharply in September-October 2014, but the premium widened and returned back to its earlier typical levels across 2015. We conclude that the overvaluation of implied vol of vol, especially for short maturities, remains a stable feature of the FX market and can be employed in unorthodox income strategies in the currency markets.

EM FX – COLLISIONS, MOMENTUM, AND BUTTERFLIES

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Emerging market currencies face another challenging year, though the pace of depreciation will be significantly less than 2015. Until a sufficient catalyst emerges to extinguish the well entrenched trend dating back to 2011, the path of least resistance is for additional dollar strength. Trading strategies will need to be more nimble than last year and timing will be critical. Our current bias is to be long dollars (or flat) or seek relative value structures, but selective tactical short-term opportunities to get long EM will arise as risk sentiment oscillates between the bullish and bearish camps.

The collision of Fed tightening, below consensus Chinese GDP, RMB depreciation, and rising corporate defaults, is a potent cocktail. Volatility will stay elevated and risk taking restrained, while there is no end in sight to the moribund capital inflow dynamics plaguing EM FX. Although these macro risks are well known, they are not individually, and especially not the combination of all four, fully priced into markets. Investors should be particularly worried about the butterfly effect as the confluence of macro developments introduces significant asymmetric downside tail risks.

While spot rates should remain relatively well correlated, there is some scope for differentiation relative to the forwards. On a regional basis, Asian currencies are expected to underperform, while the EMEA dollar bloc will be the leading outperformer, followed by the EMEA EU bloc and LATAM. We are most bullish on the RUB, PLN, and INR – and the most bearish on CNH, KRW, and MYR.

Long term ideas – six to twelve months

Regional: Short Asia against EMEA and LATAM

Short EM exposure: Long USD-KRW, USD-TWD

Long EM exposure: Short EUR-PLN, short EUR-CZK, short USD-RUB, short USD-INR

Relative value: Short TWD-INR, long RUB-MYR

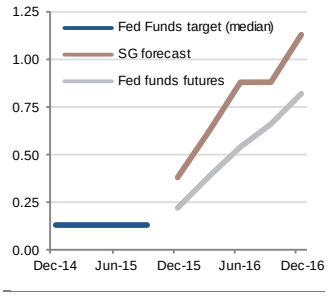
China trades: USD-CNH (call spread), long CNH vs TWD & KRW

Option structure: Worst-of CNH, JPY, TWD, CLP ATMS puts / USD calls

The collision of bearish outcomes

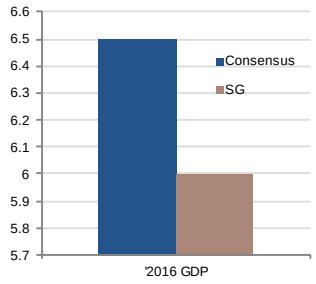
The bearish trend in EM currencies that began in 2011 will be reinforced next year by a number of macroeconomic and financial shocks – Fed tightening, slower Chinese growth, RMB depreciation, and rising corporate defaults. While these are widely recognized risks, it might be an insurmountable achievement for EM currencies to digest so many negative developments and come out unscathed. Markets are not fully priced for individual – never mind joint macro risks in 2016 – which leaves us sceptical of pursuing a contrarian strategy.

Faster tightening



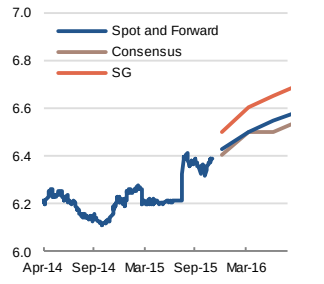
Source: SG Cross Asset Research

Weaker China GDP



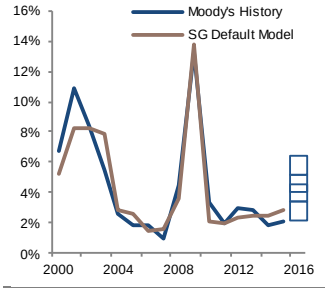
Source: SG Cross Asset Research

More RMB depreciation



Source: SG Cross Asset Research

EM corporate defaults



Source: SG Cross Asset Research

Fed tightening: Rolling policy uncertainty will keep risk appetite depressed. After the initial Fed hike, there might be a small but unsustainable relief rally, but this is less certain than earlier in the year - a "dovish" hike is now consensus and positioning is close to neutral. Market attention will increasingly shift to the speed, magnitude, and duration of the tightening cycle and if expectations gravitate toward the SG view (100bp of hikes over 12 months and a terminal rate of 2.75%), downward pressure on EM could intensify. As long as policy uncertainty remains at the forefront, rallies will be temporary, shallow, and prone to reversing.

Chinese growth: A large downside surprise will cause bearish sentiment to permeate across the EM complex. Korea and Taiwan are the most sensitive to the direct export channel in Asia, Brazil and Chile most susceptible in LATAM, with EMEA being well insulated. To the extent downside risks surface, commodity currencies such as RUB and ZAR might be at risk. SG economics expects Chinese growth to register 6.0% versus consensus of 6.5%, a marked slowdown from the pace seen in 2015. As the year progresses and downside risks become evident, there will be a revival of hard landing fears.

RMB depreciation: Further depreciation could pull the entire EM universe, especially Asia, down with it. To maintain competitiveness, EM policymakers might endorse more currency weakness, especially in those economies with the most similar export structures as China – Taiwan, Korea, Thailand, Poland, Turkey, Czech Republic, and Mexico. Depreciation is necessary to de-link from the USD trend and it can happen in a gradual and controlled manner (USD-CNY 6.80 by end-2016). Larger moves are possible if regional currencies depreciate more than the RMB and the associated trade-weighted appreciation is too much for policymakers to bear relative to growth and employment objectives.

Corporate defaults: The break-neck growth of the EM corporate hard-currency markets since 2009 has been driven by rising corporate leverage. Yet earnings remain volatile, which suggests that defaults could rise. Hard-currency corporate bonds have so far performed less poorly than EM currencies and no worse than hard-currency sovereign bonds, perhaps due to the illiquidity of the asset class. However, primary issuance – fuelled by redemptions – could see the market reprice in the coming quarters (link)

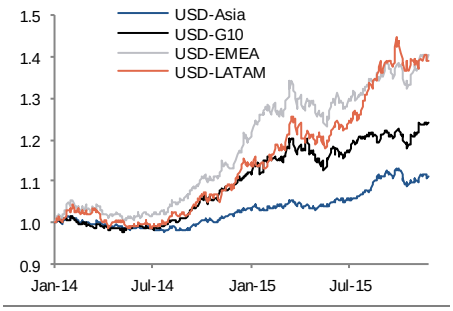
Beware of butterflies

The risks to EM currencies are asymmetric; the probability-weighted magnitude of a sell-off exceeds that of a durable rally. While one can apply the rationale of a "butterfly effect" (small changes in initial conditions leading to unknown and large differences in future outcomes) to any financial market condition, it is particularly appropriate for 2016.

Sentiment towards EM is fragile and market disruptions might become apparent in response to the first tightening cycle by a major central bank in eight years, a substantial downside surprise in the world's second biggest economy, steady RMB depreciation and more two-way volatility, and cracks starting to materialise in EM corporate balance sheets. Believing that these developments can play out smoothly without any disruptions is naive. After many years of ample liquidity, there is surely a misallocation of capital somewhere in the world.

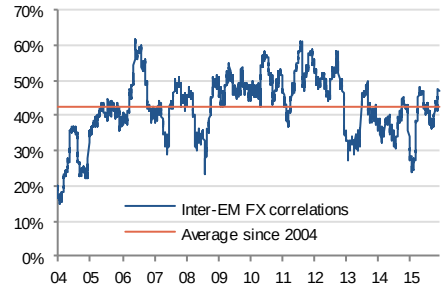
The 2008 crisis occurred after a prolonged Fed tightening cycle, but it is possible that disturbances surface in the early or middle stages this time around. Significant downside surprises in Chinese growth could significantly hurt investor sentiment toward those countries with strong direct export exposure or indirectly through commodity prices. Further depreciation in the RMB could ignite a currency war, either directly by policymakers' trying to

It's a correlated world



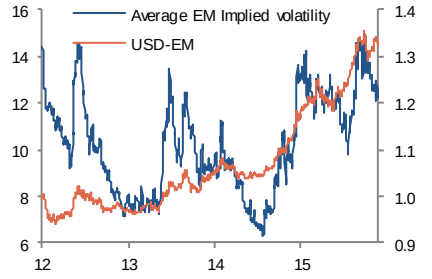
Source: SG Cross Asset Research. Bloomberg.

Inter-EM FX correlations



Source: SG Cross Asset Research. Bloomberg.

Implied vol elevated



Source: SG Cross Asset Research. Bloomberg.

match yuan weakness, or indirectly by investors shorting Asian currencies as a proxy trade. Modest corporate defaults may not lead to financial instability, but it will raise the probability of crisis in the eyes of many investors.

A correlated world with elevated volatility

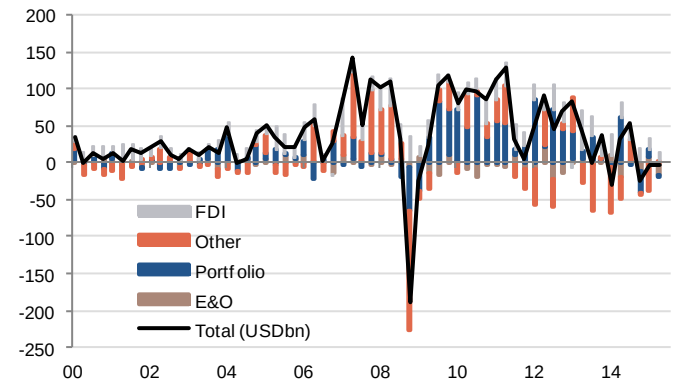
Inter-EM correlation will stay elevated, and could rise further in 2016, if top-down macro factors continue to dictate the path of the dollar trend. There could be selective opportunities for decoupling in places like Russia and Poland, but over time the general patterns in regional aggregates and the majority of individual currencies should remain closely linked.

Volatility is elevated and should remain near the upper end of the range that has prevailed since 2012 as the multitude of tail risks argues for investors to continue holding protection against adverse events. However, as evident in the pattern between average implied-volatility and spot rates, modest appreciation in EM currencies can produce outsized declines in implied violability.

Growth, capital flow, and the FX triangle

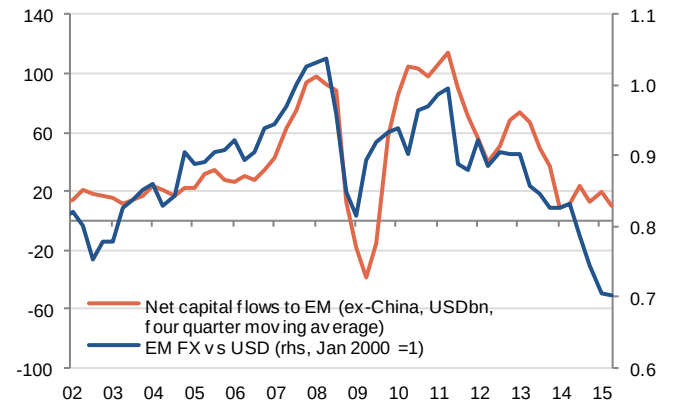
The importance of EM growth to capital flows, and capital flows to EM FX cannot be understated. Unless the gradual growth slowdown in EM countries can be reversed, the stagnation of growth does not bode well for the capital flow outlook. If capital flows cannot recover, EM currencies should remain susceptible to depreciation pressures.

Net capital flows into EM (ex-China)



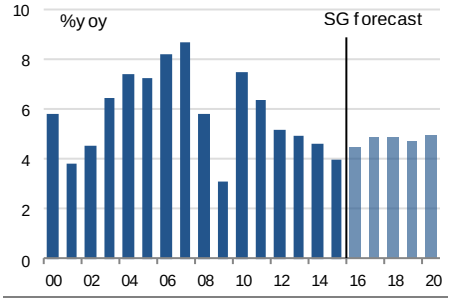
Source: SG Cross Asset Research/EM. Countries included (KRW, MYR, INR, IDR, TWD, THB, BRL, CLP, MXN, TRY, ZAR, RUB, PLN, CZK, HUF)

EM FX vs capital flows



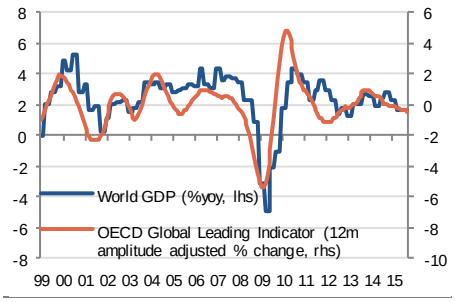
Source: SG Cross Asset Research/EM. Countries included (KRW, MYR, INR, IDR, TWD, THB, BRL, CLP, MXN, TRY, ZAR, RUB, PLN, CZK, HUF)

EM growth expected to pick up...



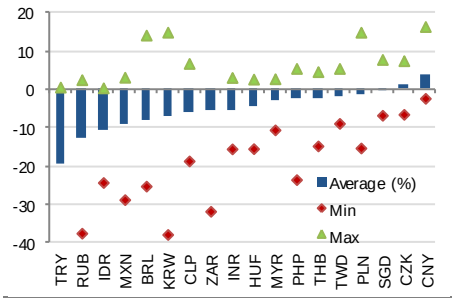
Source: SG Cross Asset Research

...but global leading indicator falling...



Source: SG Cross Asset Researc. OECD, Bloomberg.

..which is typically bad for EM FX



Source: SG Cross Asset Research. OECD, Bloomberg.

The two periods where EM currencies managed a prolonged appreciation phase was in 2003-07 and 2010-11 – and each had its own unique features. In 2003-07 the USD was weak, sentiment toward long-term EM growth was exceptionally strong, commodity prices were rising, and equities markets were taking off. Appreciation in 2010-11 was a temporary recovery as capital flowed into EM en masse as the Fed embarked on aggressive quantitative easing.

The current backdrop for EM is a lot less friendly. Heading into 2016, the debate on the speed and magnitude of Fed tightening, how much Chinese growth will slow, and the extent of RMB depreciation, is casting a dark cloud over risk appetite and does not appear conducive for EM capital flows to meaningfully accelerate.

A bottoming in EM growth, after five years of deceleration, could be helpful in restoring a more balanced risk-taking atmosphere. The IMF and SG expect EM growth to improve to 4.5% in 2016 from 4.0% in 2015, and for modest acceleration over the subsequent few years. However, a portion of the recovery could be discounted by the market as normalisation from depressed commodity prices and downside risks abound in the next couple of quarters. The OECD leading indicator continues to suggest a deceleration in global growth momentum and if downward surprises become prevalent it is highly unlikely that investors will be deploying significant capital into emerging markets.

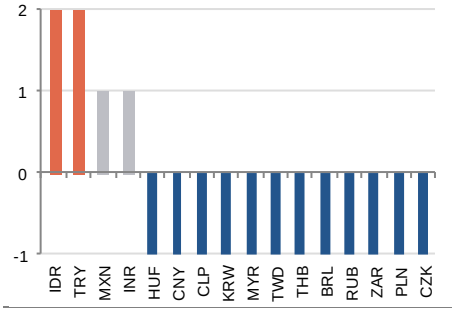
Beware reversals in capital flows

Even though a cumulative $525bn of net capital has flowed into EM (ex-China) since Q1 2012, emerging market currencies have sharply depreciated (30% on average). What has been critical over this period is the trend – as less and less capital has flowed into EM each quarter, pressure on currencies has intensified.

The disruptive outflows witnessed in Q3 this year could serve as a useful trial run for a more acute period of stress in the future; the amount of money that exited EM in Q3 was minuscule compared to the cumulative inflows since 2011 – and a very different situation compared to the outflows in the 2008-09 financial crisis where a significant proportion of accumulated investments fled.

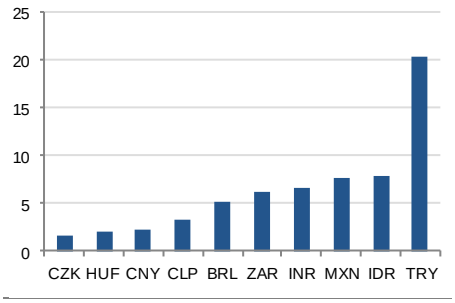
Whether investor appetite stagnates, improves, or in the worst-case scenario there is a large exodus from EM, is critical in assessing the evolution of currency markets. Overall, the risks to EM FX appear asymmetric from the capital flow channel and more heavily skewed to weaker rather than stronger currencies over the next year.

Capital flow surge scorecard



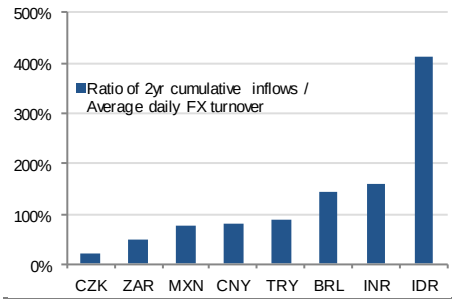
Source: SG Cross Asset Research/EM. Countries currently in a surge receive a value of '2', those that were previously in a surge at some point over the past year receive a value '1", and the least vulnerable countries that are either not in a surge or did not experience a capital inflow surge over the past year receive a value of "-1".

Riskiness of flows scorecard



Source: SG Cross Asset Research/EM. Shows countries that have experienced net inflows into portfolio or other investment in the past two years and weights by volatility. Higher number = more at risk of capital outflows.

Capital flow liquidity scorecard

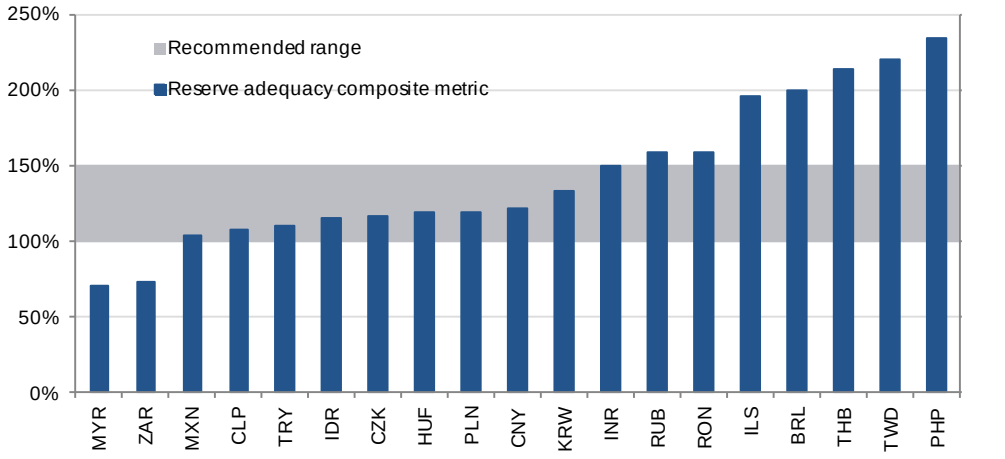


Source: SG Cross Asset Research/EM. Higher figure means a currency is more susceptible to outflows.

A further worsening in global EM capital flows will disproportionately hurt those currencies that are still experiencing robust inflows, have attracted risky inflows in the past, have low FX market liquidity compared to previous inflows, have high foreign bond and equity ownership, and whose buffers through basic balances and reserve adequacy are lower than other countries.

Only a few currencies experienced a classic definition of a 'crisis' in 2015 but there could be more causalities in the future. The experience of Q3 underscores the asymmetric tail risks facing EM currencies. Based on our capital flow scorecards and assessment of offsetting buffers, the IDR, TRY, and MXN are particularly susceptible to further deterioration in the EM capital inflow cycle.

Reserve adequacy

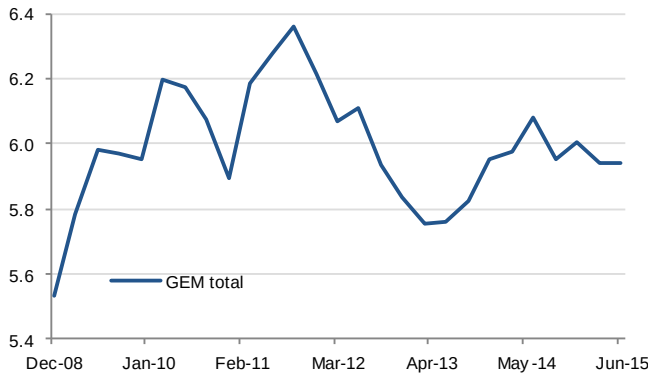


Source: SG Cross Asset Research/EM. The IMF recommends reserves to be 100-150% of the weighted average of various metrics (exports, M2, short term debt at residual maturity, other liabilities). SG estimates differ slightly from IMF calculations.

Modestly higher EM vulnerability

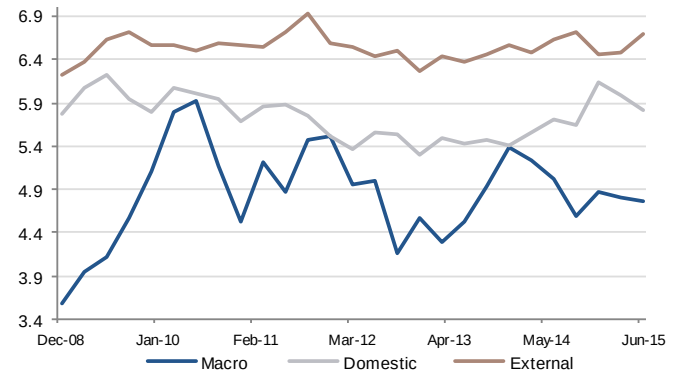
The fundamental picture for emerging markets has deteriorated over the past year with our vulnerability index registering the worst reading since Q3 2013. Macro (GDP, inflation) and domestic financial indicators worsened while external vulnerability improved. Asia continues to register the lowest vulnerability reading in aggregate and across categories.

Global EM vulnerability profile has deteriorated



Source: SG Cross Asset Research/EM. Notes: The higher the score, the lower the vulnerability; The indicator is constructed using macro variables with a quarterly frequency. The choice of the timeframe (December 2008-June 2015) is dictated by the limited availability of the data across the 24 EMs and for the analysed variables.

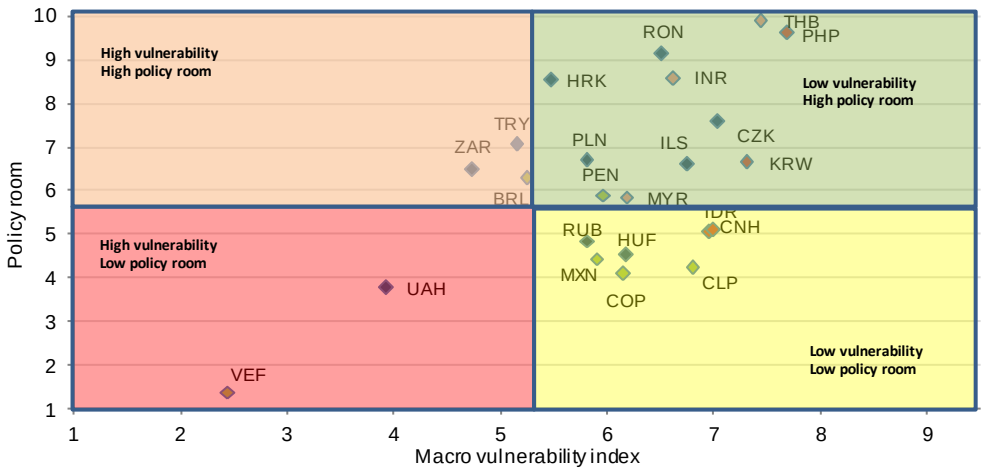
Decomposition of GEM vulnerability index



Source: SG Cross Asset Research/EM;Note: The higher the score, the lower the vulnerability

The vast majority of countries fall within the low vulnerability category – with the exceptions of Turkey, Brazil, South Africa, Ukraine, and Venezuela. The Philippines and Thailand ranked the highest, while the Czech Republic stands out as the best performer in EMEA (the rest of the CEE countries have reversed some of last year's improvements) and Chile posted a better reading than the rest of LATAM. In terms of policy room (fiscal space, FX reserves, real rate compared to the five-year average), Thailand, the Philippines and Romania retain the widest room for manoeuvre. At the other end of the spectrum, Colombia and Chile are bound by limited remaining headroom. The combination of high returns and still low-volatility, coupled with sound vulnerability metrics, preserves the attractiveness of CNY, IDR and INR.

LATAM countries constrained by limited remaining policy room for manoeuvre

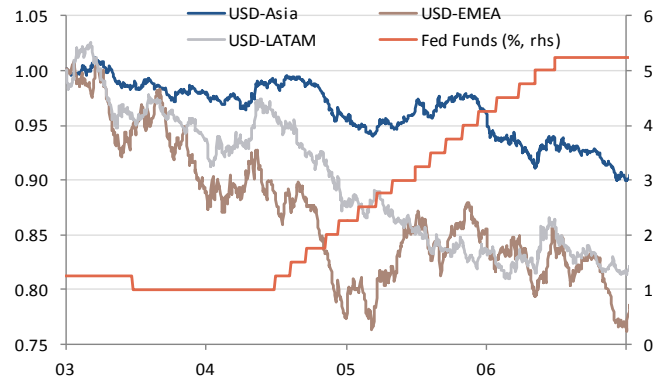


Source: SG Cross Asset Research

Macro conditions vastly different than in 2004

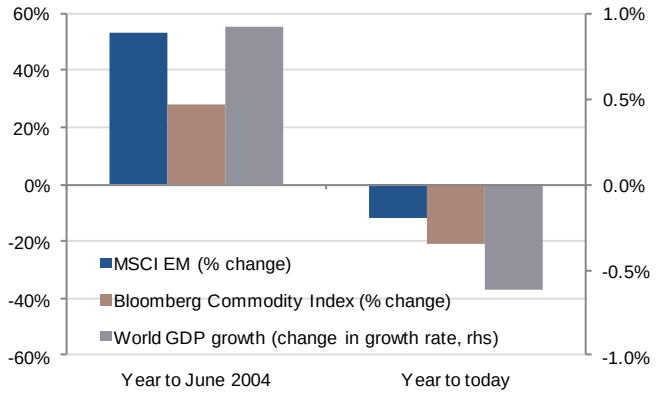
One counter argument to a bearish view is that EM currencies appreciated throughout the 2004-07 Fed tightening cycle. However, that period is vastly different than the current situation in a number of respects. Back then the commodity cycle was booming, equity markets were surging, capital was flowing into EM, the carry trade was in vogue, and there was an exceptionally positive narrative surrounding EM growth. It is almost the polar opposite situation now, and while the underlying macro factors may shift, the starting point for EM heading into Fed tightening does not appear conducive for EM currencies to climb the wall of worry.

EM FX before and after 2004 Fed tightening



Source: SG Cross Asset Research. Currency baskets indexed to Jan 2003 =1.

Current landscape different than the previous tightening

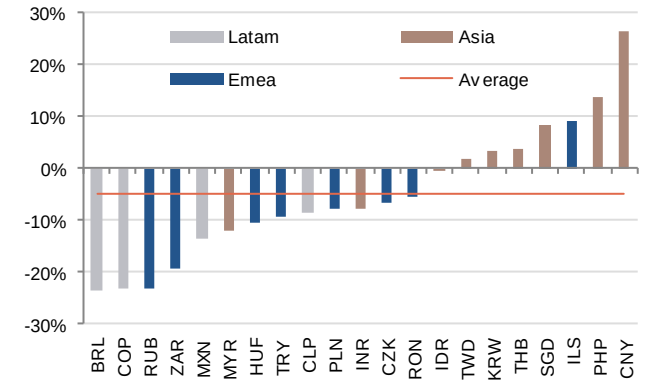


Source: SG Cross Asset Research

Valuations are cheap for a reason

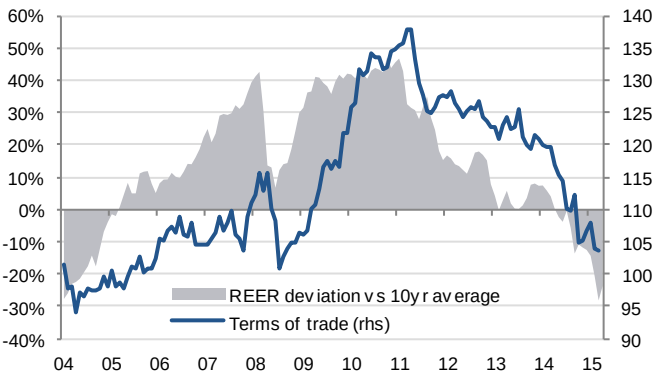
Real effective exchange rates (REER) across EM appear cheap relative to their ten-year averages but this is misleading because the macro backdrop was supportive of currency appreciation in 2004-2011 but less so in recent years. Furthermore, currencies showing the largest undervaluation all share common features – exposure to commodity prices – and in some cases, current account deficits. Valuations are rarely a sufficient reason to buy EM currencies, and until a catalyst emerges cheap valuations can persist (link). However, the overall cheapness will to some extent limit a repeat of 2015 and is one reason why we expect more benign depreciation pressure next year.

EM REER deviation vs ten-year average



Source: SG Cross Asset Research. Bloomberg. Shows % change in USD-XXX since July 2014

BRL REER deviation vs terms of trade



Source: SG Cross Asset Research. BIS Shows % change in REER since July 2014

Winners and losers in 2016

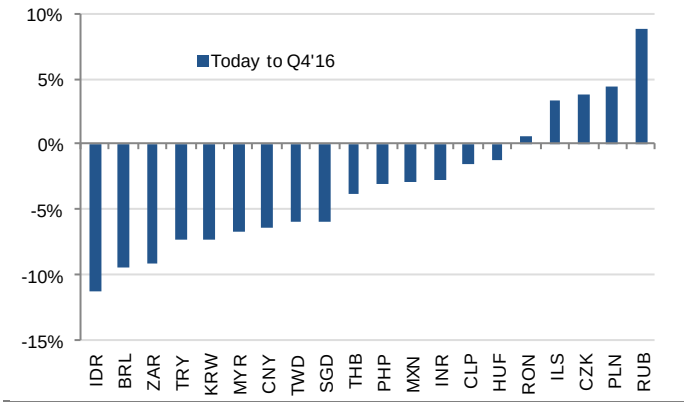
The dollar is expected to remain on an upward trajectory in 2016 but the gains against EM currencies will be modest (3.3%) compared to that experienced in 2014 and 2015 (13%). High yielders with current account deficits such as the BRL, IDR, TRY, and ZAR will remain at the mercy of poor risk appetite and weak capital inflow dynamics.

The RMB is expected to embark on a path of gradual and controlled depreciation that will drag down the entire regional currency complex, but more so those with high export exposure and similar trade structures (KRW and TWD). The MXN and CLP will show modest losses by comparison as Banixo embarks on an aggressive campaign to raise interest rates by 200bp and BCCh hikes by 75bp in the first half of the year.

It is not all doom and gloom. The RUB is expected to do well next year as domestic factors coupled with modestly higher oil prices will prove beneficial. The PLN, HUF, CZK, and RON are expected to outperform the EUR on the back of prominent ECB QE spill-over effects given the closer financial ties to the euro area, robust domestically-generated growth dynamics, and suppressed inflation.

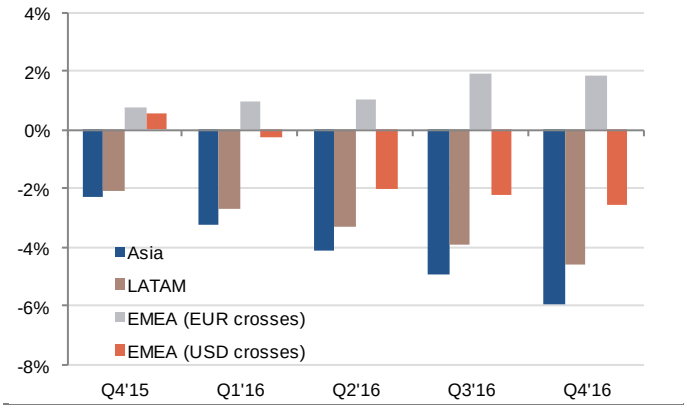
Regionally, Asian currencies will underperform as the weight of China's growth slowdown and currency depreciation has a disproportionate impact. Mitigating more significant weakness is the interventionist tendencies of central banks backed by their huge stockpile of FX reserves and favourable external positions. The next worst-performing region is expected to be LATAM, followed by the EMEA dollar bloc.

SG forecasts: spot moves (by currency)



Source: SG Cross Asset Research. CZK, HUF, PLN, Ron measured against EUR.

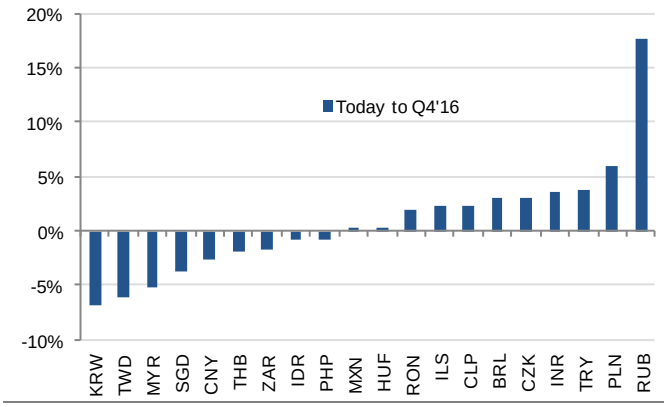
SG forecasts: spot moves (by region)



Source: SG Cross Asset Research. Asia (CNY, KRW, TWD, PHP, MYR, SGD, THB, INR, IDR), LATAM (BRL, MXN, CLP), EMEA USD bloc (TRY, ZAR, RUB, ILS), EMEA EUR bloc (RON,PLN, CZK, HUF)

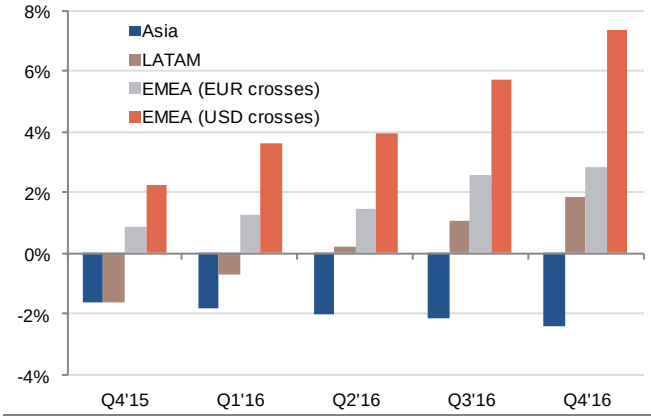
In contrast, the CEE countries will move in the opposite direction against the EUR. Real GDP performance (in excess of 3% yoy, on aggregate), natural support from strong basic balances and absorption of EU inflows remain antithetical to recurrent bouts of scrutiny on the more vulnerable high yielders in the region. The gradual recovery across Europe and limited direct exposure to China should shelter regional export dynamics, although a gradual pick-up in import demand may act as an offsetting factor for net exports in 2016. FX valuations will continue to mirror the benefits of the commodity super-cycle, with spot levels still lagging the past year's improvements in terms-of-trade.

SG forecasts: spot moves vs forwards (by currency)



Source: SG Cross Asset Research. CZK, HUF, PLN, Ron measured against EUR

SG forecasts: spot moves vs forwards (by region)



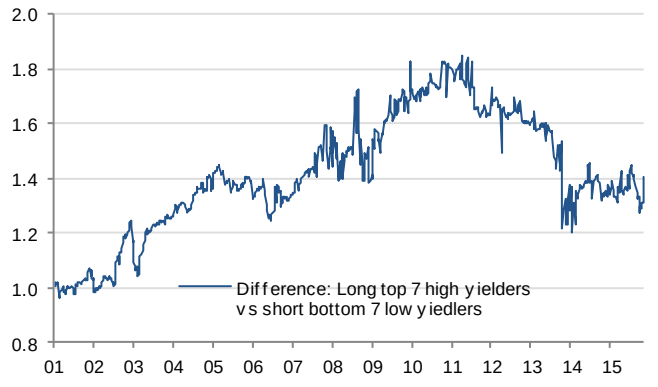
Source: SG Cross Asset Research. Asia (CNY, KRW, TWD, PHP, MYR, SGD, THB, INR, IDR), LATAM (BRL, MXN, CLP), EMEA USD bloc (TRY, ZAR, RUB, ILS), EMEA EUR bloc (RON,PLN, CZK, HUF)

On a carry-adjusted basis there is significantly more differentiation across countries and a more neutral assessment of EM currency performance. The majority of EM currencies that are expected to underperform the forwards are low yielders in Asia. Our top pick for a second straight year on a carry-adjusted basis within Asia is the INR. As a group, LATAM is expected to outperform the forwards with Brazil leading the way. The RUB will post the best carry-adjusted performance followed by the PLN. Regionally, the EMEA dollar bloc will perform the best, followed by the EMEA EUR bloc.

Can the carry trade be revived?

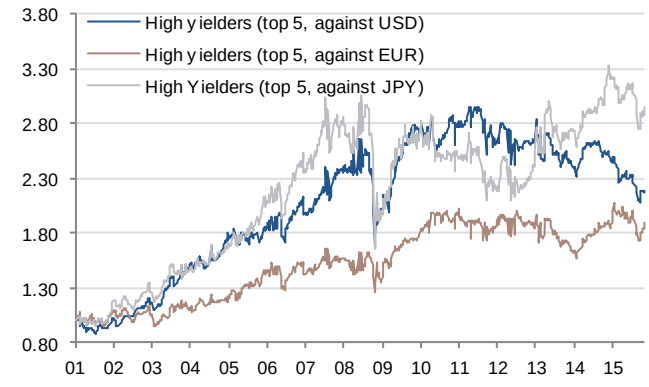
The heyday of the EM FX carry trade peaked in 2007 and since then it has generally been a painful strategy for buy-and-hold investors – and an unrewarding one since 2010 even for dynamic quantitative strategies. The choice of the funding leg matters to some extent; an inter-EM passive carry strategy or long EM yielders against the USD has lost money since 2011. Using the EUR as the funding leg has produced flat returns since 2010 while JPY-based strategies have fared much better.

Inter-EM carry trade basket – passive



Source: SG Cross Asset Research/EM. Basket is dynamically rebalanced based on interest rates. Currencies selected from the universe of SGD, PHP, TWD, INR, THB, IDR, KRW, CZK, HUF, PLN, TRY, ZAR, BRL, MXN, CLP.

Choice of funding leg matters



Source: SG Cross Asset Research/EM. Basket applies signals and filters to optimise returns. EM (ex-Asia) strategy selects high and low yielders from BRL, MXN, ZAR, HUF, CZK, TRY, PLN, RUB and ILS. Asia carry strategy selects high and low yielders from INR, KRW, IDR, TWD, PHP, SGD, THB, JPY.

Despite the generally poor performance, the sharp depreciation in EM currencies coupled with some pockets of undervaluation and the ongoing global low-yield environment, is starting to stoke some renewed interest in carry.

While there might be some selective carry opportunities in 2016, especially if the interest rate channel gains more prominence due to some EM central banks raising interest rates, tail risks are still significant and macroeconomic and financial markets conditions may not be favourable for a full revival of the carry trade. For currencies where we have a bullish outlook against the forwards, we suspect there will be better entry levels through 2016. Relative value structures will be our preferred means to capture yield differentials, especially in Asia where we like long CNH-TWD and short TWD-INR.

Risks

The tug-of-war between the bullish and bearish camps will be more pronounced next year. While our baseline scenario envisages further modest EM FX depreciation, valuation and carry could become more important considerations and at a minimum provides a starting point for investors to fade the multi-year depreciation trend. A sharp and sustained rally in commodity prices would boost risk appetite and could help reverse the general course of the USD against both EM and G10. A long string of healthier corporate earnings would put corporate default risks on the back burner.

Market expectations for Fed tightening could stay subdued and at the same time policy uncertainty regarding the speed and magnitude of rate hikes could be relegated to a secondary issue for investors. A prolonged period of stabilisation in Chinese growth that causes hard landing fears to significantly recede could help sentiment. If markets stay well behaved in the initial phase of further RMB depreciation, it could cause a positive self-reinforcing cycle. Large-scale fiscal stimulus from China is a low probability event in our opinion, and may actually turn out to be a negative development for EM if it is viewed as a sign of economic weakness and intensification of downside risks. Fiscal stimulus in 2009 was in response to a global crisis whereas in the current situation it would be isolated to China and would have dire consequences for sentiment.

TRADING CONVERGING EM PATHS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A set of bearish EM outcomes (Fed tightening, Chinese growth, yuan depreciation and a rise in EM corporate defaults) suggests that correlations in the EM space will stay elevated and could rise further in 2016. In G10, the yen remains threatened by Fed/BoJ divergence and Asian currency wars. Markets are still pricing these joint macro risks as diversified, offering the opportunity to take advantage of a cheap worst-of option.

Buy 6M worst-of CNH, JPY, TWD, CLP ATMS puts / USD calls

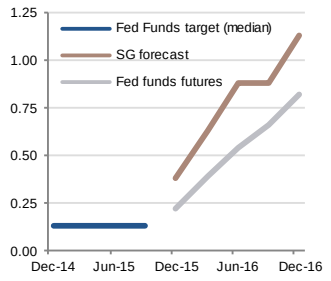
Risks: EM FX or the yen outperforming the dollar

Investors buying a worst-of option cannot lose more than the premium initially invested. The option will expire in the money only if all of the four underlying currencies have depreciated against the dollar in six months. In that case, the payoff will deliver the smallest of the four dollar outperformances.

Colliding bearish EM outcomes

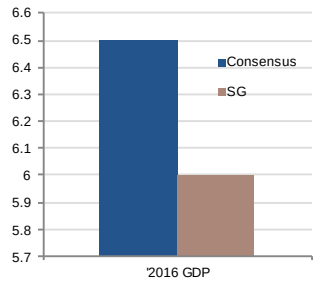
The bearish trend in EM currencies that began in 2011 will be reinforced next year by a number of macroeconomic and financial shocks – Fed tightening, slower Chinese growth, RMB depreciation, and rising corporate defaults. While these are widely recognized risks, it might be an insurmountable achievement for EM currencies to digest so many negative developments and come out unscathed.

Graph 1a. Faster tightening



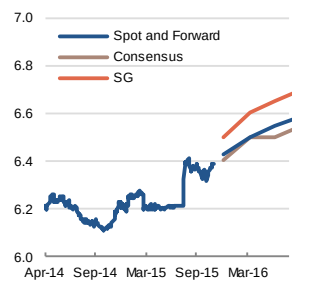
Source: SG Cross Asset Research/EM

Graph 1b. Weaker Chinese GDP



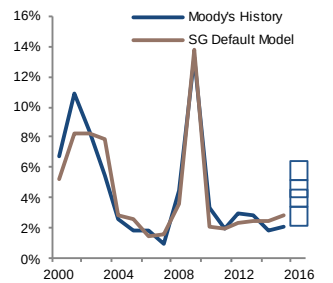
Source: SG Cross Asset Research/EM

Graph 1c. More RMB depreciation



Source: SG Cross Asset Research/EM

Graph 1d. EM corporate defaults



Source: SG Cross Asset Research/EM

Fed tightening

Rolling policy uncertainty will keep risk appetite depressed. After the initial Fed hike, there might be a small but unsustainable relief rally, but this is less certain than earlier in the year – a "dovish" hike is now the consensus (Graph 1a), and positioning is close to neutral. Market attention will increasingly shift to the speed, magnitude, and duration of the tightening cycle, and if expectations gravitate toward the SG view (100bp of hikes over 12 months and a terminal rate of 2.75%), **downward pressure on EM could intensify**. As long as policy uncertainty remains at the forefront, rallies will be temporary, shallow, and prone to reversals.

Chinese growth

A large downside surprise in Chinese growth would cause bearish sentiment to permeate across the EM complex. **Korea and Taiwan are the most sensitive to the direct export channel in Asia, while Brazil and Chile are most susceptible in LatAm, with EMEA being well insulated**. SG economics expects Chinese GDP to grow 6.0% in 2016, versus the consensus of 6.5% (Graph 1b), implying a marked slowdown from the pace seen in 2015. As the year progresses and downside risks become evident, there will be a revival of hard-landing fears.

RMB depreciation

Further yuan depreciation (Graph 1c) could pull the entire EM universe, especially Asia, down with it. To maintain competitiveness, **EM policymakers might endorse more currency weakness, especially in those economies with the export structures that are most similar to China's** – Taiwan, Korea, Thailand, Poland, Turkey, the Czech Republic and Mexico. Depreciation is necessary to delink from the USD trend, and this can happen in a gradual and controlled manner (USD/CNY 6.80 by end-2016). Larger moves are possible if regional currencies depreciate more than the yuan and the associated trade-weighted appreciation is too much for policymakers to bear relative to growth and employment objectives.

Corporate defaults

The breakneck growth of the EM corporate hard-currency markets since 2009 has been driven by rising corporate leverage. Yet earnings remain volatile, which suggests that **defaults could rise** (Graph 1d). Hard-currency corporate bonds have so far performed less poorly than EM currencies and no worse than hard-currency sovereign bonds, perhaps due to the illiquidity of the asset class. However, primary issuance – fuelled by redemptions – could see the market reprice in the coming quarters (link).

Buy a worst-of EM puts/USD call

Markets are not fully priced for individual (never mind joint) macro risks in 2016, which leaves us sceptical of pursuing a contrarian strategy. Over time, the general patterns in regional aggregates and the majority of individual currencies should remain closely linked. Underthese conditions, **a worst-of EM puts is discounted by soft correlations, while we expect correlated outcomes.**

Building an effective short-list of shorts

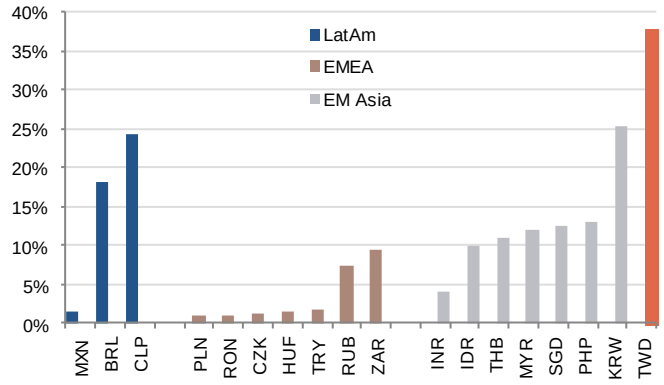
Our collision scenario prompts us to contemplate the following shorts candidates against the USD: **CNH, KRW, TWD, BRL, CLP, JPY and AUD.**

More currency flexibility, volatility, and the continuation of yuan weakness are likely forthcoming, as depreciation will be required to delink from the USD and provide a cushion to the growth slowdown. This will most hurt China's neighbours Korea and Taiwan, noticeably via the trade channel (Graph 2). Taiwan's direct exposure to China, by far the highest in EM, introduces significant downside potential to the TWD if Chinese growth disappoints. In addition, if the opposition party wins both the general and parliamentary elections, the TWD could suffer. Similarly, Korea will be impacted by the weaker yuan, but also via its export structure, similar to China. More downside risks would arise from the eruption of a currency war in the region.

LatAm will also feel the pain, with Brazil and Chile at the top of the list (Graph 2). Chile produces more than one-third of the world's copper and its trade exposure to China is twice

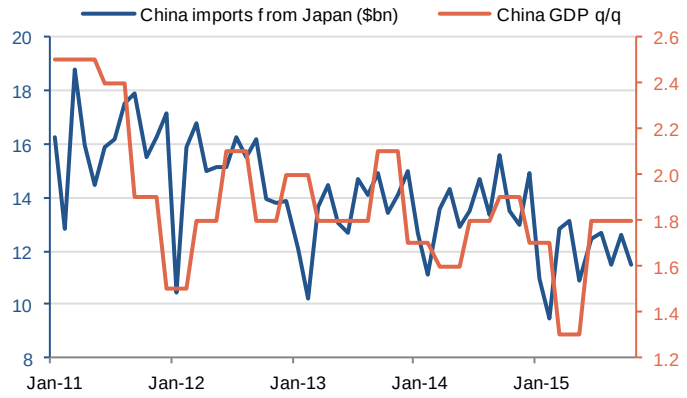
that of the US. Similarly, in the G10, the Australian dollar remains the most directly exposed to China's woes, given the reliance of the local economy on the mining sector.

Graph 2. Taiwan, Korea and Chile have the biggest export exposure to China in EM world



Source: SG Cross Asset Research/EM

Graph 3. Chinese slowdown continues to threaten Japanese trade



Source: Bloomberg/Customs General Administration PRC, SG Cross Asset Research/Forex

Yen depreciation is still needed to support the movement of the Japanese economy towards exiting deflation. The BoJ is expected to maintain its easy monetary policy, and real long-term bond yields remain negative, while the Fed is set to tighten. Against this backdrop, USD/JPY should continue rising along with US yields. In addition, the pace of Japanese exports to China follows the path of Chinese growth (Graph 3), suggesting that a downside scenario would require a boost in Japan's competitiveness.

Minimising the volatility of a not too small FX basket

The volatility of an FX basket adds individual volatility risks, but also includes correlation risks. If correlations are high and positive, this increases the volatility of the basket and makes the worst-of option more likely to expire in the money, since all currencies are expected to move in the same direction. This option pays the smallest individual performance within a basket, so it needs all components to deliver to still generate a gain. It is therefore buying intra correlations. **In minimising the portfolio volatility, the cost of the worst-of option is lowered** because it penalises the expected amplitude of the moves (via individual volatility) and the likelihood that they will occur in the same direction (via correlations). In the same fashion, considering a larger number of currencies increases the probability of an underperforming outlier and thus of a zero payoff. So all things being equal, **a larger basket also lowers the price**.

However, the collision of bearish EM outcomes detailed above should eventually guarantee that the realised correlations will be globally high, while **the market underestimates both the potential future EM volatility and EM intra correlations.**

The optimal basket: short CNH, JPY, TWD, CLP against USD

We computed the 'implied volatility' of the 35 portfolios of four currencies among our seven candidates (Graph 4). This metric is defined from both market volatilities and correlations. In the ten least volatile portfolios, the most represented currencies are the JPY (38%), the CNH (33%), the TWD (29%) and the CLP (25%). Unsurprisingly, the BRL is almost not used as it is by far the most volatile. This is also the composition of the minimal volatility portfolio and we therefore elect these four currencies for our worst-of option recommendation.

➔ **We recommend buying a 6M worst-of CNH, JPY, TWD, CLP ATMS puts / USD calls.**

Graph 4. The ten four-currency baskets having the lowest volatility (JPY: 38%, CNH: 33%, TWD: 29%, CLP: 25%)

	Curency 1	Curency 2	Curency 3	Curency 4	6M volatility
1	TWD	JPY	CNH	CLP	**5.7**
2	TWD	JPY	CNH	AUD	**6.0**
3	TWD	KRW	JPY	CNH	**6.3**
4	KRW	JPY	CNH	CLP	**6.6**
5	TWD	JPY	CNH	BRL	**6.6**
6	JPY	CNH	CLP	AUD	**6.7**
7	KRW	JPY	CNH	AUD	**7.0**
8	TWD	KRW	JPY	CLP	**7.0**
9	TWD	JPY	CLP	AUD	**7.0**
10	TWD	CNH	CLP	AUD	**7.1**

The 6M volatilities of four-currency equi-weighted baskets are computed from 6M implied correlations and volatilities.
Source: Bloomberg, SG Cross Asset Research/Forex

Graph 5. The JPY is offering diversification potential to EM shorts

6M implied correlations

	AUD	BRL	CLP	CNH	JPY	KRW	TWD	Average
AUD		27%	56%	32%	38%	51%	49%	42%
BRL	27%		27%	-5%	19%	39%	6%	19%
CLP	56%	27%		31%	11%	49%	62%	39%
CNH	32%	-5%	31%		10%	55%	63%	31%
JPY	38%	19%	11%	10%		31%	11%	20%
KRW	51%	39%	49%	55%	31%		83%	51%
TWD	49%	6%	62%	63%	11%	83%		46%
Average	42%	19%	39%	31%	20%	51%	46%	

Source: Bloomberg computations, SG Cross Asset Research/Forex

Correlation analysis

The JPY is the most represented currency because it offers a maximal average diversification to the basket (Graph 5). This is really the cheapening component of our trade and an appealing opportunity, since **the market underestimates the chances of a joint weakening of the yen and EM currencies.** The BRL offers a similar degree of diversification but is much less affordable in volatility terms. The CNH offers the second best diversification potential and is also the second most represented currency among our ten cheapest baskets (Graph 4).

Including the KRW would be somewhat redundant given its 83% correlation with the TWD. In the same fashion, the including both the AUD and the CLP is not useful. **Incidentally, it turns out that our optimisation process picked both the TWD and the CLP** (Graph 4)**, which have the highest regional exposures to China** (Graph 2).

WHAT THE CHARTS SAY

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The Dollar Index

Uptrend for 2016, but a marginal new high to be followed by a consolidation phase in the near term.

The Dollar Index signalled a long-term uptrend after confirming a massive inverted head and shoulders formation last year and subsequently breaking above the down-pointing triangle pattern in force since the 1980s (currently at 93.25/92.50).

Compelling similarities with price action in the 1990s can be drawn, as the Dollar Index then formed an identical base formation (double bottom coupled with an inverted head and shoulders). The Index rallied thereafter relentlessly, with shallow consolidation, towards the projected target of the pattern and the bullish USD cycle lasted for eight to nine years. Thus, the uptrend in the Dollar Index is poised to persist over the course of 2016, with a significant target located at 106.60/109.00, the pattern's projected target and retracement levels of the previous down trend. Long-dated indicators suggest further upside before they achieve a major ceiling, suggesting bullish momentum remains vivid.

The Index looks poised to head towards 103.30/104.10, a projection for the ongoing fifth wave from an Elliot standpoint. However, a consolidation cannot be ruled out once the aforementioned marginal highs are achieved. This is also indicated by weekly Stochastic, which is testing an important graphical ceiling (horizontal line). As witnessed back in 2008, 2010 and 2012, the Index has undergone pullbacks after the indicator tested this horizontal line.

Eventually the up move is expected to persist in 2016.

The Dollar Index, monthly chart

The Dollar Index, weekly chart

Source: SG Cross Asset Research/Equity

GBP/JPY

JPY to strengthen across the board after it achieved multi-decade trend line.

Having undergone a 4Y recovery, GBP/JPY met the descending trend at 196/200 this year. Up moves in the past have been capped around this line on multiple occasions dating back to 1975. The price action since the 1990s has evolved within a flattish channel, the median of which also coincides with 196/200.

Long-dated indicators have topped out and retraced after hitting a pivotal ceiling (circled). This horizontal ceiling has given way to elongated downtrends previously (in 1980, 1990, 1998 and 2007). Thus, 196/200 is likely to remain a key hurdle.

Formation of a multi-month head and shoulders pattern (inset) adds more weight of evidence to the above configuration, as it underlines the slow deterioration of bullish momentum, particularly since late 2014. Confirmation that this pattern, i.e. a break below 175, which is also the monthly moving average, has underpinned the up move in the pair since 2012 will signal a turnaround in the trend.

We this think a period of JPY strengthening is likely in 2016; GBP/JPY shows the possibility of a down move towards the 2009 highs of 163.

GBP/JPY, monthly chart

Source: SG Cross Asset Research/Equity

AUD/NZD

Accrued evidence of base formation above the 30Y support zone of 1.04/1.00; once confirmed, expect a recovery spanning over a couple of years towards 1.19 and 1.2350.

Having undergone a 4Y downtrend, AUD/NZD appears to have found a pivotal bottom at parity earlier this year. The pair has since tested the confluence of a nearly horizontal channel that has spanned for more than 30 years and a descending channel limit.

The pair is forming a probable inverted head and shoulders pattern at the aforementioned levels. This pattern normally suggests trend reversal to the upside. It is worth noting that the pair witnessed a similar downtrend in the 1990s (in a descending channel in wave A) but then reversal signs were not as vivid as is the case now.

Monthly indicators have diverged positively, highlighting a higher probability of a breakout. When a move above 1.1450 happens, this will confirm the formation and indicate an extended recovery towards 1.19 and probably even towards the 2011 lows of 1.2350. This upward move is expected to span for a couple of years.

AUD/NZD, monthly chart

Source: SG Cross Asset Research/Equity

USD/RUB

Parabolic uptrend of 2014 has given way to a lengthy consolidation, which should persist over the course of 2016.

USD/RUB spiked higher last December but faced stiff resistance near 78, the projected target for the multi-year channel upside breakout, where it formed a monthly shooting star. This pattern happened after a parabolic rally and the sudden reduction in the bullish positioning (i.e. the flow of profit-taking) resulted in the monthly close being far off highs and near the monthly open. This has led to a phase of consolidation that has spanned through 2015. The broad range has been between 72 and the multiyear channel upper limit at 52/48.

The upward move of 2014 resembles to the one in 2008-09, after which USD/RUB went into a prolonged sideways range that was contained within a broad triangle pattern. Thus, the sequence of expansion in momentum followed by contraction appears to be repetitive. Considering its duration, one can expect USD/RUB to remain sideways over 2016, between 72 and 52.

USD/RUB, monthly chart

USD/RUB, quarterly chart

Source: SG Cross Asset Research/Equity

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