

## Previous Weeks

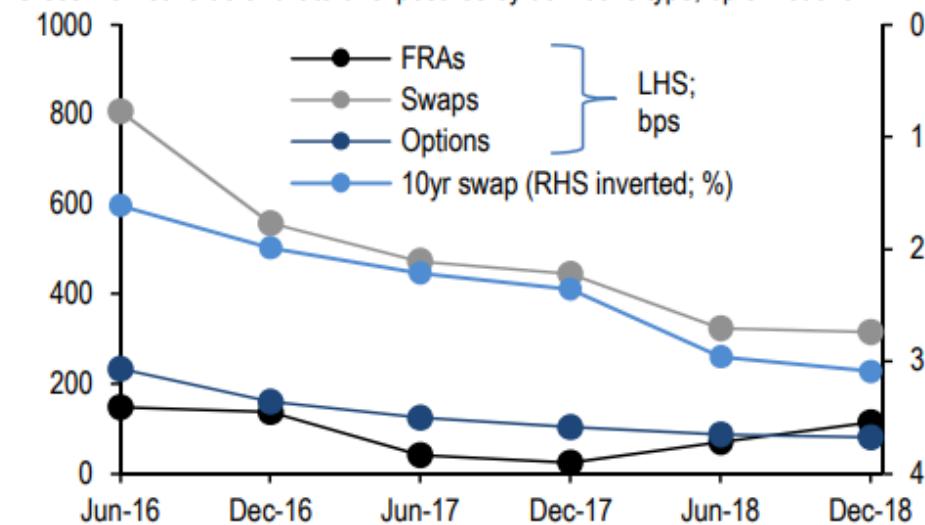
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[https://docs.google.com/document/d/1bQQfJfSAIzM5vOH63hcnTuBol3xCUxUyRF2SY\\_djAFE/edit?usp=sharing](https://docs.google.com/document/d/1bQQfJfSAIzM5vOH63hcnTuBol3xCUxUyRF2SY_djAFE/edit?usp=sharing)

## CHART OF THE WEEK

### LEGACY SPVs and exposure to SOFR/FF BASIS

**Exhibit 7: As rates move higher towards historically more normal levels, the aggregate market-to-market of bilateral (uncleared) swaps outstanding tends to decline**

Gross market value of bilateral exposures by derivative type; bp of notional

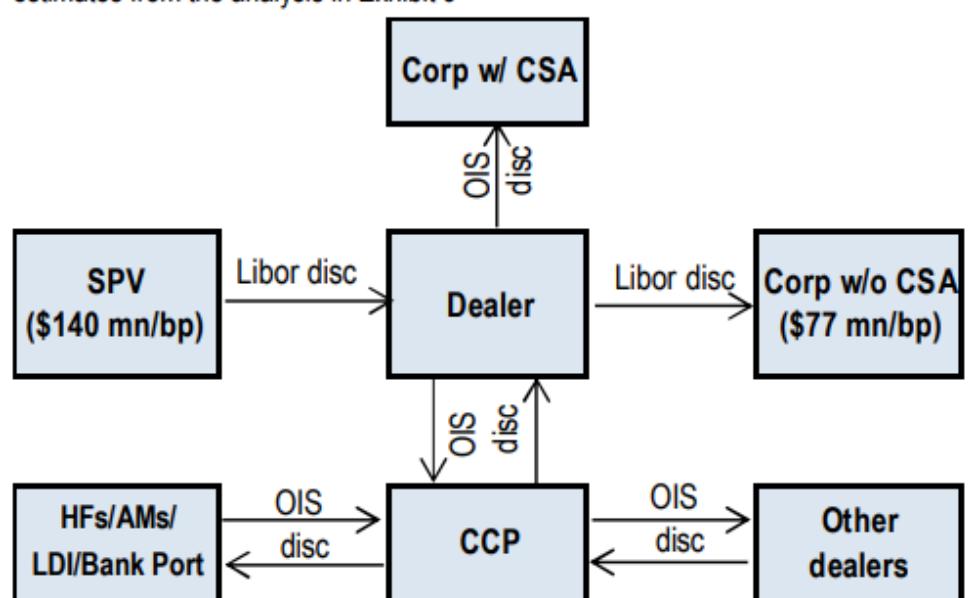


Note: Data of Dec-18

Source: J.P. Morgan, BIS

**Exhibit 8: Dealers face two counteracting sources of uncollateralized swap flow, in the form of hedges from legacy SPVs and non-financial corporate issuance**

Schematic of the USD swaps market, discounting as indicated and discounting risk estimates from the analysis in Exhibit 9



see in G10 section (2nd half)

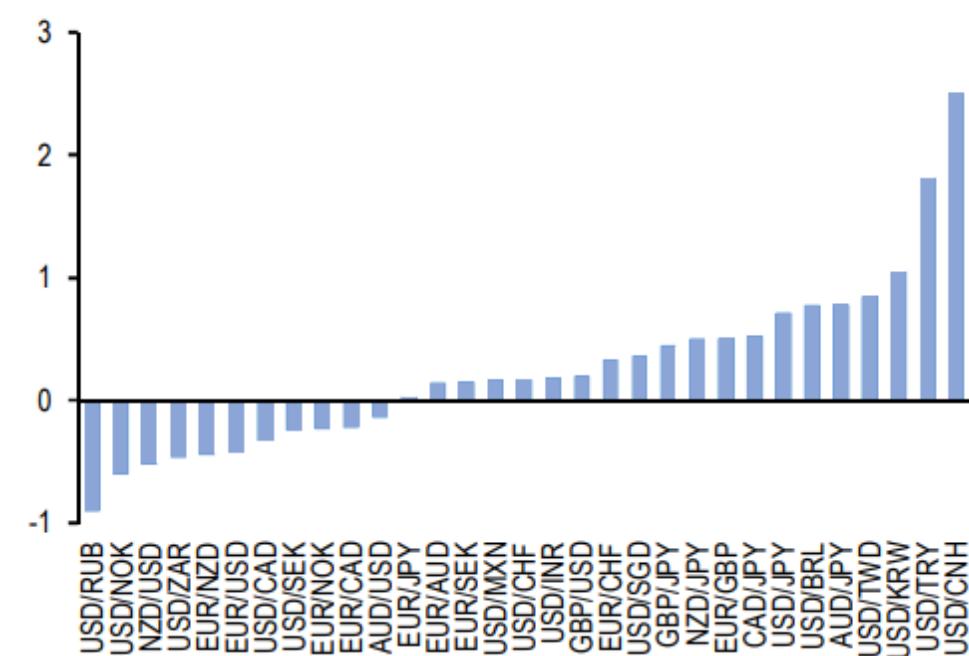
## Central Bank rates

Official rate % per annum (unless stated)	Start of cycle			Last move	Next move expected	Forecasts			
	Current	date	level			Q2 19	Q3 19	Q4 19	Q1 20
<b>Advanced</b>									
Fed funds rate	2.25-2.50	Tightening: 16 Dec 15	0-0.25	Dec 18 (+25)	No change through 2020	2.25-2.50	2.25-2.50	2.25-2.50	2.25-2.50
BoJ rate of policy-rate balances	-0.10	Easing: 30 Oct 08	0.50	Jan 16 (-20-0)	Beyond 2020	-0.10	-0.10	-0.10	-0.10
BoJ target of 10y JCB yields	0.00	Easing: 21 Sep 16	-	Sep 16 (0)	Beyond 2020	0.00	0.00	0.00	0.00
ECB main refinancing rate	0.00	Easing: 3 Nov 11	1.50	Mar 16 (-5)	Beyond 2020	0.00	0.00	0.00	0.00
ECB deposit facility rate	-0.40	Easing: 3 Nov 11	0.75	Mar 16 (-10)	Jun 20 (+15)	-0.40	-0.40	-0.40	-0.40
BOE bank rate	0.75	Tightening 2 Nov 17	0.25	Aug 18 (+25)	Beyond 2020	0.75	0.75	0.75	0.75
RBA cash rate	1.50	Easing: 3 Feb 15	2.50	Aug 16 (-25)	Beyond Q1 2020	1.50	1.50	1.50	1.50
RBNZ cash rate	1.75	Easing: 10 Jun 15	3.50	Nov 16 (-25)	Beyond Q1 2020	1.75	1.75	1.75	1.75
Swiss National Bank: 3-month libor	-1.25 to -0.25	Easing: 8 Oct 08	2.25 to 3.25	Jan 15 (-50)	Beyond H1 2020	-1.25 to -0.25	-1.25 to -0.25	-1.25 to -0.25	-1.25 to -0.25
Norges Bank: Deposit rate	1.00	Tightening: 20 Sep 18	0.50	Mar 19 (+25)	Jun 19 (+25)	1.25	1.25	1.50	1.50
Riksbank: Repo rate	-0.25	Tightening: 20 Dec 18	-0.50	Dec 18 (+25)	Beyond Q1 2020	-0.25	-0.25	-0.25	-0.25
Bank of Canada	1.75	Tightening: 12 Jul 17	0.50	Oct 18 (+25)	Q1 20 (+25)	1.75	1.75	1.75	2.00
<b>Emerging</b>									
China: 1y bench. lending rate	4.35	Easing: 21 Nov 14	6.00	Oct 15 (-25)	Beyond 2020	4.35	4.35	4.35	4.35
India: Repo rate	6.00	Easing: 07 Feb 19	6.50	Feb 19 (-25)	Jun 19 (-25)	5.75	5.75	5.75	5.75
Indonesia: 7 day reverse repo	6.00	Tightening: 17 May	4.25	Nov 18 (+25)	May 19 (-25)	5.75	5.50	5.25	5.25
Korea: Base rate	1.75	Tightening: 30 Nov 17	1.25	Nov 18 (+25)	Q3 19 (-25)	1.75	1.50	1.50	1.50
Hungary: 2w deposit rate	0.90	Easing: 22 Mar 16	1.35	May 16 (-15)	Q4 19 (+10)	0.90	0.90	1.10	1.20
Poland: 2w repo rate	1.50	Easing: 4 Mar 15	2.00	Feb 15 (-50)	Beyond Q1 2020	1.50	1.50	1.50	1.50
Russia: One-week repo rate	7.75	Easing: 30 Jan 15	17.00	Dec 18 (+25)	Q3 19 (-25)	7.75	7.50	7.00	7.00
South Africa: Repo rate	6.75	Tightening: 22 Nov 18	6.50	Nov 18 (+25)	Jul 19 (+25)	6.75	7.00	7.00	7.25
Turkey: One-week repo rate	24.00	Tightening: 24 Nov 16	7.50	Sep 18 (+625)	Q2 19 (-200)	22.00	20.00	20.00	20.00
Brazil: SELIC rate	6.50	Easing: 19 Oct 16	14.25	Mar 18 (-25)	Q4 19 (+50)	6.50	6.50	7.00	8.00
Mexico: Overnight rate	8.25	Tightening: 17 Dec 15	3.00	Dec 18 (+25)	Beyond Q1 2020	8.25	8.25	8.25	8.25

Note: Rates as of COB 17 May 2019 in % per annum (unless stated) Source: Barclays Research

**Exhibit 3. Aside from CNH, KRW and TWD in Asian FX, TRY and BRL in other EM, and Yen-crosses, the rest of the FX option universe has shrugged off the re-escalation in US/China trade tensions**

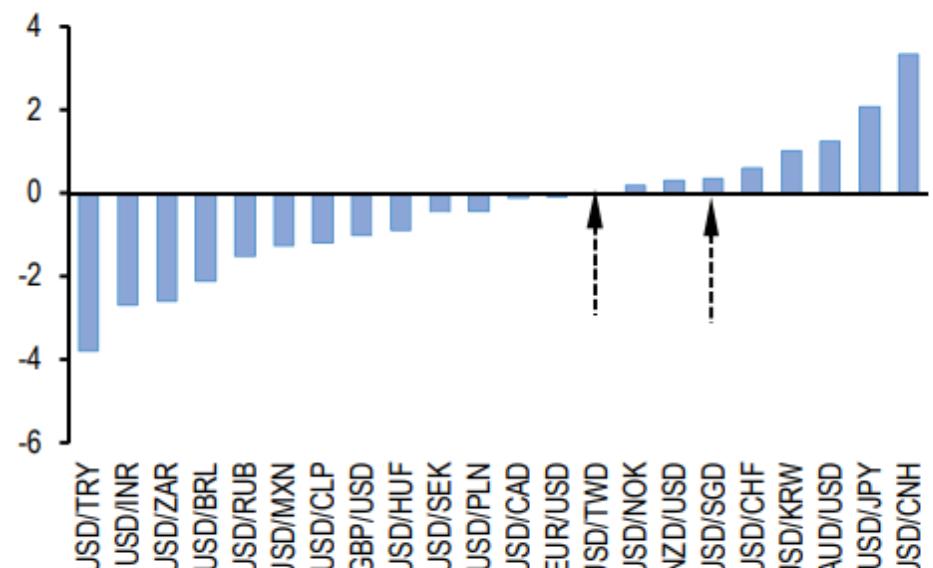
Returns (vol pts.) from **owning** delta-hedged 3M ATM straddles from 03-May-19 to 16-May-19. Options delta-hedged daily at close-of-business using smile forward deltas and option-expiry matched forwards. No transaction costs.



exploiting a non-linear negative reaction in Asian FX if the hoped for rapprochement at G20 fails to fructify, and also

**Exhibit 4. USD/CNH prices in noticeably greater event risk premium for the June 28/29 G20 summit than other trade-sensitive Asian currencies like SGD and TWD**

Premium (vol pts.) of 27-Jun to 01-Jul FVA over 27-Jun spot ATM vol

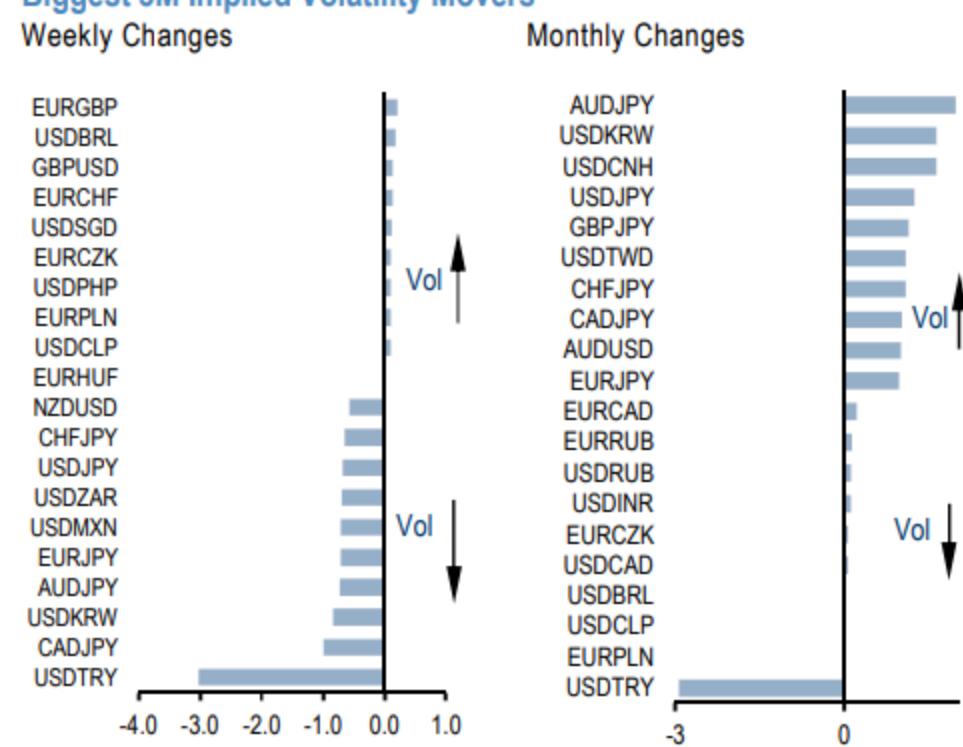


Source: J.P.Morgan

## Implied Volatilities

	Current Implied Vols			Avg. Implied Vols			Z-Score Implied Vols		
	1M	3M	1Y	1M	3M	1Y	1M	3M	1Y
AUDJPY	9.4	10.1	10.5	9.3	9.8	10.9	0.1	0.4	-0.6
AUDUSD	7.5	8.2	8.6	8.0	8.3	9.1	-0.6	-0.2	-1.0
CADJPY	7.5	8.1	8.9	8.9	9.3	10.1	-1.3	-1.4	-2.0
CHFJPY	5.7	6.3	6.9	6.7	7.1	8.0	-0.9	-0.9	-1.3
EURAUD	6.4	6.9	7.2	7.1	7.4	8.2	-1.0	-0.9	-1.6
EURCAD	5.2	5.5	6.4	7.1	7.3	7.7	-2.2	-2.3	-2.2
EURCHF	4.5	4.6	5.0	5.3	5.4	5.9	-0.7	-1.0	-1.5
EURGBP	6.4	6.7	7.7	7.6	7.9	8.2	-0.7	-0.8	-0.6
EURJPY	6.5	7.1	7.6	7.9	8.3	9.2	-1.2	-1.4	-2.1
EURNOK	5.4	6.1	6.7	6.4	6.6	6.9	-1.4	-0.9	-0.7
EURNZD	6.1	6.9	7.5	7.5	7.8	8.6	-1.5	-1.2	-1.5
EURSEK	5.2	5.6	6.0	6.2	6.2	6.4	-1.5	-1.2	-1.2
EURUSD	4.8	5.4	6.3	6.8	7.0	7.4	-2.1	-2.4	-2.6
GBPJPY	8.6	9.1	9.7	10.0	10.3	10.8	-0.8	-0.8	-1.0
GBPUUSD	7.4	7.8	8.7	8.7	8.9	9.1	-0.6	-0.6	-0.3
NZDUSD	7.2	8.2	8.8	8.5	8.8	9.6	-1.6	-0.9	-1.5
USDCAD	4.9	5.3	6.1	6.9	6.9	7.4	-2.5	-2.5	-2.6
USDCHF	4.9	5.5	6.3	6.5	6.8	7.4	-1.5	-1.6	-2.0
USDCNH	5.3	5.8	5.8	5.0	5.2	5.6	0.3	0.7	0.3
USDJPY	5.9	6.5	7.0	7.3	7.7	8.5	-1.2	-1.2	-1.8
USDNOK	7.4	8.1	8.9	8.5	8.8	9.2	-1.5	-1.1	-1.0
USDSEK	7.4	8.0	8.4	8.6	8.8	9.2	-1.4	-1.1	-1.3
USDBRL	14.0	14.2	14.1	14.0	14.2	14.7	0.0	0.0	-0.5
USDCLP	8.6	9.0	9.7	9.6	9.7	9.8	-0.6	-0.4	-0.1
USDMXN	9.3	10.0	11.2	12.1	12.5	13.6	-1.3	-1.4	-2.3
EURCZK	2.9	3.3	4.0	3.9	4.0	4.1	-1.6	-1.3	-0.4
EURHUF	4.7	4.9	5.0	4.6	4.8	5.5	0.2	0.1	-0.9
EURPLN	3.4	3.7	4.3	4.9	5.2	5.9	-1.7	-2.0	-2.9
EURRUB	8.8	9.8	11.5	11.8	12.3	13.3	-1.5	-1.6	-1.6
USDRUB	9.0	10.2	11.7	11.8	12.2	13.2	-1.3	-1.2	-1.2
USDTRY	18.9	22.3	25.5	17.5	17.4	18.0	0.2	0.8	1.5
USDZAR	13.6	14.8	15.7	15.9	16.2	16.4	-0.8	-0.7	-0.5
USDIDR	7.8	8.4	9.4	6.6	7.2	8.6	0.7	0.8	0.7
USDINR	9.1	7.8	7.3	6.1	6.4	7.2	2.1	1.2	0.2
USDKRW	6.8	7.3	7.5	7.7	8.1	9.0	-0.9	-1.0	-1.8
USDPHP	4.5	4.6	4.7	4.2	4.5	5.0	0.7	0.5	-0.8
USDSGD	3.5	3.7	4.0	4.3	4.5	4.8	-1.3	-1.4	-2.3
USDTWD	3.9	4.4	4.9	4.6	4.9	5.5	-0.9	-0.8	-1.1

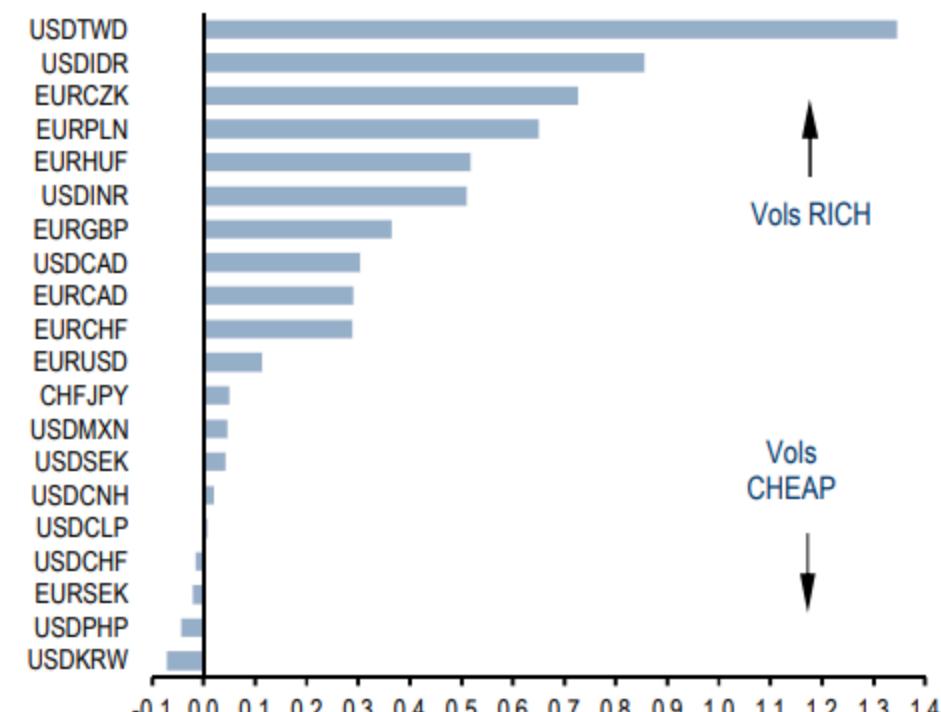
## Biggest 3M Implied Volatility Movers



Source: J.P. Morgan

## Front-End Vol Rankings

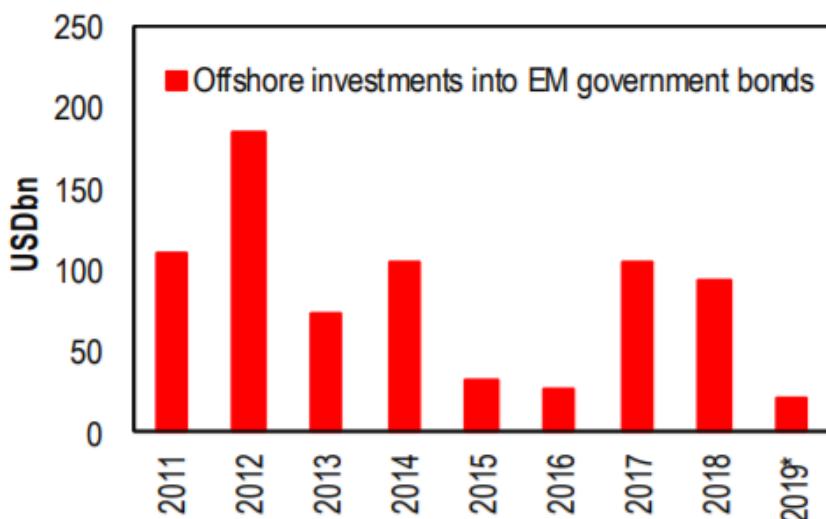
In order of Normalized Volatility Risk Premium\*



\*Normalized Volatility Risk Premium = 1M Implied Vol / 1M Realized Vol – 1

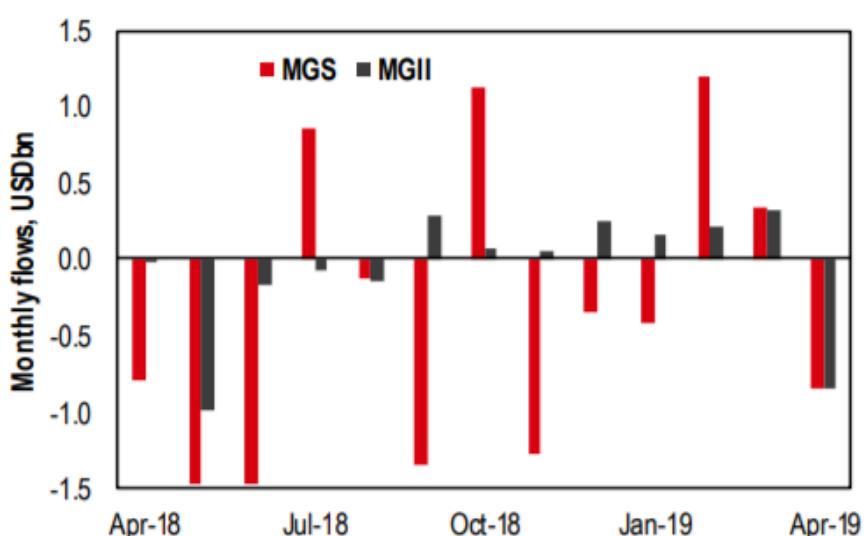
Source: J.P. Morgan

**Figure 1: Year-to-date foreign investments into EM sovereign debt**



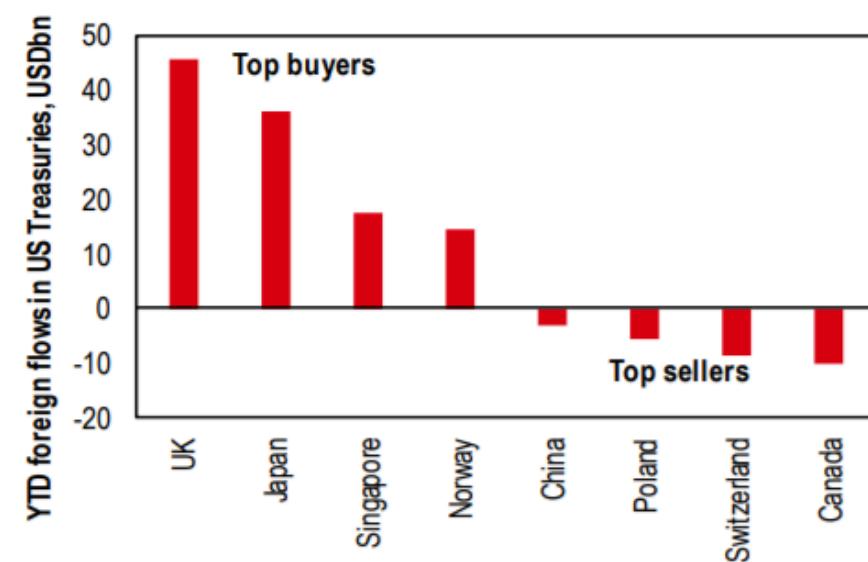
Source: Central banks, HSBC. Investments into the 18 emerging markets mentioned on page 3.  
Data as of May 2019.

**Figure 3: Overseas investors pared Malaysia sovereign debt in April**



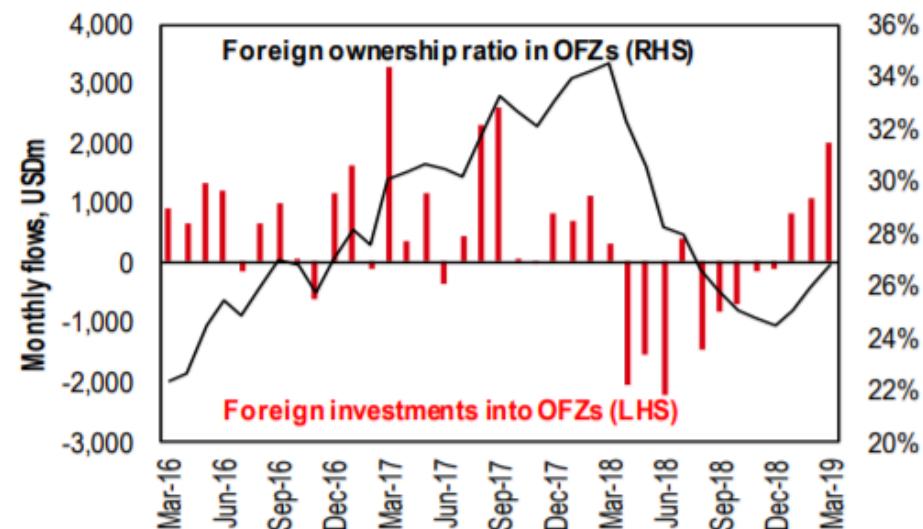
Source: BNM, HSBC

**Figure 5: UK- and Japan-based investors bought USTs the most so far in 2019**



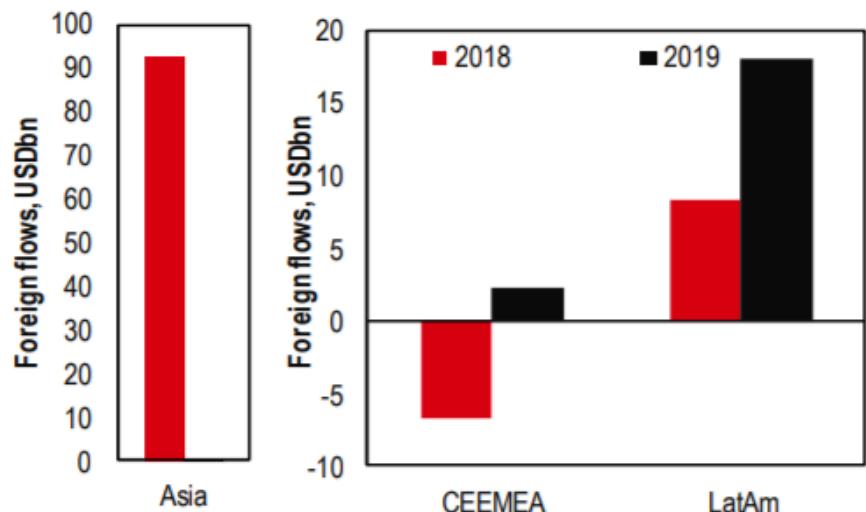
Source: TIC, HSBC \*Data till March 2019

**Figure 7: Foreign investors' holdings of OFZs surged in 1Q19**



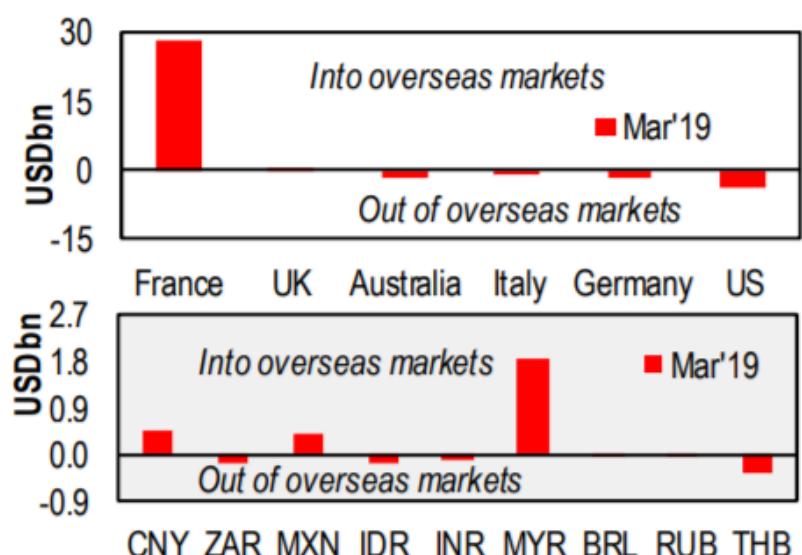
Source: CBR, HSBC

**Figure 2: Overseas investments mainly noted in LatAm region so far in 2019**



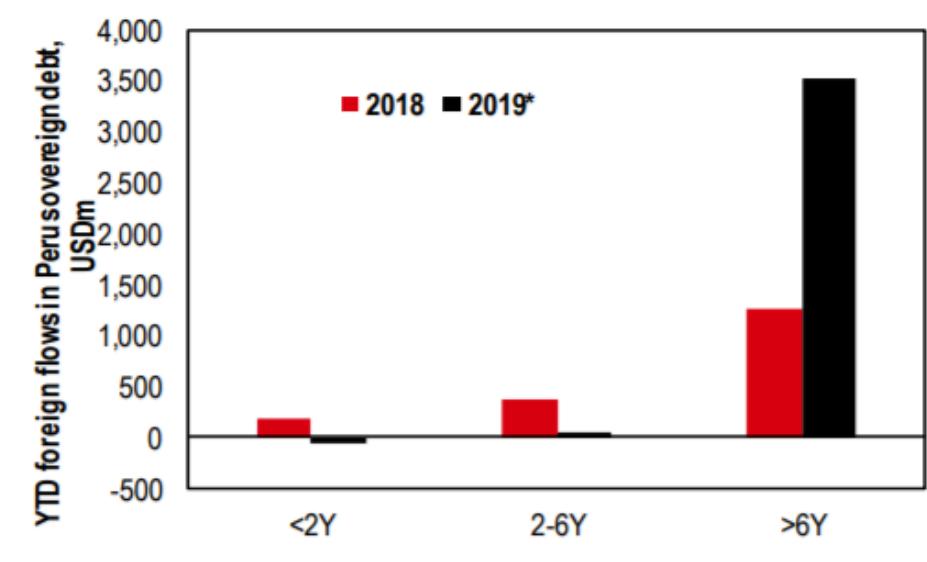
Source: Central bank websites, HSBC. Data as of May 2019.

**Figure 4: Japanese investments in foreign bonds**



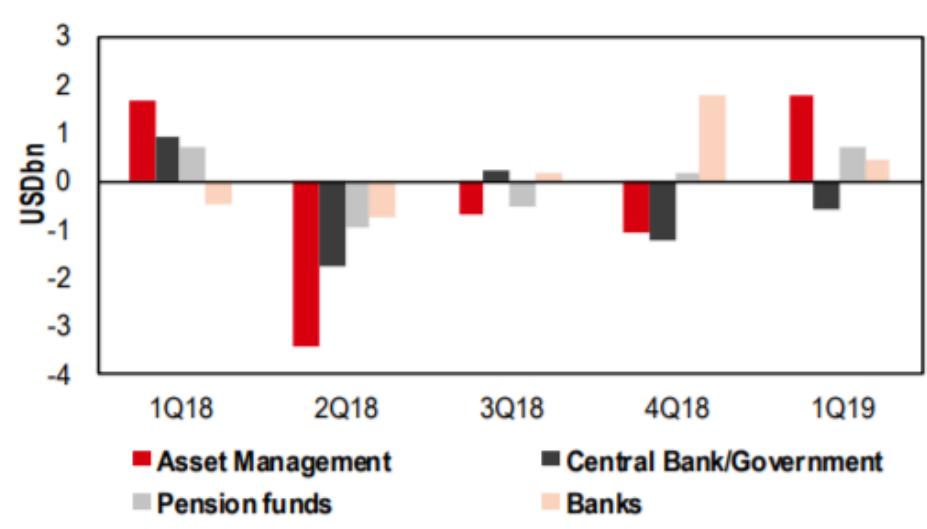
Source: Central bank website, HSBC

**Figure 6: Offshore investors' preference persists for long-dated Peru government bonds**



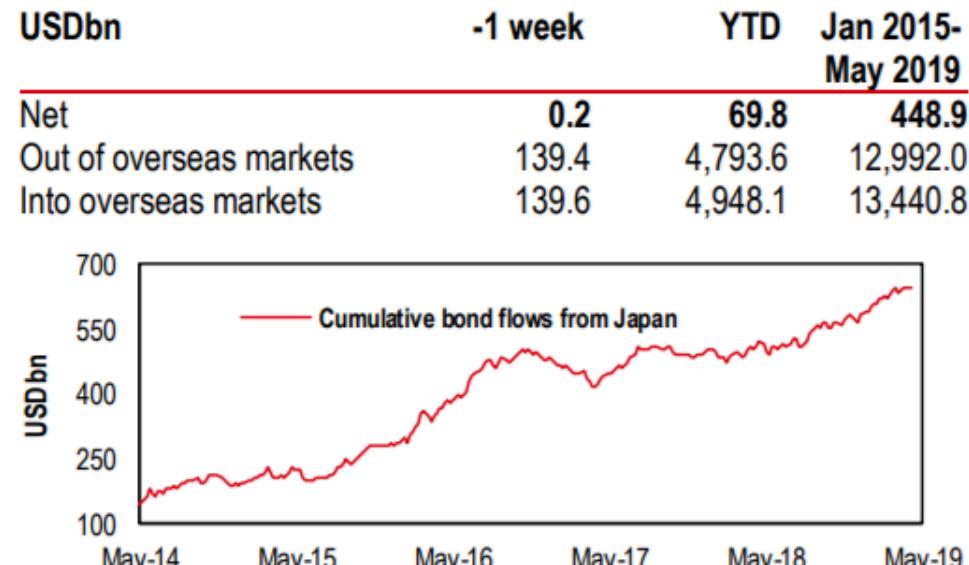
Source: MoF, HSBC \*Data till April 2019

**Figure 8: Distribution of foreign holdings of Malaysia government bonds**



Source: BNM, HSBC

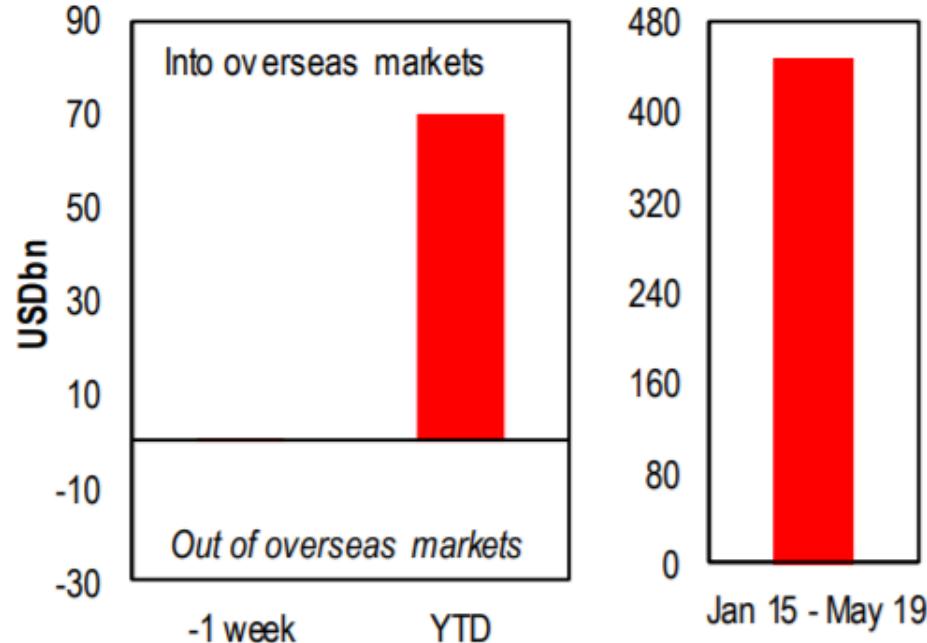
**Table 2. Weekly bond flows from Japan, up to 10 May 2019**



Source: MoF, Bloomberg, HSBC

Note: Inc Sov & Corp

**Figure 9. Net weekly bond flows from Japan, up to 10 May 2019**



Source: MoF, Bloomberg, HSBC Note: Inc Sov & Corp

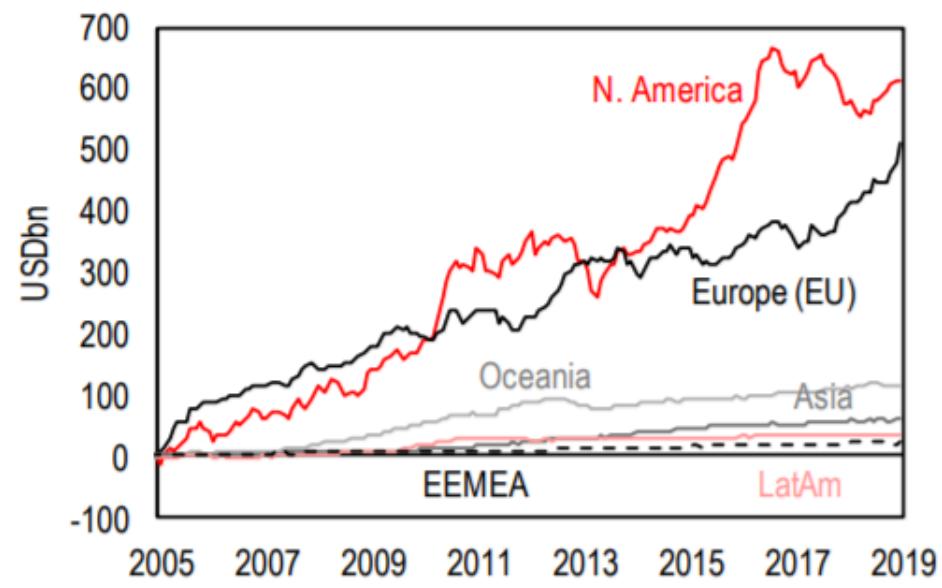
**Table 3. Net monthly bond flows from Japan, up to 31 March 2019...**

USDbn	Mar 2019	2019 YTD	2018
Europe (EU)	30.6	61.3	80.9
N. America	-4.9	13.4	-26.0
Oceania	-1.3	-1.7	6.4
EEMEA	0.7	0.5	1.9
Asia	1.9	2.8	0.1
LatAm	0.2	0.6	1.8

Source: MoF, Bloomberg, HSBC

Note: Inc Sov & Corp

**Figure 10. Cumulative monthly bond flows from Japan highlight the preference for Euro bonds so far in 2019**



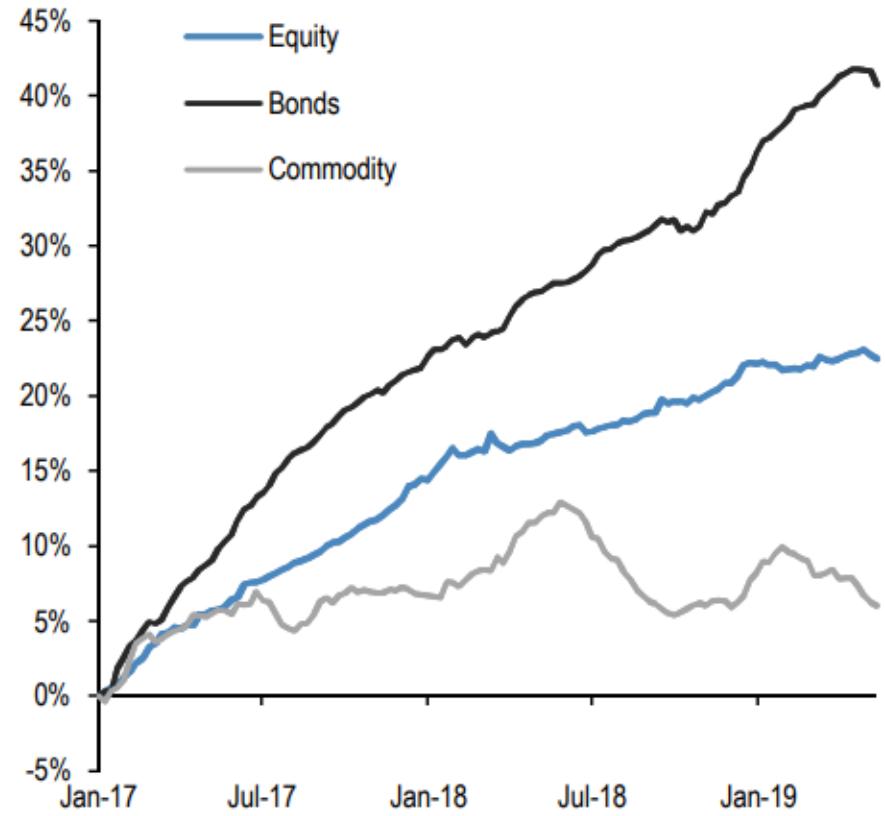
Source: MoF, Bloomberg, HSBC

Note: Inc Sov & Corp

## ETF Flow Monitor (as of May 15<sup>th</sup>)

### Chart A3: Global Cross Asset ETF Flows

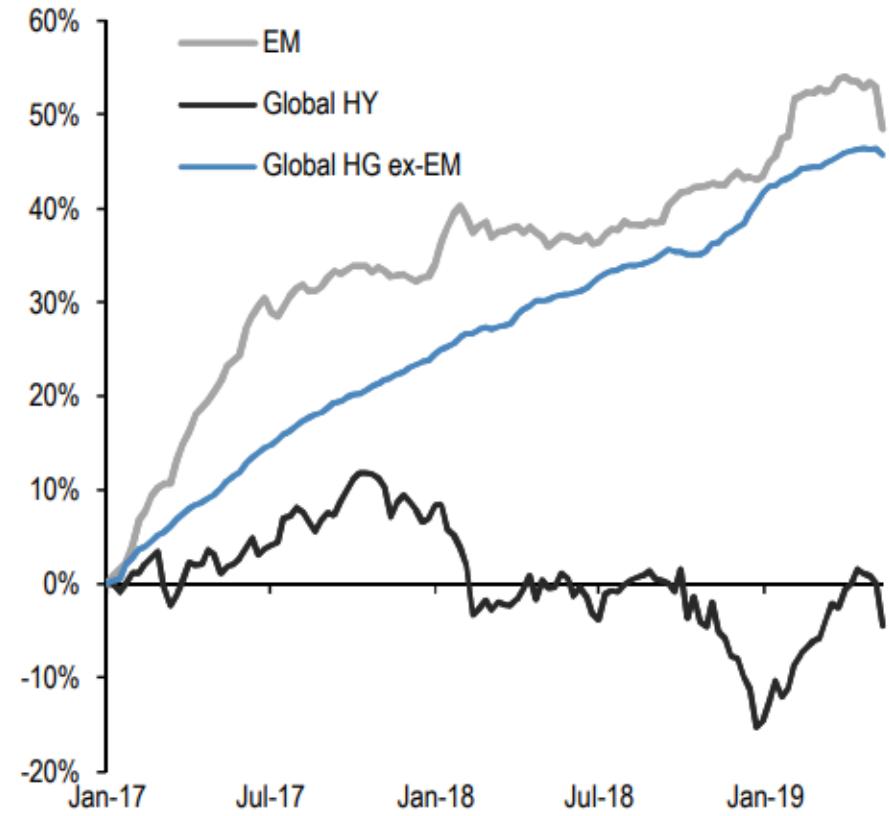
Cumulative flow into ETFs as a % of AUM



Source: J.P. Morgan, Bloomberg

### Chart A4: Bond ETF Flows

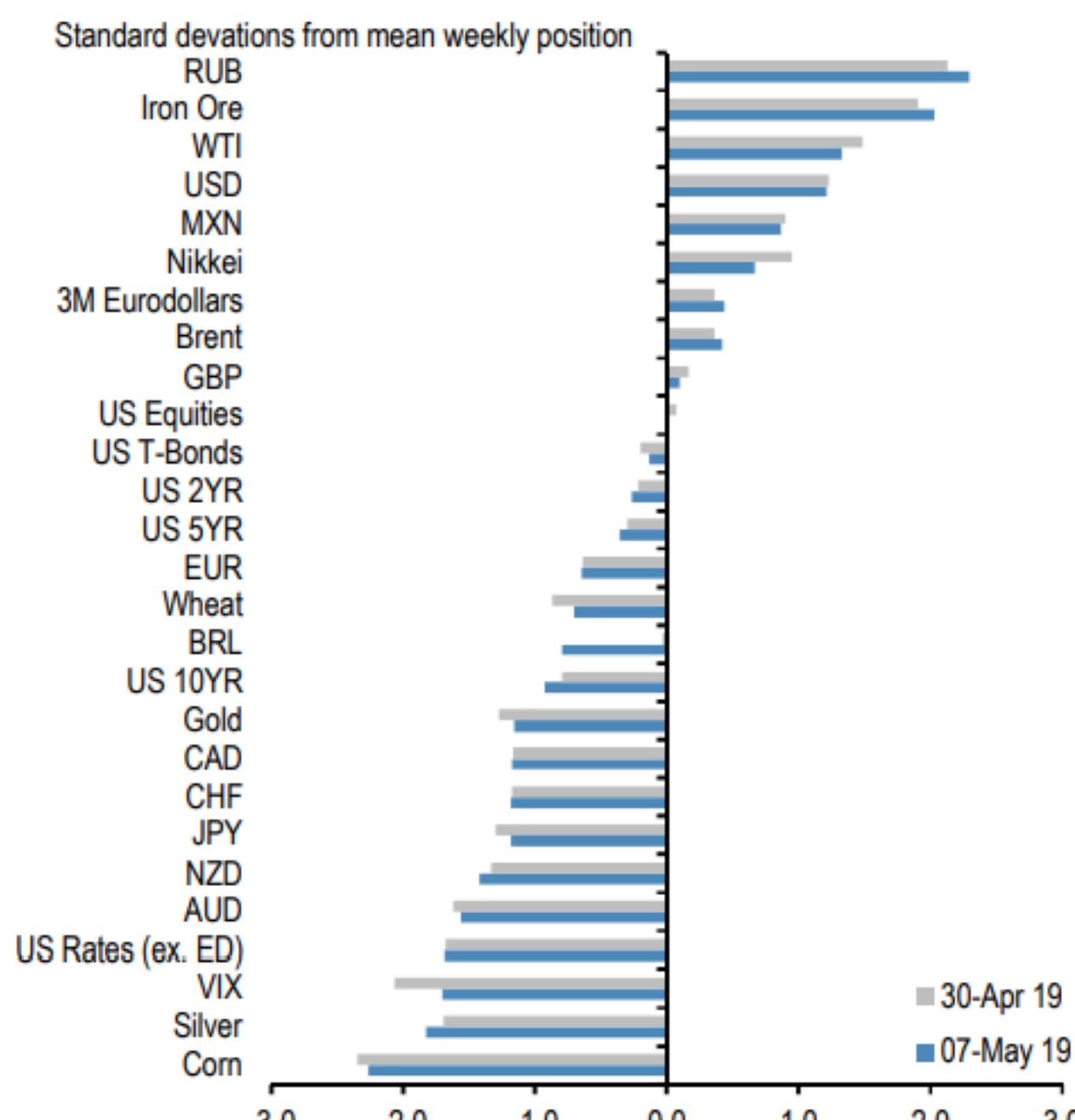
Cumulative flow into bond ETFs as a % of AUM



Source: J.P. Morgan, Bloomberg

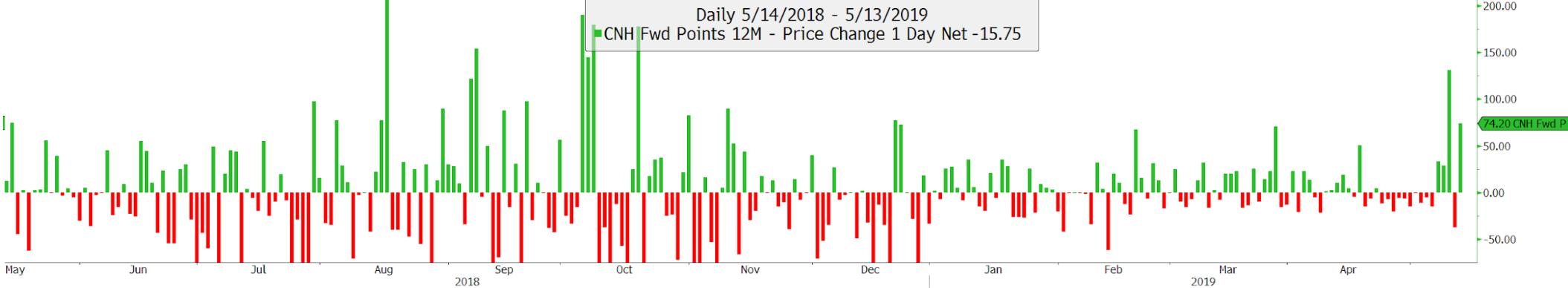
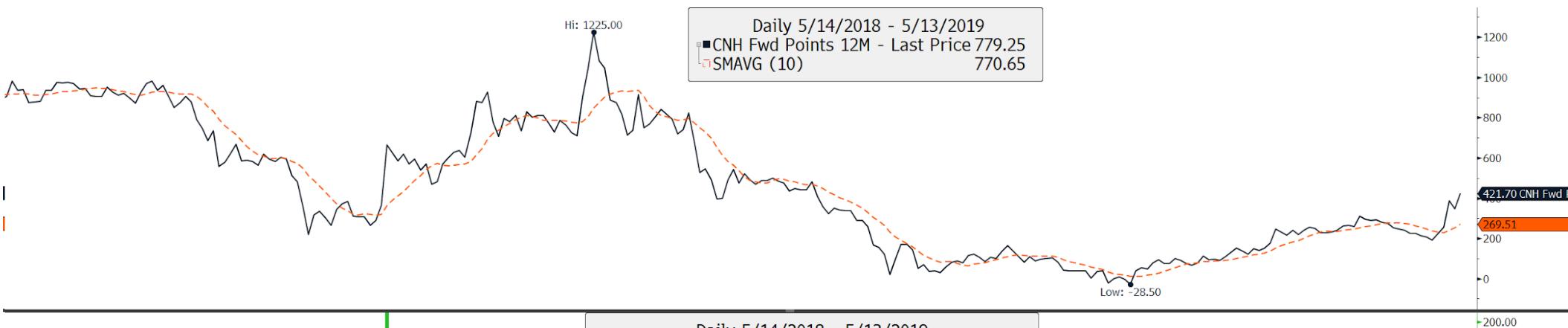
## Chart A15: Weekly Spec Position Monitor

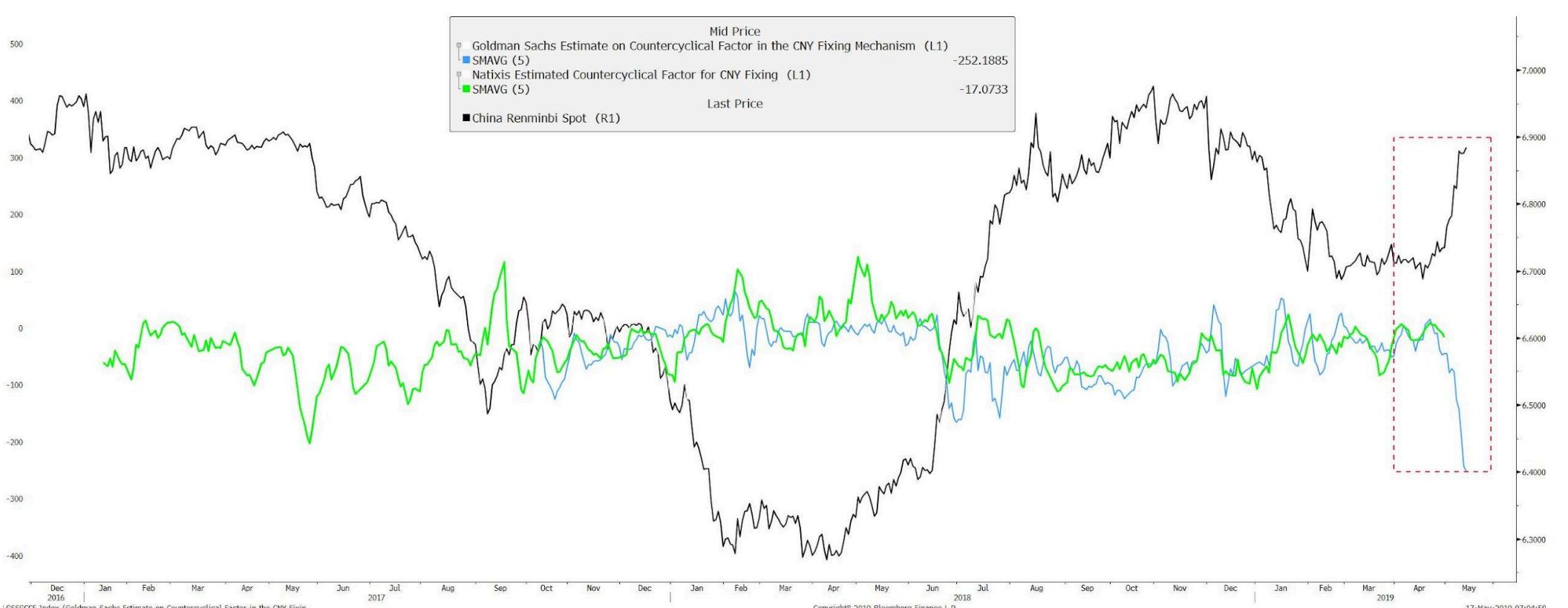
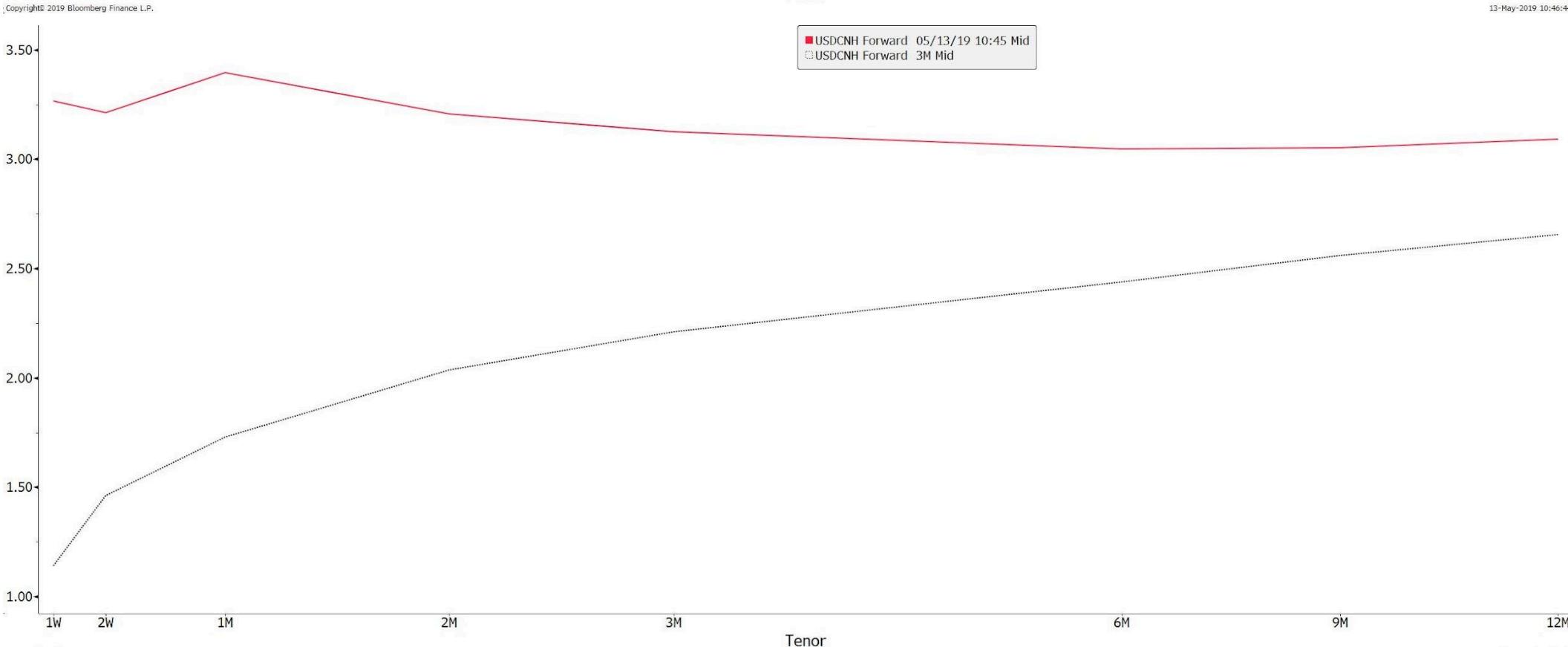
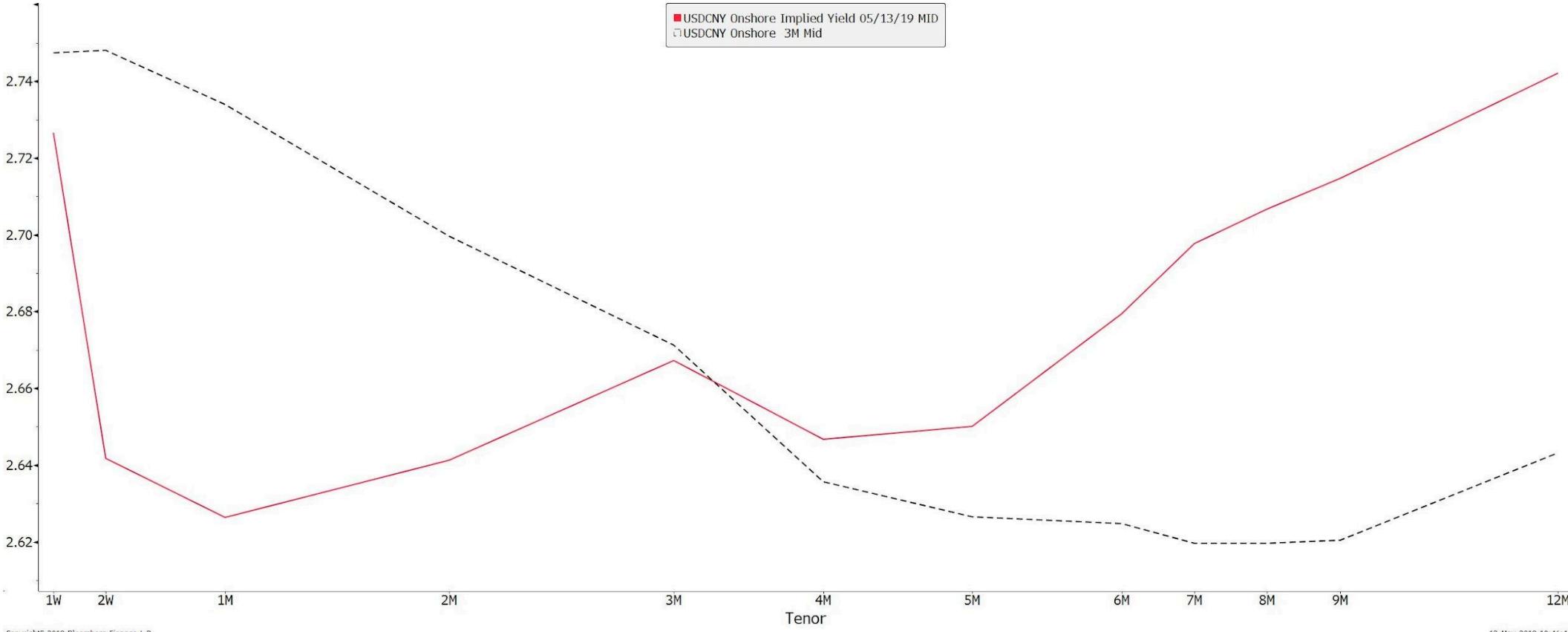
Net spec positions are proxied by the number of long contracts minus the number of short contracts using the speculative category of the Commitments of Traders reports (as reported by CFTC). To proxy for speculative investors for equity futures positions we use Asset managers (see Chart A16), whereas for other assets we use the legacy Non-Commercial category. This net position is then converted to a dollar amount by multiplying by the contract size and then the corresponding futures price. We then scale the net positions by open interest. The chart shows the z-score of these net positions. US rates is a duration-weighted composite of the individual UST futures contracts excluding the Eurodollar contract. The sample starts in Jun 2006 for all futures contracts apart from Brent which starts in Jan-2011.

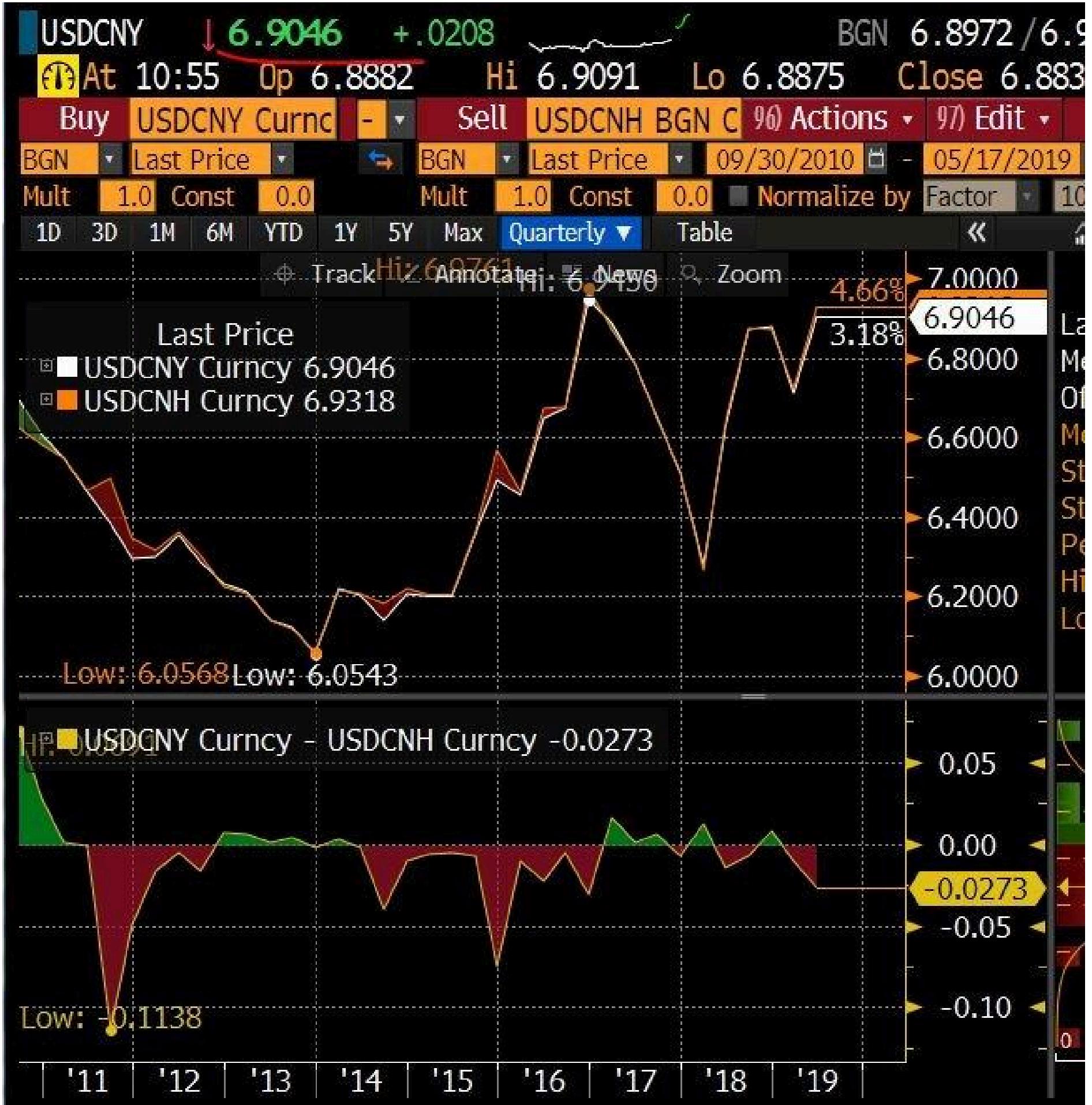


Source: Bloomberg, CFTC, J.P. Morgan

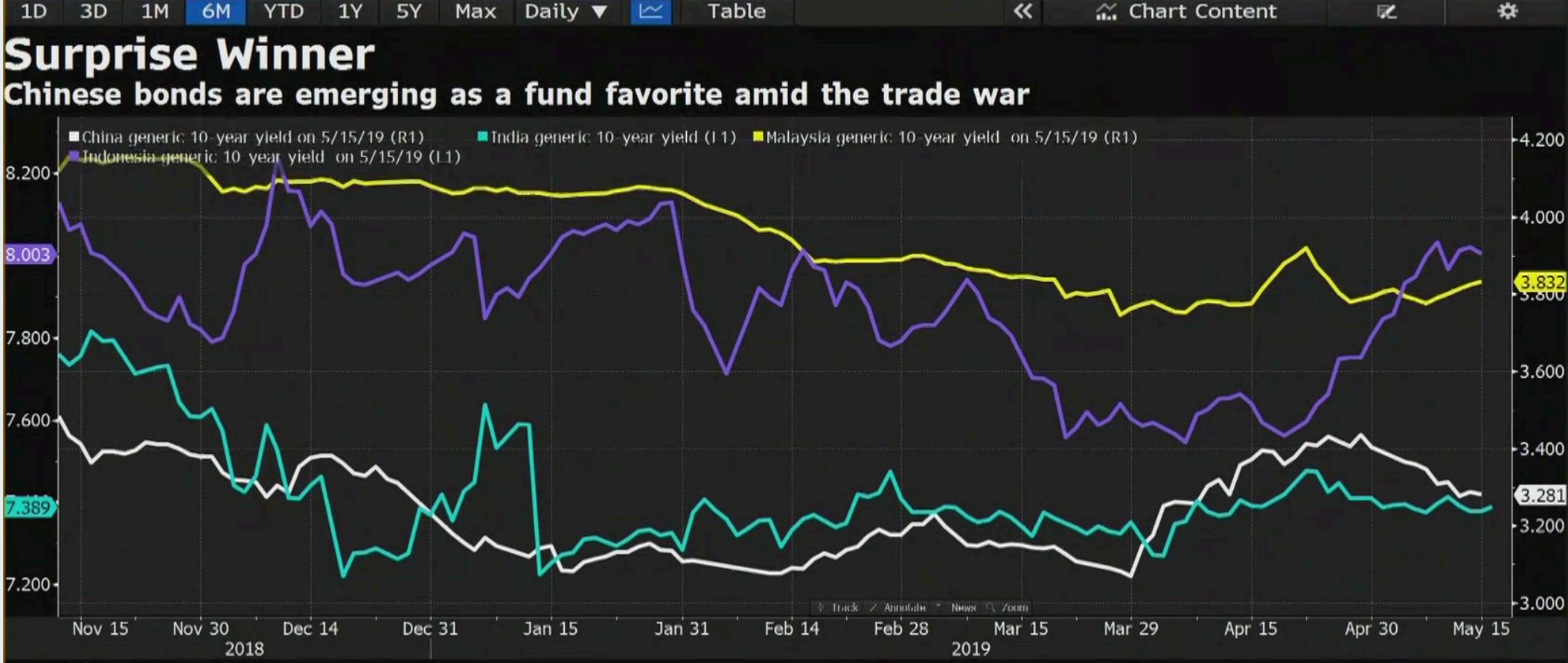
Daily 5/14/1999 - 5/13/2019 ■ Bloomberg JPMorgan Asia Dollar Index - Last Price 104.66 -.42





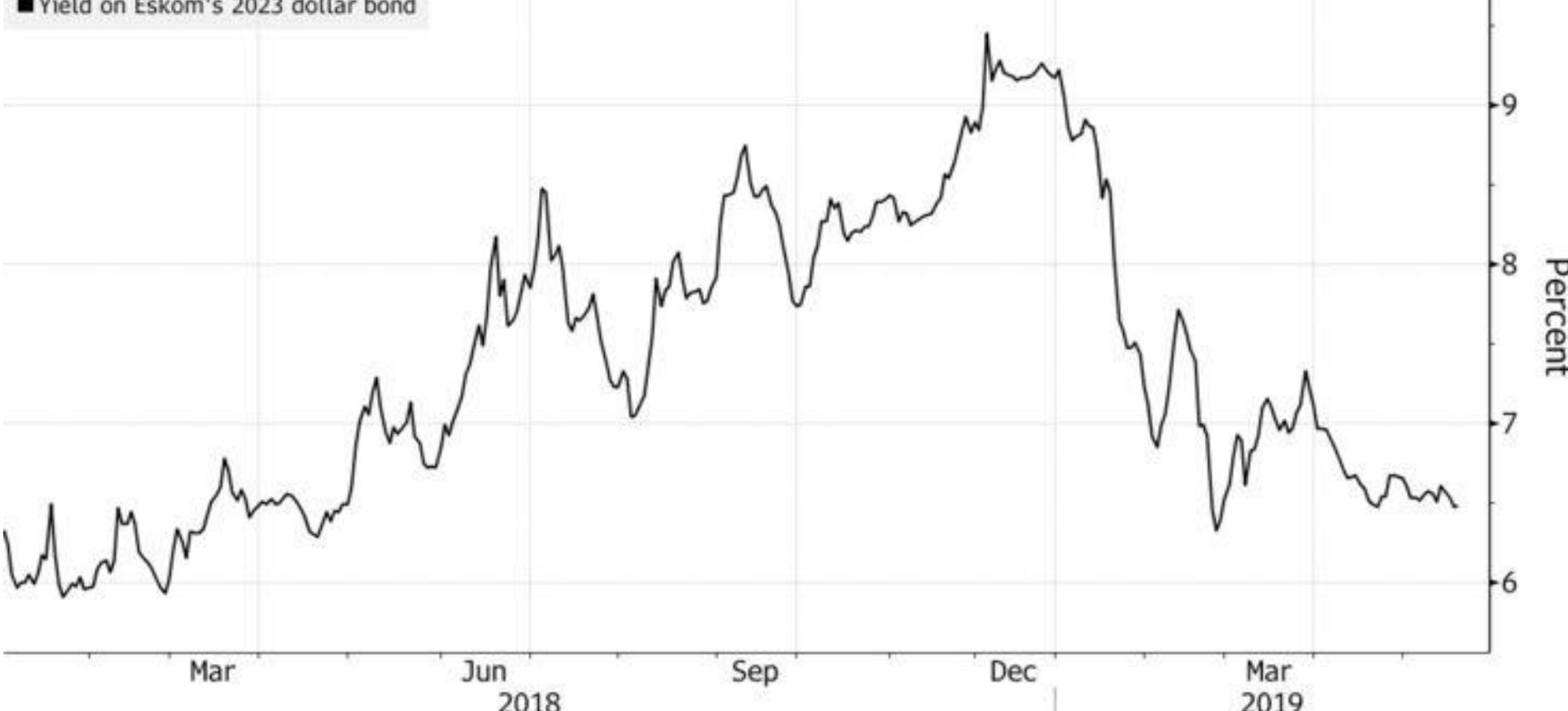






## Another Bailout?

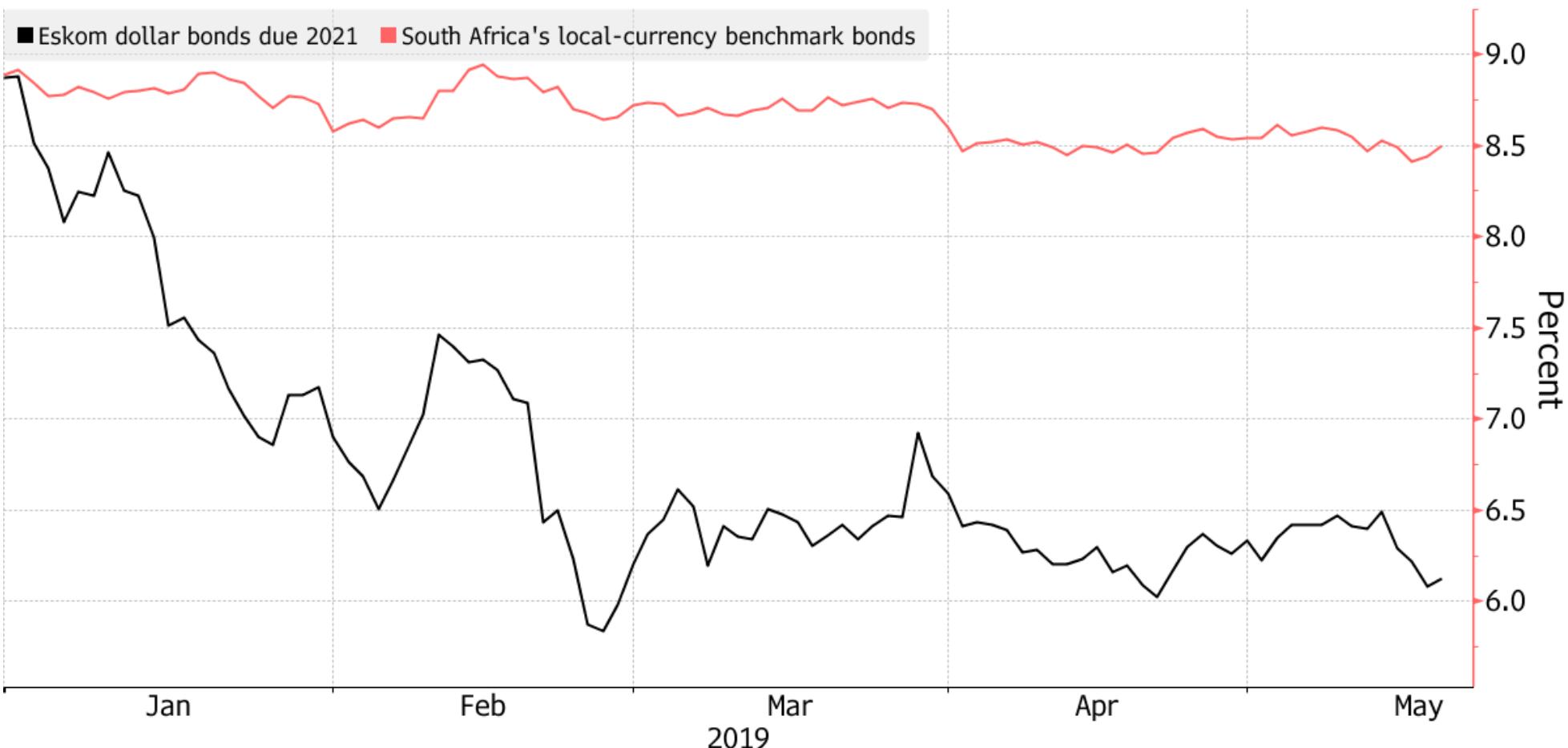
Yields on Eskom bonds fall on speculation of more state support



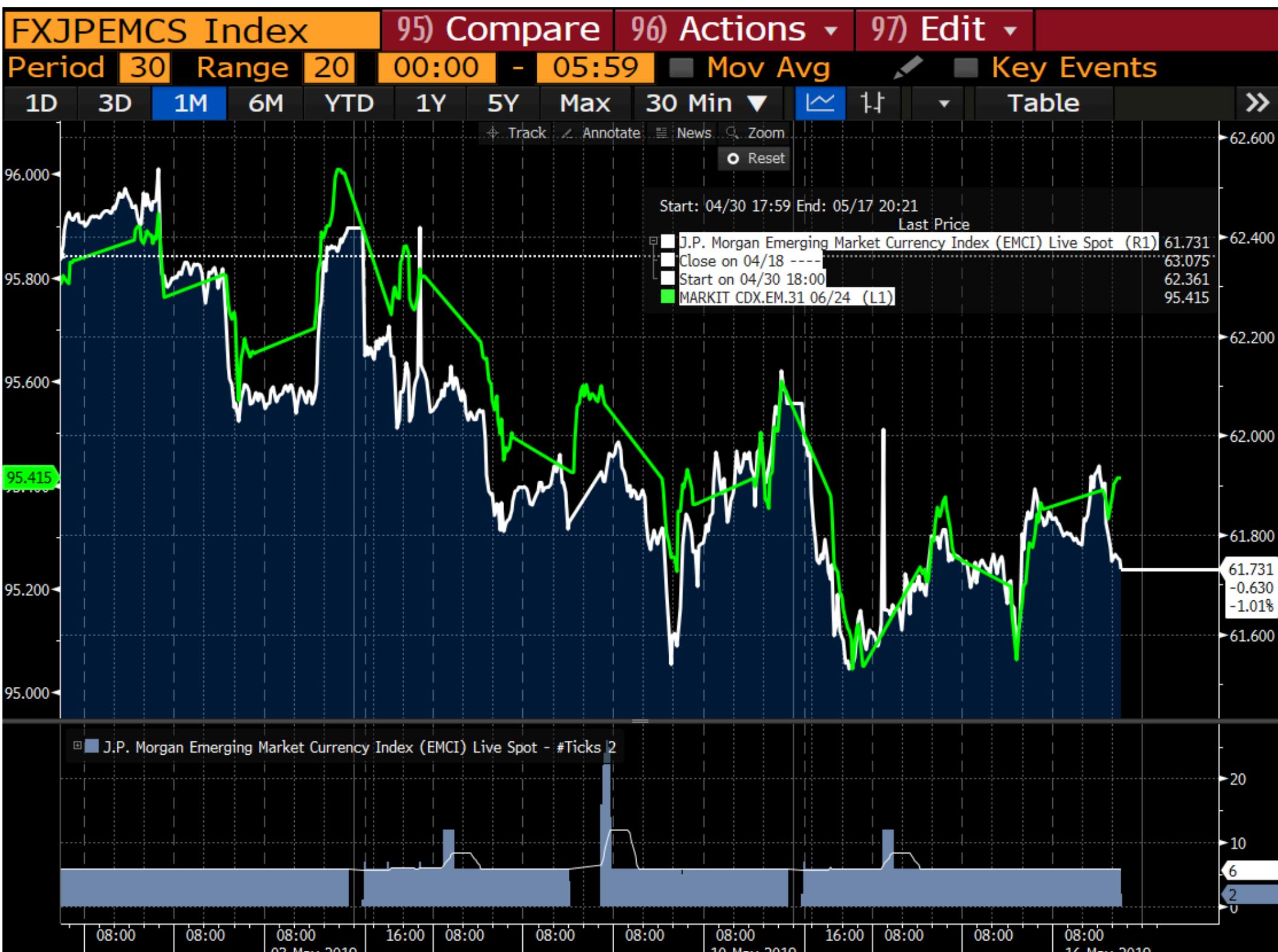
Source: Bloomberg

# A Winner and a Loser

Yields on Eskom's debt have fallen significantly more than the sovereign



Source: Bloomberg

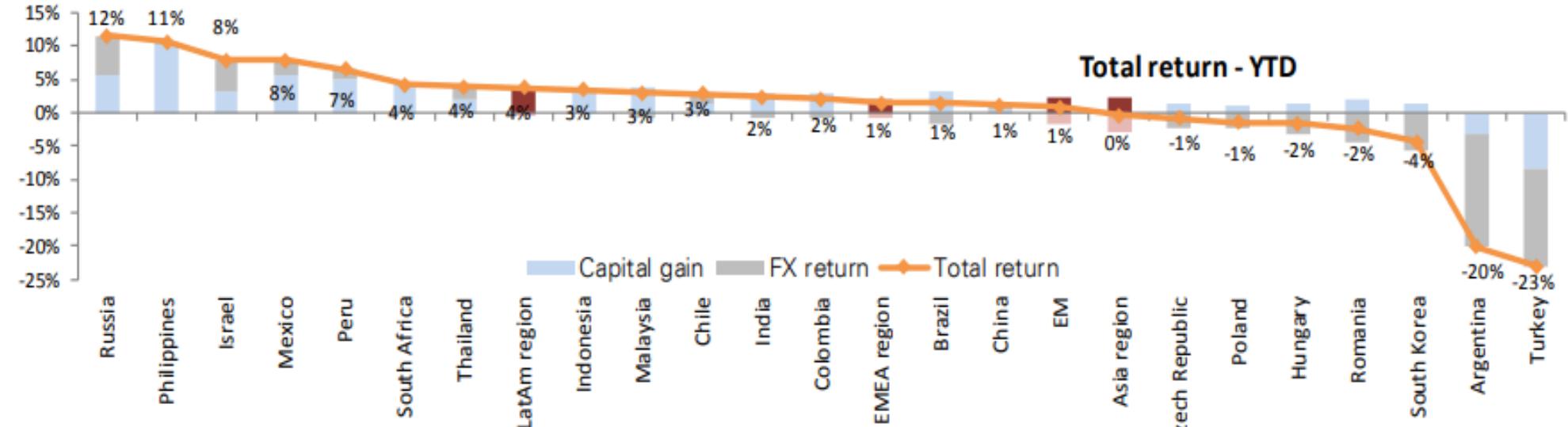


## Local government bond performance in EM

	Index weight	Modified duration	Last 7 days						YTD						12 months					
			Bonds (capital gain)		FX	Total return performance		Bonds (capital gain)	FX	Total return performance		Bonds (capital gain)	FX	Total return performance		FX	FX	Total return performance		
			hedged	unhedged		FX	FX			hedged	unhedged			FX	FX	hedged	unhedged	FX	FX	
EM		5.7	0.0%	-0.3%	0.1%	-0.4%		2.4%	-1.6%	1.9%	0.9%	5.1%	-5.4%	4.7%	-0.3%					
EMEA region	22%	5.5	-0.2%	0.2%	0.0%	0.0%		2.1%	-0.7%	1.2%	1.5%	2.9%	-8.0%	1.9%	-5.1%					
Asia region	49%	7.5	0.1%	-0.7%	0.1%	-0.7%		2.4%	-2.8%	2.2%	-0.4%	6.1%	-5.1%	6.7%	1.0%					
LatAm region	20%	4.2	-0.2%	-0.1%	0.3%	-0.2%		4.0%	-0.2%	3.1%	3.8%	7.4%	-5.8%	4.9%	1.8%					
country performance	Index weight	Modified duration	Bonds (capital gain)	FX	FX hedged	FX unhedged		Bonds (capital gain)	FX	FX hedged	FX unhedged	Bonds (capital gain)	FX	FX hedged	FX unhedged					
South Africa	4.5%	7.6	0.0%	1.3%	0.5%	1.4%		4.0%	0.2%	3.2%	4.2%	5.6%	-12.5%	3.0%	-6.9%					
Thailand	6.3%	9.4	0.3%	0.7%	0.2%	1.0%		2.1%	1.7%	1.6%	3.9%	3.2%	1.2%	4.4%	4.4%					
Israel	2.6%	6.7	-0.1%	0.8%	0.0%	0.7%		3.2%	4.7%	4.1%	7.9%	2.4%	0.4%	5.1%	2.8%					
Hungary	1.7%	4.2	0.3%	0.3%	0.2%	0.6%		1.5%	-3.1%	2.2%	-1.6%	1.7%	-8.0%	4.7%	-6.3%					
Brazil	8.7%	2.7	0.0%	0.5%	0.5%	0.5%		3.1%	-1.7%	3.0%	1.4%	10.4%	-9.0%	9.3%	1.4%					
Romania	1.2%	3.8	0.1%	0.3%	0.1%	0.5%		1.9%	-4.4%	1.1%	-2.4%	4.5%	-7.6%	3.8%	-3.1%					
Czech Republic	2.1%	6.8	0.2%	0.2%	0.2%	0.4%		1.5%	-2.3%	1.4%	-0.8%	1.1%	-6.0%	2.7%	-4.9%					
Poland	4.7%	4.5	0.3%	0.1%	0.4%	0.3%		1.0%	-2.4%	0.9%	-1.4%	3.9%	-6.2%	4.9%	-2.2%					
Russia	3.4%	5.0	0.0%	0.1%	0.1%	0.2%		5.6%	6.0%	3.5%	11.6%	3.6%	-3.3%	0.0%	0.3%					
Philippines	2.5%	6.2	0.6%	-0.8%	0.7%	-0.2%		10.4%	0.2%	8.8%	10.6%	8.5%	-0.6%	6.0%	7.9%					
Malaysia	6.6%	6.5	0.5%	-0.7%	0.2%	-0.2%		3.7%	-0.7%	3.2%	3.0%	4.5%	-2.8%	6.0%	1.6%					
Colombia	2.8%	5.2	0.4%	-0.6%	0.7%	-0.2%		2.9%	-0.9%	2.8%	2.0%	5.0%	-12.5%	5.4%	-7.5%					
Chile	0.2%	1.7	0.1%	-0.4%	0.1%	-0.4%		1.5%	1.3%	1.9%	2.8%	3.0%	-7.4%	4.4%	-4.4%					
Peru	1.5%	7.8	-0.8%	0.1%	-0.3%	-0.6%		4.9%	1.6%	4.4%	6.5%	6.2%	-0.6%	5.2%	5.6%					
Mexico	6.5%	5.1	-0.4%	-0.6%	0.0%	-0.9%		5.7%	2.2%	3.7%	7.9%	5.1%	1.8%	0.1%	6.9%					
South Korea	26.7%	7.8	0.1%	-1.1%	0.3%	-1.0%		1.2%	-5.5%	1.6%	-4.3%	7.7%	-8.5%	9.4%	-0.8%					
Indonesia	6.7%	5.9	-0.9%	-0.7%	-1.0%	-1.7%		3.1%	0.3%	1.7%	3.4%	3.1%	-1.7%	-0.7%	1.4%					
Argentina	0.2%	2.4	-3.7%	-0.9%	-3.7%	-4.6%		-3.2%	-16.9%	-16.1%	-20.1%	0.9%	-49.9%	-29.1%	-49.0%					
Turkey	1.4%	2.9	-4.3%	-3.7%	-4.1%	-8.0%		-8.5%	-14.6%	-16.8%	-23.1%	-6.5%	-30.8%	-20.0%	-37.3%					
non index countries																				
China	-	6.8	0.5%	-1.4%	0.4%	-0.8%		0.4%	0.7%	0.6%	1.2%	5.5%	-6.8%	5.2%	-1.3%					
India	-	6.6	0.5%	-0.9%	0.3%	-0.4%		3.0%	-0.6%	0.8%	2.3%	10.1%	-3.9%	5.7%	6.2%					

Note: Total unhedged = bond performance in local currency + FX vs USD /FX hedged: Bond performance – FX hedging costs via FX implied yields / sorted by Total unhedged last 7d; Source : Bloomberg Barclays Emerging Markets Index

## Local government bond performance in EM



-----(as of 5/10/19)-----

17 May 2019

6

Goldman Sachs

EM Asia FX/Rates Views

## Exhibit 2: Our views on relative performance of EM Asia FX and rates (1-2 month outlook)

	FX outlook*	Rates outlook**	Comments
China	<b>Bearish</b>	<b>Neutral</b>	Trade war escalation drives USD/CNY higher. Overshoot above 7.0 is possible depending on how the bi-lateral talks materialize.
Korea	<b>Bearish</b>	<b>Bearish</b>	US-China trade conflict and re-escalation of Korea peninsula tension to weigh on KRW. Rates should rise as market is over-pricing BoK rate cut.
Taiwan	<b>Neutral</b>	<b>Neutral</b>	TWD should follow CNY and KRW weaker, but should outperform KRW due to better CA position; CBC should keep FX volatility low.
Hong Kong	<b>Neutral</b>	<b>Neutral</b>	HKD rates is biased to the upside, as spot USD/HKD is edging flirting near the top side of 7.75-7.85 convertibility band.
India	<b>Neutral</b>	<b>Neutral</b>	Asymmetric downside risks on unfavorable election outcome, fiscal slippage risks, higher oil to continue to weigh on INR
Singapore	<b>Bearish</b>	<b>Neutral</b>	Subdued growth and inflation to keep MAS on hold in 2019. SGD is at the strong end of the NEER, so scope for further rally limited.
Thailand	<b>Neutral</b>	<b>Neutral</b>	Reduced political uncertainty, improved optimism on the government-led EEC projects and safe haven status (within EM) should help to support THB.
Malaysia	<b>Bearish</b>	<b>Neutral</b>	Weaker exports, fiscal deterioration and risk of Malaysia's exclusion from FTSE Russel WGBI index should continue to weigh on MYR.
Indonesia	<b>Neutral</b>	<b>Neutral</b>	Deterioration in global risk appetite is keeping IDR assets under pressure. We expect BI to cut rates in H2-2019 unless USD/IDR spikes higher.
Philippines	<b>Bullish</b>	<b>Bullish</b>	Constructive PHP as real rates remain attractive given the sharp decline in domestic inflation (from rice bill) and undervaluations.

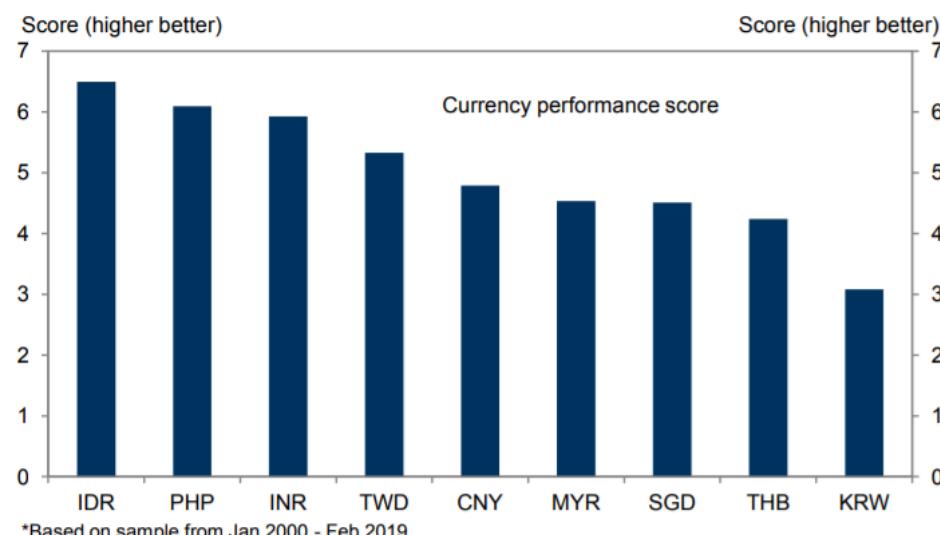
Source: Goldman Sachs Global Investment Research

### Exhibit 3: Trade Ideas in EM Asia rates and FX

Open trades	Initiated	Current	Entry	Target	Stop	Total PnL (capital and carry, bp)
Pay KRW 2Y IRS	2-May-19	1.70	1.71	1.95	1.55	1.0
Short SGD vs. NEER basket	17-Jan-19	100.1	100	98	101	-0.1%
Closed trades	Initiated	Closed	Entry	Closed	Total PnL (capital and carry, bp)	
Long IDR 5Y bond	21-Mar-19	9-May-19	7.14	7.5	-36	
Short KRW vs. TWI	15-Nov-18	26-Apr-19	100	103.9	+3.9%	
Long PHP vs. TWI	2-Nov-18	12-Mar-19	100	100.8	+0.8%	
Long SGD vs. short THB	18-Nov-18	18-Jan-19	23.9	23.2	-2.8%	
Long IDR 10Y bond	6-Nov-18	11-Dec-18	8.2	8.1	+8	
Pay HKD 2-yr, Rec THB 2-yr IRS (bp)	6-Sep-18	14-Nov-18	82	90	+8	
Long INR, IDR, KRW versus SGD, JPY	16-Nov-17	6-Jul-18	100	97.5	-2.5%	
THB 2/5Y IRS flattener (bp)	19-Apr-18	28-Jun-18	51	48	+3	
Long Indian 5-year bonds (%)	11-May-18	11-Jun-18	7.8	8.0	-15	
Pay HKD 2-yr, Rec SGD 2-yr IRS (bp)	2-Mar-18	25-May-18	10	33	+20	
Receive CNY 5Y IRS	20-Nov-17	18-Apr-18	4.0	3.5	+54	
Pay USD 2-yr, Rec SGD 2-yr IRS (bp)	27-Jun-17	6-Feb-18	33	55	+49	
Pay INR 2-yr IRS (%)	20-Nov-17	6-Feb-18	6.2	6.6	+35	
KRW IRS 2/10Y IRS steepener (bp)	17-Mar-17	2-Feb-18	33	41	+24	
THB 2/10Y IRS steepener (bp)	17-Mar-17	23-Jun-17	95	75	-20	
Long IDR 2Y NDS (%)	7-Mar-17	17-Mar-17	7.6	7.0	+60	

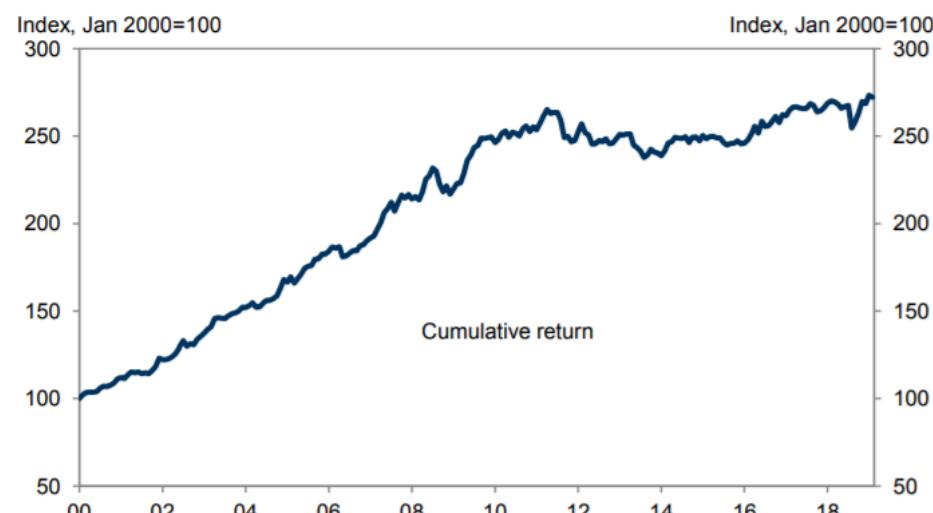
Source: Goldman Sachs Global Investment Research

### Exhibit 6: Consolidated EM Asia currency performance score



Source: Goldman Sachs Global Investment Research

### Exhibit 7: Consolidated EM Asia currency cumulative returns

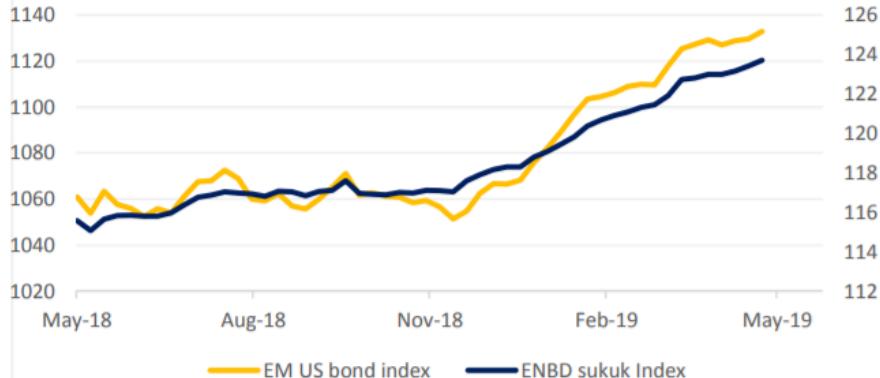


Source: Goldman Sachs Global Investment Research

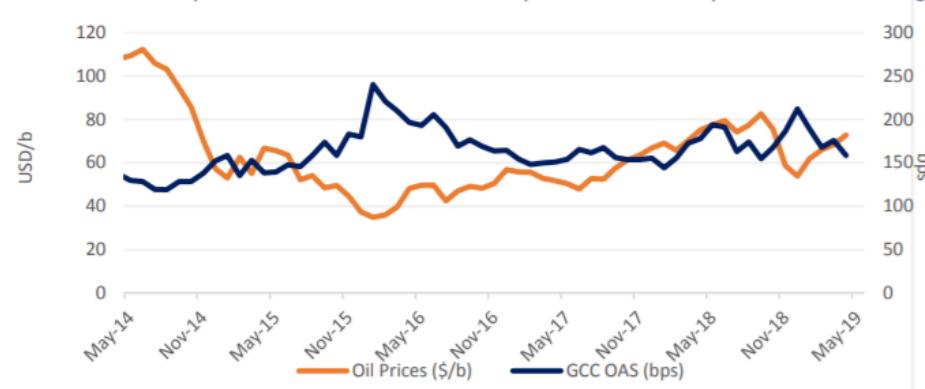
### HIGHLIGHTS

- The correlation of GCC bonds' credit spreads with oil prices remained intact in April whereby credit spreads on GCC bonds tightened 17bps as Brent crude future reflect 6% increase in oil prices to USD 73/b.
- Duration weighted return on GCC bonds compare favorably with that on US and European IG corps.
- Total return on Emirates NBD Markit iBoxx sukuk index in April was a small gain of 0.67% compared with a gain of 0.39% on EM bond index. YTD performance of the sukuk universe still remains above that of conventional bonds, however this could also be reflective of the average higher credit ratings and shorter duration on sukuk portfolios compared with conventional counterparts.

### Sukuk outperformed conventional bonds



### GCC bond spreads relationship with oil prices is high

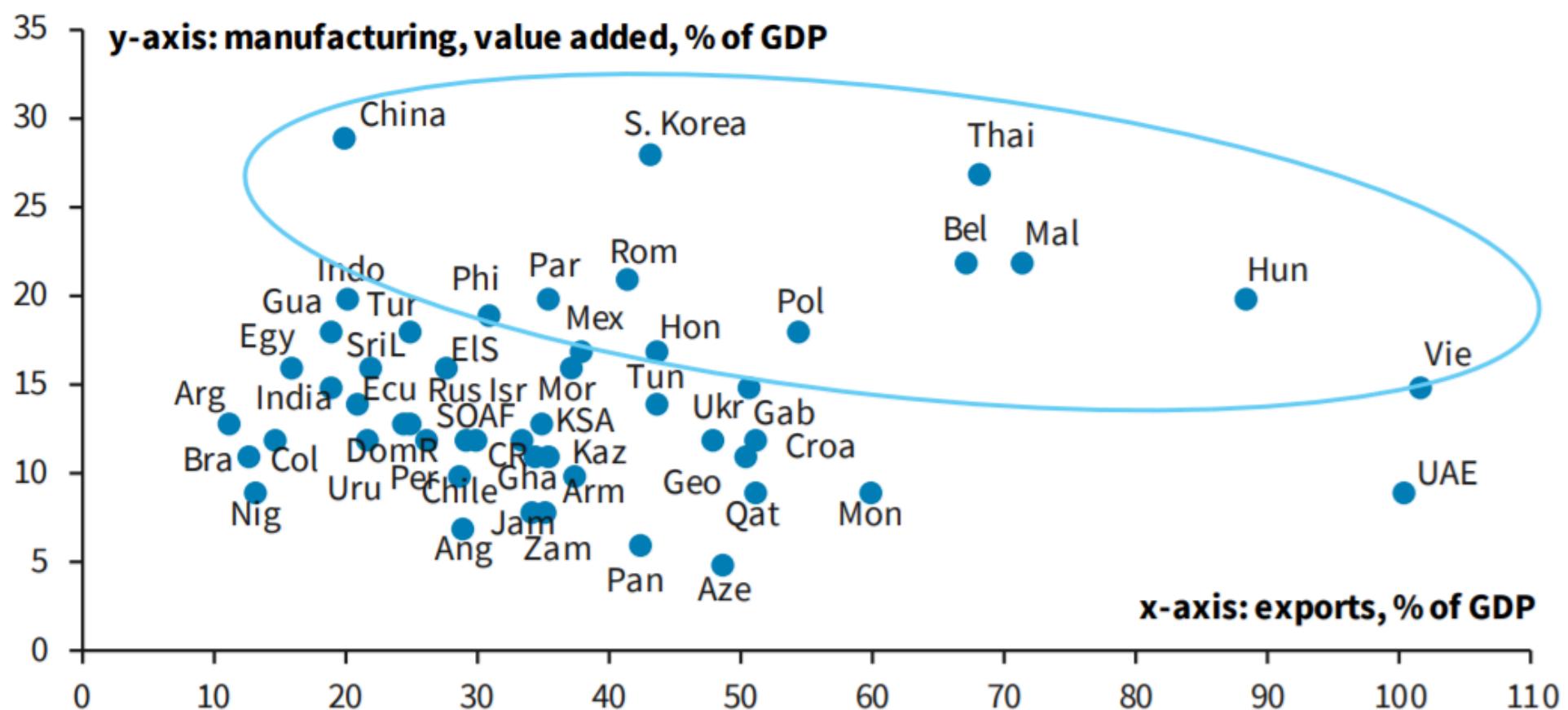


### GCC bonds look attractive on relative value

	Yield %	OAS bps	YTD Return %
US Agg	2.94	44	3.26
Euro Agg	0.48	75	2.83
EM US Agg	5.29	288	6.05
GCC IG	3.67	124	5.56
GCC All	3.96	160	5.78

Source: Bloomberg, Emirates NBD Research

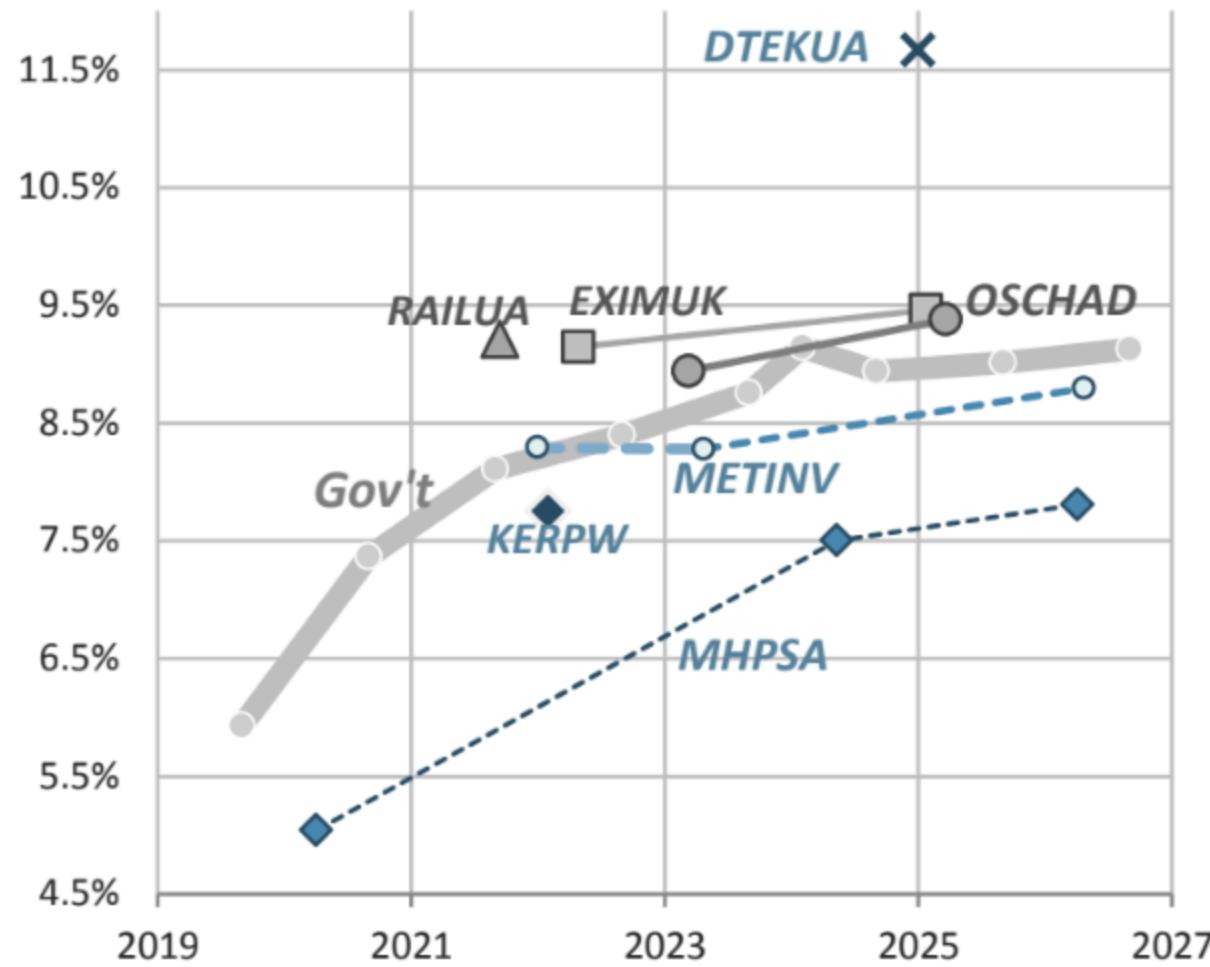
**FIGURE 3**  
EM Asia, CEE and parts of Central America most exposed to global manufacturing trade



Note: exports are exports of goods and services, latest annual data available for all data.

Source: World Bank, Barclays Research

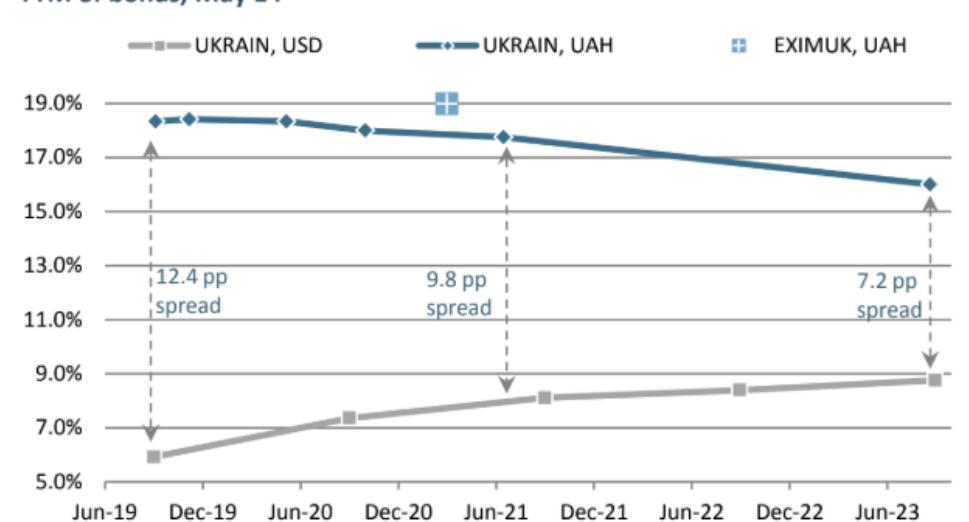
Ukrainian Eurobonds map, May 14



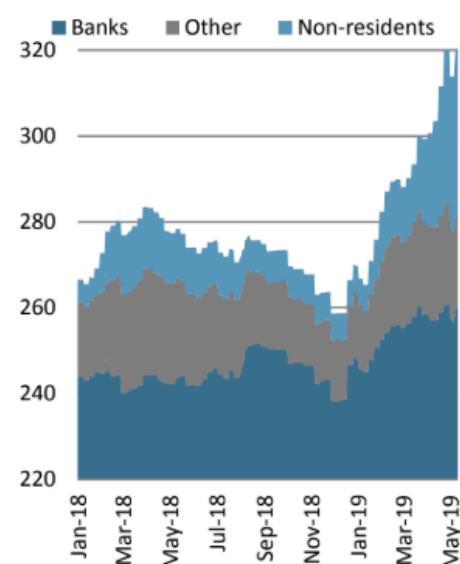
Ukrainian sovereign local currency bonds trade at a 7-12pp spread to their USD-denominated paper. In our view, they offer an excellent alternative to dollar-denominated bonds for any investor who is ready to take on Ukrainian risk:

- The default risk of UAH bonds is less than for USD bonds. Most of local currency bonds are held by domestic banks (mostly state-owned), and the government won't dare to default on them as this could lead to the bankruptcy of state banks and will cost the state budget and Ukrainian financial system much more compared to servicing local bonds. Ukraine's recent history supports this idea: in 2015, the government did not default on local bonds, but defaulted on Eurobonds.
- As Ukrainian banks are key players on the domestic bond market, the pricing of local currency bonds is determined mostly by the key rate of Ukraine's central bank (17.5% currently). As the period of high rates is approaching its end, the yields of local currency bonds will tend to decrease soon. The high central bank rate and expectations that it will decrease forms the inverted shape of the UAH bond curve.
- The risk of currency shock is a poor excuse for international investors not to invest in UAH bonds. If the hryvnia sharply devaluates (e.g., by more than 13%) in the short term (which could happen in case of failure of an IMF deal by the year end), Ukraine will face deep troubles in servicing USD debt, while still being able to service local currency bonds.
- In other words, those believing in currency shock in the near term should not invest in Ukrainian Eurobonds. Those seeing this risk as small should prefer investing in local currency bonds, which are expected to earn much more than dollar bonds.
- The only caveat of Ukrainian UAH bonds compared to dollar Eurobonds is that they are "not Euroclearable". However, the international UAH bond of Ukreximbank has no such problem.
- Ukraine is finalizing its deal with Clearstream, which will make access to local UAH bonds much easier for any non-resident very soon.
- We see local currency government bonds as the most attractive alternative to USD Eurobonds that mature in 2019-2023.**
- We also see the UAH-denominated international bond of Ukreximbank as the best opportunity to get exposure to Ukrainian risk.**

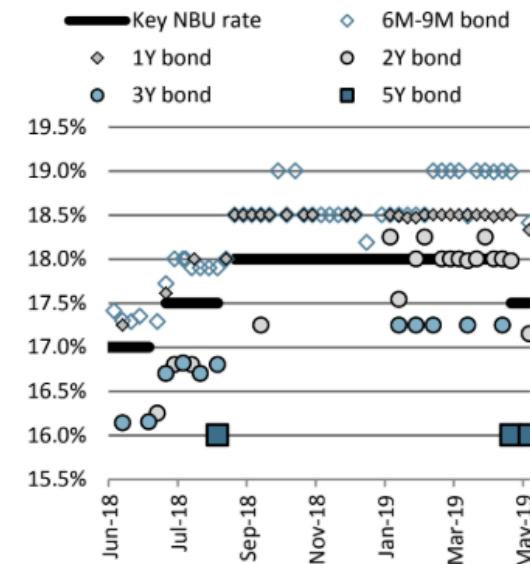
#### YTM of bonds, May 14



#### UAH gov't bond holders, UAH bln\*



#### Key rate & UAH bond placement rates at primary auctions



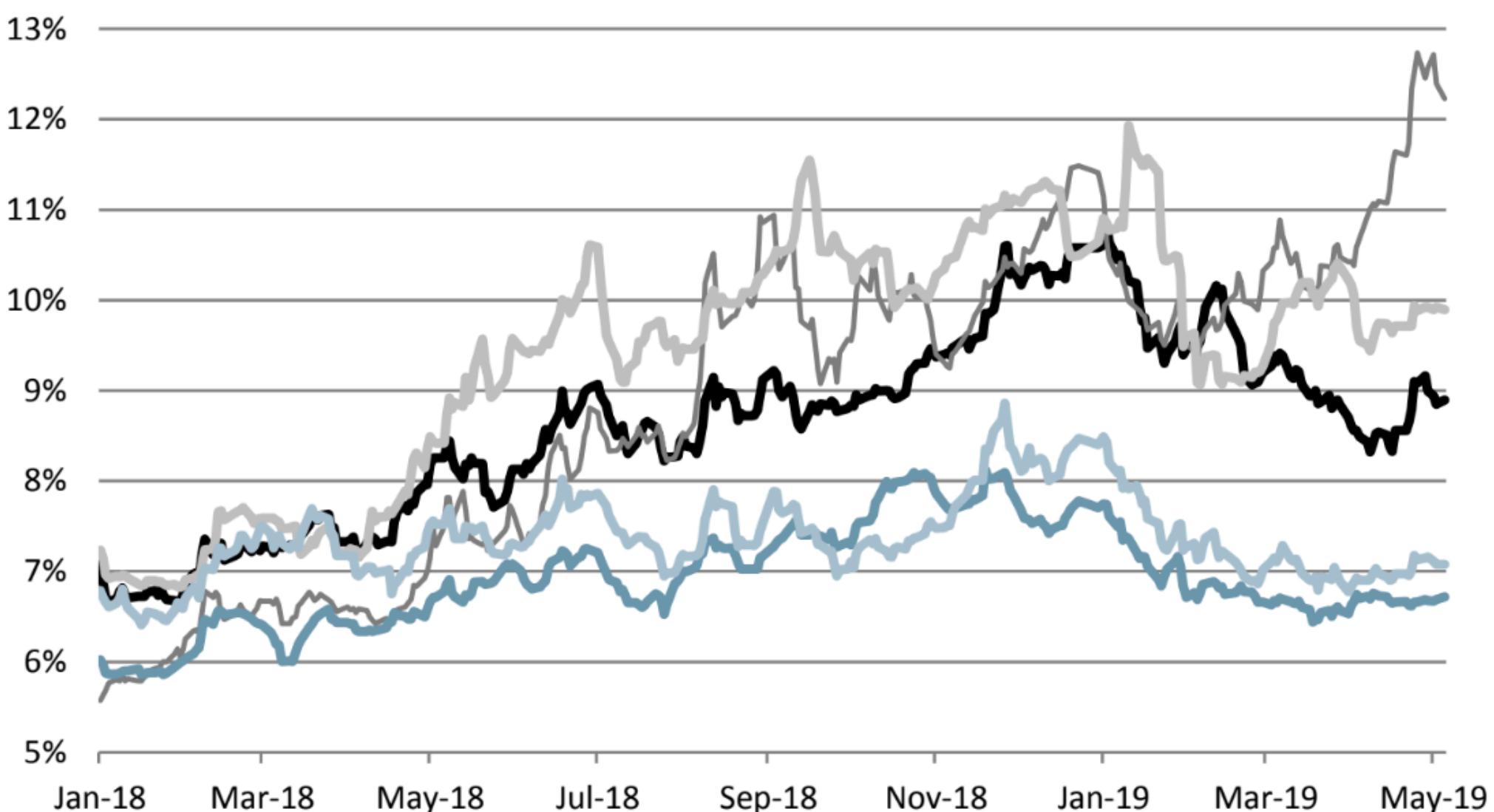
— UKRAIN 09'26

— ELSALV 01'27

— ARGENT 01'27

— ANGOL 11'25

— LEBAN 11'26



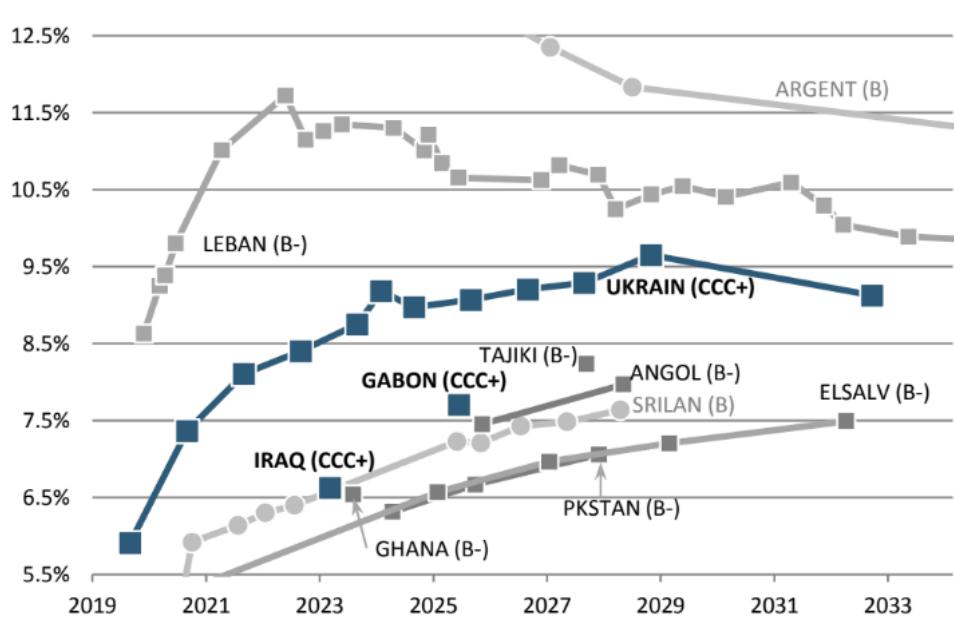
Ukrainian sovereign bonds trade at higher yields than most countries with comparable credit ratings, as well as some countries that have a worse economic situation, in our view.

To some extent, Ukraine's positioning on the yield map is determined by existing economic and political uncertainty, geopolitical risk (particularly escalating Russian aggression), as well as its recent history of debt restructuring.

Looking at the table below, we conclude that some of the countries with better credit ratings have a weaker economic position, as well as worse ability to service their debt. Also we notice that:

- Looking fundamentally better, Gabon and Iraq have credit ratings comparable to Ukraine, though the market treats them better. Angola and Pakistan trade inside Ukraine's curve, which does not look fair given their weaker economic performance and higher debt burden.
  - Potentially, Ukraine's yields can move to levels of Angola and Pakistan providing its key political uncertainty is resolved.
- Yields for the sovereign bonds of Zambia, Argentina and Lebanon – although having better ratings – trade at higher yields than Ukraine, which looks logical to us.
  - Ukraine can reach Lebanon's level in case geopolitical risks intensify, while Argentina's level can be reached in case Ukraine's ability to service its debt worsens (e.g. the IMF program fails).

Map of high-yield sovereign bonds, May 14



The USDCNH vol surface remains quite flat despite some front-end re-steepening in recent sessions, especially in the 6m/3m part, which trades at the fifth percentile of its five-year historic distribution.

At the same time USDCNH risk-reversals appear rich relative to ATM vols and rate differentials.

We think that the People's Bank of China is unlikely to intervene to weaken the currency and therefore expect USDCNH to hold below the psychologically important 7.00 level.

We consider fading the inversion of the volatility surface and the richness of the risk-reversal and explore (i) selling USDCNH 6.96 calls with a forward hedge thus monetizing the cheapness of the forward points relative to the risk-reversal, and (ii) entering 1x1.25 6m/3m 6.85 ratio calendars.

**Trade 1:** Enter 1.0 x 1.25 6m/3m 6.85 put calendars offered at 25bp. At inception the trade is flat delta, and captures approximately 57bp of positive static carry+roll over the first 90 days. The day before the expiry of the short leg, the trade results in a maximum gain of approximately 80bp for spot around 6.85 and breaks even for spot between 6.7650 and 7.03.

**Trade 2:** Sell 3m 40 delta (strike 6.96) USDCNH call, delta-hedged. Receive 94bp upfront. The trade captures approximately 60bp of positive static carry+roll over a 95-day horizon (day before expiry of the short leg). At expiry it breaks even for spot between 6.7650 and 7.0950 .  
(USDCNH: 6.9040, 3m: 6.9130, 2m: 6.9125, 3m: 6.9210)

## Global Markets Daily: Where is fair value for CNY rates? (Suwanapruti/Sequeira)

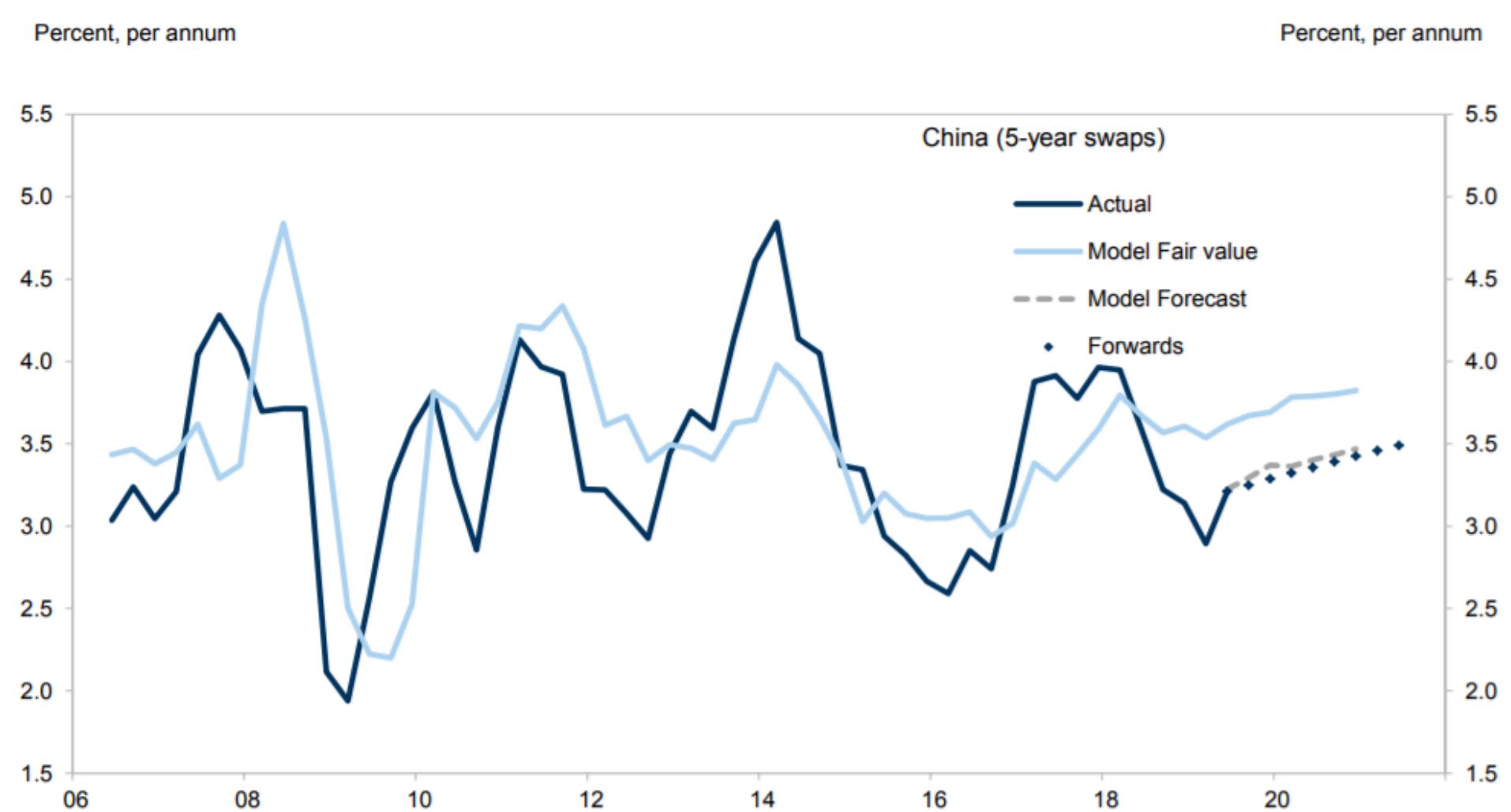
- Coming into the year, receiving CNY rates was one of the most popular trades within the Asia macro space, according to the feedback from our GS macro conference (January 22-23). The view at the time was that China's economic growth was slowing (based on Q4-2018 activity data), which would keep the PBoC dovish, and investors were anticipating that bonds would also benefit if Bloomberg indices included China's bond market into the Global Aggregate Index.

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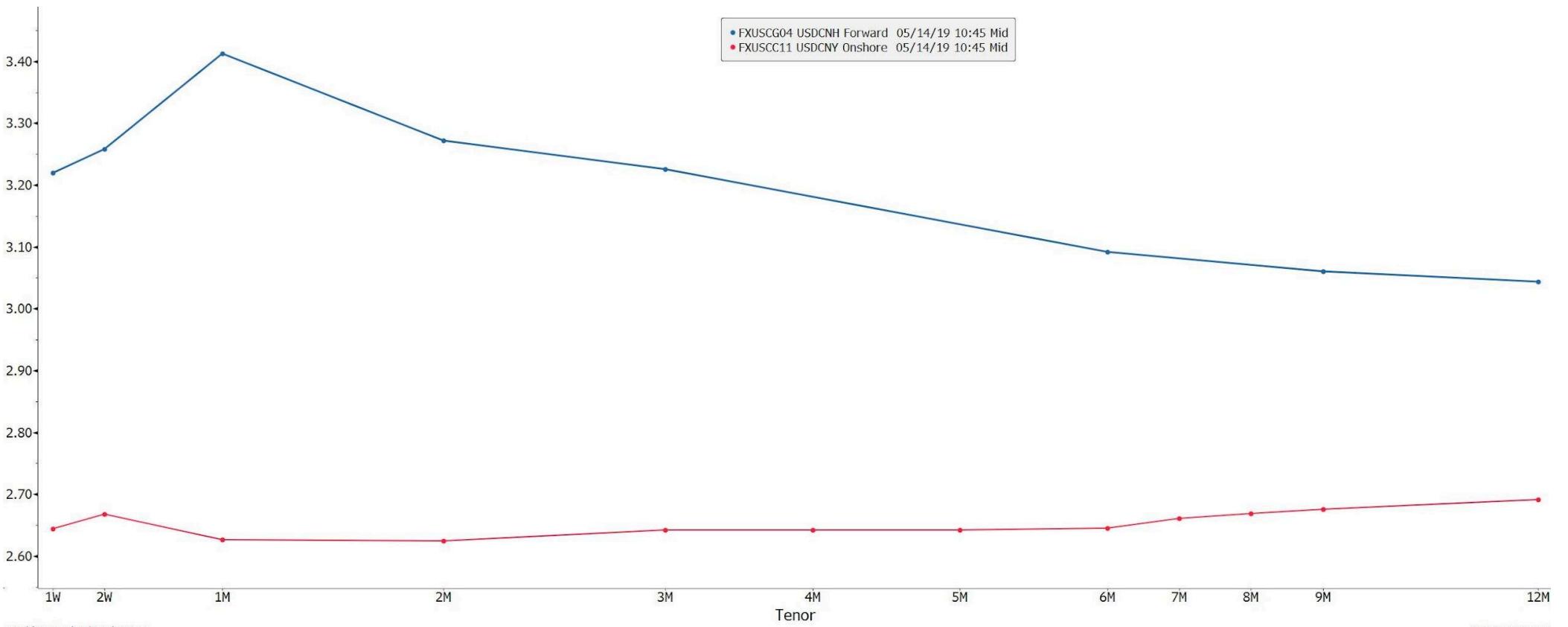
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### Exhibit 1: Our macro fair value swap model indicates room for CNY IRS rates to rise slightly from here



Source: Goldman Sachs Global Investment Research





Approximate location:  
25.162, 56.474

Al Marzoqa Oil Tanker | Offshore of Fujairah, UAE | May 13, 2019 | Maxar WorldView-2 Satellite Image

## Sabotage incident targeted Saudi Aramco facility

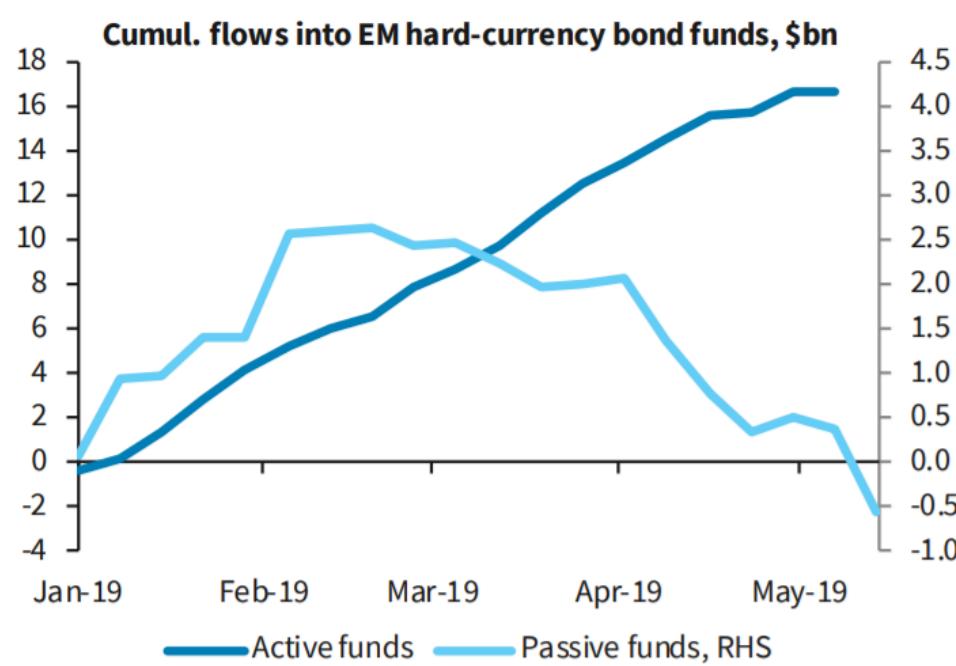
DHAHRAN, May 14, 2019

Saudi Aramco responded to a fire at East West Pipeline Pump station 8 which was caused by a sabotage incident using armed drones which targeted pump stations 8 and 9.

As a precautionary measure, the Company temporarily shut down the pipeline, and contained the fire which caused minor damage to pump station 8. Saudi Aramco confirms that no injuries or fatalities have been reported. Saudi Aramco's oil and gas supplies have not been impacted as a result of this incident.

FIGURE 4

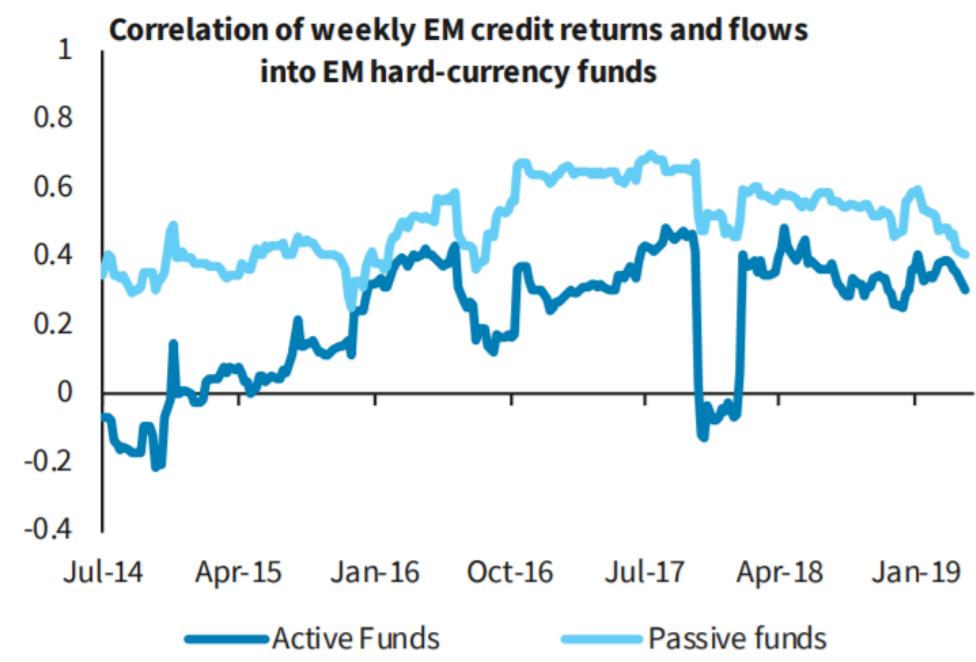
EM credit ETFs have continued to suffer outflows, while flows into active funds have been resilient...



Source: EPFR, Barclays Research

FIGURE 5

...reflecting the higher correlation of passive fund flows to very short-term asset performance



Source: EPFR, Bloomberg, Barclays Research

16 May 2019

5

Saudi ARAMCO Pump Station 8; 24.48° N, 43.38° E  
Image by Planet Labs; Research by TankerTrackers.com  
2019-05-14



Saudi Energy Minister says two pump stations on the East-West pipeline were attacked, confirming sabotage targets global oil supply.

Tuesday 1440/9/9 - 2019/05/14

Riyadh, May 14, 2019, SPA -- Khalid A. Al-Falih, Minister of Energy, Industry, and Mineral Resources, stated that on Tuesday, May 14, 2019, between 6:00 a.m. and 6:30 a.m., two pump stations on the East-West pipeline were attacked by armed drones which caused a fire and minor damage to Pump Station No. 8. The fire has since been contained. The pipeline transports Saudi oil from the Eastern Province to Yanbu port.

Saudi Aramco has taken all necessary measures and temporarily shut down the pipeline to evaluate its condition.

The company is working on restoring the pump station prior to resuming operations.

Mr. Al-Falih confirmed that the Kingdom of Saudi Arabia condemns this cowardly attack, emphasizing that this act of terrorism and sabotage in addition to recent acts in the Arabian Gulf do not only target the Kingdom but also the security of world oil supplies and the global economy.

These attacks prove again that it is important for us to face terrorist entities, including the Houthi militias in Yemen that are backed by Iran.

The Saudi minister concluded the statement by asserting that Saudi oil production has not been interrupted.

--SPA

13:45 LOCAL TIME 10:45 GMT

0007

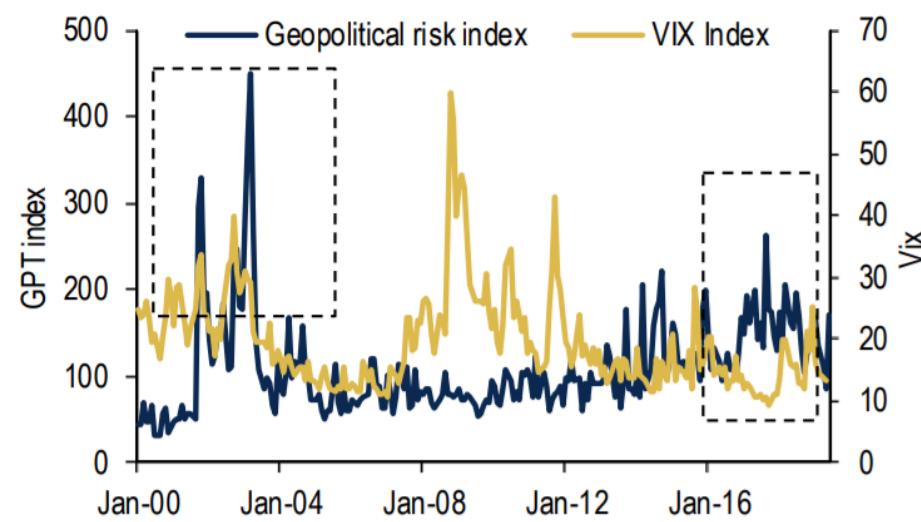
Implied vols in crude oil has picked up somewhat from the recent lows but remains very contained: eg, 3m IVOLCRUD Index is now at 29 vs 23 a few weeks ago but still far short of spikes to 50+ in various rounds of volatility in the past years (Chart 1).

### **Chart 1: Oil vol has picked-up, but low vs. historical periods of market volatility**



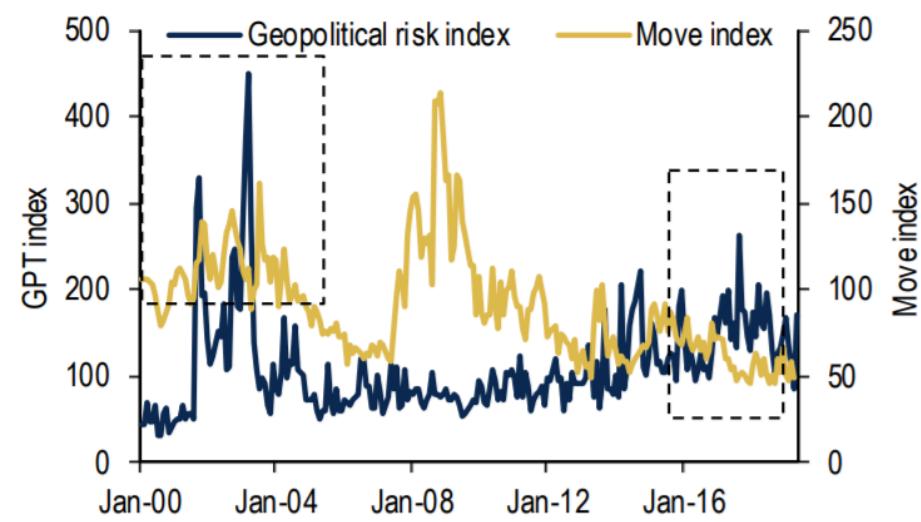
Source: Bloomberg

### **Chart 2: Geopolitical risk vs. VIX**



Source: Federal Reserve, Bloomberg

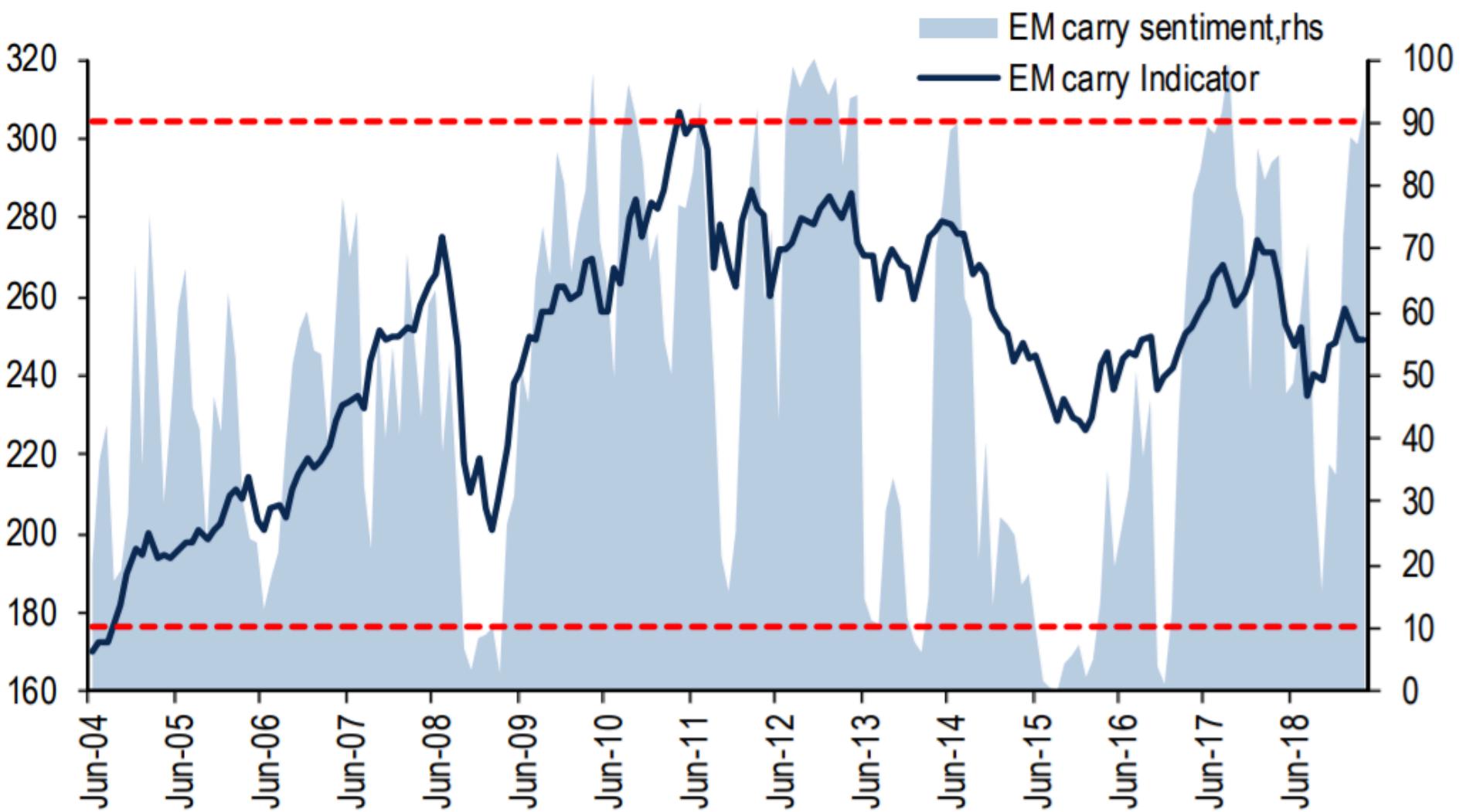
### **Chart 3: Geopolitical risk vs. US rates vol**



Source: Federal Reserve, Bloomberg

Specifically on Iran, historical periods of tension (e.g. 2011 – 2013) did not appear to have any material impact on markets. For example, Saudi FX forward points were unchanged, whilst regional equity markets showed little relationship to the increase in tensions. The Saudi stock market actually grew over 30% between mid-August 2011 and the peak in early April 2012; this period coincided with the start of Iran's enrichment operations at the Fordow facility. Actual military activity was always seen as a tail risk rather than a baseline, as it is currently. Should Iran (or the US) return to the negotiating table, we may well once again see a lack of response from markets. If anything, higher oil prices would help oil-exporting sovereign assets.

#### Chart 4: Heavy EM positioning is a concern



Source: Area shows our EM carry sentiment indicator . Backtesting is hypothetical in nature and reflects application of the screen prior to its introduction. It is not intended to be indicative of future performance. This indicator was not created to act as a benchmark. The indicator identified as an indicator above is intended to be an indicative metric only and may not be used for reference purposes or as a measure of performance for any financial instrument or contract, or otherwise relied upon by third parties for any purpose without prior written consent of BofA Merrill Lynch Global Research. Source: Bloomberg, BofA Merrill Lynch Global Research

## **Expect further Fx depreciation of the Iranian Rial**

A sustained much weaker external position is likely to imply continued depreciation of the Iranian Rial. In our view, any further large Fx depreciation could increase inflation, possibly exacerbating ongoing domestic protests. Iran maintains a dual exchange rate system: an official, overvalued, rate for imports of selected priority goods (IRR/USD rate of 42,000), and a market rate for other imports (generally closer to fundamentals, and around 110,000 as of end-2018).

A weaker currency would limit the widening of fiscal and external accounts. As oil export proceeds are converted by the government at the official rate for fiscal revenues, authorities would be required to implement a depreciation in the official rate. This would allow the official rate to catch up to the parallel rate, as plans for exchange rate unification by end-March 2019 were not implemented. Deficit monetization could also be a possibility on the fiscal financing front.

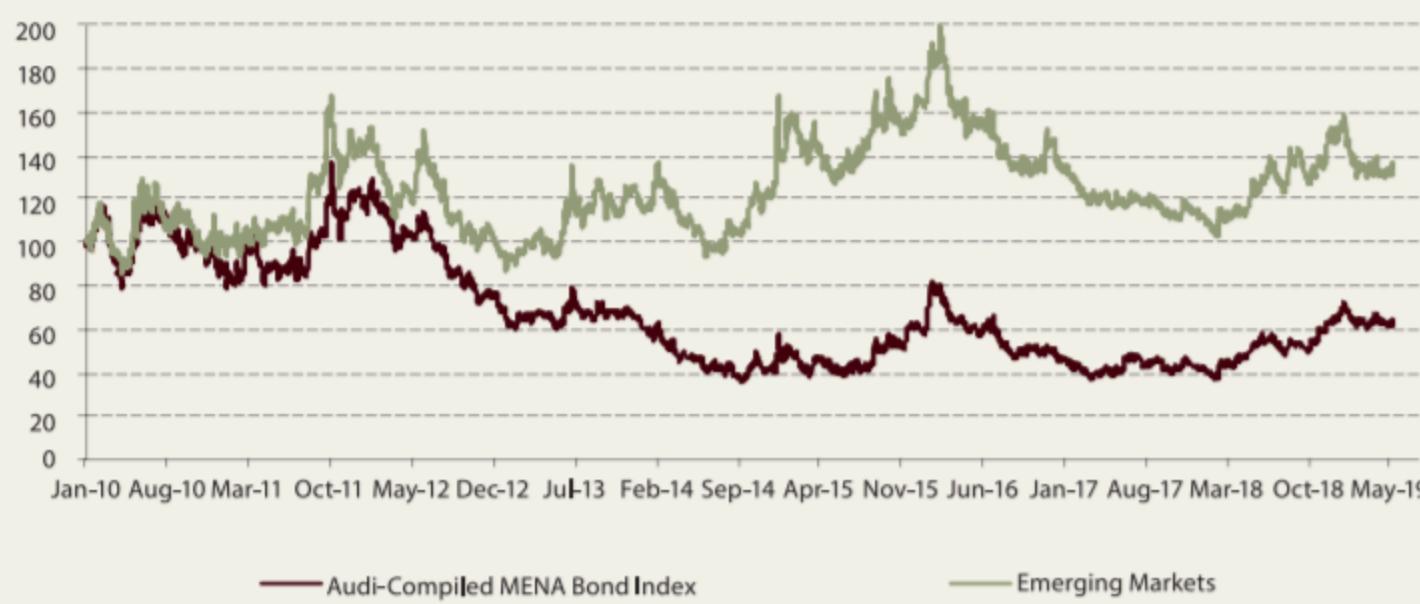
## **Large but not fully accessible Fx reserves**

Much uncertainty revolves the foreign assets and liabilities position of Iran despite a likely positive IIP position. An important portion of foreign assets appears to be encumbered and unavailable to draw for BoP payment purposes. We understand this was the situation even after the US provided sanctions relief after the JCPOA agreement. We understand this may be due to the inability of Iran to maintain and expand Correspondent Bank Relations (CBRs) which remain limited at this stage.

As a result of delays or difficulties in receiving external payments, Iran has had to accumulate trade credits with trading partners. Oil export proceeds for the past year have been locked in escrow accounts to finance imports from purchasing countries. The IMF reports that Iran took steps to reach bilateral agreements to convert its dollar reserves and export earnings into other currencies, as well as started to denominate its oil contracts in euros.

## Z-SPREAD BASED AUDI MENA BOND INDEX V/S INTERNATIONAL BENCHMARKS

Base Jan 2010 = 100



Sources: Bloomberg, JP Morgan, Bank Audi's Group Research Department

## SOVEREIGN RATINGS & FX RATES

SOVEREIGN RATINGS	Standard & Poor's	Moody's	Fitch		
<b>LEVANT</b>					
Lebanon	B-/Negative/B	Caa1/Stable	B-/Negative/B		
Syria	NR	NR	NR		
Jordan	B+/Stable/B	B1/Stable	NR		
Egypt	B/Stable/B	B2/Stable	B+/Stable/B		
Iraq	B-/Stable/B	Caa1/Stable	B-/Stable/B		
<b>GULF</b>					
Saudi Arabia	A-/Stable/A-2	A1/Stable	A+/Stable/F1+		
United Arab Emirates	AA/Stable/A-1+*	Aa2/Stable	AA/Stable/F1+*		
Qatar	AA-/Stable/A-1+	Aa3/Stable	AA-/Stable/F1+		
Kuwait	AA/Stable/A-1+	Aa2/Stable	AA/Stable/F1+		
Bahrain	B+/Stable/B	B2/Stable	BB-/Stable/B		
Oman	BB/Negative/B	Ba1/Negative	BB+/Stable/F3		
Yemen	NR	NR	NR		
<b>NORTH AFRICA</b>					
Algeria	NR	NR	NR		
Morocco	BBB-/Stable/A-3	Ba1/Stable	BBB-/Stable/F3		
Tunisia	NR	B2/Stable	B+/Negative/B		
Libya	NR	NR	NR		
Sudan	NR	NR	NR		
NR= Not Rated	RWN= Rating Watch Negative	* Emirate of Abu Dhabi Ratings			
FX RATES (per US\$)	10-May-19	03-May-19	31-Dec-18	Weekly change	Year-to-date
<b>LEVANT</b>					
Lebanese Pound (LBP)	1,507.50	1,507.50	1,507.50	0.0%	0.0%
Jordanian Dinar (JOD)	0.71	0.71	0.71	0.0%	-0.2%
Egyptian Pound (EGP)	17.12	17.18	17.92	-0.3%	-4.5%
Iraqi Dinar (IQD)	1,192.86	1,192.68	1,192.68	0.0%	0.0%
<b>GULF</b>					
Saudi Riyal (SAR)	3.75	3.75	3.75	0.0%	0.0%
UAE Dirham (AED)	3.67	3.67	3.67	0.0%	0.0%
Qatari Riyal (QAR)	3.66	3.66	3.65	0.0%	0.0%
Kuwaiti Dinar (KWD)	0.30	0.30	0.30	0.0%	0.1%
Bahraini Dinar (BHD)	0.38	0.38	0.38	0.0%	0.0%
Omani Riyal (OMR)	0.39	0.39	0.39	0.0%	0.0%
Yemeni Riyal (YER)	250.00	250.00	250.00	0.0%	0.0%
<b>NORTH AFRICA</b>					
Algerian Dinar (DZD)	119.05	119.05	117.65	0.0%	1.2%
Moroccan Dirham (MAD)	9.63	9.66	9.54	-0.3%	1.0%
Tunisian Dinar (TND)	2.99	2.99	3.05	0.0%	-1.8%
Libyan Dinar (LYD)	1.39	1.39	1.40	0.0%	-0.3%
Sudanese Pound (SDG)	45.11	45.11	47.62	0.0%	-5.3%

**Moves in the CCI commodity price index, and in EM FX  
(an up-move in the chart signals strength for EM FX )**

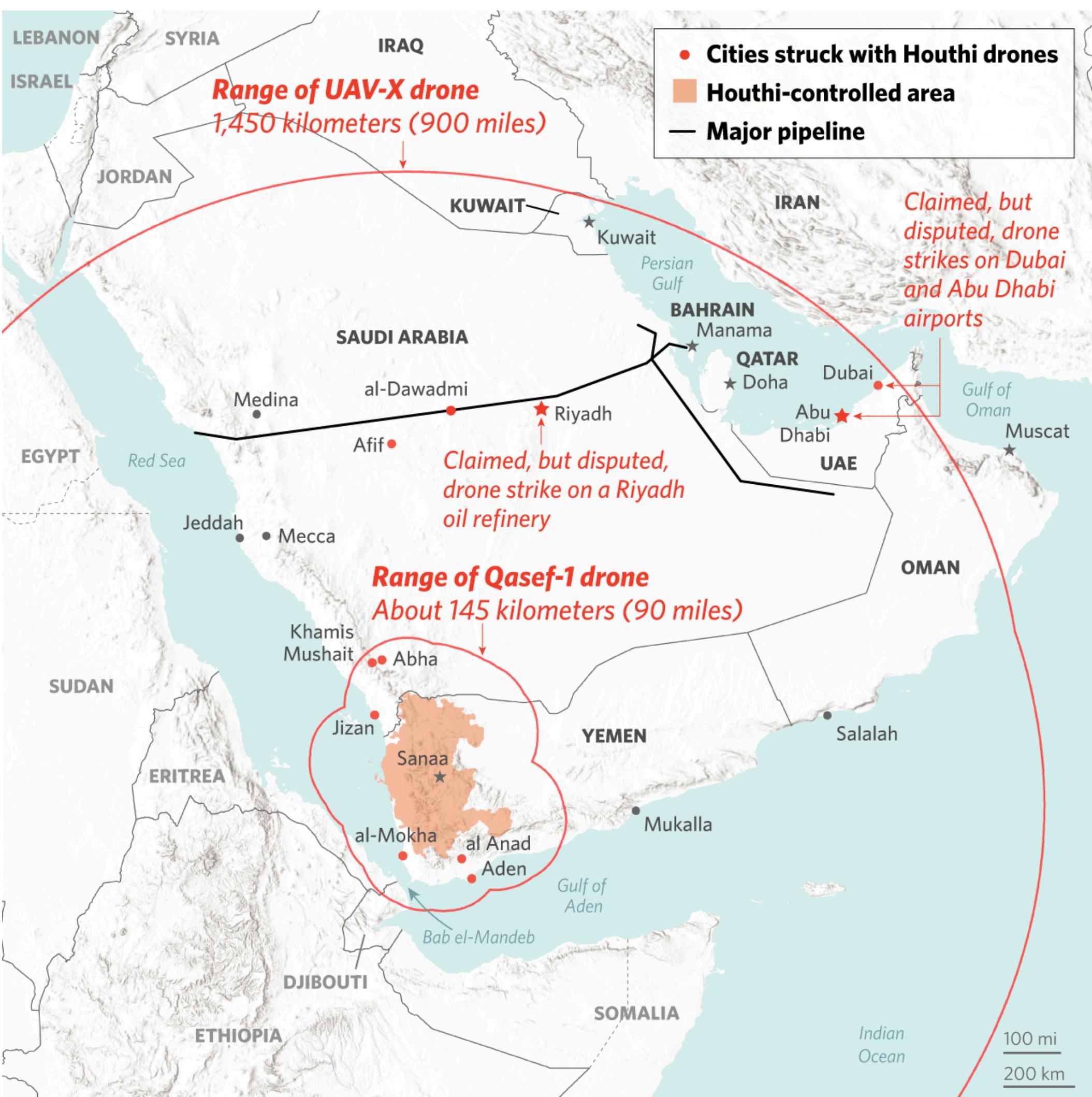


The weights that we refer to as "GBI-EM 2013 country weights" above are these: 10.2% for each of Brazil, Mexico, Poland, South Africa, Turkey, Indonesia, Malaysia, and Thailand; and 6.1% for each of Hungary, Russia and Colombia.

Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

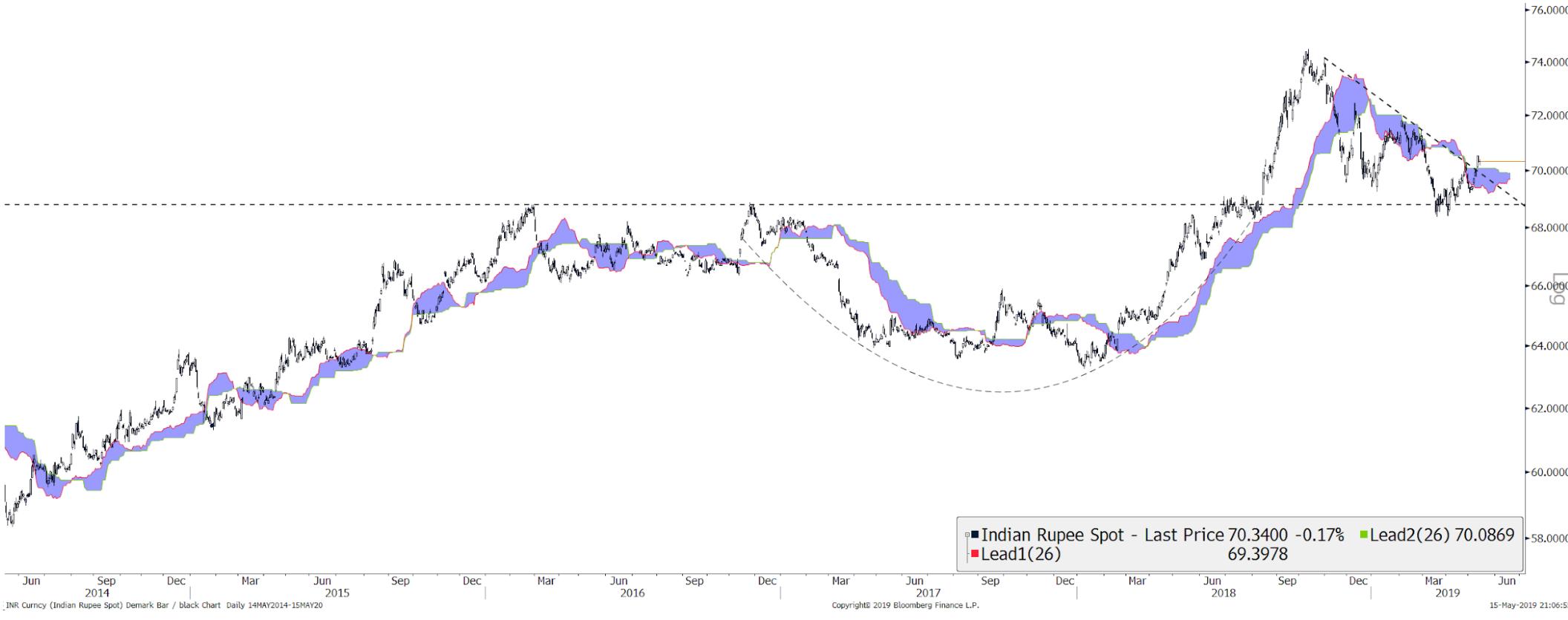
# Drone Incidents and Potential Range of Houthi Drones

The Houthi drone arsenal is a growing threat to Saudi Arabia and the UAE. Most attacks have hit southwest Saudi Arabia and Yemen, but recent strikes suggest drones can now hit Riyadh, Dubai and Abu Dhabi.



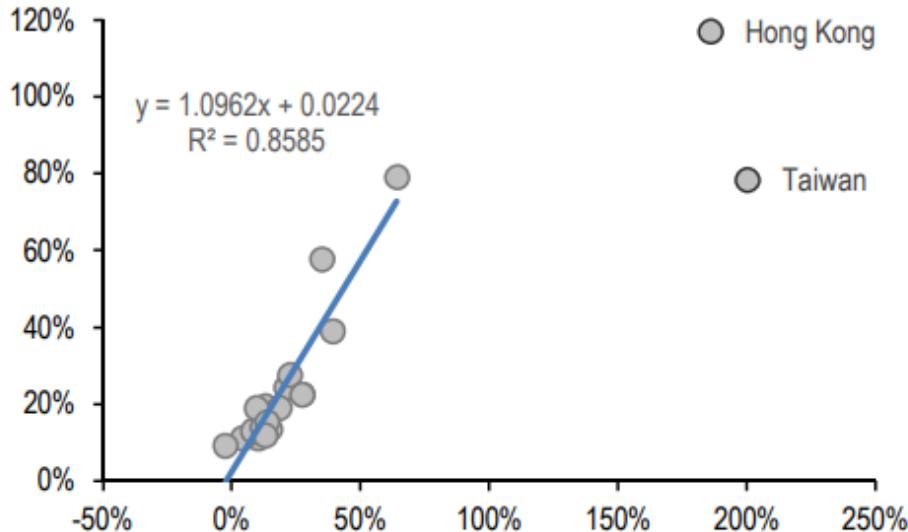
Sources: Stratfor analyses, Wall Street Journal, Reuters, BBC, NBC

Copyright Stratfor 2019



**Exhibit 11: Taiwan stands out among current account surplus countries both for the size of its net foreign asset position and the extent to which it is held by the private sector**

Official FX reserves (y-axis) vs net foreign assets (x-axis); % of GDP

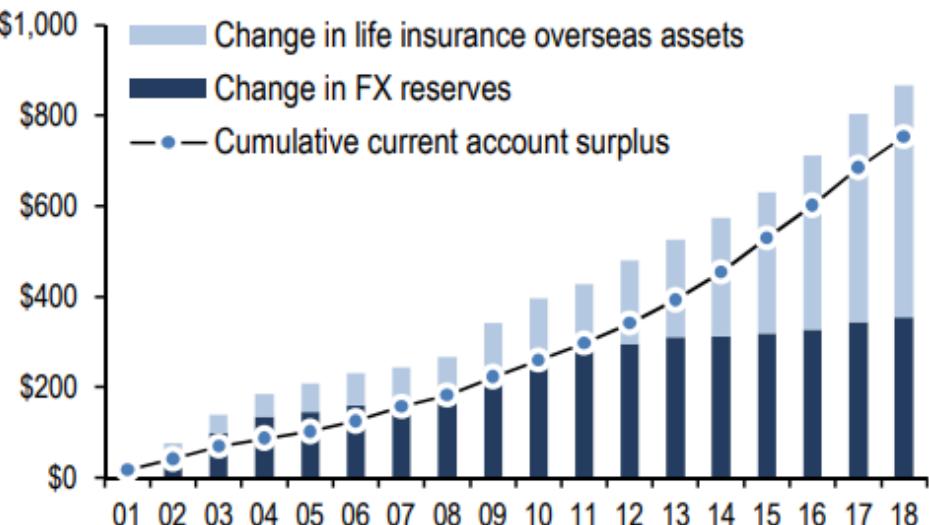


Note: Net foreign assets reported by the World Bank in local currency units, and converted back into dollars. GDP data is taken from country national accounts. Where available, data is as of 2018. For Taiwan, we source net foreign assets via their international investment position, reported in dollars. Includes Taiwan, China, Hong Kong, India, Indonesia, South Korea, Malaysia, Singapore, Thailand, Argentina, Brazil, Chile, Colombia, Mexico, Czech Republic, Hungary, Poland, Romania, Russia, South Africa and Turkey.

Source: J.P. Morgan, World Bank, Haver Analytics

**Exhibit 12: The growth in foreign assets in Taiwan has been dominated by the life insurance sector for most of the past ten years**

Cumulative change in current account surplus, change in FX reserves (excluding gold), and change in overseas assets held by life insurance companies; % of GDP



Source: J.P. Morgan, Taiwan FSC, Bloomberg

**Where has this concentration of foreign assets found a home?** Mostly in the financial sector. Insurance companies in particular are a primary beneficiary of these flows, where they currently make up nearly 70% of the industry aggregated investment portfolio. **Consistent with this assertion, growth in foreign currency assets held by insurance companies accounts for the majority of U.S. dollar inflows (in excess of GDP) from the current account over the past 20 years (Exhibit 12).** Particularly notable has been the acceleration of foreign asset growth on life insurance balance sheets since mid-2014, which came largely a result of changes to the regulations governing their investment portfolios (see [New regulations in Taiwan are bearish for USD vega](#), J. Younger et al., 8/14/17).

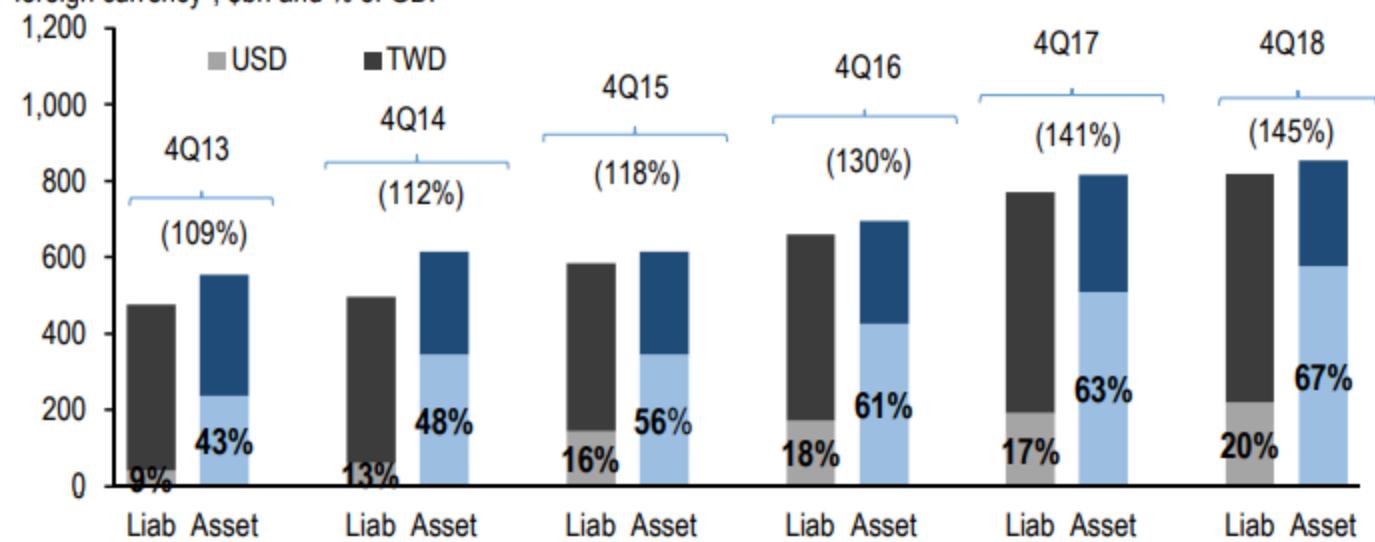
**Also somewhat curious is the manner in which these foreign assets are funded.** The majority of their U.S. dollars are sourced via the onshore FX swap market, and another quarter likely from spot transactions which are left either unhedged or managed with proxy pairs, and FX policies still represent only 25% or so of foreign currency funding. **This has produced a sizeable mismatch in currency exposure**

**between assets and liabilities in this sector, close to 48% (Exhibit 13).** Because foreign assets in excess of USD policies are effectively funded with short-term rolling FX forwards (or simply not hedged) this constitutes a sizeable duration gap with significant roll risk—effectively a form of leverage. In terms of magnitude, this totals approximately \$420bn, or 72% of 2018 Taiwan GDP.

Since then regulators have walked back this expansion a bit by imposing more constraints on the Formosa bond market. **More recently, regulators have been somewhat more aggressive on this front, imposing a hard cap on net foreign currency exposure at 65% of invested assets** (see e.g., [Revisiting demand from life insurance companies in Taiwan](#), J. Younger et al., 8/17/18, and [Taiwan financials](#), J. Huang et al., 8/2/18). Likely as a consequence, the annualized pace of USD asset acquisitions by these investors has dropped by nearly 50% relative to the peak in 2017, with 2019 currently tracking a further slowdown.

**Exhibit 13: ...which has led to a significant and growing currency mismatch on the life insurance balance sheet**

Liabilities and assets for the aggregated Taiwanese life insurance industry as of year-end, split into domestic and foreign currency\*; \$bn and % of GDP



Note: FX liabilities based on reported aggregate FX policies from Cathay, China Life, Fubon, and Shin Kong, grossed up to the size of the industry. Foreign assets from FSC data. Gray and blue indicate assets and liabilities, respectively, with dark shades referring to domestic currency and light to foreign currency (95% or so of which is likely USD).

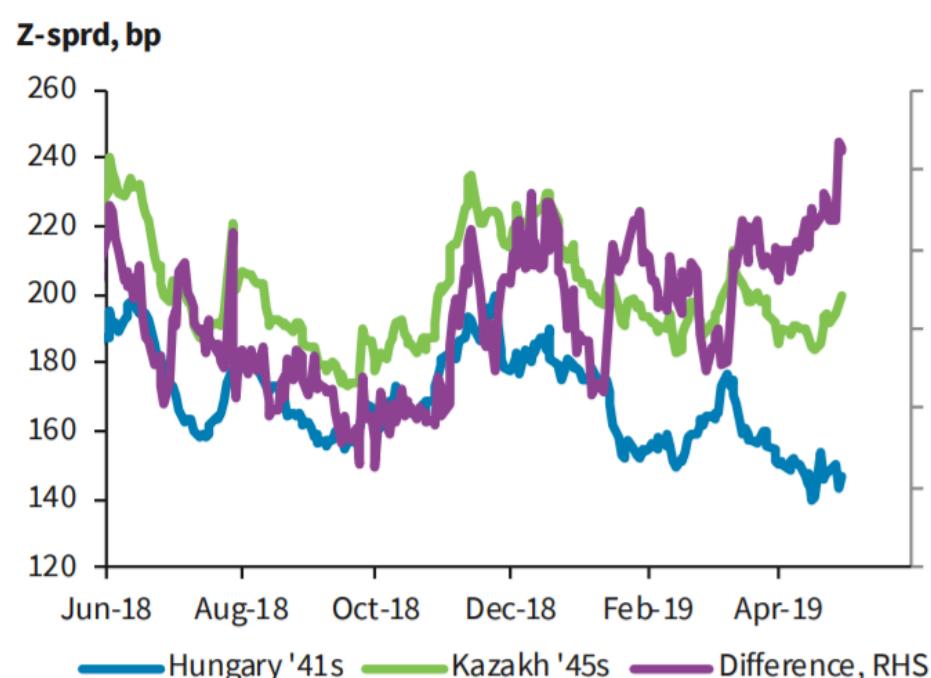
Source: J.P. Morgan, Taiwan FSC, Bloomberg, company disclosure

**How much volatility risk have they sold?** We estimate the dollar vega exposure of the aggregate stock of callables currently exceeds \$300mn per abp. Given a typical moves in options market pricing (e.g., 10Yx10Y swaptions implied volatility), **this translates to a \$10-15 P/L weekly event for each and every person in Taiwan**. A more economically relevant comparison, however, is to the mortgage market in the U.S., which sells volatility via borrower prepayment options. Based on our estimates, the short volatility risk associated with callables is comparable to that in privately-held agency MBS—a seismic shift relative to even a few years ago (**Exhibit 9**). **In this way, the growth of Taiwanese life insurance companies coupled with their search for yield has fundamentally shifted the structure and balance of flows in U.S. interest rate options markets.**

**Arguably the largest impact of asset sales out of Taiwan will be felt by USD interest rate volatility markets.** Although this flow has already slowed significantly, the stock remains high. As a consequence, the tail risk primarily at issue here is one in which callables themselves are sold and/or put back to the issuer. This represents a rather extreme outcome given theoretical MTM and liquidity considerations.

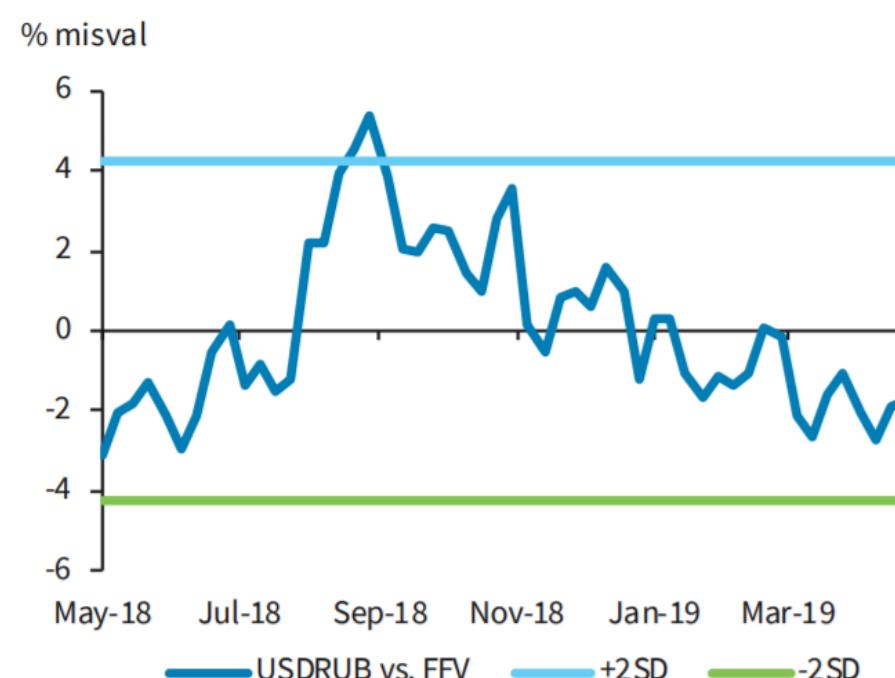
**Perhaps most surprisingly, any significant disruption in Taiwan could affect implementation of monetary policy in the U.S.** Though in the pre-crisis days of scarce reserves the Fed funds market was quite active, deep, and liquid, that is clearly no longer the case. Several QE programs have vastly expanded the monetary base, such that most banks—particularly the largest institutions—have little need to borrow, while increased intermediation and balance sheet costs inhibit their ability to lend. As a result, the Fed funds market has devolved into essentially a one-way flow of FHLBs selling to foreign as well as smaller and regional domestic banks. Among those institutions, **Taiwan has occupied an increasingly large role, participating in roughly 12% of the overall volume, and more than 40% of foreign bank activity, in Q4 2018** (the largest such buyer; see also [Interest Rate Derivatives, US Fixed Income Markets Weekly, 3/8/19](#)). Interestingly, there is reason to believe their activity is at this point driven more by a desire to source cheap USD funding for lending via the cross-currency basis (see [Interest Rate Derivatives, US Fixed Income Markets Weekly, 9/28/18](#)). **This suggests that any increased need for USD funding on behalf of the life insurance industry in Taiwan could put upward pressure on the effective Fed funds rate**—itself potentially an argument against the current policy implementation framework (see also discussion in [Altered Rates](#), A. Roever et al., 4/10/19).

FIGURE 1  
We believe Hungary trades too expensive to Kazakhstan



Source: Bloomberg, Barclays Research

FIGURE 2  
USDRUB remains low relative to its relationship with risk appetite, interest rate differentials and commodity prices



Source: Bloomberg, Barclays Research



## Large variation in June G20 event pricing

**From an event risk standpoint, the G20 summit in Osaka on June 28/29 has become a focal point of option markets,** since a potential meeting of Presidents Trump and Xi could prove pivotal in cooling the rapidly escalating trade conflict. The USD/CNH vol curve in particular has moved swiftly to price in a large premium for the event: forward volatility spanning the 27-Jun to 01-Jul dates is currently priced at a healthy 3 vol premium to the spot 27-Jun ATM vol (basis FVA mids), one of the largest premia for forward vols of similar maturity (Exhibit 4). Other vol curves, even those in Asia, do not attach the same degree of importance to the event however. JPY, AUD and KRW are the only currencies where day-weights are somewhat substantial, but trade-sensitive Asian names such as SGD and TWD that should have re-priced more in sync with CNH appear to be more or less unmoved.

Spillovers from China stress to the rest of the region have been noticeably muted so far, but this can change sharply if even a Presidential summit at Osaka fails to break the trade negotiation deadlock, and the US were to proceed with 25% tariffs on all Chinese imports as has been threatened. Pre - vs. post-USD call calendar spreads are well suited to

**Exhibit 5. Lower vol CNH proxies in Asia such as TWD and SGD offer better economics for pre- vs. post-G20 USD call calendar spreads than CNH**

Indicative pricing and leverage statistics of short 1M vs. long 2M USD call/currency put one-touch calendar spreads. Spot/NDF refs as follows: USD/CNH 6.9470, USD/SGD 1.3757, USD/TWD 1M NDF 31.3930. Assumes choice pricing on the 1M leg, 3% charge from mid on the 2M leg. All pricing as of mid-day LDN 17-May-19.

Currency Pair	Static							
	Short tenor	Long tenor	Short tenor	Long tenor	Net premium	carry in 1-mo	Max payout / time (%)	
	strike	strike	OT price	OT price	(% USD)	USD	premium	
			(%USD)	(%USD)				
USD/TWD	31.9	31.9	30.7	38.4	7.7	23.0	13.0	
USD/SGD	1.392	1.392	30.1	45.2	15.1	15.0	6.6	
USD/CNH	7.07	7.07	29.8	49.1	19.3	10.4	5.2	

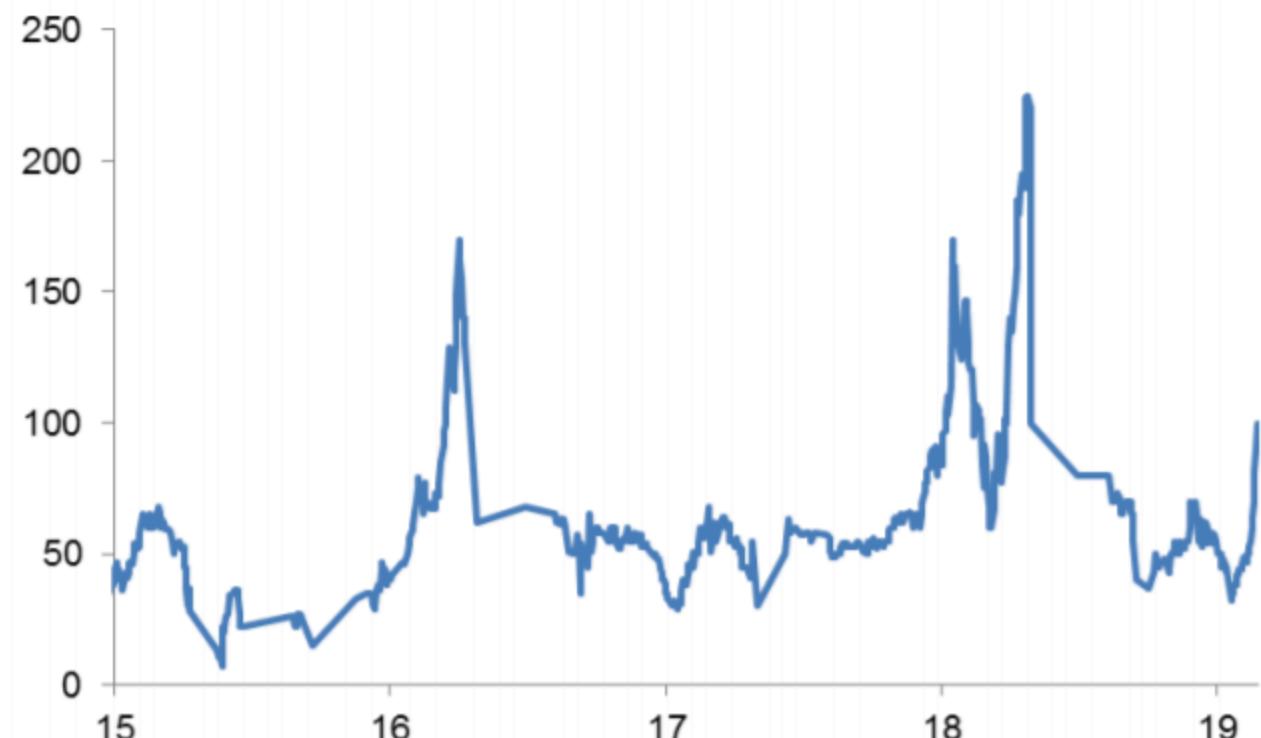
Source: J.P.Morgan

allay many investors' concerns of paying time decay over the next 2-3 weeks that are likely to be a relatively fallow period for actual trade-related developments, the odd tweet notwithstanding. Anecdotal evidence and option prices both suggest that such risk has so far been exclusively concentrated in USD/CNH, but the low-vol nature of SGD and TWD may render them even better vehicles than CNH to sell pre-event USD calls in to finance post-event dates.

Exhibit 5 compares the indicative economics of comparable **short 1M vs. long 2M one-touch calendar spread**

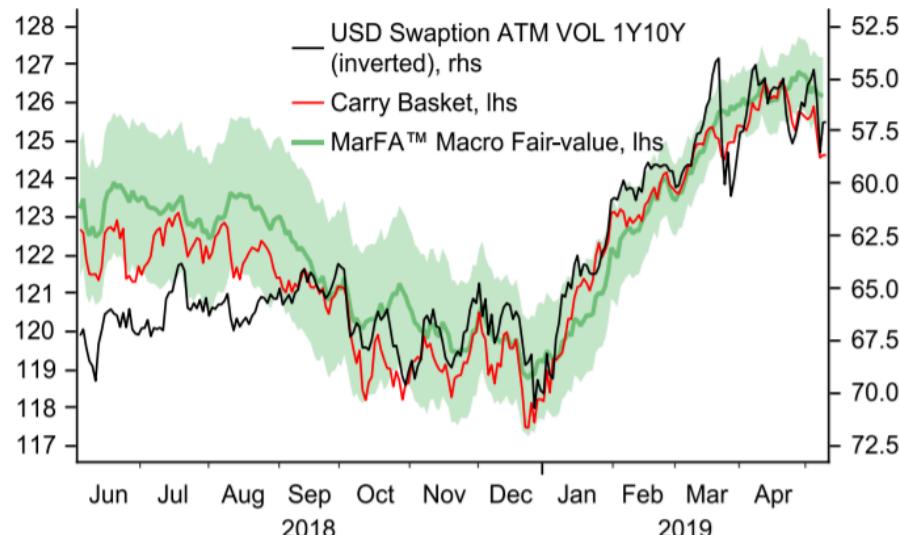
structures in the three currencies (1M expiry is 19-June and 2M expiry is 19-July, so the two pillar dates satisfy the pre/post requirement around the G20 summit date), and suggests that TWD offers the best *ex-ante* static carry and maximum leverage ratio of the trio, and that economics for both TWD and SGD trump CNH's. Admittedly there is a

**Fig. 1: Premium of Brazilian soybean export prices over US soybean price (USD/bushel)**



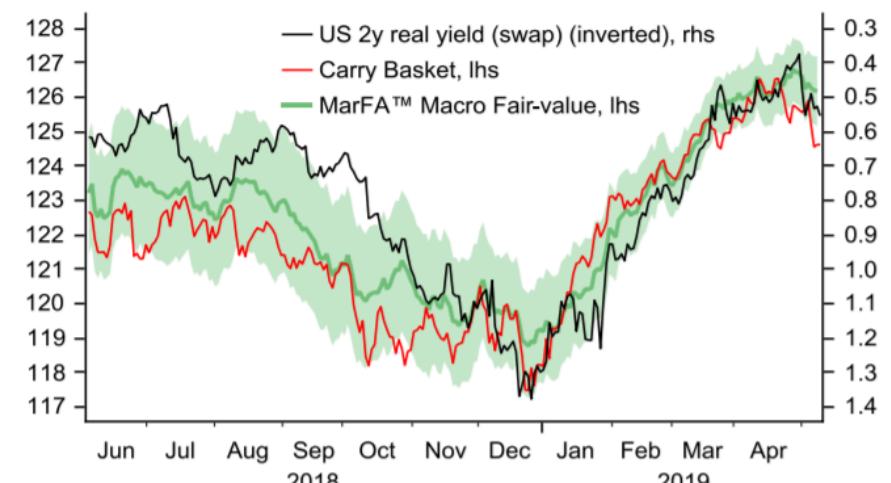
Sources: Chicago Mercantile Exchange, Bloomberg, BNP Paribas

**Fig. 1: Increased volatility is impacting carry basket**



Sources: BNP Paribas, Bloomberg, Macrobond

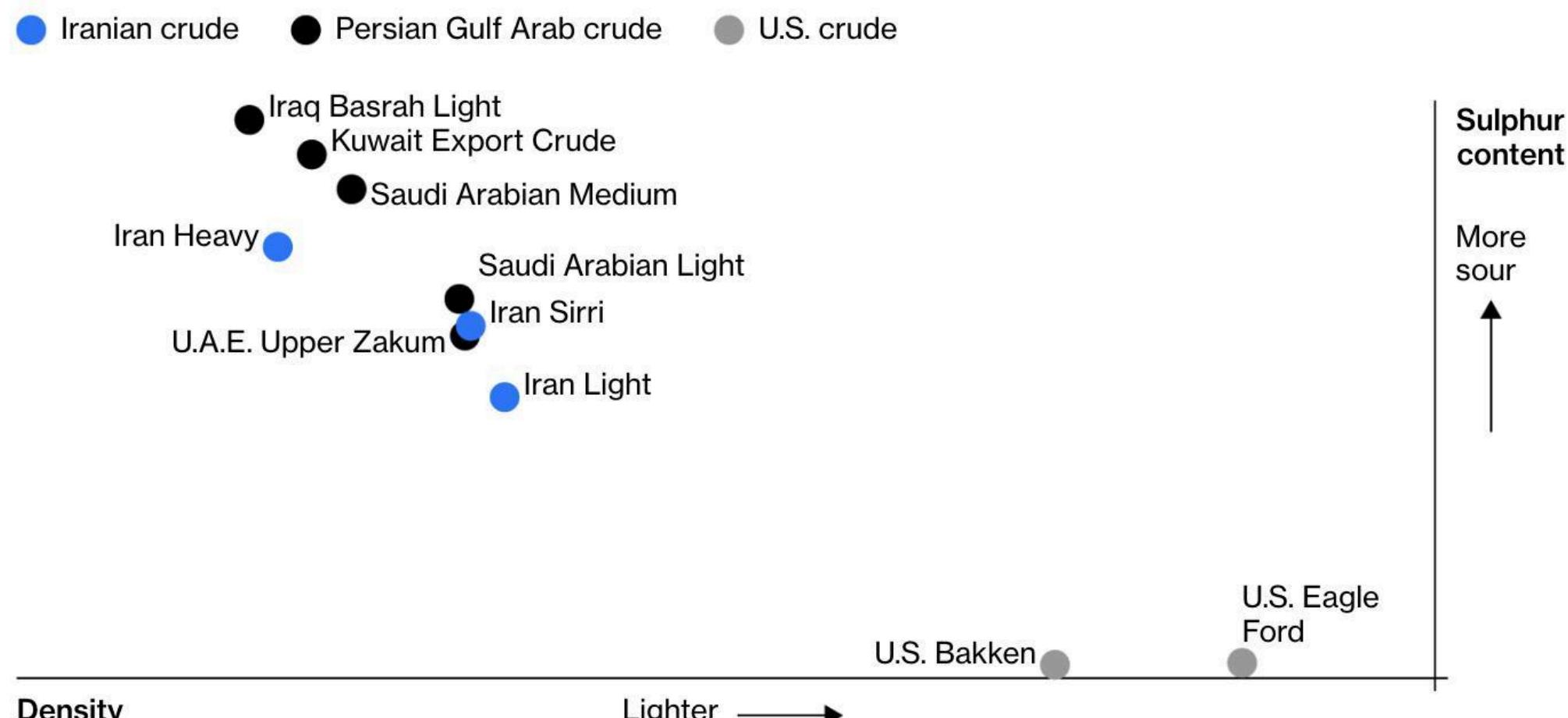
**Fig. 2: US real yield support for carry basket has peaked**



Sources: BNP Paribas, Bloomberg, Macrobond

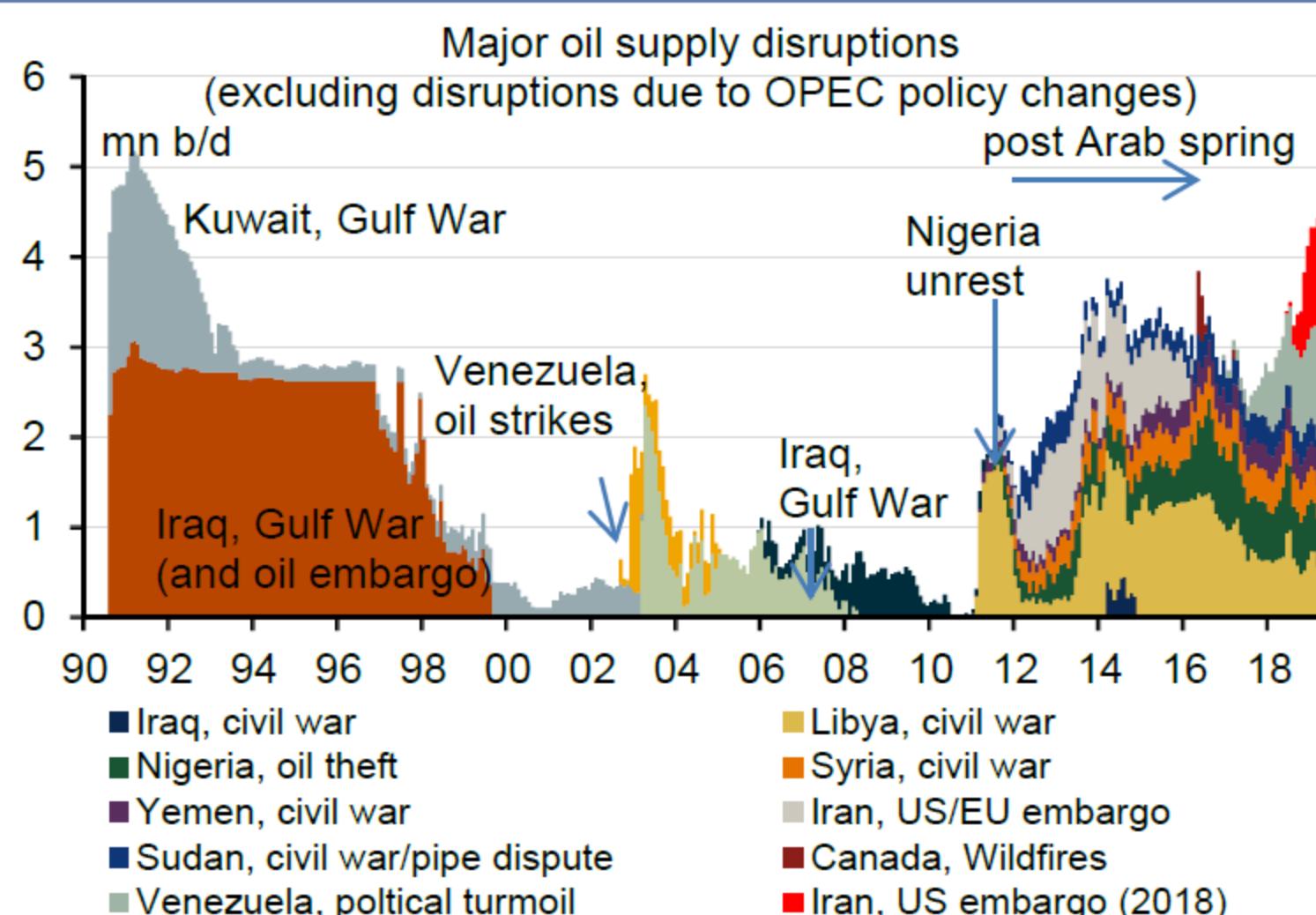
## Substitutes

Crudes from Persian Gulf Arab countries are good substitutes for sanctioned Iranian barrels



Source: Bloomberg

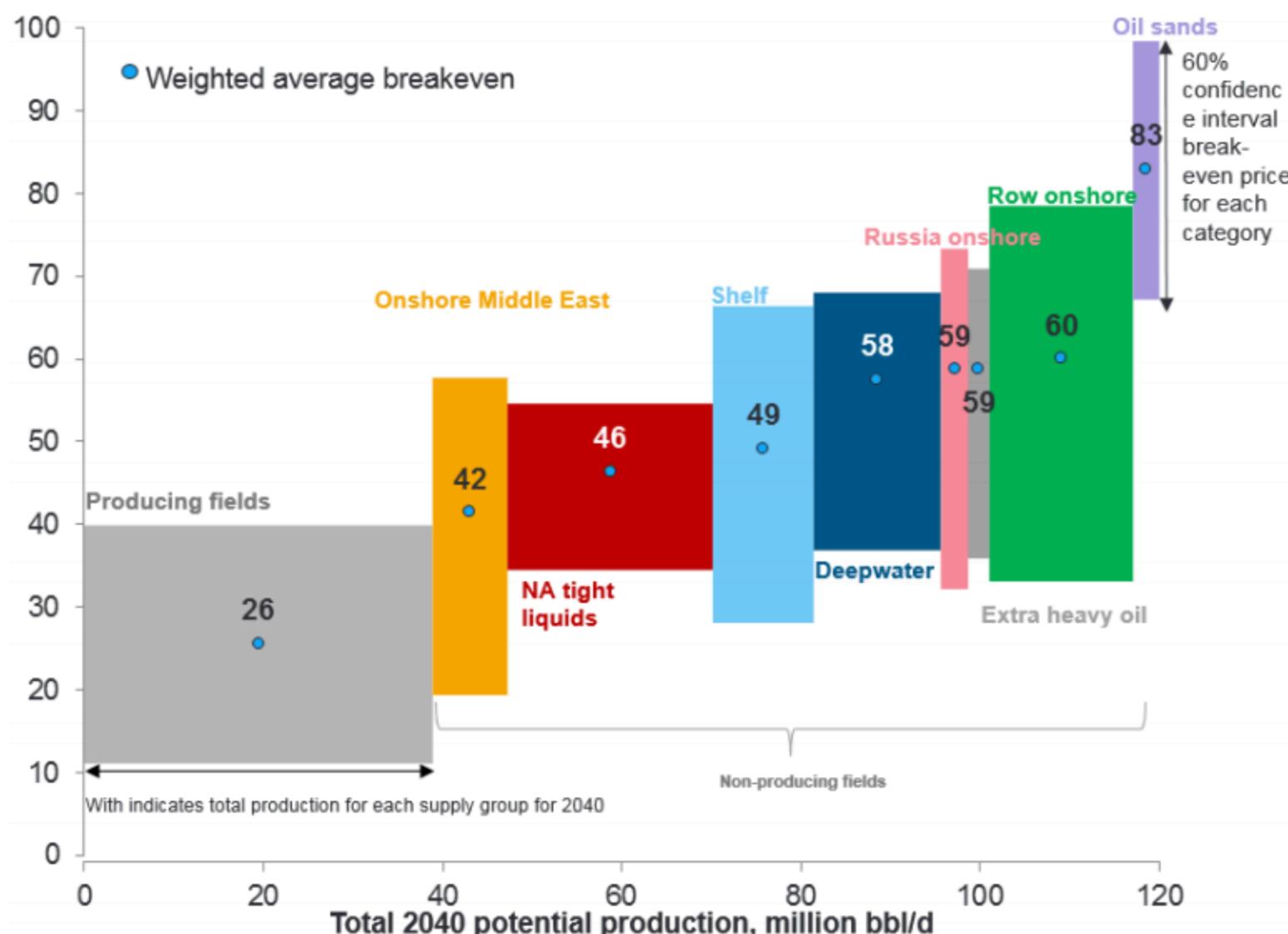
### Chart 1: Global oil supply disruptions are picking up pretty meaningfully as a result of Iran and Venezuela supply losses



Source: IEA, BofA Merrill Lynch Global Research estimates

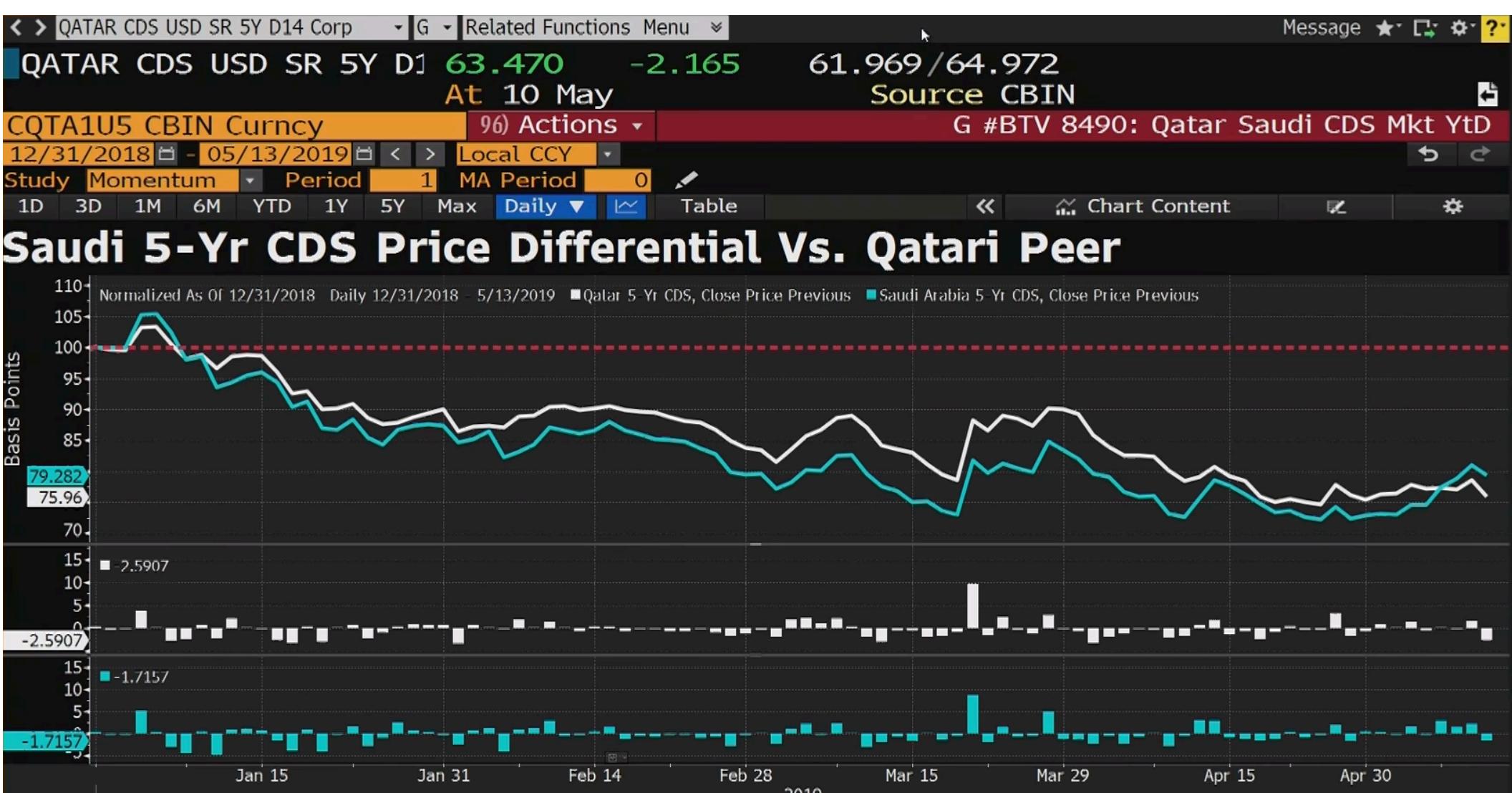
## Exhibit 12: Real Brent Break-even price

\$/bbl

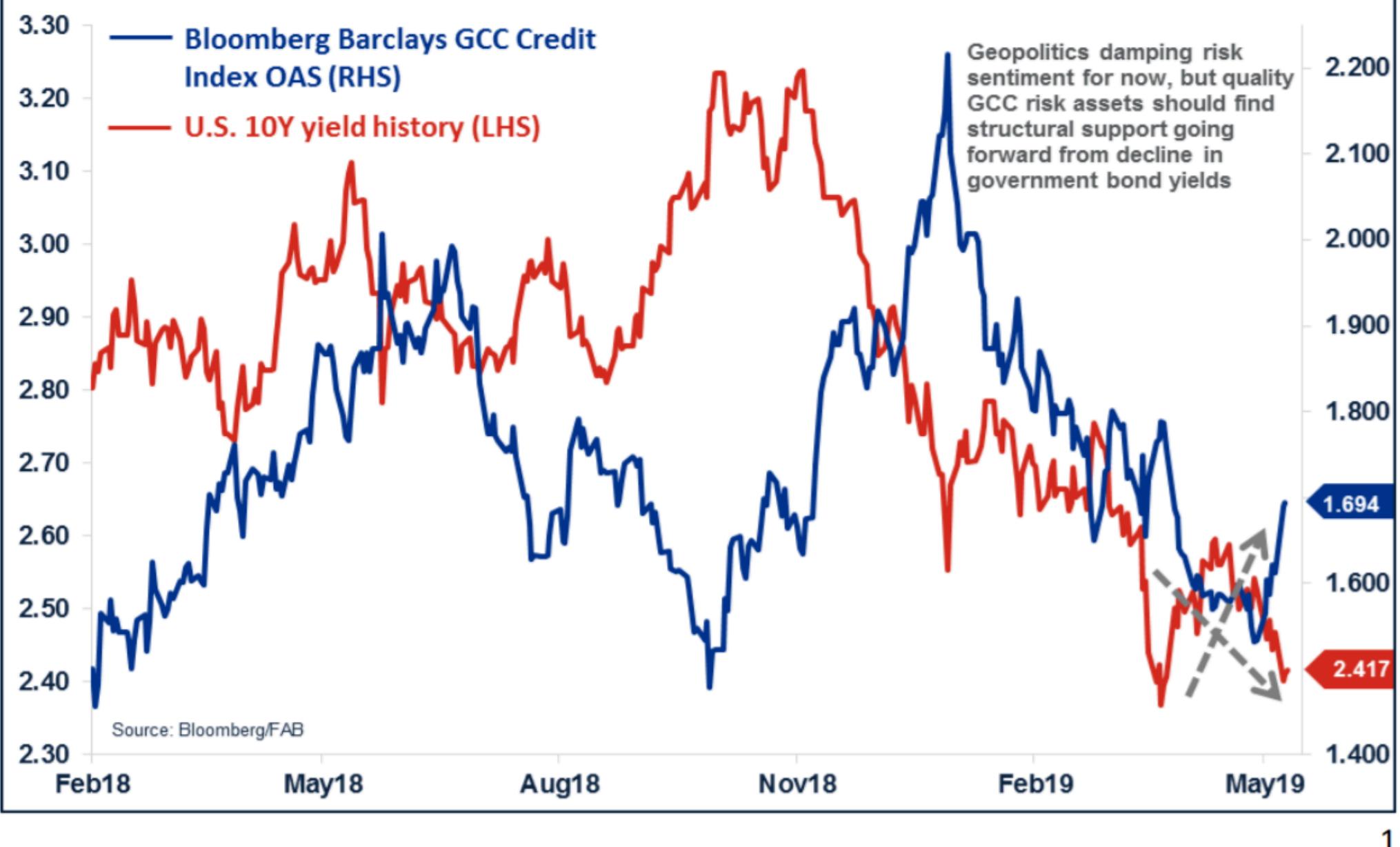


Source: J.P. Morgan Commodities Research, Rystad Energy

Short Gulf risk (Long CDS) hasn't boded well

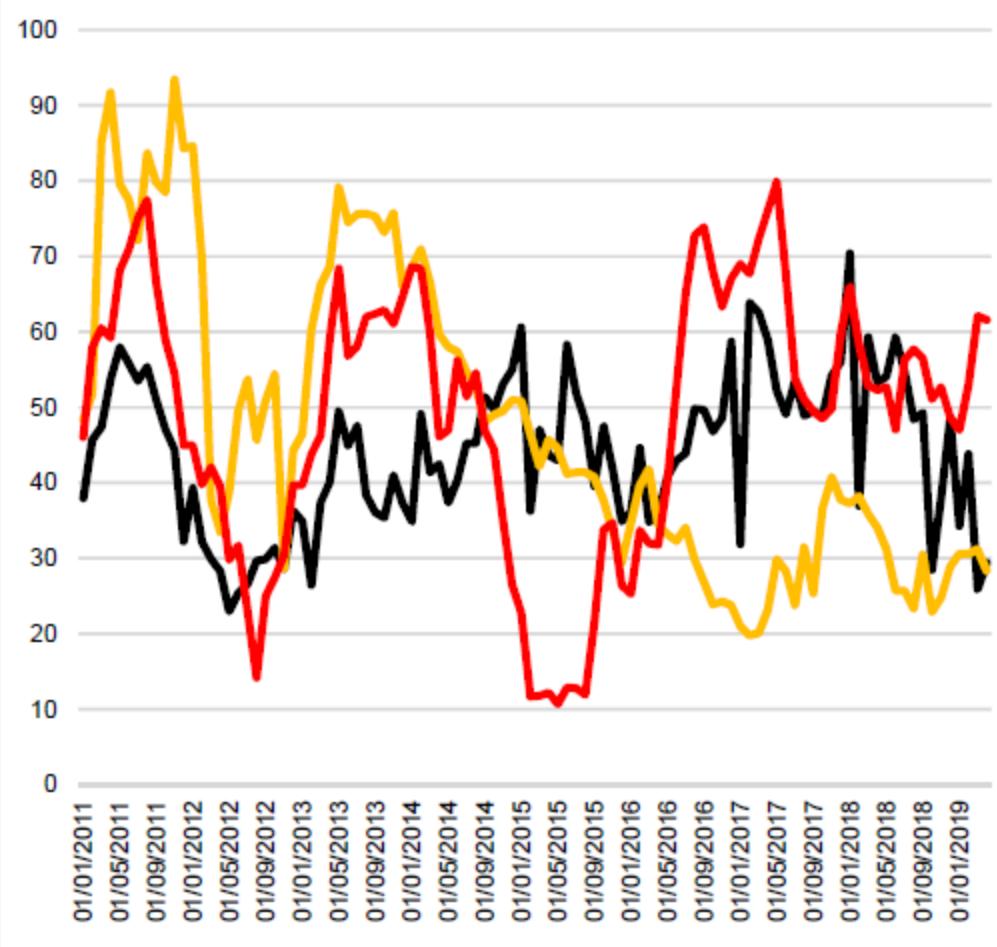


## Short-term risk vs. long-term value



**Figure 1**  
**Main Drivers of Asian Liquidity – PBoC, BoJ and Cross-border Flows to Asian Emerging Markets**

Indexes 'normal' ranges 0-100      Monthly      2011-2019

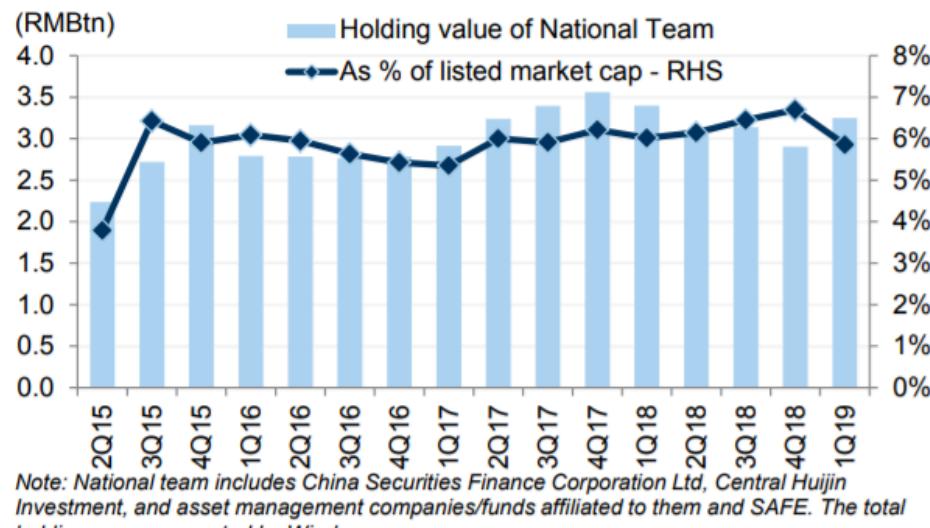


Source  
CrossBorder Capital, People's Ban of China, Bank of Japan, IMF

MY APOLOGIES.... THE NEXT FEW CHARTS ARE EQUITY-RELATED

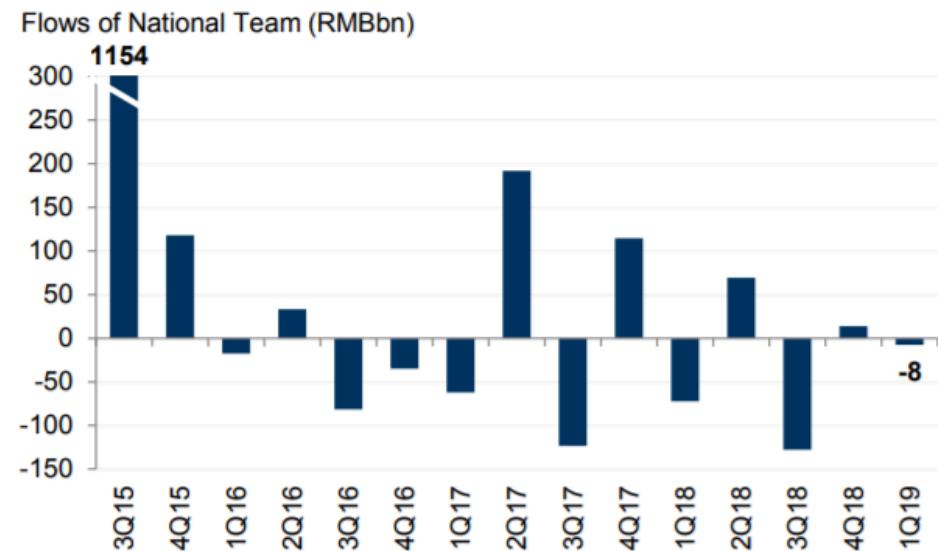
# A shares: The 'National Team'

**Exhibit 26: The 'National team' ownership slightly declined in 1Q19, with ~Rmb3tn of aggregate notional value in domestic equities**



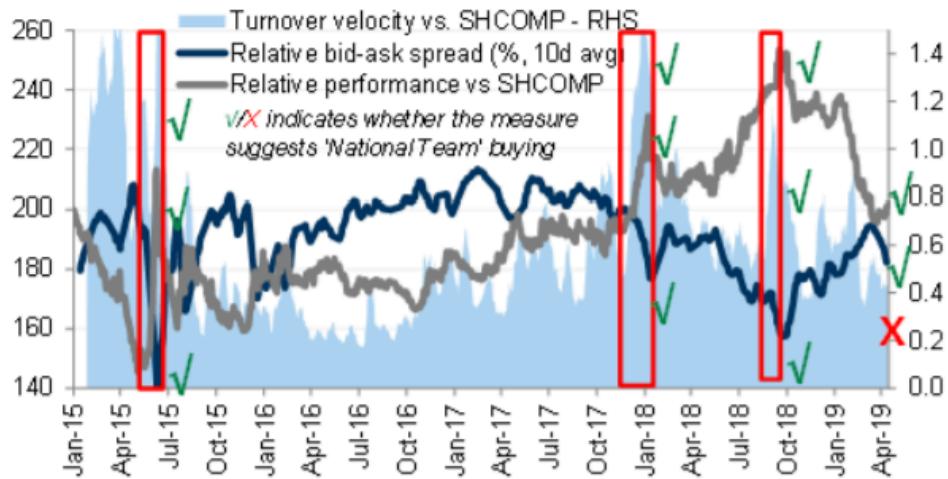
Source: Wind, FactSet, Goldman Sachs Global Investment Research

**Exhibit 27: Flows from the 'National Team' were muted in the past two quarters**



Source: Wind, FactSet, Goldman Sachs Global Investment Research

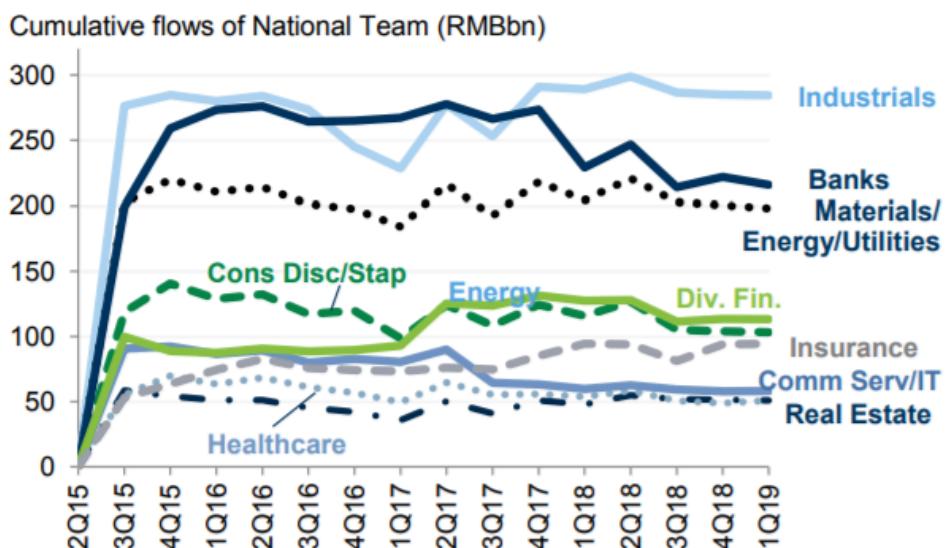
## Exhibit 28: Our real-time market proxies suggest that the National Team may have turned incrementally more active in recent days



Note: Constituents include ICBC, Petro China, BOC, China Petro & Chem, China Life. Red highlights show periods with all the measures suggesting 'National Team' buying.

Source: Bloomberg, Wind, Goldman Sachs Global Investment Research

## Exhibit 29: 'National Team' has kept holdings mostly unchanged for most sectors in the past two quarters



Source: Wind, FactSet, Goldman Sachs Global Investment Research

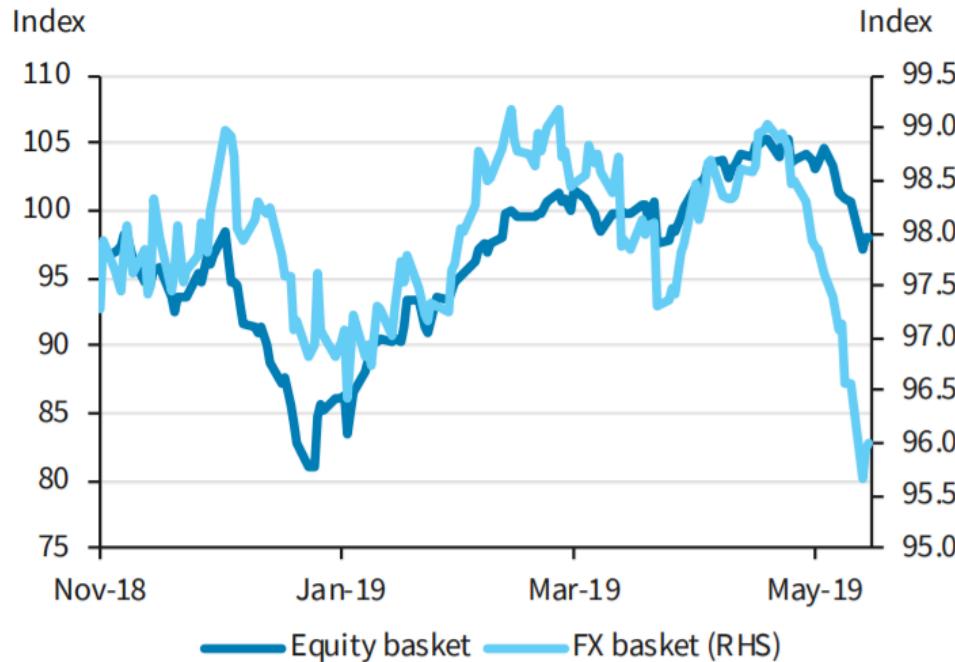






FIGURE 1

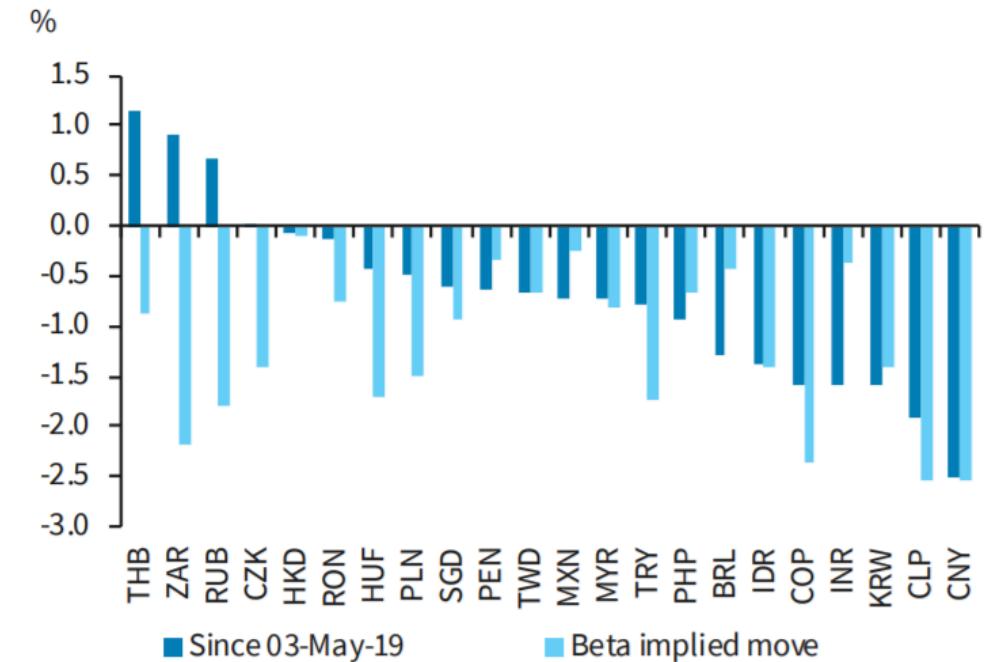
US-China trade sensitive assets have underperformed recently



Note: the methodologies for the equity basket is in *US-China trade war flares up again*, 9 May 2019 and FX in *Trade wars and FX: Lots of noise but little priced*, 24 July 2018. Source: Bloomberg, Barclays Research

FIGURE 2

FX performance show leaders/laggards in pricing in trade risks



Note: Implied moves using 52 week betas to USDCNH shown.

Source: Bloomberg, Barclays Research

16 May 2019

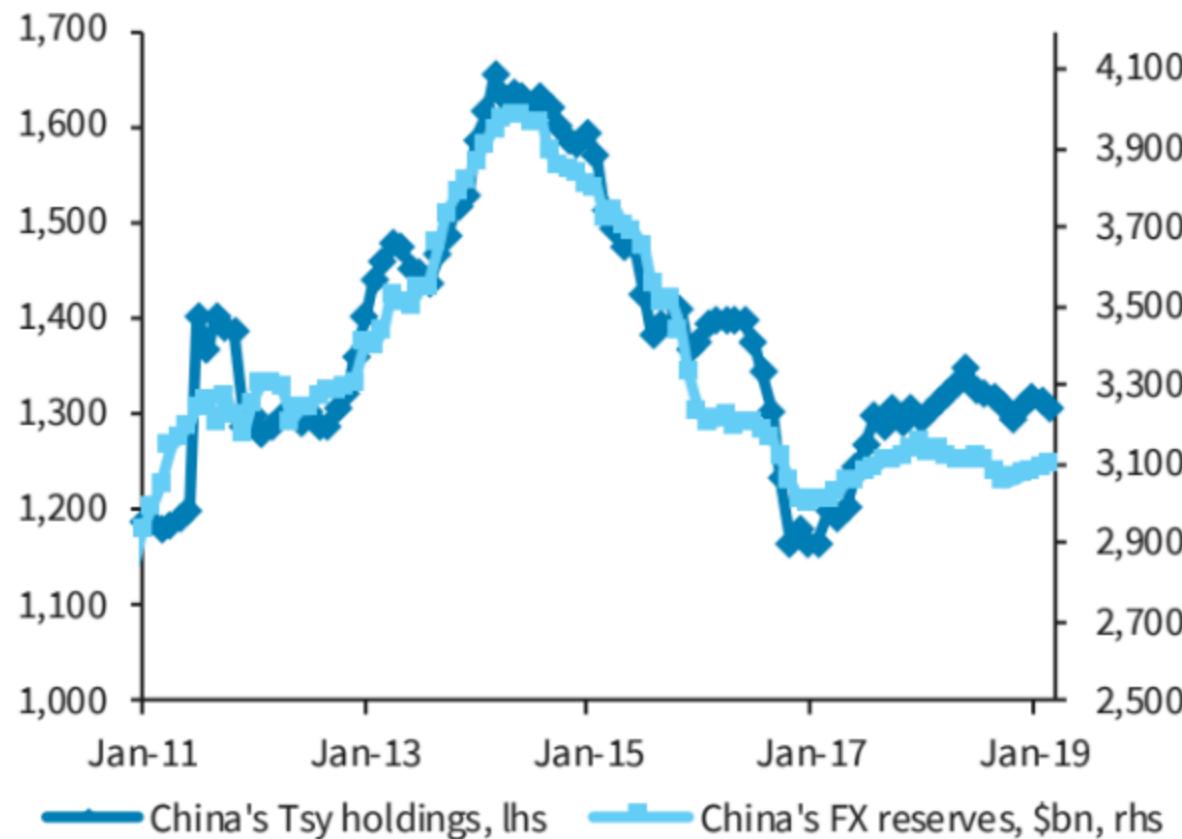
3





## FIGURE 6

## China's Treasury holdings have largely mimicked its FX reserves



Note: We add Belgium's holdings to reported China's to get a better measure of China's Treasury holdings. Source: US Treasury, Barclays Research

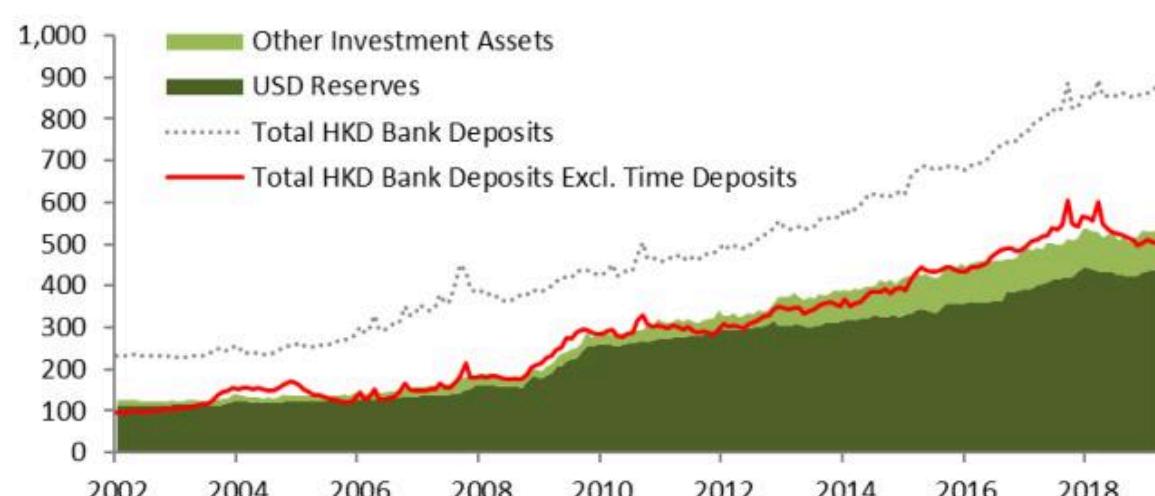
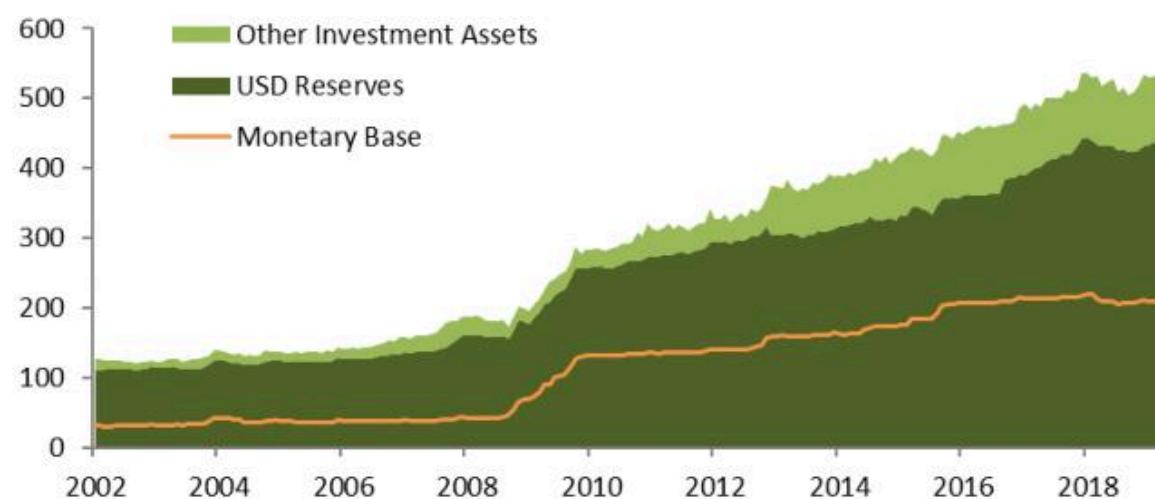


## THE HKMA HAS THE RESOURCES TO MAINTAIN THE PEG

Under a currency board, the monetary base is backed by an equal or larger amount of FX reserves.

- The HKMA's reserves are more than twice as large as the monetary base.
- This means that, even if private entities wanted to convert all outstanding HKD (monetary base) into USD, the HKMA could do so and still maintain the peg.
- In fact, the HKMA could theoretically cope with a situation where bank depositors wanted to convert all of their non-time deposits into USD (deposits are larger than the monetary base).

**Conclusion:** There can be no question about the HKMA's ability to maintain the peg.



## HKMA TRIES TO STRIKE A BALANCE BETWEEN RATES AND PEG



Under a pure currency board arrangement, if the exchange rate moves to the weaker end of the band, the HKMA would buy HKD using USD reserves; the monetary base would contract and interest rates would rise – the more so the more aggressive the intervention has to be.

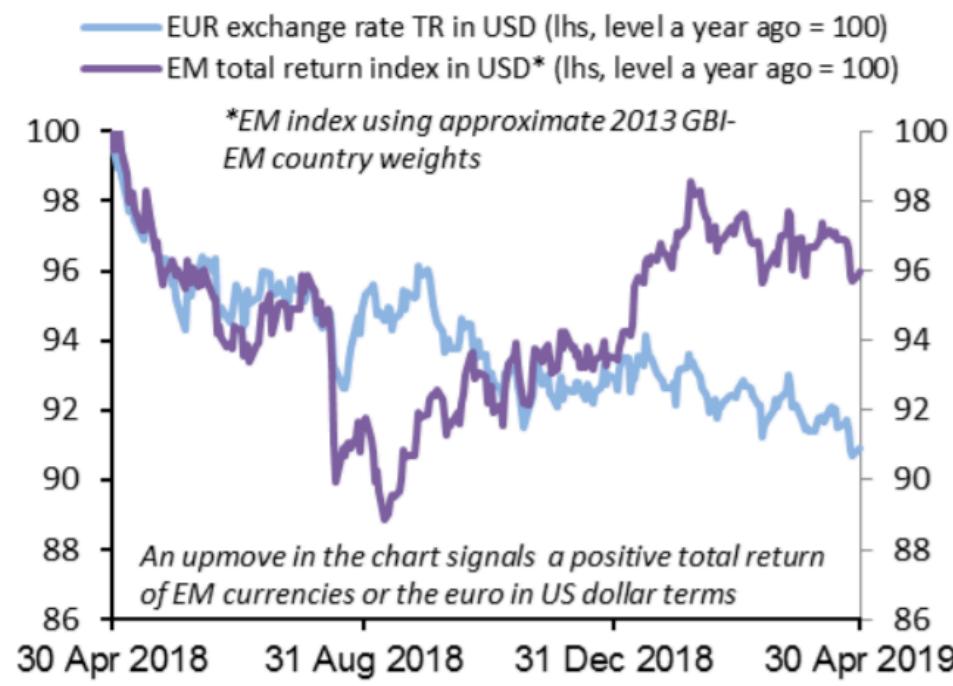
Too high interest rates could destabilize the economy, so the HKMA chooses to keep the exchange rate at the weaker end of the band in order to minimize interest rate increases.

- The HKD is at its weaker limit by choice – it's not a sign of the HKMA's weak resolve.

## Exhibit 5: GS EM Asia FX dashboard

	Metrics	China	South Korea	Taiwan	India	Indonesia	Malaysia	Philippines	Singapore	Thailand
Technical	Carry 3M FX implied yield (% per annum.)	2.66	1.29	2.24	8.64	11.75	3.14	6.13	1.95	1.64
	3M FX implied yield-to-vol ratio	0.50	0.18	0.51	1.09	1.40	0.45	1.15	0.52	0.31
	3M FX implied real yield (% per annum.)	-1.32	-0.23	1.37	5.31	10.42	-0.20	5.11	0.93	0.63
	10-year yield (% per annum.)	3.29	1.87	0.74	7.38	8.05	3.84	5.76	2.13	2.44
	Momentum Simple cross-over spot vs. MA(200) (+/-)	+	+	+	-	+	+	-	+	-
	1M FX total return (%)	0.14	-2.46	-0.35	-0.49	0.67	-1.34	1.35	-0.55	1.01
	3M FX total return (%)	1.79	-4.69	1.16	8.68	9.56	1.75	6.10	0.80	2.97
	Valuation Spot deviation from PPP (%)	5.09	12.91	98.84	31.95	51.23	103.34	3.10	108.65	39.93
	Spot deviation from GSDEER (%)	19.57	-7.70	3.43	0.82	1.96	19.87	5.34	-2.62	-2.25
	Spot deviation from FEER (%)	-12.62	-6.04	-4.15	-8.10	-10.16	-8.91	-11.42	-8.43	-9.90
Positioning	Spot deviation from GSDEER (TWI, %)	-10.06	21.06	6.57	6.26	5.66	-9.83	1.97	10.69	11.91
	Reversal (3-year spot % change)	5.25	1.53	-4.51	5.49	8.32	3.49	12.42	-0.24	-11.12
	3M Risk reversals (25-delta, %)	1.12	1.39	0.82	1.14	1.49	2.39	0.58	0.53	0.52
	Relative Strength Index (Scale 0-100)	81.99	77.37	79.45	61.79	72.47	80.41	60.94	66.36	34.87
	Note: where higher frequency is unavailable, use next level frequency									
		Better								Worse

Source: Goldman Sachs Global Investment Research



The weights that we refer to as "approximate GBI-EM country weights" are these: 10.2% for each of Brazil, Mexico, Poland, South Africa, Turkey, Indonesia, Malaysia, and Thailand; and 6.1% for each of Hungary, Russia, and Colombia.

Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

# Interest rate swaps / Cross currency swaps across EM

## Comparing IRS/XCCY contracts across EM

Country	Level	change since				3m Carry/Roll (B/E)			Country	Level	change since				3m Carry/Roll (B/E)					
		1d	7d	1m	z-score (1Y)	B/E	Vol	Ratio			1d	7d	1m	z-score (1Y)	B/E	Vol	Ratio			
Outright trades																				
2Y IRS/XCCY																				
EMEA																				
Israel	0.57	-1	1	6	0.26	7.6	16	0.47	Israel	0.71	-1	2	8	-0.30	6.7	22	0.30			
Czech Republic	2.23	2	3	13	0.63	-2.3	36	-	Czech Republic	2.11	2	-3	9	0.09	-5.7	45	-			
Hungary	0.81	-4	0	5	-0.58	16.9	32	0.53	Hungary	1.10	-5	-2	9	-0.67	16.4	47	0.35			
Poland	1.86	-2	-6	6	-0.43	4.6	12	0.38	Poland	1.85	-2	-10	10	-0.59	3.7	21	0.18			
Romania	3.71	2	-2	-13	-1.14	-2.0	17	-	Romania	-	-	-	-	-	-	-	-			
Russia	7.33	3	-5	7	0.11	-9.4	75	-	Russia	7.13	0	-3	19	-0.22	-9.4	91	-			
South Africa	7.14	0	-2	5	-0.89	1.3	30	0.04	South Africa	7.10	0	-3	8	-1.04	4.0	42	0.09			
Turkey	29.2	103	278	487	1.75	-120.6	743	-	Turkey	26.1	26	192	485	1.48	-138.4	745	-			
Latam																				
Brazil	7.2	-6	-19	-10	-1.08	29.2	87	0.33	Brazil	9.2	0	-16	-22	-1.19	13.6	119	0.11			
Chile	3.16	1	-4	5	-1.24	5.5	23	0.24	Chile	3.28	1	-7	9	-1.58	8.1	30	0.27			
Colombia	4.55	-1	-4	5	-1.14	12.7	22	0.58	Colombia	4.88	-5	-10	1	-1.42	12.9	30	0.42			
Mexico	8.10	1	-3	8	-0.53	-10.9	48	-	Mexico	7.83	2	2	14	-0.76	-15.0	62	-			
Peru	4.17	1	-5	-1	-0.54	4.0	38	0.11	Peru	4.41	5	7	3	-0.46	8.8	45	0.19			
5Y IRS/XCCY																				
EMEA																				
Israel	1.07	-1	2	5	-0.88	8.3	26	0.32	Israel	1.23	-1	1	5	-1.04	8.5	36	0.24			
Czech Republic	2.06	0	-1	12	-0.17	-2.7	46	-	Czech Republic	1.99	-1	-1	11	-0.55	-3.2	54	-			
Hungary	1.59	-10	-6	13	-0.67	12.6	49	0.26	Hungary	1.94	-12	-12	16	-0.71	9.9	63	0.16			
Poland	2.12	-4	-13	9	-0.89	4.1	23	0.18	Poland	2.16	-4	-15	12	-1.00	-1.1	32	-			
Romania	3.80	3	-6	-10	-2.03	1.7	22	0.08	Romania	-	-	-	-	-	-	-	-			
Russia	7.11	14	10	23	0.14	2.3	54	0.04	Russia	6.65	-5	-7	3	-0.89	-13.7	52	-			
South Africa	7.47	-4	-5	8	-1.05	4.5	37	0.12	South Africa	7.57	-5	-11	13	-1.11	7.0	45	0.16			
Turkey	25.0	75	218	415	1.84	-106.6	597	-	Turkey	26.1	32	137	333	1.68	-67.3	498	-			
Latam																				
Brazil	8.5	-3	-17	-18	-1.17	17.6	107	0.16	Brazil	9.7	-1	-13	-22	-1.22	-1.6	125	-			
Chile	3.49	1	-6	7	-1.69	5.4	21	0.26	Chile	3.62	0	-8	8	-1.69	5.0	22	0.22			
Colombia	5.25	-3	-5	12	-1.08	11.0	26	0.42	Colombia	5.65	-1	-5	23	-0.89	-25.0	31	-			
Mexico	7.91	0	-1	12	-0.69	-3.6	61	-	Mexico	7.68	-1	-2	13	-0.80	0.3	73	0.00			
Peru	4.35	0	-3	4	-1.71	1.4	23	0.06	Peru	4.5	-1	5	16	-1.09	3.3	21	0.16			
10Y IRS/XCCY																				
EMEA																				
Israel	1.81	0	1	0	-1.43	7.4	24	0.31	Israel	2.63	-1	1	-7	-1.91	6.7	24	0.28			
Czech Republic	2.00	0	-2	12	-0.45	-1.2	45	-	Czech Republic	1.93	0	-3	11	-0.69	0.3	44	0.01			
Hungary	2.36	-8	-8	15	-0.76	9.1	52	0.18	Hungary	3.24	-7	-11	19	-0.78	5.6	61	0.09			
Poland	2.46	-4	-14	9	-0.97	3.4	25	0.13	Poland	2.83	-3	-14	11	-1.00	2.6	30	0.09			
Romania	4.35	-1	-10	-10	-2.50	1.9	16	0.12	Romania	-	-	-	-	-	-	-	-			
Russia	6.79	1	-1	9	-0.47	3.2	30	0.11	Russia	6.80	29	26	35	0.33	4.7	41	0.12			
South Africa	8.03	-4	-6	11	-0.90	4.9	37	0.13	South Africa	8.91	0	3	17	-0.51	5.3	40	0.13			
Turkey	21.9	65	181	339	2.22	-84.3	430	-	Turkey	25.0	26	66	87	3.10	-25.4	100	-			
Latam																				
Chile	3.93	1	-7	12	-1.54	4.4	18	0.24	Chile	4.47	3	-6	14	-1.28	3.2	16	0.20			
Colombia	5.93	-3	-9	16	-1.08	8.7	29	0.30	Colombia	6.86	-4	-14	22	-1.00	6.0	35	0.17			
Mexico	8.19	0	-2	11	-0.59	0.0	62	0.00	Mexico	8.62	0	-3	11	-0.44	5.0	64	0.08			
Peru	4.84	0	-3	-5	-2.49	4.2	16	0.26	Peru	5.47	0	-3	-17	-2.35	7.5	20	0.37			

## Snapshot: Current client protection buying by index and change over the week

	On-the-run index		All series	
	Current (risk), \$bn	Change (prot bought/sold), \$mn	Current (risk), \$bn	Change (prot bought/sold), \$mn
Main	15.9 long	4,850 bought	12.1 long	4,000 bought
Cross	1.8 long	1,825 bought	3.2 short	2,200 bought
SenFin	0.7 short	125 bought	0.2 short	50 bought
SubFin	1.0 short	100 bought	1.3 short	100 bought
CDX.IG	25.6 long	2,450 sold	24.0 long	550 bought
CDX.HY	2.7 long	1,825 bought	1.6 short	1,425 bought
CDX.EM	4.4 long	250 bought	4.7 long	325 bought
Asia	1.2 short	50 bought	3.1 short	475 sold
Austr.	0.3 short	25 sold	0.5 short	25 sold

Note: 1) Current is as of Fri 10 May; 2) Change is from 03 May to 10 May. Source: DTCC, Barclays Research

Ranges and percentiles: 0% denotes longest, 100% denotes shortest

	On-the-run index				All series			
	Current (risk), \$bn	Range	%ile, 1yr	%ile, 3yr	Current (risk), \$bn	Range	%ile, 1yr	%ile, 3yr
Main	-15.9 long	-30 -> +7	12%	45%	-12.1 long	-28 -> +6	47%	58%
Cross	-1.8 long	-4.4 -> +5.1	14%	10%	3.2 short	-2.9 -> +9.5	22%	43%
SenFin	0.7 short	-2.5 -> +9.1	22%	40%	0.2 short	-2.1 -> +8.0	18%	21%
SubFin	1.0 short	-0.2 -> +1.5	69%	68%	1.3 short	0.6 -> 2.0	22%	41%
CDX.IG	-25.6 long	-46 -> +16	41%	53%	-24.0 long	-52 -> 0	53%	75%
CDX.HY	-2.7 long	-11 -> +2	60%	72%	1.6 short	-9 -> +2	84%	95%
CDX.EM	-4.4 long	-5.0 -> +3.9	14%	5%	-4.7 long	-5.7 -> +4.5	12%	4%
Asia	1.2 short	0.2 -> 4.8	14%	8%	3.1 short	2.4 -> 6.8	0%	6%
Austr.	0.3 short	-0.7 -> +1.2	27%	45%	0.5 short	-0.7 -> +1.2	23%	75%

Note: Negative numbers are investor longs. 3yr ranges for on-the-run and all series. Source: DTCC, Barclays Research

FIGURE 1

Main: Investors bought \$4.9bn in on-the-run, \$4.0bn across series, in a week where Main was 8bp wider

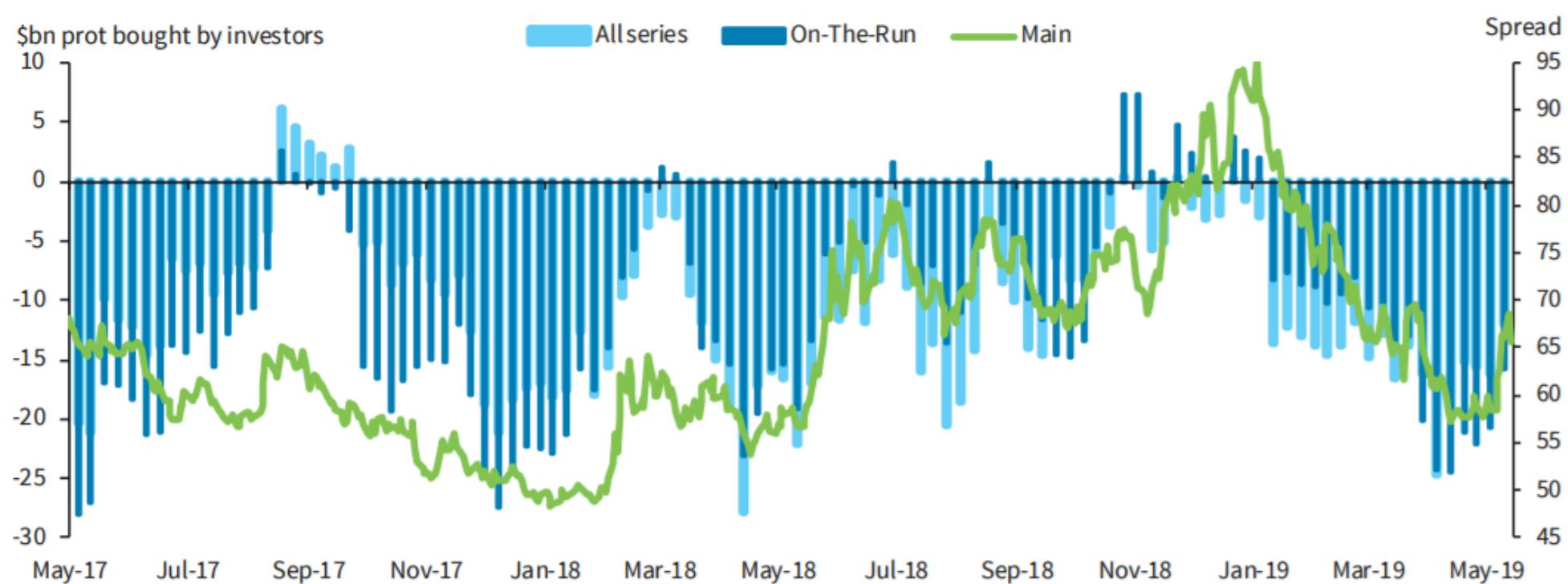


FIGURE 2

Cross: Investors bought \$1.8bn in on-the-run, \$2.2bn across series

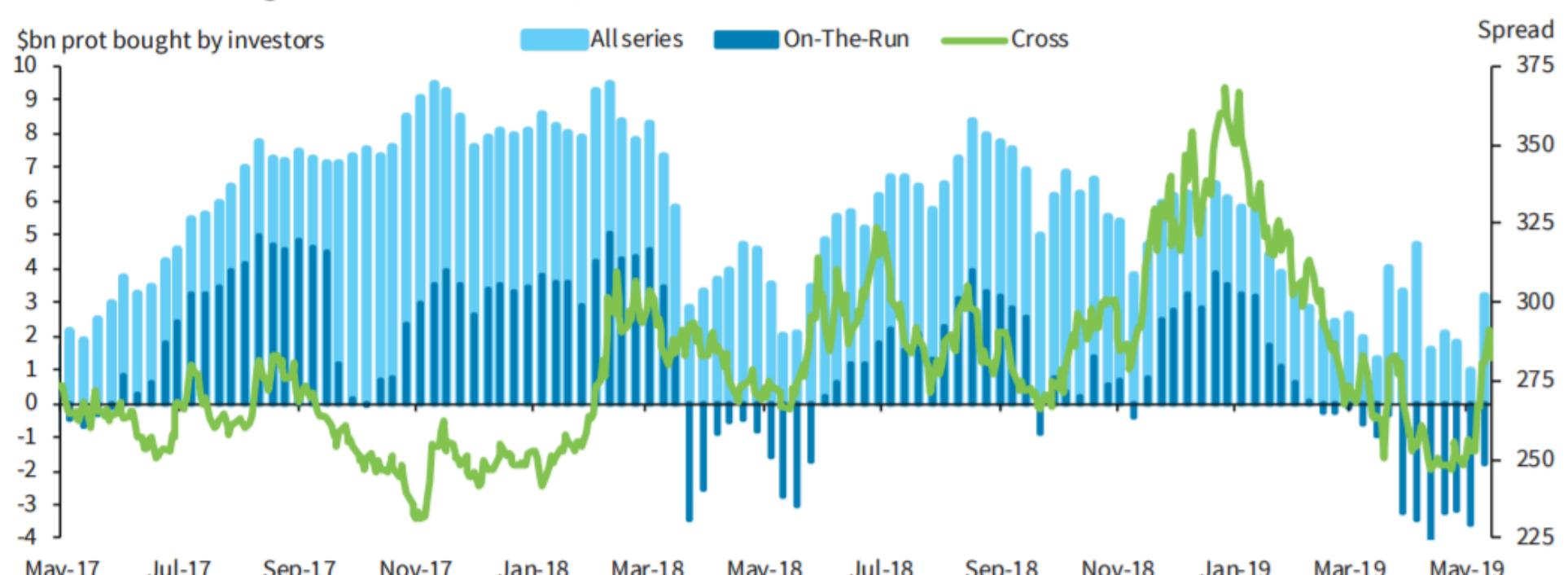


FIGURE 7

CDX.EM: Investors bought \$250mn protection in on-the-run, \$325mn across series

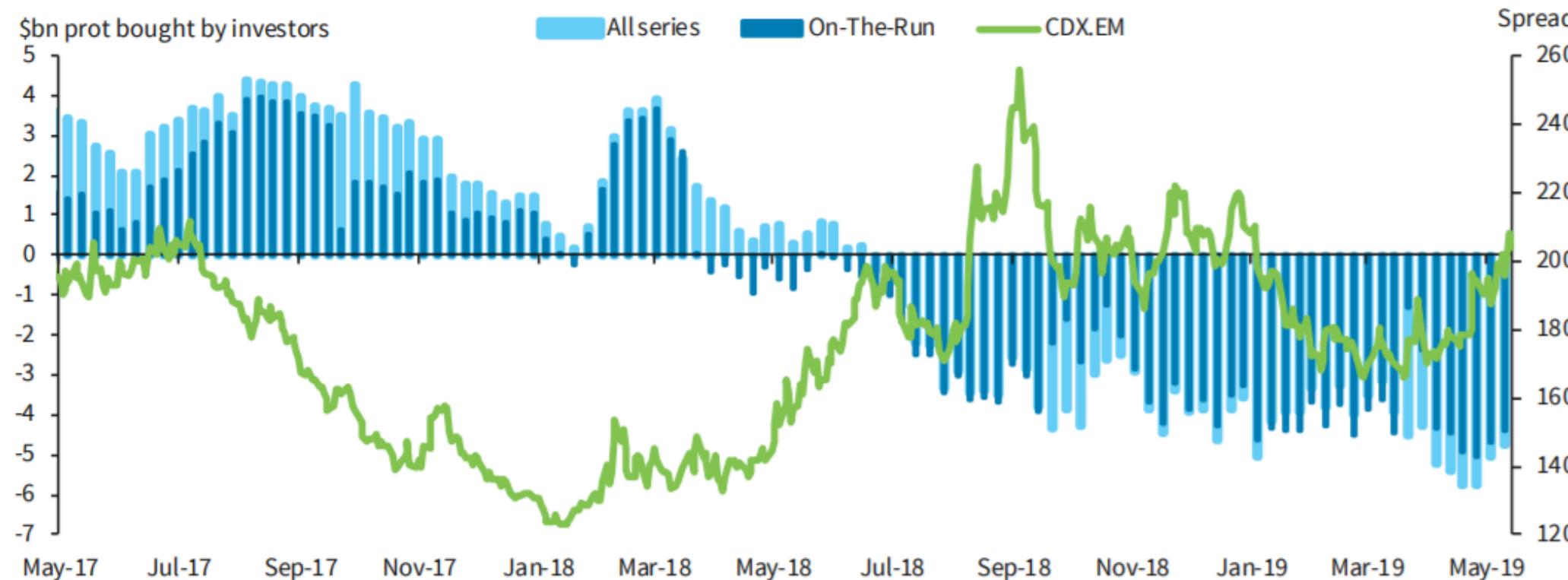
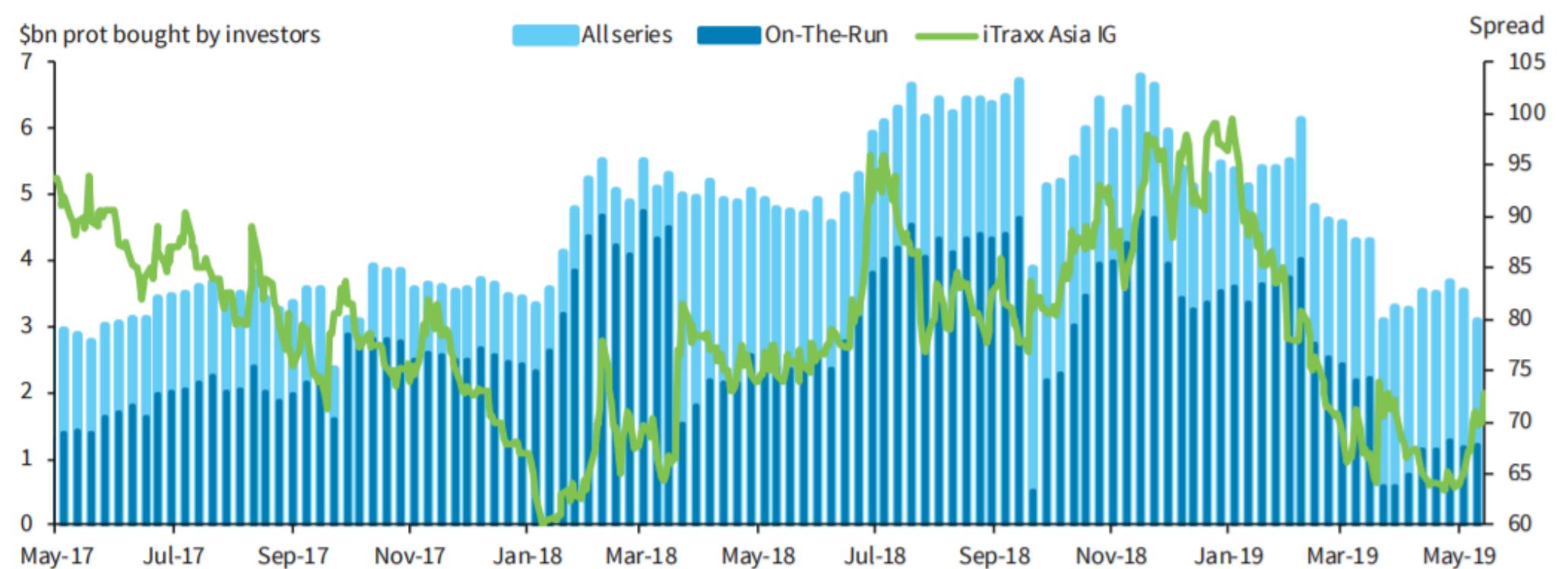


FIGURE 10

Asia: Investors bought \$50mn in on-the-run, but sold \$475mn across series



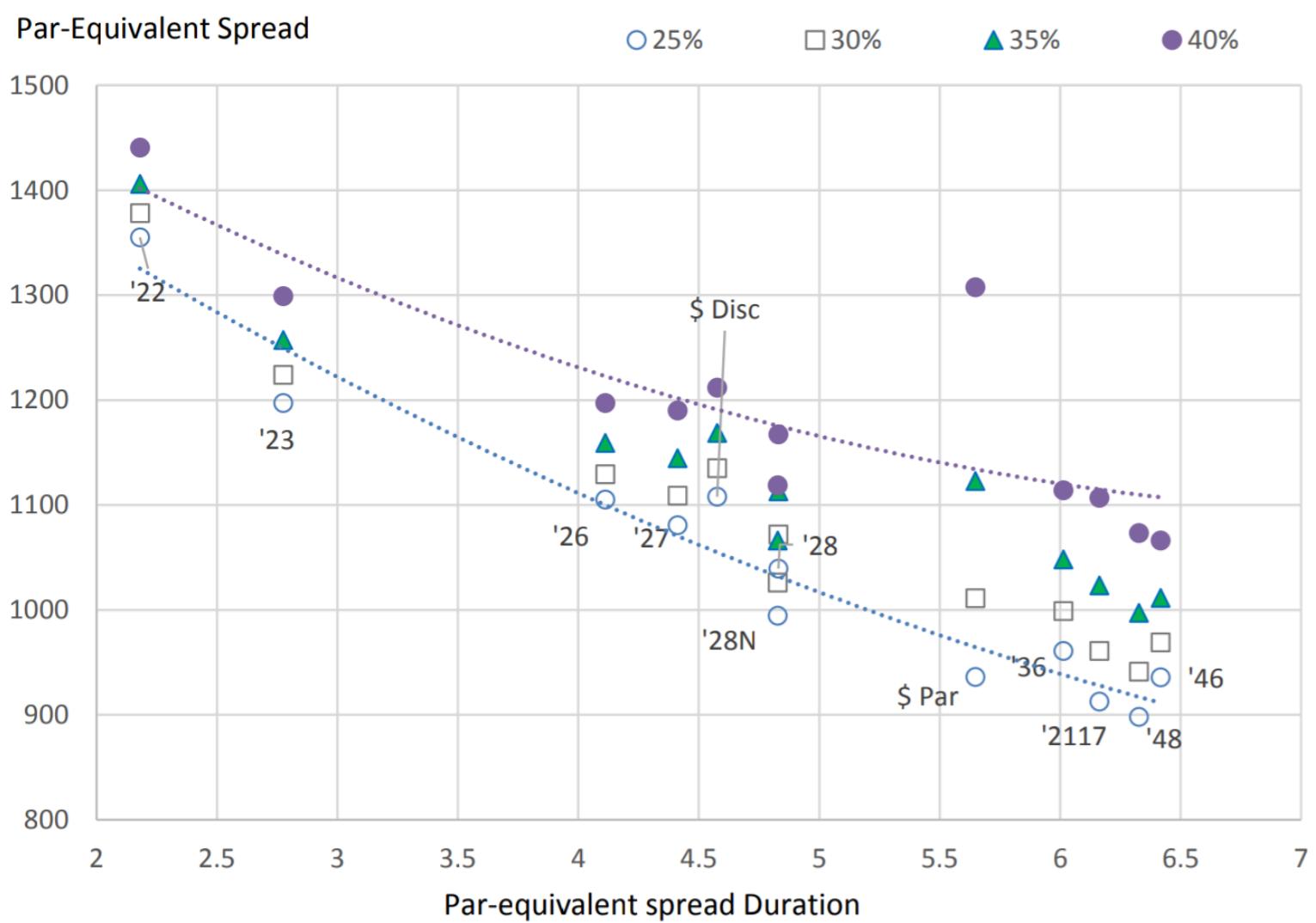
Using data from DTCC, we define the “investor position” in a given series of an index as the amount of protection (in \$bn) investors (defined by DTCC as “non-dealers”) have bought from dealers (defined by DTCC as an entity which is, or is an affiliate of, an entity that is in the business of making markets or dealing in credit derivative products) on a cumulative basis. This means that at a given time, we show the total amount of protection bought/sold by investors versus dealers, and the change week to week is then how much was traded between investors and dealers.

For each index, we show dark-blue bars which are for the on-the-run index (and the given point in time), whereas the light-blue bars are for total index positioning (“All series”), expressed in on-the-run duration equivalent – ie, an index two series off-the-run will have a weight of 80%. For iTraxx and CDX.EM we use S16 onwards and for CDX.IG/HY S17 onwards.

We show ranges of positioning in the tables on the front page. These denote, respectively, the range of investor positions for the index which was on-the-run at the given point in time, and the range of investor positions across all series, both using data for the last three years. We also show percentiles of current positioning at 1 and 3yr horizons.

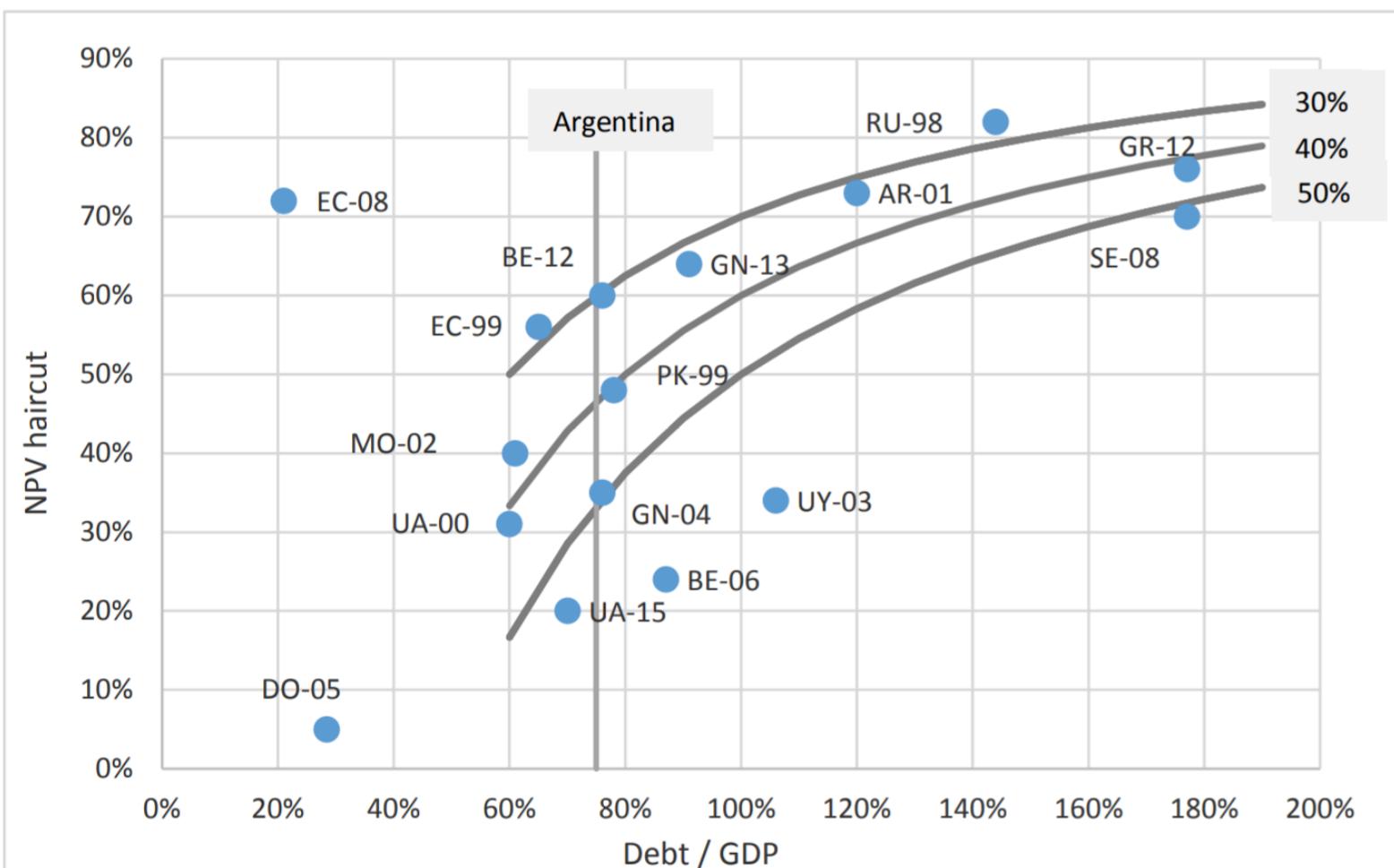
The data are published by DTCC Tue COB (NY time) and pertain to the confirmed trades as of the preceding Friday – ie, the data are typically two business days old at the time of publication.

Figure 70: Argentina bonds PE spreads under varying recovery assumptions



Source :Deutsche Bank

Figure 69: Unsurprisingly, the level of debt/GDP at the time of default is a key determinant of the haircut



Source : Deutsche Bank, Moody's, World Bank, Haver Analytics

Note: The lines on the chart above represent the combinations of initial debt/gdp and NPV haircut which would result in either 30%, 40%, or 50% final debt/gdp, if the NPV haircut were applied across the entire debt stock as a principal reduction.

## Curve valuation under different recovery assumptions

Given the wide range of views on recovery value, we see it informative to analyze current bond valuation under different recovery assumptions, as shown in the graph below (with recovery ranging from 25-40%)<sup>8</sup>.

While a number of observations can be drawn from the graph, the most notable one is the cheapness of the Pars when a higher recovery value is assumed. The Pars should be the preferred assets for investors with a constructive view on recovery value (>=30%), and/or with an investment aim of minimizing draw-downs. The Pars have been structurally undervalued by the market in our view, given the ever recurring bouts of volatility that elevates default probabilities implied by the credit spreads. The main caveat for preferring the Pars is that the bonds would likely yield lower returns if the market rallies significantly with bond prices restored to levels seen before the currency crisis.

Another revelation is that our key relative value proposition of Discounts vs. 28Ns holds as the distortion goes beyond what can be explained by different recovery assumptions (hence the dollar price differentials), at least when it does not exceed 40%.

## Russia

### Russia - Money-Market and Cross-Currency Swap curve

Contracts	Level	change since			z-score (1Y)	Carry/Roll over 3m			Carry/Roll Protection Ratio
		1d	7d	1m		B/E	Vol	Ratio	
3m FX Implied Yield	7.71	2	-8	-4	1.29	-	-	-	-
6m FX Implied Yield	7.60	-1	0	2	1.04	-37.3	36.4	-	46%
<b>Forward Implied yield</b>									
3m3m FX Implied yield	7.34	-2	-8	-6	0.47	-37.3	62	-	49%
6m3m FX Implied yield	7.05	2	-4	-11	-0.16	-28.7	87	-	44%
9m3m FX Implied yield	7.16	4	-7	4	-0.03	10.9	98	0.11	37%
12m3m FX Implied yield	7.09	1	-4	11	0.01	-7.4	76	-	37%
15m3m FX Implied yield	6.99	1	-3	16	-0.14	-9.2	83	-	41%
<b>Top 2 Money Market Switches - Flatteners</b>									
6m3m - 9m3m	11	3	-2	15	0.35	39.5	36	1.10	29%
3m3m - 9m3m	-18	6	1	10	-0.71	48.2	60	0.80	37%
<b>Top 2 Money Market Switches - Steepeners</b>									
9m3m - 15m3m	-17	-4	4	12	-0.33	20.1	30	0.68	36%
9m3m - 12m3m	-7	-3	3	7	0.11	18.3	33	0.56	40%
<b>Cross-Currency Swap curve</b>									
<b>Benchmark Cross-Currency Swaps</b>									
1YXCCY	7.54	1	-6	-4	0.45	-18.5	61	-	0%
2YXCCY	7.33	3	-5	7	0.11	-9.4	75	-	38%
5YXCCY	7.11	14	10	23	0.14	2.3	54	0.04	31%
10YXCCY	6.79	1	-1	9	-0.47	3.2	30	0.11	32%
1y1YXCCY	7.13	0	-3	19	-0.22	-9.4	91	-	42%
2y2YXCCY	6.65	-5	-7	3	-0.89	-13.7	52	-	50%
5y5YXCCY	6.80	29	26	35	0.33	4.7	41	0.12	43%
<b>Benchmark Cross-Currency Swap Slope Trades</b>									
1Y-2YXCCY	-21	2	1	11	-1.34	9.1	17	0.53	57%
1Y-5YXCCY	-43	13	16	27	-0.64	20.8	18	1.13	50%
2Y-5YXCCY	-22	11	15	16	-0.04	11.7	25	0.48	49%
2Y-10YXCCY	-54	-2	4	2	-0.34	12.6	56	0.23	52%
5Y-10YXCCY	-32	-13	-11	-14	-0.64	1.0	32	0.03	55%
<b>Cross-Currency Swap curve in detail</b>									
1YXCCY	7.54	1	-6	-4	0.45	-18.5	61	-	0%
3m1YXCCY	7.35	1	-6	-1	0.06	-18.7	82	-	42%
6m1YXCCY	7.26	2	-5	5	-0.08	-9.1	89	-	39%
1y1YXCCY	7.13	0	-3	19	-0.22	-9.4	91	-	42%
2y1YXCCY	7.27	40	40	55	0.52	6.5	62	0.11	39%
3y1YXCCY	5.99	-53	-57	-52	-2.23	7.3	57	0.13	37%
2YXCCY	7.33	3	-5	7	0.11	-9.4	75	-	38%
3m2YXCCY	7.24	5	0	13	-0.04	-8.5	84	-	37%
1y2YXCCY	7.19	19	18	37	0.06	-1.7	76	-	38%
3YXCCY	7.17	0	-1	8	-0.04	-0.6	71	-	31%
3m3YXCCY	7.16	9	6	19	-0.04	-0.6	74	-	33%
1y3YXCCY	6.82	-3	-6	9	-0.57	-12.5	64	-	45%
2y3YXCCY	6.72	1	0	14	-0.65	-1.1	38	-	42%
4YXCCY	7.20	12	9	23	0.16	1.4	62	0.02	31%
5YXCCY	7.11	14	10	23	0.14	2.3	54	0.04	31%
6YXCCY	6.92	1	1	11	-0.25	2.7	46	0.06	31%
7YXCCY	6.85	1	0	9	-0.38	2.8	40	0.07	31%
10YXCCY	6.79	1	-1	9	-0.47	3.2	30	0.11	32%
<b>IRS contracts (vs Mosprime)</b>									
1W	7.85	0	-12	-7	0.75				
3m Fixing	8.27	2	-1	-4	0.40				
1x4 FRA	8.28	0	-3	-3	0.16				
3x6 FRA	8.13	0	0	-22	-0.40	-15.5	65	-	42%
6x9 FRA	8.05	0	0	-20	-0.70	-7.5	99	-	44%
9x12 FRA	7.96	0	0	-17	-0.84	-9.0	118	-	45%
1Y	8.32	0	-4	-14	-0.47	-9.4	82	-	37%
2Y	8.33	0	-4	1	-0.58	-0.6	99	-	33%
3Y	8.38	0	-5	10	-0.57	1.4	97	0.01	34%
5Y	8.55	0	-5	18	-0.43	2.3	85	0.03	36%
10Y	8.92	0	-1	24	0.17	2.7	66	0.04	39%

Time series of contract with highest z-score (1 year)



Time series of contract with lowest z-score (1 year)

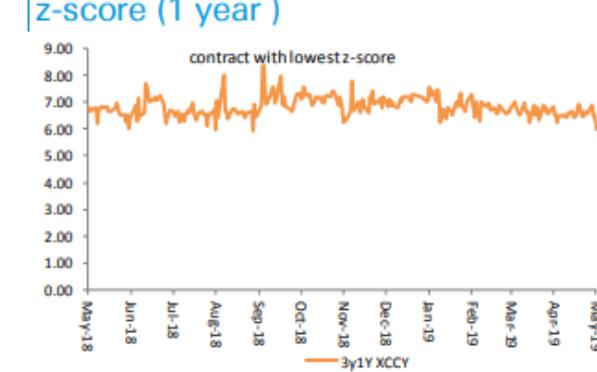
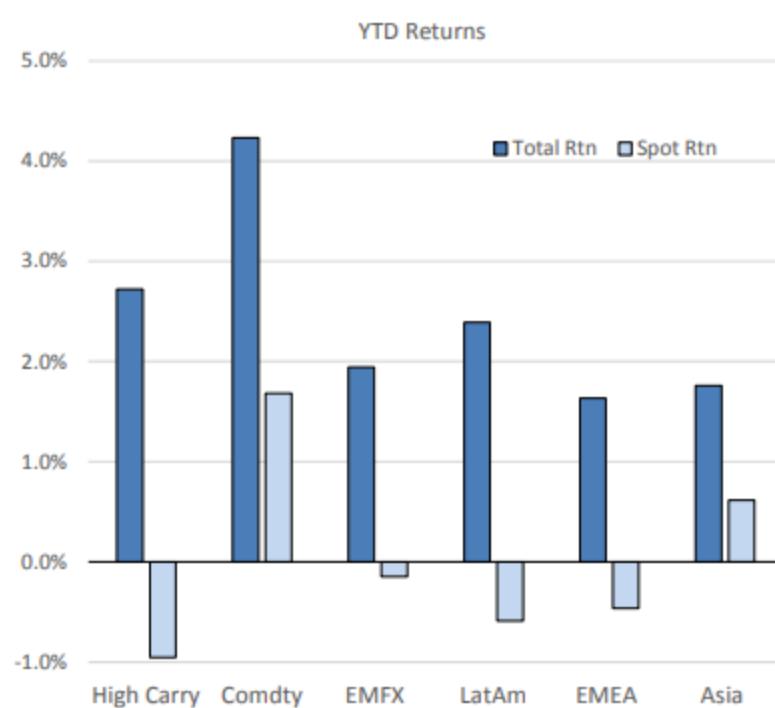


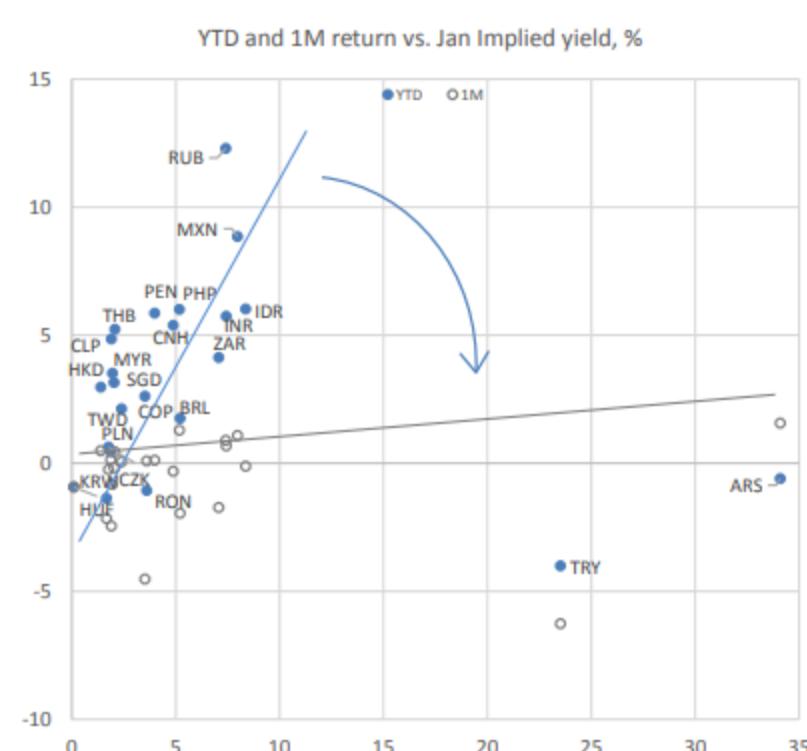


Figure 12: Carry outperformance concentrated in January–February



Source : DB Research, Bloomberg Finance LP

Figure 13: EM FX low and disperse performance

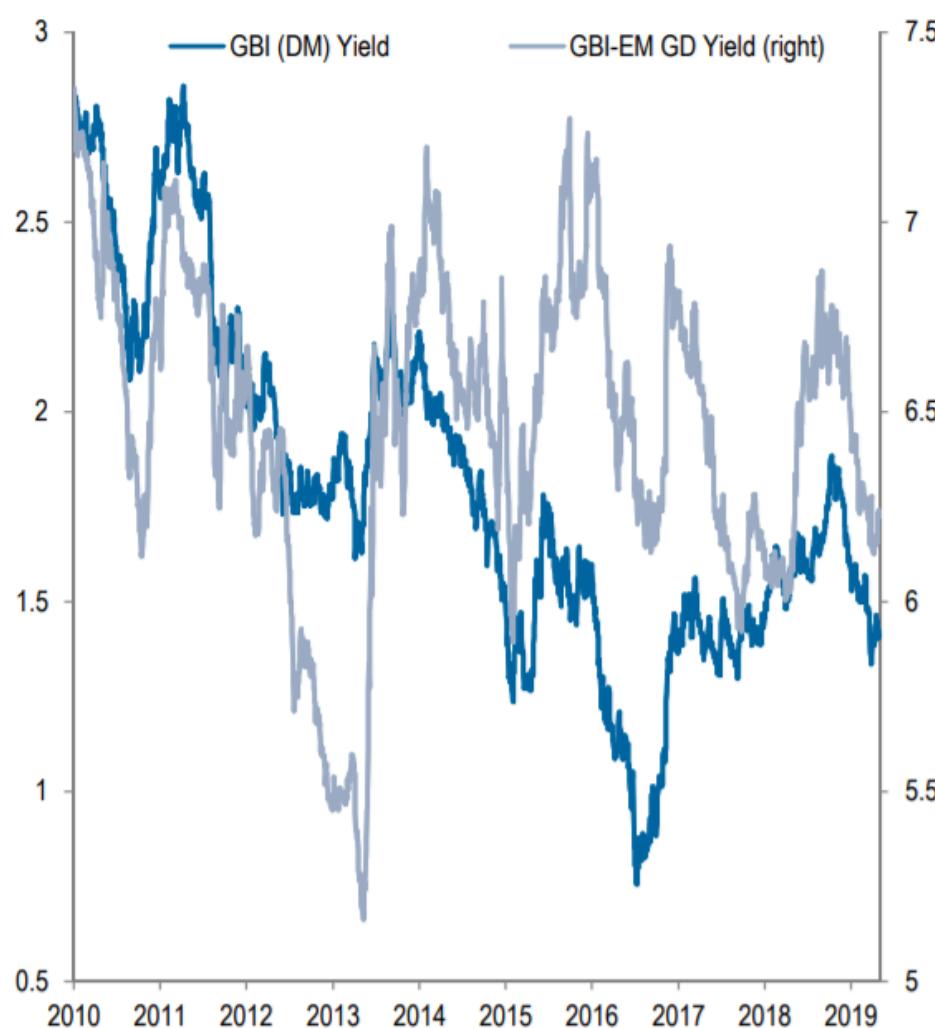


Source : DB Research, Bloomberg Finance LP

EM local rates markets have been rallying in line with global rates but EM rates are at risk if EM FX weakness persists, although carry can help

#### EM local rates have rallied in line with global rates since October

GBI (DM) is the DM local government bond index, GBI-EM GD is the EM local government bond index; yields (bp)



Source: J.P. Morgan

#### Performance of local bonds' duration over periods where EM FX saw losses

Returns for GBI-EM broken down by FX, and duration (%)

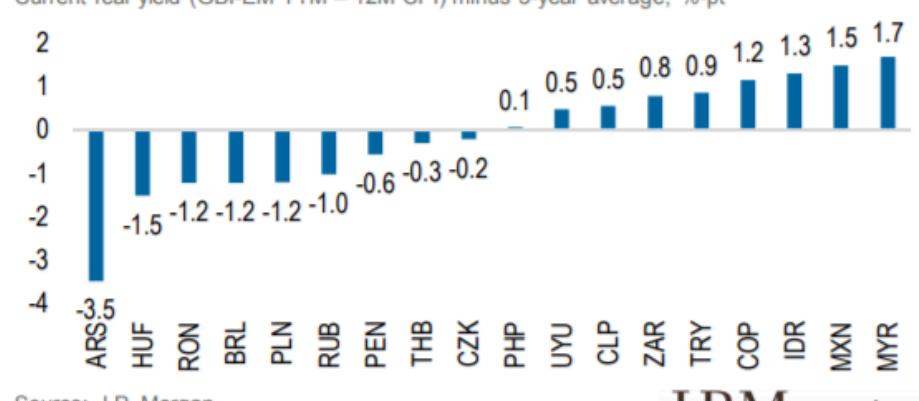
Period	Start	End	FX return GBI-FX	Duration Returns		
				GBI-EM	HY	LY
8-May-13	24-Jun-13		-7.2	-7.1	-9.5	-5.1
9-Aug-13	3-Sep-13		-4.5	-2.6	-3.3	-1.5
3-Oct-13	3-Feb-14		-6.3	-2.9	-4.2	-1.3
24-Jul-14	16-Mar-15		-20.6	-0.7	-2.2	1.7
15-May-15	29-Sep-15		-14.5	-3.9	-5.8	-1.1
12-Oct-15	20-Jan-16		-9.8	-1.7	-2.4	-0.5
8-Nov-16	23-Nov-16		-5.7	-2.8	-3.2	-2.1
11-Sep-17	3-Nov-17		-4.7	-1.6	-1.9	-1.1
18-Apr-18	2-Jul-18		-9.1	-3.7	-4.8	-2.6
30-Jul-18	15-Aug-18		-5.1	-1.5	-2.7	0.0
31-Jan-19	14-Feb-19		-2.3	-0.4	-0.8	0.2
12-Apr-19	25-Apr-19		-1.9	-0.4	-0.7	0.0
<b>Average</b>			<b>-7.6</b>	<b>-2.4</b>	<b>-3.4</b>	<b>-1.1</b>

Source: J.P. Morgan

High Yielders: BRL, ZAR, TRY, COP, IDR, MXN, PEN, RUB; Low Yielders: CLP, CZK, HUF, MYR, PHP, PLN, RON, THB

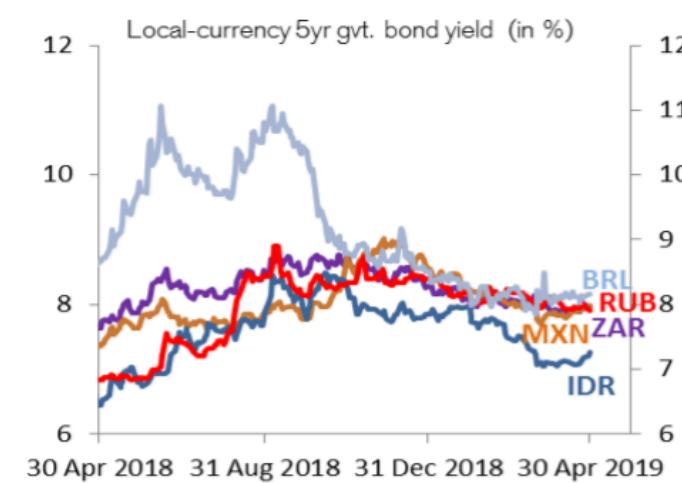
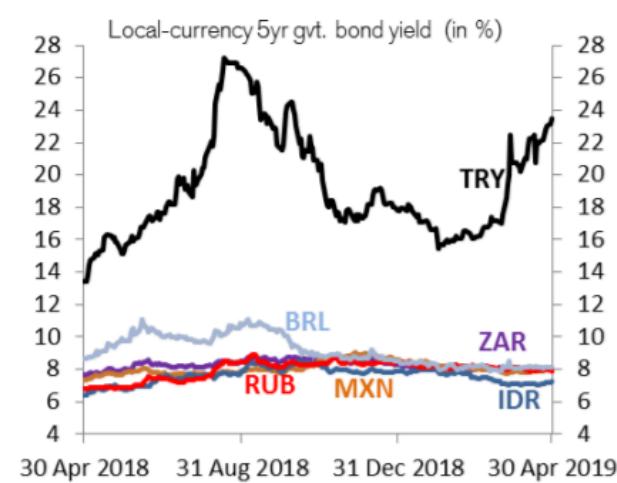
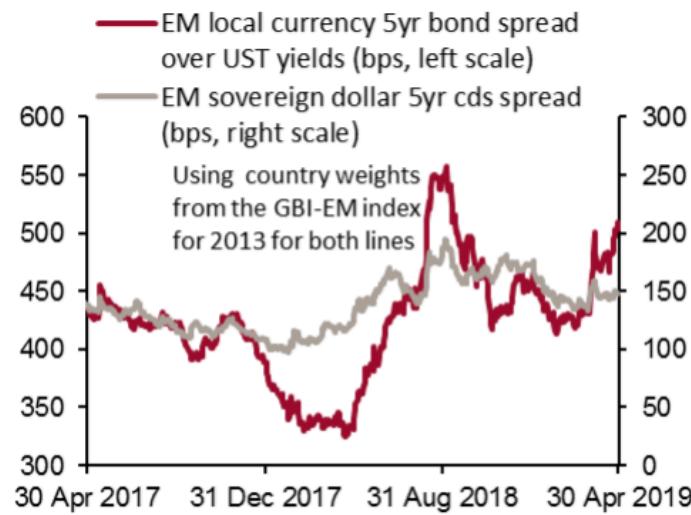
#### A granular look per country suggests real yields seem supportive for some EM high yielders but not for all

Current real yield (GBI-EM YTM – 12M CPI) minus 3-year average, %-pt



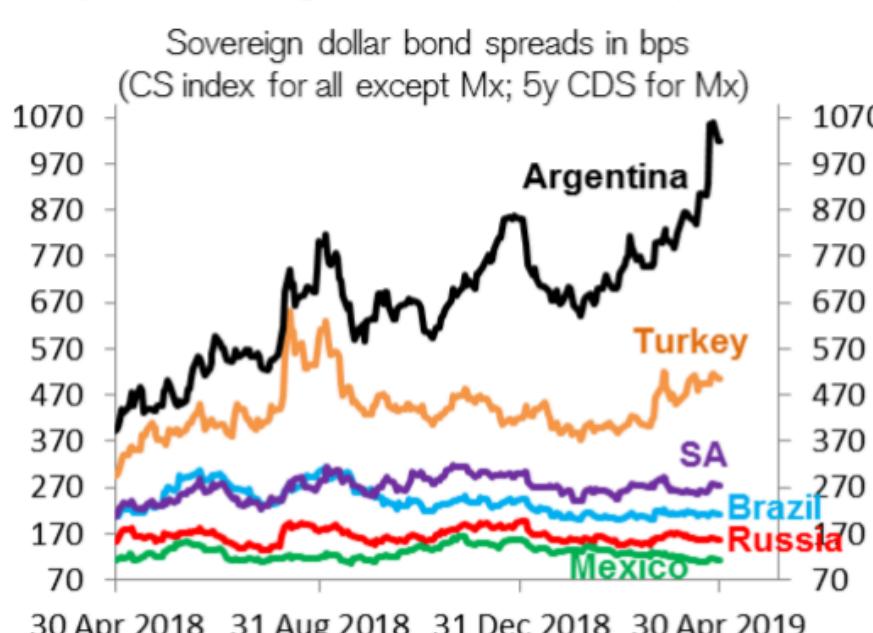
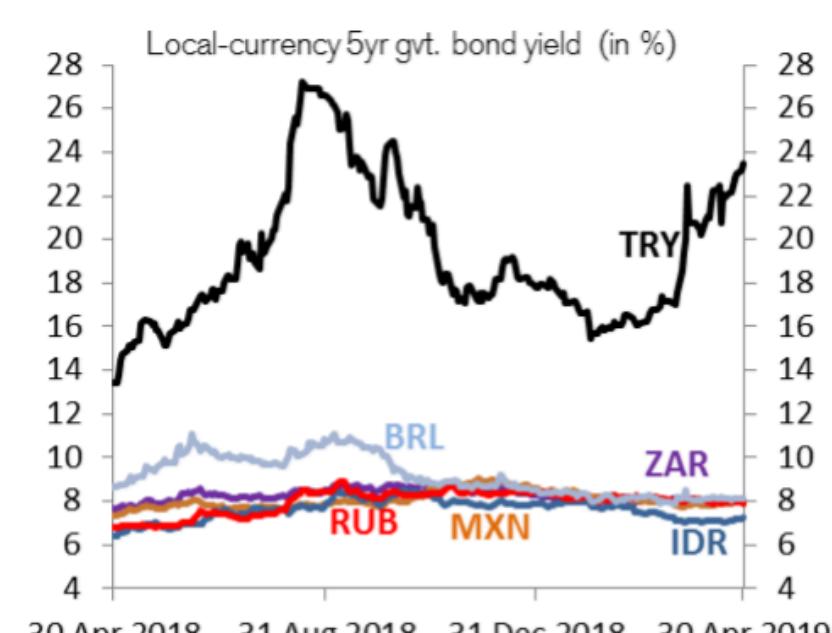
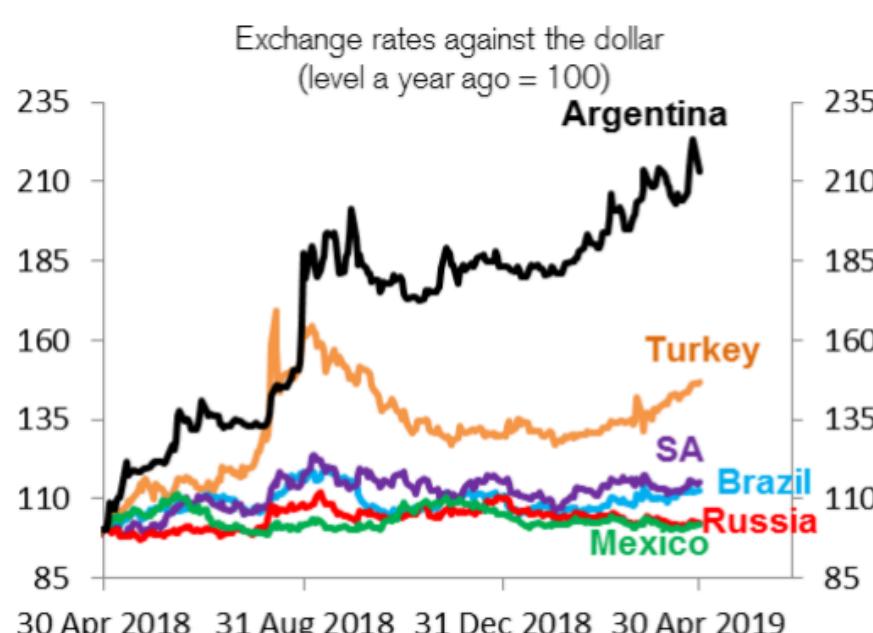
Source: J.P. Morgan

J.P.Morgan



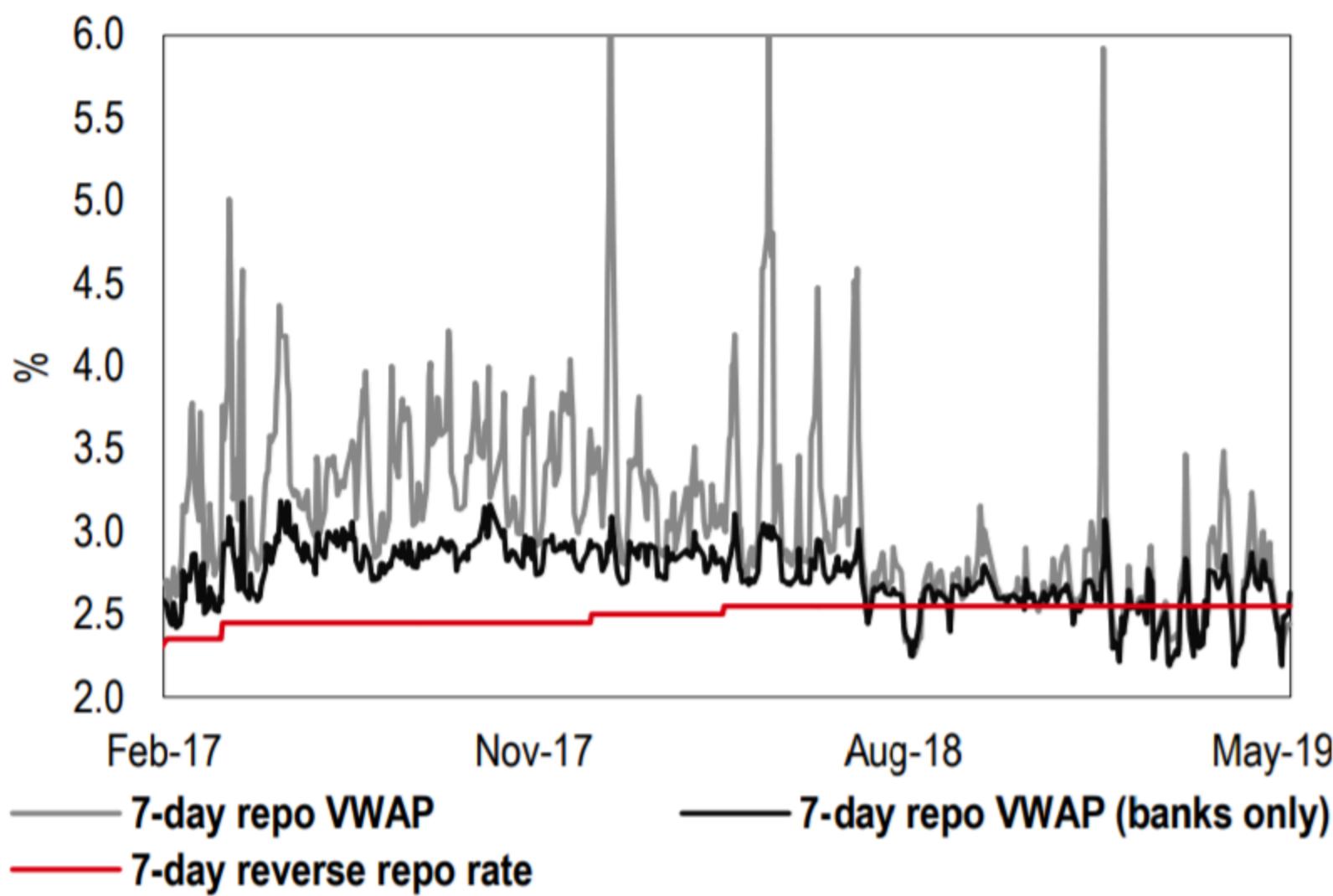
The weights that we refer to as "GBI-EM 2013 country weights" above are these: 10.2% for each of Brazil, Mexico, Poland, South Africa, Turkey, Indonesia, Malaysia, and Thailand; and 6.1% for each of Hungary, Russia and Colombia.

Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

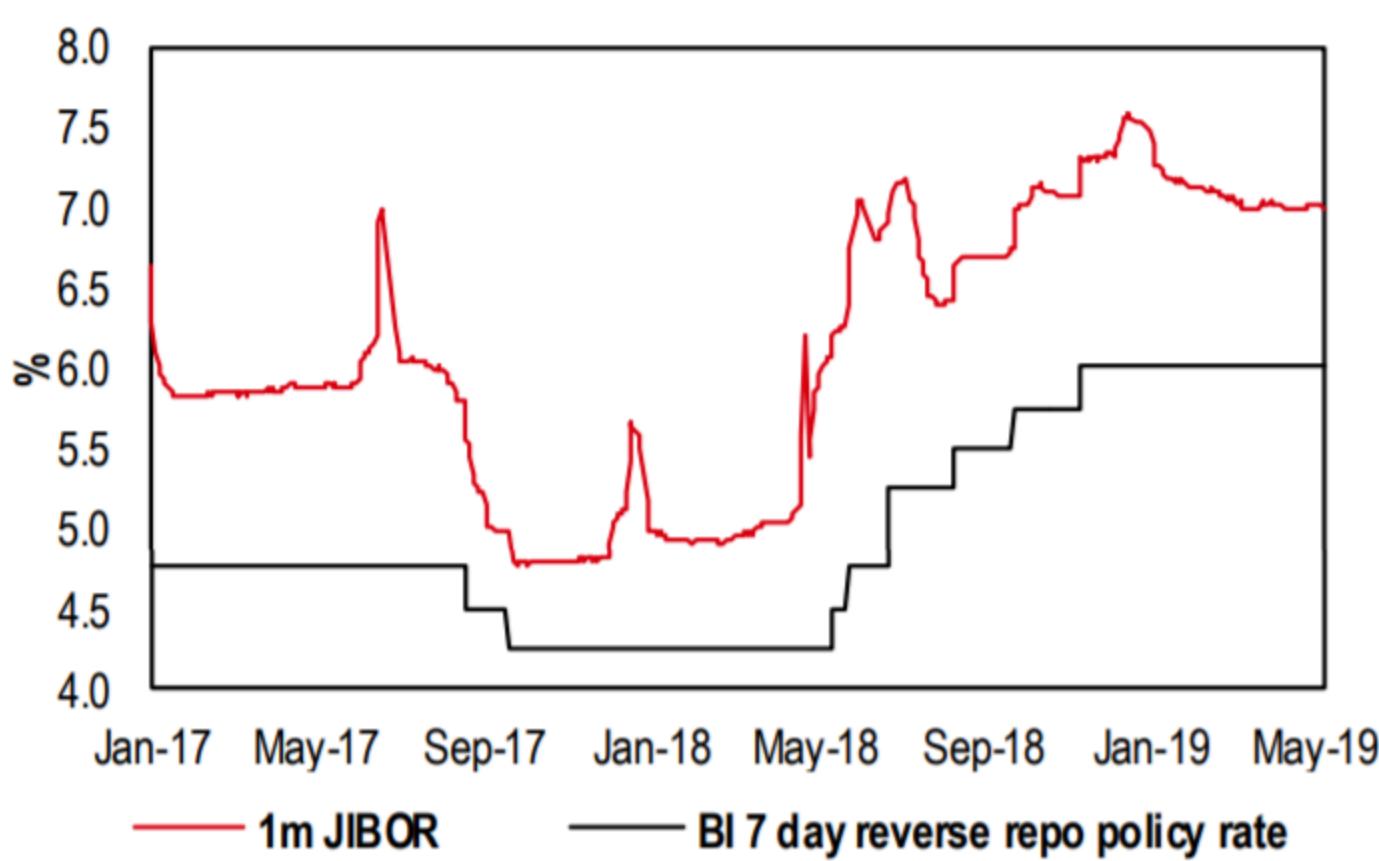


Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

**Figure 5. Ample room for potential policy rate cuts**

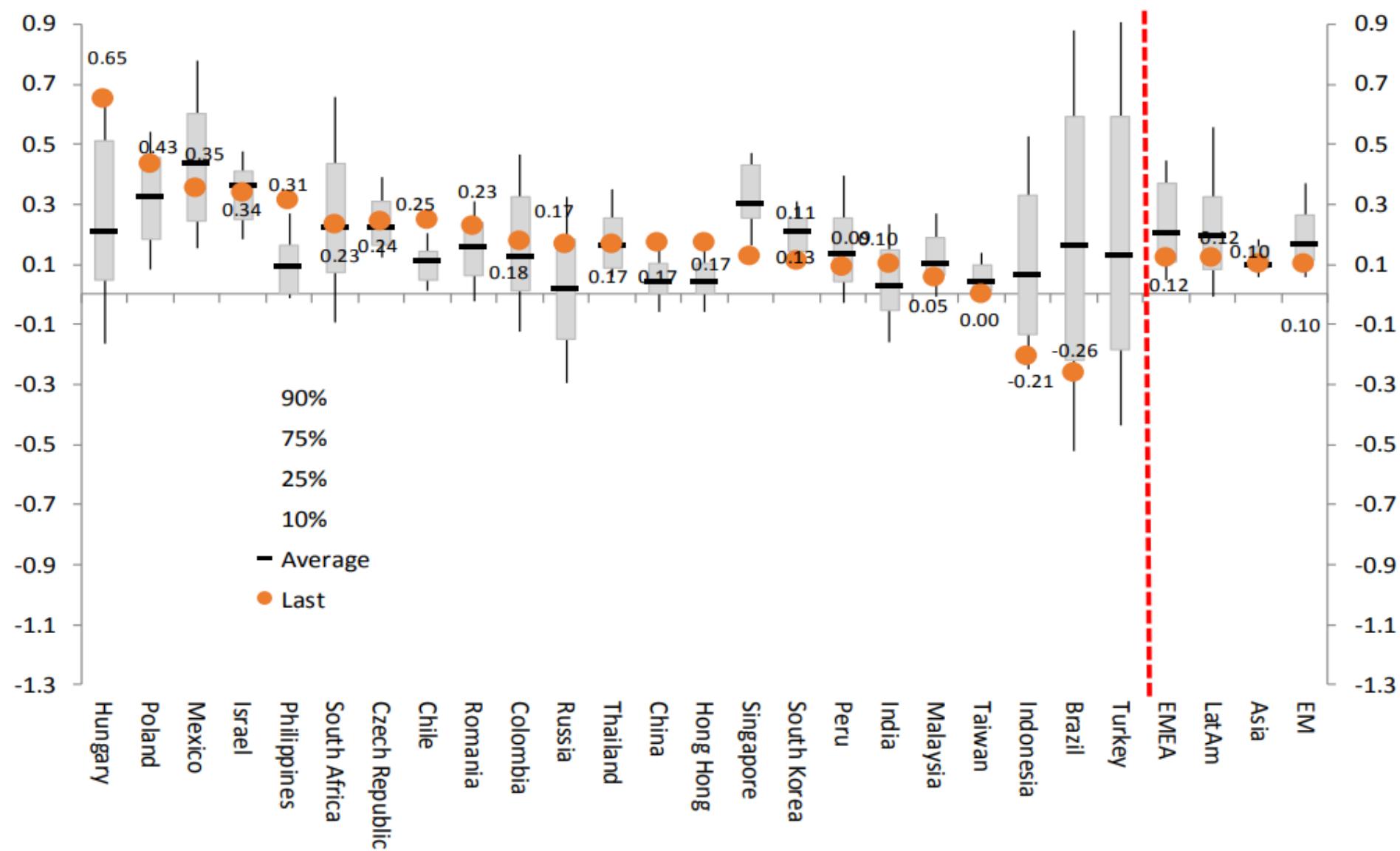


**Figure 11. Spike in money market rates ahead of Ramadan in 2018**



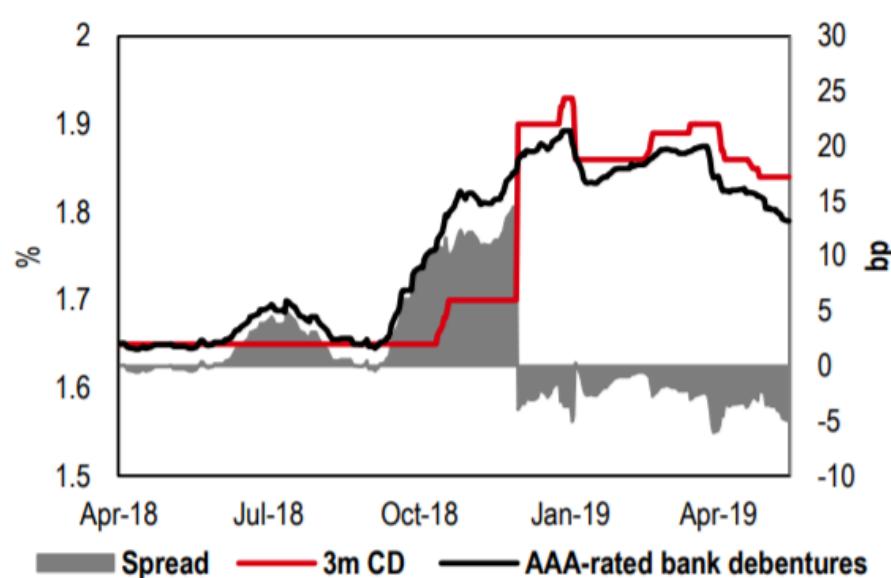
## External sensitivity: Betas in 10Y EM local bonds vs 10Y-US swaps

Betas in 10Y EM local bonds to US swaps over the last five and a half years (90d rolling daily changes)



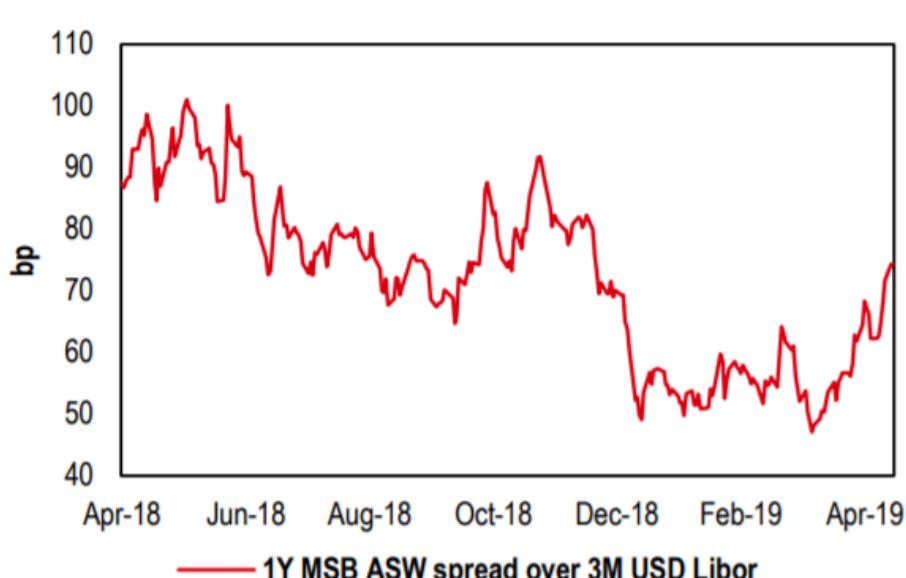
Source: Deutsche Bank

**Figure 12. AAA-rated bank debenture yields have been falling**



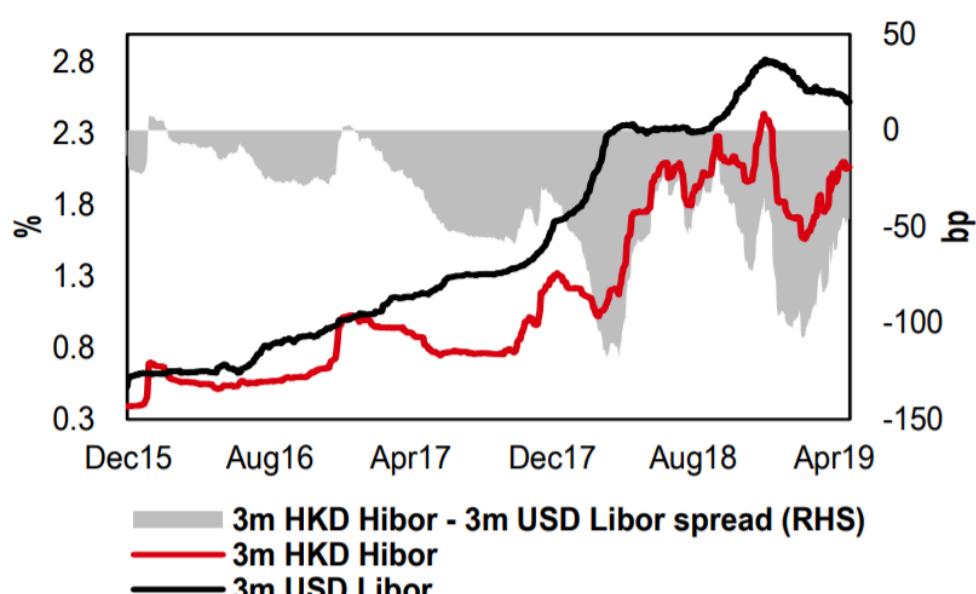
Source: Bloomberg, HSBC

**Figure 13. Yield pick-up from Korean bonds on a FX-hedged basis has been rising**



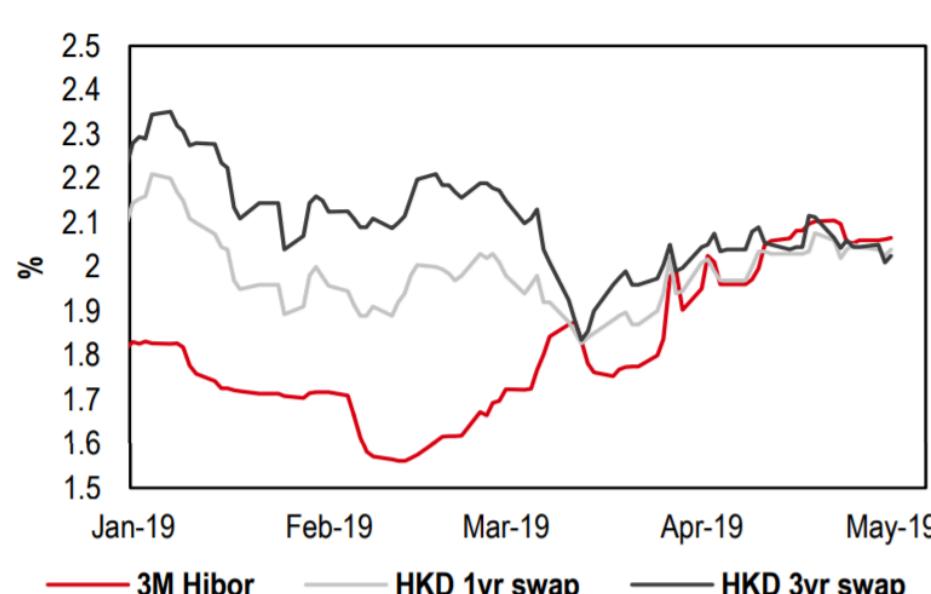
Source: Bloomberg, HSBC

**Figure 22. The spread between Hibor and USD Libor has tightened recently**



Source: Bloomberg, HSBC

**Figure 23. Front-end swaps currently below 3m Hibor**



Source: Bloomberg, HSBC

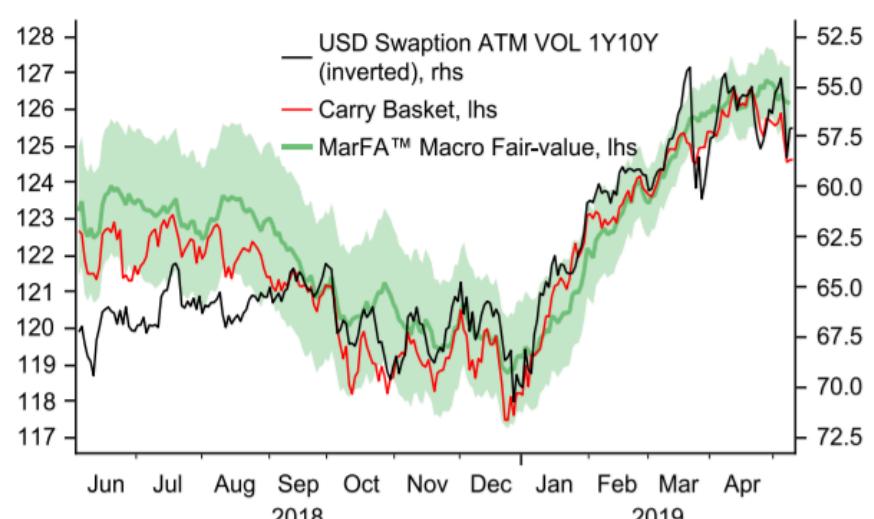
Figure 46: EMFX Scorecard: Currencies ranked from best long (rank 1) to best short (rank 22)

EMFX Scorecard

Currencies	Final rank	Macro (long-term variables)					Financial (short-term variables)								RSI	Overall Financial rank
		Long-term Valuation	Growth Momentum	Real Rates	Flows (basic balance)	Overall Macro rank	Carry	External Valuation	Short-term Valuation	Momentum	Bond Positioning	Risk Reversal				
MYR	1	4	15	5	7	1	14	5	8	11	5	3	4	4	4	
KRW	2	19	6	7	8	6	19	2	2	4	6	11	2	2	2	
COP	3	2	8	11	17	5	17	1	7	2	15	7	3	3	3	
HUF	4	5	2	22	6	4	22	4	1	5	4	8	9	5	5	
TRY	5	1	21	1	22	12	7	18	9	1	1	1	1	1	1	
RON	6	10	5	11	20	13	9	6	10	6	10	5	17	6	6	
SGD	7	14	19	10	1	10	2	9	11	13	12	12	12	7	7	
TWD	8	6	22	13	2	8	11	8	14	12	14	7	10			
RUB	9	11	4	14	5	2	7	17	13	21	7	10	11	16	16	
BRL	10	13	3	15	9	6	20	10	18	3	12	16	10	14	14	
PLN	11	8	10	18	10	13	10	12	17	9	3	9	16	11	11	
CNY	12	16	9	20	13	20	18	16	4	15	2	6	9			
ZAR	13	7	7	8	21	8	14	19	12	8	13	6	15	16		
IDR	14	15	17	2	18	17	2	15	15	17	9	20	8	13		
CLP	15	3	16	9	16	10	21	3	19	10	0	22	5	18		
CZK	16	21	20	16	12	22	12	13	5	7	14	4	14	8		
THB	17	22	18	17	4	21	5	11	6	14	11	18	20	12		
PEN	18	17	11	18	11	18	1	14	16	16	17	17	13	15		
MXN	19	18	12	3	14	16	4	21	3	22	16	21	19	19	19	
PHP	20	12	1	6	15	2	6	20	20	18	19	21	21	22		
INR	21	9	14	4	19	13	13	22	22	19	2	13	18	21		
ILS	22	20	13	21	3	18	16	7	21	20	8	15	22	20		

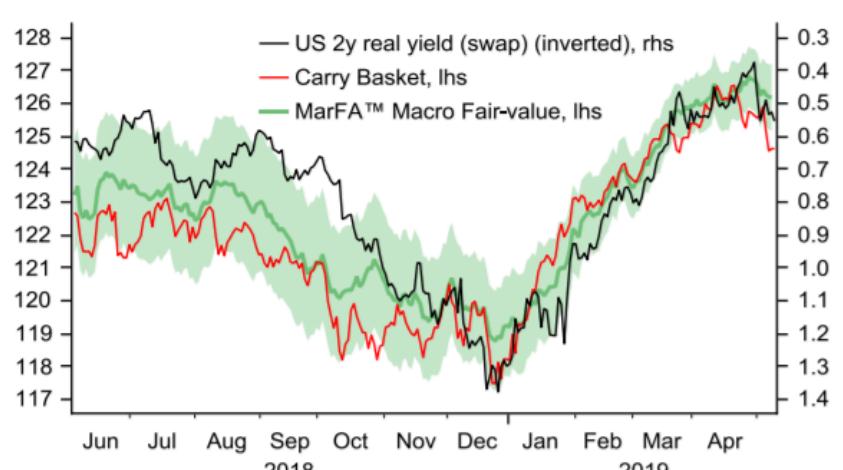
Source : Deutsche Bank; Bar sizes in each cell correspond to the rank, with larger bars corresponding to higher numbers and thus more attractive shorts; smaller bars correspond to more attractive longs. Where applicable, EM FX considered vs. USD

**Fig. 1: Increased volatility is impacting carry basket**



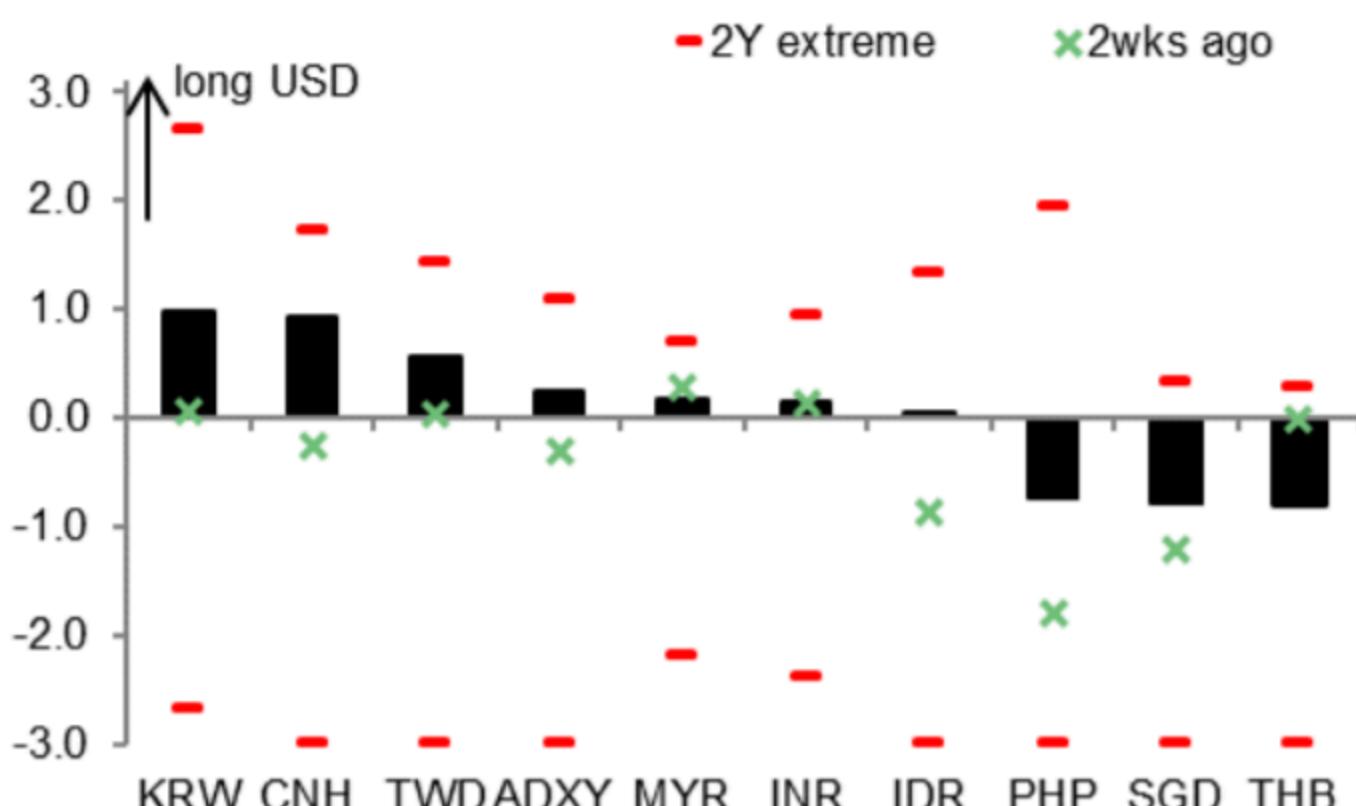
Sources: BNP Paribas, Bloomberg, Macrobond

**Fig. 2: US real yield support for carry basket has peaked**



Sources: BNP Paribas, Bloomberg, Macrobond

**Fig. 3: Short positions building in North Asian currencies**



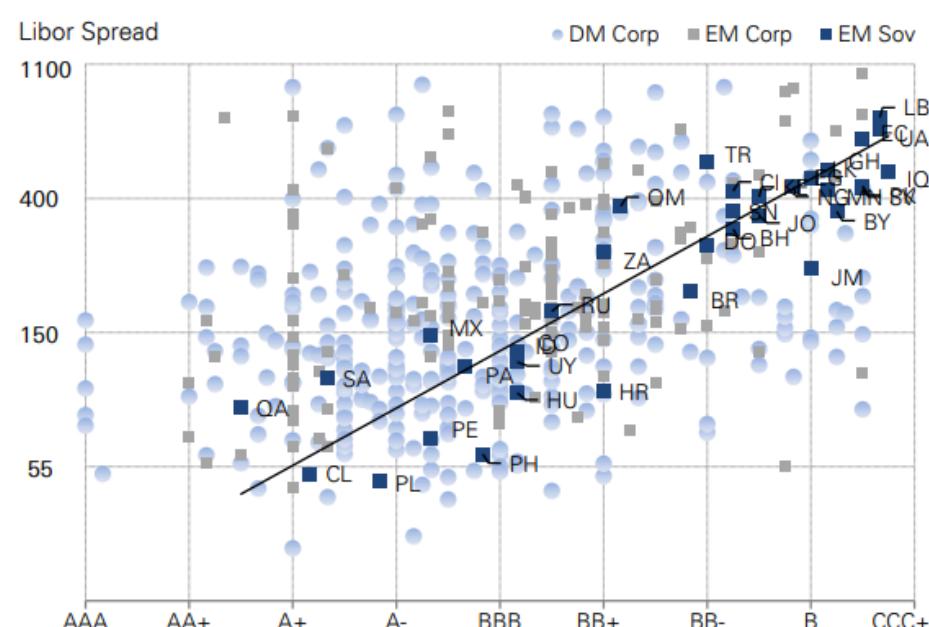
Sources: DTCC, Reuters, Bloomberg, BNP Paribas

NP Paribas London Branch  
Paribas Securities Corp.

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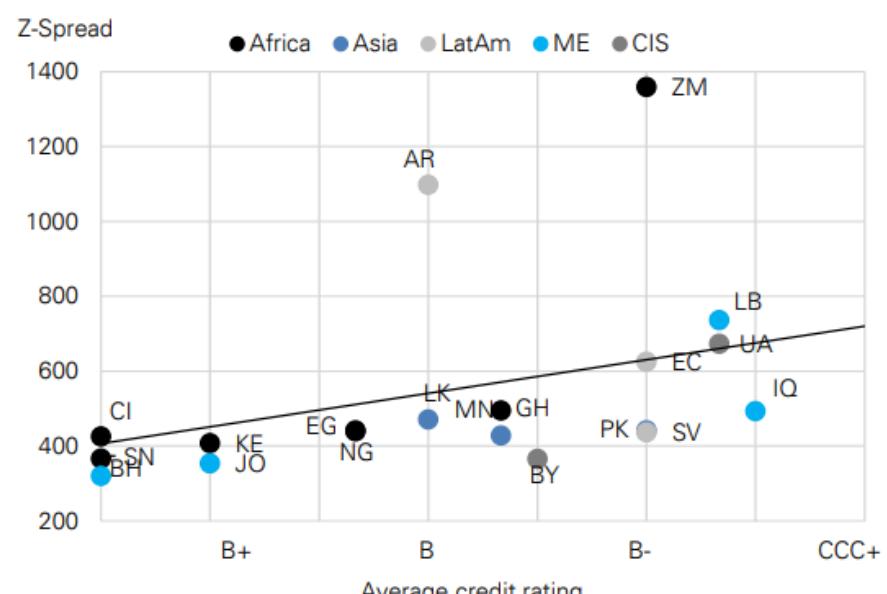
**Benchmark valuation** does not look stretched as spreads have remained in a 340-360bp range since early February (wider than the 2018 and 5-year averages), but there is **significant dispersion between countries**. Among low-yielders we generally prefer **GCC** relative to CEE, LatAm and Asian ratings peers, given the spread premium they offer on an equally-rated basis (see below chart). Among the highest beta credits, premium has vanished in the most improved (e.g. Ecuador - see chart), with fundamentals, political issues, and/or supply risk preventing more than a marketweight for the others.

Figure 24: EM sovereigns 10Y bond spreads vs. credit rating (overlaid with global credits)



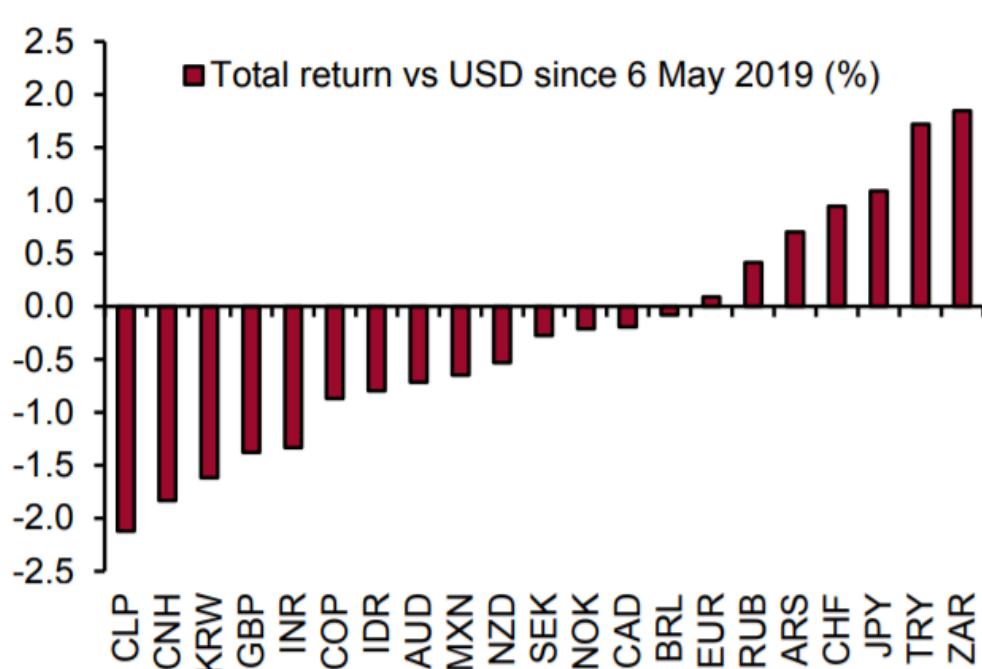
Source : Deutsche Bank, Moody's, S&P, Fitch

Figure 25: ...zooming into the distressed space...



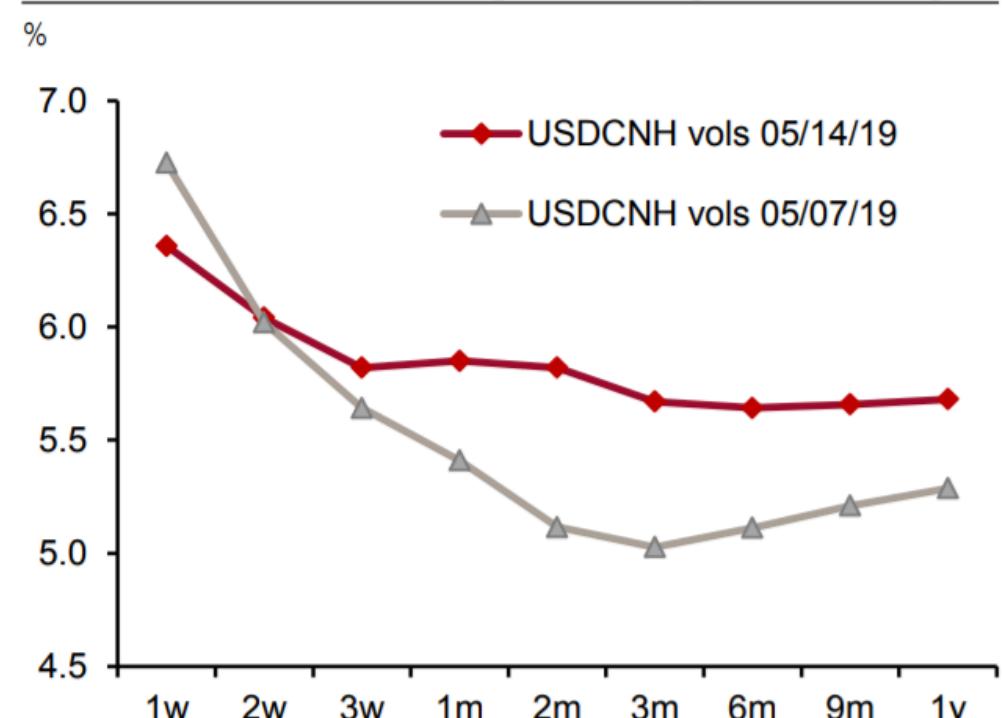
Source : Deutsche Bank, Moody's, S&P, Fitch

Figure 2: FX performance has been fairly diversified since trade fears escalated in early May



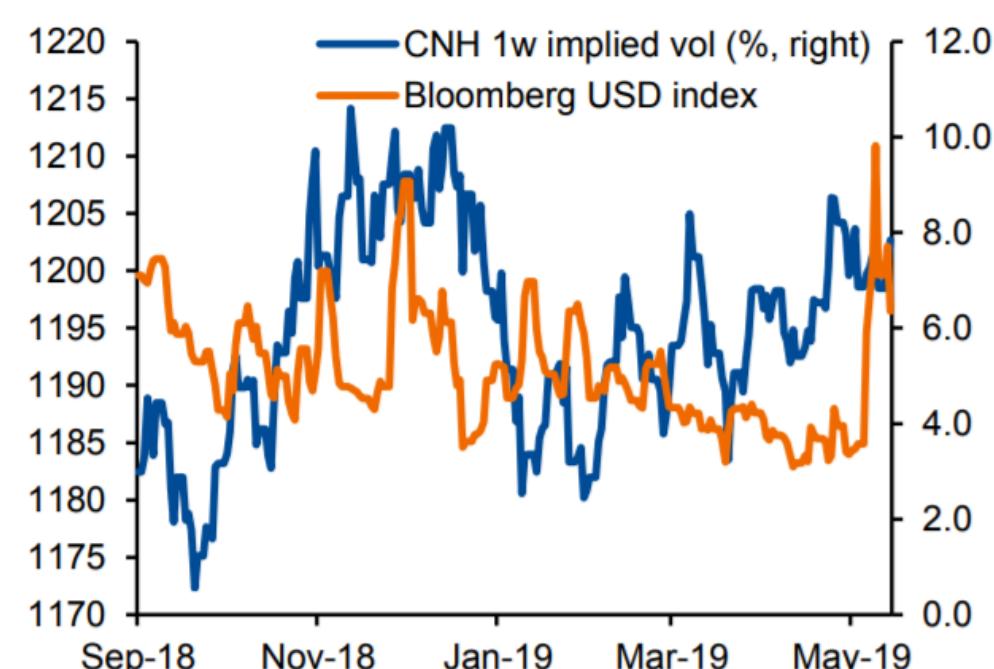
Source: Credit Suisse, the BLOOMBERG PROFESSIONAL™ service

Figure 4: Inverted CNH vol curve still assumes quick trade resolution, less sanguine though than 1w ago



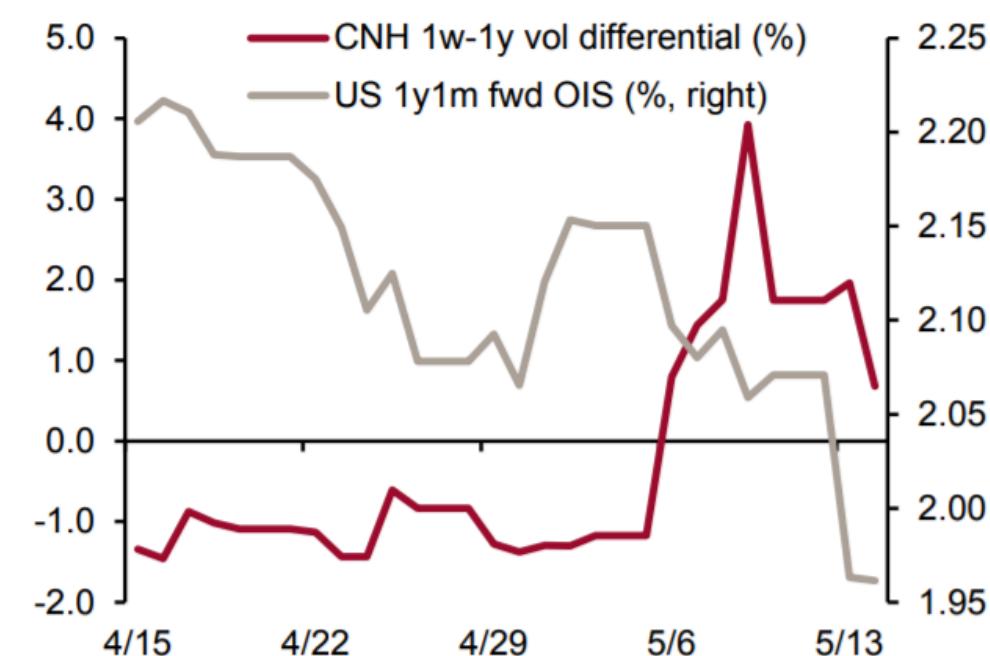
Source: Credit Suisse, the BLOOMBERG PROFESSIONAL™ service

Figure 3: The broad USD remains directionally unresponsive to spikes in trade war fears



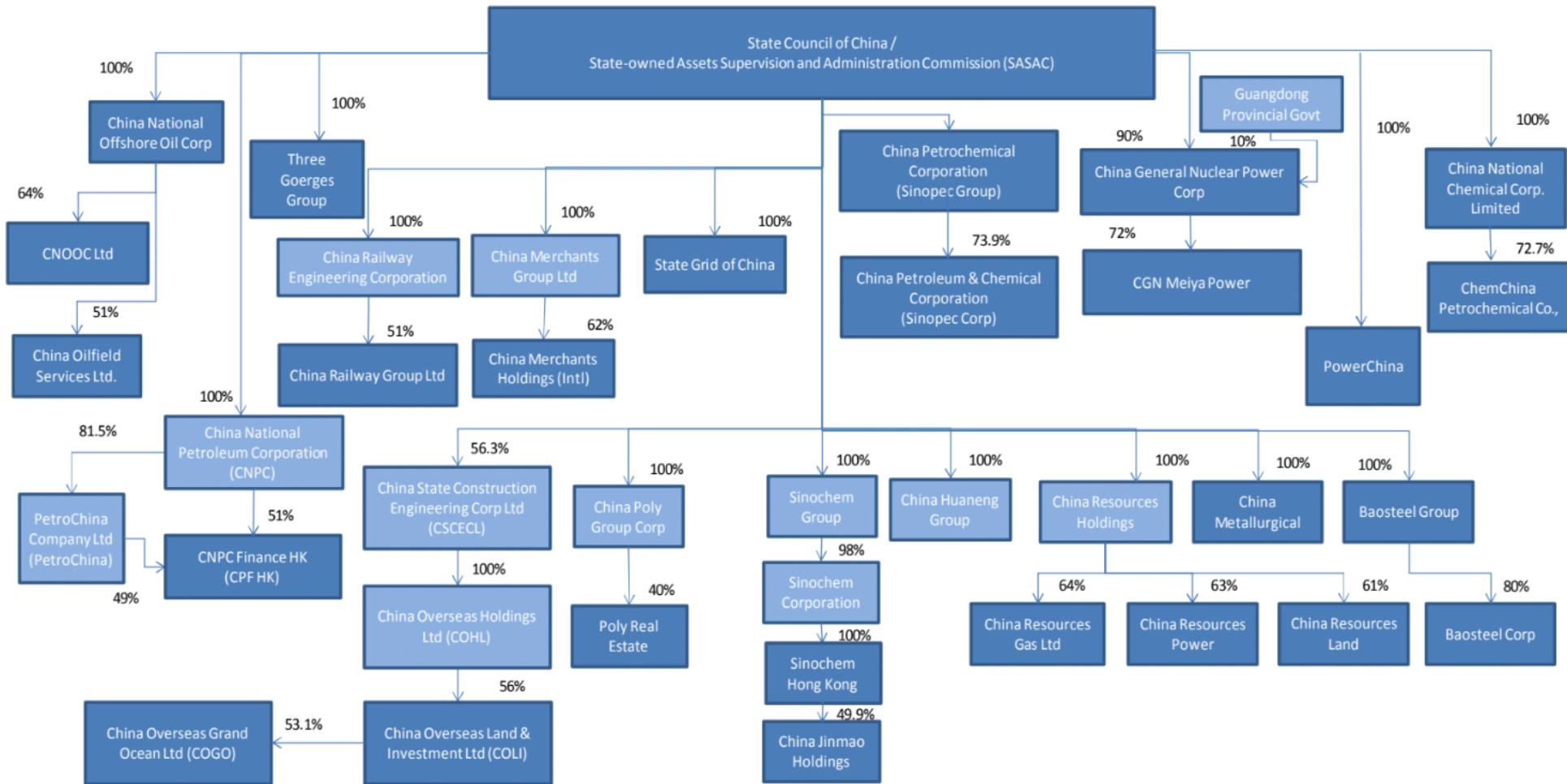
Source: Credit Suisse, the BLOOMBERG PROFESSIONAL™ service

Figure 5: Fed expectations swiftly repriced more dovish on trade woes



Source: Credit Suisse, the BLOOMBERG PROFESSIONAL™ service

Table 1: Government ownership structure of selected China SOEs:



Source: Moody's, S&P, Fitch, company reports and J.P. Morgan.

Figure 1: China A-rated corps vs China BBB-rated corps basis



Source: Bloomberg, J.P. Morgan.

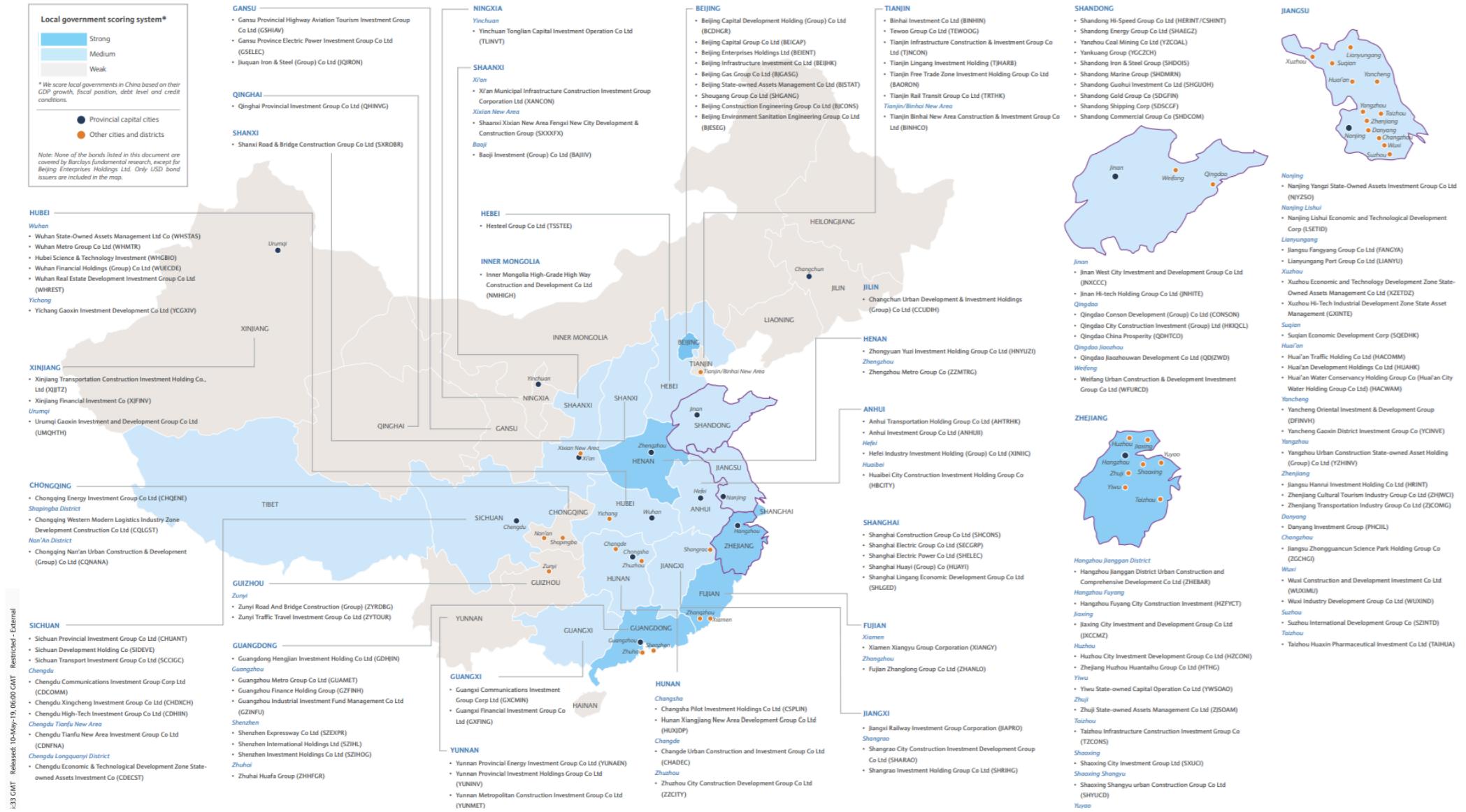
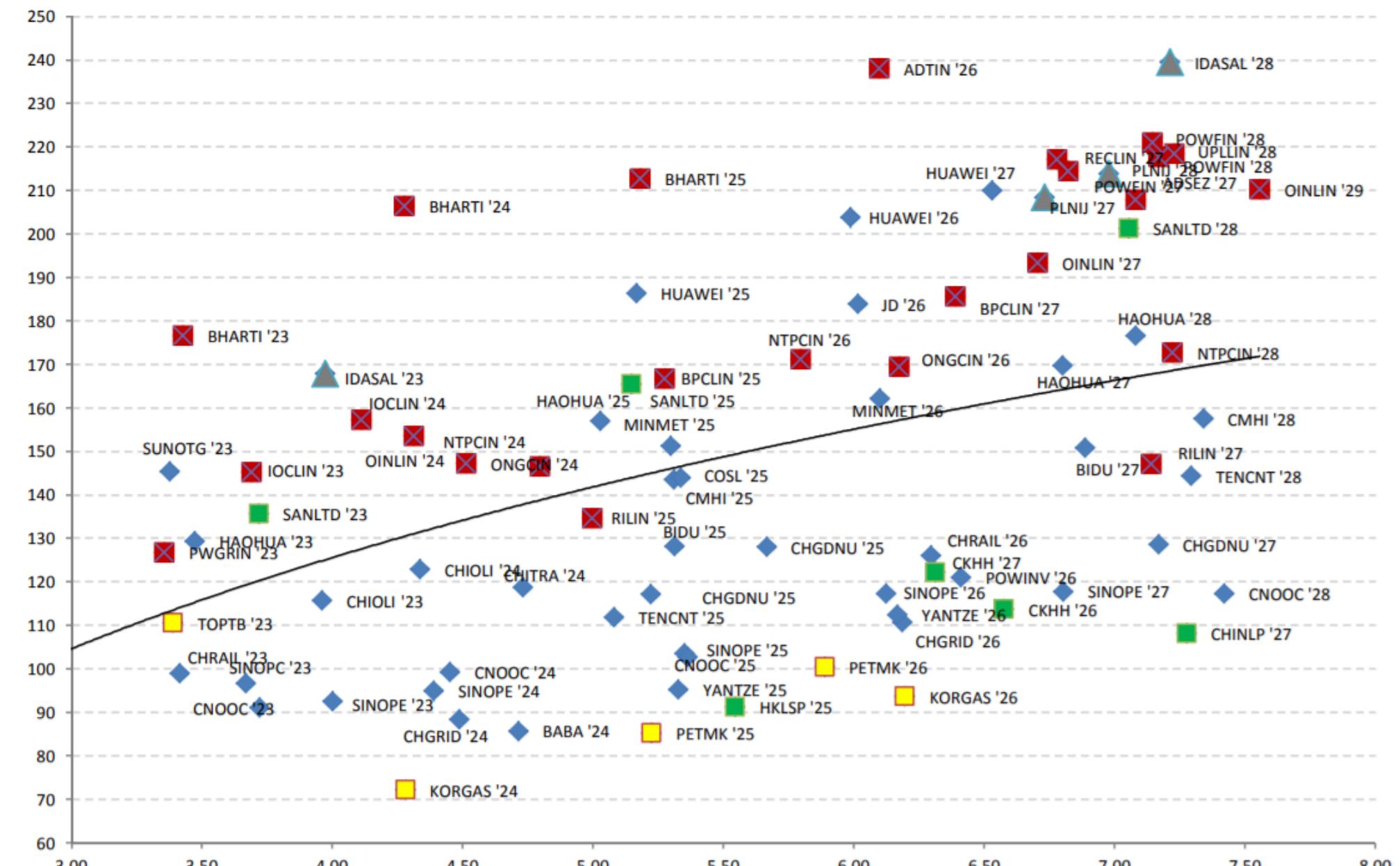
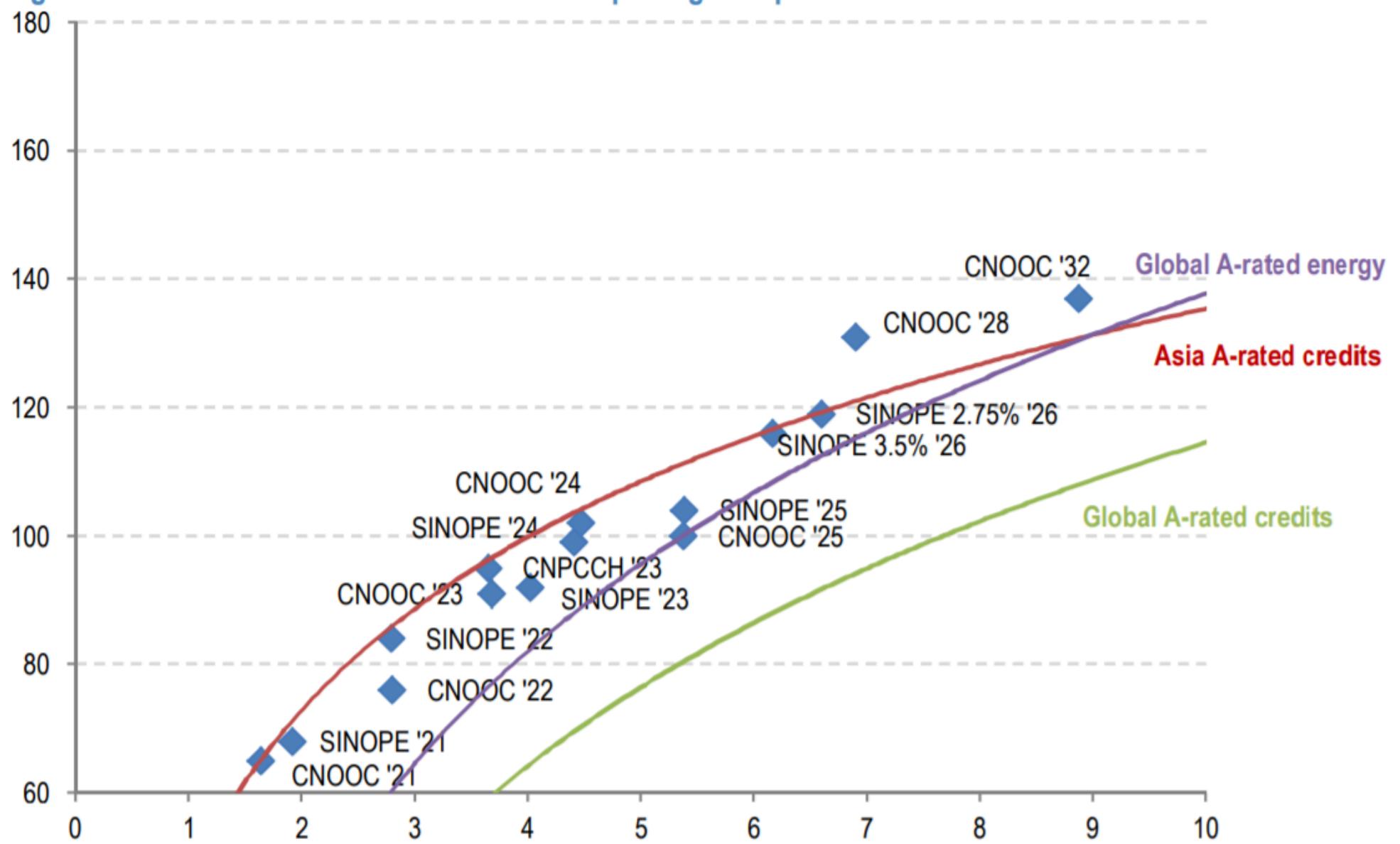


Figure 6: Relative value for China SOEs vs. Asian IG peers



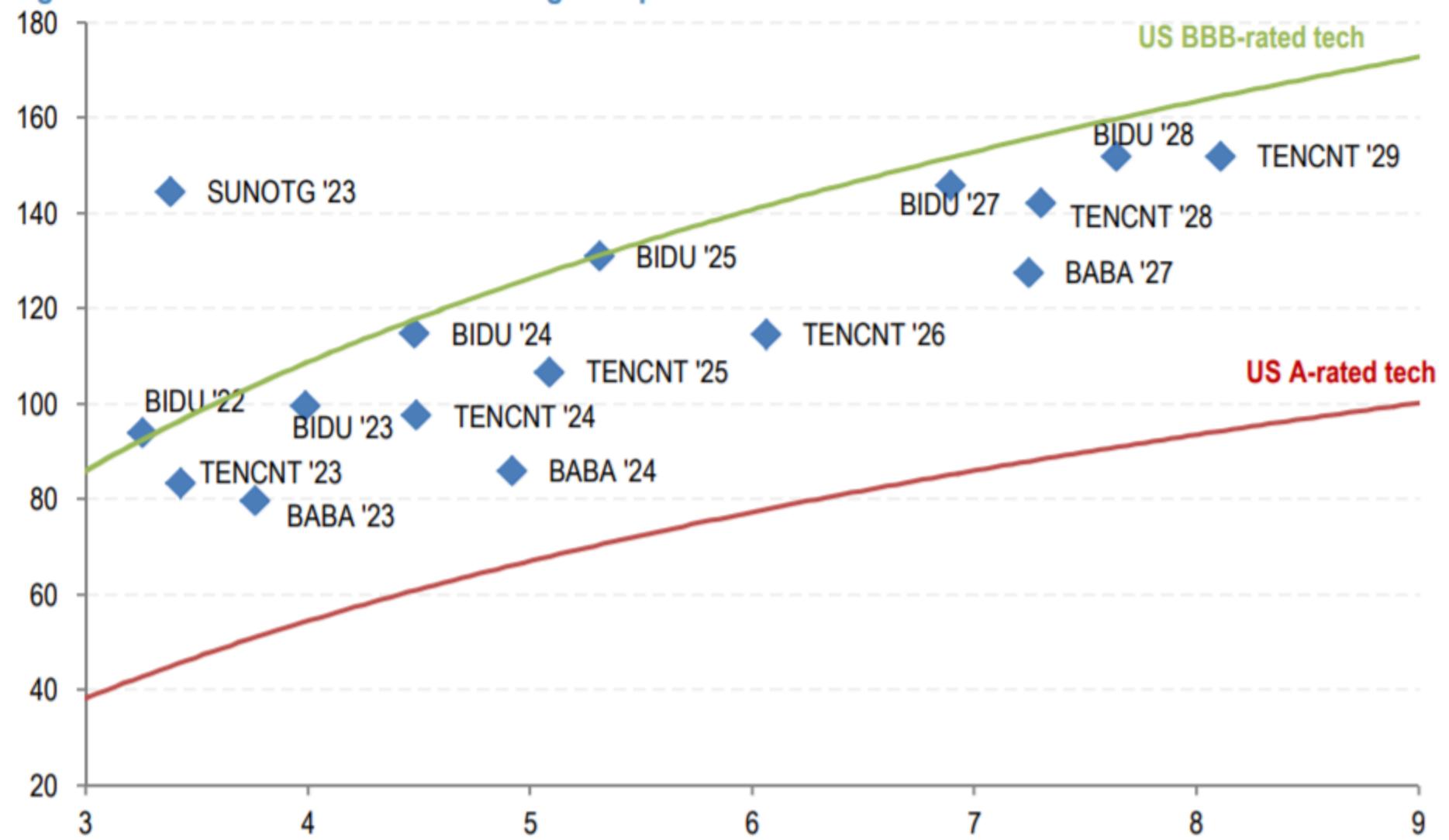
Source: Bloomberg, J.P. Morgan.

**Figure 4: Relative value of China-A rated oil corps vs global peers**



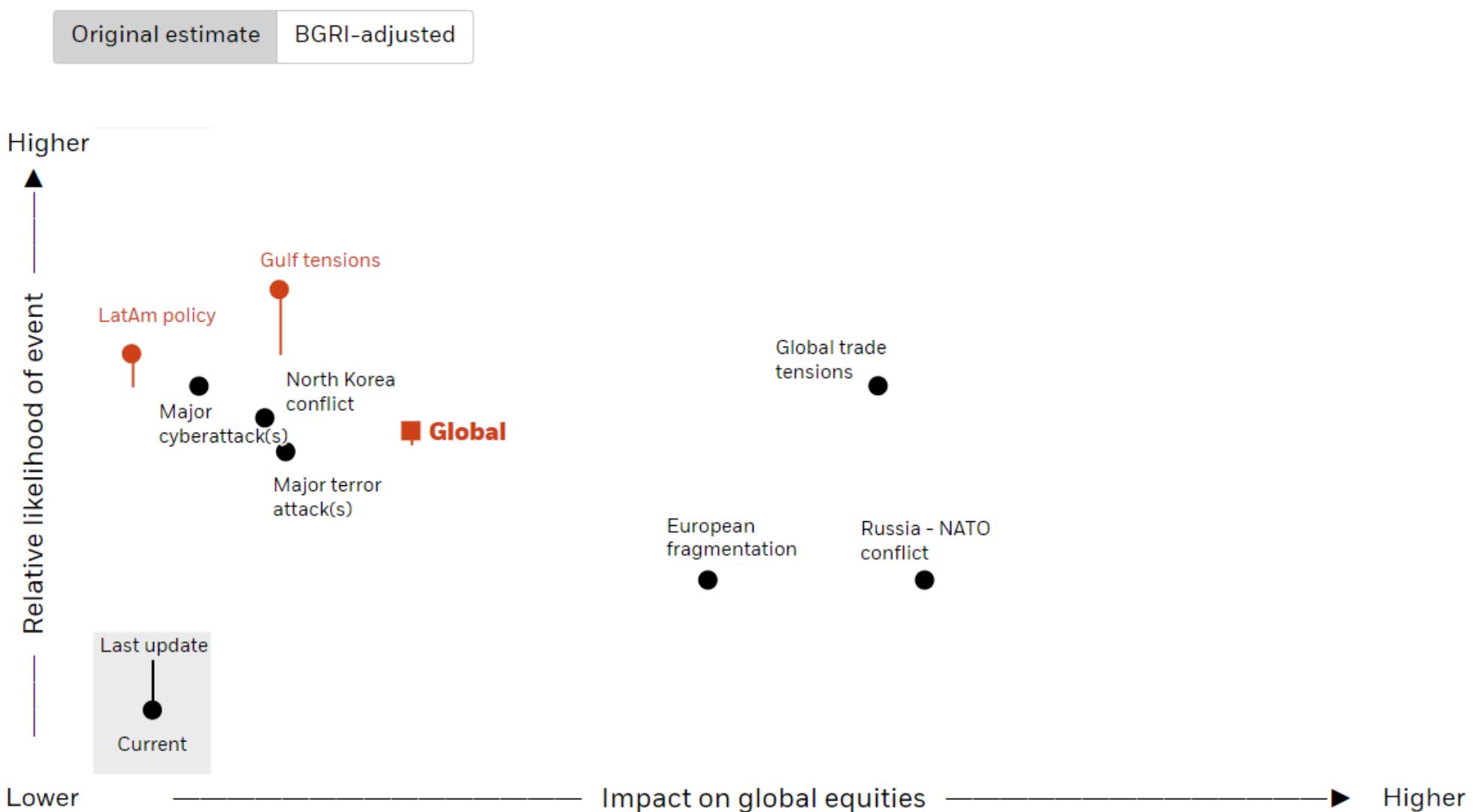
Source: J.P. Morgan, Bloomberg.

**Figure 5: Tencent bonds vs. China and global peers**

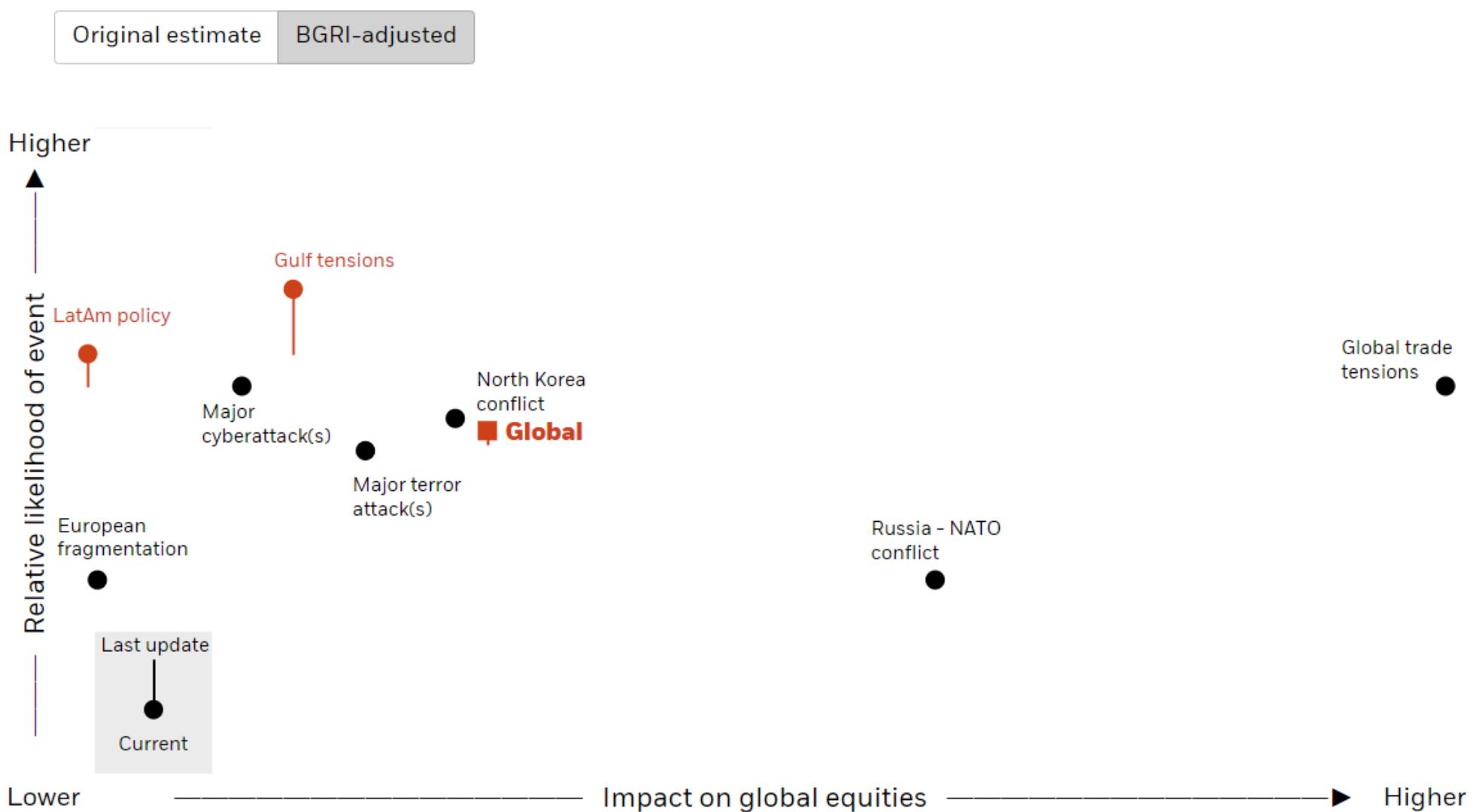


Source: J.P. Morgan, Bloomberg.

## Relative likelihood and market impact of risks

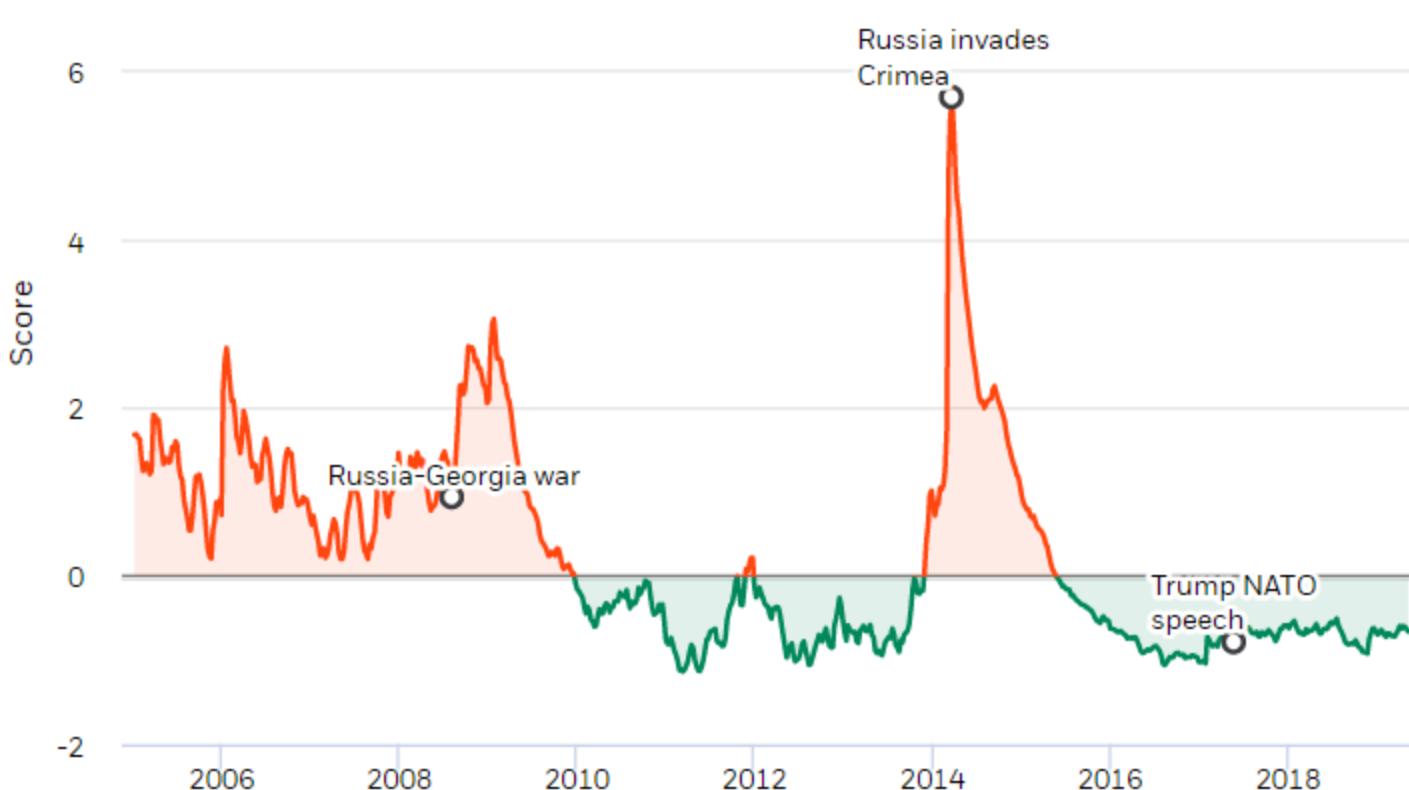


## Relative likelihood and market impact of risks



## Russia - NATO conflict

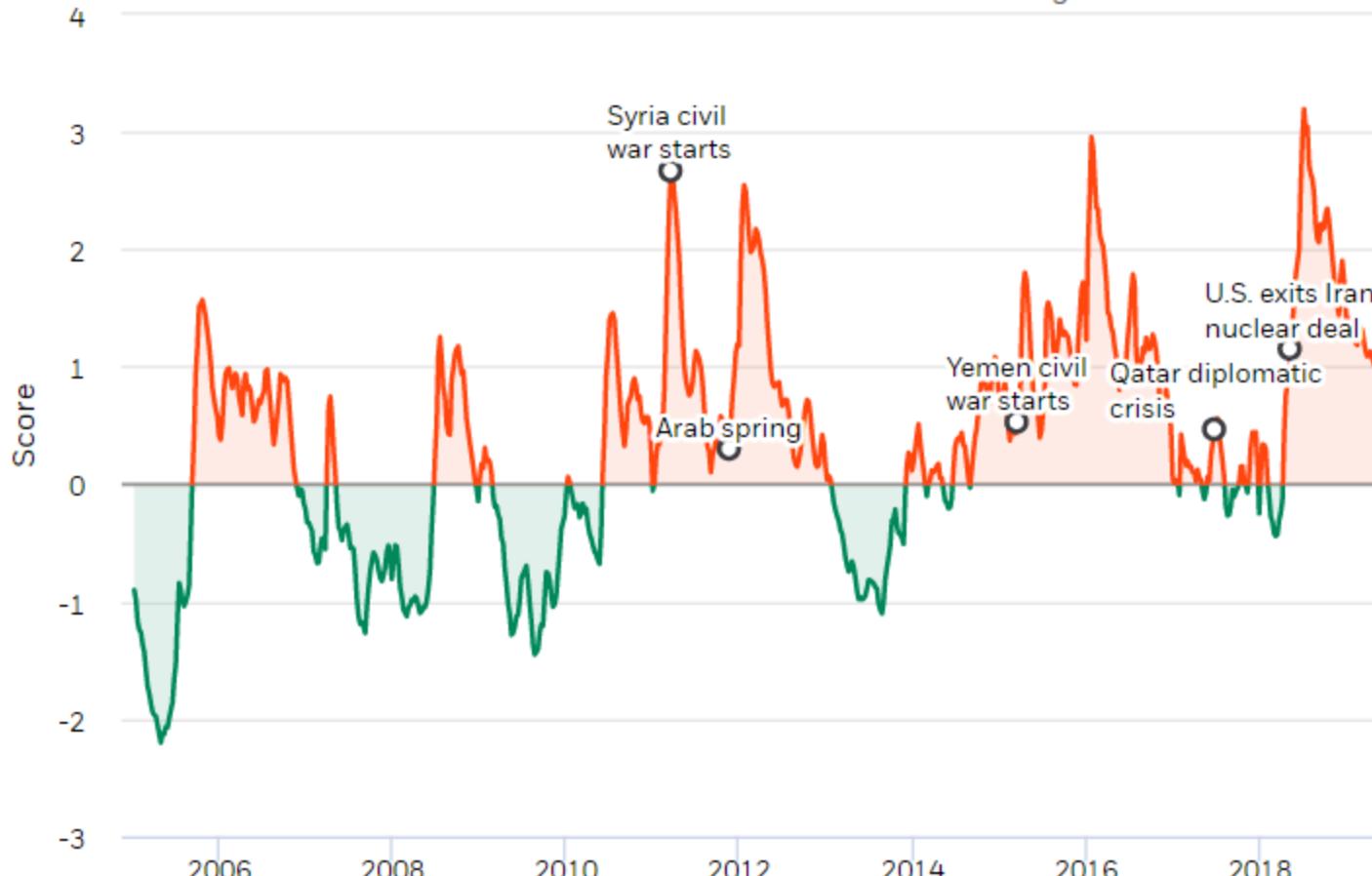
Drag inside chart to zoom in



Source: BlackRock Investment Institute, with data from Thomson Reuters. Data as of May 10, 2019. Notes: We identify specific words related to this geopolitical risk and use text analysis to calculate the frequency of their appearance in the Thomson Reuters Broker Report and Dow Jones Global Newswire databases as well as on Twitter. We then adjust for whether the language reflects positive or negative sentiment, and assign a score. A zero score represents the average BGRI level over its history from 2003 up to that point in time. A score of one means the BGRI level is one standard deviation above the average. We weigh recent readings more heavily in calculating the average. The BGRI's risk scenario is for illustrative purposes only and does not reflect all possible outcomes as geopolitical risks are ever-evolving.

## Gulf tensions

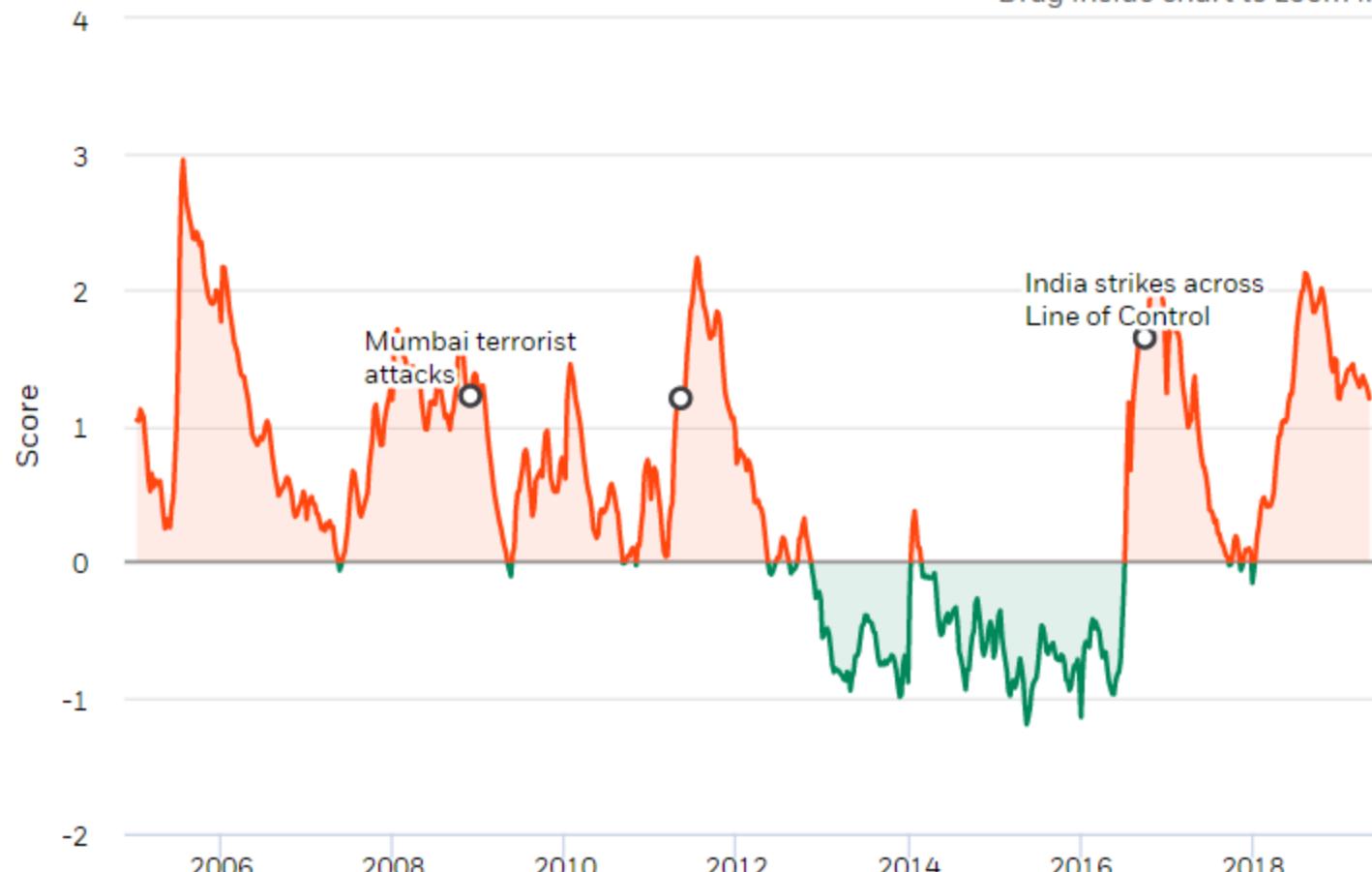
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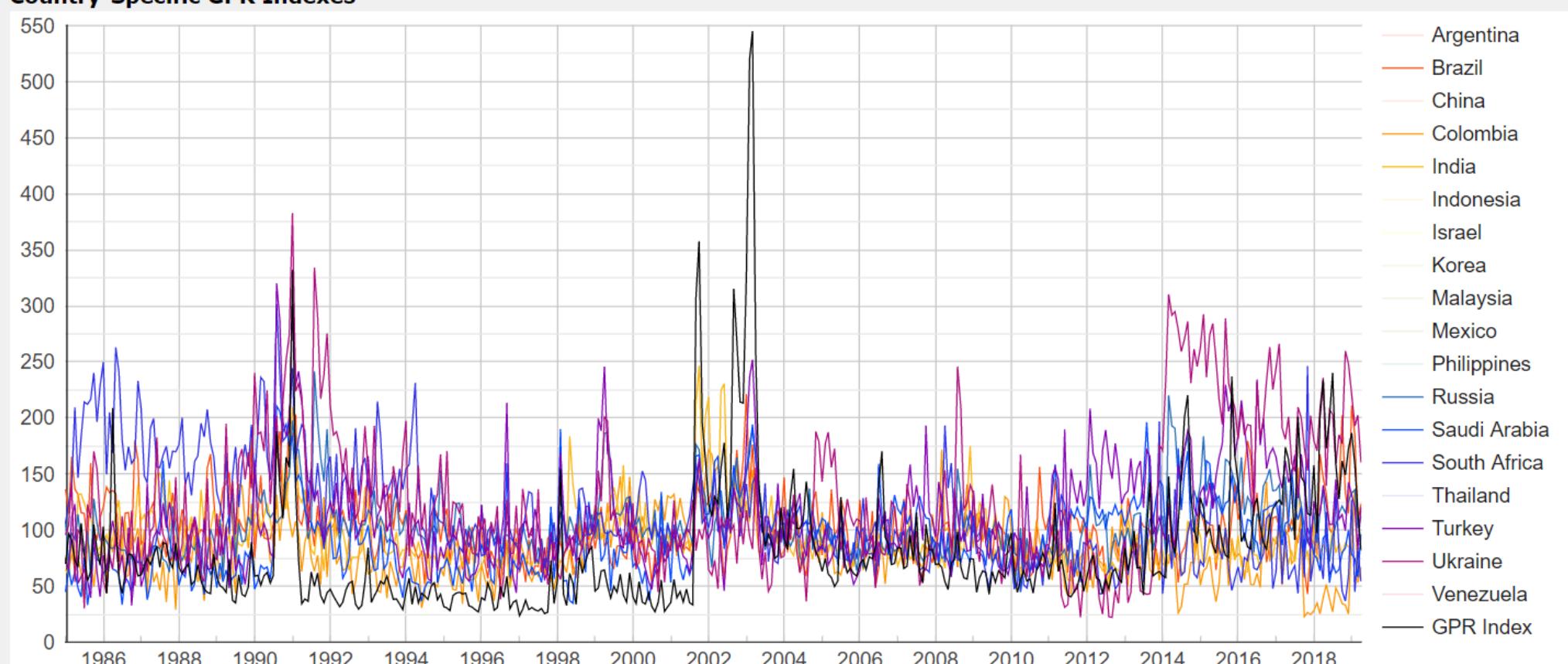
## South Asia tensions (new)

Drag inside chart to zoom in



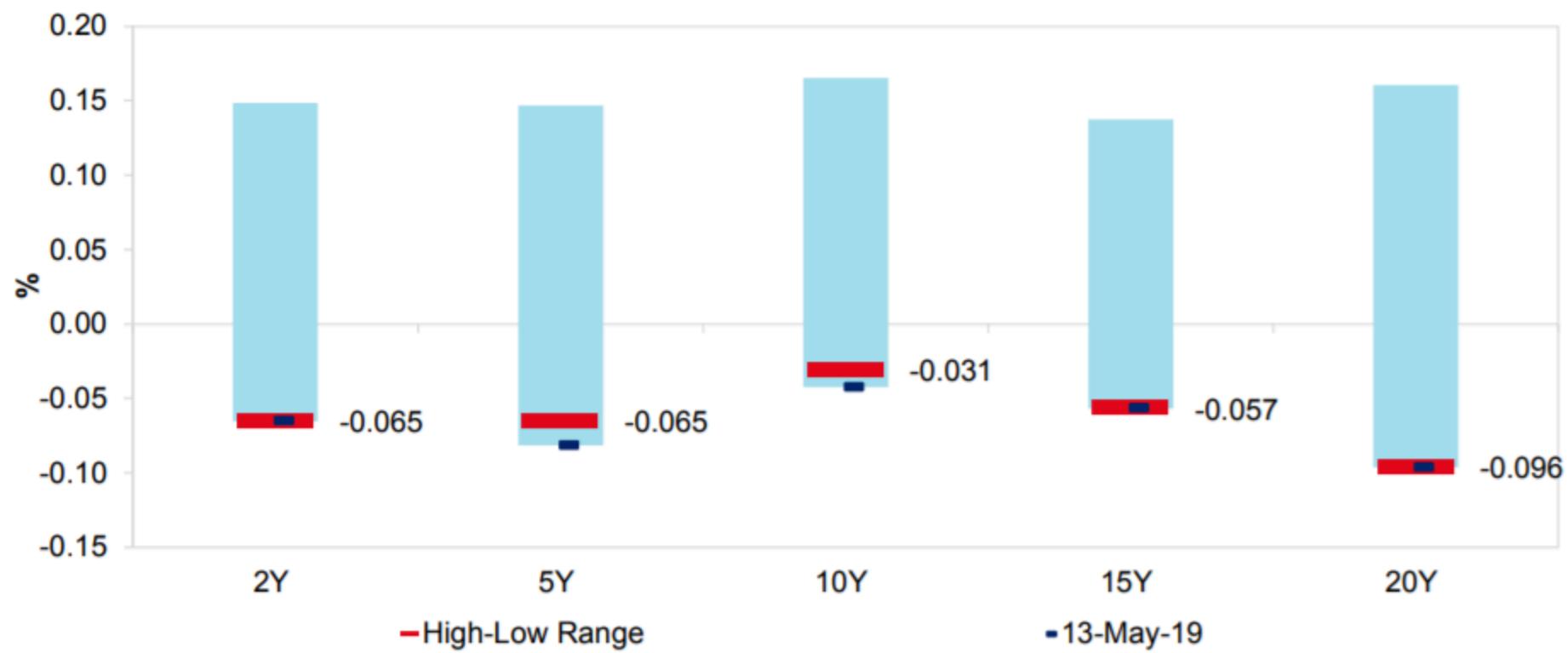
Source: BlackRock Investment Institute, with data from Thomson Reuters. Data as of May 10, 2019. Notes: We identify specific words related to this geopolitical risk and use text analysis to calculate the frequency of their appearance in the Thomson Reuters Broker Report and Dow Jones Global Newswire databases as well as on Twitter. We then adjust for whether the language reflects positive or negative sentiment, and assign a score. A zero score represents the average BGRI level over its history from 2003 up to that point in time. A score of one means the BGRI level is one standard deviation above the average. We weigh recent readings more heavily in calculating the average. The BGRI's risk scenario is for illustrative purposes only and does not reflect all possible outcomes as geopolitical risks are ever-evolving.

### Country-Specific GPR Indexes



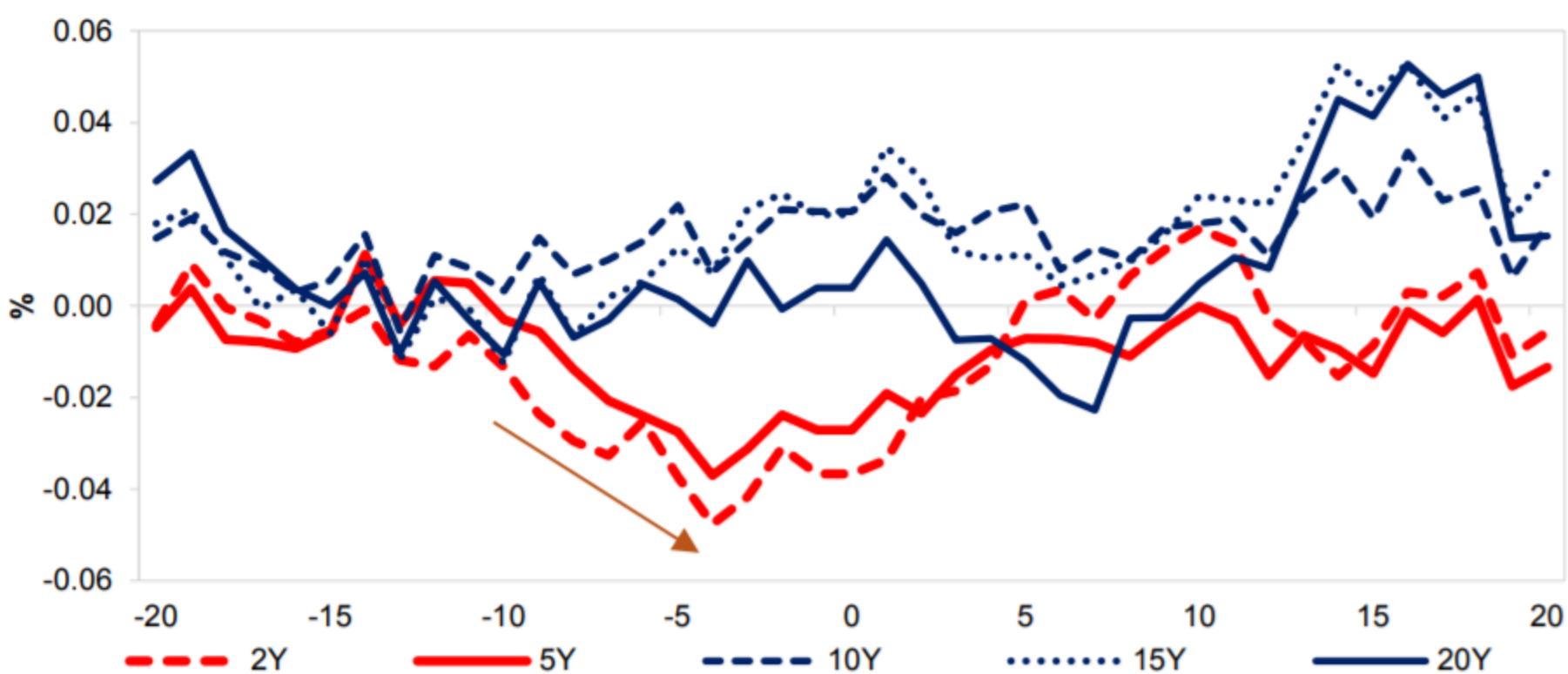
## SGS Bondswap Spreads (Benchmark Tenors 1Y)

Source: Bloomberg, UOB Global Economics & Markets Research



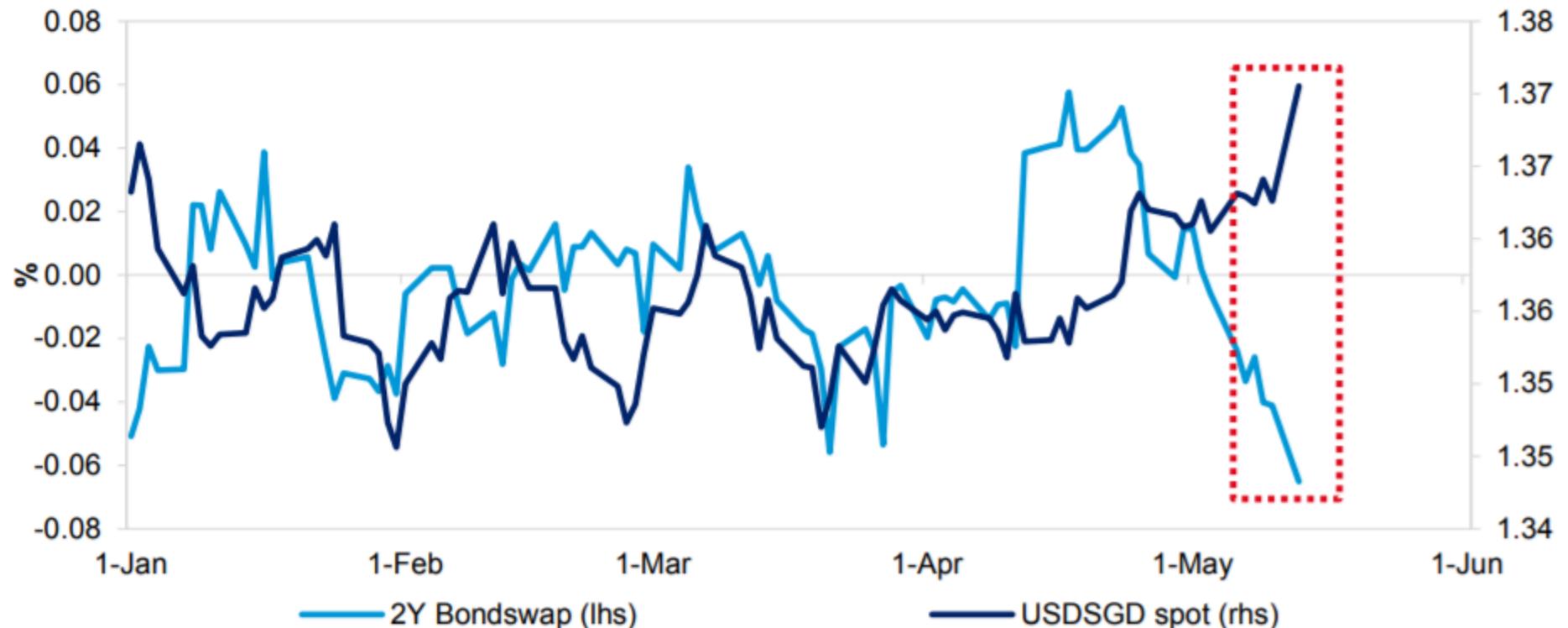
## Average Bondswap Spread Cumulative Change

Source: Bloomberg, UOB Global Economics & Markets Research



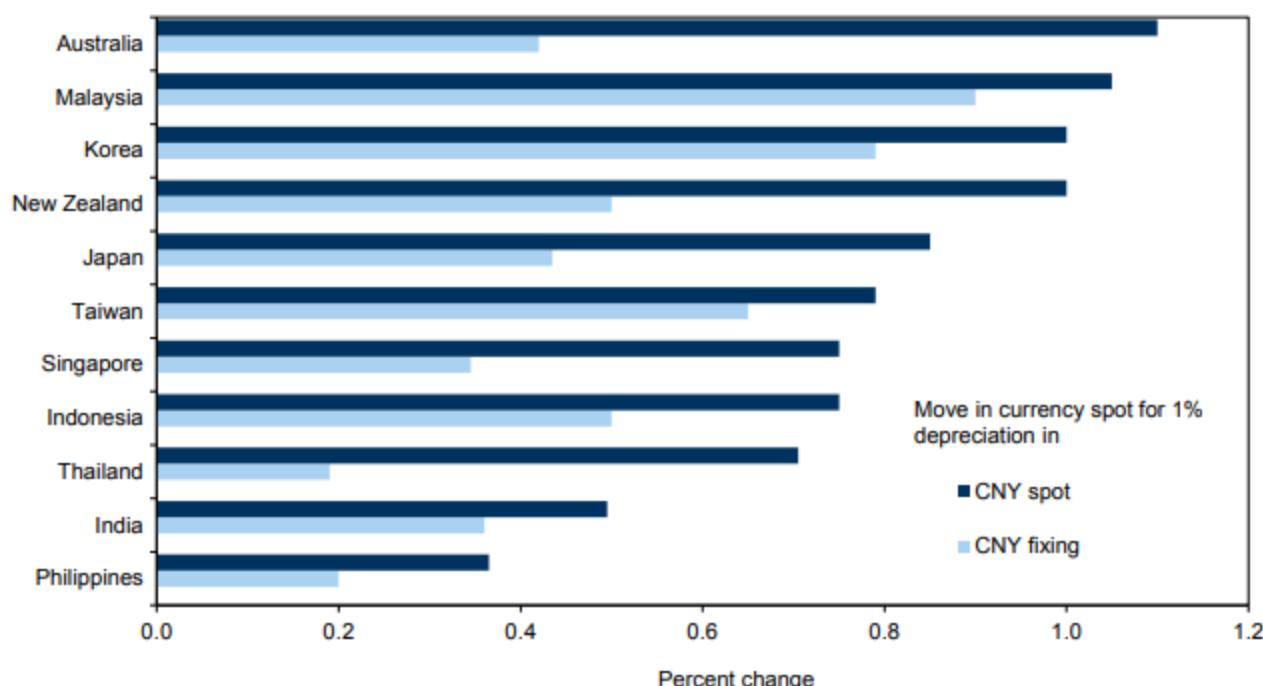
## Bondswap Spread And USDSGD Decoupled

Source: Bloomberg, UOB Global Economics & Markets Research



**NJA low-yielders – Dragged lower by CNY anchor.** In Asia, with the exception of the THB which rallied on the dissipation of election related uncertainty, all currencies weakened against the dollar, with KRW the biggest underperformer. Our previous research shows that the smaller export-oriented economies in the region – Korea, Taiwan, and Malaysia – are the most sensitive to shifts in Chinese growth and the RMB. Our quantitative analysis of the sensitivities of Asian currencies to shocks to USD/CNY, which controls for other factors like data surprises in the US, China and the domestic economy as well as oil prices, the VIX and broad dollar moves, suggests that these currencies (MYR, KRW, TWD) tend to move almost one-for-one with the CNY (Exhibit 1). Our FX strategy team's research also highlights the role of KRW and TWD as good overall FX hedges because they are sensitive not only to a wide range of China specific risks, but also effective hedges against a wide range of global risk drawdowns. Given the resurgence in trade tensions and their sensitivity to CNY weakness, we revised our KRW, TWD and MYR forecasts weaker last week to reflect potential further downside vs USD. We revised our 3m USD/TWD forecast up to 32.0 (from 31.0 previously) and USD/MYR forecast to 4.25 (from 4.20 previously).

### Exhibit 1: Several regional currencies have moved almost one-for-one with the CNY historically

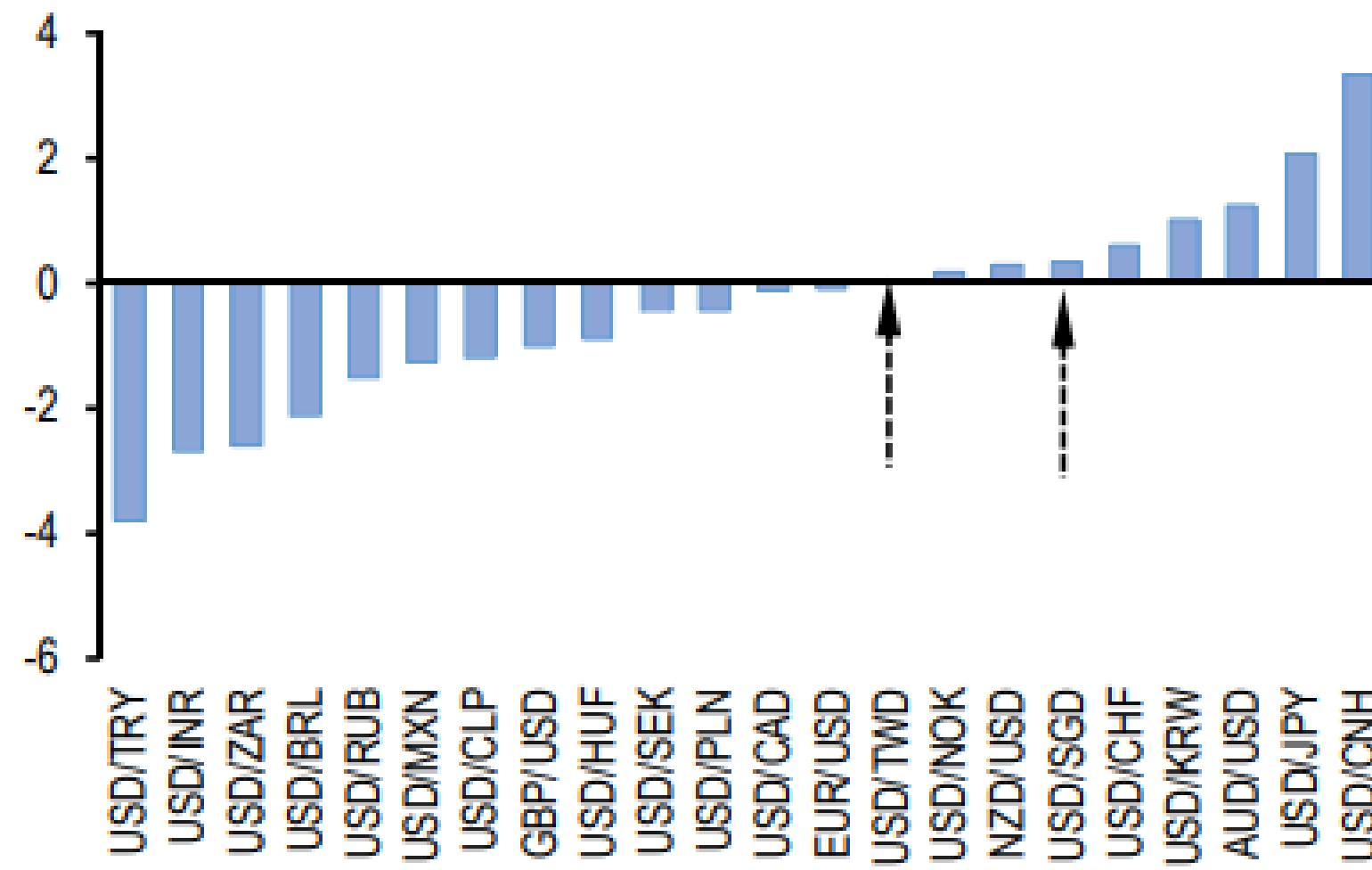


Source: Bloomberg, Goldman Sachs Global Investment Research

exploiting a non-linear negative reaction in Asian FX if the hoped for rapprochement at G20 fails to fructify, and also

**Exhibit 4. USD/CNH prices in noticeably greater event risk premium for the June 28/29 G20 summit than other trade-sensitive Asian currencies like SGD and TWD**

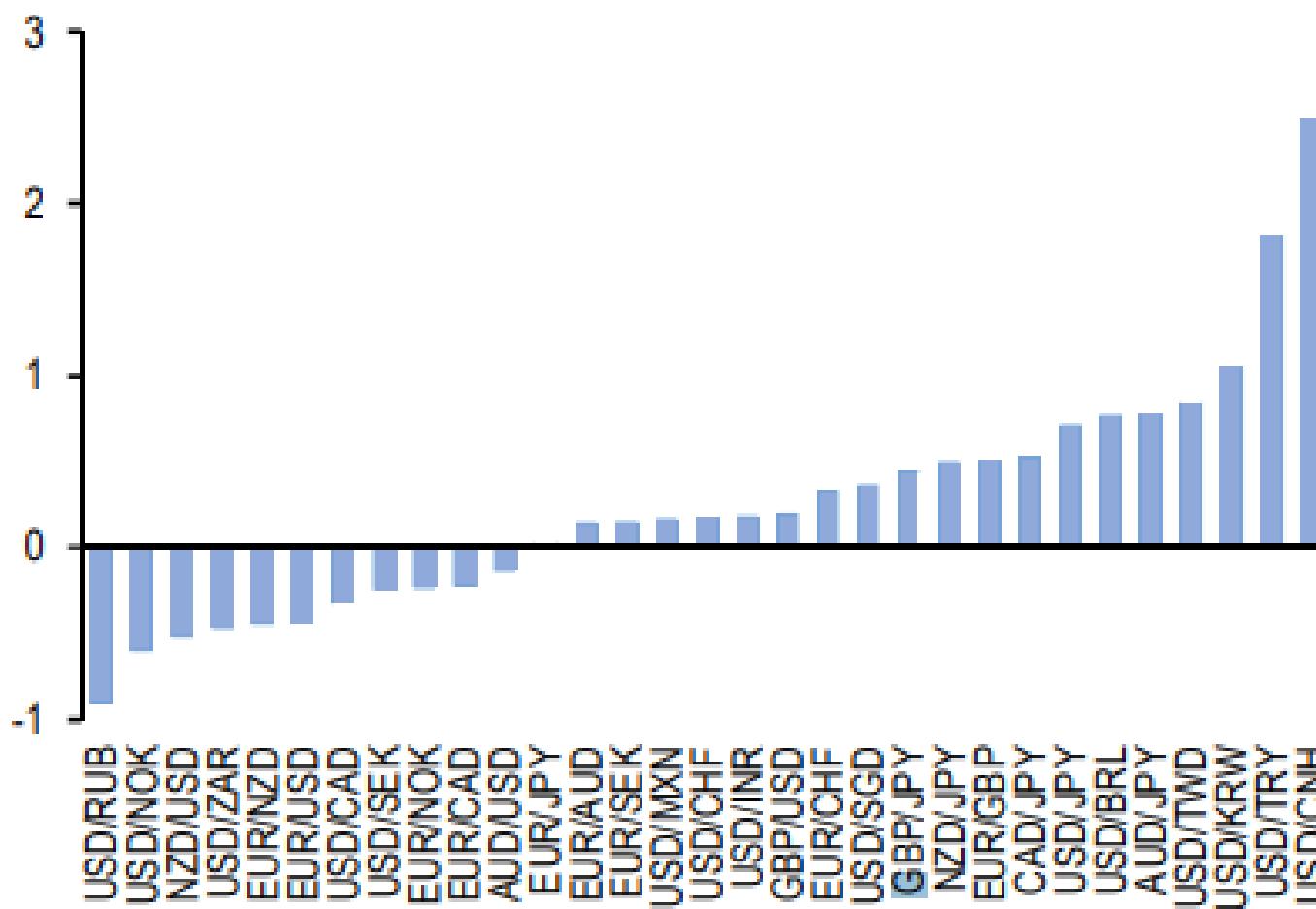
Premium (vol pts.) of 27-Jun to 01-Jul FVA over 27-Jun spot ATM vol



Source: J.P.Morgan

### Exhibit 3. Aside from CNH, KRW and TWD in Asian FX, TRY and BRL in other EM, and Yen-crosses, the rest of the FX option universe has shrugged off the re-escalation in US/China trade tensions

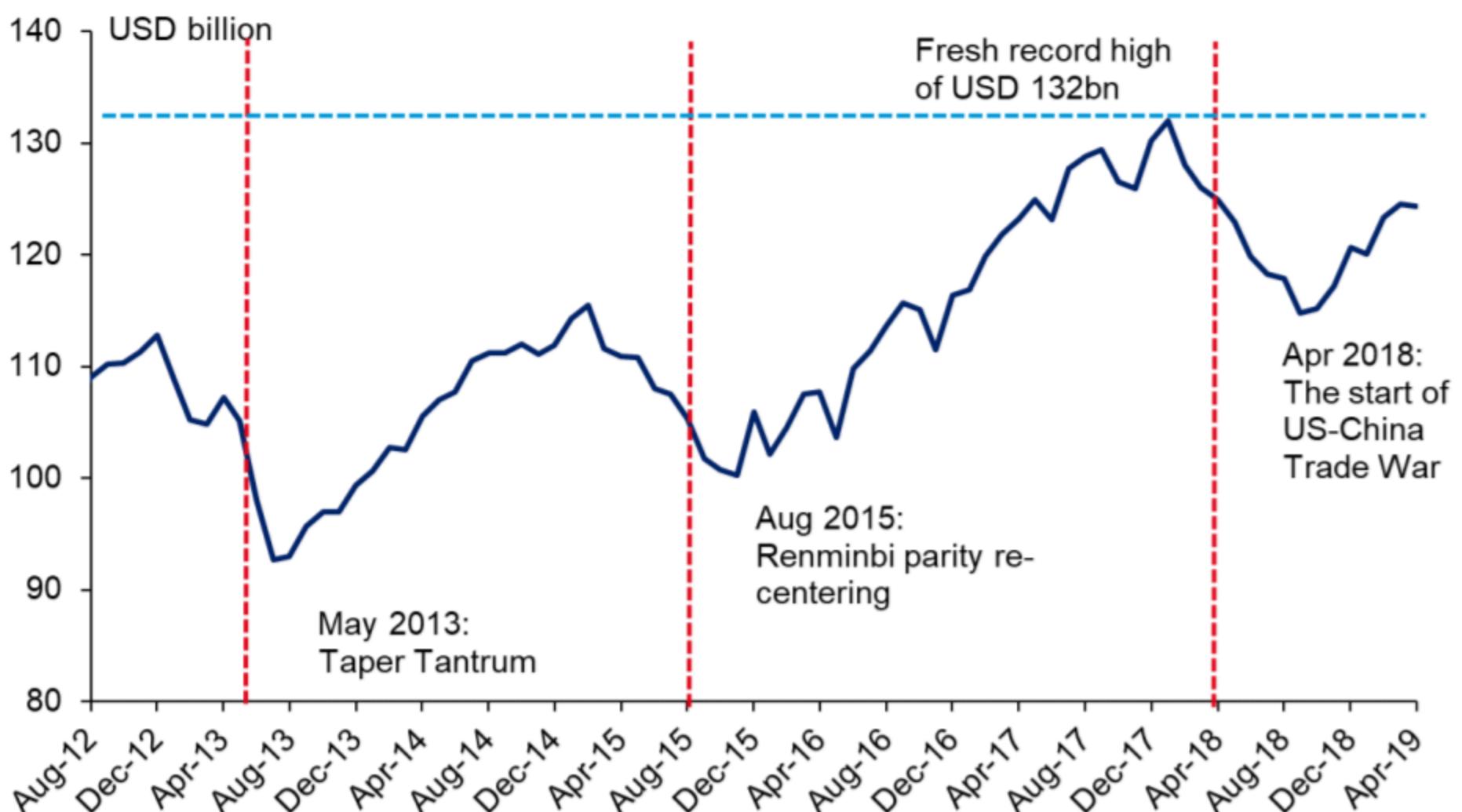
Returns (vol pts.) from owning delta-hedged 3M ATM straddles from 03-May-19 to 16-May-19. Options delta-hedged daily at close-of-business using smile forward deltas and option-expiry matched forwards. No transaction costs.



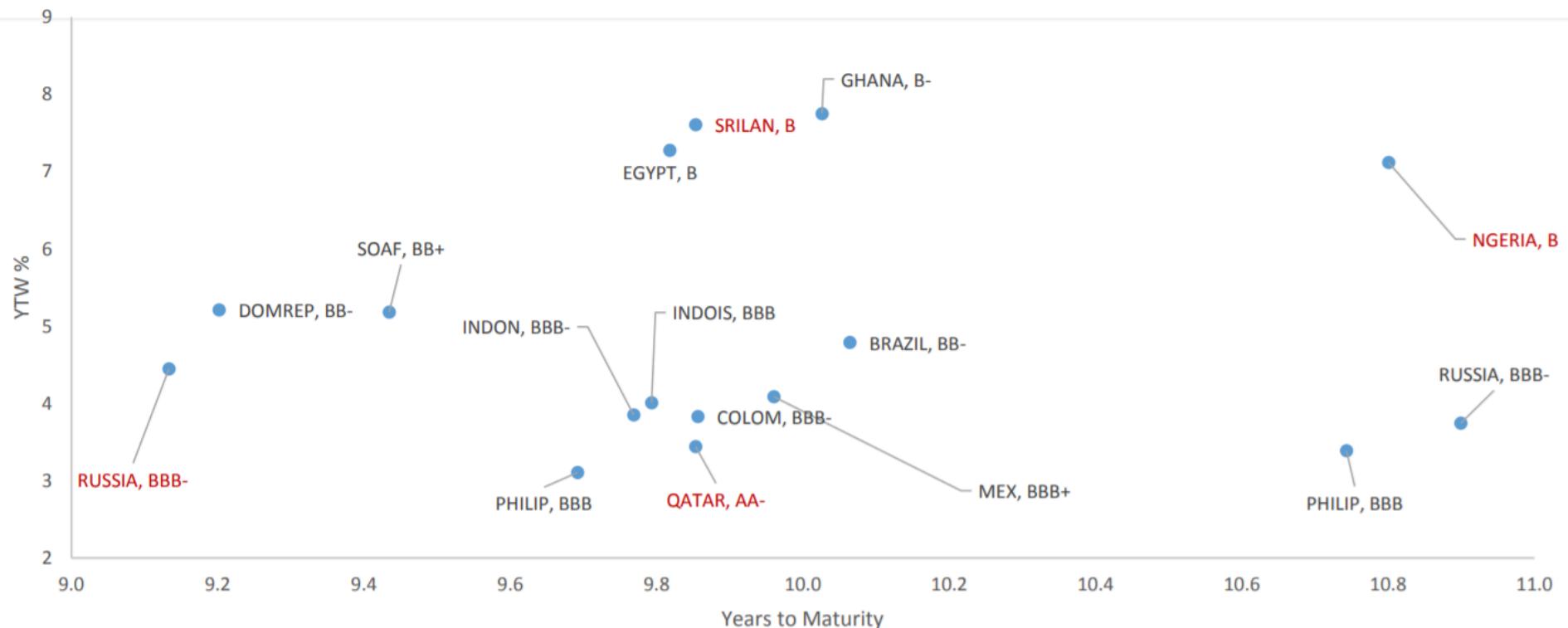
Source: J.P.Morgan

### Figure 1. FX Reserves Decreased Slightly in April 2019

Source: Bank Indonesia, UOB Global Economics & Markets Research

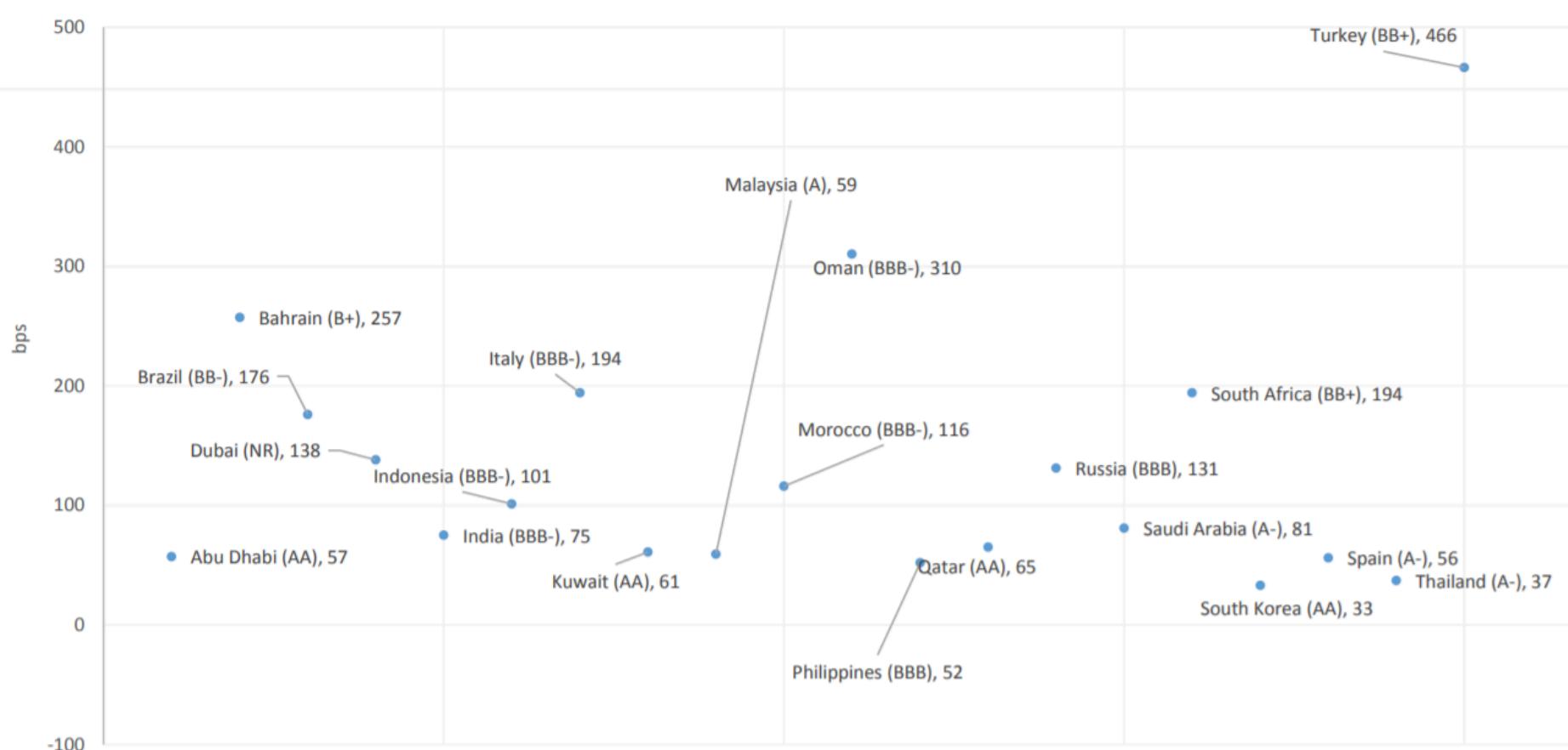


### Sovereigns RV snapshot : Maturity vs yield to worst



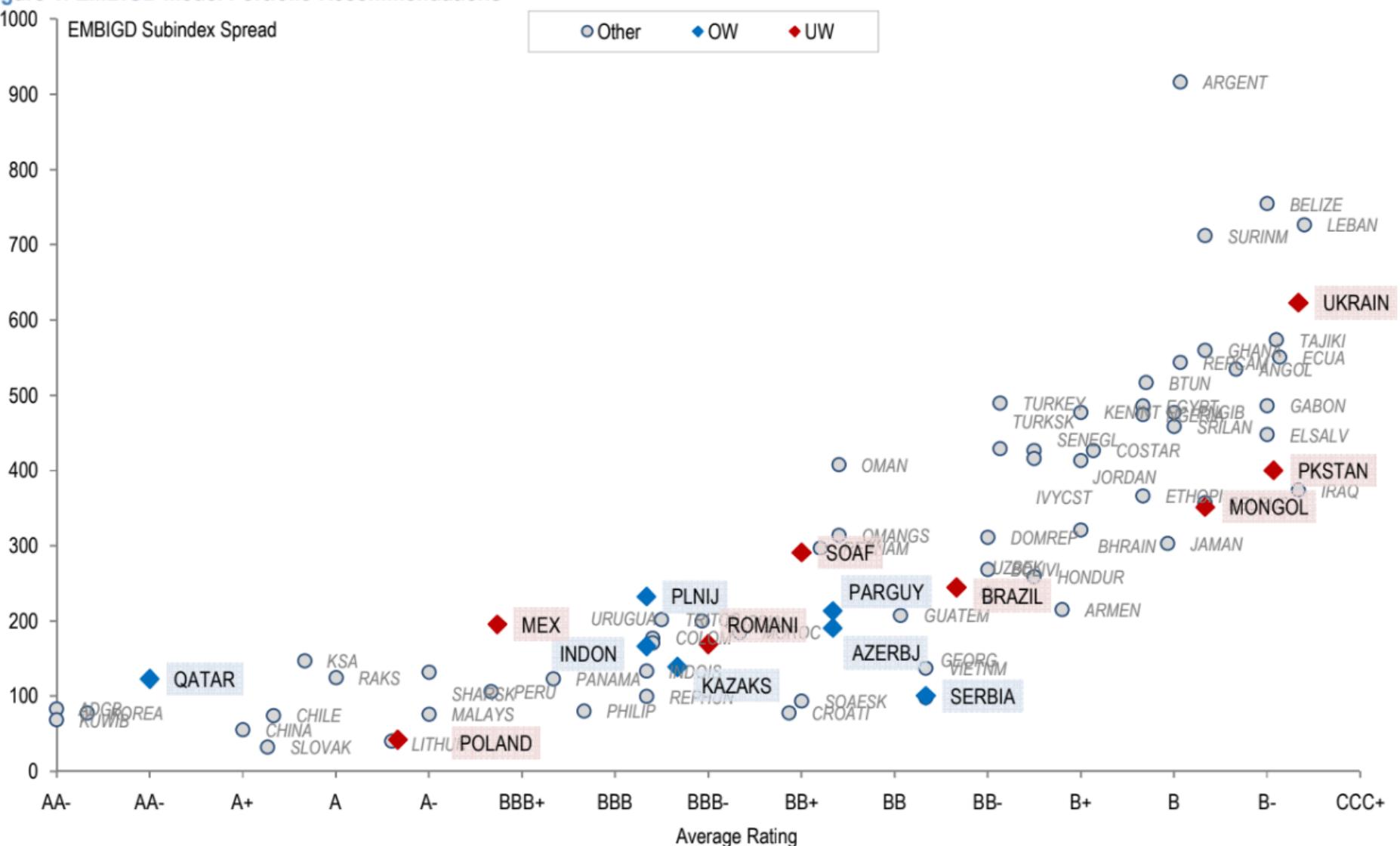
Source: Bloomberg, Emirates NBD Research

### Sovereigns RV snapshot based on 5yr CDS spreads of similar rated sovereigns



Source: Bloomberg, Emirates NBD Research

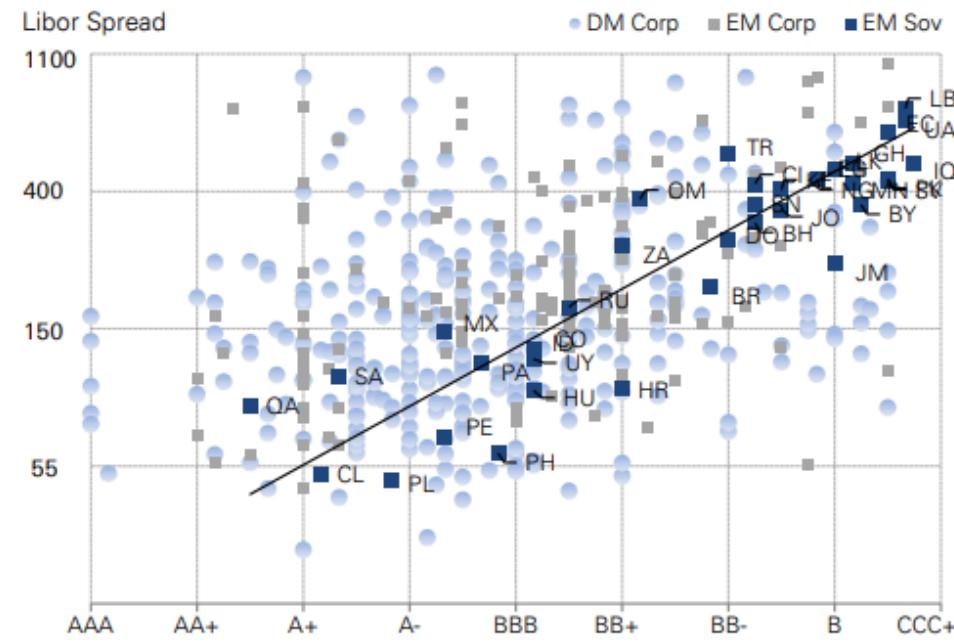
**Figure 1: EMBIGD Model Portfolio Recommendations**



Source: J.P. Morgan.

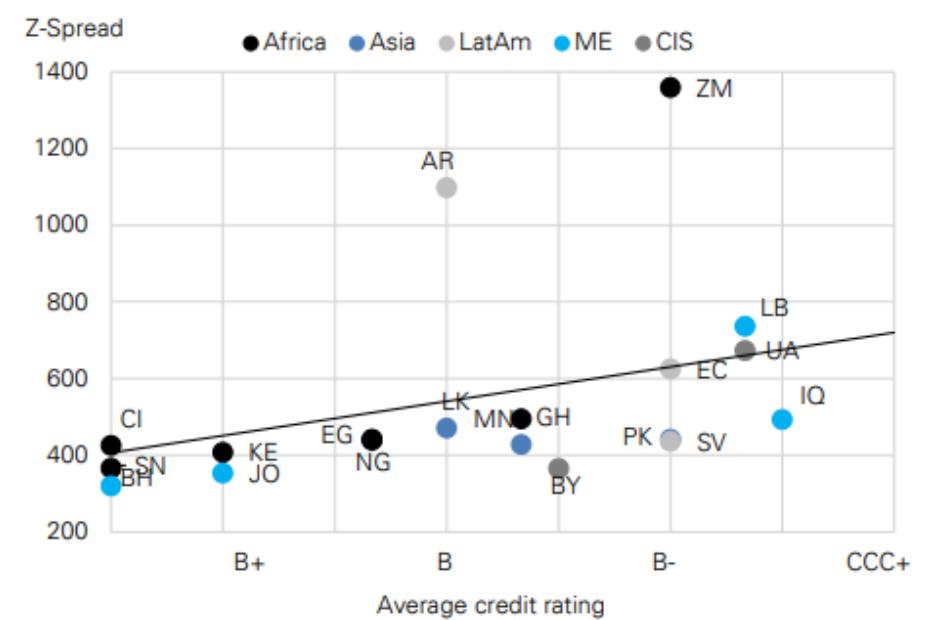
**Benchmark valuation** does not look stretched as spreads have remained in a 340-360bp range since early February (wider than the 2018 and 5-year averages), but there is **significant dispersion between countries**. Among low-yielders we generally prefer **GCC** relative to CEE, LatAm and Asian ratings peers, given the spread premium they offer on an equally-rated basis (see below chart). Among the highest beta credits, premium has vanished in the most improved (e.g. Ecuador - see chart), with fundamentals, political issues, and/or supply risk preventing more than a marketweight for the others.

Figure 24: EM sovereigns 10Y bond spreads vs. credit rating (overlaid with global credits)



In **LatAm**, the risk of potential escalation in US/China trade talks will continue to weigh on commodity prices (which have corrected by 6% recently, measured by CRY), but idiosyncratic developments remain the more important factors. We stay underweight the very low-beta names **Peru** and **Chile** due to very tight valuation as well as reduced support from copper prices, and marketweight most other major

Figure 25: ...zooming into the distressed space...



*Source : Deutsche Bank, Moody's, S&P, Fitch*

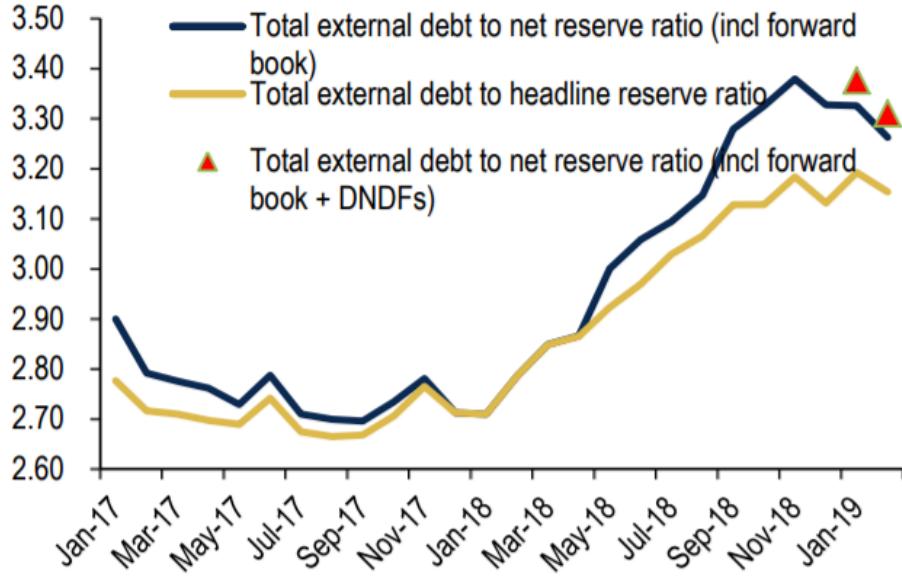


### Weaker IDR is warranted and it's not bad

One of the most baffling things since the beginning of this year was the strong “pursuit” for a stronger IDR even as trade balances weren’t improving and current account looked to surprise to the downside (Chart 5). Elections were probably one of the biggest factors that prompted policy makers to seek a stronger currency. As a result, IDR REER diverged significantly from Indonesia’s current account trajectory and now, undoubtedly, Rupiah looks “too strong.”

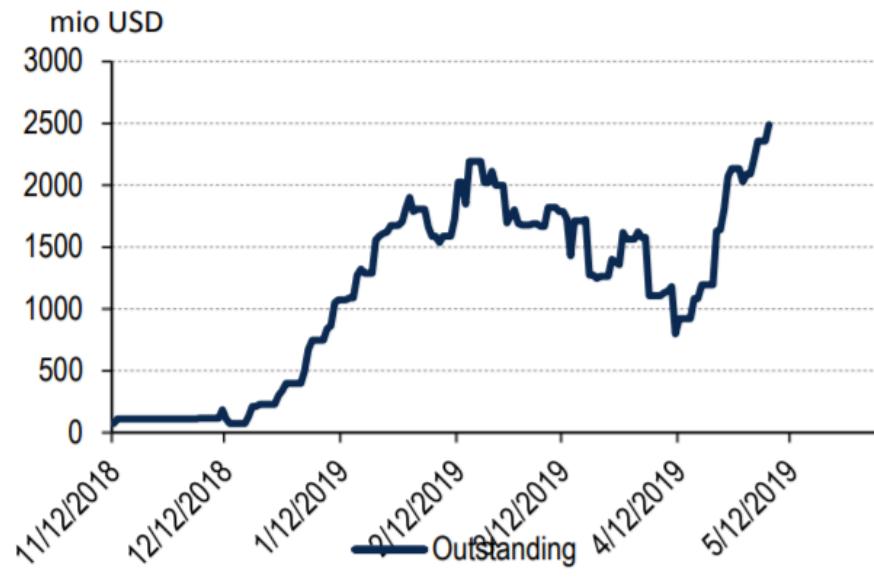
Given the collapse in terms of trade, we think BI will have little choice on the currency front and will allow Rupiah to weaken. BI will only “manage” the weakness. Chart 3 shows that outstanding DNDNs (through auctions) have sharply risen since the middle of April and has now reached a new all-time high of 2.5bn USD.

**Chart 2: External ratios are far from 2017 levels**



Source: BofA Merrill Lynch Global Research, Bloomberg

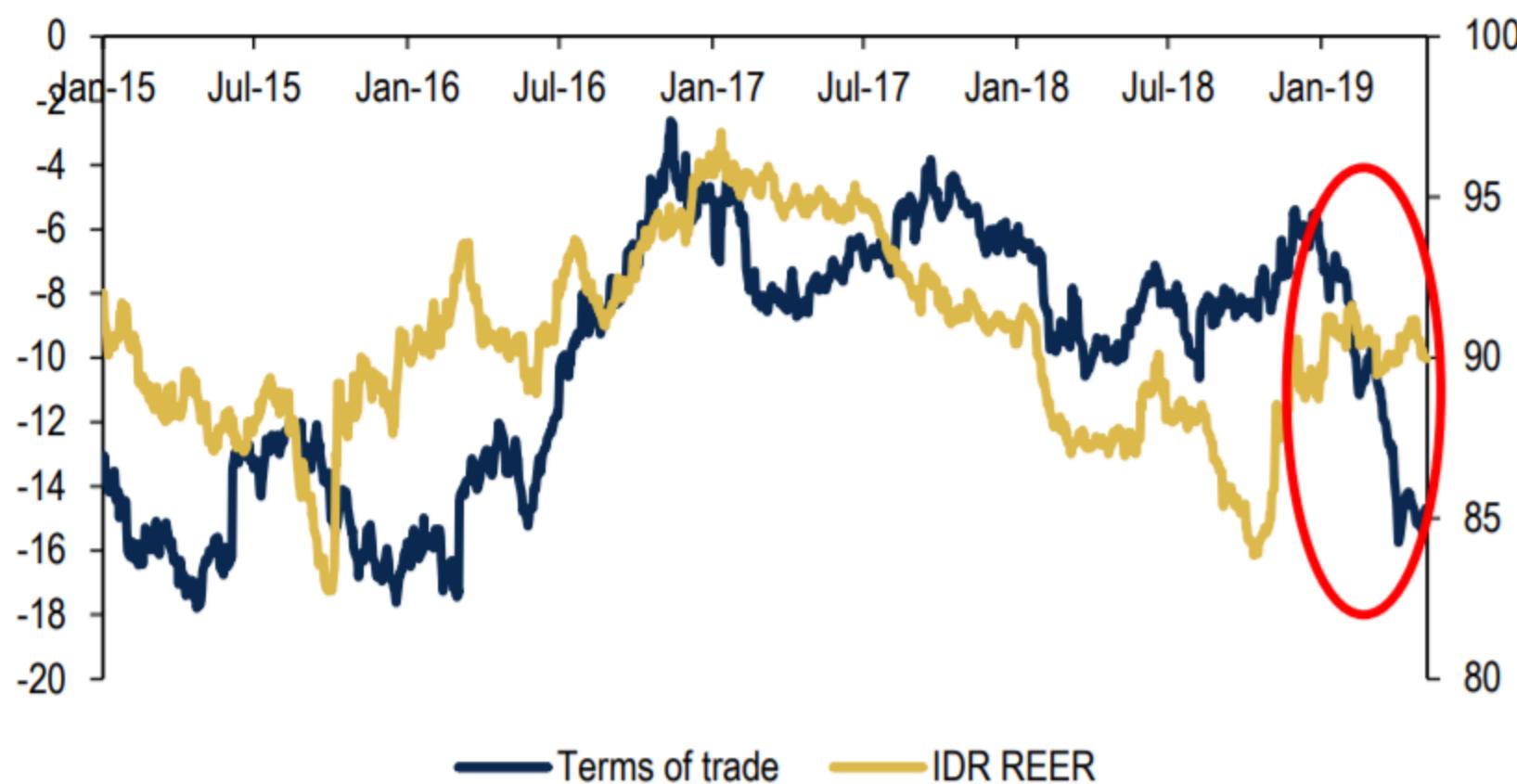
**Chart 3: Outstanding DNDNs reaching new highs**



Source: BofA Merrill Lynch Global Research, Bloomberg

(Domestic NDFs)

## Chart of the day: IDR has yet to adjust to the collapse in ToT



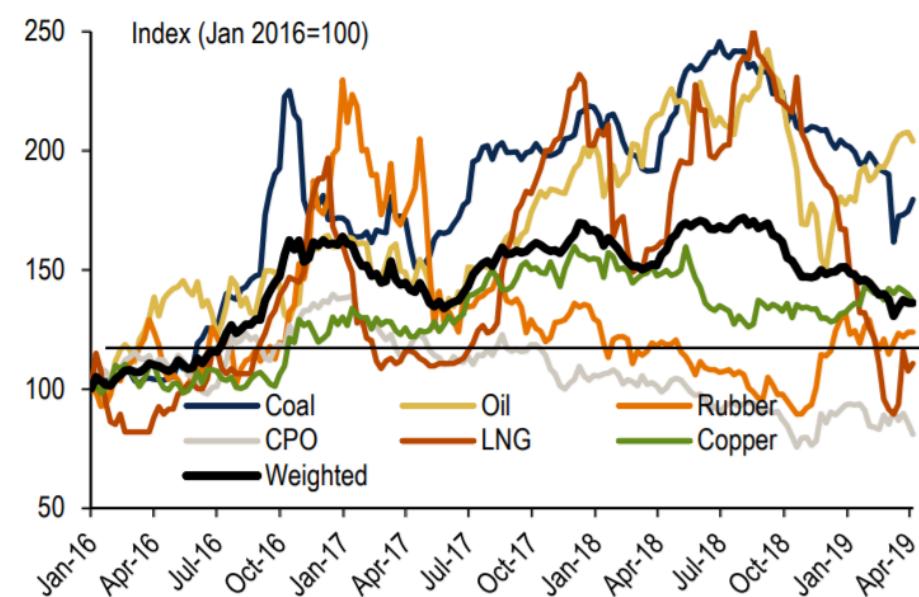
Source: BofA Merrill Lynch Global Research, Bloomberg

**Table 1: IDR has weakened 9 out of 10 times during May/June combined**

USD/IDR Spot returns (%)	Jan	Feb	Mar	Apr	May	June	May/June combined
2018	-1.25	2.73	-0.17	1.35	-0.12	3.12	3.00
2017	-0.77	-0.23	-0.12	0.05	-0.05	0.19	0.14
2016	-0.07	-2.92	-1.02	-0.45	3.55	-3.21	0.34
2015	2.29	2.05	1.1	-0.85	2.01	0.87	2.88
2014	0.35	-4.94	-2.14	1.77	0.99	1.7	2.69
2013	-0.5	-0.77	0.68	-0.01	1.47	1.29	2.76
2012	-0.78	0.28	1.36	0.34	3.3	-0.5	2.80
2011	0.59	-2.52	-1.28	-1.67	-0.23	0.42	0.19
2010	-0.54	-0.11	-2.6	-0.99	1.83	-1.1	0.73
2009	2.29	5.49	-2.5	-9.19	-3.11	-0.85	-3.96

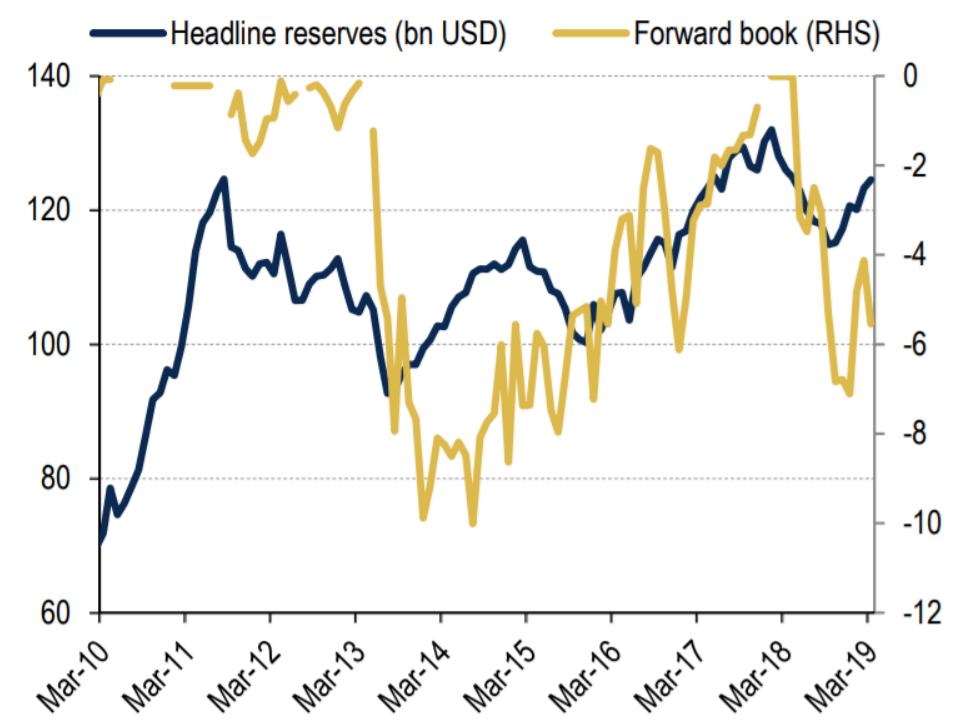
Source: BofA Merrill Lynch Global Research, Bloomberg

**Chart 1: Palm Oil, Coal and LNG have led the collapse in ToT**



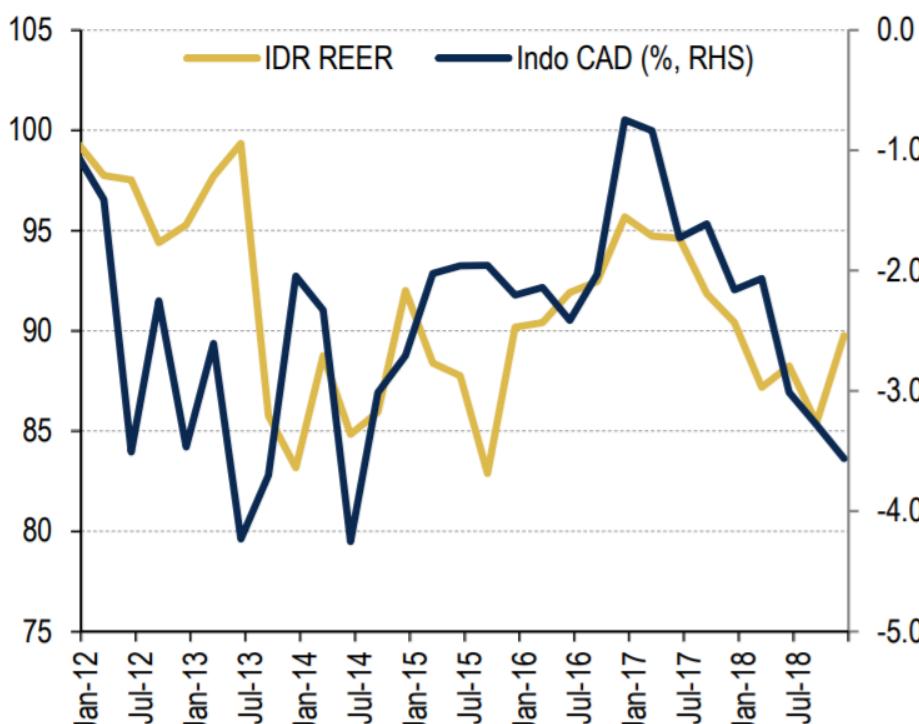
Source: BofA Merrill Lynch Global Research, Bloomberg

**Chart 4: Indonesia needs to buyback 14-15bn USD worth of reserves**

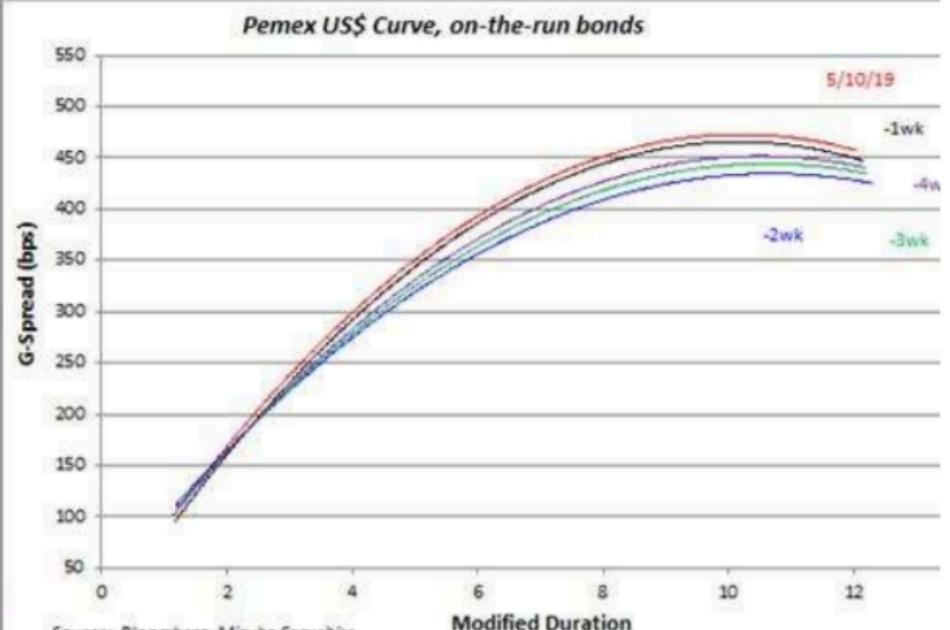
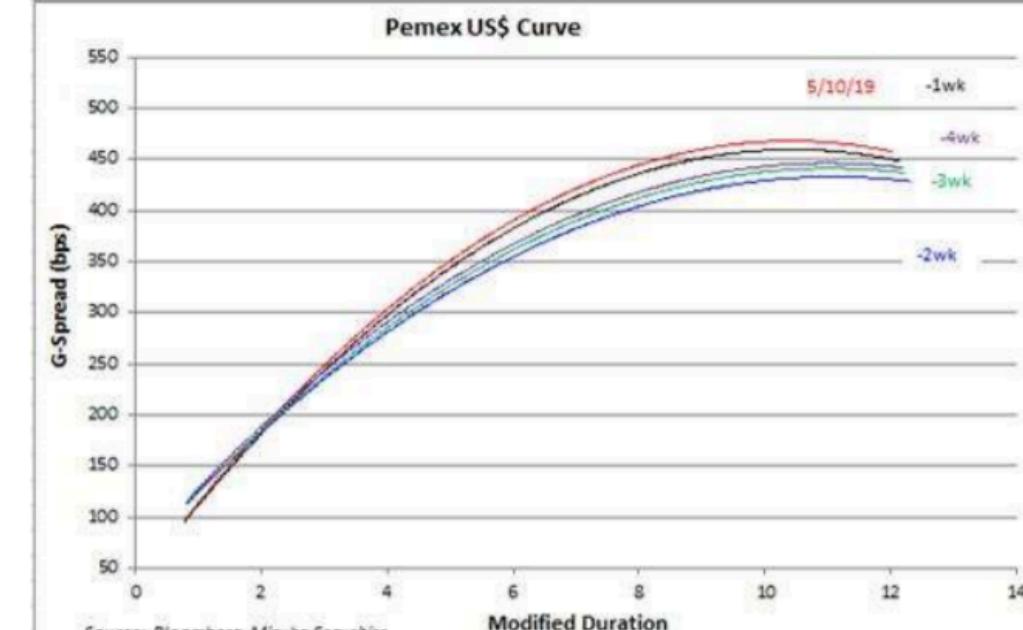
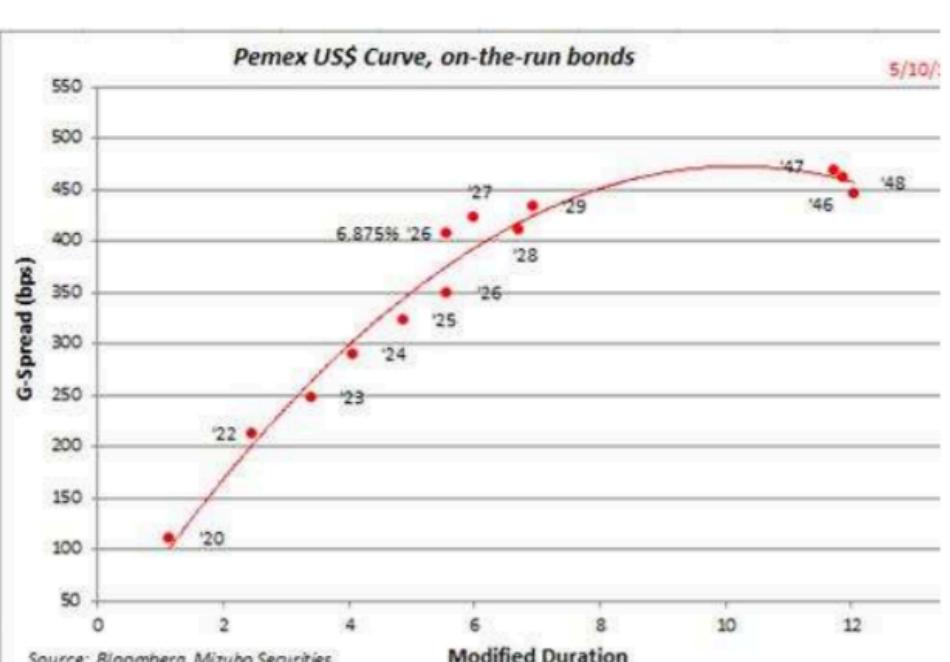
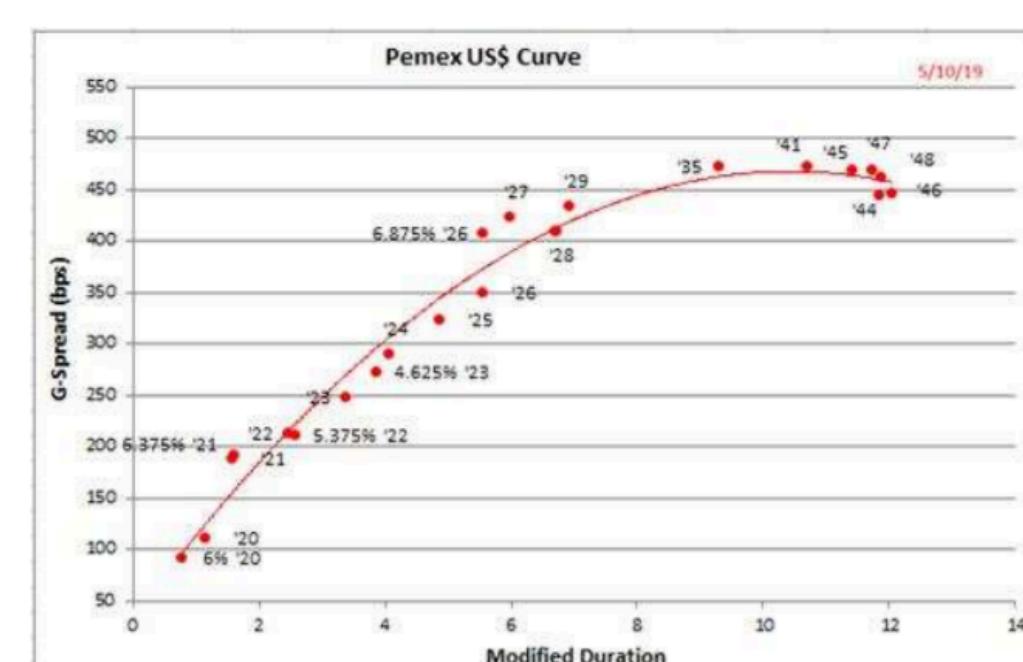
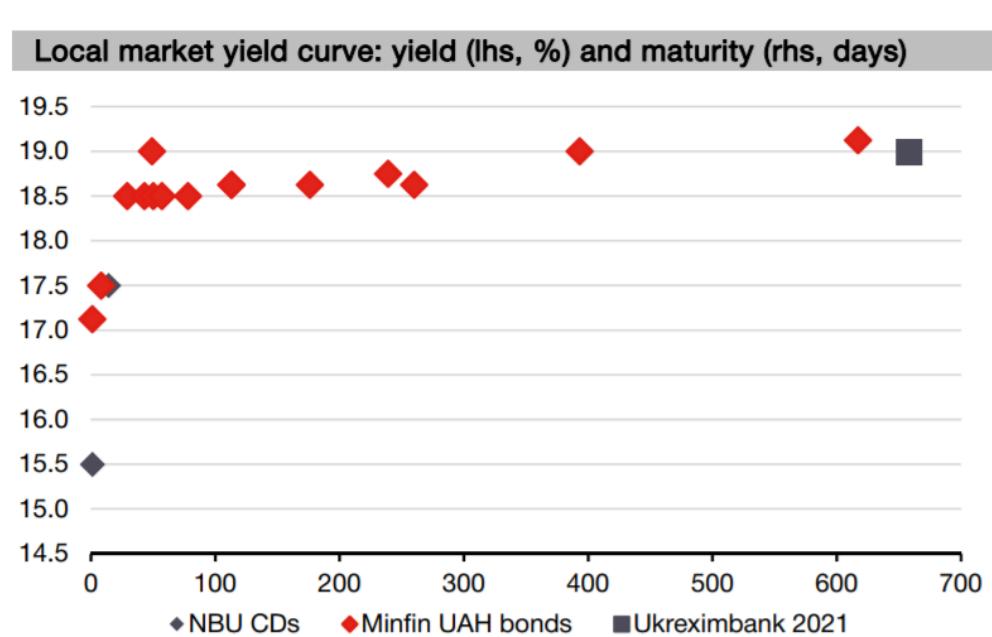
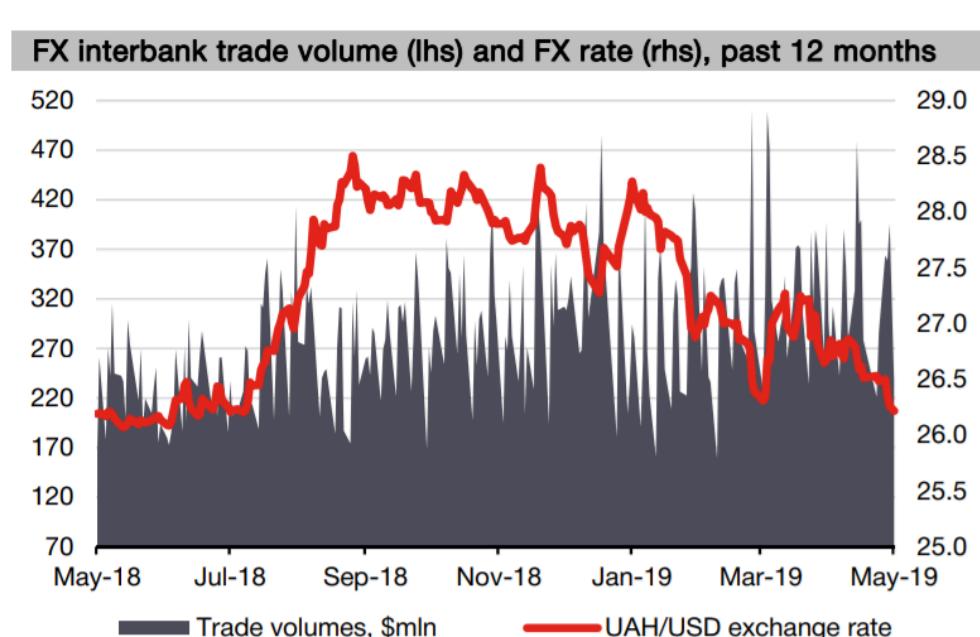
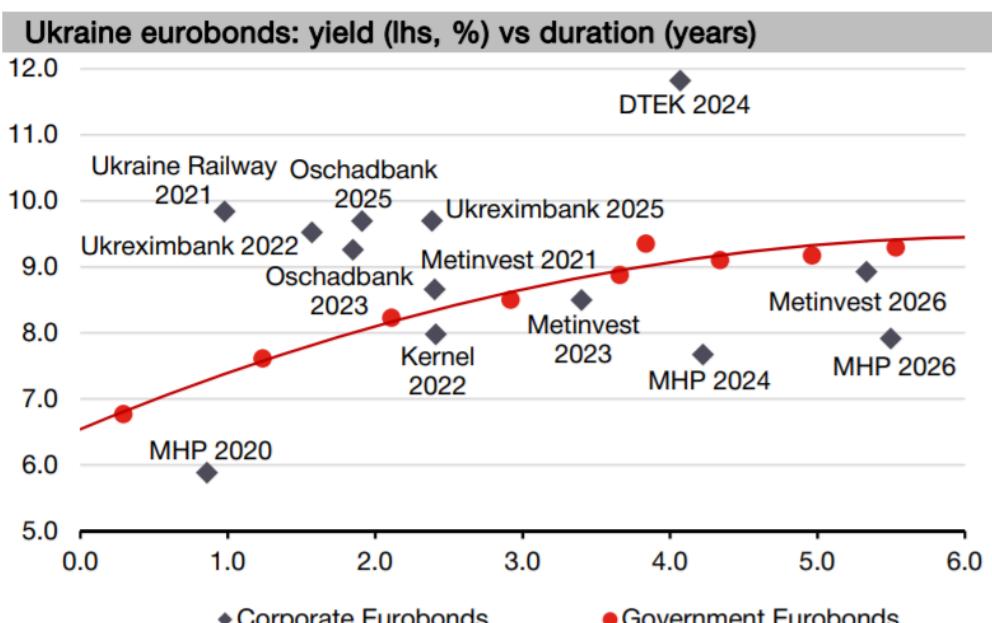
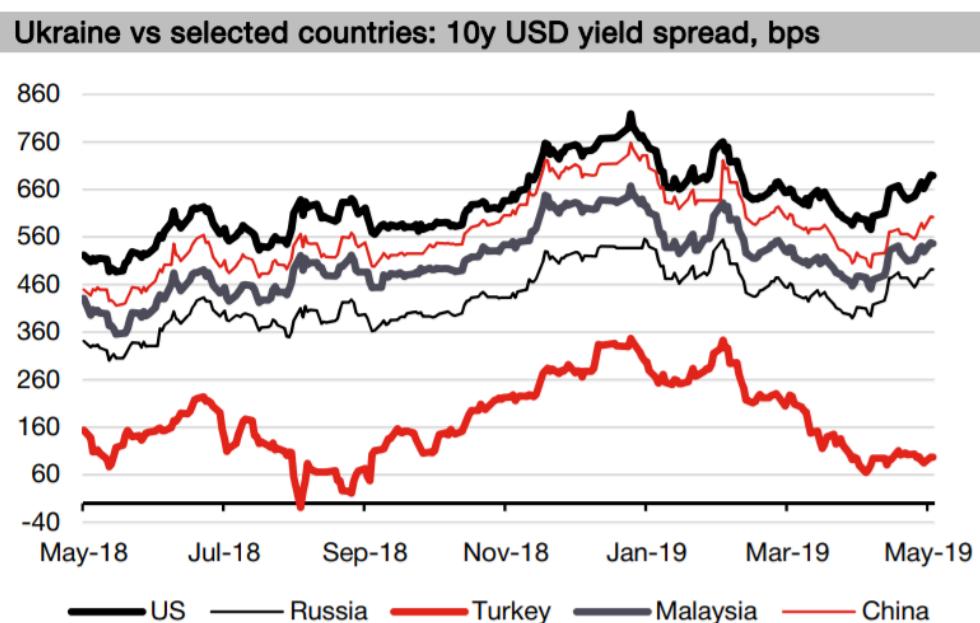


Source: BofA Merrill Lynch Global Research, Bloomberg

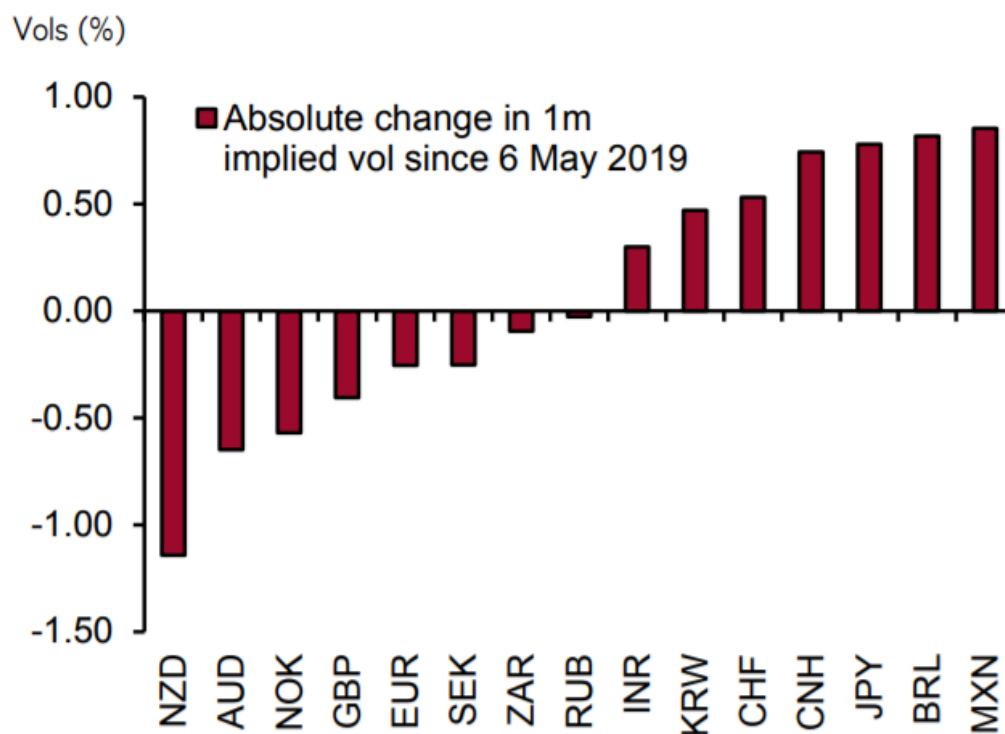
**Chart 5: IDR REER higher even as CAD worsened**



Source: BofA Merrill Lynch Global Research, Bloomberg



**Figure 10: The biggest vol shock so far has been in BRL and MXN**

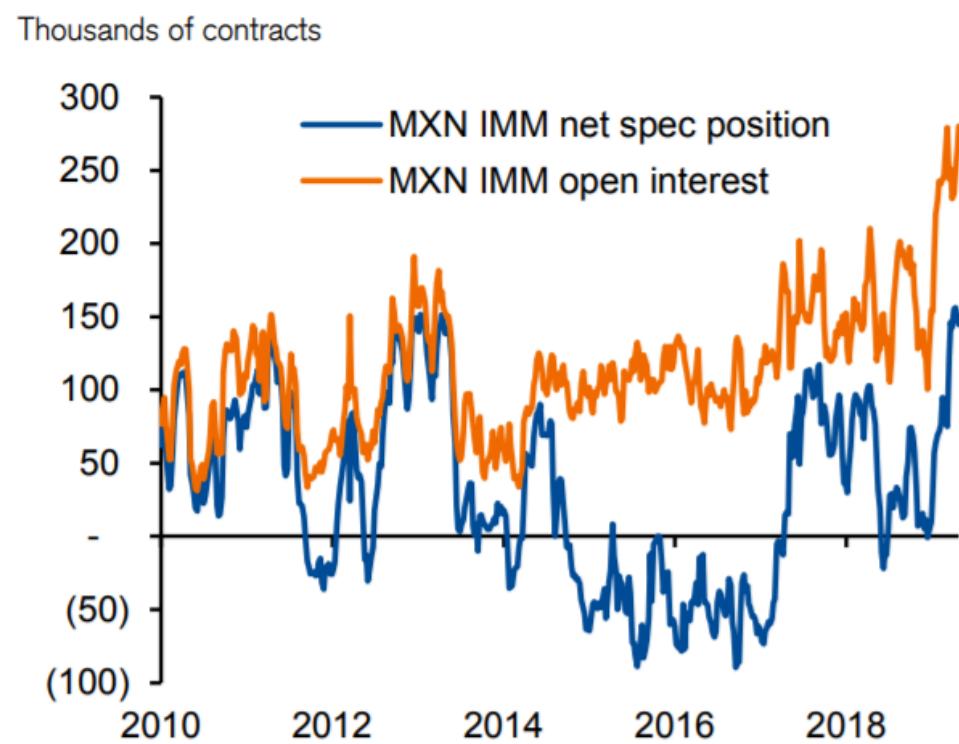


Source: Credit Suisse, the BLOOMBERG PROFESSIONAL™ service

### Myth two: Mexico is a net oil exporter

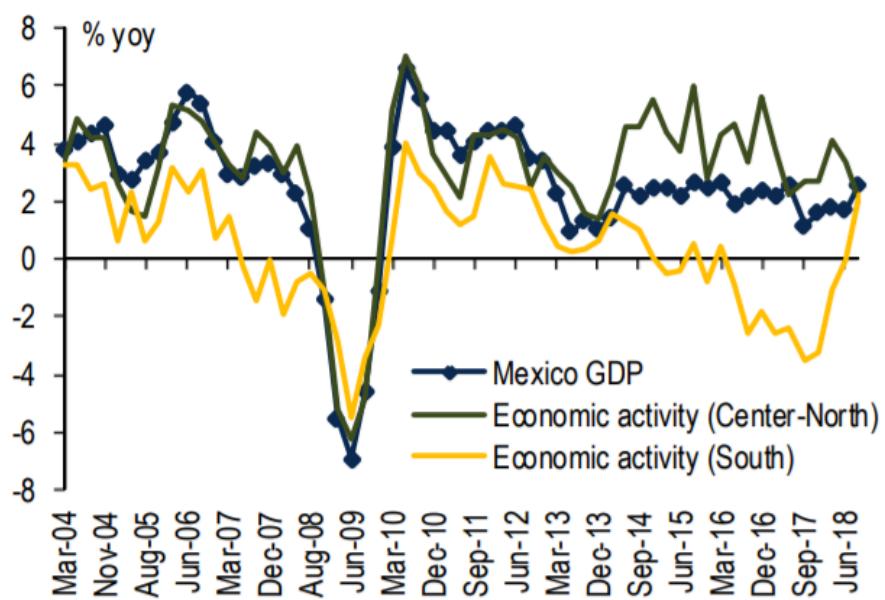
For many years, Mexico was a relatively large oil producer (globally), with a peak production of 3.4 million barrels per day in 2004. And for many years, Mexico had a large oil trade surplus, which it used to finance a large trade deficit in everything else. The energy sector for many years was a monopoly of the state, and the revenues from oil exports were also used to finance a large proportion of government expenditure, as oil revenues represented more than 40% of total revenues at their peak (2008). So, many

**Figure 11: Positioning in MXN has surged in 2019, might be vulnerable in risk off scenario**



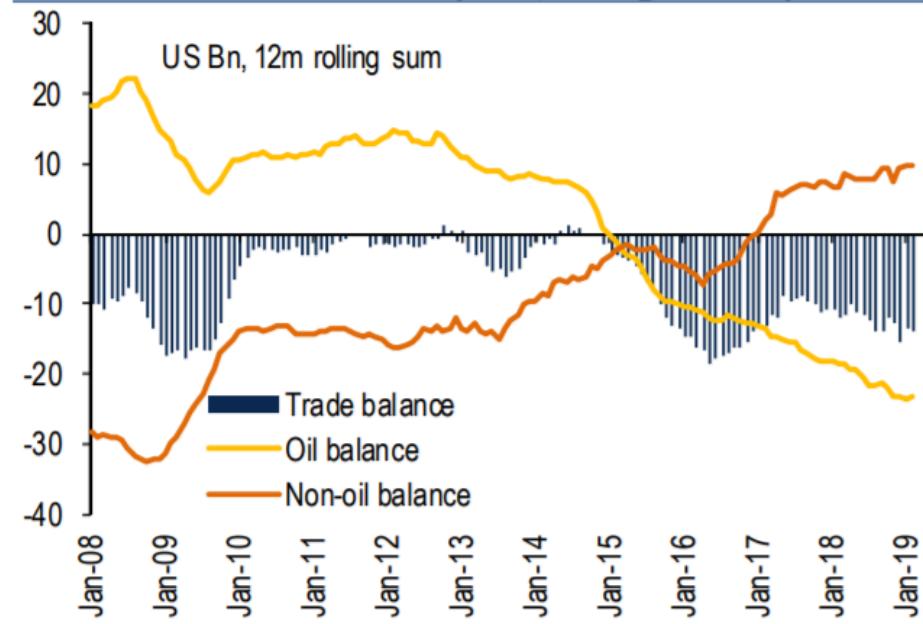
Source: Credit Suisse, the BLOOMBERG PROFESSIONAL™ service

### Chart 1: The two Mexicos: the south recently suffered a deep recession



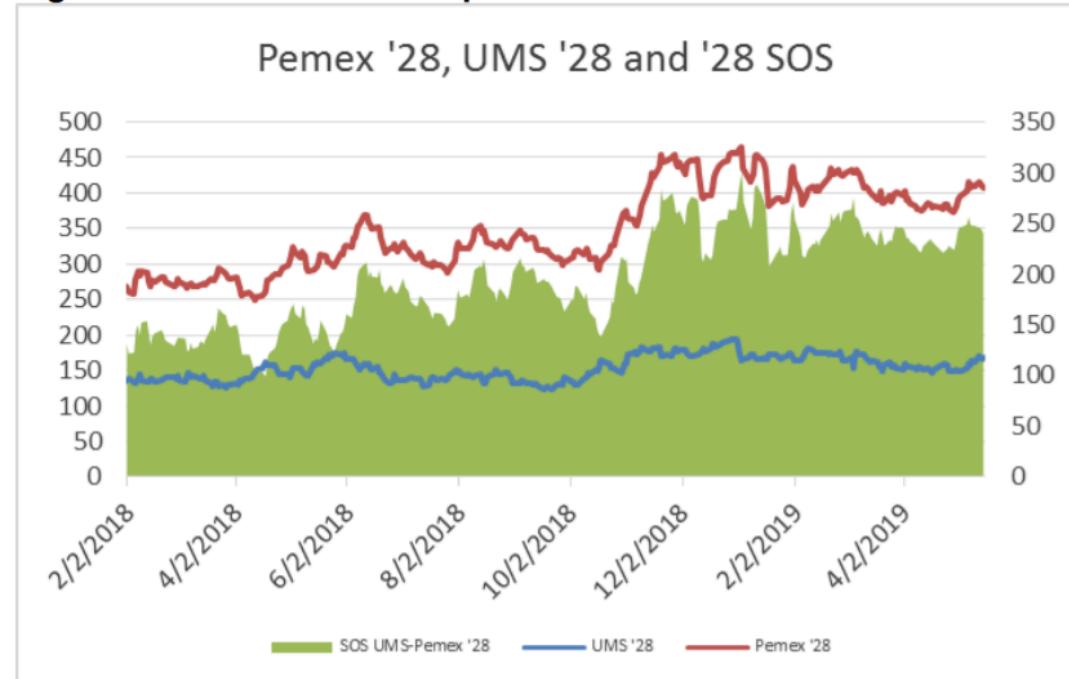
Source: BofA Merrill Lynch Global Research, Banxico, INEGI

### Chart 2: Mexico is now a net oil importer, due to gasoline imports



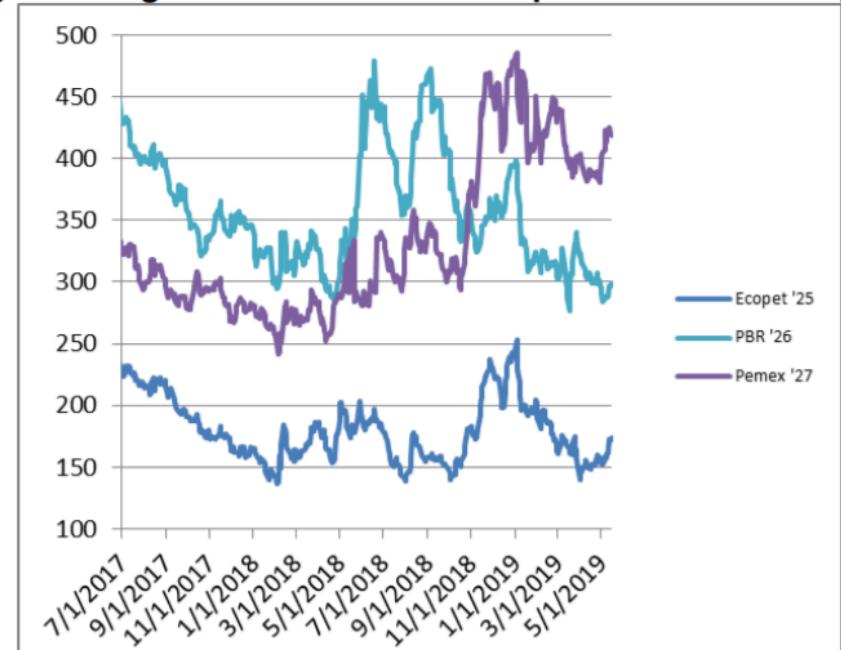
Source: BofA Merrill Lynch Global Research, INEGI

**Figure 3. Pemex '28 Still 40bp Inside SOS Wide**



Sources: Bloomberg and Santander.

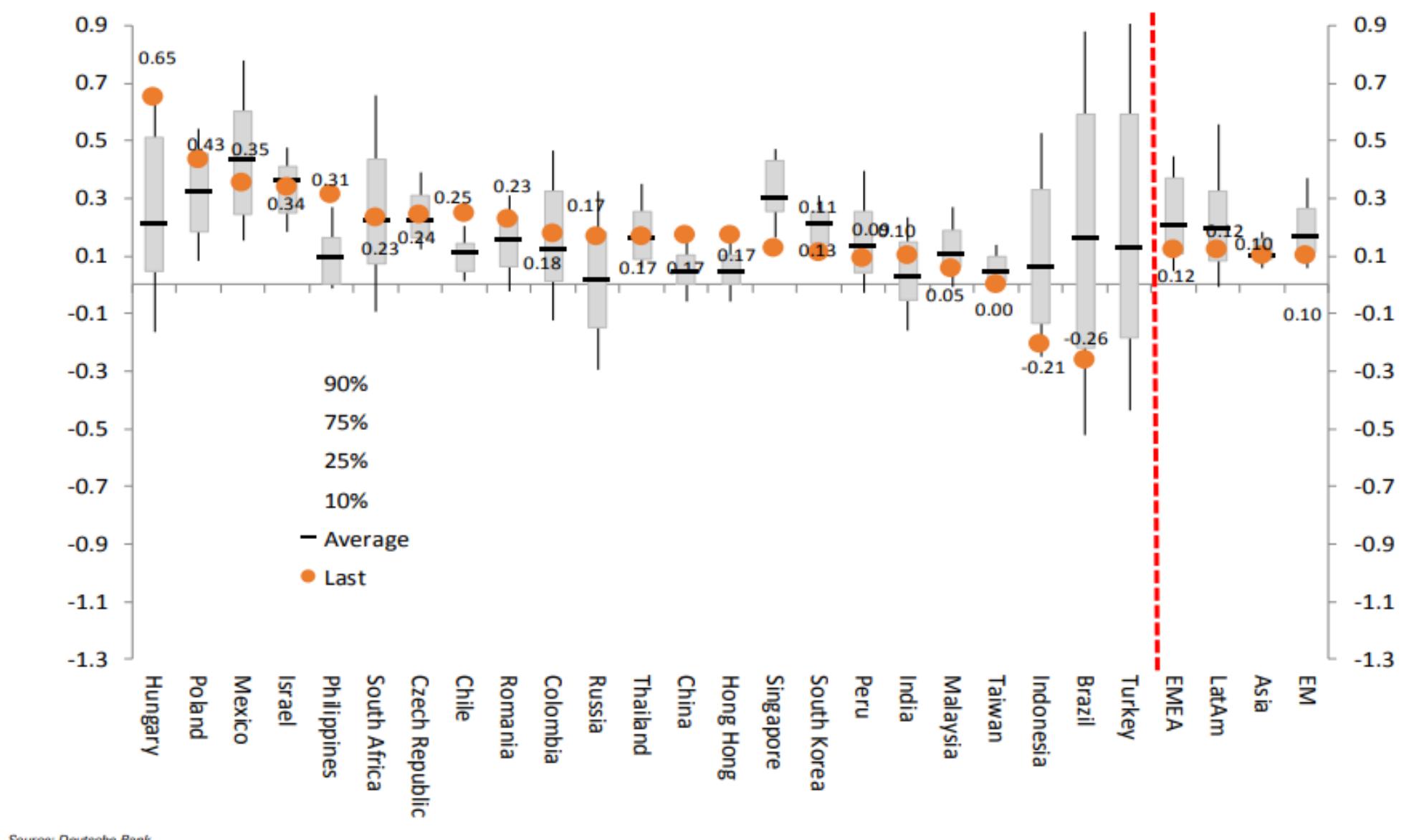
**Figure 4. Highest SOS & Absolute Spread of Peer Group**



Sources: Bloomberg and Santander.

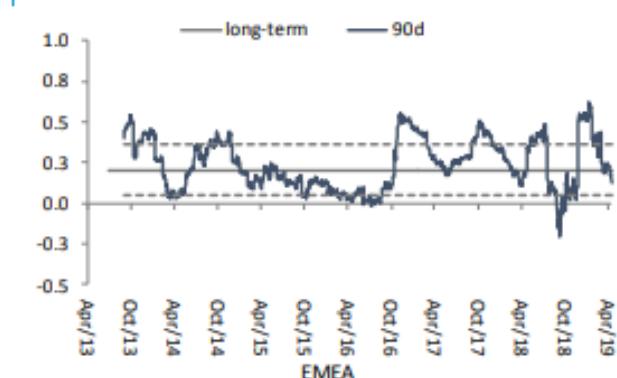
# External sensitivity: Betas in 10Y EM local bonds vs 10Y-US swaps

Betas in 10Y EM local bonds to US swaps over the last five and a half years (90d rolling daily changes)

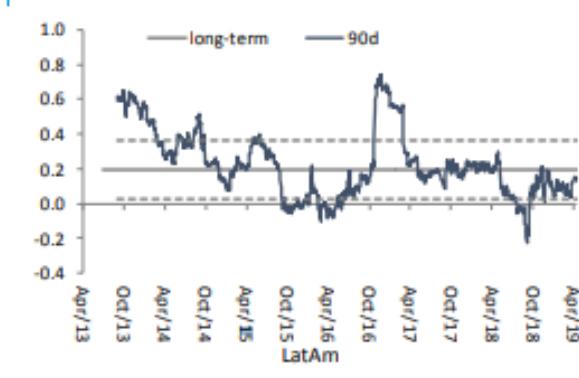


Source: Deutsche Bank

CEEMEA



LatAm



Asia

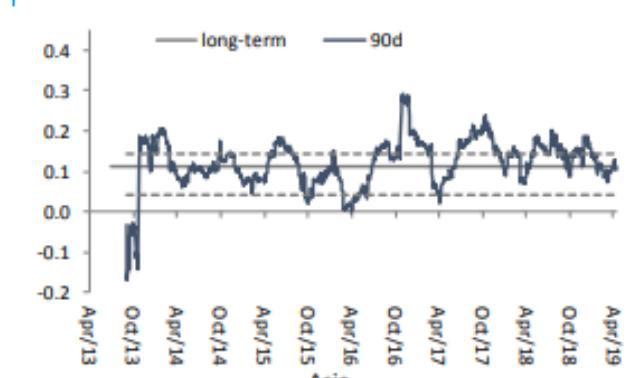
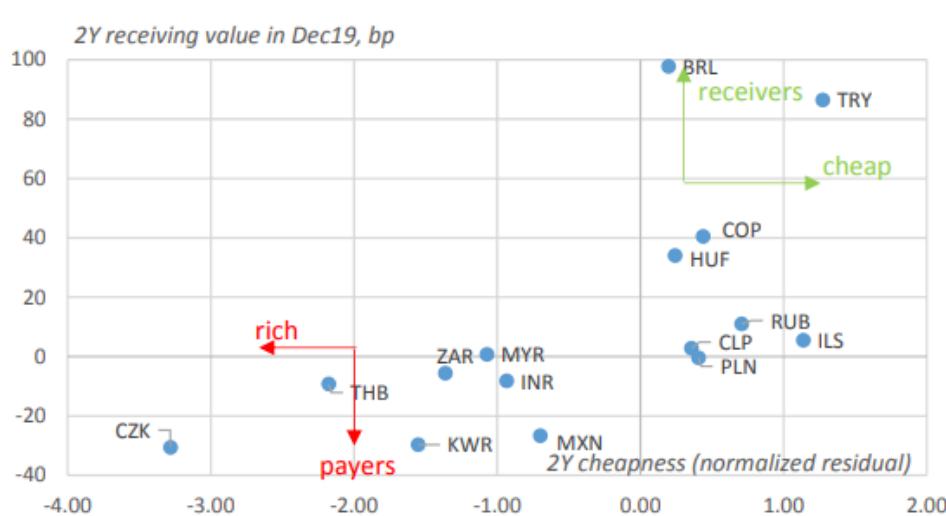
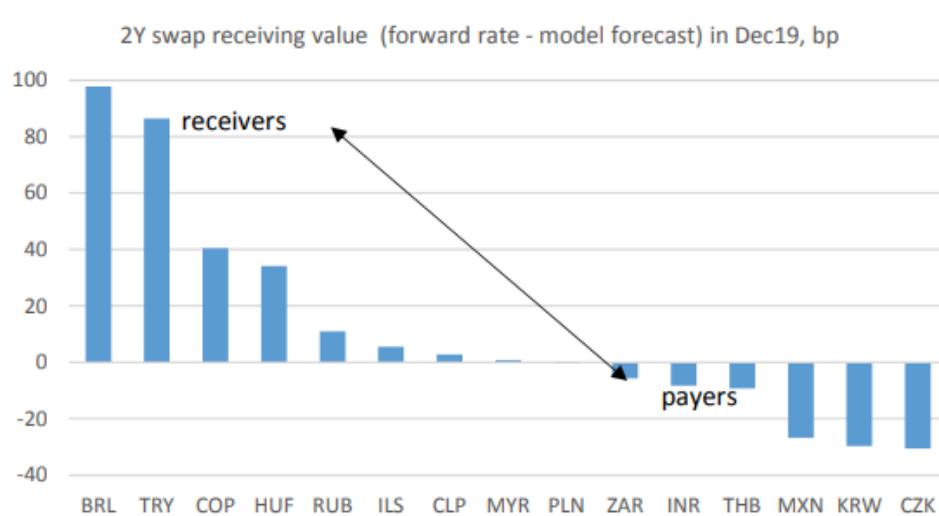


Figure 18: 2Y receiving value vs current valuation



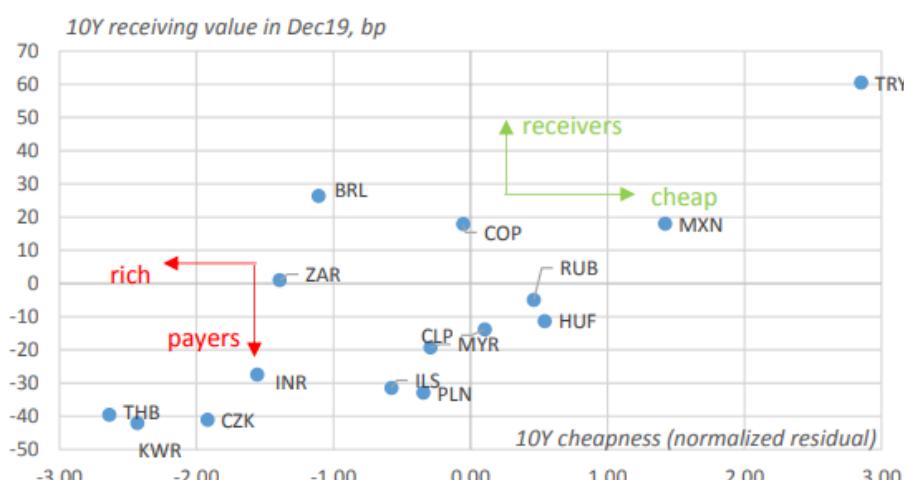
Source : Deutsche Bank, Bloomberg Finance LP

Figure 19: Where is value in 2Y at the year-end



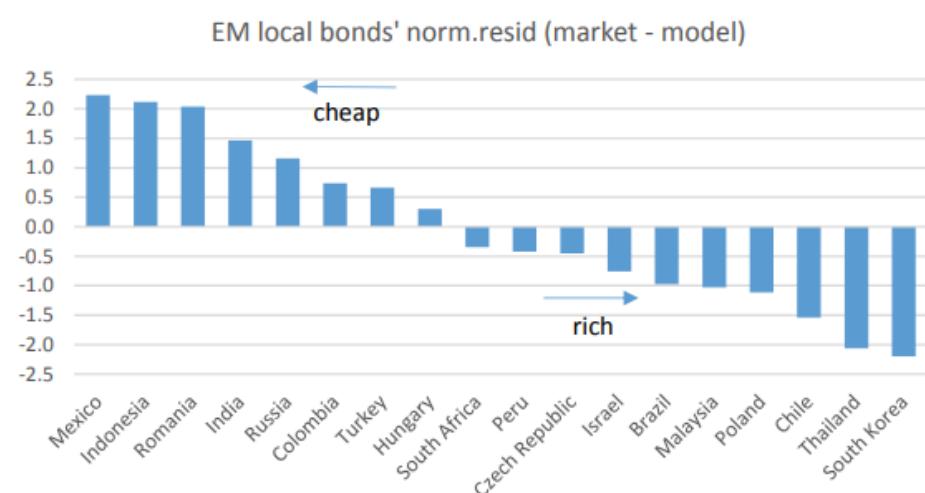
Source : Deutsche Bank, Bloomberg Finance LP

Figure 20: Current 10Y swap valuation and receiving value



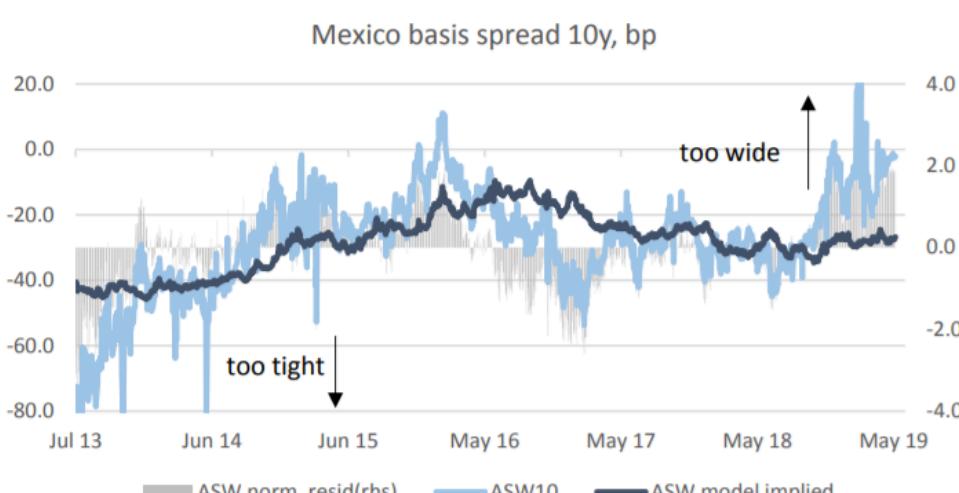
Source : Deutsche Bank, Bloomberg Finance LP

Figure 21: Assessing value in local bonds



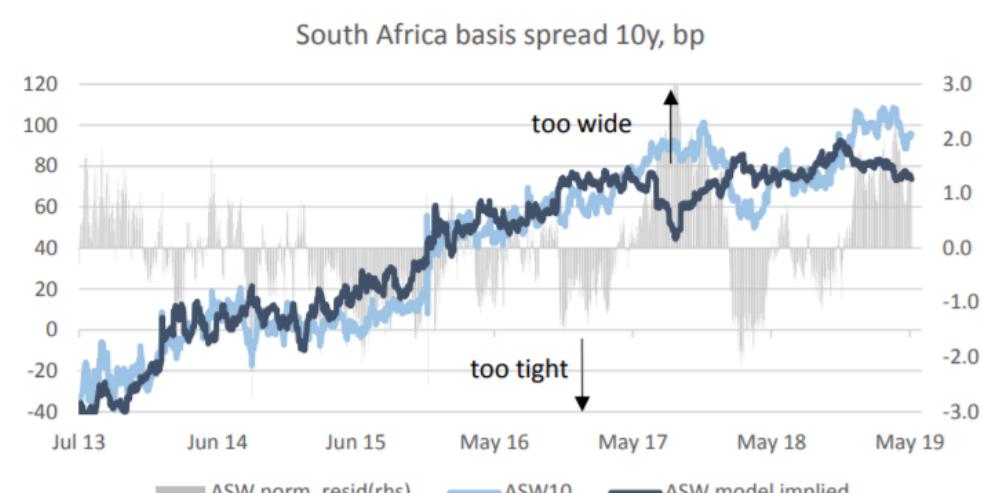
Source : Deutsche Bank, Bloomberg Finance LP

Figure 39: Mexico's 10Y basis spread is too wide compared to its drivers...



Source : Deutsche Bank, Bloomberg Finance LP

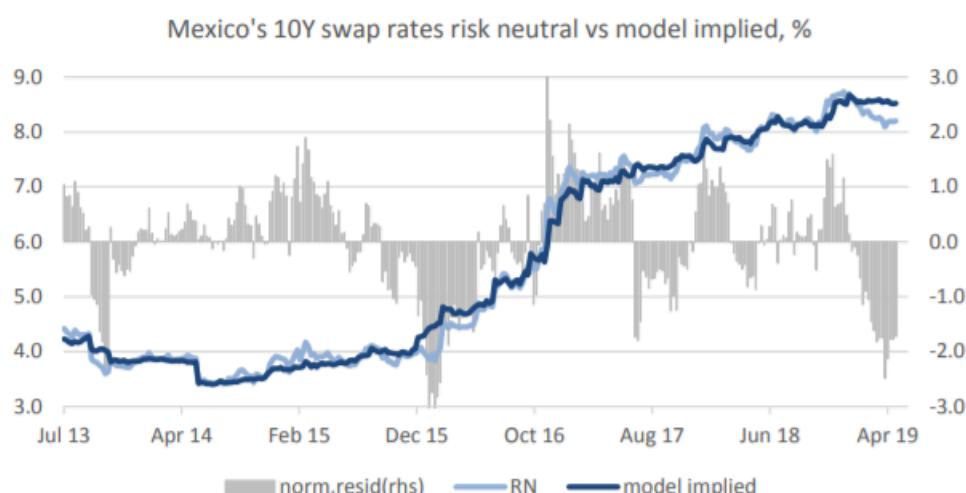
Figure 40: ... so is South Africa's



Source : Deutsche Bank, Bloomberg Finance LP

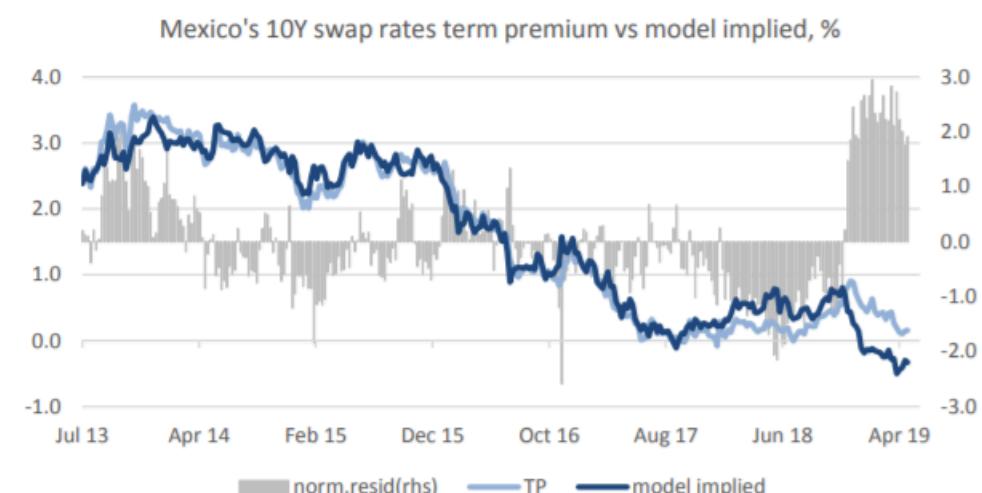
Interestingly, RN, which we can rationalize as neutral from the market's perspective, was declining from the end of last year to late March and has been picking up of late. This is in line with the market pricing implied by short-term forward rates, which has reacted to higher and persistent inflation. **MXN swaps' TP**, on the other hand, is driven by policy rate and UST 10Y. The former compresses TP, while the latter does the opposite. Currently, TP is 50bp too high compared to the model level implied by its drivers, despite its record-low levels of TP.

Figure 26: MXN swap RN looks lower than what is implied by its drivers...



Source : Deutsche Bank, Bloomberg Finance LP

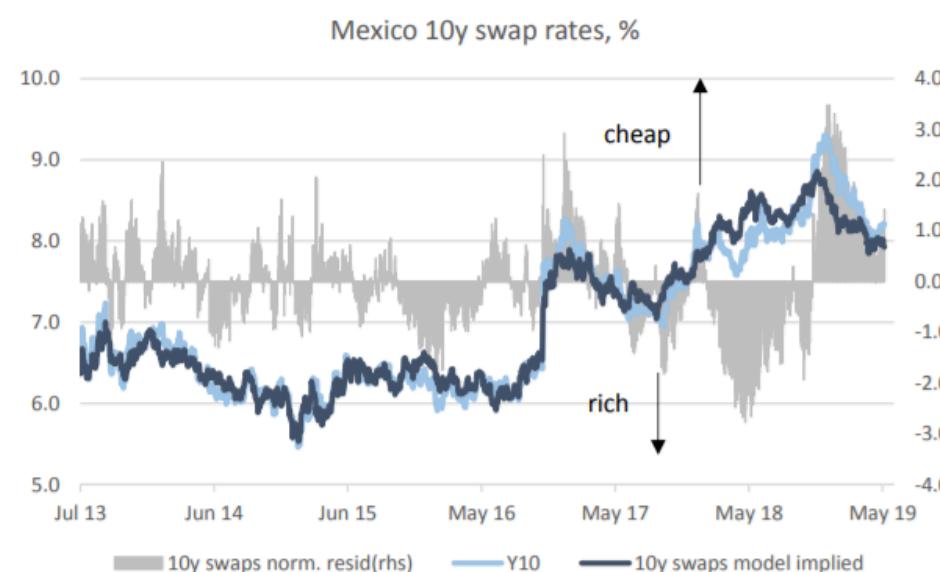
Figure 27: ... while its TP is too high compared to the underlying drivers



Source : Deutsche Bank, Bloomberg Finance LP

After determining what drives RN and TP respectively, we are now in a position to assess the effect on swap rates of the underlying drivers in a more direct manner. To this end, we regress the level of swap rates on the level of relevant drivers. We use daily data of swap rates at each tenor from 1Y to 10Y for the post taper-tantrum period<sup>2</sup>. In this sense, the fundamental valuation model for swap rates can be viewed as an extended Taylor rule augmented with various risk factors. In the model, policy rates anchor the level of the curve, while all other relevant macro and financial variables determine the shape of the curve. As implied by RN and TP, MXN 10Y swap rates are too high compared to their underlying drivers, due to the dislocation in TP outweighing that in RN, as the chart below shows. The table below summarizes the model specification of the fundamental valuation model for each country. As we can see, swaps move tightly with bonds for the same tenor, so the two assets are supposed to be driven by the same set of underlying drivers.

Figure 28: MXN 10Y swaps look cheap compared to model-implied levels



Source : Deutsche Bank, Bloomberg Finance LP

Figure 29: Drivers for swap rates

country	Yield drivers					
	short-end rates	inflation	FX	CDS	UST 10y	EUR swap 10y
Czech Republic	X	X				X
Hungary	X	X				X
Israel	X					X
Poland	X	X				X
Romania	X	X				X
Russia	X	X		X		
South Africa	X	X	X			X
Turkey	X	X	X	X		
Brazil	X	X		X		
Chile	X		X	X		X
Colombia	X	X		X		X
Mexico	X		X		X	
Peru		X	X	X		X
India	X	X				X
Indonesia	X			X		X
Malaysia	X	X	X	X		X
South Korea	X	X				X
Thailand	X	X				X

Source : Deutsche Bank, Bloomberg Finance LP

# A quantitative toolkit for analyzing EM swaps

In early April, we published [A quantitative toolkit for analyzing EM local bonds](#) to explain how we identify value across countries based on term-structure models of EM local bonds. In this report, we extend our quantitative framework to analyze EM swaps. While in the case of bonds we focus on the choice of duration, here we pay special attention to relative value across the curve.

**In the first section**, we assess value across tenors and across countries based on fundamental valuation models. The model provides two value metrics: current valuation and expected receiving value based on our forecasts. The former measures the cheapness/richness of swaps implied by underlying drivers, while the latter estimates expected receiving value at the end of the investment horizon. **In the second section**, we show an example to illustrate how the valuation model and carry & roll-down analysis help us pinpoint sweet spots. **In the third section**, we analyze basis spread based on the fundamental valuation model. **In the fourth section**, we identify relative value on swap curves based on Principle Component Analysis (PCA), as a supplement to the fundamental valuation model. **In the last section**, we quantify risks to EM swaps and conduct scenario analysis w.r.t. core rates.

---

## Fundamental valuation model: Assessing value on swap curves

- The fundamental valuation model helps identify the value on swap curves.
- The model provides two value metrics - current valuation and expected receiving value. The former measures cheapness/richness of swaps implied by underlying drivers, while the latter estimates expected receiving value at the end of the investment horizon.

### Background

In early April, in [A quantitative toolkit for analyzing EM local bonds](#), we highlighted that EM local yields tend to move in tandem with macro variables such as policy rates and inflation (expectation), as well as financial variables such as CDS, FX and core rates. To identify the underlying variables that drive yields of EM local bonds, we first decomposed yields into two components – risk neutral rates (RN) and term premium (TP). Then we searched for significant underlying drivers of each component. RN is defined by the average of the current and future expected short-term rates. Under the expectations hypothesis, RN is exactly the long-term rate observed in a risk-neutral world. Therefore it reflects the trade-off between growth and inflation. In a real world where investors tend to be risk-averse, however, investors will require more than what RN provides. That's where TP comes in. TP, the residual after excluding RN from market yields, captures all the risk factors derived from policy/inflation/fiscal uncertainties, market volatility and appetite for risk. It therefore reflects the premium required to compensate risk-averse investors.

Here we take **MXN 10Y swaps** to illustrate how we derive the fundamental valuation models for swaps from the driver models for RN and TP. **RN** is positively driven by policy rate and FX (which weighs on inflation and expectations). The current level of RN is 30bp lower than what is implied by the current level of policy rate and FX.

## Appendix A: Methodology of yield decomposition

We employ a regression-based method to estimate dynamic arbitrage-free term structure (DAFTS) models by following Antonio Diez de los Rios 2016 (ADR henceforth). Arbitrage-free conditions guarantee bonds with same risks (cross time and cross tenors) are exactly priced, which is the key to price term premium consistently. Log bond prices and yields are therefore linear in pricing factors that are extracted from observed yields.

The efficiency of the estimation is asymptotically equivalent to maximum likelihood estimation (MLE) widely used to estimate DAFTS models, which thus generates minimum information loss. Compared to MLE, the regression-based method is robust and easy to compute, and thus can be applied to a variety of term structures cross time and cross countries. In terms of model implementation and results, ADR is model is largely similar to NY Fed ACM term premium model. We replicated / applied both models to EM term structures and have maintained / updated EM term premium on a weekly basis based on ADR model.

### Algorithm:

**Step 1:** Extract the first 3 principal components from zero yields as state variables (pricing factors).

**Step 2:** Run cross-section regressions of yields on pricing factors (obtained in Step 1) to get expected short rates.

**Step 3:** Estimate state transition equations (vector auto-regression on the pricing factors ) to get relevant coefficients for use in Step 4.

**Step 4:** Derive risk-neutral rates (RN) on tenor n, which are defined by the average of current and expected future short rates.

**Step 5:** Calculate TP as the difference between yields and RN, on each tenor.

# EM Local Rates: Measuring premium

**Term premium (TP) has been an important component of value and cushion for EM rates over the years.** We have repeatedly highlighted TP's increasing importance as real rate differentials vs. the US have compressed - especially since taper tantrum. Our latest report on TP published **last November (when US yields hit a seven-year high)** discussed that **TP could serve as a cushion for duration during hiking cycles and also stressed the hefty cushion built between late '16 and late '18 due to rising TP, across a large set of EM curves.**

**Since early November, TP has significantly declined from historical highs to post-tantrum average levels across all the three regions, thus accounting for most of the recent repricing in EM local fixed income (LFI). The slowdown in growth across DM and some EM still seems poised to continue, judging by leading indicators. Accordingly, our DM strategists also see room for further flattening and contained inflation expectations, and we also believe that there is room for additional TP compression. But the cushion has shrunk.**

**The already compressed TP, combined with the real rate differentials between EM vs DM hovering near historical lows, suggests reduced upside for EM LFI (FX hedged).** However, it is important to stress that EM LFI is one of the most idiosyncratic asset classes within EM. Select higher yielders still offer value - if anything - because of still benign inflation outlooks and still high risk-neutral rates and/or TP. That said, investors do need to be more selective.

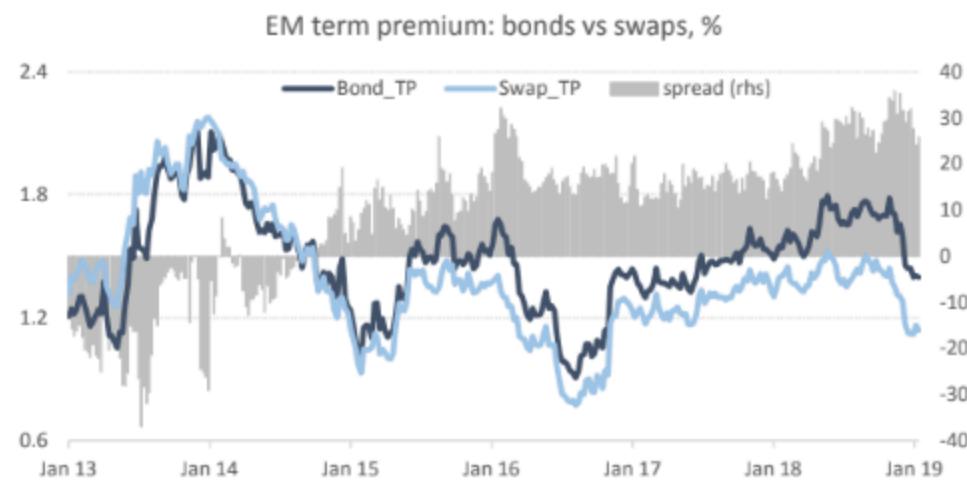
**In this report,** we provide a brief description of our methodology and reassess TP valuation. In particular, we analyze the recent development in TP/RN, study TP's underlying drivers, examine the remaining cushion for policy normalization, identify dislocations in basis of bond TP vs swap TP, and provide overall strategy implications at the end.

## A tale of two premia - bonds vs swaps

We now compare bond vs swap TPs to identify basis dislocations. In our earlier [report](#), we decomposed the swap curves into RN and TP using the same methodology. Putting those two together, we find - as expected - a high degree of co-movement across bond TP and swap TP. Both curves follow common variables such as monetary policy, inflation (and/or expectations) and core rates. However, dislocations do exist and they stem from differences in liquidity, client segmentation across cash and derivatives, positioning, supply-demand, and credit risks (sovereign risks for cash and counterparty risks for OTC-traded derivatives).

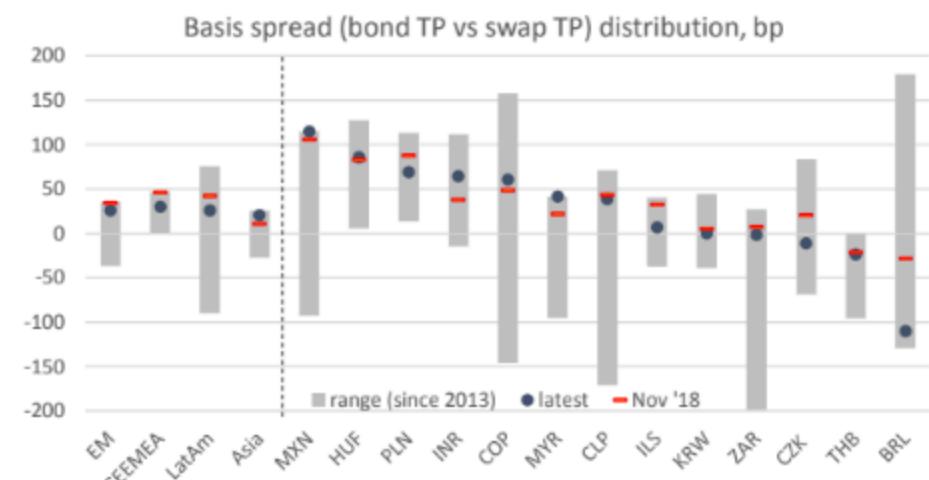
**Cash vs Swaps:** Since discrepancies in bond vs swap TP can be persistent, we focus on dislocations instead. We measure value according to normalized residuals of the regressions of bond TP on swap TP. The table below summarizes the dislocations between the two TPs (and the ranking), and their percentiles. The model implies bond TP is too high compared to swap TP in **Mexico, Malaysia, and Thailand**, while the opposite holds true for **Brazil**.

Figure 35: Bond TP moves in tandem with swap TP, with discrepancy though



Source: Deutsche Bank, Bloomberg Finance LP.

Figure 36: ASW spread is at historical highs in Mexico and Malaysia, while the opposite holds true for Brazil



Source: Deutsche Bank, Bloomberg Finance LP.

(the preceding page was from 2/19, the everything else both before and after is current but I included it just to detail methodology, disregard the chart)

Figure 30: 2Y swap table

country	combined ranking	2y swap valuation model						end '19		
		market level	model implied	spread, bp	norm. residual	valuation ranking	model forecast	forward	receiving value, bp	rec.value ranking
Czech Republic	15	2.23	2.58	-35	-3.3	15	2.48	2.17	-31	15
Hungary	6	0.79	0.74	5	0.2	7	0.91	1.25	34	4
Israel	3	0.58	0.48	10	1.1	2	0.75	0.81	6	6
Poland	8	1.92	1.87	4	0.4	5	2.08	2.08	0	9
Russia*	3	7.37	6.87	50	0.7	3	6.93	7.04	11	5
South Africa	11	7.14	7.43	-30	-1.4	12	7.29	7.23	-6	10
Turkey*	1	26.47	24.99	148	1.3	1	23.33	24.19	87	2
Brazil	5	7.31	7.20	11	0.2	8	7.14	8.11	98	1
Chile	7	3.21	3.11	10	0.4	6	3.31	3.34	3	7
Colombia	2	4.59	4.47	11	0.4	4	4.57	4.97	40	3
Mexico	11	8.11	8.25	-14	-0.7	9	8.16	7.89	-27	13
India	10	5.90	6.09	-20	-0.9	10	5.94	5.86	-8	11
Malaysia	9	3.49	3.60	-11	-1.1	11	3.43	3.44	1	8
South Korea	14	1.72	1.92	-20	-1.6	13	1.97	1.67	-30	14
Thailand	13	1.78	1.96	-19	-2.2	14	1.92	1.83	-9	12
<b>EM</b>		<b>5.50</b>	<b>5.44</b>	<b>7</b>	<b>-0.4</b>		<b>5.35</b>	<b>5.46</b>	<b>11</b>	
CEEMEA		6.64	6.42	22	-0.1		6.25	6.40	14	
LatAm		5.80	5.76	5	0.1		5.79	6.08	29	
Asia		3.22	3.39	-18	-1.4		3.32	3.20	-12	

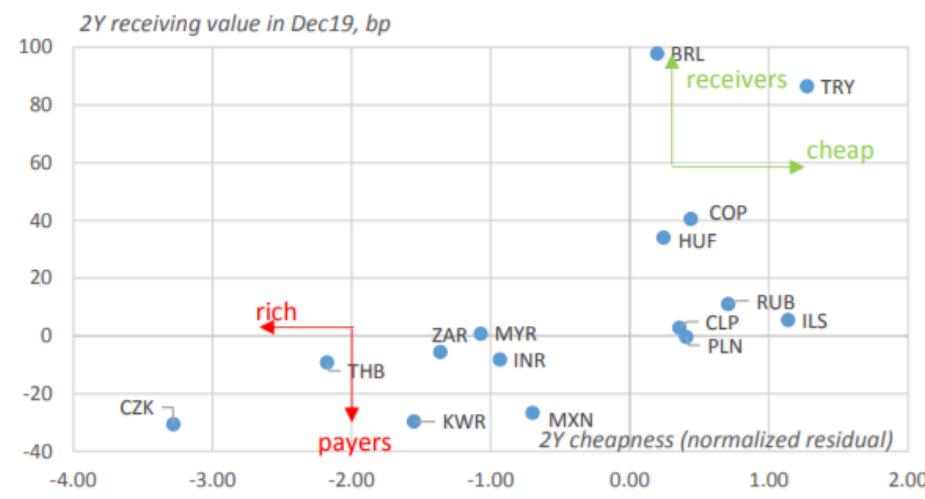
Source : Deutsche Bank, Bloomberg Finance LP. Note: We use XCCY swaps for Russia and Turkey.

Figure 31: 10Y swap table

country	combined ranking	10y swap valuation model						end '19		
		market level	model implied	spread, bp	norm. residual	valuation ranking	model forecast	forward	receiving value, bp	rec.value ranking
Czech Republic	13	2.02	2.28	-27	-1.9	13	2.42	2.01	-41	14
Hungary	3	2.42	2.28	14	0.5	3	2.77	2.66	-11	7
Israel	10	1.84	1.92	-8	-0.6	9	2.34	2.03	-31	11
Poland	10	2.60	2.67	-7	-0.3	8	3.03	2.70	-33	12
Russia*	3	6.79	6.53	26	0.5	4	6.60	6.56	-5	6
South Africa	8	8.05	8.36	-31	-1.4	11	8.19	8.20	1	5
Turkey*	1	20.11	18.12	199	2.9	1	18.13	18.73	61	1
Brazil	6	8.88	9.58	-70	-1.1	10	8.95	9.21	26	2
Chile	7	3.99	3.96	3	0.1	5	4.21	4.07	-14	8
Colombia	3	5.99	6.01	-2	-0.1	6	6.03	6.20	18	4
Mexico	2	8.21	7.92	29	1.4	2	8.06	8.24	18	3
India	12	6.08	6.42	-34	-1.6	12	6.27	5.99	-27	10
Malaysia	8	3.79	3.76	2	-0.3	7	3.90	3.70	-19	9
South Korea	15	1.70	2.27	-57	-2.4	14	2.13	1.71	-42	15
Thailand	14	2.18	2.96	-78	-2.6	15	2.63	2.23	-40	13
<b>EM</b>		<b>5.64</b>	<b>5.67</b>	<b>-3</b>	<b>-0.5</b>		<b>5.71</b>	<b>5.62</b>	<b>-9</b>	
CEEMEA		6.26	6.02	24	-0.1		6.21	6.13	-9	
LatAm		6.77	6.87	-10	0.1		6.81	6.93	12	
Asia		3.44	3.85	-42	-1.7		3.73	3.41	-32	

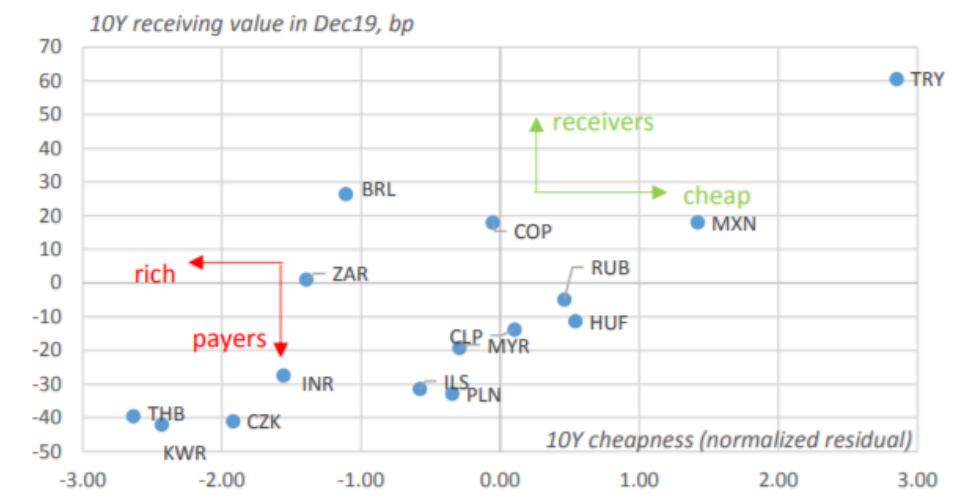
Source : Deutsche Bank, Bloomberg Finance LP

Figure 32: 2Y swaps - current valuation vs receiving value at the year-end



Source : Deutsche Bank, Bloomberg Finance LP

Figure 33: 10Y swaps - current valuation vs receiving value at the year-end



Source : Deutsche Bank, Bloomberg Finance LP

## Valuation heat map

[Figure 34](#) illustrates the current valuation across tenors and across countries. For example, Turkey is particularly cheap in the belly to the long end. In contrast, the Czech Republic is extremely rich across tenors (more so in the short end to belly), while South Korea and Thailand are particularly rich in the belly to the long end. South Africa is significantly rich in the belly, while Mexico is noticeably rich in the short end and significantly cheap in the long end.

Figure 34: Valuation heat map - the greener, the cheaper

Country	Cheapness (green) / richness (red) of swap curves across EM countries: measured by normalized residuals									
	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Czech Republic	-3.2	-3.3	-3.0	-2.8	-2.6	-2.4	-2.3	-2.2	-2.1	-1.9
Hungary	0.6	0.2	0.5	0.7	0.7	0.8	0.8	0.7	0.7	0.5
Israel	1.4	1.1	0.9	0.6	0.4	0.1	-0.2	-0.4	-0.5	-0.6
Poland	0.2	0.4	0.2	0.1	0.0	0.0	-0.1	-0.2	-0.2	-0.3
Russia*	0.8	0.7	0.7	0.8	0.6	0.6	0.5	0.6	0.6	0.5
South Africa	-1.1	-1.4	-1.5	-1.5	-1.6	-1.5	-1.5	-1.5	-1.4	-1.4
Turkey*	1.3	1.3	1.3	1.5	1.6	1.9	2.2	2.4	2.7	2.9
Brazil	0.7	0.2	-0.4	-0.7	-0.9	-	-1.1	-	-	-
Chile	0.4	0.4	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1
Colombia	0.5	0.4	0.5	0.6	0.5	0.4	0.2	0.1	0.1	-0.1
Mexico	-1.3	-0.7	-0.2	0.1	0.4	-	0.9	-	-	1.4
India	-0.5	-0.9	-1.3	-1.5	-1.6	-	-1.6	-	-	-1.6
Malaysia	-1.3	-1.1	-0.9	-0.9	-0.7	-	-0.5	-	-	-0.3
South Korea	-0.9	-1.6	-1.8	-2.0	-2.1	-2.2	-2.3	-2.3	-2.4	-2.4
Thailand	-1.0	-2.2	-2.4	-2.6	-2.6	-	-2.7	-	-	-2.6

Source : Deutsche Bank, Bloomberg Finance LP

## Current valuation vs expected receiving value

We now introduce the two value metrics: current valuation and expected receiving value (at the end of the investment horizon; here we focus on the year end). Current valuation assesses the current richness/cheapness of swap rates implied by underlying drivers, while expected receiving incorporates macro forecasts over the investment horizon.

**Current valuation:** Based on the valuation model, we obtain the model implied yields (or the "fair" yields). **We measure the current dislocation in yields by the normalized residuals between the market level and the model implied one.** So a positive normalized residual implies that the market level of yields is higher than the "fair" level, and thus the corresponding swaps look cheap compared to what is implied by underlying drivers.

**Expected receiving value** - We forecast yields at the end of the holding period (please see [here](#) for the detailed methodology on how to forecast yields based on the valuation models), based on the model structure and the forecast values of underlying drivers made by our economists and the European/US Strategy team (for core rates) at year-end. We define the (expected) receiving value at the year-end by the difference between the forward rates vs the model forecast rates. In this regard, receiving value consists of two components: the expected yield change to model estimate and carry plus rolldown.

## The full results of swap valuation model: How to read the table

The swap table consists of three panels: 1) The current valuation (ranking based on the dislocation vs the fair value), 2) Year-end forecast rankings based on the receiving value and 3) Combined ranking (average of the two sub-rankings; please see [here](#) for the discussion of the weighting on the two sub-rankings).

### The “Current” panel:

- **market level:** the current market yield level of swaps
- **model implied:** the fair level of yields implied by the underlying drivers
- **spread, bp:** the difference between market level vs model implied level
- **norm. resid:** normalized residuals to measure the current dislocation. The larger the number, the cheaper the bonds
- **valuation ranking:** based on the current dislocation (normalized residuals)

### The “End-19” panel:

- **model forecast:** forecast yields based on the model structure and forecasts for key drivers
- **forward:** market forward rates at the year end
- **receiving value, bp:** the difference between forward and model forecast
- **rec.value ranking:** based on the receiving value at the year end

### **Summary of results:**

[Figure 30](#) and [Figure 31](#) summarizes the results for 2Y and 10Y swaps respectively. **For 2Y**, the model implies swaps in Turkey, Israel, Russia and Colombia are cheap in terms of normalized residuals, while Czech Republic, South Korea, Thailand and South Africa are particularly rich. At the year end, the model sees much receiving value in Brazil, Turkey, Colombia and Hungary, while suggests payers in Czech Republic, South Korea and Mexico.

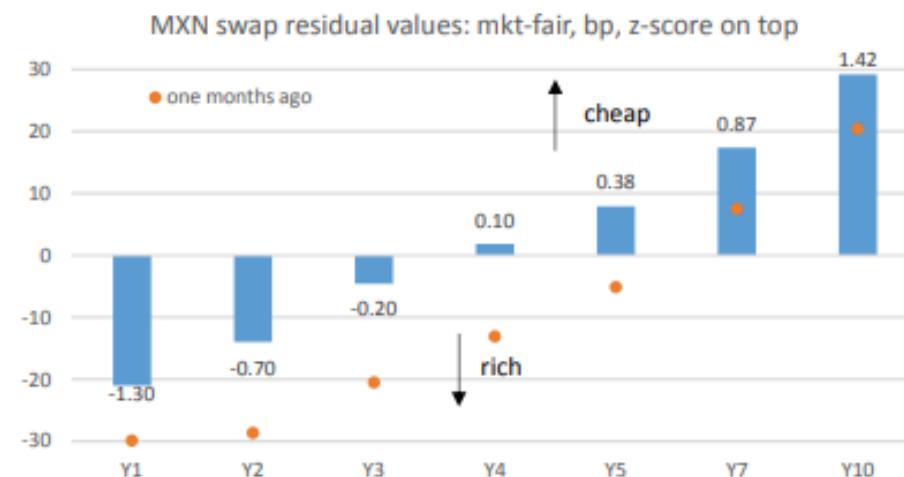
**For 10Y**, swaps in Turkey, Mexico, Hungary are cheap, while Thailand, South Korea and Czech Republic are significantly rich. At the year end, the model implies receivers in Turkey, Brazil, Mexico and Colombia, while payers in South Korea, Thailand, Czech Republic, Poland and Israel.

## A simple example: Finding sweet spots based on valuation model and carry plus rolldown

We use the MXN curve again to illustrate how we pin down the specific swap trades by optimizing carry & rolldown across neighboring tenors.

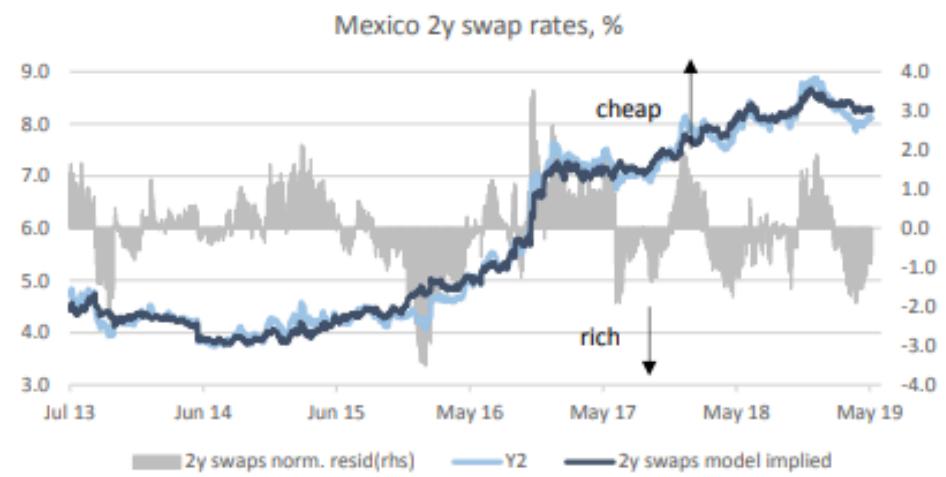
On valuation across all tenors, as the chart below (left) shows, the longer the tenors, the cheaper the swap rates, compared to underlying drivers (policy rates, FX and UST 10Y). [Figure 28](#) and [Figure 36](#) demonstrate MXN 10Y looks cheap while 2Y looks rich, which makes 2s10s noticeably steep compared to what the drivers imply (~ 2.2std.dev, or ~40bp). Based on the forecasts given by our economists and DM rates strategists, the valuation model expects the year-end 2s10s to be -10bp, vs the market pricing (forward rates) of 35bp, which implies 45bp of value on flattener.

Figure 35: The short end remains significantly richer than the long end



Source : Deutsche Bank, Bloomberg Finance LP

Figure 36: MXN 2Y swaps look rich relative to underlying drivers



Source : Deutsche Bank, Bloomberg Finance LP

As mentioned above, the value consists of two components: carry & rolldown and the expected yield change (capital gain). The former is the static value (curve unchanged), while the later is the dynamic value if the curve actually moves to fair estimate - and, implicitly, our forecasts.

The next question is: how to position the flattener? We pinpoint the trade by optimizing carry & rolldown and also taking liquidity/executability into account. Among all the implementable flatteners, 2s10s provides among the largest carry & rolldown (13bp over 3 month) as well as among the highest vol-adjusted carry & rolldown<sup>3</sup>. As a result, the flattening view is best positioned in 2s10s. Please see [here](#) (page 8-10) for detailed discussion on Mexico's swap rates.

## Basis spread model: Cash or swaps?

We have fundamental valuation models for both bonds and swaps, which share the same model structure within each country. We can then regress the basis spread (bond yields – swap rates) on the same drivers. After being purged from relevant macro/financial variables, the residuals capture all the technical factors which are supposed to be fast-moving and mean-reverting. The table below summarizes the current level and the 6-year percentile of the basis, one-week and one-month change in the spread, the model implied level of the spread, and the dislocation.

We rank the basis spread based on the percentile and the dislocation. The larger the positive normalized residuals, the wider the basis spread (bond-swap) implied by the underlying drivers and thus the cheaper bonds look than swaps. The table shows the basis spread is currently at the upper-end of the distribution over the past 6 years in most countries, and the spread looks too wide compared to the model implied. So the distribution is asymmetric and is skewed to the point where bonds look cheap compared to swaps across the board. This asymmetry can also be seen in the spread between bond and swap TP as [Figure 37](#) shows. The model suggests the basis spread in India, Mexico and South Africa is too wide.

[Figure 37: Bond TP has increasingly outweighed swap TP over the past three years](#)



Source : Deutsche Bank, Bloomberg Finance LP

[Figure 38: Basis spread table](#)

10Y basis spread (bond yield - swap yield) model										
country	overall ranking	level, bp	6Y percentile	1wk chg, bp	1 mo chg, bp	percentile ranking	model implied, bp	spread, bp	norm. resid	dislocation ranking
Czech Republic	8	-9	63%	2	-13	9	0	-8	1.1	5
Hunagry	9	67	68%	-2	-4	7	72	-5	-0.3	10
Israel	13	9	44%	3	-9	12	14	-4	-0.6	12
Poland	14	28	43%	-5	-16	13	57	-29	-2.2	15
Russia*	7	143	71%	1	-16	6	99	44	1.1	7
South Africa	3	96	94%	2	-4	4	73	22	1.5	3
Turkey*	15	-32	13%	4	-75	15	104	-136	-2.1	14
Brazil	10	0	57%	1	1	11	4	-4	-0.3	11
Chile	11	11	62%	-2	-13	10	38	-26	-1.9	13
Colombia	6	69	64%	-4	1	8	53	16	1.1	4
Mexico	2	-2	97%	-1	0	2	-27	25	1.8	2
India	1	133	98%	10	-17	1	55	79	2.3	1
Malaysia	4	7	96%	3	-2	3	9	-1	-0.1	8
South Korea	11	19	41%	0	-2	14	20	-1	-0.2	9
Thailand	4	28	88%	1	-12	5	11	17	1.1	6

Source : Deutsche Bank, Bloomberg Finance LP

## PCA model: A "macro-free" alternative to identifying relative value across swap curves

For swaps, fundamental valuation plus carry & rolldown analysis is our workhorse model, on top of macro views on key variables such as monetary policy and inflation. In addition, we have developed a statistical (free of macro assumptions) and high-frequency method to identify relative value on swap curves. We decompose swap curves into three factors - level, slope and curvature - based on Principle Component Analysis (PCA). The first three PCs correspond to the three factors above respectively. Usually, policy rate and inflation determine the level factor, while inflation, FX, core rates and/or CDS together determine the slope.

PC3, the curvature factor, is hardly driven by macro or financial variables, and thus is relatively fast-moving, mean-reverting and closer to "well-behaved" residuals. In this sense, PC3, or the residual purged from PC1 and PC2, is largely statistically driven and thus is suitable to serve as signals for RV on the curve. The wider the residuals (or normalized residuals) are, the more likely they are going to mean-revert and thus the more likely RV strategies could work.

The charts below show PCA decomposition for Mexico's swap curves. PC1 is still hovering around historical highs, which won't necessarily go down because PC1 is largely driven by policy rates / inflation. PC2 is at the historical average level, while PC3 has reached extremely high levels, which implies potential RV opportunities.

Figure 41: Mexico's curvature factor approaches historical highs

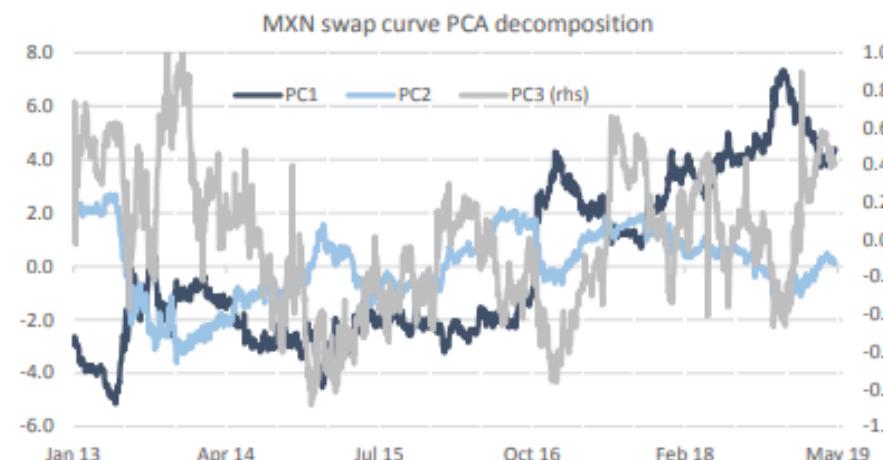
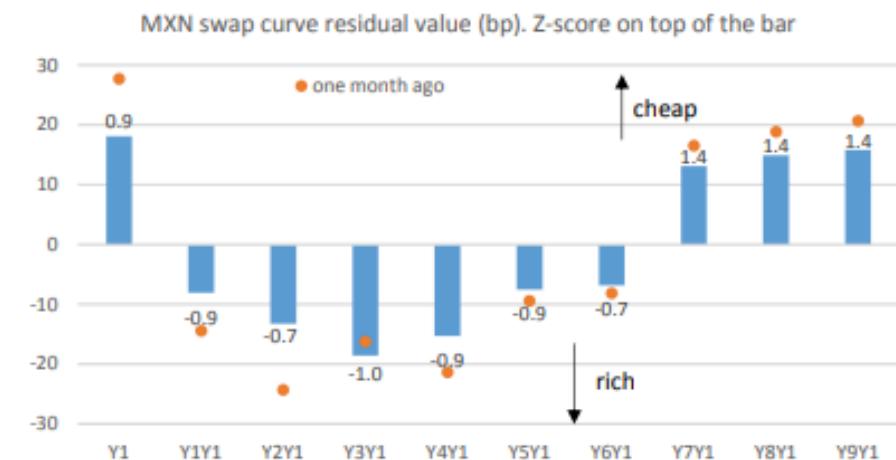


Figure 42: Mexico's belly is too rich relative to very short ends and long ends



Next, we examine the residual value purged from the level and slope factors, since curvature may also have a directional component. To this end, we regress the level of yields at each tenor on PC1 and PC2, and get the latest residual at each tenor. Here we use daily data since 2013. To magnify the shape of the curve and thus the residuals, we use 1Y spot and forward rates (Y1, Y1Y1, Y2Y1, Y9Y1). Positive values of residuals mean "cheap" and negative ones mean "rich". Here we focus on the relative cheapness and richness across tenors rather than the absolute level of remaining value. For Mexico, its 2Y-6Y sectors are too rich relative to the very short end (1Y) and long ends (8Y-10Y sectors). Compared to one month ago, the residuals have been indeed mean-reverting: 2Y looks less rich while 10Y looks less cheap.

## Quantifying risks

As already shown in [Figure 29](#), core rates and CDS<sup>4</sup> are two key drivers for swap rates. In this section, we conduct beta analysis to these two drivers at tenors of 2Y, 5Y and 10Y.

**Risk patterns:** 1. Longer ends are more sensitive than shorter ends. 2. Mexico, Hungary, Czech Republic and India are the most exposed to core rates while Brazil, Russia and Turkey are the least exposed. 3. Beta to CDS tends to peak at 5Y or 10Y. 4. Brazil and Russia are the most susceptible to CDS.

The beta analysis provides us a guidance on how EM swap rates will respond to key financial/external shocks. When we have bullish views on core rates, high beta countries could benefit from the re-pricing in core rates more than peers. Otherwise, those high beta countries could suffer larger loss in tandem with core rates sell-off. Regarding CDS, if we expect countries to embrace bright fiscal prospects, or to face subdued geopolitics, then high beta countries would benefit due to the compression in TP.

*Note: Betas in the table are the coefficients of core rates and CDS in the valuation model. The EM yields, core rates and CDS are in pp unit, so a reading of "1.2" means a 100bp shock to core rates/CDS leads to 120bp rise in yields. Readings of "0" means either the coefficients are insignificant, or that adding the variable doesn't raise adjusted R^2.*

Figure 43: Swaps beta to core rates and CDS

	Swaps					
	beta to core rates			beta to CDS		
	2Y	5Y	10Y	2Y	5Y	10Y
Czech Republic*	0.1	0.5	0.8	0.0	0.0	0.0
Hungary*	0.2	0.6	1.0	0.0	0.0	0.0
Israel*	0.1	0.4	0.7	0.0	0.0	0.0
Poland*	0.3	0.6	0.7	0.0	0.0	0.0
Romania***						
Russia**	0.0	0.0	0.0	1.1	0.9	1.0
South Africa	0.1	0.2	0.3	0.0	0.0	0.0
Turkey**	0.0	0.0	0.0	0.5	0.6	0.6
Brazil	0.0	0.0	0.0	0.8	1.2	1.2
Chile	0.5	0.5	0.4	0.7	0.8	0.8
Colombia	0.4	0.6	0.4	0.3	0.6	0.8
Mexico	0.4	0.8	1.1	0.0	0.0	0.0
Peru***						
India	0.6	0.7	0.8	0.0	0.0	0.0
Indonesia***						
Malaysia	0.2	0.4	0.5	0.1	0.3	0.5
South Korea	0.3	0.4	0.4	0.0	0.0	0.0
Thailand	0.2	0.4	0.4	0.0	0.0	0.0

Source : Deutsche Bank, Bloomberg Finance LP. Note: Countries with \*\*\* use XCCY swaps; countries with \*\*\*\* don't have liquid swap markets.

4 CDS affects swap rates either through fiscal issues like in Brazil or through geopolitical issues like in Russia.

Based on the sensitivity to core rates, we show receiving value under different scenarios w.r.t. core rates. Assume at the year end, the range of UST 10Y is from 2.0% to 3.4%, and that of EUR swap 10Y is from 0.1% to 1.5%. DB official forecasts for the two rates at the year end are 2.4% and 0.9%, respectively. Based on the valuation model, we estimate a range of yields at year-end for each country and accordingly their expected receiving value. Based on the linear model structure, expected receiving values are the most sensitive to core rates in Mexico, Hungary and Czech Republic, while are insensitive in Brazil, Russia and Turkey, as [Figure 44](#) and [Figure 45](#) show.

**Figure 44: Scenario analysis w.r.t. core rates on year-end expected receiving value in 2Y swaps**

2y swap receiving value (end '19) with different core rates															benchmark	
UST 10y	2.00	2.10	2.20	2.30	2.40	2.50	2.60	2.70	2.80	2.90	3.00	3.10	3.20	3.30	3.40	2.40
EUR swap 10y	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50	0.90
BRL	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98
CLP	23	18	13	8	3	-2	-7	-13	-18	-23	-28	-33	-38	-43	-48	3
COP	58	54	49	45	40	36	32	27	23	18	14	9	5	0	-4	40
MXN	-9	-13	-18	-22	-27	-31	-36	-40	-44	-49	-53	-58	-62	-67	-71	-27
CZK*	-21	-22	-23	-25	-26	-27	-28	-29	-31	-32	-33	-34	-35	-37	-38	-31
HUF*	51	49	47	45	43	41	38	36	34	32	30	28	26	23	21	34
ILS*	11	10	9	9	8	7	7	6	6	5	4	4	3	2	2	6
PLN*	23	20	17	14	11	9	6	3	0	-3	-6	-9	-12	-15	-18	0
RUB	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
TRY	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87
ZAR	-1	-2	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	-6
INR	16	10	4	-2	-8	-14	-20	-26	-32	-38	-44	-50	-56	-63	-69	-8
MYR	9	7	5	3	1	-1	-3	-5	-8	-10	-12	-14	-16	-18	-20	1
KWR	-16	-20	-23	-26	-30	-33	-36	-40	-43	-46	-50	-53	-56	-60	-63	-30
THB	-1	-3	-5	-7	-9	-11	-13	-15	-17	-19	-21	-23	-25	-27	-29	-9

Source : Deutsche Bank, Bloomberg Finance LP. Note: Swaps in CZK, HUF, ILS and PLN are subject to EUR 10Y swap rates.

**Figure 45: Scenario analysis w.r.t. core rates on year-end expected receiving value in 10Y swaps**

10y swap receiving value (end '19) with different core rates															benchmark	
UST 10y	2.00	2.10	2.20	2.30	2.40	2.50	2.60	2.70	2.80	2.90	3.00	3.10	3.20	3.30	3.40	2.40
EUR swap 10y	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50	0.90
BRL	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
CLP	4	-1	-5	-9	-14	-18	-23	-27	-31	-36	-40	-45	-49	-53	-58	-14
COP	32	29	25	21	18	14	11	7	4	0	-4	-7	-11	-14	-18	18
MXN	63	52	40	29	18	7	-4	-16	-27	-38	-49	-60	-72	-83	-94	18
CZK*	22	14	6	-2	-9	-17	-25	-33	-41	-49	-57	-65	-73	-80	-88	-41
HUF*	69	59	49	39	29	19	9	-1	-11	-21	-32	-42	-52	-62	-72	-11
ILS*	23	16	9	2	-4	-11	-18	-25	-31	-38	-45	-52	-59	-65	-72	-31
PLN*	26	18	11	4	-4	-11	-18	-26	-33	-40	-48	-55	-62	-69	-77	-33
RUB	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5
TRY	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61
ZAR	14	11	7	4	1	-2	-5	-9	-12	-15	-18	-22	-25	-28	-31	1
INR	3	-4	-12	-20	-27	-35	-43	-51	-58	-66	-74	-82	-89	-97	-105	-27
MYR	1	-4	-9	-14	-19	-24	-29	-34	-39	-44	-49	-54	-59	-64	-69	-19
KWR	-27	-31	-34	-38	-42	-46	-50	-53	-57	-61	-65	-69	-72	-76	-80	-42
THB	-22	-27	-31	-35	-40	-44	-48	-52	-57	-61	-65	-69	-74	-78	-82	-40

Source : Deutsche Bank, Bloomberg Finance LP

## Appendix A

**The bond valuation tables – the details** We use an adjusted term-structure model based on Nelson-Siegel-Svensson. The spline curve fitted model (based on zero-coupon curves) is a bond fair value model to identify the dislocation (richness/cheapness) of a bond to the cash curve. By deriving a price for each bond, the model indicates where the price of a bond "should" trade based on bonds with similar characteristics. The curve construction is only based on liquid bonds, however, we model a zero yield curve on a daily basis and from there derive the "fair value" for each bond – even if not included in the construction process. Nevertheless, we leave bonds out of the process with less than 3m of modified duration. **Historical richness/cheapness vs fair value** Some bonds will always show up as rich/cheap given low/high liquidity (on-the-run/off-the run) or other factors (date of coupon payments, PD bonds). Hence comparing the cheapness/richness to the "actual fair value" can be misleading with a limited chance of near-term mean-reverting characteristics. Therefore, we don't just compare a bond's current value to the actual fair value, but also incorporate how the bond has been trading vs the mode price on a daily basis over the past three months<sup>9</sup>. The latter feature is reflected in "pickup" in our bond valuation tables for each country.

Although the bond calibrated curve model is important in evaluating richness/ cheapness for specific bonds, when picking the most attractive bond on the curve, additional factors should be considered as well - particularly ASW-spreads, Carry/ Roll and Volatility.

### Terminology:

- **Model spread:** Is the calibrated fair spread using our term structure model
- **Rich/Cheap:** reflects the difference between market spread and model spread.
- **Pickup:** richness/cheapness relative to the long-term (3m) richness/cheapness
- **In the range bar chart**, the light blue area shows the 10% to 90% range of the past one year (6m for rich/cheap range bar); the dark blue shows the 25% to 75% range; the dot indicates the current level.
- Carry is the accrued premium over the next 3 months. Roll is the gain of holding such a position over the next three months due to curve decay. Total is the sum of carry and roll, representing the steady-state return.
- **Break-Even (B/E) sum of carry and roll.** It is also the amount of spread change over the next 3 months which would offset the steady-state returns (carry/ and rolldown) of a dv01-neutral long position.
- **Vol:** Volatility is measured as the annualized standard deviation of the 3m change in the underlying bond over the past 252 trading days.
- **Ratio** is defined as vol adjusted carry/roll and it is not calculated for negative carry/roll.
- **How to select the bonds?** Best bonds in each country with lowest valuation rank. The selection process is based on a) recent price action (10%), b) steady-state return characteristics (carry/roll) (20%), c) rich/cheap analysis (55%) and d) basis analysis (15%). The bond selection can change on a daily basis.

Maturity	Hungary														ASW: bond - swap	Change	Range 12m									
	Amount outstanding (USD bn)	Amount issued in auctions YTD (USD bn)	Amount issued in switches YTD (USD bn)	Liq	Rank	Dur	Yield in %	YTM change (bp)			Carry/Roll (3m)			Rich (-) / Cheap (+)												
								1d	1w	1m	B/E	Vol	Ratio	current (bp)	avg (bp)	pickup (bp)	Z-Score (3m)									
Jun-20	2.2	-	-	L1	3	1.19	0.11	0	0	-26	13.0	51.0	0.3	3	-1	4	1.4	-20	30	-35	-1.8	-4	0	-4	-40	100
Sep-20	1.1	-	-	B	8	1.46	0.17	-1	-4	-33	14.4	50.4	0.3	-6	-8	2	0.5	0	0	-36	-1.4	-3	-6	-6	0	0
Nov-20	2.0	-	-	L1	9	1.54	0.23	0	-2	-34	15.0	53.8	0.3	-6	-8	2	0.5	0	0	-33	-1.3	-2	-6	-5	0	0
Apr-21	2.6	0.3	-	L2	13	2.02	0.67	-2	-8	-35	20.1	54.3	0.4	13	19	-6	-1.5	0	0	0	-2.2	-2	-13	0	0	0
Oct-21	2.3	-	-	L1	17	2.48	0.69	-2	-5	-33	17.8	53.4	0.3	-9	-6	-4	-0.9	0	0	-10	-1.4	-3	-8	7	0	0
Jun-22	3.4	-	-	L1	15	2.86	1.09	-2	-5	-37	18.8	54.7	0.3	5	10	-5	-1.2	0	0	16	-1.0	-3	-6	6	0	0
Aug-22	0.3	0.3	-	B	-	3.29	1.27	-2	-11	-	19.6	52.6	0.4	12	13	-1	-0.9	0	0	31	-0.2	-3	-12	-	0	0
Oct-22	3.8	-	-	L1	1	3.42	1.30	-2	-10	-28	19.1	50.5	0.4	8	3	5	1.2	0	0	30	0.2	-4	-11	17	0	0
Nov-23	3.5	-	-	L1	4	4.10	1.45	1	-4	-33	16.5	54.9	0.3	-11	-15	3	0.9	0	0	23	0.1	0	-4	13	0	0
Jun-24	3.1	-	-	L1	14	4.74	1.74	-1	-6	-33	16.2	60.2	0.3	-5	-2	-3	-1.2	0	0	41	-0.5	-2	-7	12	0	0
Oct-24	2.1	0.8	-	L1	12	5.07	1.93	-1	-5	-36	16.3	54.2	0.3	3	7	-4	-1.8	0	0	54	-0.1	-2	-6	9	0	0
Jun-25	4.2	0.4	0.4	L1	11	5.22	2.05	-1	-3	-35	15.5	57.7	0.3	3	6	-3	-2.0	0	0	54	0.7	-2	-4	7	0	0
Dec-26	2.1	-	-	L1	6	6.85	2.44	-1	2	-29	13.7	61.1	0.2	2	3	-1	-0.3	0	0	70	0.5	-2	0	9	0	0
Oct-27	4.2	0.2	0.4	B	10	7.42	2.51	-1	3	-25	12.5	61.6	0.2	-6	-7	1	0.5	0	0	64	0.2	-2	-1	12	0	0
Oct-28	1.4	-	-	L2	2	7.31	2.69	-1	4	-20	12.3	59.6	0.2	6	-1	6	1.5	0	0	69	1.3	-2	0	15	0	0
Aug-30	0.5	0.4	-	B	16	9.50	2.95	1	5	-28	10.2	55.0	0.2	-2	1	-4	-1.4	0	0	74	-0.4	0	0	3.7	0	0
Oct-31	0.7	-	-	B	5	10.07	3.09	-2	4	-19	9.5	50.3	0.2	2	3	-1	-0.4	0	0	77	0.8	-2.8	-2	12	0	0
Oct-38	0.2	0.1	-	L2	7	14.22	3.44	-2	4	-30	6.4	33.3	0.2	0	-1	0	0.5	0	0	66	0.2	-2.6	-0.3	4.1	0	0

Price action				Carry/Roll				Rich/Cheap Analysis				Basis analysis					
1d	1w	1m	Total	3m	B/E	Vol	Total	current	pickup	z-score	Total	z-score	absolute	1m	Total	Total	
10%				25%				50%				15%				100%	
20%	30%	50%	100%	70%	30%	100%	30%	60%	10%	100%	34%	33%	33%	100%			

## Appendix B: The Bond Valuation Model

### Bond valuation

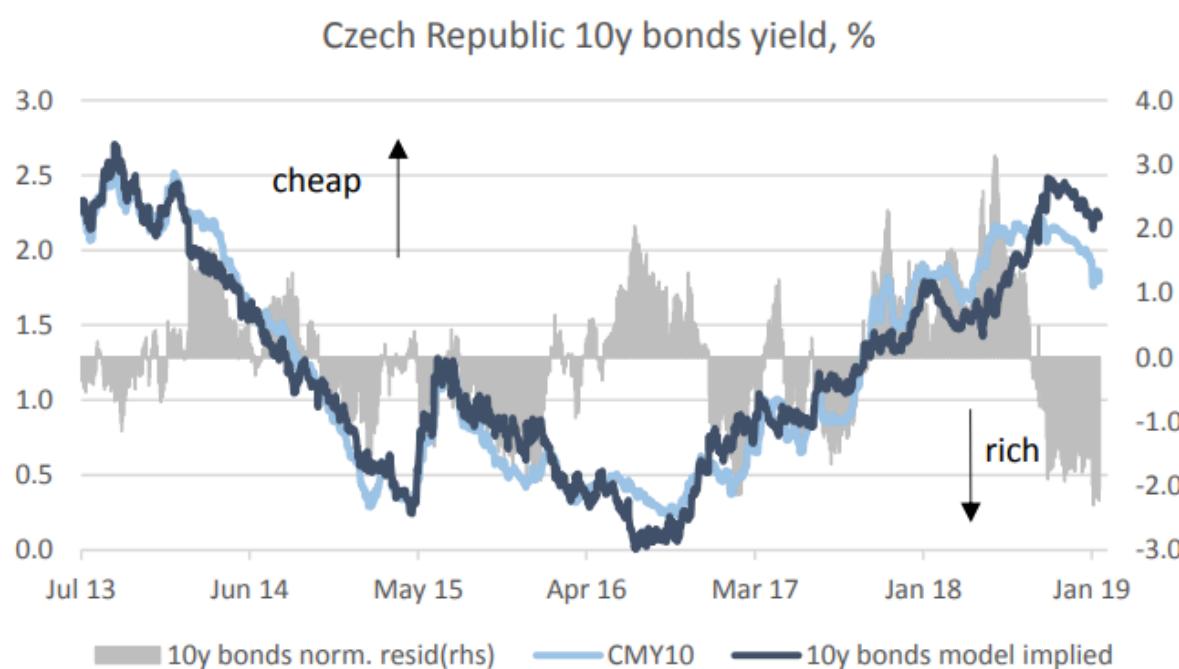
**The bond valuation:** Based on empirical evidence of the interaction between yield curves and macro/financial variables, we regress the level of 10Y yields on the level of a set of macro/financial variables. Independent variables tend to be policy rate, inflation, FX and US 10y rates. The choice of those variables, however, is country-specific. A few of countries are also subject to CDS and/or oil. The sample we use is post taper tantrum except Indonesia due to the data availability for policy rate.

**Ranking:** The ranking is based on the current bonds richness/cheapness relative to the underlying drivers. Shown as normalized residuals.

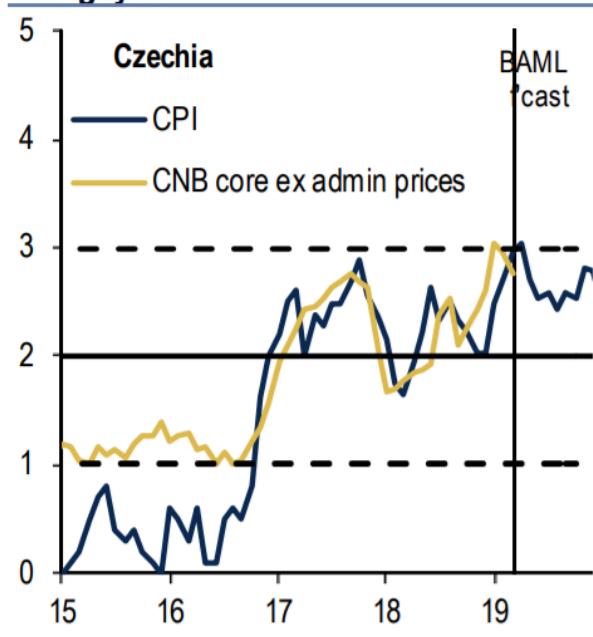
**Example:** Czech Republic

**The underlying drivers:** Since Jul-13, the policy rate, spot inflation and 10Y EUR swap rate explain 94% of the variation in 10Y bond yields. The current implied yield is 2.68% vs the actual yield at 2.13%. Therefore, our model implies significant richness in 10Y bonds at the moment – based on the three drivers. In fact, as the chart shows below, the dislocation (defined by the normalized residuals) are at record-wide levels (>3.0).

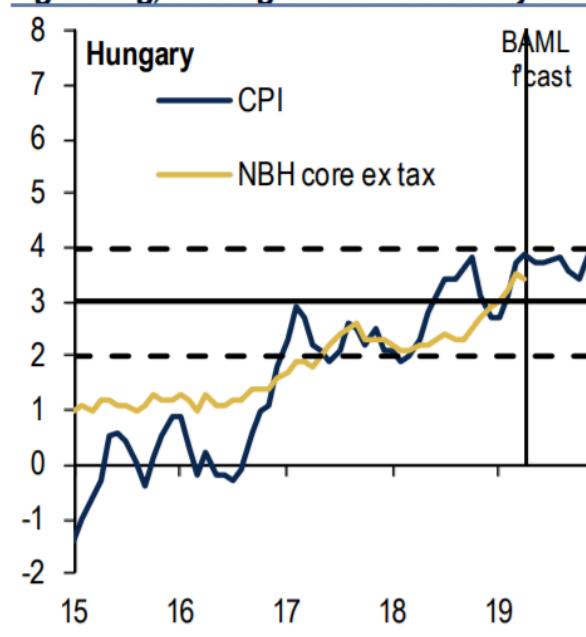
#### Czech Republic 10y bonds yields vs model implied



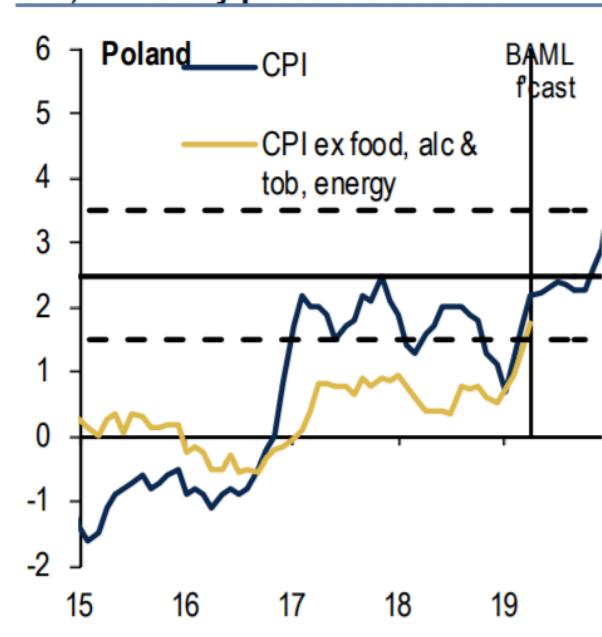
**Chart 7: CZ – CPI path allows CNB to end the hiking cycle**



**Chart 8: HU – oil saves NBH from near-term tightening, but long-end rates could adjust**

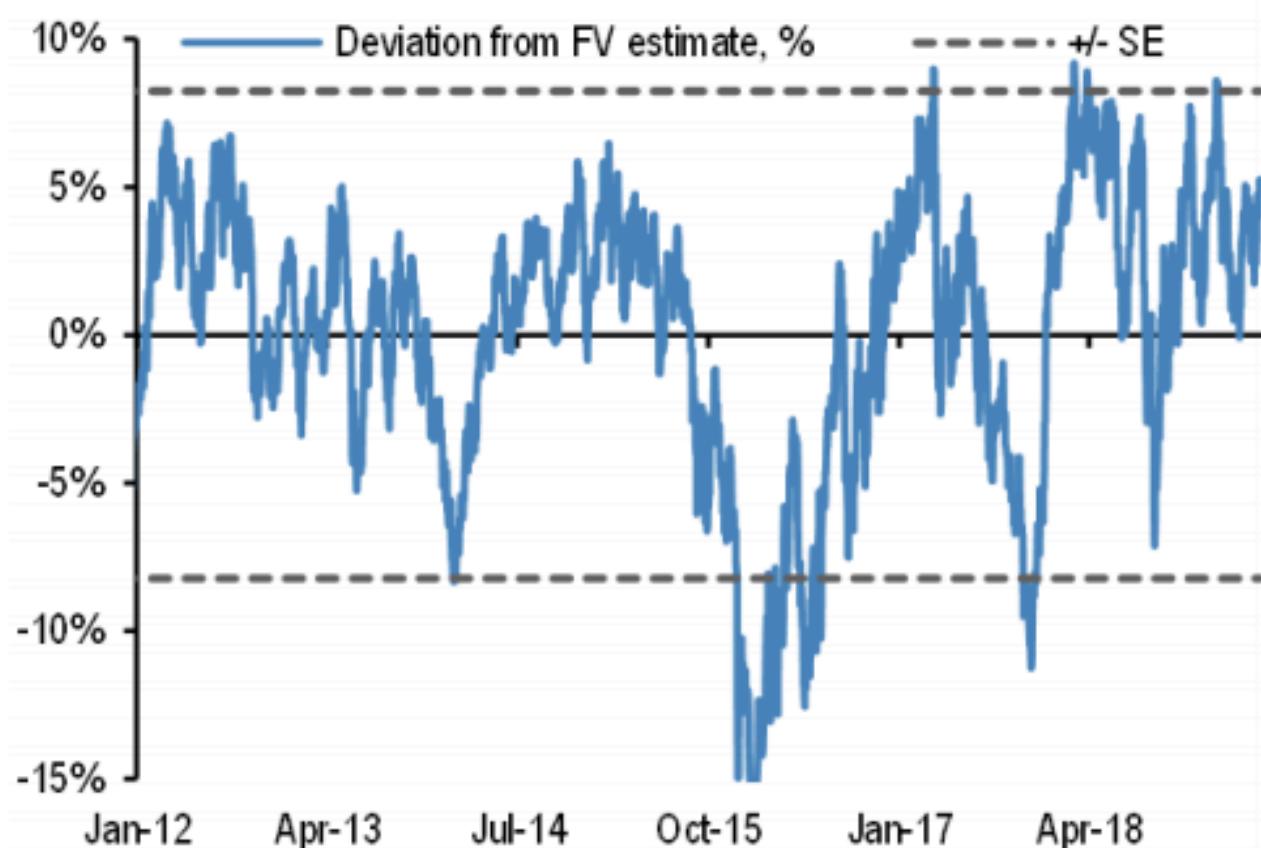


**Chart 9: PL – CPI path more dynamic at year-end, NBP to stay put before elections**



#### Exhibit 4: ZAR is moderately overvalued in our BEER model

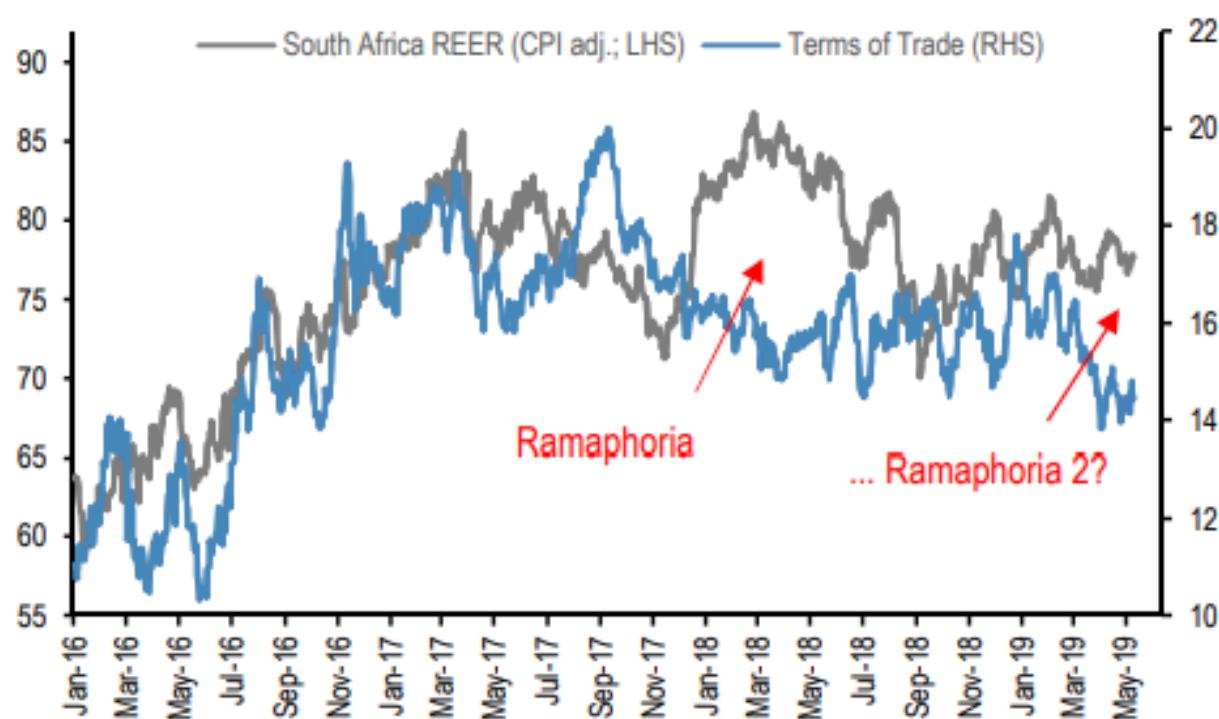
Deviation from fair value, +ve implies overvalued. Model is based on government debt/GDP, current account/GDP, real rate differentials and terms of trade



Source: J.P. Morgan, Haver, Bloomberg

#### Exhibit 5: A large divergence has once again reappeared between terms of trade and the REER

South Africa REER (CPI adjusted, LHS); South Africa Terms of Trade (RHS)

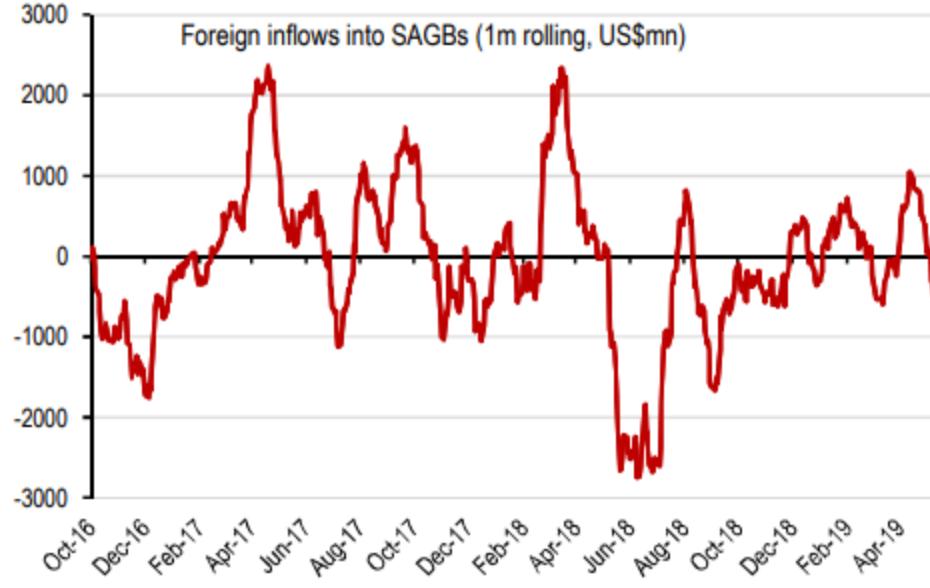


Source: J.P. Morgan, Bloomberg, Citi Terms of Trade

**Foreign outflow momentum picked up significantly.** Net foreign flow momentum in South Africa local bonds turned rapidly to nearly \$1bn of outflows in one-month rolling terms (Exhibit 7). This follows two large daily foreign outflows of over \$200mn in the past five days, as foreign investors were net sellers in the days around the recent National Elections. Cumulative YTD net foreign inflows now stand at \$430mn, down from the YTD high of \$1,390mn in mid-April, while still comparing favorably to the large \$4.8bn of foreign outflows experienced last year.

#### Exhibit 7: Foreign outflow momentum from South Africa local bonds is stark

US\$mn, net foreign flows into South Africa local bonds, 1m rolling. Negative is net foreign outflows.



Source: J.P. Morgan, Bloomberg

#### Exhibit 8: BCU has increased FX intervention to limit UYU volatility

Monthly USD purchases by the central bank of Uruguay (-ive means sales)



Source: BCU

**Figure 42. Brazil – Mexico Relative Spread**

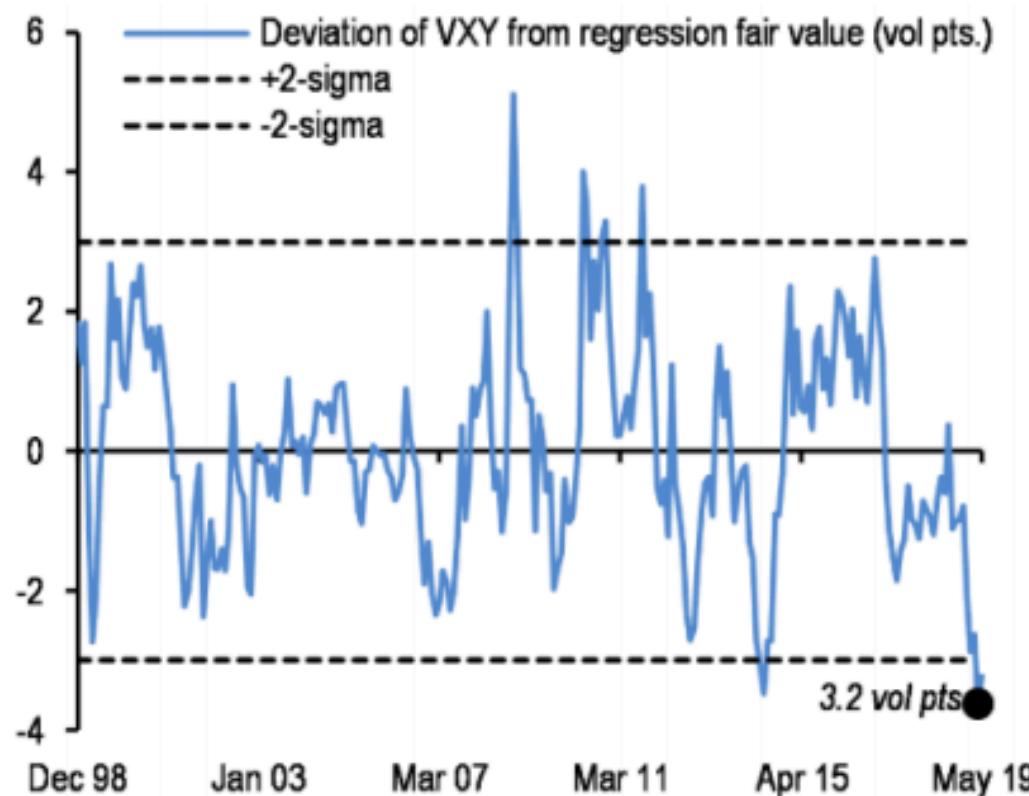


Source: Citi Research, Citi Fixed Income Indices

\*Note: spreads are aggregated values of the country sub-components of our Citi EM Sov Bond Index.

## Exhibit 2. ..and continues to screen severely undervalued vis-à-vis low-frequency business cycle correlates

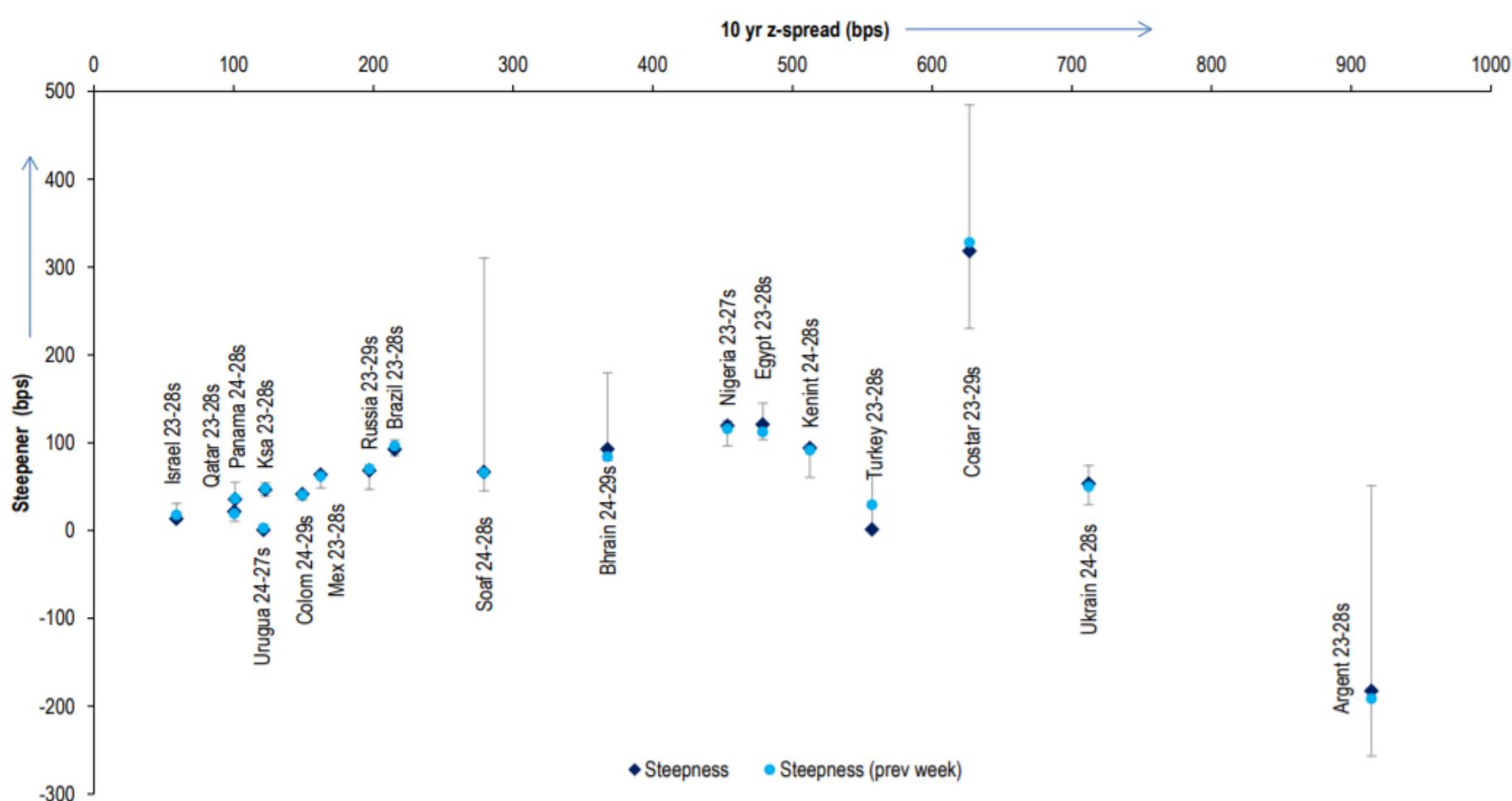
Residual from regressing VXY Global on level of JPM global composite PMI (business cycle indicator), volatility of global PMI (proxy for growth surprises) and the average inter-quartile forecast dispersion of 4-qtr ahead US real GDP, unemployment and headline CPI provided by the Philadelphia Fed's Society of Professional Forecasters (SPF) quarterly survey (uncertainty proxy).



Source: J.P.Morgan

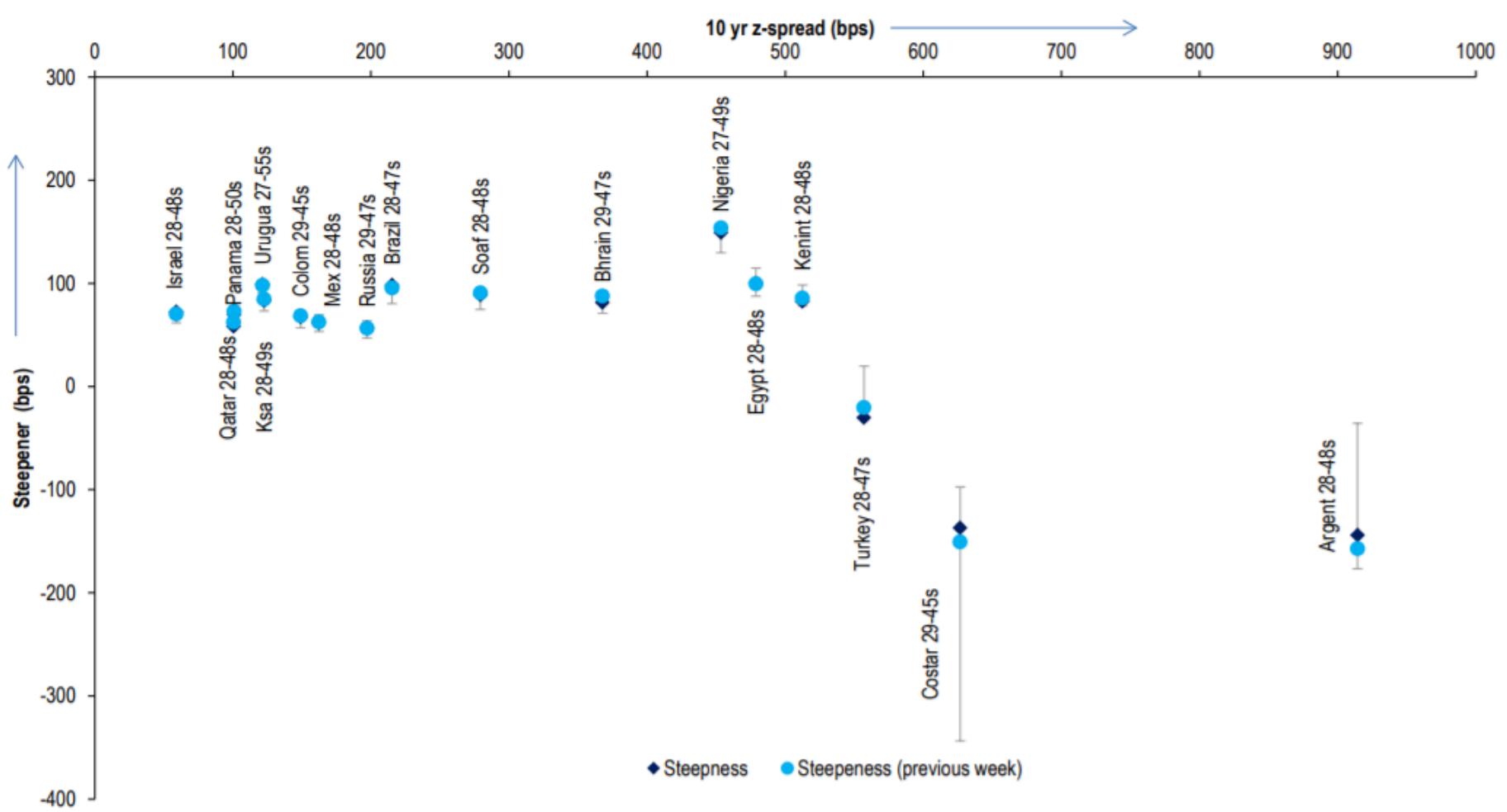
## Sovereign Curve Moves Snapshot

Figure 43. 5-10s z-spread levels with 3m range



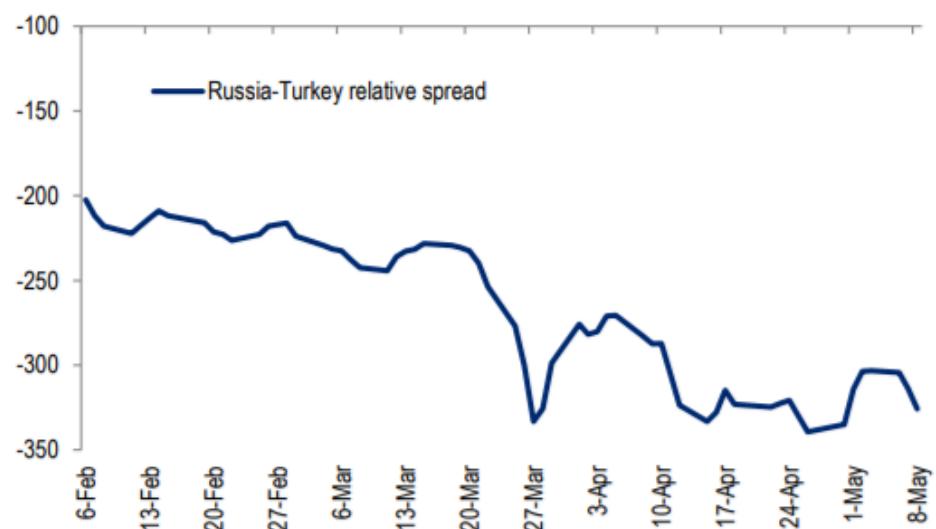
Source: Citi Research, Bloomberg. US 5-10s is the yield level in bps, rest are z-spread levels.

**Figure 44. 10-30s z-spread levels with 3m range**



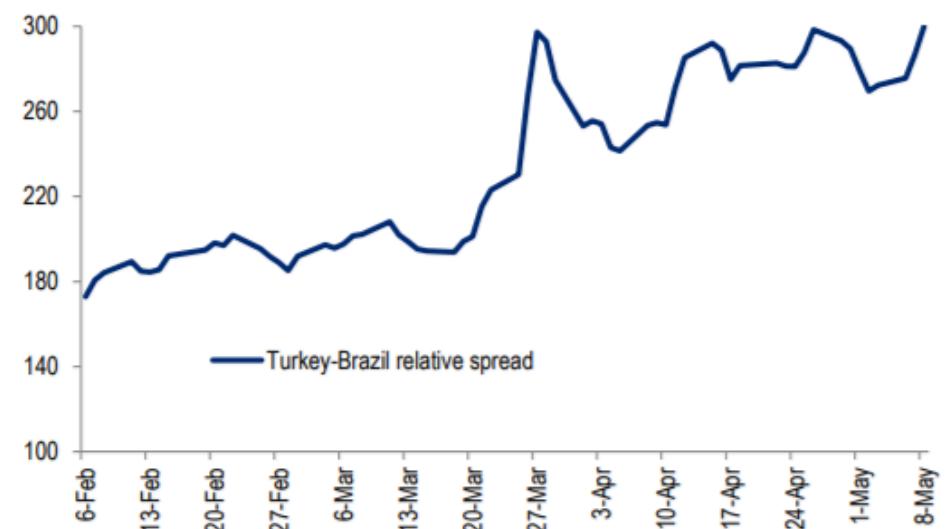
Source: Citi Research, Bloomberg. US 10-30s is the yield level in bps, rest are z-spread levels.

**Figure 38. Russia – Turkey Relative Spread**



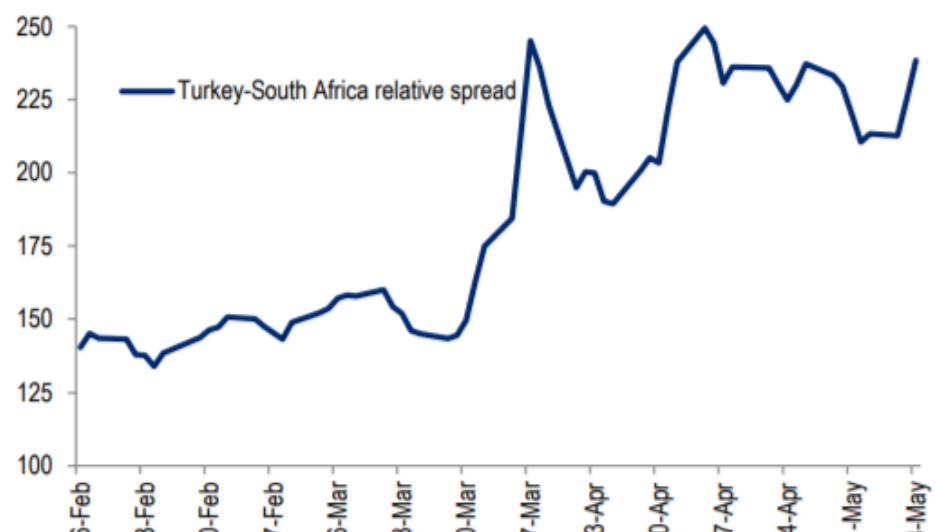
Source: Citi Research, Citi Fixed Income Indices

**Figure 39. Turkey – Brazil Relative Spread**



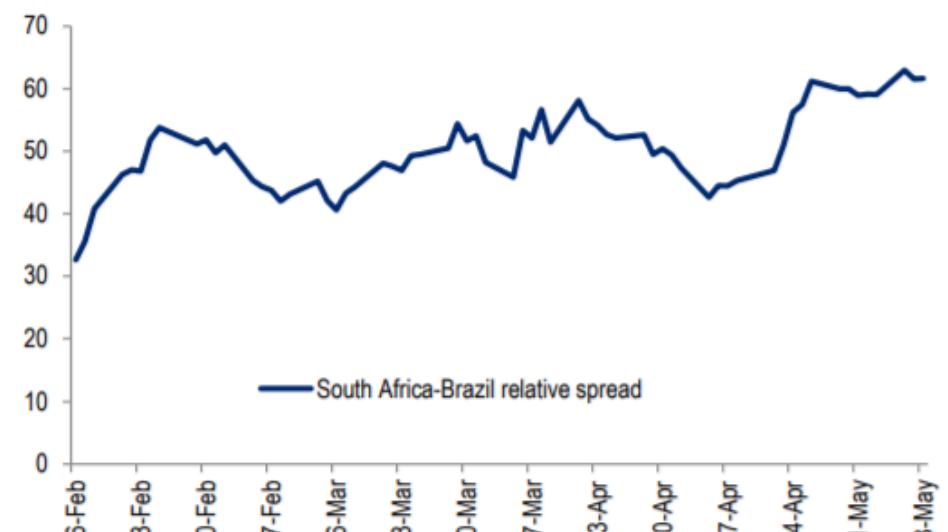
Source: Citi Research, Citi Fixed Income Indices

**Figure 40. Turkey – South Africa Relative Spread**



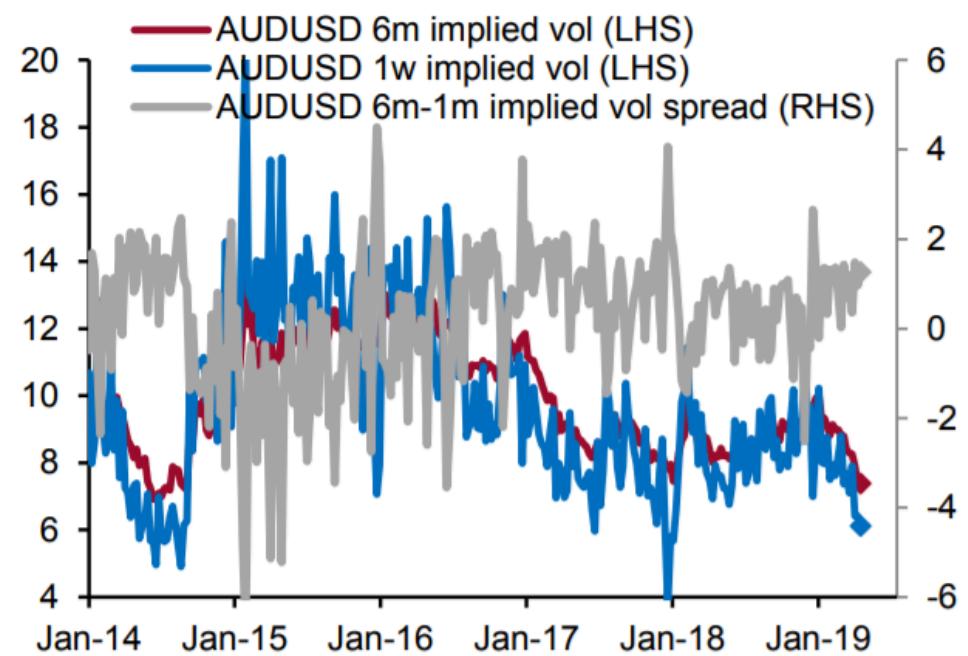
Source: Citi Research, Citi Fixed Income Indices

**Figure 41. South Africa – Brazil Relative Spread**



Source: Citi Research, Citi Fixed Income Indices

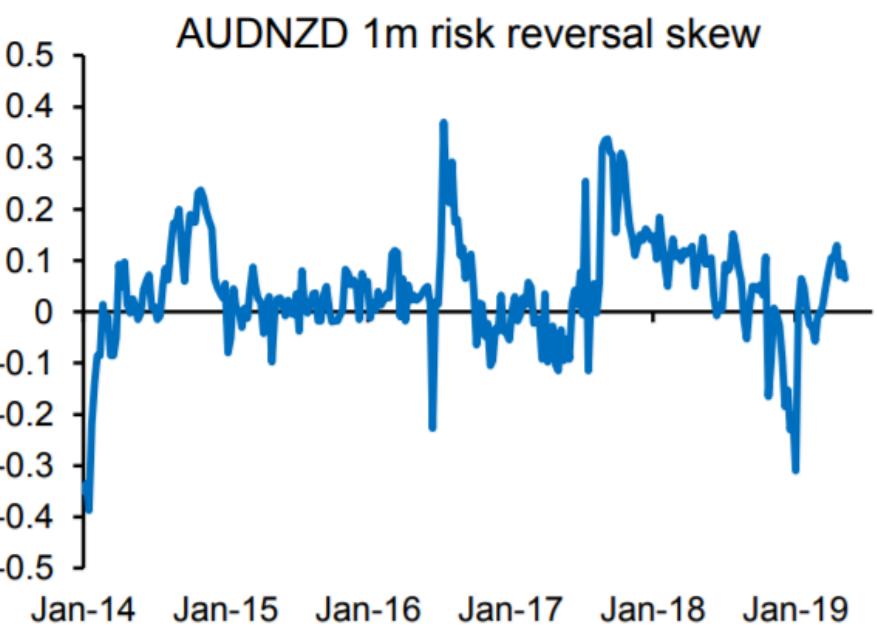
**Figure 16: AUDUSD implied vol is not elevated around this event, in our view**



Source: Credit Suisse, the BLOOMBERG PROFESSIONAL™ service

**Figure 17: AUDNZD 1m risk reversal skews are far above levels seen in previous years too**

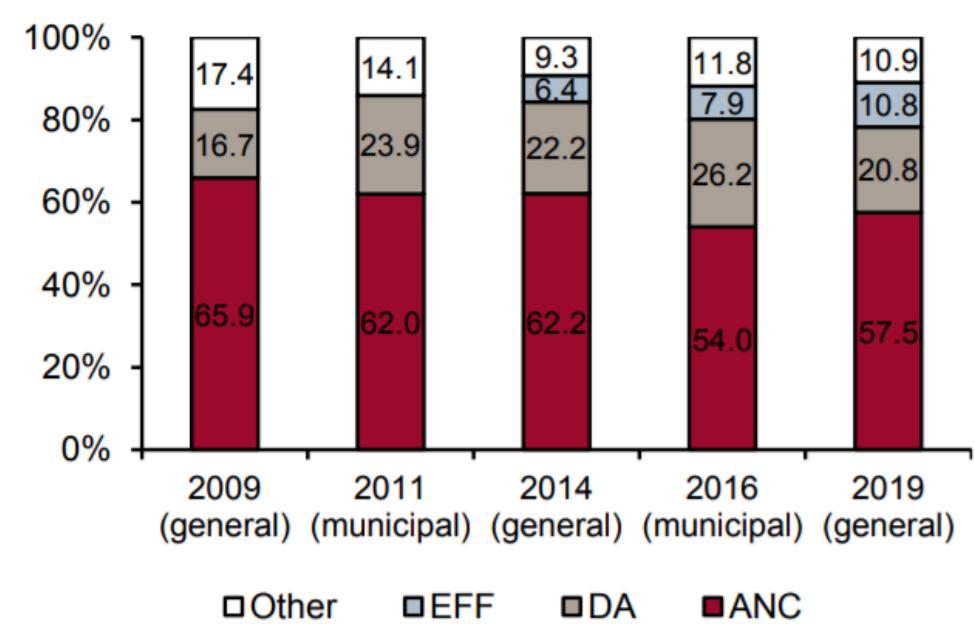
Skew – higher means bid for AUD calls / NZD puts



Credit Suisse, the BLOOMBERG PROFESSIONAL™ service

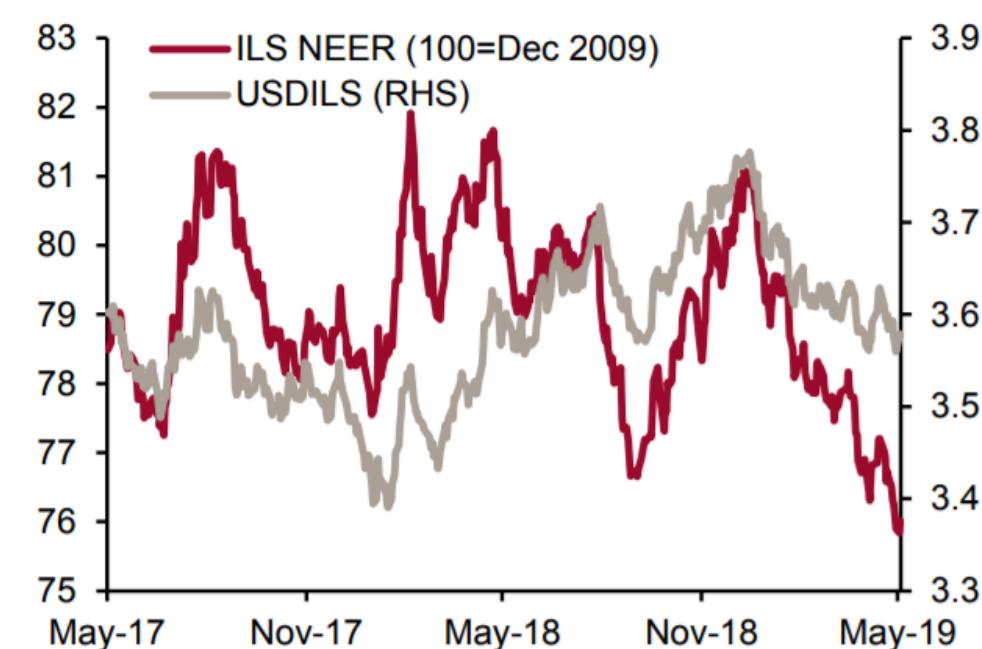
**Figure 18. The ANC maintained its outright majority in parliament**

Election results (% of total votes)



Source: Credit Suisse

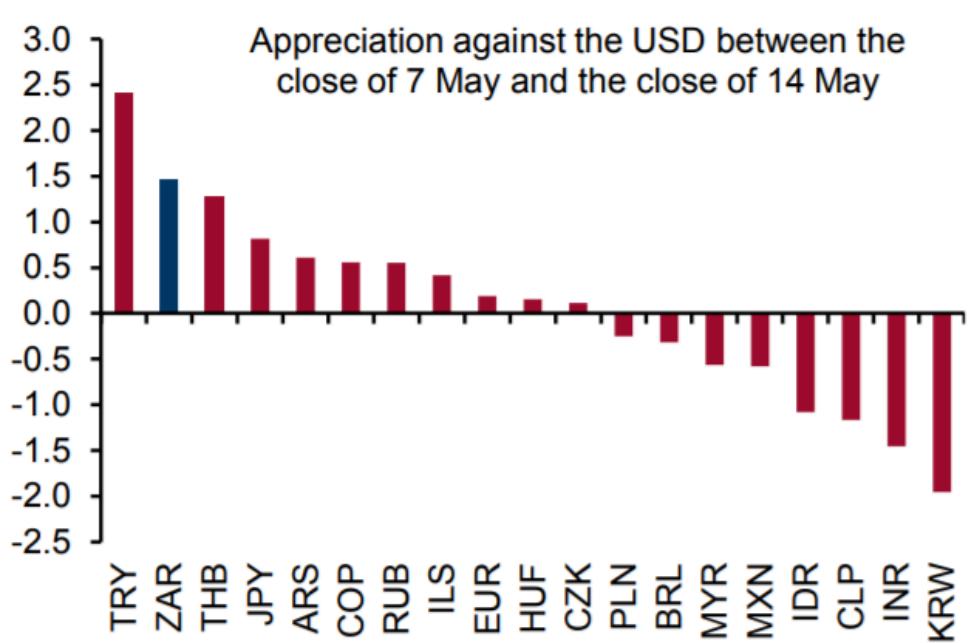
**Figure 20. ILS NEER has fallen to multi-year lows although USDILS is still largely in a range**



Source: Credit Suisse, the BLOOMBERG PROFESSIONAL™ service

**Figure 19. The elections results helped markets to price out tail-risks of political complications**

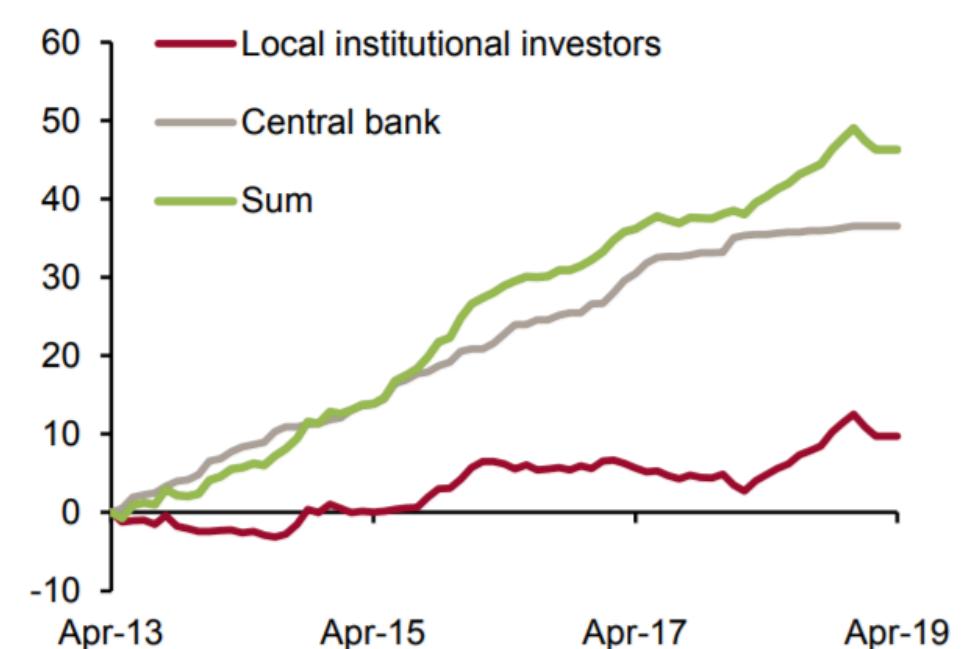
%



Source: Credit Suisse, the BLOOMBERG PROFESSIONAL™ service

**Figure 21. The central bank and institutional investors have stopped “sterilizing” the current account surplus**

Cumulative FX buying (\$bn)\*



\* Data for local institutional investors is updated to February. Source: Credit Suisse, Central bank

Figure 24: EM sovereigns 10Y bond spreads vs. credit rating (overlaid with global credits)

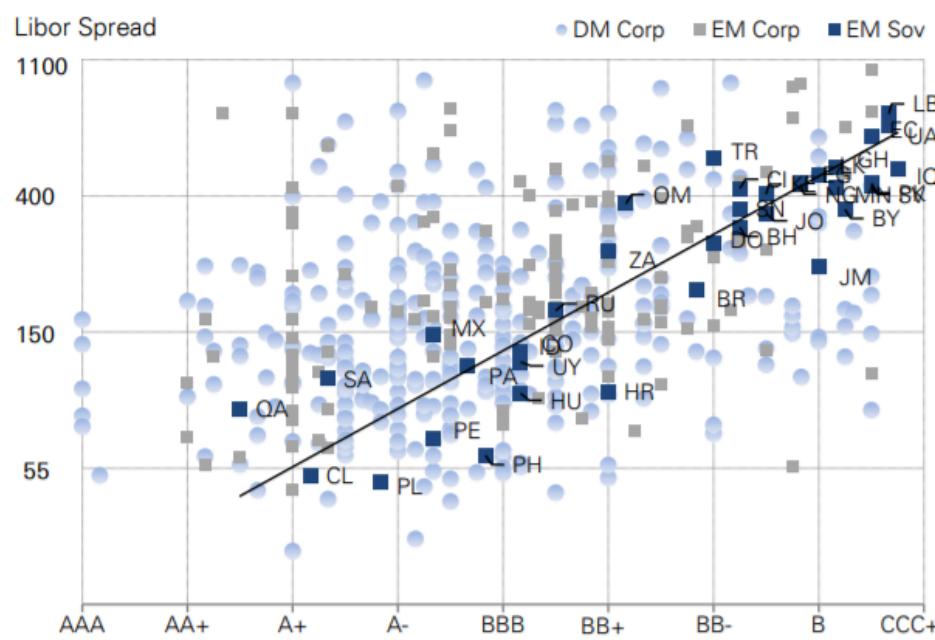
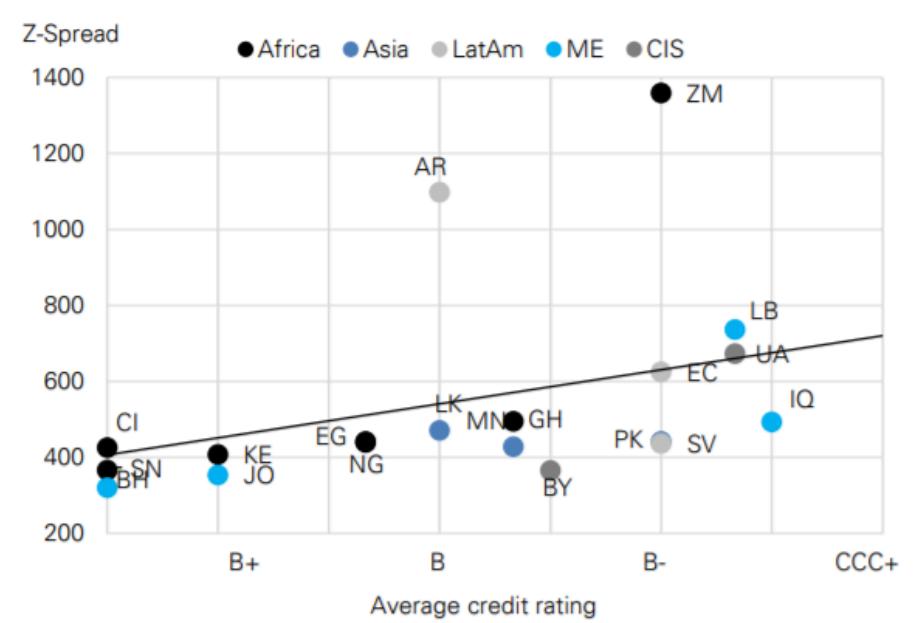
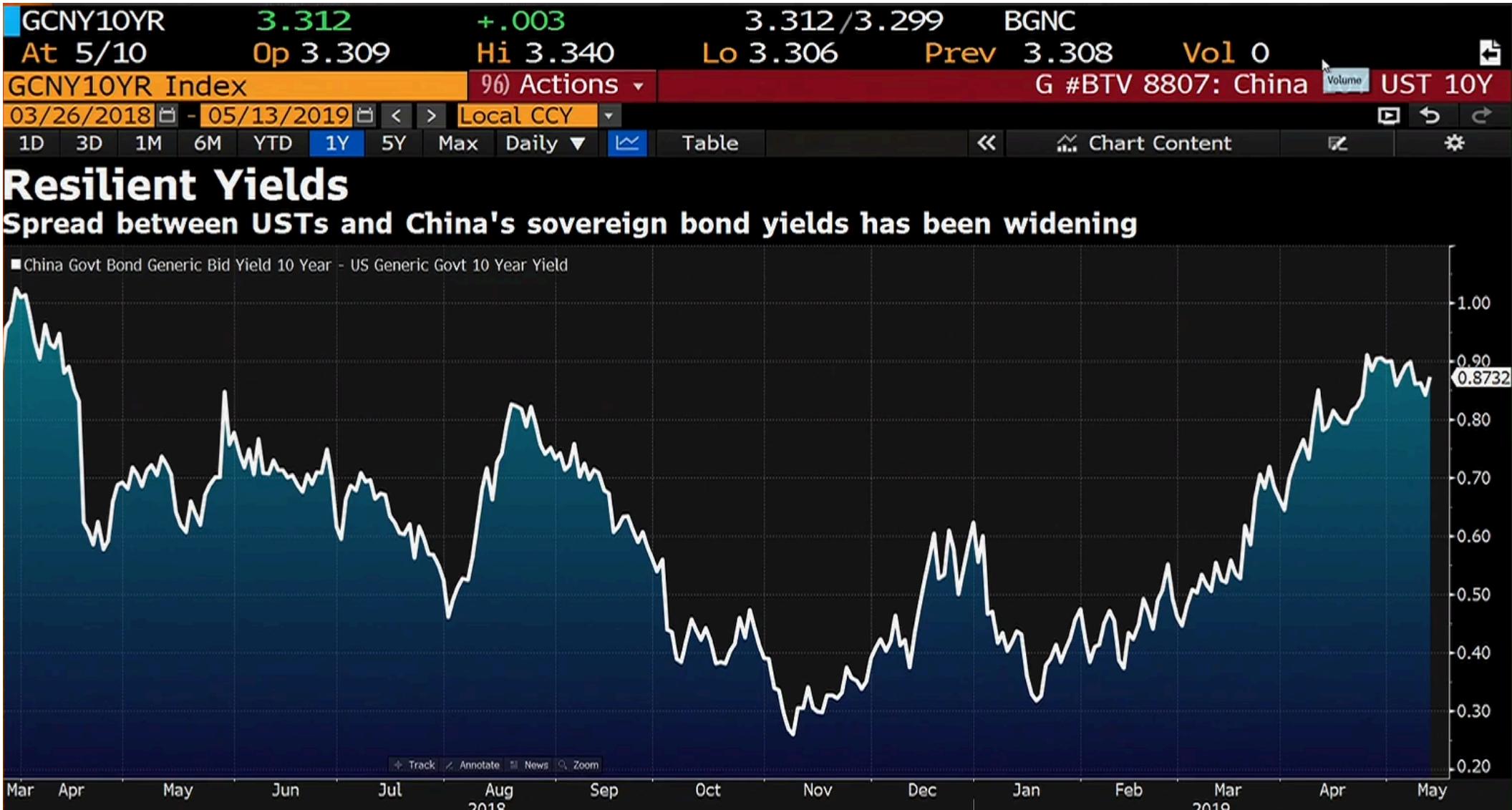
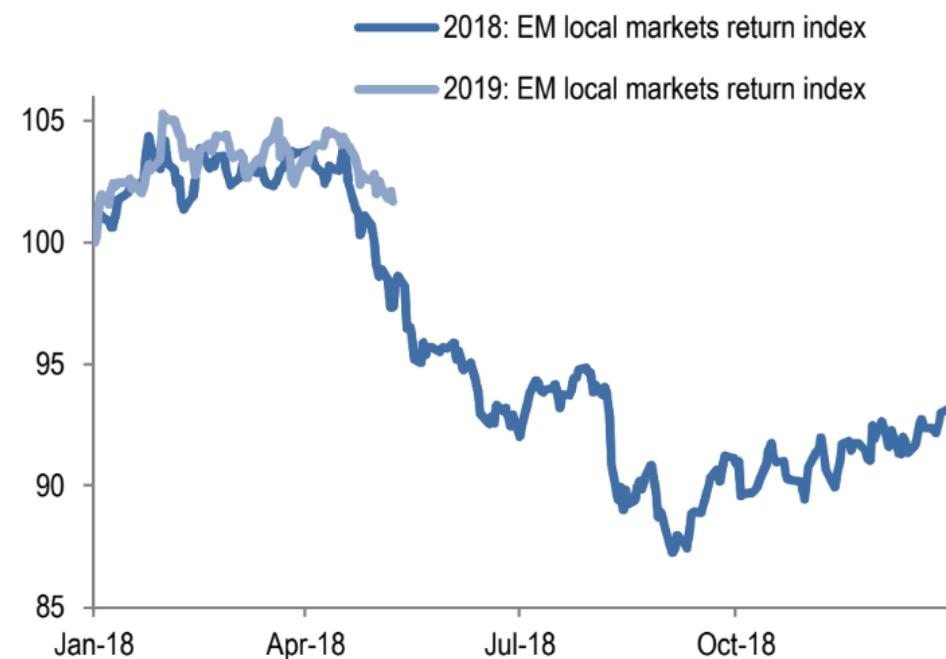


Figure 25: ...zooming into the distressed space...

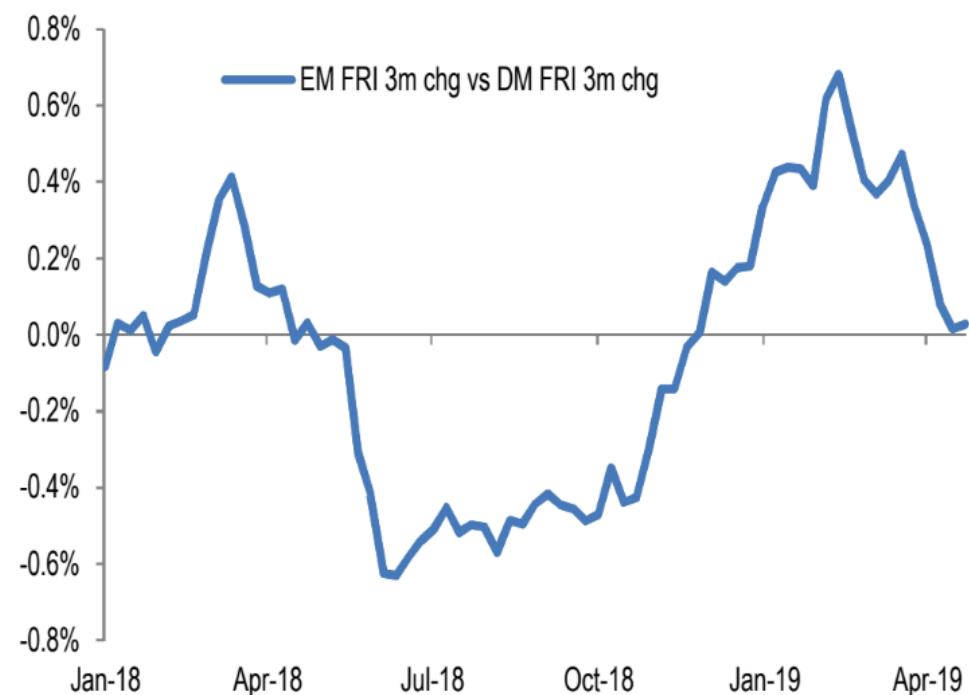




**Figure 1: Don't look down... EM local markets in 2019 are following a path similar to 2018**  
 EM local markets returns (GBI-EM in USD) starting at 100 in Jan 2018 and 2019 returns overlayed

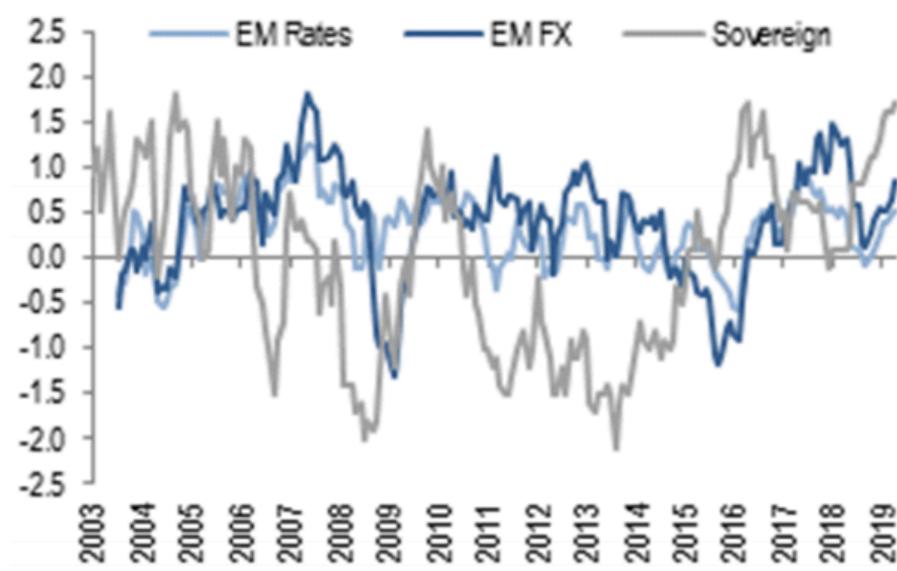


**Figure 2: A trend of EM growth forecast revisions slipping versus DM would likely weight on EM markets**  
 J.P. Morgan Forecast Revision Indices (FRIs) for EM and DM



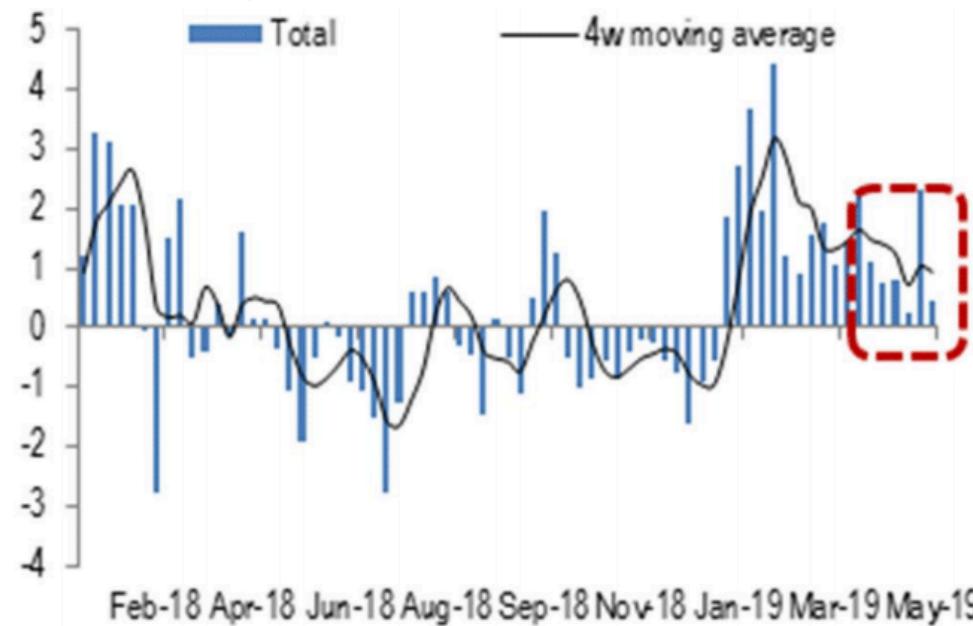
**Figure 3: Positioning is most extended in EM sovereigns, but OW across EM FX and Rates as well**

+ve means OW, -ve means UW, 0 means neutral



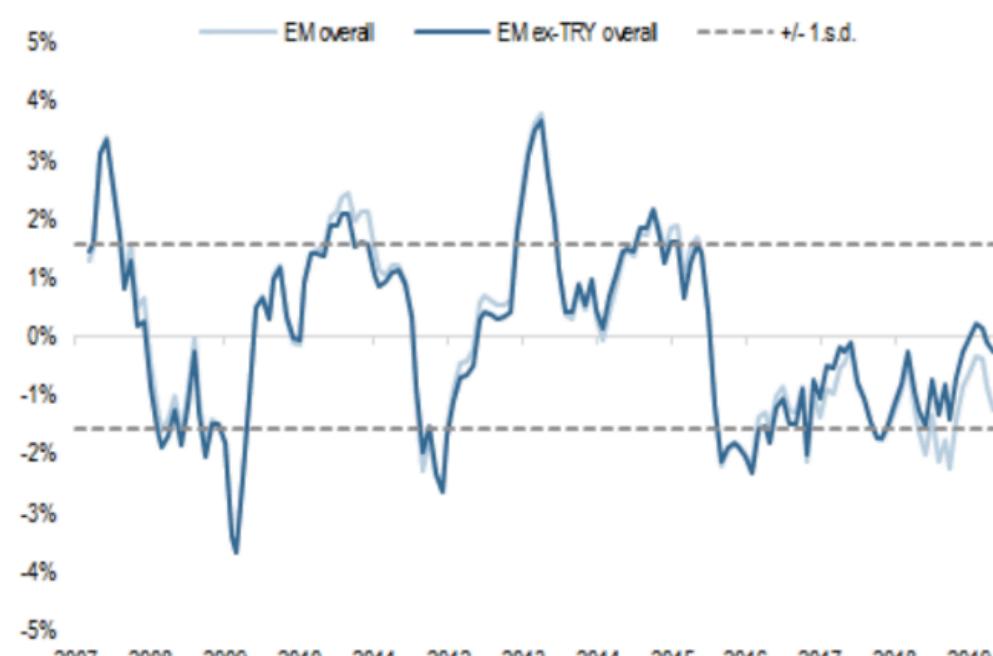
**Figure 4: EM retail bond fund inflows have become less supportive, as the pace has slowed**

USD billion, weekly EM retail bond fund flows



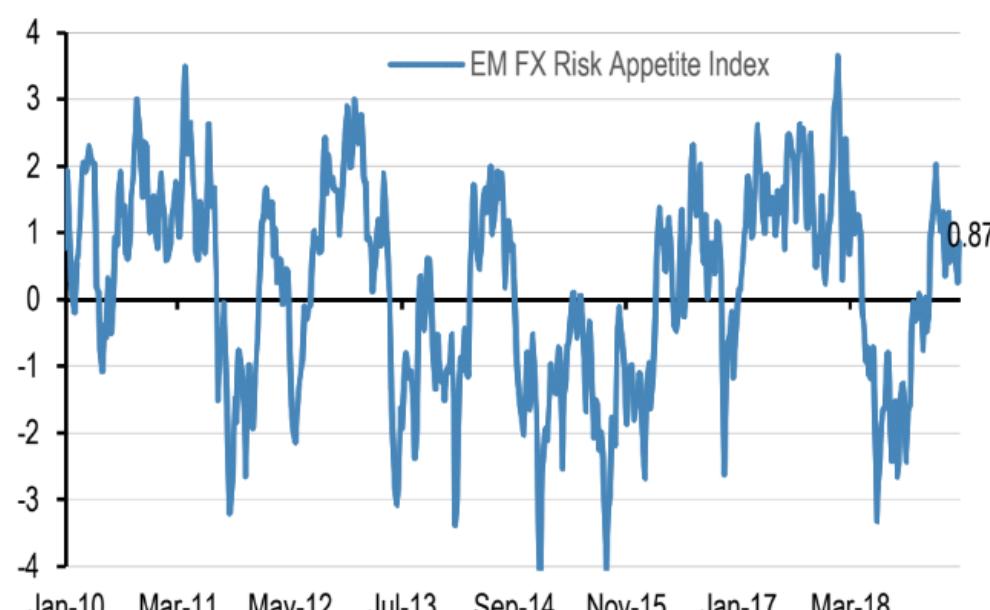
**Figure 5: EM FX is not expensive on standard measures...**

Global EM REER deviation from fair value, % deviation from BEER fair value

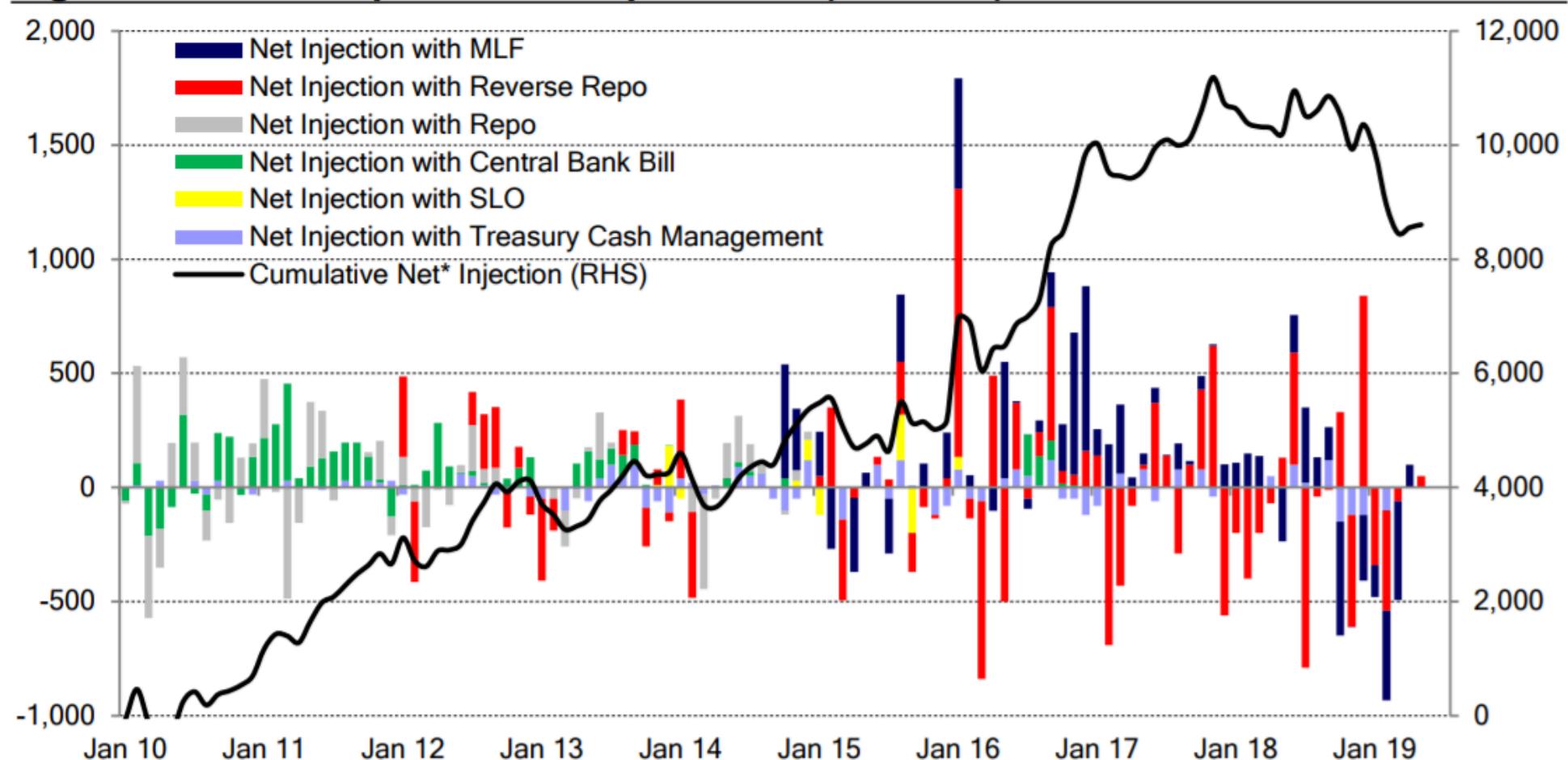


**Figure 6: ... and EM FX risk appetite is not stretched**

1st principle component measure derived from positioning, flow, vol, skew and technical indicators



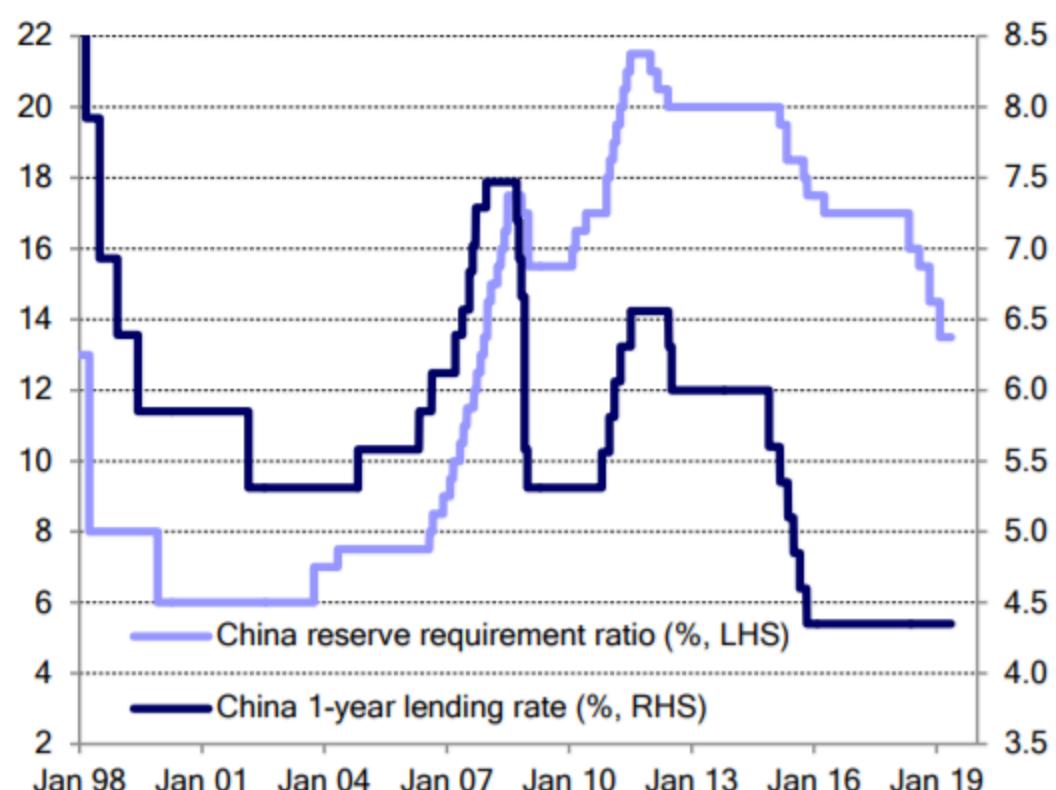
**Figure 42: PBOC open market operations (RMB trn)**



\*Net = Central Bank Bill Matured + Repo Matured + Reverse Repo Turnover + Treasury Cash Deposit + MLF Issue - Central Bank Bill Issue - Repo Turnover - Reverse Repo Matured - Treasury Cash Deposit Matured - MLF Matured

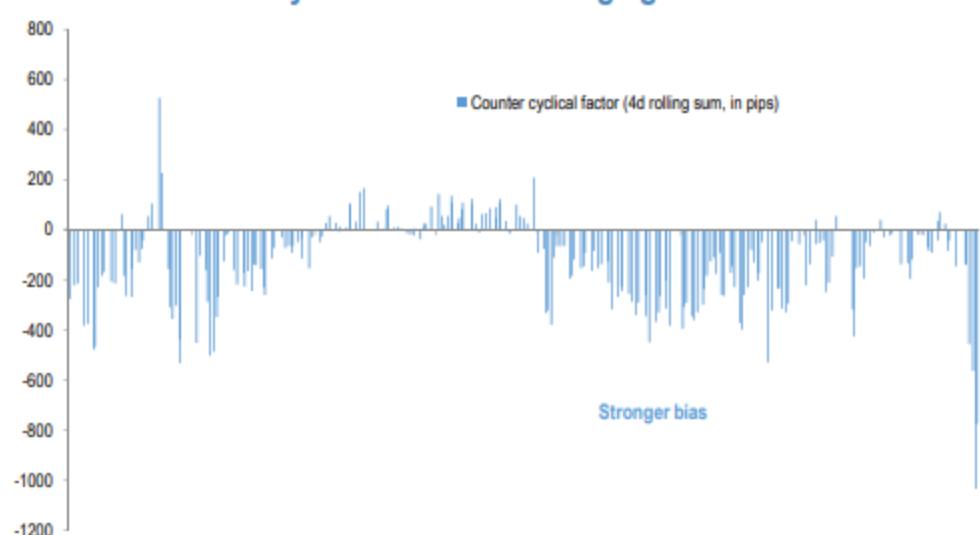
Source: PBOC, Credit Suisse research

**Figure 43: China policy rates**



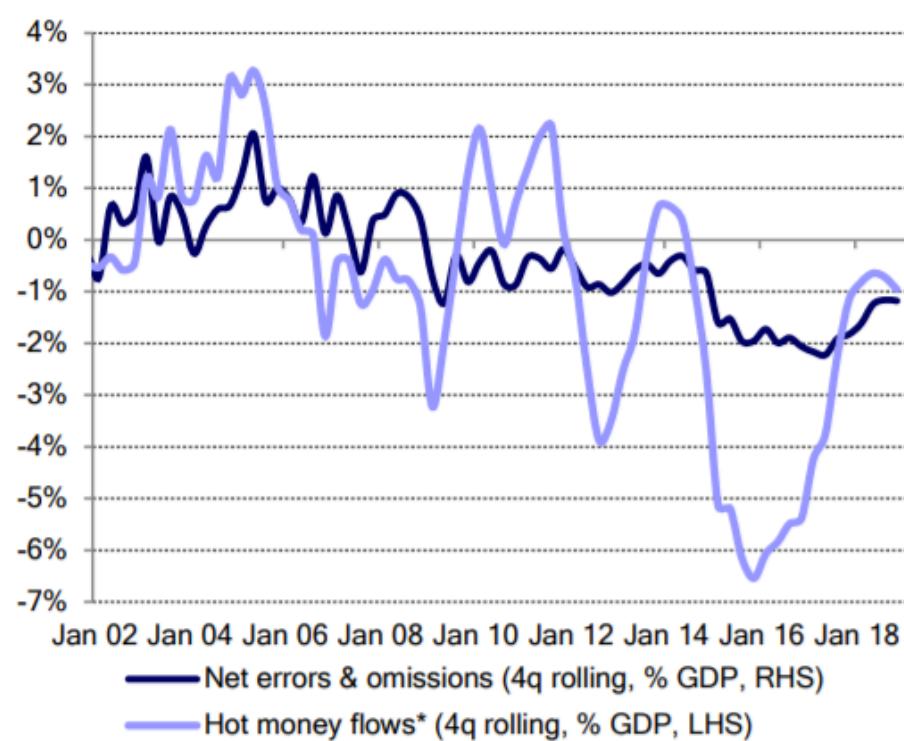
Source: Thomson Reuters, Credit Suisse research

**Exhibit 4: Counter cyclical factor is leaning against CNY weakness**



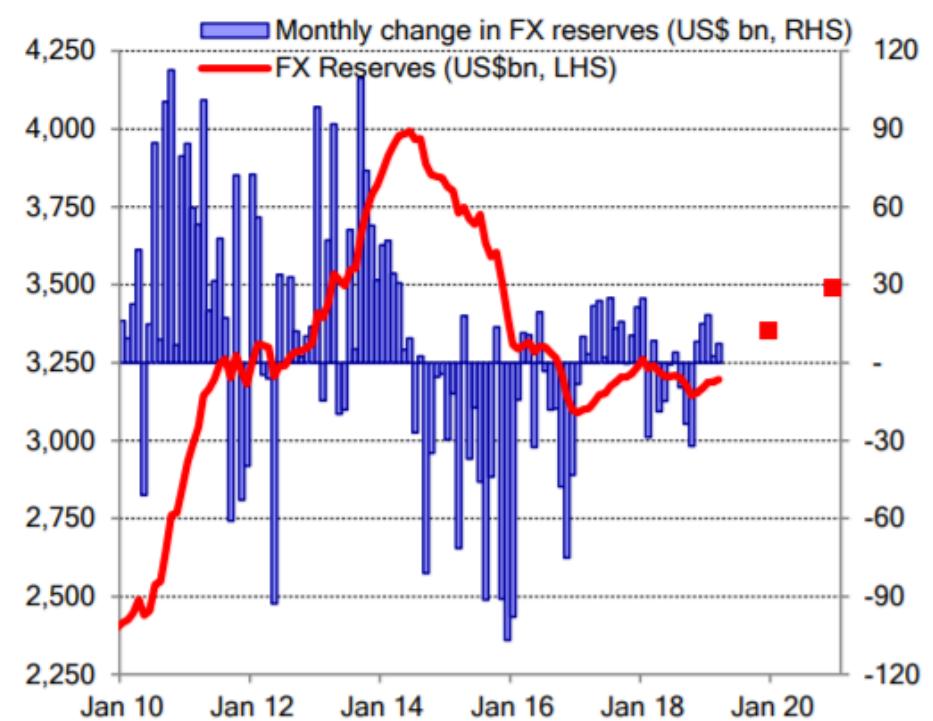
Source: J.P. Morgan

**Figure 47: Chinese capital flight: Net errors & omissions and total hot money flows\***



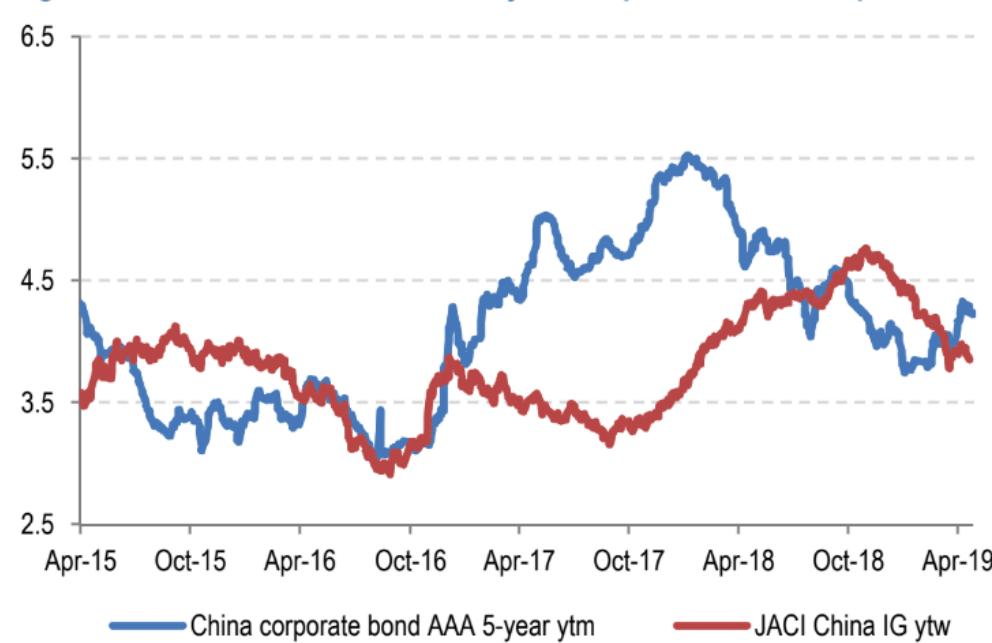
\*Hot money flows: net debt and equity portfolio flows, other investment (mainly bank lending), net errors and omissions  
Source: Thomson Reuters, Credit Suisse research

**Figure 48: China FX reserves**



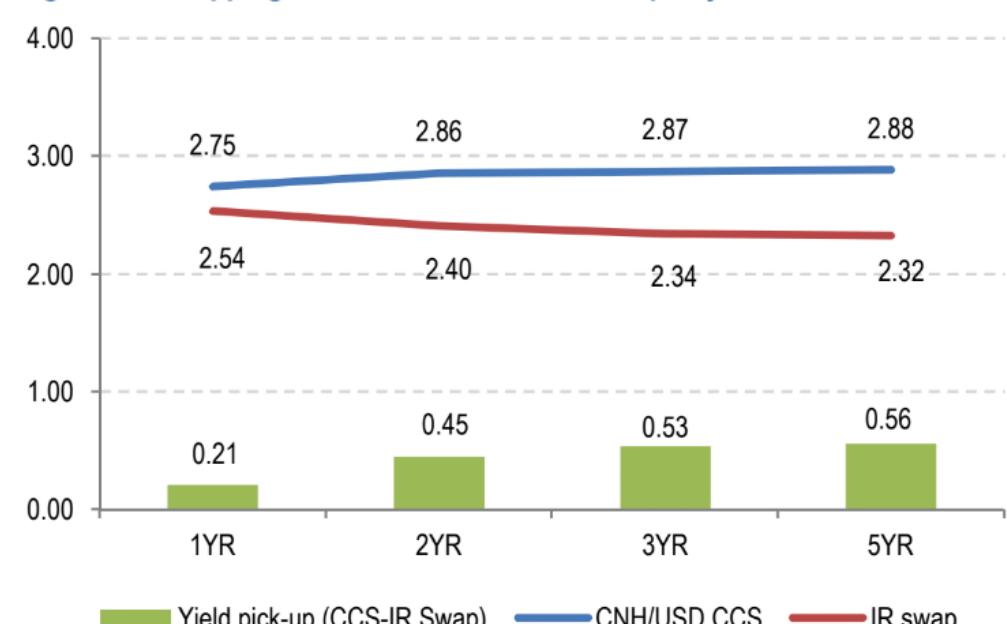
Source: PBoC, Credit Suisse estimates

**Figure 12: China onshore vs. offshore yields at par before FX-swap**



Source: WIND and J.P. Morgan.

**Figure 13: Swapping into RMB to ONLY add ~60bp to yield**



Source: WIND and J.P. Morgan.

When a 40bps back-up in rates isn't even 1 Std Dev.....

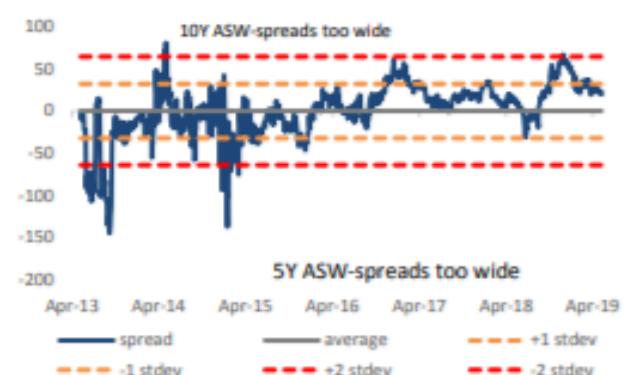
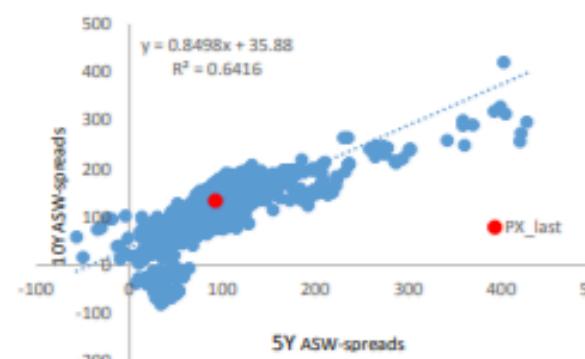
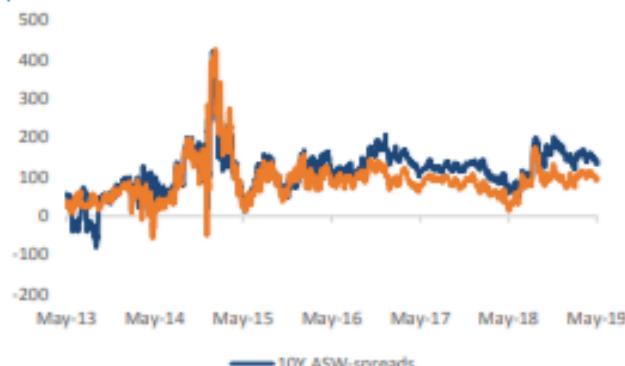
# ASW-spreads in EM - finding dislocations

## ASW-spreads in bp

Country	5Y ASW-spread				10Y ASW-spread				regressed 10Y ASW-spread	spread 10Y actual vs regressed	+/- 1 stdev	+/- 2 stdev	implications for 10Y ASW-spreads
	Level	5d	30d	1Y z-score	Level	5d	30d	1Y z-score					
Czech Republic	-46	5	-15	0.2	-6	4	-6	0.3	-12	6	15	30	neutral
Hungary	35	1	3	0.9	70	2	-2	1.1	50	20	13	27	wide
Israel	16	4	-2	1.1	12	5	-5	0.6	19	-7	6	12	tight
Poland	15	3	-4	1.1	33	2	-8	0.5	33	1	9	18	neutral
Romania	56	3	18	2.4	62	11	15	3.0	77	-15	18	35	neutral
Russia	93	1	-22	0.0	134	-1	-26	-0.1	114	20	32	64	neutral
South Africa	49	0	1	-0.8	98	3	3	0.9	70	27	12	24	very wide
Turkey	-270	-50	-100	-1.5	-140	-45	-65	-1.5	-155	15	41	81	neutral
Brazil	111	0	-14	-0.9	116	6	-4	-0.8	107	9	30	61	neutral
Colombia	56	-4	4	0.5	69	-1	5	0.7	53	17	17	34	neutral
Chile	23	3	-10	-0.6	16	4	-1	-1.7	9	8	16	32	neutral
Mexico	6	-1	1	1.6	2	3	9	1.7	-7	9	8	15	wide
Malaysia	4	2	2	1.1	7	6	-2	0.9	1	6	12	24	neutral
India	150	10	14	2.1	158	10	15	2.0	149	9	14	29	neutral
Indonesia	-18	16	22	-0.3	64	19	74	1.4	-8	72	35	69	very wide
South Korea	9	0	-3	-0.9	18	0	-2	-0.6	18	1	4	8	neutral
Thailand	17	2	-1	0.2	32	5	2	0.9	18	14	12	25	wide

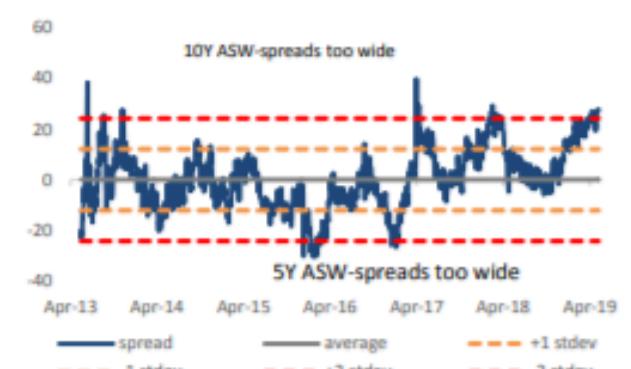
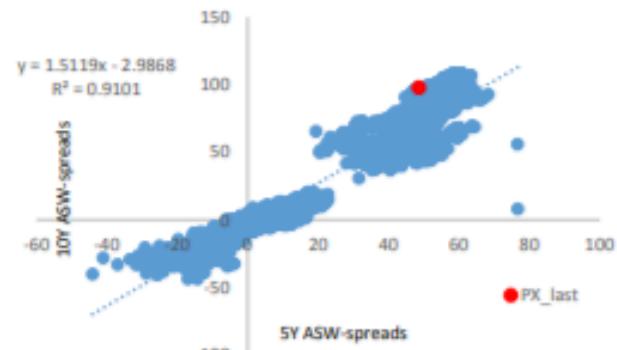
\*ASW-spreads based on constant maturity curves for EM EA/LatAm; >1stdev = wide, >2 stdev = extremely wide, <1stdev = tight, <2 stdev - extremely tight

## Russia



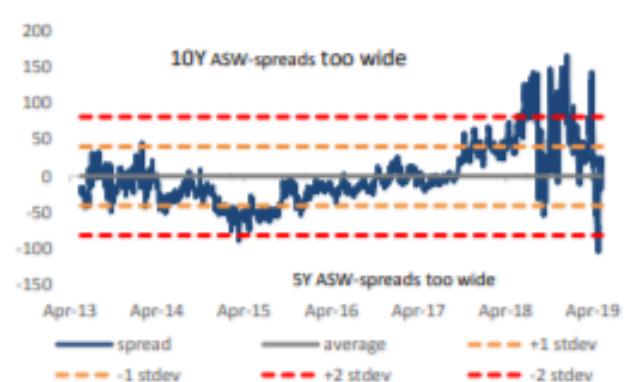
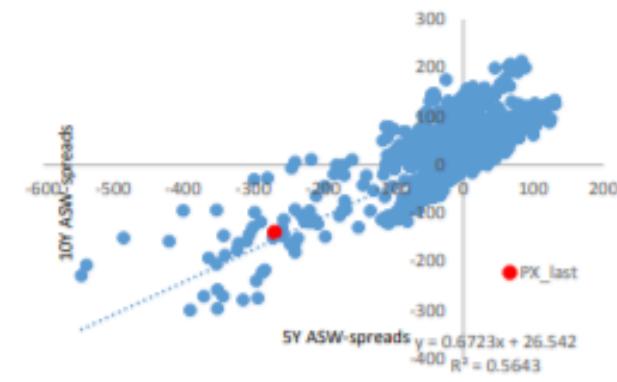
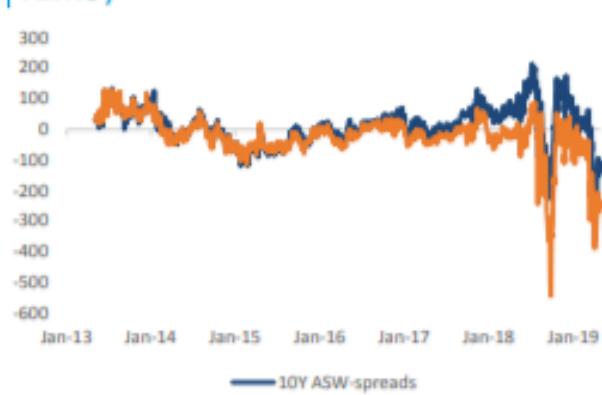
Source: Deutsche Bank

## South Africa



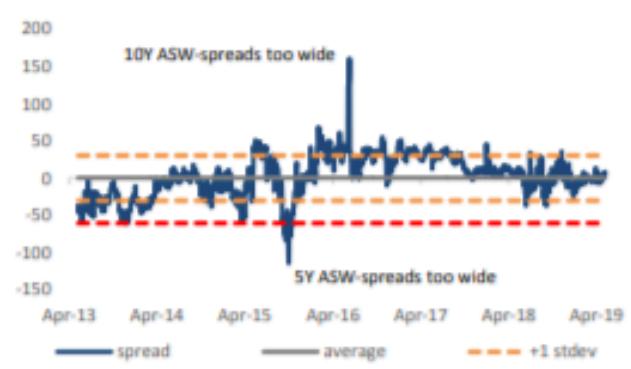
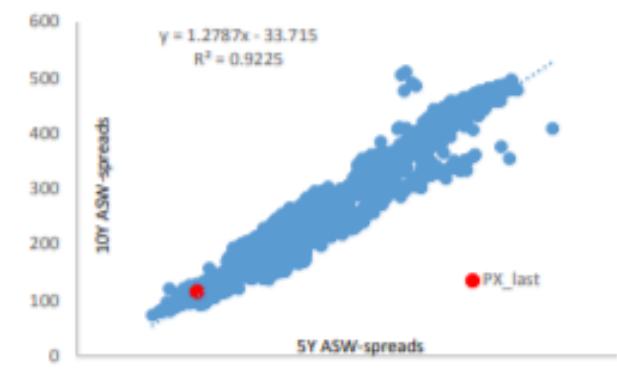
Source: Deutsche Bank

## Turkey



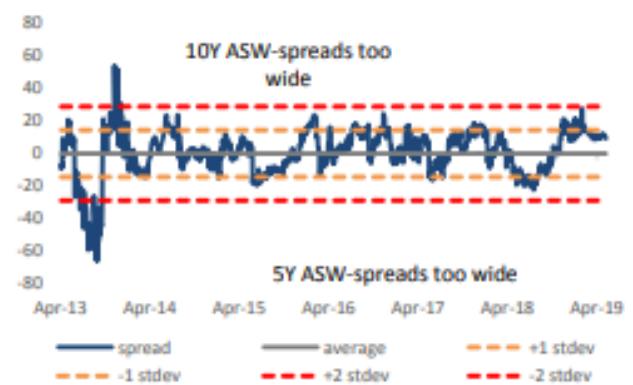
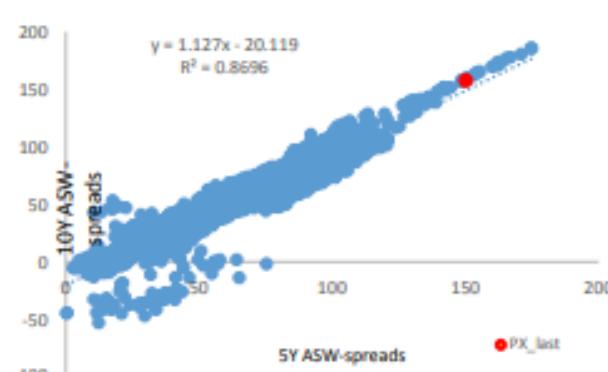
Source: Deutsche Bank

## Brazil

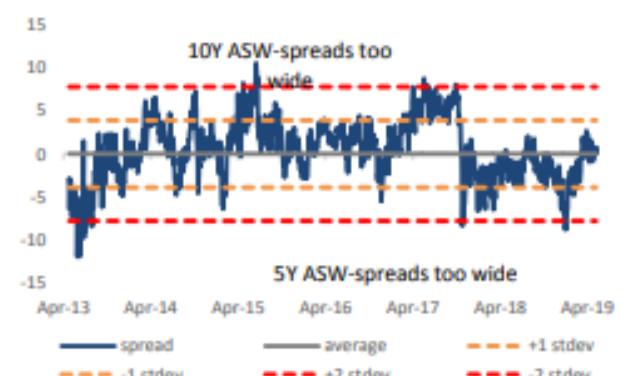
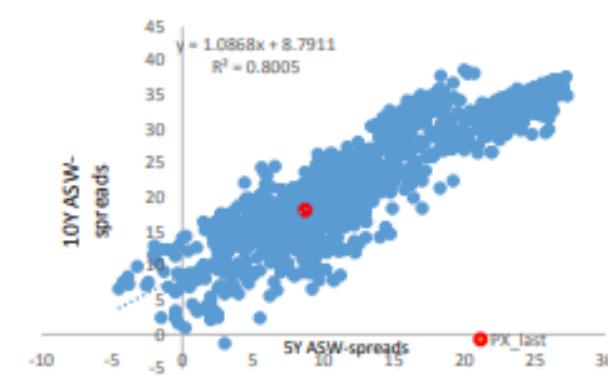


Source: Deutsche Bank

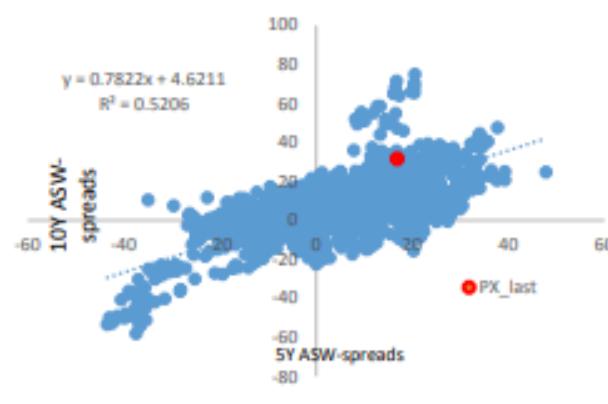
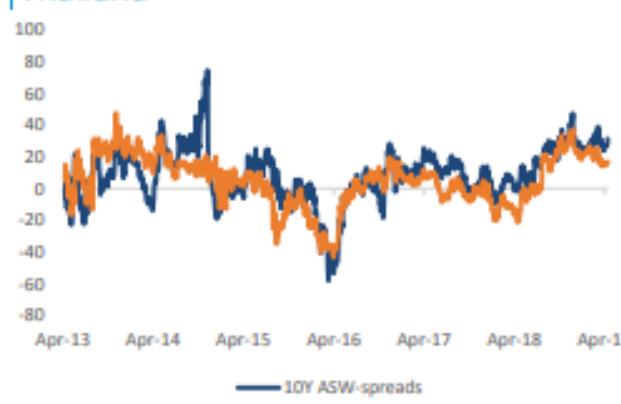
## India



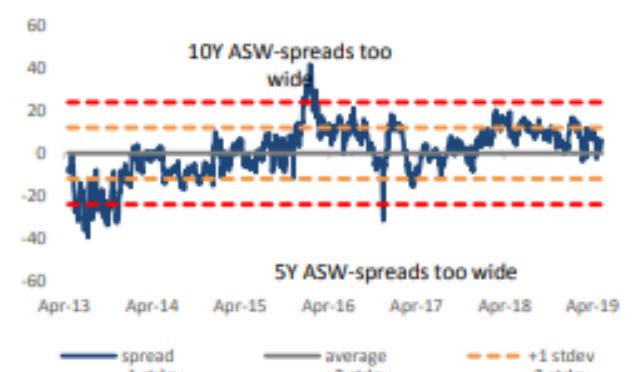
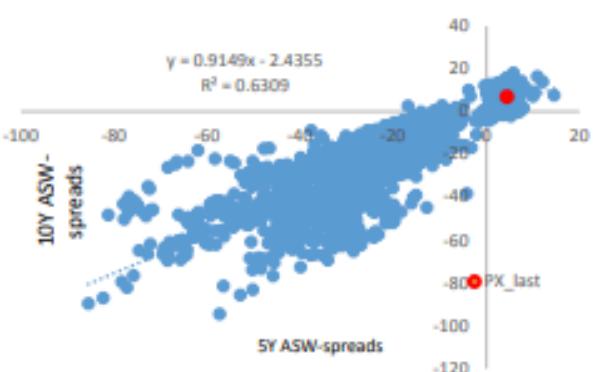
## South Korea



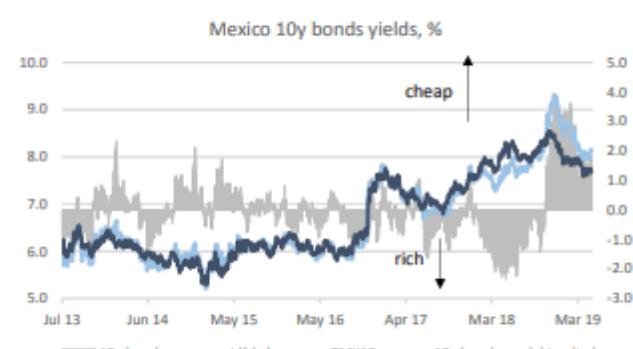
## Thailand



## Malaysia

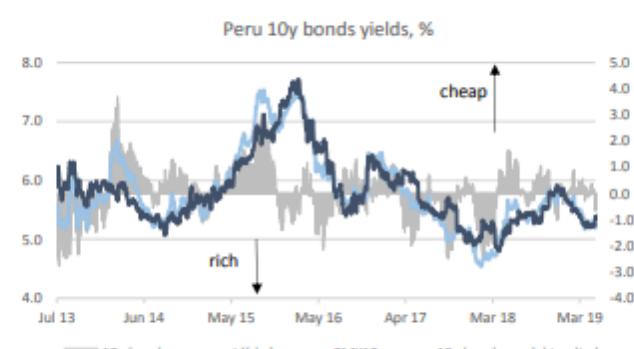


## Mexico



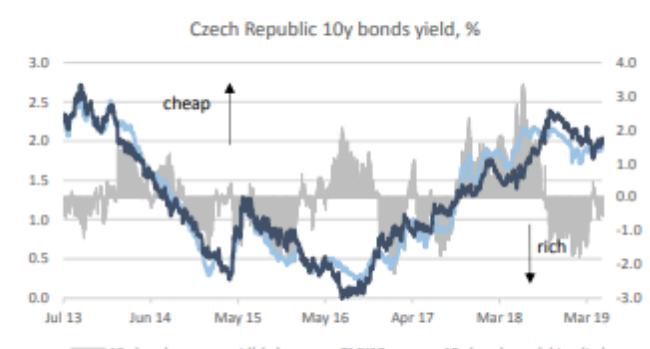
Source: Deutsche Bank

## Peru



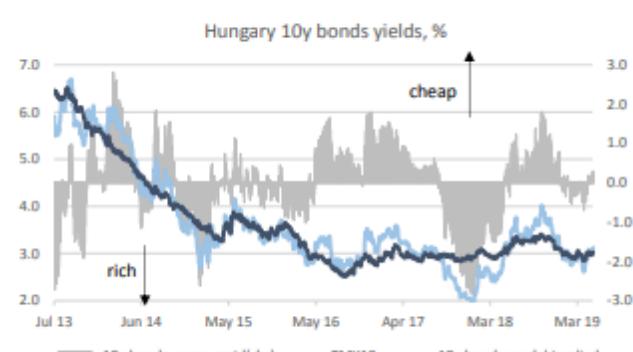
Source: Deutsche Bank

## Czech Republic



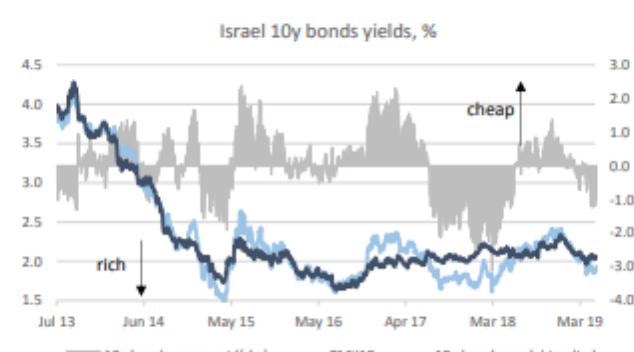
Source: Deutsche Bank

## Hungary



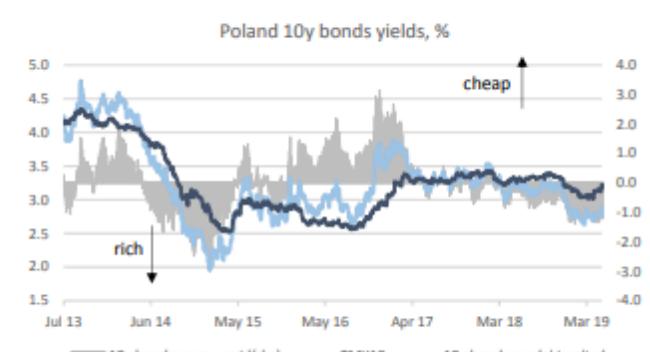
Source: Deutsche Bank

## Israel



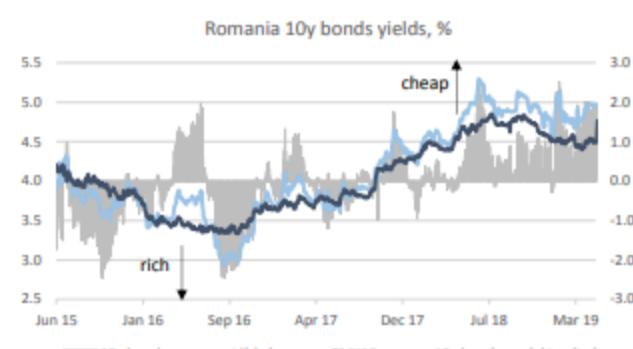
Source: Deutsche Bank

## Poland



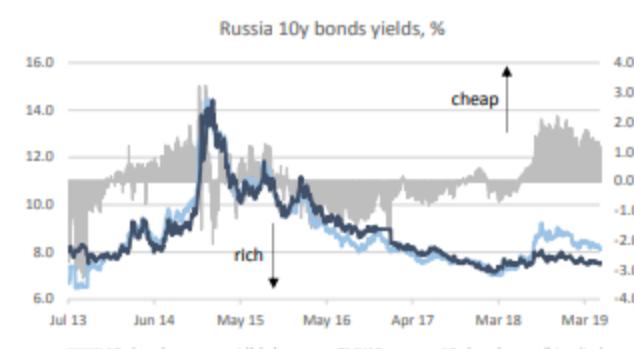
Source: Deutsche Bank

## Romania



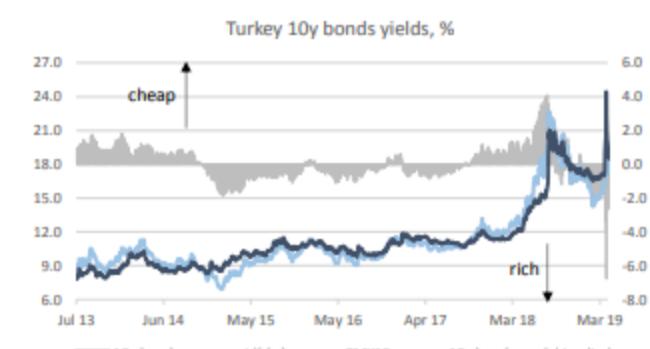
Source: Deutsche Bank

## Russia



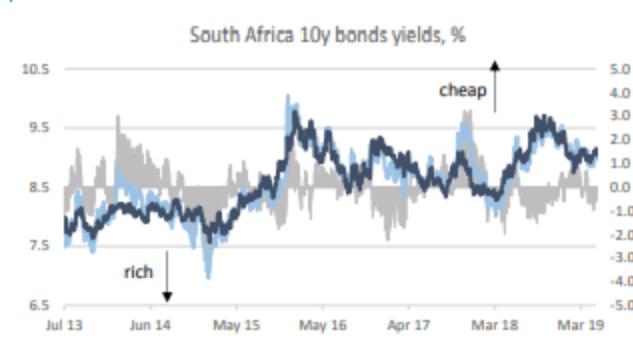
Source: Deutsche Bank

## Turkey



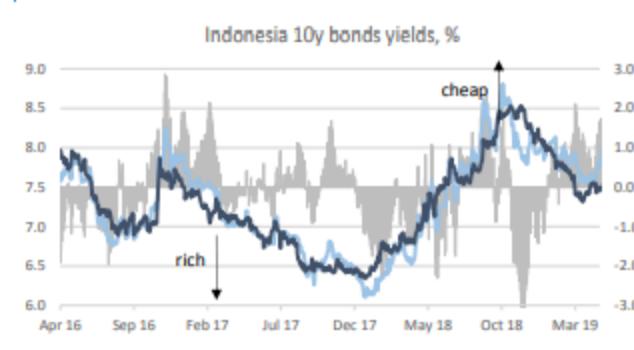
Source: Deutsche Bank

## South Africa



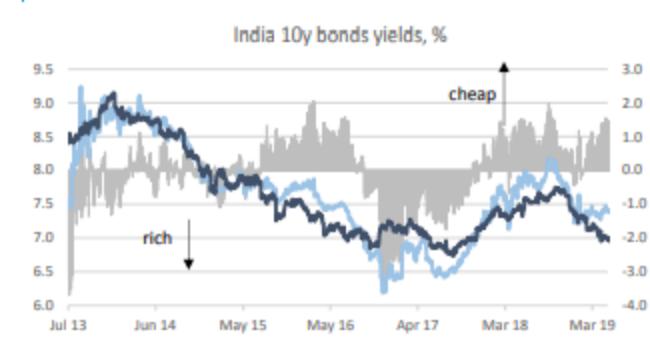
Source: Deutsche Bank

## Indonesia



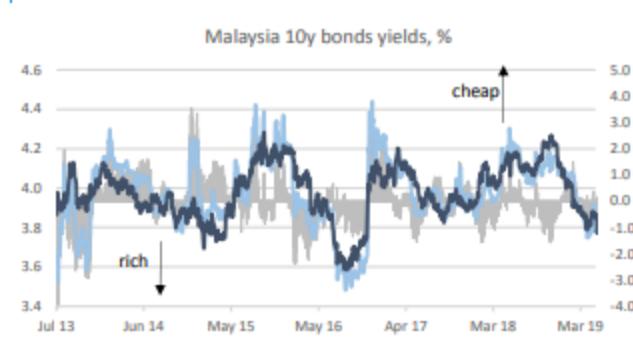
Source: Deutsche Bank

## India



Source: Deutsche Bank

## Malaysia



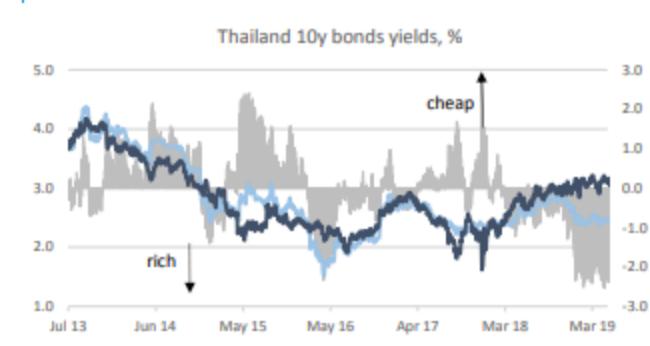
Source: Deutsche Bank

## South Korea



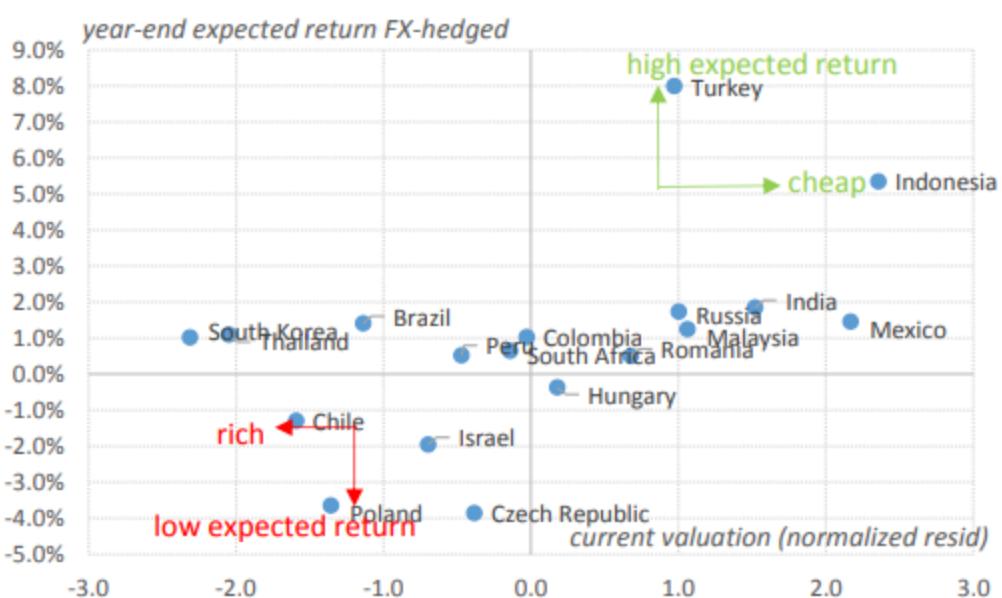
Source: Deutsche Bank

## Thailand

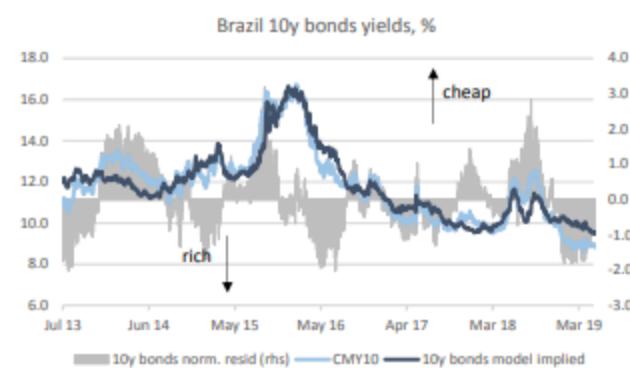


Source: Deutsche Bank

## EM bond valuation model : expected excess return vs current cheapness

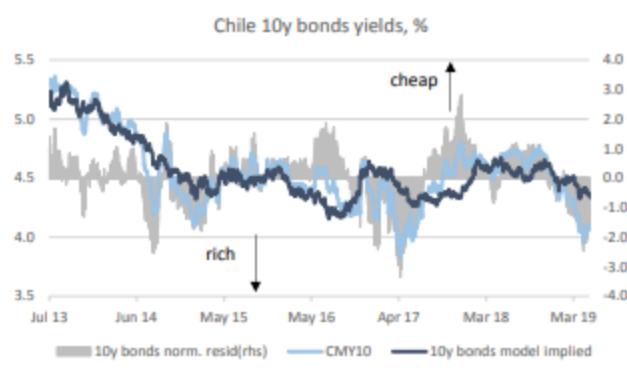


### Brazil



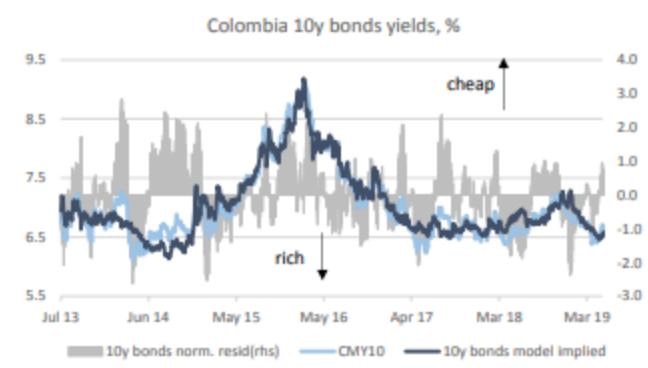
Source: Deutsche Bank

### Chile



Source: Deutsche Bank

### Colombia



Source: Deutsche Bank



Exhibit 4: Counter cyclical factor is leaning against CNY weakness



Source: J.P. Morgan

In the absence of a major circuit breaker, the market bias is likely to take USD/CNH higher, with the basis between CNH and the onshore spot level widening back out to levels last seen in Q2/Q3 last year. We would be mindful of the authorities resolve though, particularly with spot USD/CNH now within striking distance of previous highs and the all-important 7.00 handle.

**Since trade tensions re-ignited, no EM Asia currency has fallen more against the USD than CNH. We see scope for some catch up in the period ahead,** as the trade conflict has the potential to undermine an already fragile global capex backdrop. Trade orientated currencies, particularly those that are sensitive to equity outflows appear the most vulnerable.

**Our analysis suggests that long USD/TWD represents the best risk/reward under this framework** (see [China FX and spillover risk to EM Asia: adding short TWD position via options](#))

## ...but be mindful of the Beijing's resolve

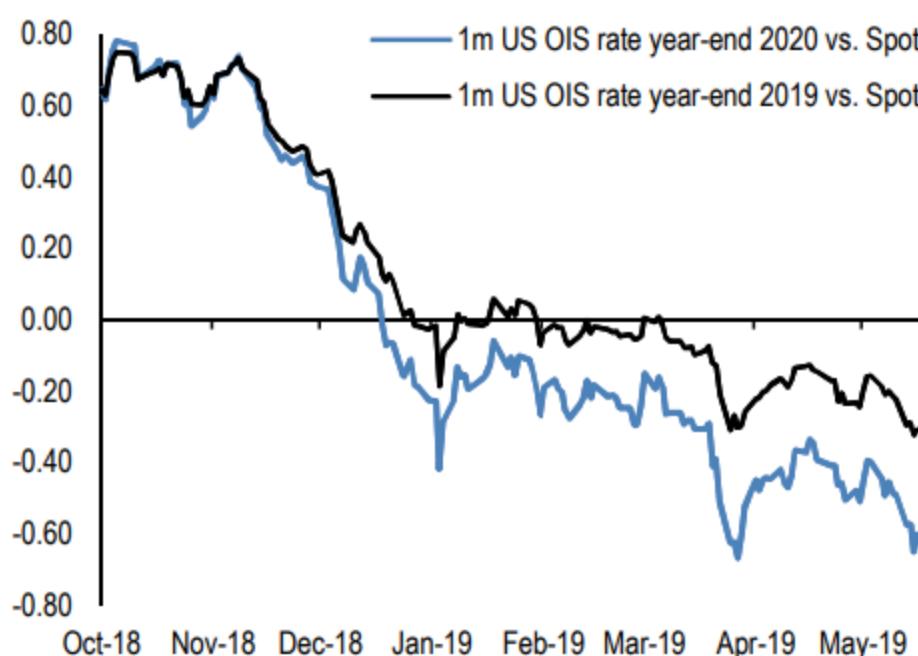
**Amid the escalation in rhetoric, Chinese authorities are leaning against the pace of CNY depreciation.** The implied counter cyclical factor (CCF) in our daily CNY fixing model suggests a strengthening bias of ~1000pips in the middle part of this week (Exhibit 4), which is by far the largest cumulative CCF quantum since it was first introduced in late May-2017. In addition, the PBoC also conducted 20bn yuan worth of HKMA bill issuance mid-week to support the offshore renminbi by draining CNH liquidity, raising CNH yields/forward points (1M CNH FX implied yield rose to 4% intra-week from 2.5%) and thereby rendering shorting the currency expensive. Recall that this is a relatively new addition to the PBoC's toolkit that serves twin purposes of supporting the development of the offshore CNH market but also crucially giving the central bank another lever to manage CNH liquidity and by extension expectations of RMB depreciation ([Controlling CNY expectations via the CNH market](#), Liao and Luk, December 7, 2018). Finally, reports on the [newswires](#) are that the authorities won't let CNY weaken past 7 against the USD.

**G10**

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Figure 6: Fed rate cut expectations by the end of 2019 and by the end of 2020

In %.



Source: J.P. Morgan.

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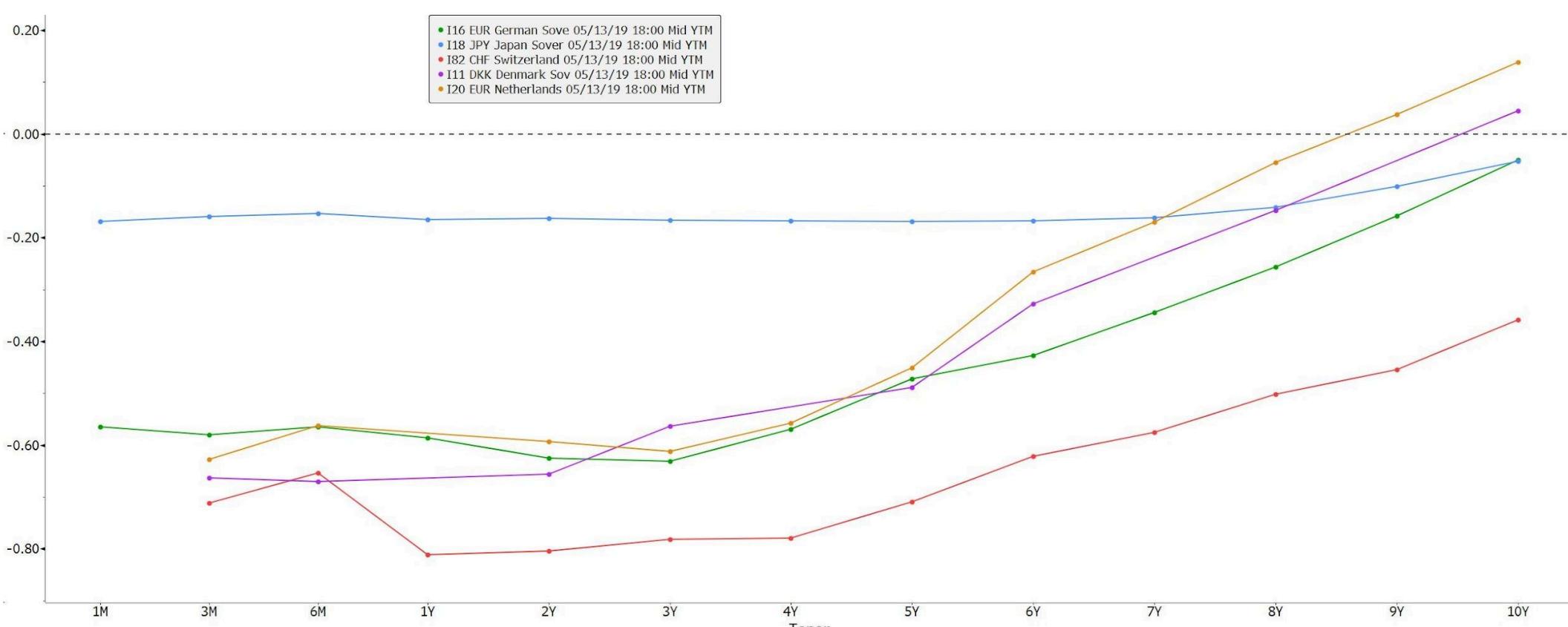
## Market Reaction

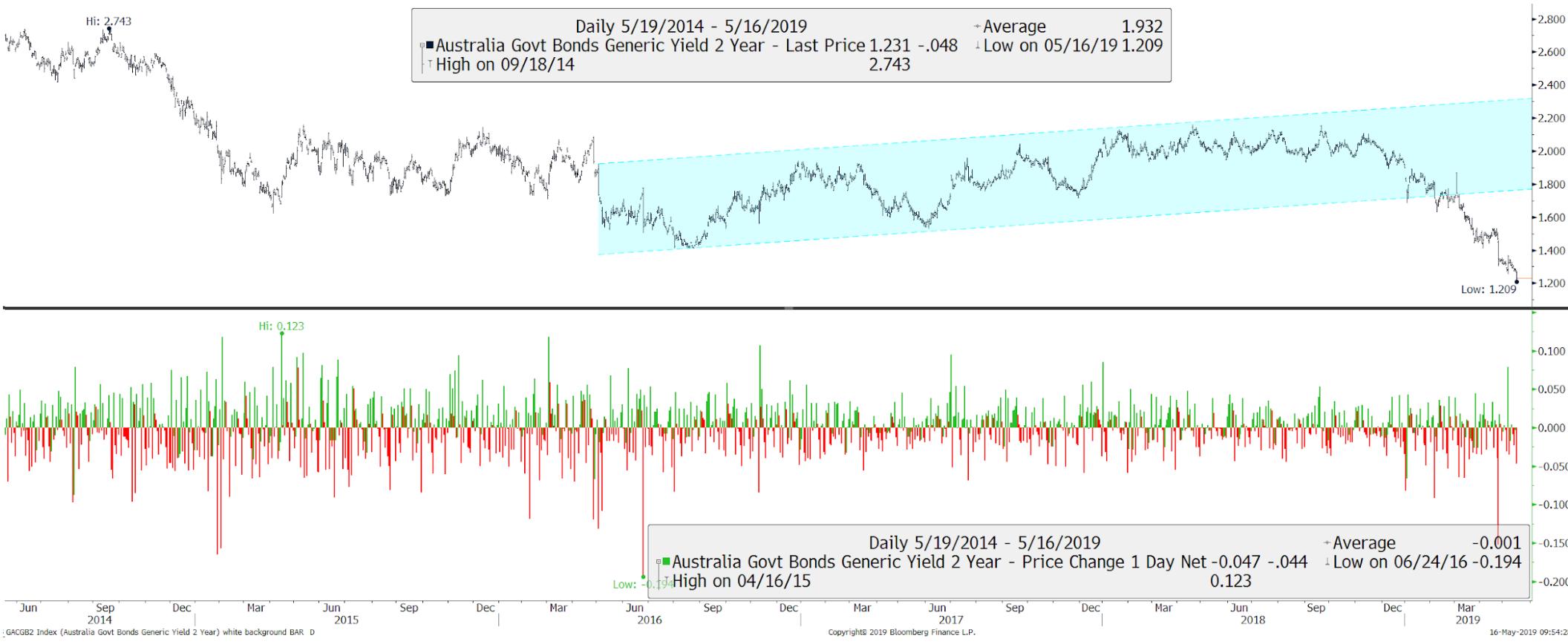
**Exhibit 1: The market reaction to tariff escalation in the past 2 weeks has been similar to last year's escalation events, but the ultimate fallout remains unclear but ominous**

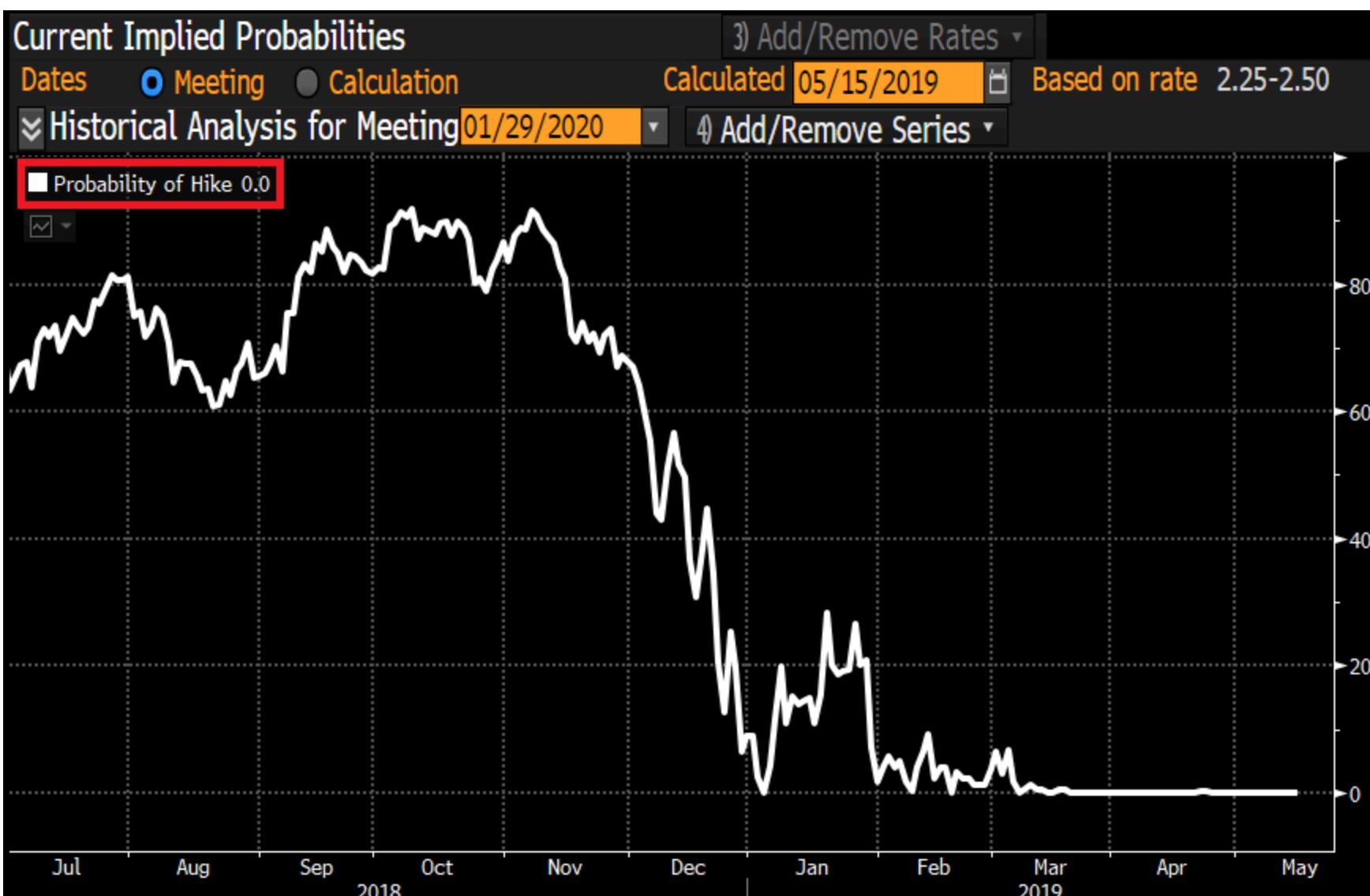
	10d change following major Tariff events					Average change			
	Jun'18	Jul'18	Aug'18-A	Aug'18-B	Sep'18	May'19	+20d	+40d	+60d
<b>Reserve FX</b>									
USD TWI	-0.2%	0.8%	1.3%	0.2%	0.9%	0.7%	0.1%	0.9%	1.3%
JPY TWI	0.7%	-0.8%	1.8%	0.1%	-0.2%	2.3%	-0.3%	0.3%	0.3%
CHF TWI	0.2%	0.0%	1.9%	1.6%	-2.0%	1.3%	0.2%	1.0%	1.0%
EUR TWI	1.3%	0.6%	-1.9%	0.4%	-1.2%	0.6%	0.3%	-0.1%	-0.3%
<b>High Beta FX</b>									
CNH/USD	-3.4%	-2.0%	-1.4%	0.0%	-0.7%	-3.0%	-1.8%	-2.8%	-2.9%
ADXY	-2.1%	-1.1%	-1.1%	-0.4%	-1.0%	-1.8%	-1.2%	-1.8%	-1.9%
EMCI	-0.4%	-0.6%	-5.4%	-2.5%	-0.3%	-1.5%	-1.0%	-2.6%	-2.8%
G10 High Beta	-0.9%	-0.3%	-1.3%	-1.2%	-1.2%	-0.7%	-0.3%	-0.7%	-1.1%
<b>Other Markets</b>									
SHCOMP	-8.5%	1.4%	-3.3%	-0.8%	-6.3%	-0.9%	-1.7%	-3.4%	-4.0%
S&P	-2.4%	2.5%	0.8%	0.6%	-1.5%	-2.4%	0.7%	-0.4%	-3.2%
USD 2y OIS	-5.0	3.5	-2.5	5.1	10.0	-16.2	7.6	10.3	10.3
UST 10y	-9.9	0.7	-6.9	5.3	15.9	-12.5	6.6	7.8	6.7

Source: JPMorgan; Note: business days; G10 High Beta is average TWI's of AUD, CAD, NZD, and NOKs

15-Jun-18 = Announcement of Phase I Tariffs; 5-Jul-18 = Implementation of \$34bn tranche of Phase I Tariffs; 1-Aug-18 = Announcement of Phase II Tariffs; 23-Aug-18 = Implementation of \$16bn tranche of Phase I Tariffs; 24-Sep-18 – Implementation of first 10% of Phase II Tariffs; 5-May-19 = Ratchet up of Phase II Tariffs to 25%







### Box: How we model the "fair value" of forward Fed pricing

Among all available market variables that trade on the back of future Fed policy expectations, we choose the Eurodollar (ED) future contract as it has a much longer history than other money market rates; this enables us to look at previous hiking/cutting cycles. Specifically, we use the 9<sup>th</sup> ED contract and take the difference between that and the spot Fed Funds rate as the gauge for market pricing of Fed rate hikes/cuts over the next two years.

We study the relationship between macro variables and market pricing for future Fed policy in a similar way to an augmented Taylor rule. We apply two types of OLS regressions to model fair value, i.e. in level terms and change terms. In these models, we include as explanatory variables: a) the gap between neutral rates and current policy rate (as a proxy for 'policy space'), b) US manufacturing ISM to capture forward growth momentum, c) market implied 5y5y inflation expectations and d) the US equity market S&P500 index (as a proxy for financial conditions). The model starts from 1999, due to the limited history for inflation expectations; we use monthly data in the analysis.

The **level regressions** aim to capture the fair value of Fed policy expectations given our position in the policy cycle, as well as forward-looking indicators for growth, inflation and financial conditions. When using the S&P 500 index in our regression, we convert it into a stationary series. We first calculate the natural logarithm of the price series and then detrend the log series using an **HP filter**. The new series effectively is the percentage deviation from trend.

**Figure 6: Model results for 'fair' forward Fed pricing**

Full sample level Regression model					
	alpha	Gap b/t neutral and FFR (bp)	Mfg ISM (%)	(% deviation from tre 5y5y inflation (bp))	
coefficient	-61	0.5	0.8	0.1	0.3
Tstat	-1.0	11.6	0.7	0.1	2.4
<b>R-square</b>	<b>51%</b>				

Regression model on 3-month changes					
	alpha	Gap b/t neutral and FFR (bp)	Mfg ISM	SPX (%)	5y5y inflation (bp)
coefficient	-3	0.7	2.5	1.8	0.7
Tstat	-0.9	8.9	2.2	3.5	5.3
<b>R-square</b>	<b>43%</b>				

Regression model on 6-month changes					
	alpha	Gap b/t neutral and FFR (bp)	Mfg ISM	SPX (%)	5y5y inflation (bp)
coefficient	-5	0.8	2.8	1.4	0.8
Tstat	-1.2	11.3	2.5	2.8	5.5
<b>R-square</b>	<b>54%</b>				

Source: UBS calculations. Note: In the Four-regime regression, T1, T2 and T3 are dummy variables that reflect the time periods of QE2 to Taper Tantrum, post Taper Tantrum, and the current low inflation expectation regime starting from Q4 2015. The product of these dummy variables and other macro factors aim to capture the regime-dependent relationship between the macro factors and the Fed pricing.

- First we run a full sample model to capture the long-term relationship between the various variables. As shown in the top table in Figure 6, the variables that matter over the long run are the 'policy space' and long-term inflation expectations. The fitted line from the full-sample model is shown in Figure 8.
- Second, we also run rolling regressions, both in 3-year and 5-year windows, in order to capture the evolution in the relationship between forward Fed pricing and macro variables. Five-year rolling betas are shown in Figure 7. It is interesting to note that inflation expectations are becoming a more dominant driver recently; as is the diminishing influence of the 'policy room' for tightening, as policy rates have been rising towards the neutral range.

In the **change regressions**, we focus on how Fed policy expectations over the next two years change in light of changes on the explanatory macro variables.

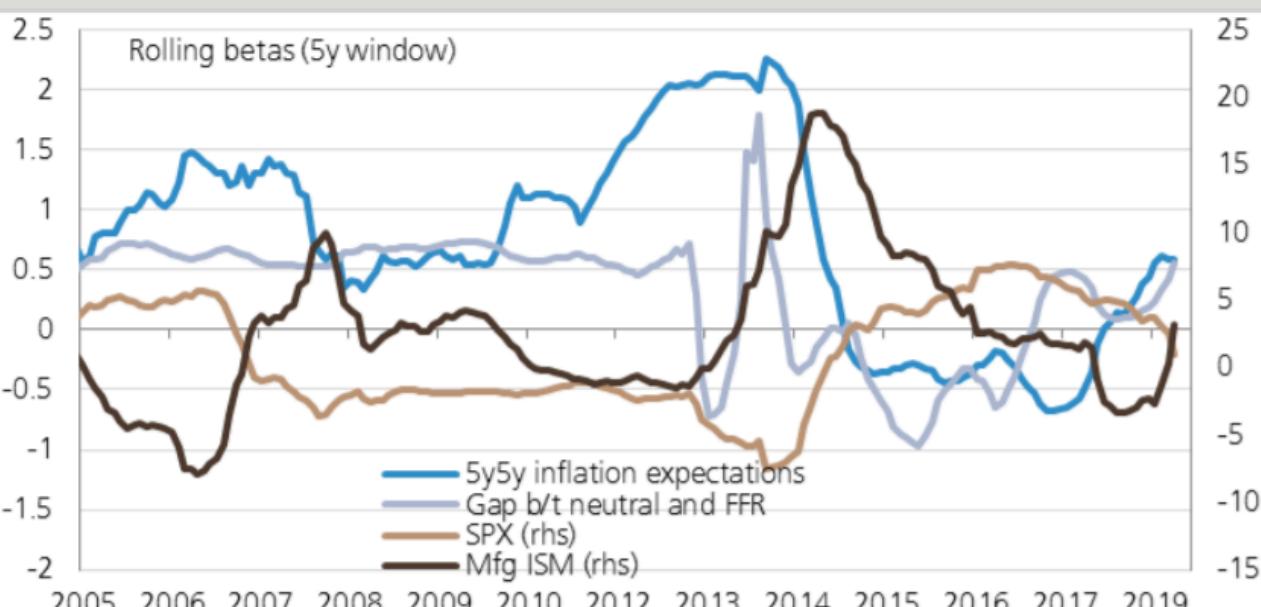
We run two regressions on changes; one working with 3-month changes to capture the short-term correlation and another

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UBS 7

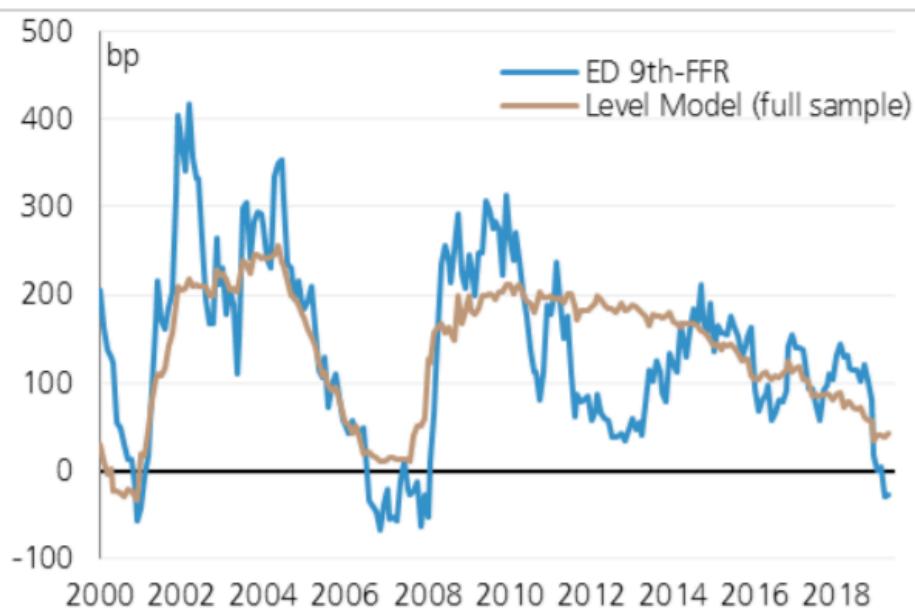
with 6-month changes to reflect slightly more medium-term dynamics (as shown in the bottom two tables in Figure 6). In both models, the coefficients for the four macro factors are significant and have the appropriate signs; that is, more 'policy room' for rate hikes, higher ISM, easier financial conditions, and higher inflation expectations all imply pricing for more Fed hikes.

**Figure 7: Rolling betas of key macro variables**



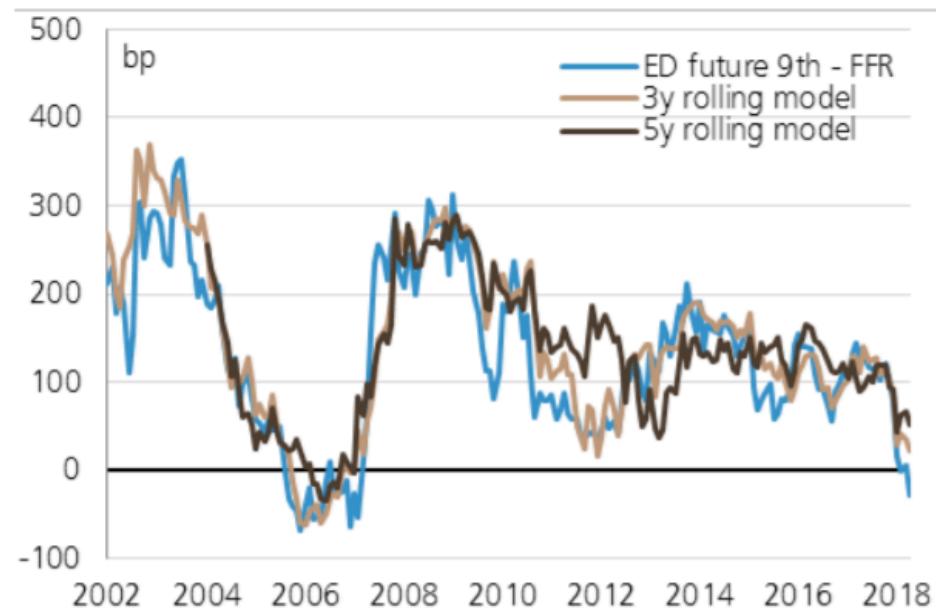
Source: Bloomberg, UBS calculations

**Figure 8: Market pricing for the Fed appears to be too dovish vs fundamentals**



Source: UBS calculations, Bloomberg

**Figure 9: Conducting the analysis on a rolling window basis confirms this finding**



Source: UBS calculations, Bloomberg

## Why You Should Never Use the Hodrick-Prescott Filter\*

James D. Hamilton

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Here's why. (1) The HP filter produces series with spurious dynamic relations that have no basis in the underlying data-generating process. (2) Filtered values at the end of the sample are very different from those in the middle, and are also characterized by spurious dynamics. (3) A statistical formalization of the problem typically produces values for the smoothing parameter vastly at odds with common practice, e.g., a value for  $\lambda$  far below 1600 for quarterly data. (4) There's a better alternative. A regression of the variable at date  $t + h$  on the four most recent values as of date  $t$  offers a robust approach to detrending that achieves all the objectives sought by users of the HP filter with none of its drawbacks.

## 2 Characterizations of the Hodrick-Prescott filter.

Given  $T$  observations on a variable  $y_t$ , Hodrick and Prescott (1981, 1997) proposed interpreting the trend component  $g_t$  as a very smooth series that does not differ too much from the observed  $y_t$ .<sup>1</sup> It is calculated as

$$\min_{\{g_t\}_{t=1}^T} \left\{ \sum_{t=1}^T (y_t - g_t)^2 + \lambda \sum_{t=1}^T [(g_t - g_{t-1}) - (g_{t-1} - g_{t-2})]^2 \right\}. \quad (1)$$

When the smoothness penalty  $\lambda \rightarrow 0$ ,  $g_t$  would just be the series  $y_t$  itself, whereas when  $\lambda \rightarrow \infty$  the procedure amounts to a regression on a linear time trend (that is, produces a series whose second difference is exactly 0). The common practice is to use a value of  $\lambda = 1600$  for quarterly time series.

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<sup>1</sup> Phillips and Jin (2015) reviewed the rich prior history of generalizations of this approach.

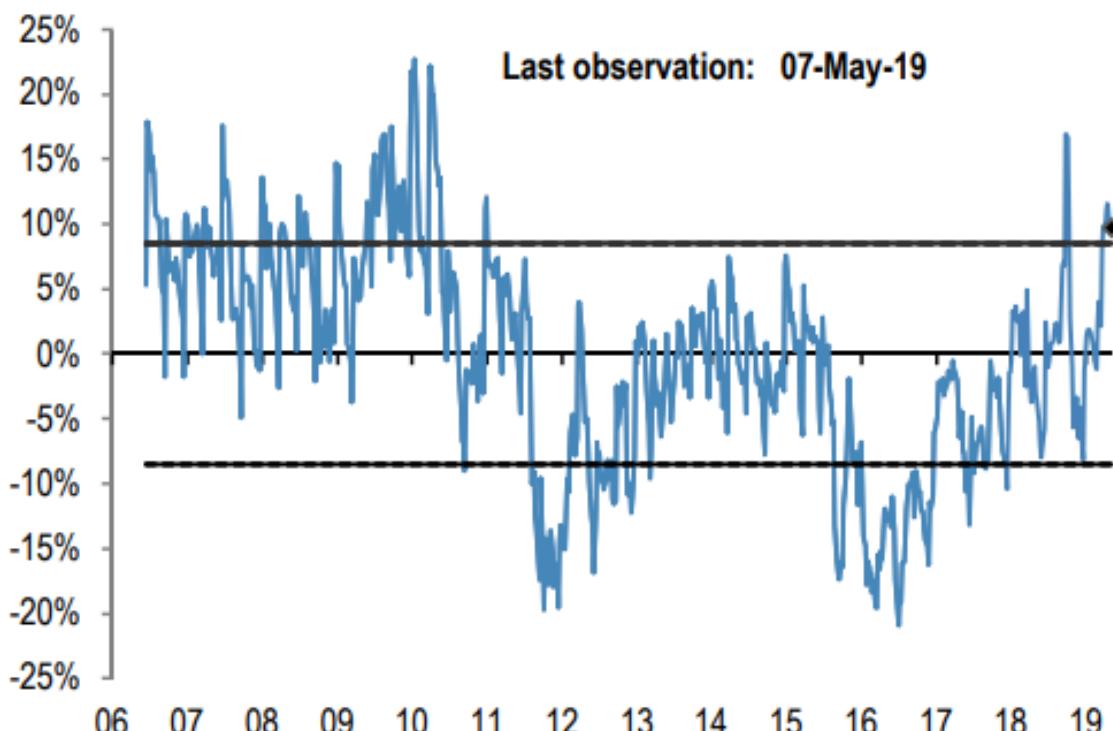
**through the summer.** We are becoming even more concerned on Asia and see USD/CNY breaking through 7. We do not see a quick resolution to the trade war and argue that Chinese authorities will become more amenable to currency weakness. The JPY should be a continued beneficiary of global volatility and we forecast a move down to 105 in USD/JPY. In the midst of this turmoil EM remains vulnerable so we prefer relative value trades with a low global beta. In all, our overall bias is clear: higher volatility and weaker risk appetite are here to stay.

Theme #1: Knockin' on Seven's door – sell CNH/JPY  
Theme #2: Put out of misery – buy EUR/USD put  
Theme #3: Farageheit 451 - sell GBP/JPY  
Theme #4: Laughing Stokk - buy EUR/SEK, sell EUR/CHF  
Theme #5: Bear in China's shops - buy USD/TWD; buy PHP vs IDR, INR; sell SGD NEER basket  
Theme #6: The Good, the Cad, and the Ugly - buy AUD/CAD, AUD/NZD  
Theme #7: Not so slick - buy USD/CAD contingent call  
Theme #8: Chile con Zarne - sell ZAR/CLP  
Theme #9: Realoty Czech - buy PLN/CZK  
Theme #10: COP busts cartels - sell MXN/COP  
Theme #11: Corel rift - sell USD/EUR – USD/JPY correlation  
Theme #12: Jezz it up - buy GBP vol  
Theme #13: Zero to hero - sell digi risk reversals

## Chart A18: Spec position indicator on US equity futures vs. intermediate sector UST futures

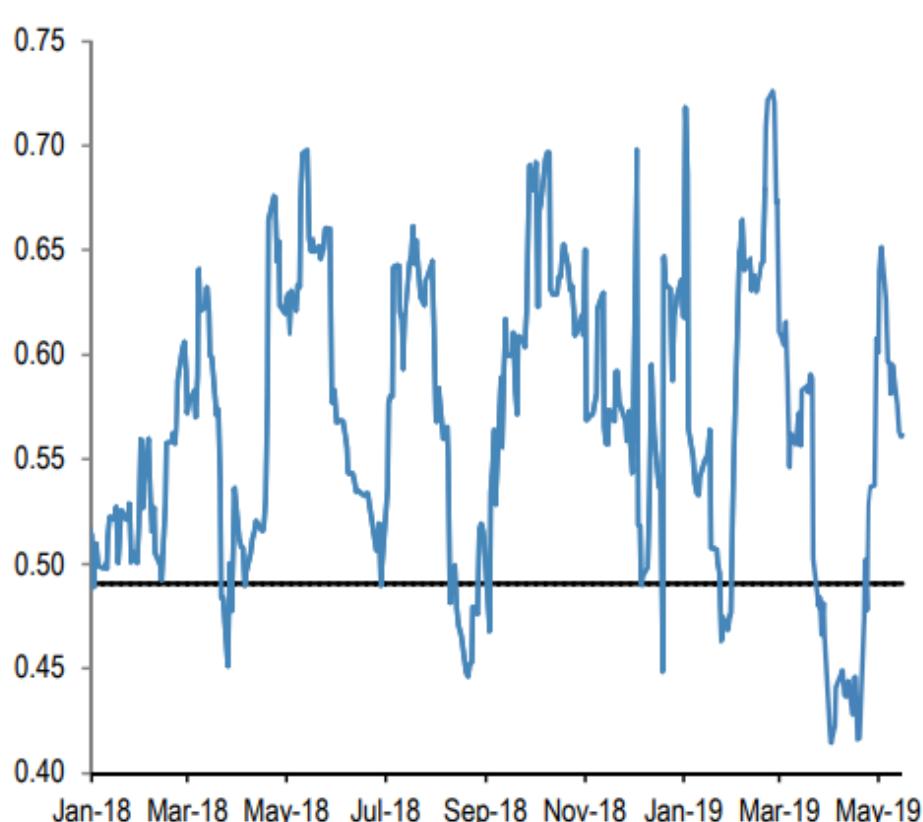
### Difference between net spec positions on US equity futures vs. intermediate sector UST futures

This indicator is derived by the difference between total CFTC positions in US equity futures by Asset managers (Chart A16) scaled by open interest minus the non-commercial category spec position on intermediate sector UST futures (i.e. all UST futures duration weighted ex ED and ex 2Y UST futures) also scaled by open interest.



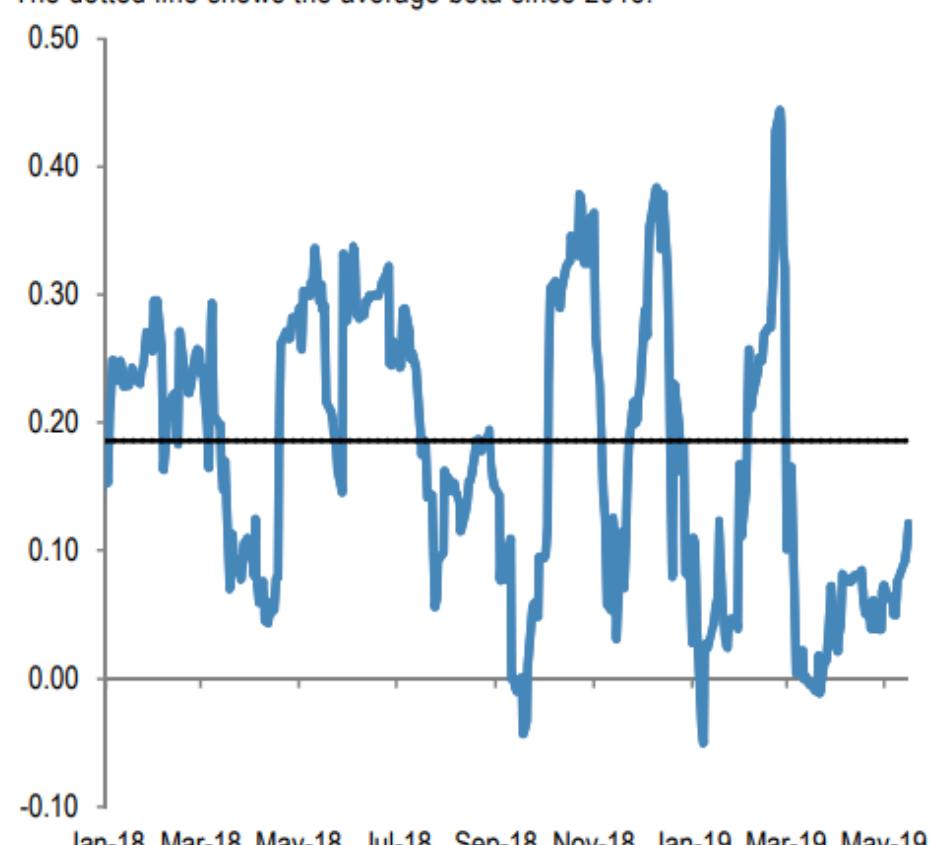
## Chart A19: 21 day rolling beta of 20 biggest active US bond mutual fund managers with respect to the US Agg bond index

The dotted line shows the average beta since 2013.



## Chart A20: 21 day rolling beta of 20 biggest active Euro bond mutual fund managers with respect to the Euro Agg bond index

The dotted line shows the average beta since 2013.



## Chart A21: Performance of various type of investors

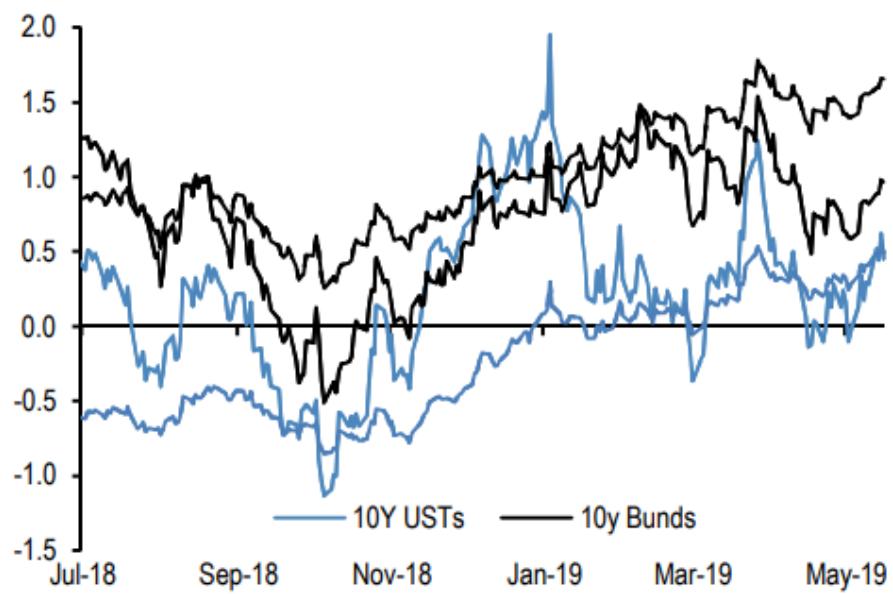
The table depicts the performance of various types of investors in %.

Date	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>Investors</b>									
Equity L/S	-8.4%	7.4%	14.3%	1.8%	-1.0%	5.5%	13.3%	-7.1%	7.6%
Macro ex-CTAs	-4.8%	2.4%	0.0%	0.4%	-0.1%	3.4%	2.3%	-1.3%	2.7%
CTAs	-4.4%	-2.9%	0.7%	15.7%	0.0%	-2.9%	2.5%	-5.8%	3.0%
Risk Parity Funds	9.2%	13.0%	-0.5%	8.1%	-5.1%	10.0%	13.5%	-6.5%	8.3%
Balanced MFs	1.1%	12.2%	18.7%	7.6%	-0.5%	8.4%	14.0%	-4.9%	9.5%
<b>Benchmark</b>									
S&P 500	2.1%	16.0%	32.4%	13.7%	1.4%	12.0%	21.8%	-4.4%	14.6%
60 Equity : 40 Bonds	3.5%	11.3%	18.4%	8.4%	-0.4%	8.0%	16.1%	-1.9%	10.3%
S&P Riskparity Vol 10	7.3%	8.2%	2.0%	4.7%	-4.1%	8.1%	8.0%	-4.0%	8.1%

Source: Bloomberg, HFR, SG CTA Index, J.P. Morgan.

## Chart A22: Momentum signals for 10Y UST and 10Y Bunds

z-score of the momentum signal in our Trend Following Strategy framework shown in Tables A5 and A6 in the Appendix. Solid lines are for the shorter term and dotted lines for longer-term momentum.



Source: Bloomberg, J.P. Morgan.

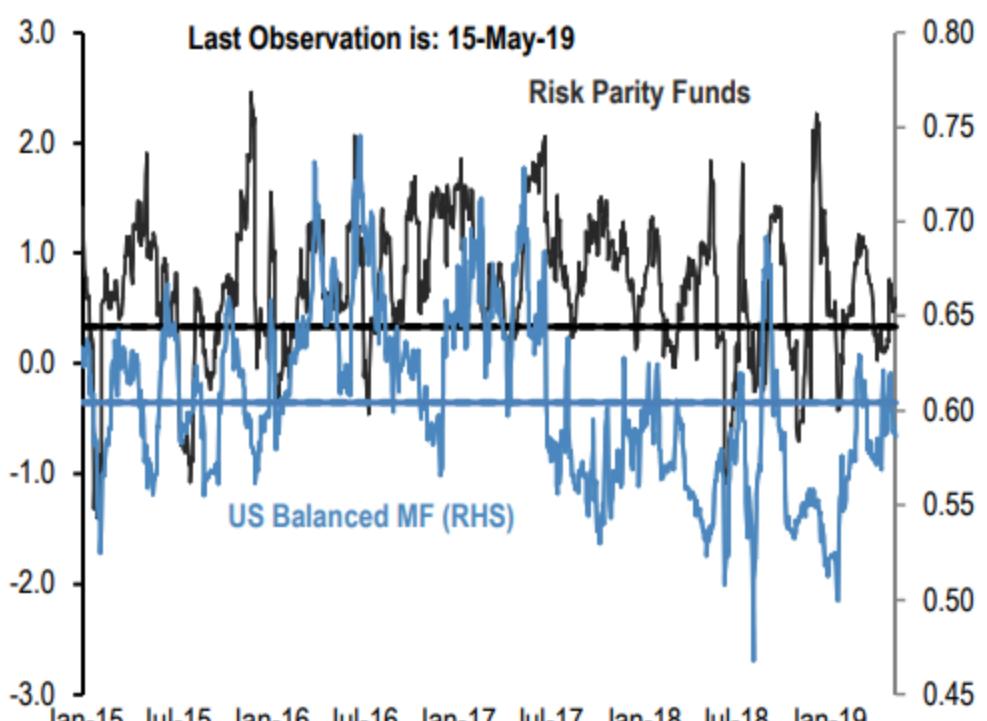
Flows & Liquidity

GLOBAL FLOW

17 May 2019

## Chart A24: Equity beta of US balanced mutual funds and Risk Parity funds

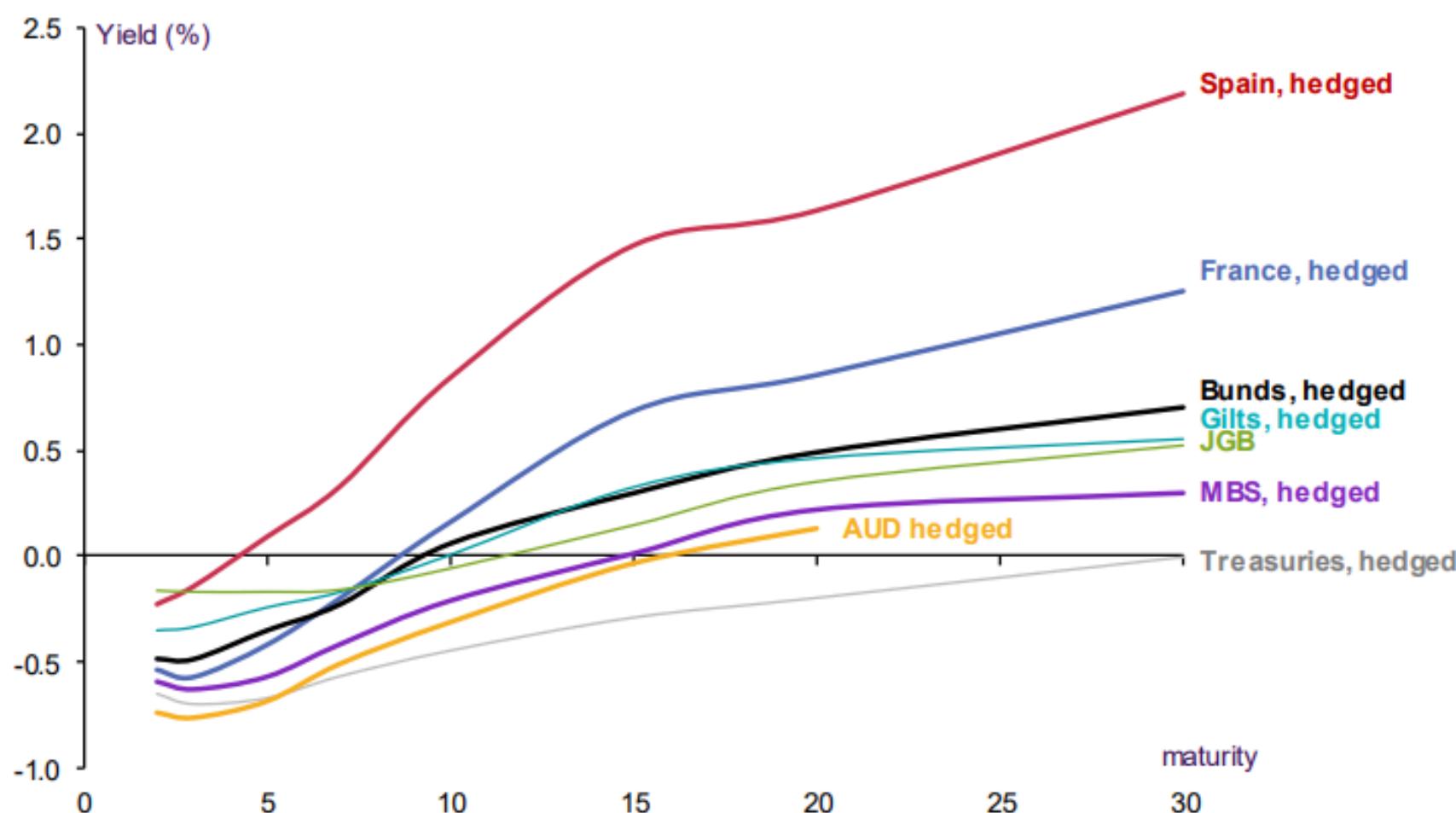
Rolling 21-day equity beta based on a bivariate regression of the daily returns of our balanced mutual fund return index to the daily returns of the S&P 500 and our Risk Parity fund return index to the daily returns of the S&P 500 and Barcap US Agg indices. Given that these funds invest in both equities and bonds we believe that the bivariate regression will be more suitable for these funds. Our risk parity index consists of 25 daily reporting Risk Parity funds. Our balanced mutual fund index includes the top 20 US-based active funds by assets and that have existed since 2006. Our balanced mutual fund index has a total AUM of \$700bn which is around half of the total AUM of \$1.5tr of US based balanced funds which we believe to be a good proxy of the overall industry. It excludes tracker funds and funds with a low tracking error. Dotted lines are average since 2015.



Source: Bloomberg, SG CTA Index, J.P. Morgan.

# The world according to the Japanese FX-hedged investor. Europe is where the opportunities are.

Source: NWM, Bloomberg



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Figure 35: Asset managers still own significant long positions in Treasury futures



Source : CFTC, Deutsche Bank

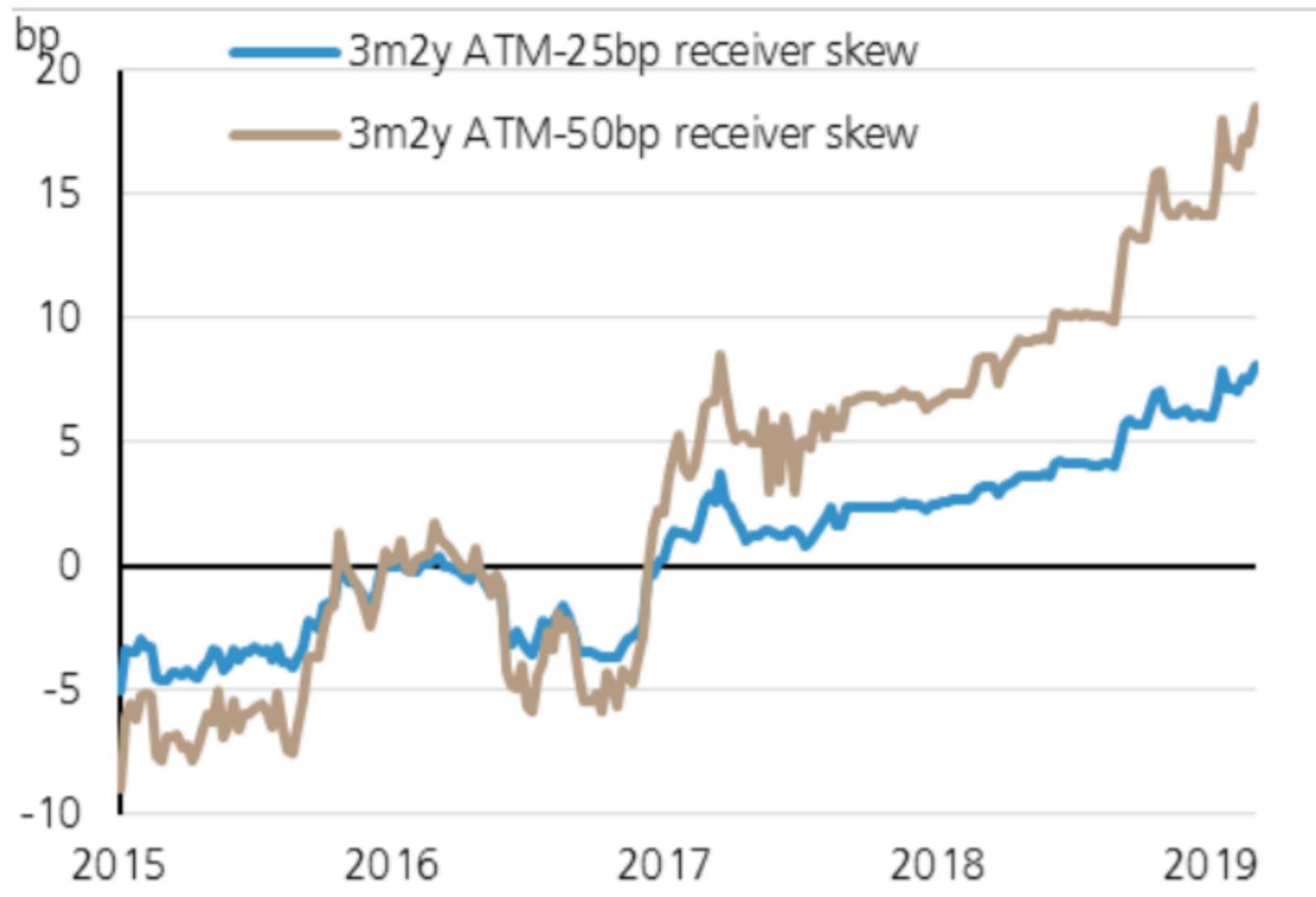
Figure 36: TUM9/U9 calendar spread summary

Contract	TUM9	TUU9	TUM9-TUU9 Spread
CTD	T 2.375% 15-Mar-2021	T 2.625% 15-Jun-2021	
Roll Market (32nds)	106-21 2	106-28 6	-0-07 4
Fair Value (32nds)	106-23 4	106-31 0	-0-07 4
Rich (+) / Cheap (-)	-0-02 2	-0-02 2	0-00 0
BPV / Hedge Ratio	3.82	4.36	100 : 88
Open Interest / % Rolled	3,698,829	677,348	15%

Prices are shown at mid-market and as of 5/15/2019.

Source : Deutsche Bank

**Figure 17: The receiver skews are quite rich**

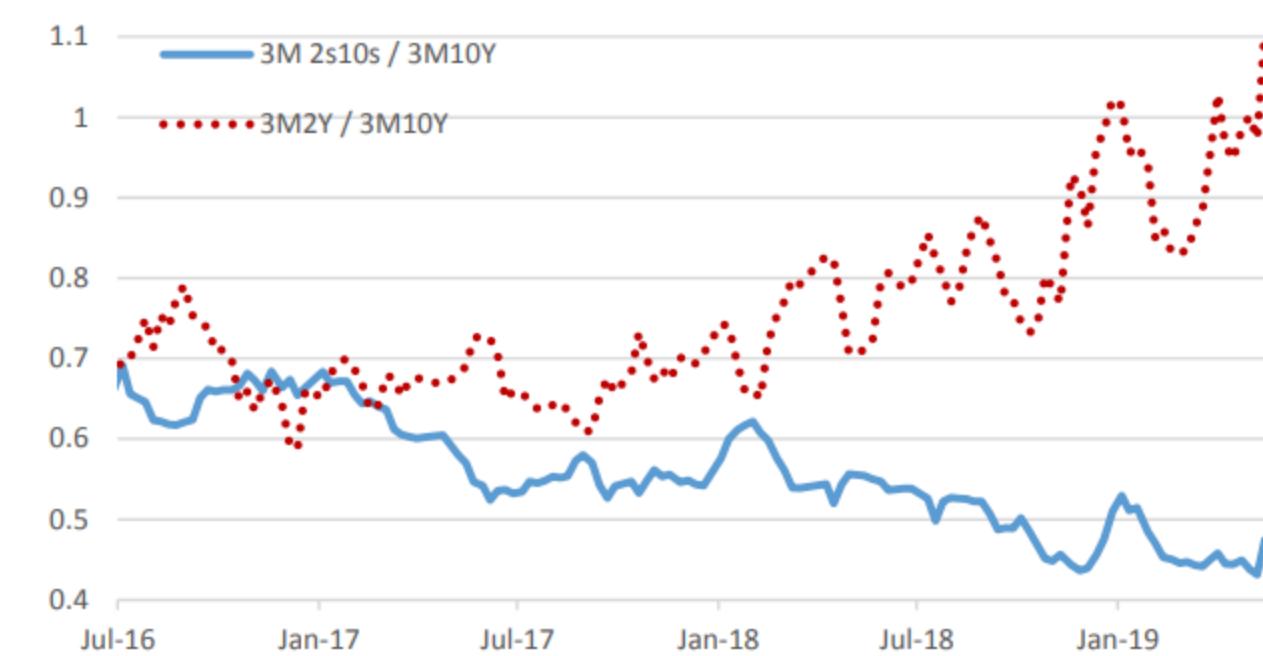


Source: UBS Bloomberg

17 May 2019

Global Fixed Income Weekly

Figure 45: Curve vol vs. vanilla



Source : Deutsche Bank

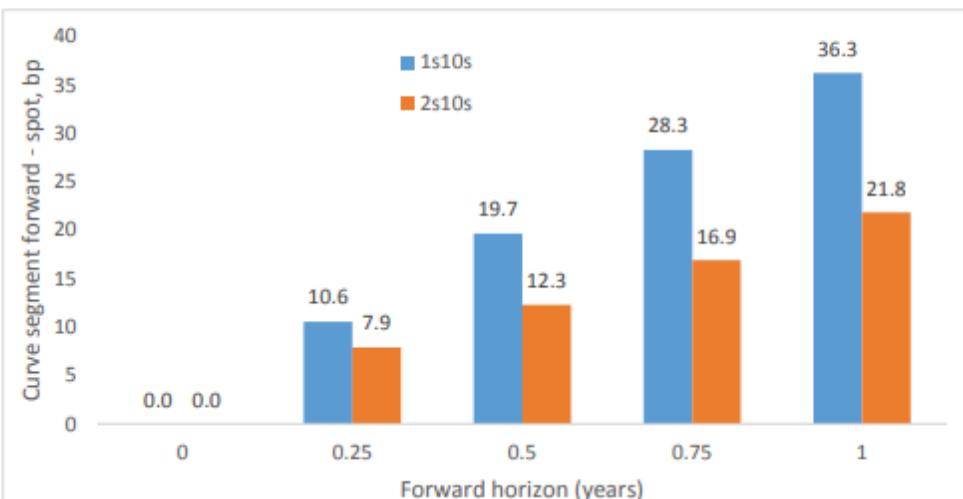
## US Strategy Update - Treasury

### Futures: Jun-19 to Sep-19 Roll

#### Analysis

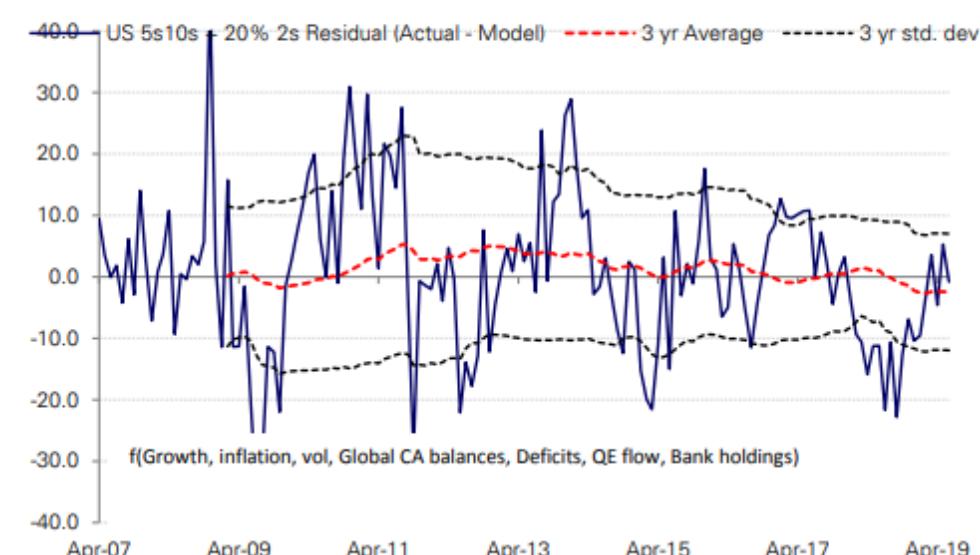
- First notice for M9 Treasury futures is May 31. Open interest in the back contract for TU and FV has started building early in this roll cycle. We think the early OI could reflect short positions taken by the RV and leveraged fund community.
- All futures contracts except the classic bond will roll over to a new, longer maturity CTD. As a result, M9/U9 calendars are exposed to rate and curve risks. We provide an estimated beta for each contract.
- Treasury bill supply is expected to decline over the next several months. The SOFR futures market is pricing for a bigger drop in repo rates relative to fed funds in July and August. Bill issuance volatility stemming from the debt ceiling impasse adds uncertainty to repo rates around late summer.
- Positioning is overall bearish for the calendars. Asset managers still own significant long positions with ~4500K net futures contracts as of May 7. While they have pared back positions marginally in FV, TY, and UXY since the last roll cycle, asset managers increased net longs in TU to a new record level.
- In bond futures, asset managers have been migrating from US to WN over the past year, which may help explain the general cheapening bias in the WN calendar spread in recent roll cycles. A continuation of this trend during this cycle would be bearish for the WN calendar.
- We are bearish across-the-board on M9/U9 calendar spreads

Figure 49: Flatteners roll favorably to spot



Source : Bloomberg Finance LP, Deutsche Bank

Figure 50: 5s10s TP is currently fair, but we expect a stronger dollar and robust demand to exert downward pressure going forward



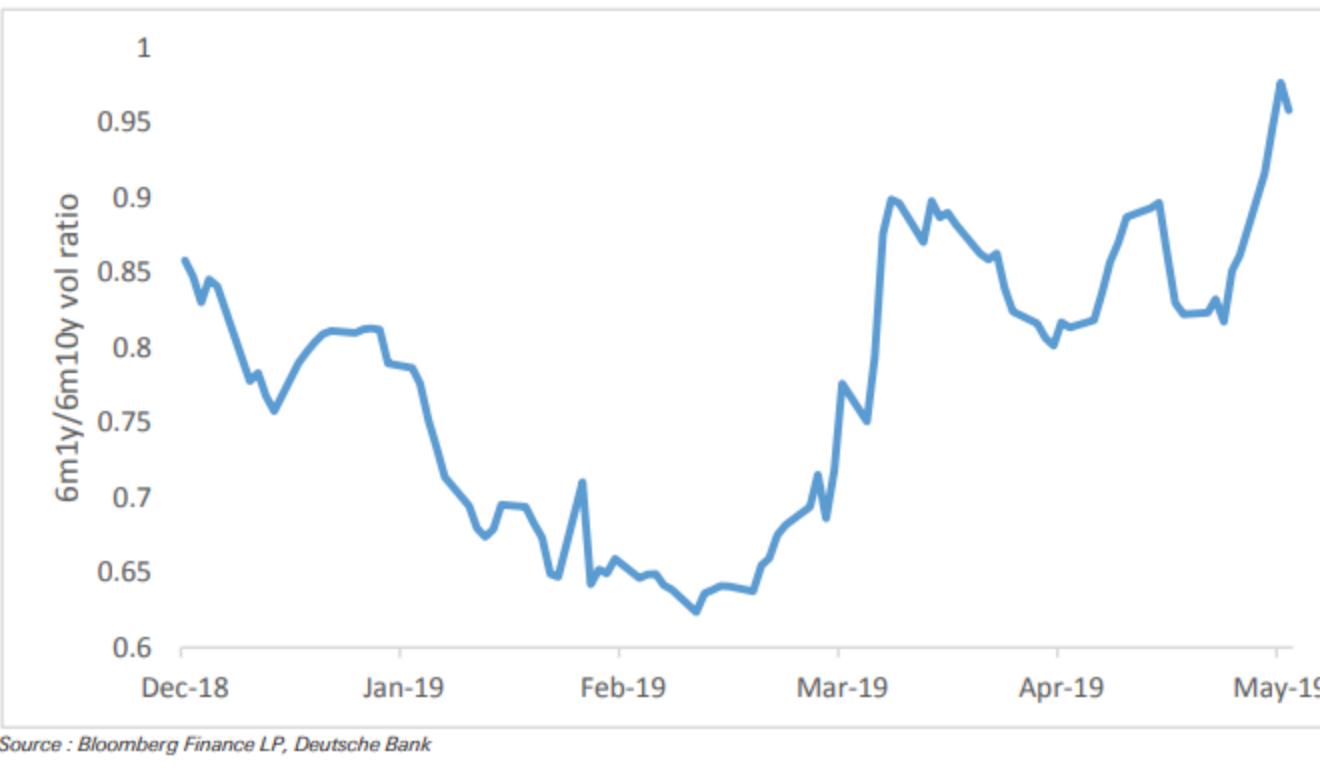
Source : Deutsche Bank

This position rolls in favor of the trade by 20 bp over one year. However, this trade, and similar structures, remains vulnerable to further declines in short rates absent an offsetting decline in the term premium. The primary risk to the trade is that the forward 2s10s spread steepens, and the theoretical maximum loss is unlimited.

**Bearish conditional flatteners** remove the directional risk of a further market rally, while the underlying rate spread will benefit from positive roll characteristics. An example of this class of trades is:

- Buy \$1.03 billion 6m1y payer ATM, sell \$112.5mm 6m10y payer ATM for zero cost.

Figure 51: 6m1y vol has richened to 6m10y vol



Source : Bloomberg Finance LP, Deutsche Bank

Investors can further optimize instruments in flattening positions with respect to implied volatility by buying curve floors and selling OTM payers on longer rates for financing. Specifically, we recommend that investors:

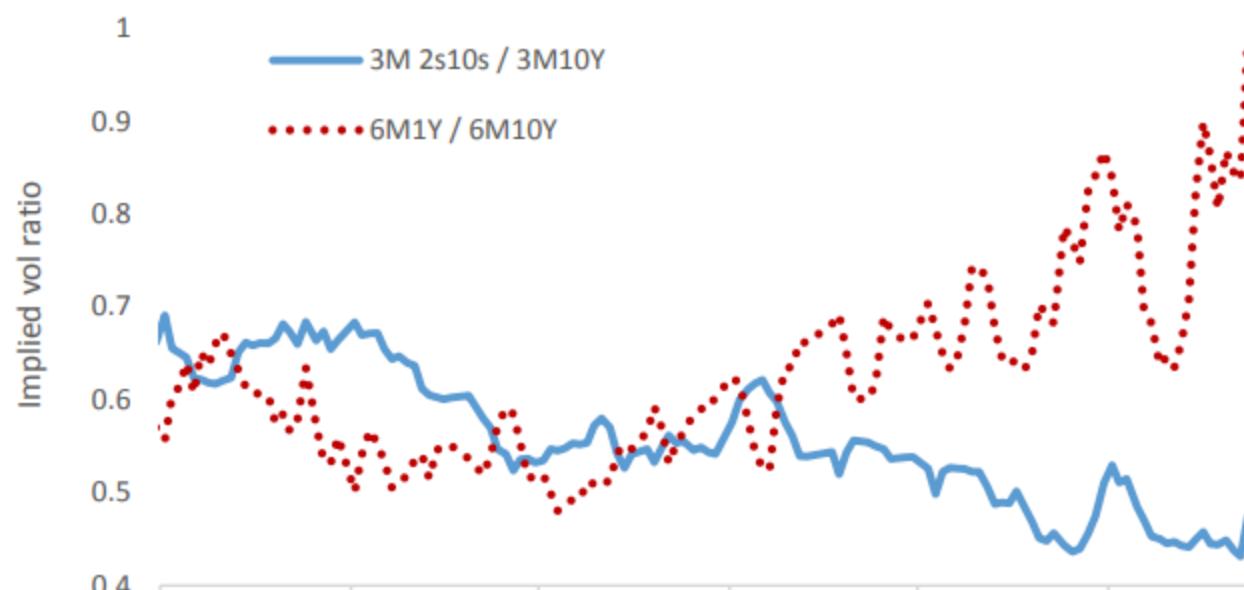
- **Buy \$1bn 3M 2s/10s ATM/curve floor vs. sell \$1bn 3M10Y 13bp OTM CMS caps for zero net premium.**

This trade has a slightly different risk profile than its conditional analogue in terms of swaptions. First, conditional bear flatteners in 2s10s now require net premium to enter because 2Y gamma trades above its 10Y counterpart, i.e one is financing expensive vol with cheap vol and the trade is exposed to bear steepeners.

17 May 2019

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Figure 52: High correlation between curve points has cheapened curve vol , while the upper left has richened to 10y tails in swaptions.



Source : Deutsche Bank

# Forward vol calculations and comparison

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- Forward vols, ie, implied vols starting at future dates, offer a way to analyse how the market expects the implied vol surface to evolve.
- **Calculation:** Forward vols are usually not quoted in the market, but can be calculated by the option triangulation method using mid-curve vols.<sup>1</sup>
- **Comparison:** We plot the forward vols for short (1y) and long (5y) expiry options on various tenors, across USD, EUR, GBP and JPY. Opportunities are identified by looking at the slope of the forward vol curves.
  - **Steep upward slope:** Implies that vols are richer in the forward space. If the vol surface remains unchanged, then forward vols are likely to roll down to lower spot vol levels. Selling forward vols is, therefore, more attractive.
  - **Inverted slope:** Implies that vols are cheaper in the forward space. If the vol surface remains unchanged, then forward vols are likely to roll up to higher spot vol levels. Buying forward vols is, therefore, more attractive.
- Dislocations or views in forward vols are typically traded using calendar spreads and option triangles, although pure forward vol options are also occasionally traded.

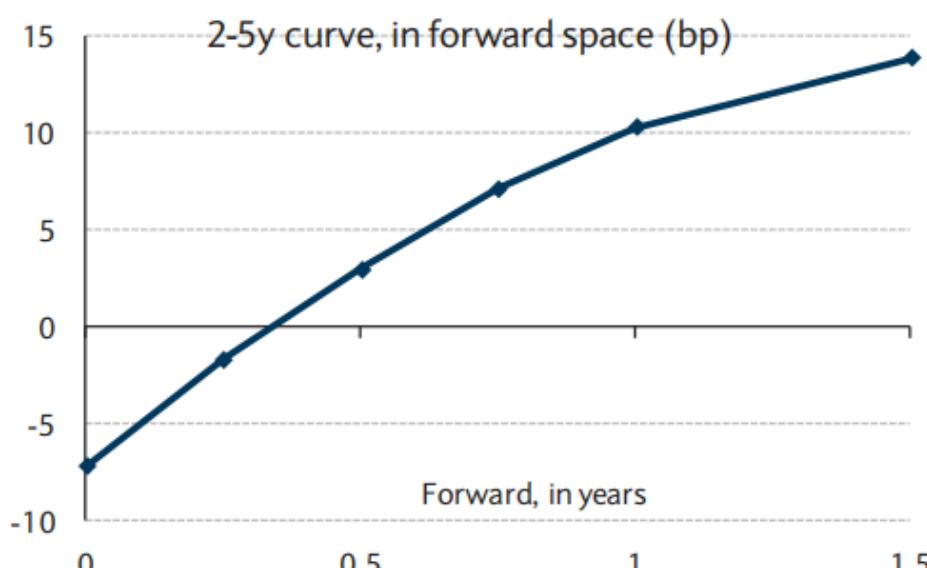
Note: <sup>1</sup>As an example, 5yf 5y\*10y forward vol can be approximated by subtracting the time-weighted variance of 5y\*(5y 10y) mid-curve options from the variance of 10y\*10y options. 5y\*(5y 10y) mid-curve vol, in turn, can be calculated using its two constituent vanilla implied vols, 5y\*5y and 5y\*15y. An implied correlation between 5yf 5y and 5yf 15y rates is required for the mid-curve vol calculation, which we have assumed to be 100%. Note that this assumption can lead to an underestimation of the mid-curve vol, and, hence, an overestimation of the forward vol.

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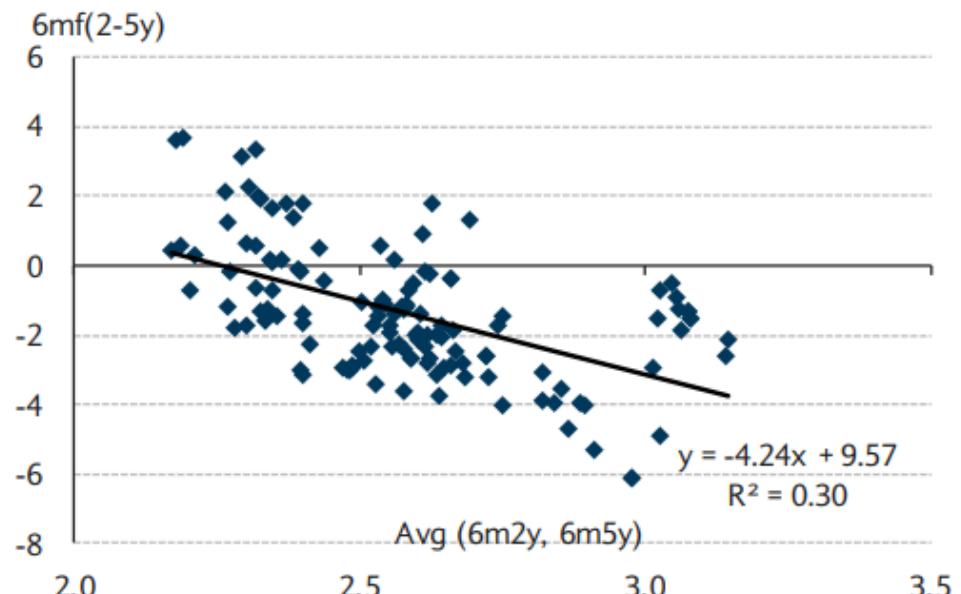


# Trade #1: Buy USD 6m\*2y vs 6m\*5y bear flatteners

USD 6mf 2-5y curve is sizeably steeper than spot 2-5y curve



6mf (2-5y) curve has tended to flatten in a sell-off



## Rationale

- Similar 6m\*2y and 6m\*5y vol levels mean that a zero cost trade can be struck at roughly the same levels as the forward curve
- The trade offers a sizeable carry of c.10bp in six months, if forward rates roll-up to the spot

## Risks

- The trade stands to lose in an aggressive bear steepening of the curve, which appears unlikely given the current outlook

Note: As of 14 May 2019. Source for all tables: Barclays Research

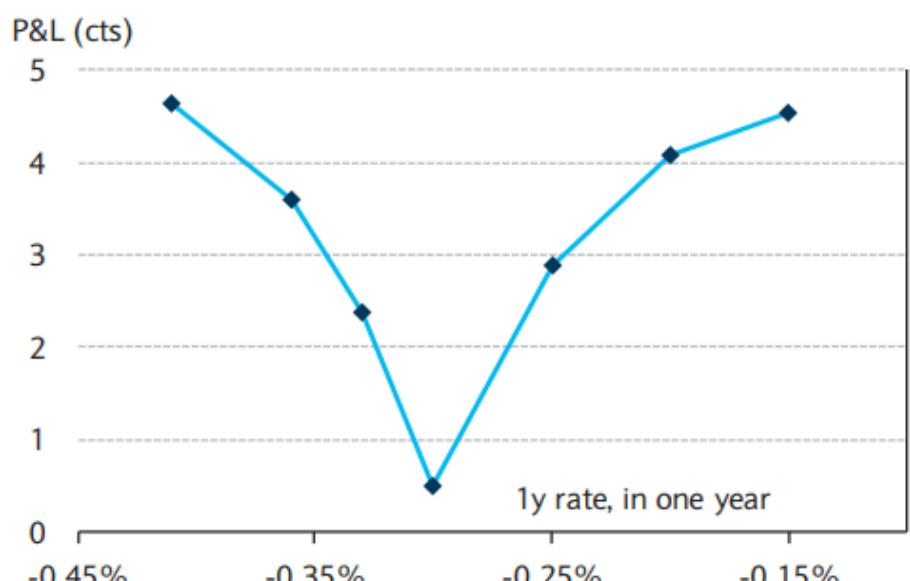


## Trade #2: Sell 1x2 vs 1y1y cap-floor vs swaption straddles

**While still low, the premium intake from selling the wedge has increased recently**



**The P&L is positive in one year, regardless of the rate level (assuming const vol post roll-down)**



### Rationale

- Given the sharp roll-down in implied vols in the top-left, selling the wedge in EUR is profitable regardless of the rate level (assuming constant vol levels, post roll-down)
- The carry for the trade in one year is 3cts, or c.50% of the initial premium intake

### Risks

- A sharp sell-off which leads to a rise in vol levels and steepening of the rates curve can lead to losses on the trade. However, given that the trade is long gamma, the losses are unlikely to be high

Note: As of 14 May 2019. Source for all charts: Barclays Research

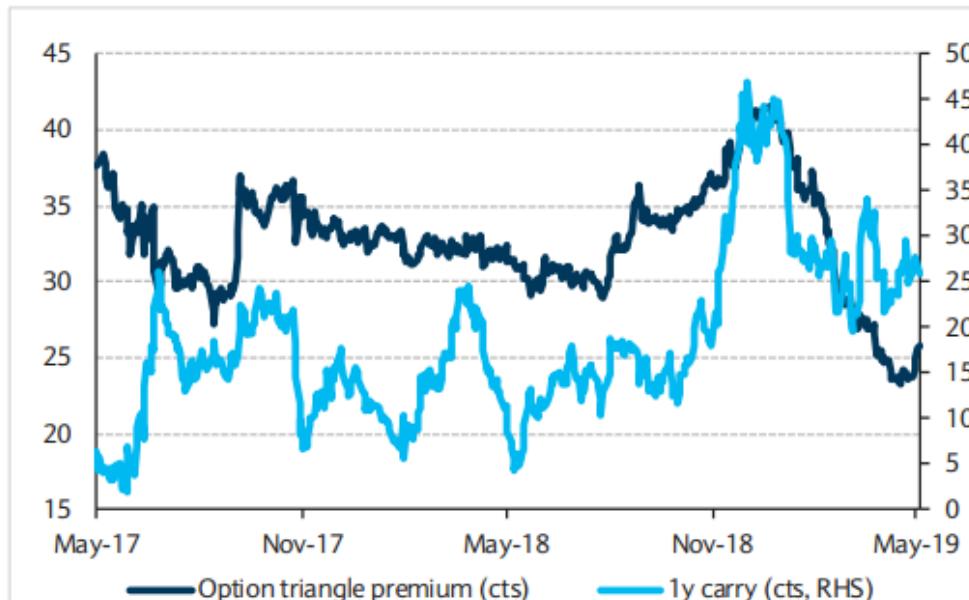


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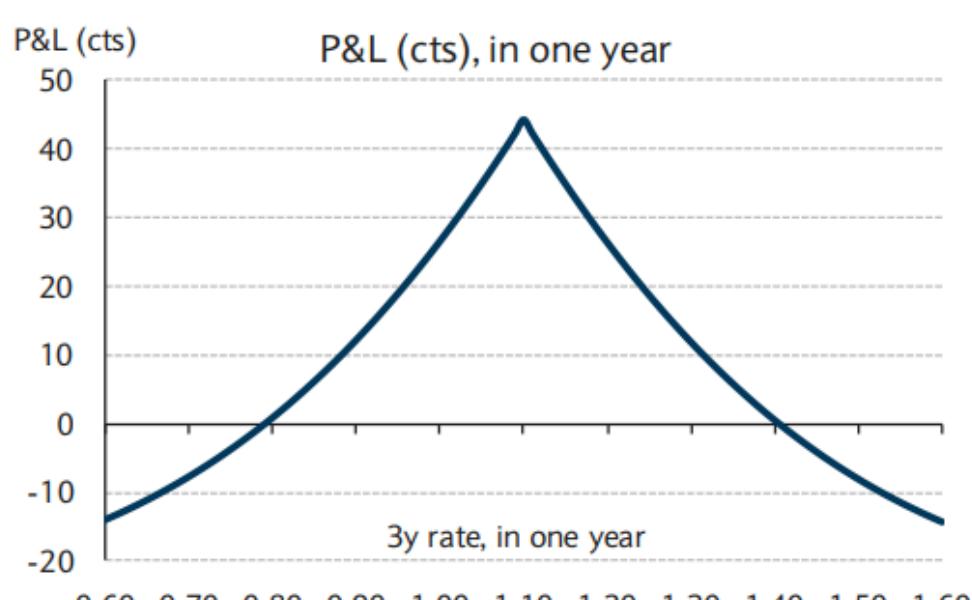
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## Trade #3: Buy GBP 1y\*1y + 2y\*2y vs. 1y\*3y option triangles

**The initial premium required for the triangle is low, while the carry on the trade remains high**



**The trade in one year profits over a wide range of underlying rates**



### Rationale

- The trade carries extremely well, earning over 25cts, or c.100% of the initial premium, in one year if rates and vols roll-down towards spot
- The trade, in one year, has a fairly wide breakeven range – it gains if 3y rates are between c.0.80% and 1.40%, under assumptions of parallel rate moves and constant vols

### Risks

- A sharp rally, such as in a negative outcome in Brexit negotiations, or a sharp sell-off, in case of large upside surprises in economic activity, can lead to losses. However, any spike in implied vols that would accompany such moves may mitigate some of the losses

Note: As of 14 May 2019. Source for all charts: Barclays Research



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15 May 2019

USD Option Triangles								USD Option Triangles									
Long Legs		Short Leg	fwd vol	Fwd vol level (abpv)	Price of option triangle (cts)	1y carry (cts)	1y P&L, if rates stay at their strikes (as % of initial cost)	1y P&L, normalised for expiries of options	Long Legs		Short Leg	fwd vol	Fwd vol level (abpv)	Price of option triangle (cts)	1y carry (cts)	1y P&L, if rates stay at their strikes (as % of initial cost)	1y P&L, normalised for expiries of options
1y1y	2y1y	1y2y	1yf 1y1y	66	20	27	1.54	1.09	1y5y	6y10y	1y15y	1yf 5y10y	62	605	255	0.44	0.82
2y1y	3y1y	2y2y	2yf 1y1y	74	19	1	0.07	0.23	5y5y	10y10y	5y15y	5yf 5y10y	64	381	39	0.10	1.26
1y2y	3y1y	1y3y	1yf 2y1y	70	39	41	0.83	0.90	10y5y	15y10y	10y15y	10yf 5y10y	64	272	16	0.06	1.31
2y2y	4y1y	2y3y	2yf 2y1y	73	34	6	0.18	0.73	1y10y	11y10y	1y20y	1yf 10y10y	59	804	257	0.31	0.85
1y3y	4y1y	1y4y	1yf 3y1y	72	57	42	0.54	0.74	5y10y	15y10y	5y20y	5yf 10y10y	60	548	44	0.08	1.24
2y3y	5y1y	2y4y	2yf 3y1y	72	45	12	0.26	1.19	10y10y	20y10y	10y20y	10yf 10y10y	59	403	23	0.06	1.49
1y1y	2y2y	1y3y	1yf 1y2y	66	40	66	1.55	1.09	1y5y	6y20y	1y25y	1yf 5y20y	56	949	459	0.49	0.90
2y1y	3y2y	2y3y	2yf 1y2y	72	36	5	0.14	0.46	5y5y	10y20y	5y25y	5yf 5y20y	56	552	69	0.12	1.54
1y2y	3y2y	1y4y	1yf 2y2y	70	79	81	0.77	0.83	10y5y	15y20y	10y25y	10yf 5y20y	57	398	22	0.05	1.22
2y2y	4y2y	2y4y	2yf 2y2y	72	65	14	0.23	0.92	1y10y	11y20y	1y30y	1yf 10y20y	54	1276	444	0.34	0.92
1y3y	4y2y	1y5y	1yf 3y2y	71	111	80	0.54	0.74	5y10y	15y20y	5y30y	5yf 10y20y	54	841	79	0.09	1.44
2y3y	5y2y	2y5y	2yf 3y2y	72	92	18	0.20	0.94	10y10y	20y20y	10y30y	10yf 10y20y	54	612	36	0.06	1.54
1y2y	3y5y	1y7y	1yf 2y5y	67	184	173	0.78	0.84									
3y2y	5y5y	3y7y	3yf 2y5y	71	137	15	0.11	0.69									
1y5y	6y5y	1y10y	1yf 5y5y	66	344	134	0.43	0.80									
5y5y	10y5y	5y10y	5yf 5y5y	67	208	25	0.12	1.45									
1y10y	11y5y	1y15y	1yf 10y5y	62	451	138	0.30	0.83									
5y10y	15y5y	5y15y	5yf 10y5y	63	311	25	0.08	1.26									

(Note: Richness/Cheapness as been determined by as (current value – 2ymin) / (2y max – 2y min))

Note: For 1y P&L, normalised for expiries: Consider an option triangle where the longer expiry is  $t_2$  years and the shorter expiry is  $t_1$  years. If the normal implied vol surface is flat across expiries and tenors, then the P&L of the trade in  $t_{carry}$  years (as a fraction of the initial cost), under the conditions of the forward rates getting realised, is approximately equal to  $\frac{[\sqrt{t_2} - \sqrt{t_{carry}}] - [\sqrt{t_1} - \sqrt{t_{carry}}]}{[\sqrt{t_2} - \sqrt{t_1}]} - 1$ . We therefore divide the P&L by this factor to normalise them for expiries.

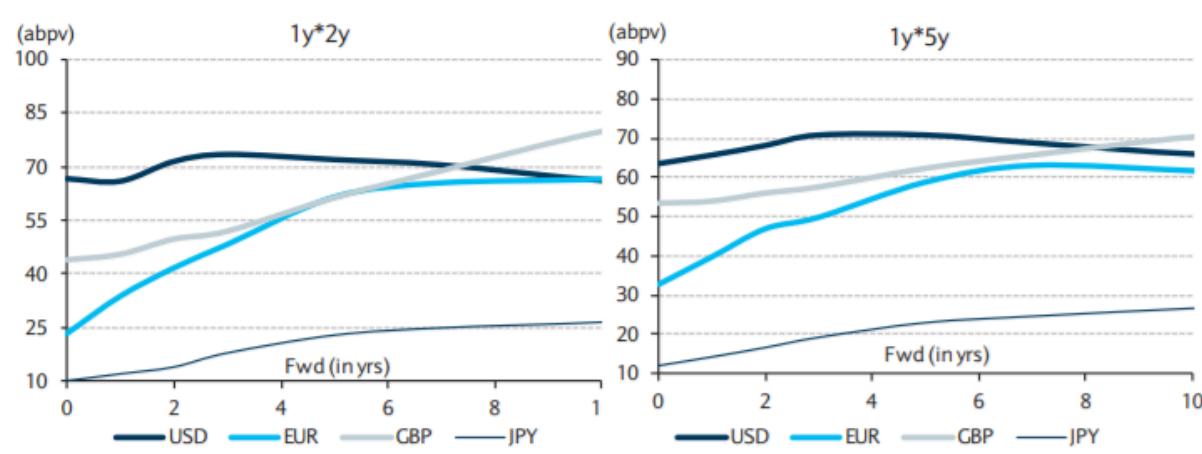
The forward vols have been calculated from the vanilla implied vol surfaces. 1y P&L, if rates stay at their strikes, has been calculated assuming constant implied vols after roll-down. Normalized 1y P&L numbers have been formatted based on how rich/cheap they are compared with other points. As of 13 May 2019. Source: Barclays Research

## Methodology

- We analyse option triangle structures in USD, EUR GBP and JPY on the following metrics:
  - Forward vol level (in abpv):** The level is calculated using the spot implied vol surface for the respective currency. We format the forward vols based on how rich (in blue) or cheap (in grey) they are compared with their respective two-year histories.
  - Price of the option triangle (cents):** When buying an option triangle, a low initial premium outlay (in grey), compared with its own two-year history, is preferred. Conversely, when selling an option triangle, a higher premium intake (in blue) is desirable.
  - 1y carry (cents):** Carry is calculated under a scenario in which the rates curve and vol surface remain unchanged over time, and forward rates and vols roll to spot. We format the carry based on how high or low it is compared with its own two-year history. A higher carry (in blue), from a historical context, is desirable when buying an option triangle.
  - P&L in 1y, if underlying rates stay at their strikes (as % of initial premium):** An option triangle has a short gamma exposure. Therefore, barring any gains from a breakdown in correlation of underlying rates, an option triangle typically has its maximum P&L if the forward rates get realised, ie, underlying rates remain at their respective strikes.
  - P&L in 1y, normalised for option expiries:** The above-mentioned P&L depends on the expiries of the different options in the triangle. Therefore, to make the P&L numbers comparable across various structures, we normalise them for the expiries of the options. The resulting normalised P&L is then largely a function of the roll-down in the vol surface. When buying an option triangle, a higher normalised P&L is desirable (in green).
- Based on these metrics, we identify wedges that are **cheap** on a relative value basis (**in blue**) and those that are **rich** (**in grey**).

# Forward vol surface analysis offers RV opportunities

## Forward vol curves for 1y expiry options



USD	2y	5y	10y	30y	EUR	2y	5y	10y	30y
1y	67	64	59	52	1y	23	33	38	39
1yf 1y	66	66	62	54	1yf 1y	34	40	42	42
2yf 1y	72	68	64	55	2yf 1y	42	47	47	44
3yf 1y	74	71	67	57	3yf 1y	48	50	51	45
4yf 1y	73	73	68	58	4yf 1y	53	56	56	49

GBP	2y	5y	10y	30y	JPY	2y	5y	10y	30y
1y	44	53	56	53	1y	10	12	16	25
1yf 1y	45	54	55	51	1yf 1y	12	14	19	27
2yf 1y	50	56	55	50	2yf 1y	14	17	21	30
3yf 1y	52	57	56	51	3yf 1y	18	19	22	29
4yf 1y	54	59	58	51	4yf 1y	21	22	24	31

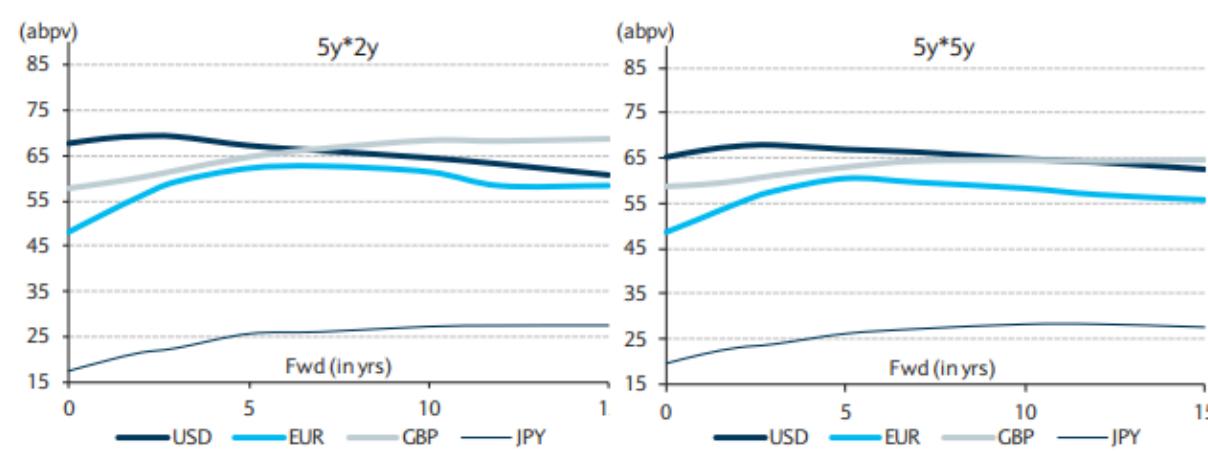
(Richness/Cheapness as been determined by as  $(\text{current value} - \text{1ymin}) / (\text{1y max} - \text{1y min})$ )

- 1y\*2y forward vol remains highly upward sloping in EUR

Note: As of 13 May 2019. Source for tables and charts: Barclays Research

# Forward vol surface analysis offers RV opportunities

## Forward vol curves for 5y expiry options



USD	2y	5y	10y	30y	EUR	2y	5y	10y	30y
5y	68	65	61	54	5y	48	49	48	43
5yf 5y	67	67	64	54	5yf 5y	62	60	59	52
10yf 5y	64	65	64	55	10yf 5y	61	58	60	51
15yf 5y	61	62	60	53	15yf 5y	58	56	59	48

GBP	2y	5y	10y	30y	JPY	2y	5y	10y	30y
5y	58	59	57	51	5y	18	20	23	30
5yf 5y	65	63	59	52	5yf 5y	26	26	28	30
10yf 5y	68	65	59	47	10yf 5y	27	28	31	36
15yf 5y	69	65	58	43	15yf 5y	28	28	31	35

(Richness/Cheapness as been determined by as  $(\text{current value} - \text{1ymin}) / (\text{1y max} - \text{1y min})$ )

- 5y\*30y forward vol curves have flattened in USD and GBP

Note: As of 13 May 2019. Source for tables and charts: Barclays Research

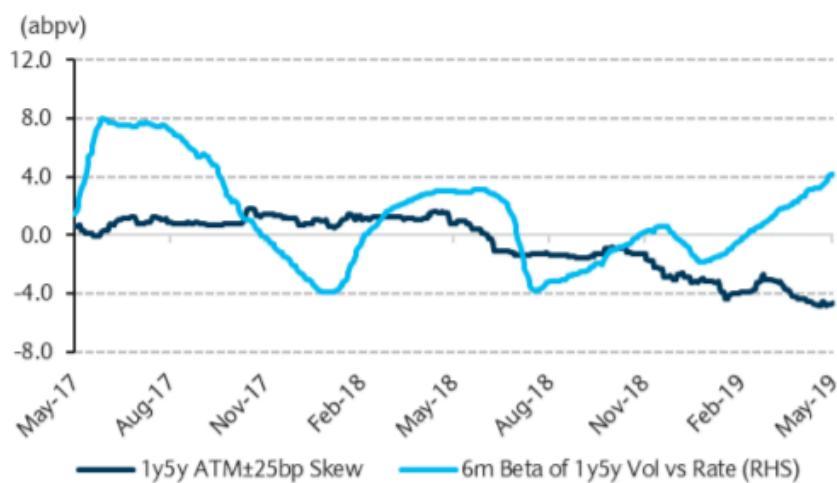
# USD vol skew: Short to mid expiry skews are at 1yr lows

USD ATM+50 vs. ATM-50 USD skew								
(abpv)	1y	2y	5y	7y	10y	15y	20y	30y
3m	-32.5	-29.7	-16.8	-13.7	-9.4	-8.3	-7.5	-6.7
1y	-20.9	-17.1	-8.7	-7.0	-4.5	-4.3	-4.1	-3.9
3y	-5.7	-4.7	-2.6	-2.2	-1.4	-1.5	-1.5	-1.4
5y	-1.8	-1.6	-1.4	-1.2	-0.8	-0.9	-0.9	-0.9
7y	-0.6	-0.6	-0.6	-0.7	-0.7	-0.8	-0.8	-0.8
10y	0.0	-0.3	-0.5	-0.6	-0.7	-0.8	-0.8	-0.7
15y	0.0	-0.1	-0.1	-0.2	-0.3	-0.5	-0.6	-0.6

Note: Richness/Cheapness is determined using the expression  $(\text{current value} - \text{1y min.}) / (\text{1y max} - \text{1y min})$

Skew in both USD 1y\*5y and...

...USD 1y\*30y appear cheap when compared with the realised rate vol relationship



Note: Beta of daily changes in ATM implied vols vs rates has been multiplied by 0.5 and then scaled by the width of the skew. As of 13 May 2019. Source for table and charts: Barclays Research

## USD vol surface: Top-left vols have richened

USD vol surface								
(abpv)	1y	2y	5y	7y	10y	15y	20y	30y
3m	48.1	61.6	62.4	60.5	57.6	54.4	52.4	50.1
1y	63.9	66.8	63.6	61.9	59.4	56.6	54.4	52.3
3y	68.8	67.8	64.5	62.9	60.5	57.2	55.0	53.1
5y	68.5	67.6	65.0	63.5	61.1	57.7	55.4	53.9
7y	67.1	66.2	64.3	62.8	60.6	57.1	54.9	53.6
10y	63.9	63.3	61.9	60.7	58.9	55.3	53.4	52.6
15y	60.1	59.7	58.7	57.6	56.0	53.6	52.3	51.7

Note: Richness/Cheapness is determined using the expression  $(\text{current value} - \text{1y min.}) / (\text{1y max} - \text{1y min})$

USD 1y\*5y have richened recently amid a rise in risk aversion



While USD 1y\*30y have also risen recently, they are still low when compared to their 12m history

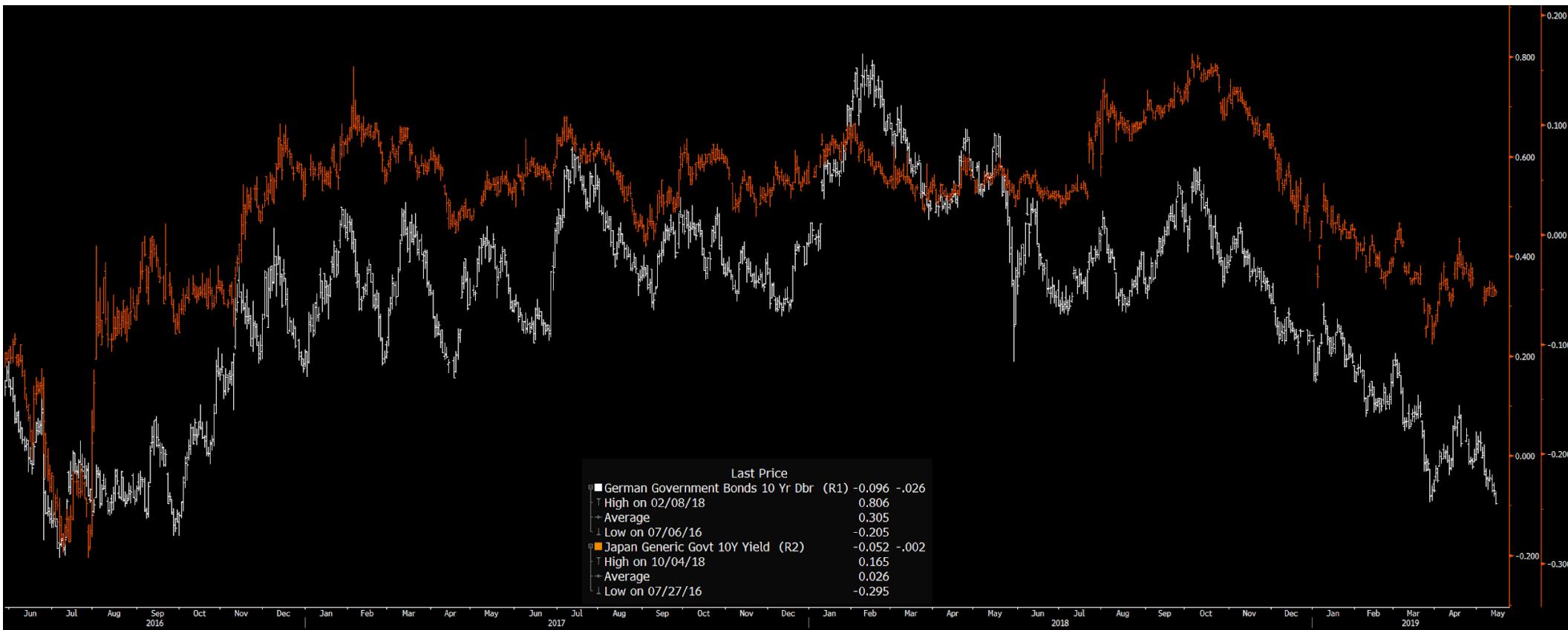
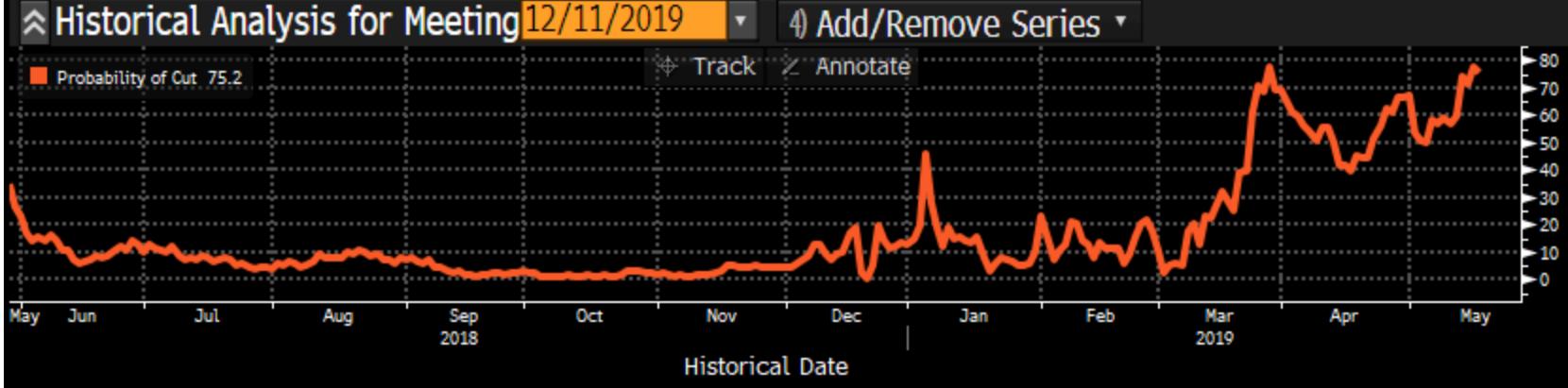


Note: As of 13 May 2019. Source for table and charts: Barclays Research



**Current Implied Probabilities**

Dates	Meeting	Hike Prob	Cut Prob	1.25-1.5	1.5-1.75	1.75-2	2-2.25	2.25-2.5	Fwd Rate	Based on rate 2.25-2.50
06/19/2019		0.0%	12.6%	0.0%	0.0%	0.0%	12.6%	87.4%	2.35	
07/31/2019		0.0%	26.6%	0.0%	0.0%	2.0%	24.6%	73.4%	2.31	
09/18/2019		0.0%	52.5%	0.0%	0.7%	10.0%	41.8%	47.5%	2.22	
10/30/2019		0.0%	60.4%	0.1%	2.3%	15.3%	42.7%	39.6%	2.18	
12/11/2019		0.0%	75.5%	0.9%	7.2%	25.7%	41.5%	24.5%	2.09	
01/29/2020		0.0%	80.1%	2.1%	10.7%	28.7%	38.3%	19.9%	2.04	

**FIGURE 7**

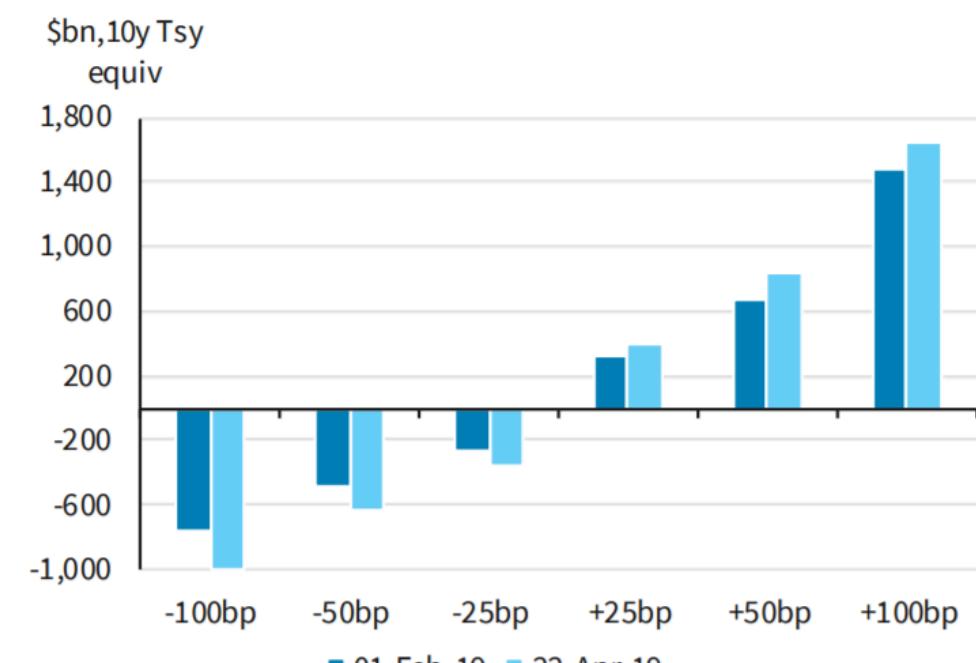
30y spread tightening alongside risk-off moves in equity markets and rate rally



Source: Barclays Research

**FIGURE 8**

Currently larger duration demand on rate shifts than start of year



Source: Barclays Research



Figure 109: PC1 loadings - PC1 represents the outright level of vol

PC1	1y	2y	3y	5y	7y	10y	15y	20y	30y
1m	0.14	0.1	0.1	0.12	0.12	0.11	0.12	0.13	0.14
2m	0.14	0.1	0.1	0.11	0.12	0.11	0.12	0.13	0.14
3m	0.13	0.1	0.11	0.11	0.11	0.11	0.12	0.12	0.13
6m	0.1	0.1	0.11	0.11	0.11	0.11	0.12	0.12	0.12
9m	0.09	0.11	0.12	0.12	0.11	0.11	0.11	0.12	0.12
1y	0.09	0.11	0.13	0.12	0.12	0.11	0.11	0.12	0.12
18m	0.11	0.13	0.14	0.13	0.12	0.11	0.11	0.12	0.11
2y	0.13	0.14	0.14	0.13	0.12	0.11	0.11	0.11	0.11

Source : Deutsche Bank

Figure 110: PC2 loadings - PC2 represents the top left versus bottom right component

PC2	1y	2y	3y	5y	7y	10y	15y	20y	30y
1m	0.16	0.29	0.22	0.13	0.07	0.01	-0.01	-0.03	-0.06
2m	0.16	0.25	0.18	0.09	0.04	-0.02	-0.04	-0.06	-0.09
3m	0.18	0.23	0.16	0.07	0.01	-0.04	-0.06	-0.08	-0.1
6m	0.21	0.17	0.11	0.03	-0.02	-0.07	-0.09	-0.1	-0.12
9m	0.2	0.14	0.07	0	-0.04	-0.09	-0.11	-0.12	-0.13
1y	0.17	0.1	0.04	-0.03	-0.06	-0.11	-0.12	-0.13	-0.14
18m	0.12	0.06	0	-0.06	-0.08	-0.12	-0.13	-0.14	-0.14
2y	0.07	0.01	-0.03	-0.07	-0.1	-0.12	-0.13	-0.14	-0.14

Source : Deutsche Bank

Figure 111: PC3 loadings - PC3 represents the expiry slope

PC3	1y	2y	3y	5y	7y	10y	15y	20y	30y
1m	0.09	0.1	0.12	0.17	0.21	0.24	0.24	0.24	0.23
2m	0.06	0.05	0.07	0.11	0.14	0.17	0.16	0.16	0.15
3m	0.03	0	0.01	0.05	0.08	0.1	0.1	0.1	0.09
6m	-0.03	-0.08	-0.06	-0.02	0.01	0.04	0.04	0.03	0.03
9m	-0.1	-0.13	-0.12	-0.06	-0.02	0.01	0	0	0
1y	-0.16	-0.16	-0.15	-0.08	-0.05	-0.02	-0.02	-0.02	-0.02
18m	-0.21	-0.2	-0.17	-0.11	-0.09	-0.04	-0.04	-0.04	-0.04
2y	-0.25	-0.22	-0.19	-0.13	-0.1	-0.06	-0.06	-0.06	-0.06

Source : Deutsche Bank

Figure 112: % explained by the first three PCs over different look-back periods. Over the last three months PC1 explanatory power has fallen to 62%.

%	3m	6m	1y	2y	3y
<b>PC1</b>	62.2%	85.9%	68.9%	55.3%	84.6%
<b>PC2</b>	31.1%	10.2%	21.6%	34.4%	9.9%
<b>PC3</b>	4.5%	2.4%	6.5%	6.9%	3.3%

Source : Deutsche Bank

The residuals of our PCA model suggest that a) 3m expiry is cheap within the 1y PCA and 2) 3m1y is cheap in both 1y and 3y look-back period. In fact 1y tails appear cheap in both decompositions.

Figure 113: PCA residuals (three factor, 1y look-back)

PCA res	1y	2y	3y	5y	7y	10y	15y	20y	30y
1m	1.68	0.76	0.65	1.8	1.78	1.5	1.13	0.76	0.22
2m	-0.22	-1.05	-1.05	-0.68	-0.51	-0.46	-0.67	-0.87	-1.03
3m	-0.84	-0.78	-0.47	-1.05	-0.86	-0.69	-0.88	-1.06	-1.05
6m	-1	-0.73	0.07	-0.53	-0.07	0.28	-0.16	-0.52	-0.65
9m	-0.43	-0.08	0.83	-0.06	0.34	0.65	0.2	-0.09	-0.26
1y	0.31	0.3	1.4	0.15	0.4	0.6	0.11	-0.13	-0.36
18m	0.19	-0.14	0.8	0.18	0.55	0.45	0.19	-0.04	-0.27
2y	0.18	-0.55	0.13	0.33	0.37	0.42	0.15	-0.13	-0.2

Source : Deutsche Bank

Figure 114: PCA residuals (three factor, 3y look-back)

PCA res	1y	2y	3y	5y	7y	10y	15y	20y	30y
1m	-3.93	0.67	0.8	3.73	3.13	2.44	1.11	-0.21	-2.03
2m	-3.88	-0.2	0.15	2.15	1.79	1.41	0.25	-0.83	-2.15
3m	-3.86	-0.33	0.25	1.27	0.95	0.67	-0.44	-1.43	-2.46
6m	-1.49	-0.64	0.51	1.57	1.65	1.44	0.27	-0.72	-1.42
9m	-0.69	-0.07	0.8	1.24	1.36	1.24	0.22	-0.64	-1.1
1y	-0.04	0.06	0.82	0.65	0.74	0.6	-0.3	-1.05	-1.29
18m	-0.49	-0.54	0.01	-0.24	0.08	-0.1	-0.7	-1.39	-1.57
2y	-1.02	-1.36	-0.9	-0.68	-0.57	-0.49	-1.03	-1.71	-1.66

Source : Deutsche Bank

Figure 115: Implied/3m realized, mid curve grid

MC	1y1y	2y1y	3y2y	5y5y	10y10y	20y10y
1m	1.1	1.04	1.17	1	1.05	1.09
2m	1.02	1.02	1.07	0.95	0.99	1.05
3m	1	1.05	1.02	0.95	0.97	1.04
6m	0.94	1.09	1.05	1.01	0.98	1.1
9m	0.96	1.11	1.07	1.04	1.01	1.14
1y	0.99	1.14	1.06	1.06	1.02	1.16
18m	1.06	1.17	1.07	1.1	1.04	1.19
2y	1.12	1.19	1.11	1.14	1.05	1.22

Source : Deutsche Bank

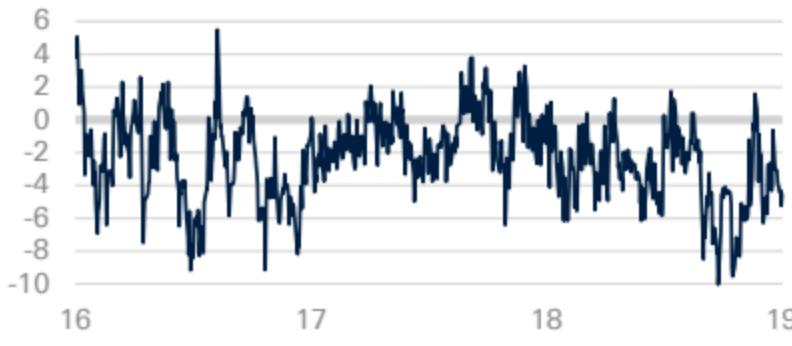
Figure 116: Implied/3m realized, vanilla grid

Vanilla	1y	2y	3y	5y	7y	10y	15y	20y	30y
1m	1.15	1.11	1.06	1.1	1.08	1.05	1.06	1.04	1.02
2m	1.01	1.02	1	1.02	1	0.98	1	0.99	0.96
3m	0.94	0.97	0.99	0.99	0.98	0.97	0.98	0.97	0.95
6m	0.87	0.91	0.95	0.97	0.98	0.98	0.99	0.98	0.97
9m	0.84	0.9	0.94	0.97	0.98	0.99	1	0.99	0.99
1y	0.83	0.9	0.95	0.97	0.98	0.99	1.01	1	0.99
18m	0.87	0.95	0.99	1	1.01	1.02	1.03	1.02	1.01
2y	0.95	1.02	1.05	1.05	1.05	1.06	1.06	1.04	1.04

Source : Deutsche Bank

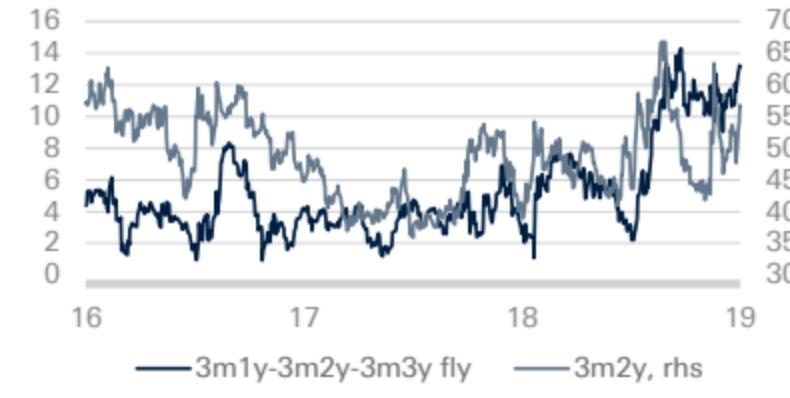
3m1y vol appears modestly cheap in the 1m/3m/6m expiry fly. Additionally 3m1y/3m2y/3m3y is at the richer end of the range, suggesting that 3m1y is cheap. In other words 3m1y is cheap both on expiry and tail.

Figure 117: 1m1y - 3m1y - 6m1y vol fly - 3m1y appears cheap



Source : Deutsche Bank

Figure 118: 3m1y/3m2y/3m3y vol fly is at the richer end of its range suggesting that 3m1y is cheap

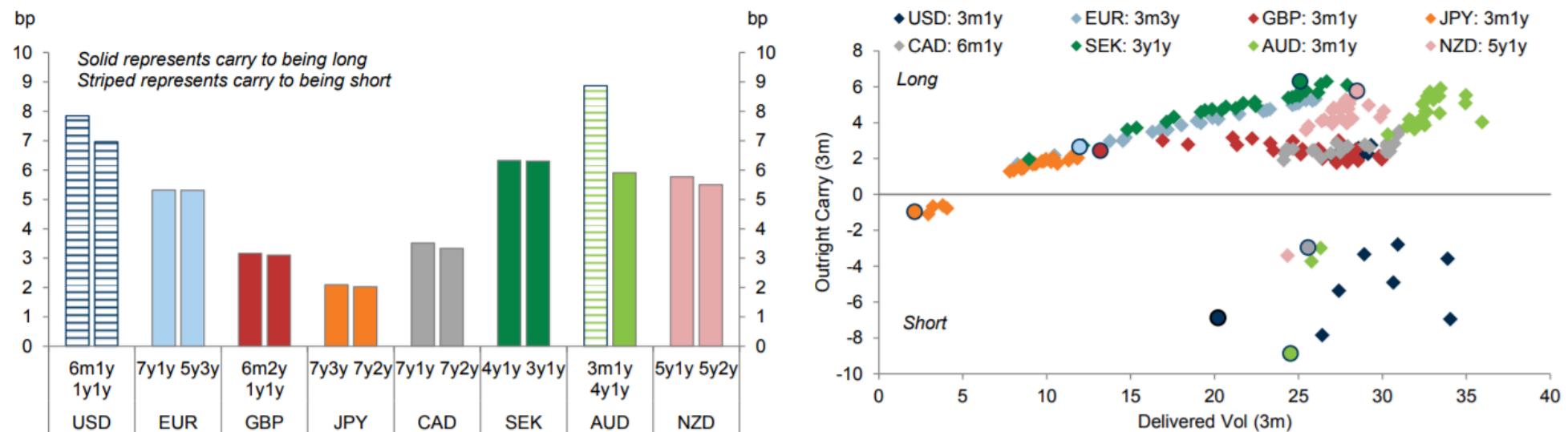


Source : Deutsche Bank

3m1y1y-3m1y vol spread is near the higher end of its range. Essentially this implies that bear flatteners using 1y as the short leg have attractive break-even cushion relative to the ATMF curve. Below we show 6m1y-6m3y2y forward curve, spot curve and zero premium bear flattener breakeven.

## Outright Carry

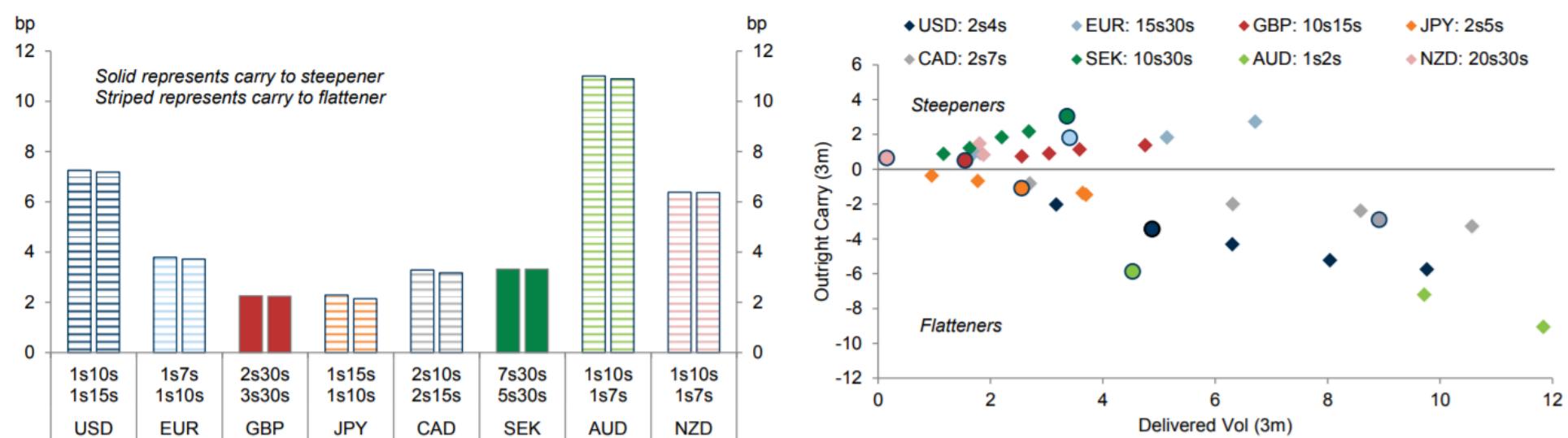
Bar chart shows top two carry points by currency, with solid reflecting carry to a long position and striped carry to a short position. Scatter illustrates top 25 carry/vol points by currency, with top point by currency noted



Source: Goldman Sachs Global Investment Research

## Curve Carry

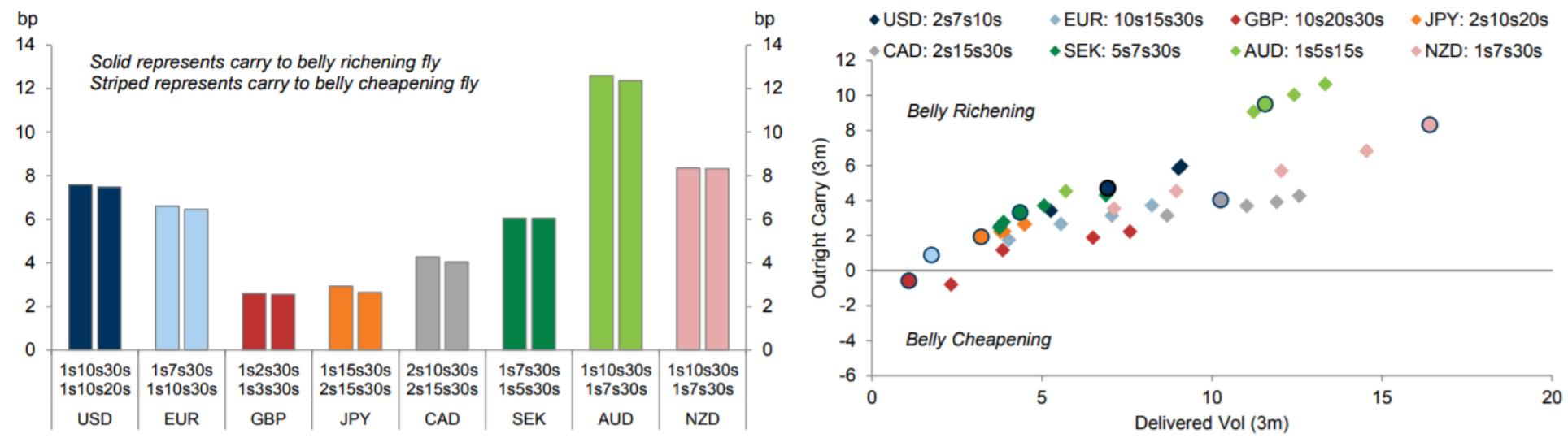
Bar chart shows top two carry curves by currency, with solid reflecting carry to a steepening position and striped carry to a flattening position. Scatter illustrates top 5 carry/vol curves by currency, with top curve by currency noted



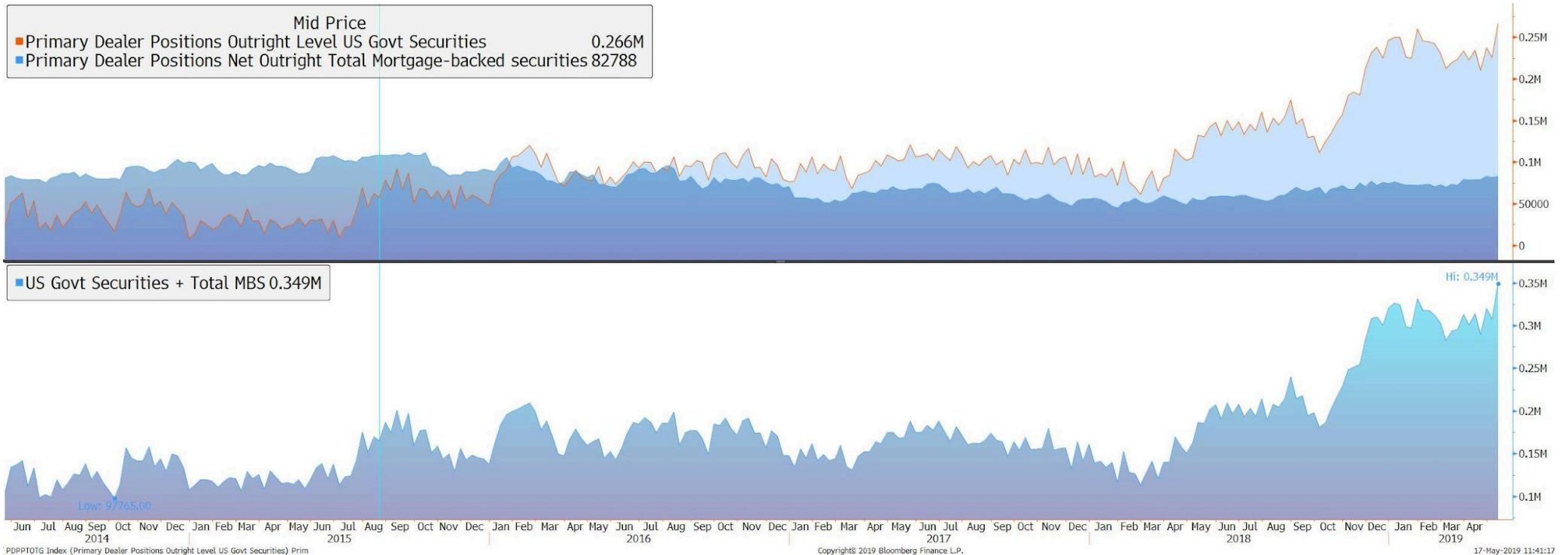
Source: Goldman Sachs Global Investment Research

## Fly Carry

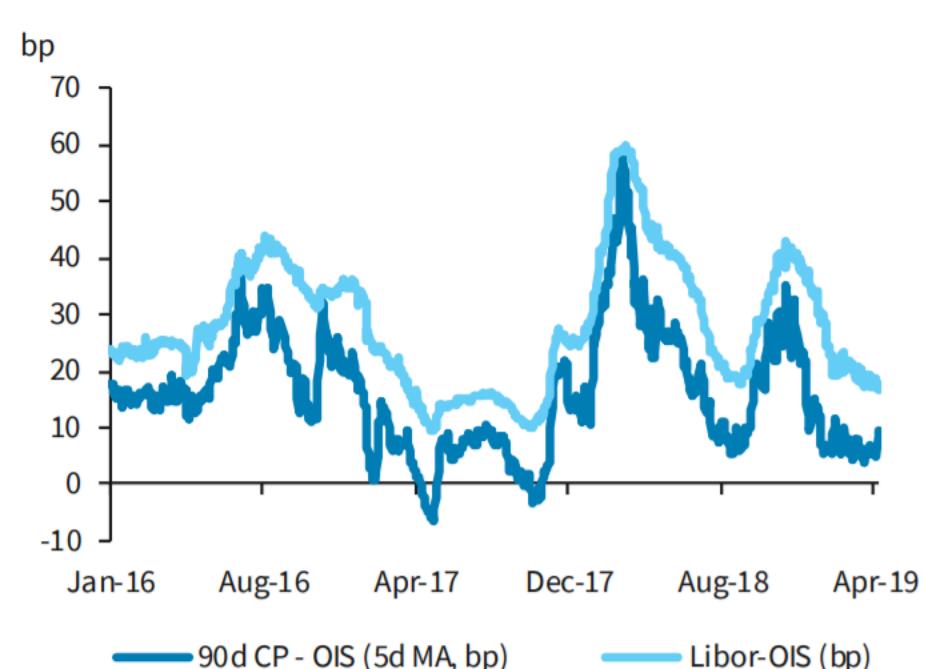
Bar chart shows top two carry flies by currency, with solid reflecting carry to a belly-richening fly and striped carry to a belly-cheapening fly. Scatter illustrates top 5 carry/vol flies by currency, with top fly by currency noted



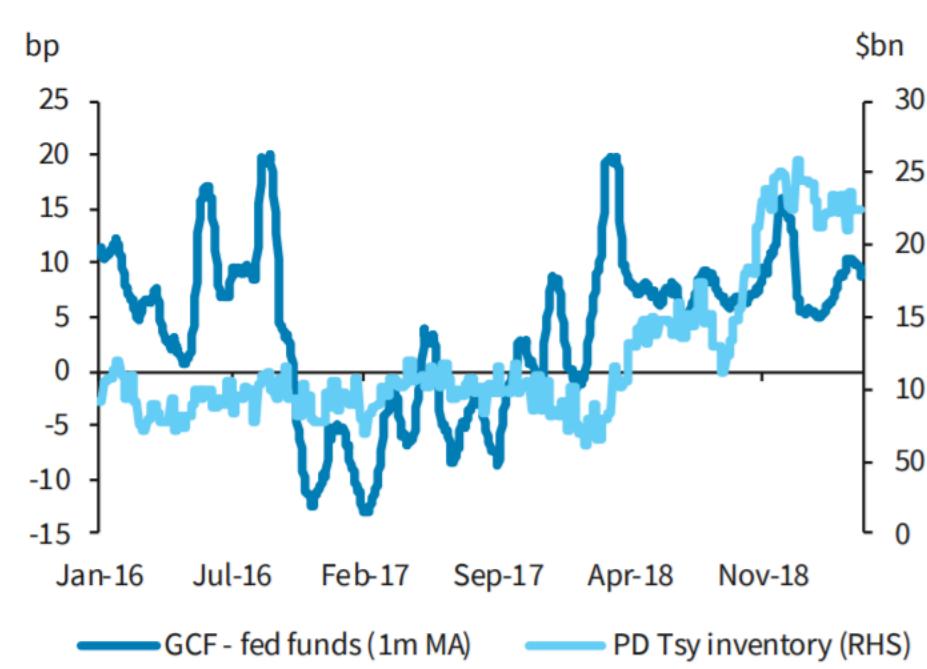
Source: Goldman Sachs Global Investment Research



**FIGURE 9**  
Libor-OIS came in further toward CP rates, despite a small pick-up in CP rates



**FIGURE 10**  
Repo spreads to Fed funds have stayed elevated from the start of 2018 as dealer inventories remain high



A rise in sponsored repo activity should contribute to narrowing repo spreads as its netting benefit reduces the cost of doing repo

We also look for a pickup in sponsored repo activity to help lower repo spreads (see *SOFR and repo netting*, 24 January 2019). In this program, netting Fixed Income Clearing Corporation (FICC) members can sponsor their clients to give them access to the FICC cleared repo platform. The SEC only just approved a FICC proposal to expand the category of market participants who can act as sponsors to include non-banks, and to broaden the set of repo transactions that are eligible for clearing and balance sheet netting to include transactions between the sponsored firm and other FICC netting members. With more netting opportunities, banks facing balance sheet constraints would benefit from shifting more repo transactions onto a centrally cleared platform. We expect the number of participants in sponsored repo to increase, and for sponsored repo activity to gradually pick up further. Our view is that the resulting freeing up of balance sheet should allow for a decline in SOFR relative to the effective Fed funds rate, and our base case is for SOFR to trade on top of the Fed funds rate over the coming months (see our *Money Markets Monthly Update*, 25 April 2019).

Yet there are reasons pressures on repo might not fully reverse: dealers continue to operate with high inventories, and specials activity is likely to remain limited

However, offsetting factors may prevent repo spreads from persistently falling below the Fed funds rate again. First, the high level of dealer inventories might reflect a “new normal” as a result of continued large coupon issuance sizes, where dealers require repo financing for a higher base level of inventories. It is telling that inventories of shorter-tenor coupons, for which the Treasury has lifted coupon sizes more, have stayed more elevated. On the other hand, inventory holdings of Treasuries with more than 7y remaining to maturity have come down much more.

Specials activity has picked up recently, but it is still concentrated in a limited number of issues, mostly in on-the-run securities. In our view, the pick-up may be short-lived, given that the Fed has now capped and will fully end its balance sheet run-off starting October, resulting in higher SOMA add-ons and more Treasury securities available to dealers via the SOMA lending program.

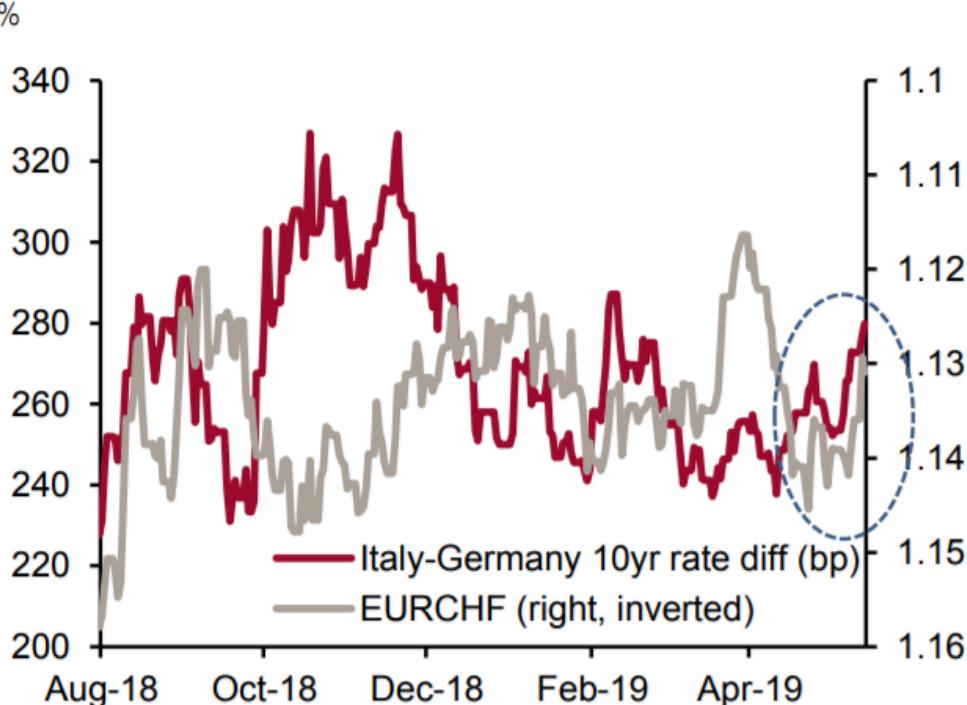
Lastly, should the risk-off mode persist, causing capital flows from emerging markets, there is a risk of Treasury selling from emerging market central banks in an effort to stem devaluation. This would result in an accumulation of Treasuries on primary dealer balance sheets, increasing the need for funding. While currently available data on Treasury holdings and central bank reserves do not cover the most recent episode of escalating trade tensions, we also have not seen any other signs suggestive of central bank selling of Treasuries, such as a pickup in the error to spline of more seasoned Treasury CUSIPs.

## UBS Global Rates Trade Recommendations

Region	Trade Recommendations	Opened	Entry	Current <sup>1</sup>	Target	Stop	6m Carry <sup>2</sup>	Performance <sup>3</sup>	Status
US	Long US 10-year breakeven rate	16-Jan-19	182bp	188bp	205bp	170bp	-1bp	2bp	Hold
	Sell 6m2y receiver spread (strike: 2.4% and 2.1%)	08-Feb-19	-6bp	-12bp	0bp	-12bp		-6bp	Stopped 13-May-19
	Receive US 30-year real yields (switching from receiving 10y real rates)	26-Nov-18	110bp	92bp	60bp	120bp	4bp	59bp	Hold
	US 6m2y 1X2 payer spread 5y US swap spread widens	15-Apr-19	2bp	2bp	18bp	0bp		-1bp	Hold
Euro area	5s30s ASW curve flattener	15-Apr-19	3bp	1bp	20bp	-10bp	4bp	-1bp	New
	Long GGB Aug22	01-Dec-17	403bp	161bp	200bp	475bp	41bp	360bp	Closed on 15-Apr-2019
	EUR 5s30s steepener 1y fwd	16-Jul-18	100bp	102bp	120bp	85bp		2bp	Closed on 16 May 2019
	EUR 2s10s steepener	05-Feb-19	4bp	2bp	-15bp	14bp	-3bp	2bp	Hold
UK	Long GGB 2029	01-Mar-19	85bp	66bp	120bp	60bp	-2bp	-19bp	Hold
	Receive 5y5y RPI ILS (short inflation)	17-Oct-16	342bp	360bp	330bp	380bp		-18bp	Closed on 16 May 2019
	Pay 1y1y GBP IRS fwd	29-Apr-19	106bp	115bp	135bp	90bp		9bp	Opened on 19-Apr-19
Japan	5y5y 10y20y JPY IRS steepener	11-Feb-19	64bp	55bp	90bp	50bp		-8bp	Stop revised 25-Mar-19
Australasia	Long 10y AUD breakeven rate	08-Feb-19	159bp	142bp	180bp	140bp	-1bp	-18bp	Stop revised 25-Mar-19
	3s10s AUD ASW box flattener	14-Mar-19	4bp	8bp	-12bp	11bp	-3bp	-4bp	Hold
	ACGB 2s10s Steepeener	03-May-19	-2bp	-3bp	20bp	-7bp	-3bp	-1bp	Opened on 03-May-19
Cross-market	Long 30y Gilts vs Bunds	17-Jun-16	140bp	110bp	40bp	90bp	4bp	52bp	Hold
	Receive 2y AUD vs pay 2y NZD swap	07-Mar-19	-12bp	-26bp	-40bp	0bp	-3bp	14bp	Closed on 03-May-19
	Receive 1y1y AUD vs 1y1y USD	03-May-19	-100bp	-88bp	-130bp	-80bp		-12bp	Opened on 03-May-19

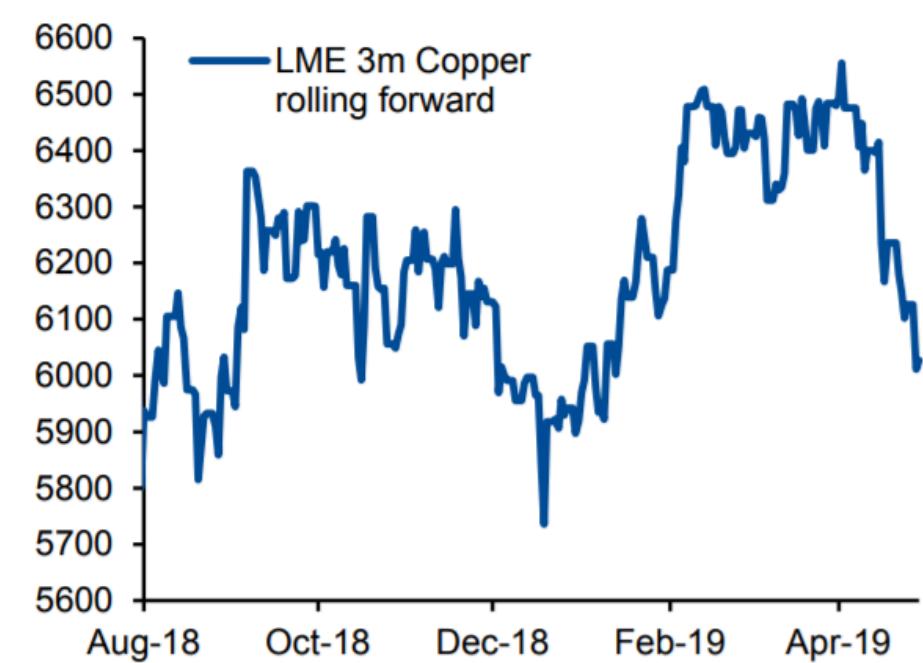
1) Including roll down, 2) Carry at inception of the trade, 3) Accounting for cost of carry. As of 12noon London 16<sup>th</sup> May 2019. A record of our current and 12 month historical Rates trade recommendations is available on UBS Neo or via your UBS sales representative. Past performance is not an indication of future performance. Source: UBS, Bloomberg

**Figure 8: EURCHF has started to trade more in line with Italian political risk proxies**



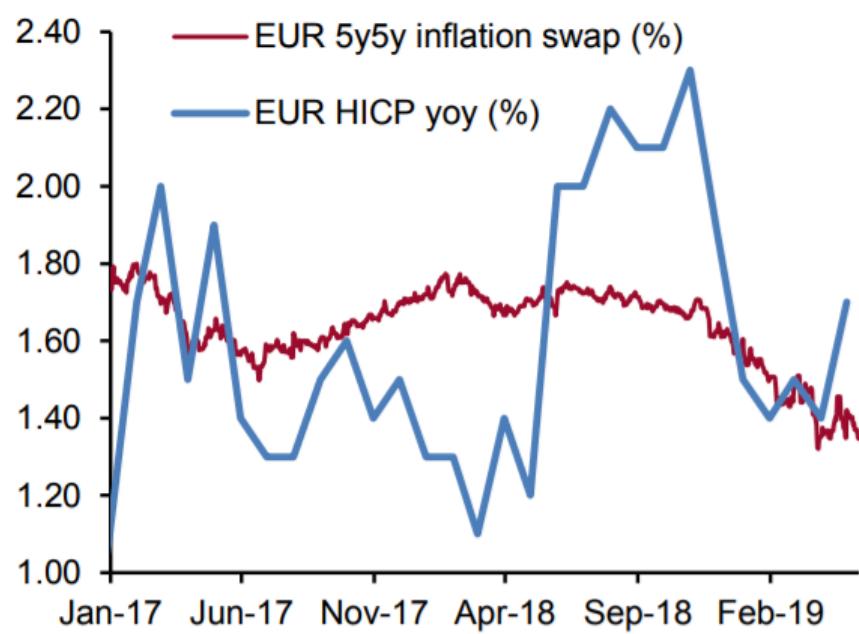
Source: Credit Suisse, the BLOOMBERG PROFESSIONAL™ service

**Figure 9: Copper prices nearing 2018 lows as tariffs raise global growth slowdown fears**



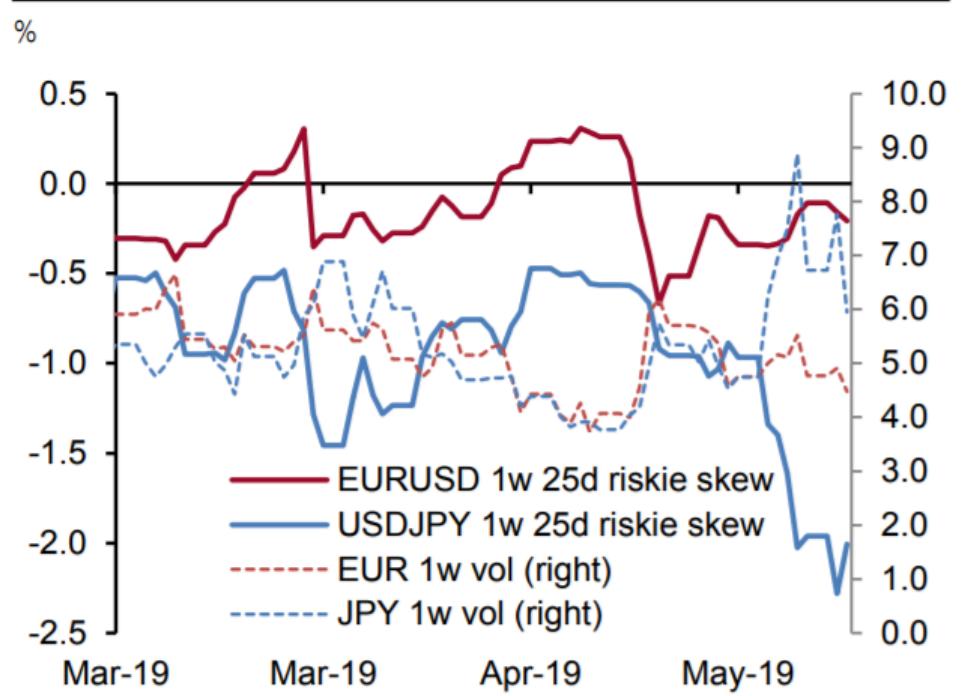
Source: Credit Suisse, the BLOOMBERG PROFESSIONAL™ service

**Figure 6: Further weakness in EUR inflation expectations could revive ECB easing expectations**



Source: Credit Suisse, the BLOOMBERG PROFESSIONAL™ service

**Figure 7: Vol markets seemingly pricing little risk of auto tariffs, ongoing near-term trade tensions in JPY**

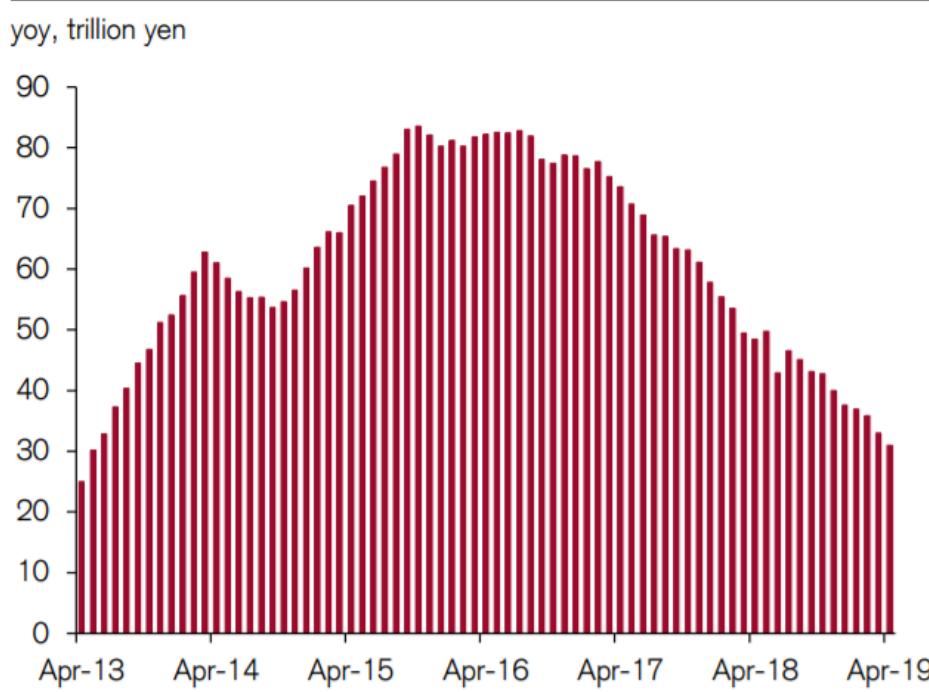


Source: Credit Suisse, the BLOOMBERG PROFESSIONAL™ service

14 May 2019

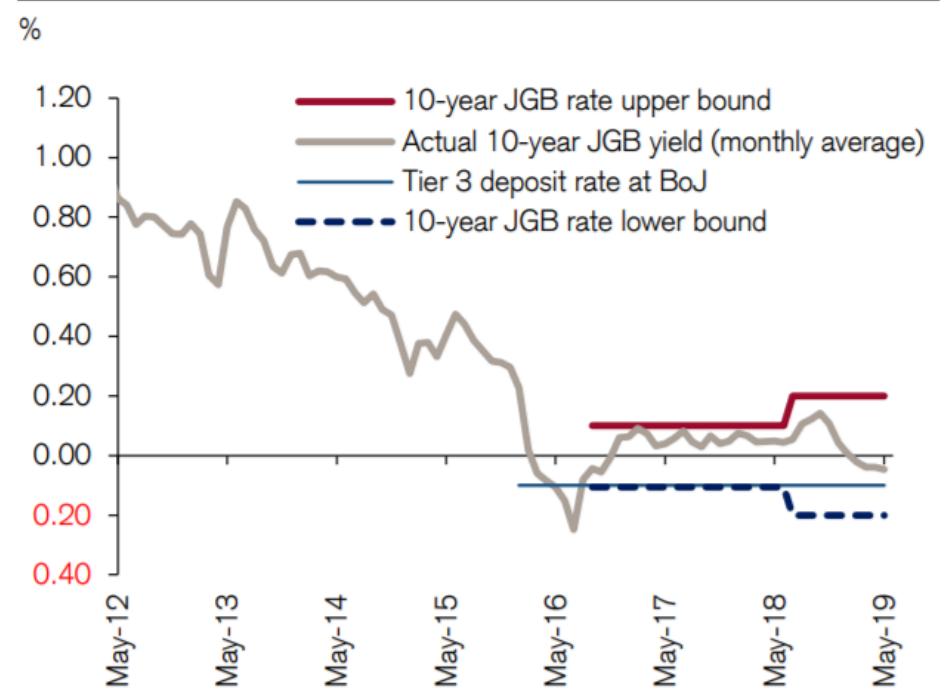
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**Figure 1: JGBs held by the BoJ**



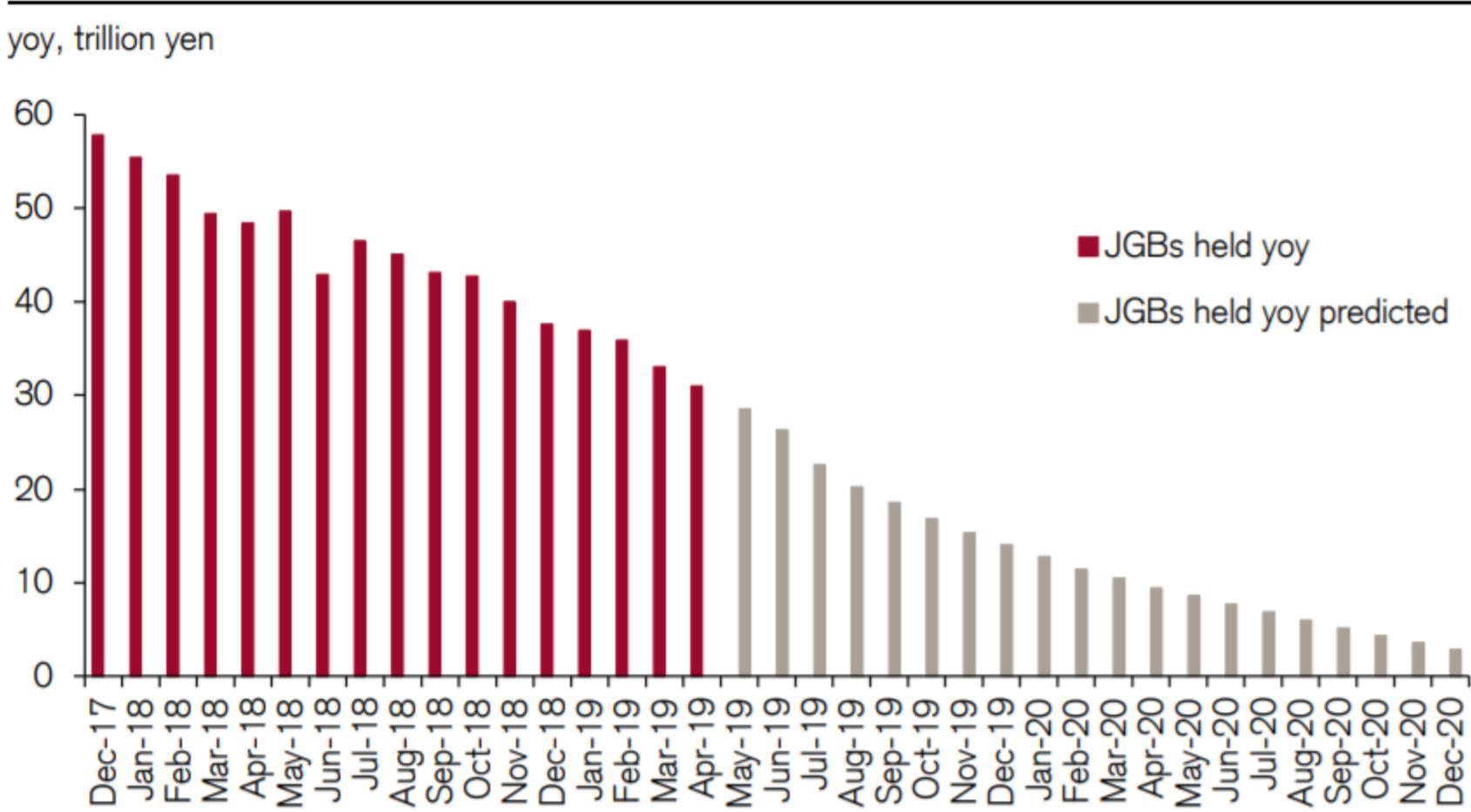
Source: BoJ, Credit Suisse

**Figure 2: Policy rate targets and 10-year JGB yield**



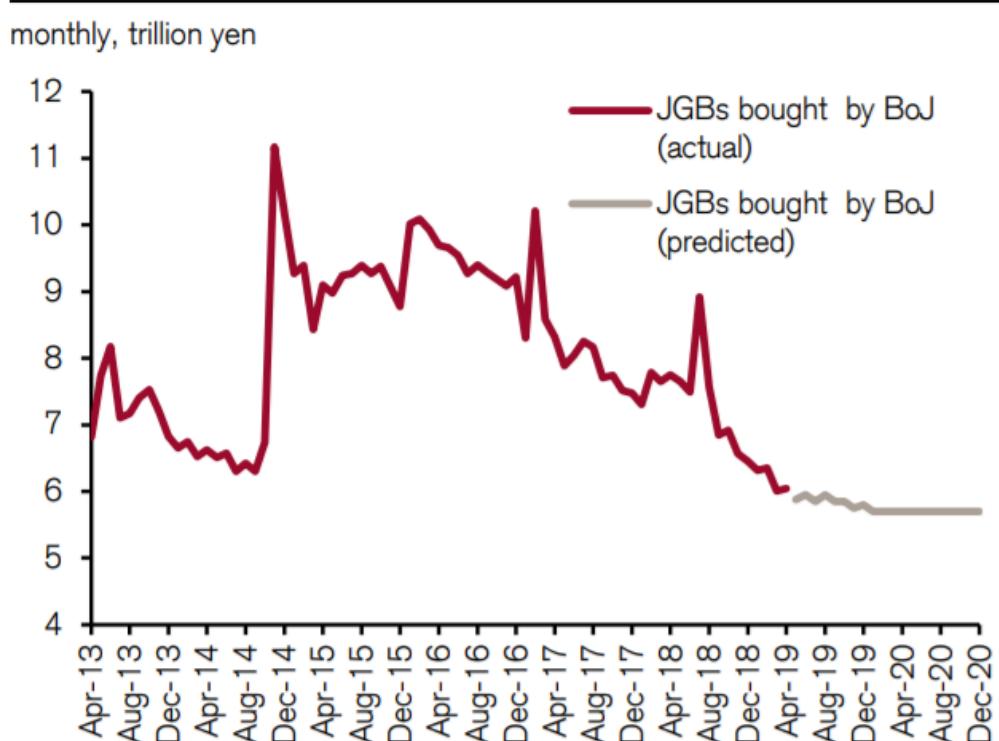
Source: BoJ, Credit Suisse

**Figure 4: JGBs held by the BoJ (actual and predicted)**

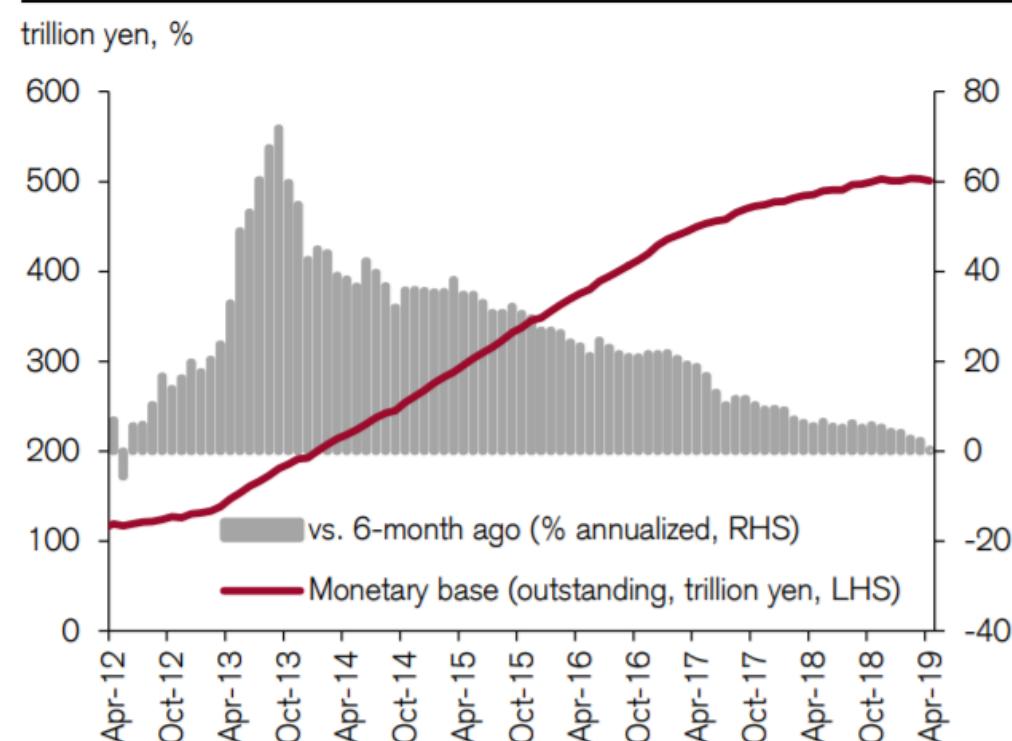


**3) Monthly JGB purchases:** The BoJ was buying around ¥10 trillion in JGBs each month back when NIRP was launched in January 2016, but monthly purchases have since fallen to a little over ¥6 trillion as of March 2019. The BoJ is currently on track to buy around ¥72 trillion in JGBs over 2019 as a whole (Figure 5), with monthly purchases set to run at around ¥5.7–5.9 trillion from May onwards.

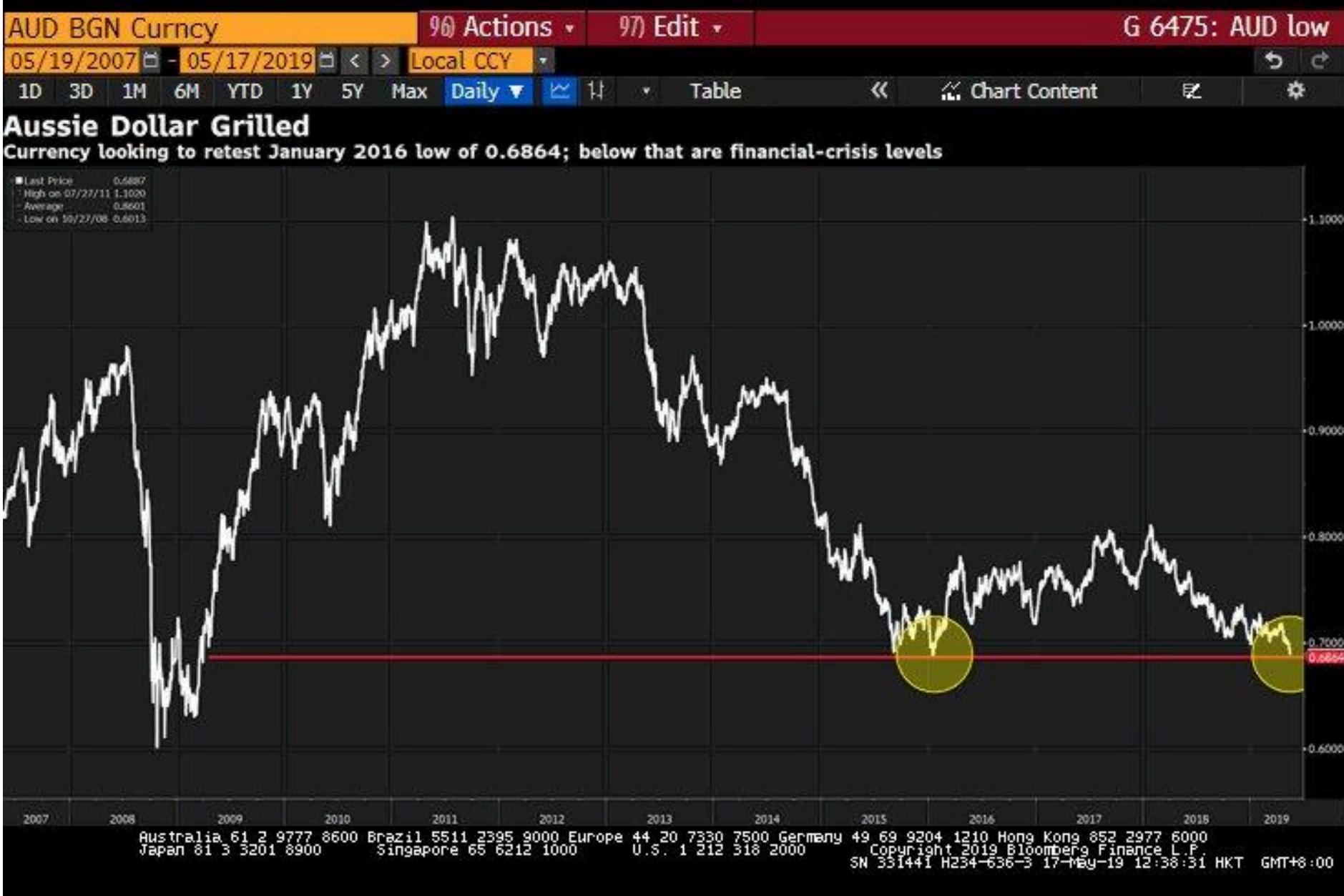
**Figure 5: JGBs bought by BoJ (actual and predicted)**



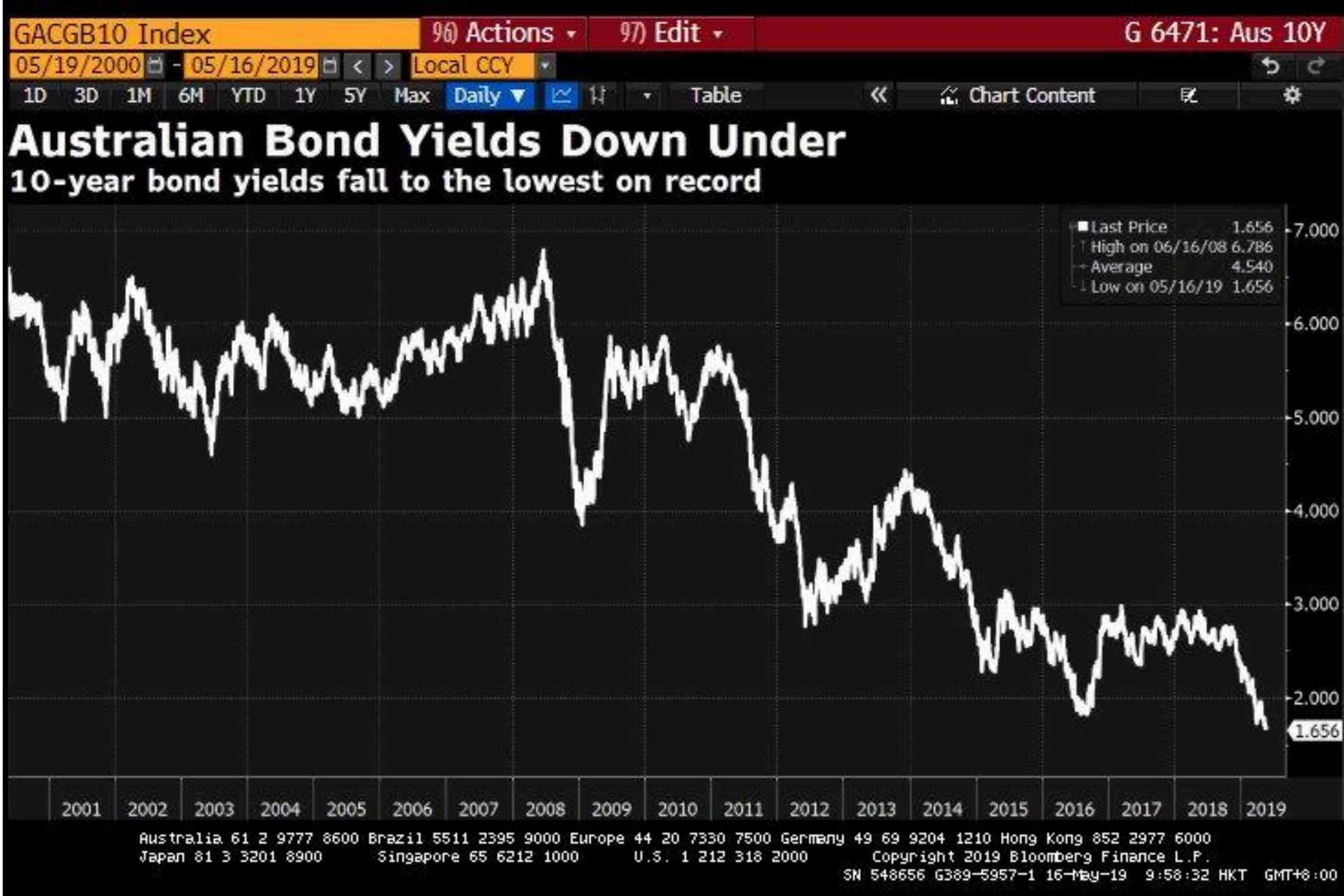
**Figure 6: Monetary base**



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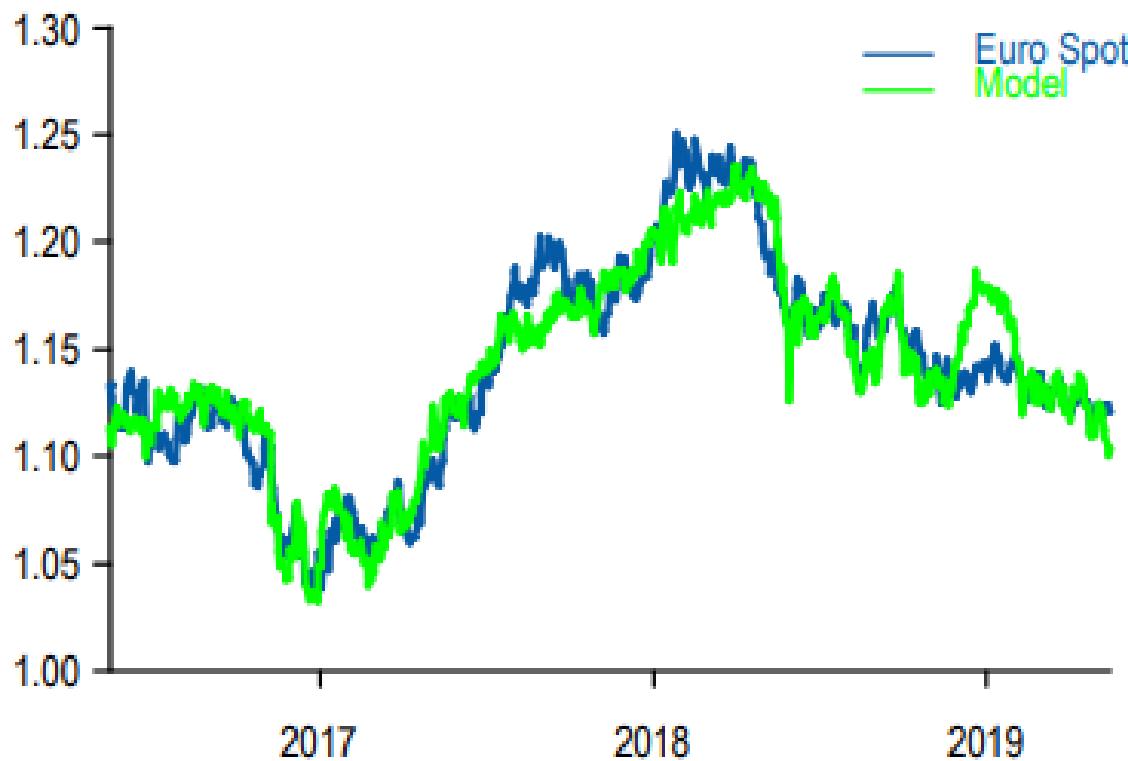


GRAB



**Exhibit 8: Fair value for EUR/USD has fallen to around 1.10, partly due the widening in the Italy spread. 20bp on the BTP spread is worth one cent for EUR/USD**

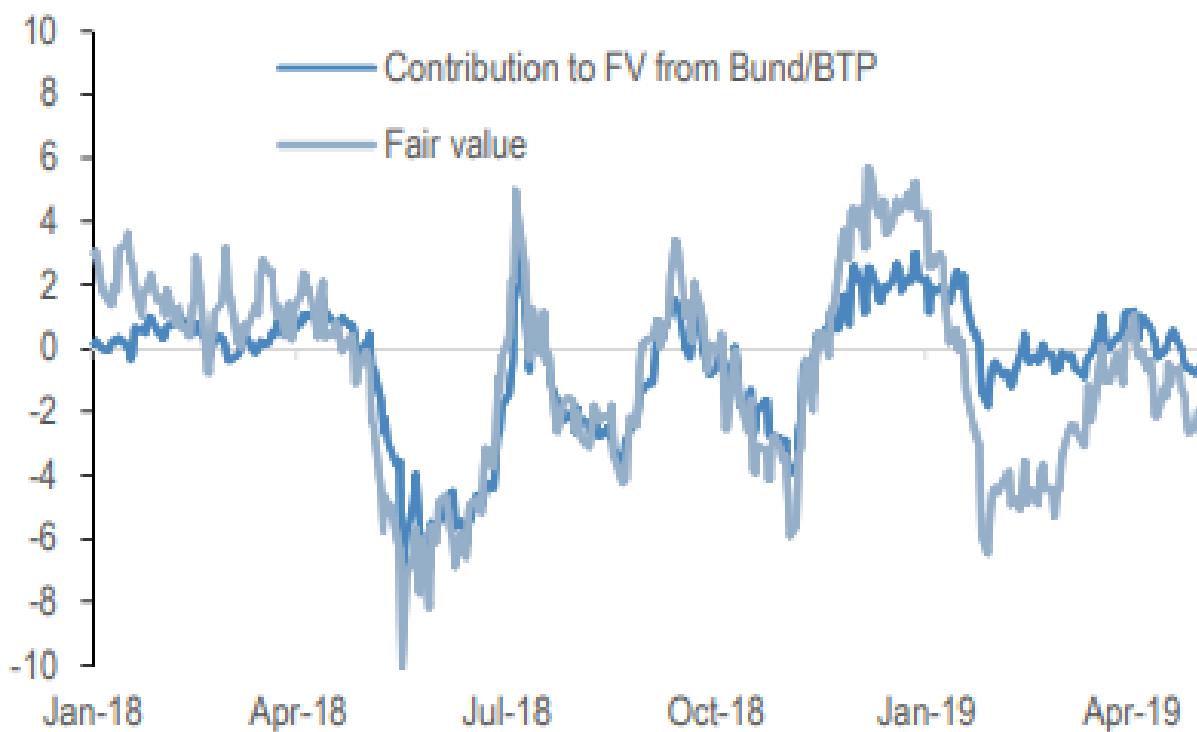
EUR/USD =  $1.271 + 0.078 \text{ (5Y EUR-USD)} + 0.21 \text{ (EUR-USD 2s/10s box)} - 0.047 \text{ (BTP-Bund)}$ . R<sup>2</sup> = 90% over 3Y. SE = 0.016



Source: J.P. Morgan

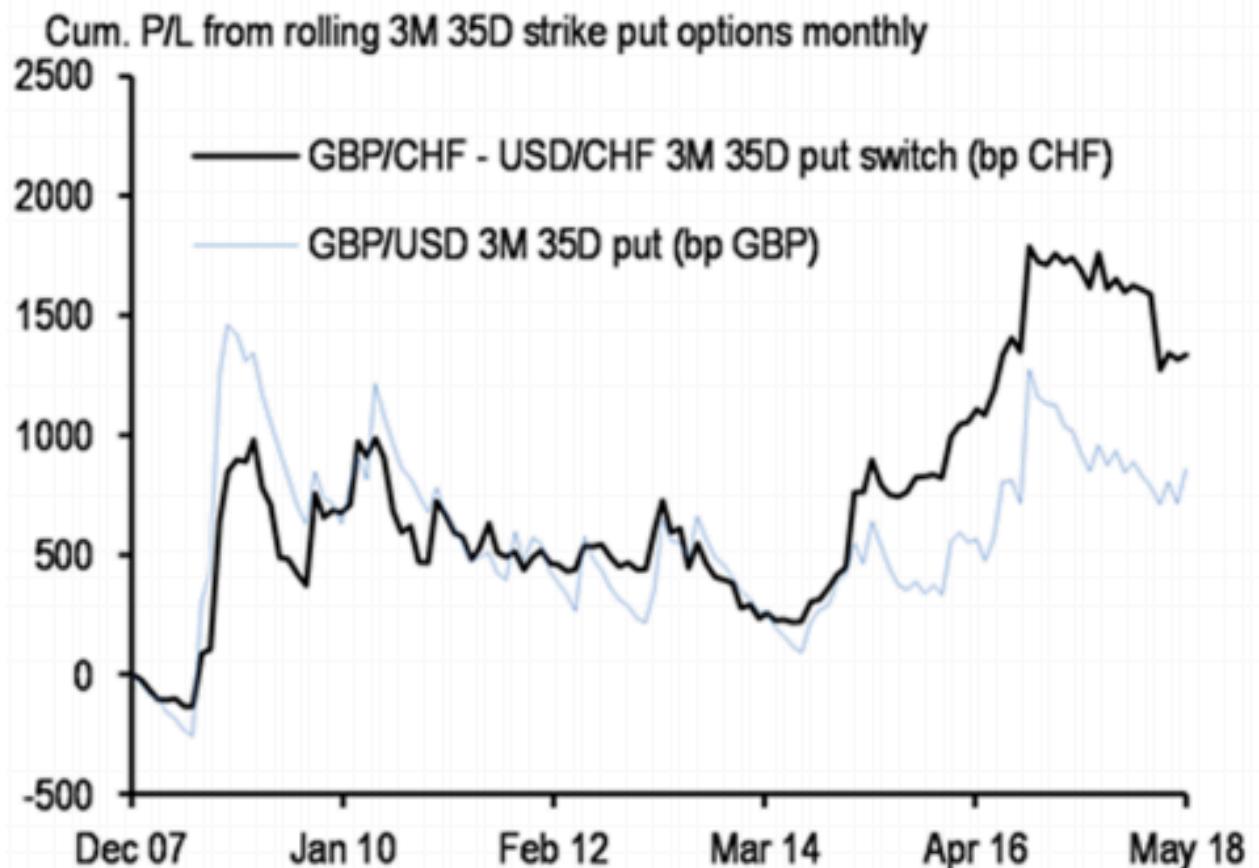
**Exhibit 9: The widening in the BTP spread is pulling FV for EUR/USD slightly lower. But Italian credit risk is much less of a drag than last May when formation of the new government knocked six cents off EUR FV**

2 month change in EUR/USD fair value from the model in the previous chart together with the contribution to the change in FV from the change in the BTP spread



Source: J.P. Morgan

**Exhibit 4: GBP/CHF – USD/CHF put switches have outperformed  
GBP/USD puts over the past 10-years, despite costing a fraction of  
the latter and often receiving premium at inception**

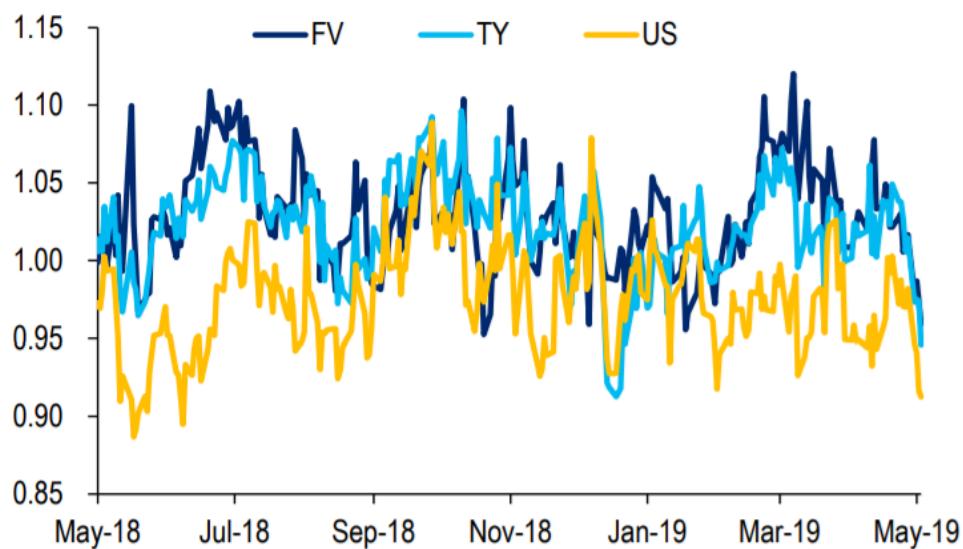


Source: J.P. Morgan

## Fade the richness of swaption vol to Board vol

As spreads tightened in a market rally, recent realized volatilities of swaps have increased relative to cash and futures volatilities. In addition, the demand for swaption gamma from mortgage accounts has likely increased given higher sensitivity of prepayments to rates. As a result, implied Board vols have notably cheapened to swaptions (Figure 23). In fact, TY vol now trades cheap to swaptions in July and August expirations (Figure 24).

Figure 23. Board/swaption vol ratios



Note: The chart shows the ratio of ATM Board vol to CTD-matched swaption vols. The second available expiry (rolled on the expiration of front options) is used for the chart.  
Source: Citi Research

Figure 24. TY vol now trades cheap or flat to swaption vol

option	FVN9	FVQ9	FVU9	TYN9	TYQ9	TYU9	USN9	USQ9	USU9
Board vol	64.5	64.4	64.2	59.8	60.5	61.3	49.8	50.8	51.6
1w chg	-0.5	1.6	1.7	-2.7	-0.2	0.8	-2.6	-1.0	-0.3
Board/ 1m RV	1.12	1.12	1.12	1.03	1.04	1.05	1.07	1.09	1.11
Board/ 3m RV	1.07	1.07	1.06	0.96	0.97	0.98	0.94	0.96	0.97
CTD-matched swpn vol	67.2	66.5	65.3	63.2	62.4	61.6	54.5	54.6	54.5
1w chg	3.0	4.6	5.3	1.0	3.0	3.5	0.5	2.2	2.6
swpn/ 1m RV	1.14	1.13	1.10	1.12	1.11	1.09	1.14	1.14	1.14
swpn/ 3m RV	1.07	1.06	1.04	1.03	1.02	1.01	1.01	1.01	1.01
Board/swpn	0.96	0.97	0.98	0.95	0.97	1.00	0.91	0.93	0.95
1w ago	1.01	1.02	1.04	1.01	1.02	1.04	0.97	0.99	1.00
ftrs 1m RV/swap 1m RV	0.97	0.97	0.97	1.03	1.03	1.03	0.97	0.97	0.97
ftrs 3m RV/swap 3m RV	0.96	0.96	0.96	1.02	1.02	1.02	0.98	0.98	0.98

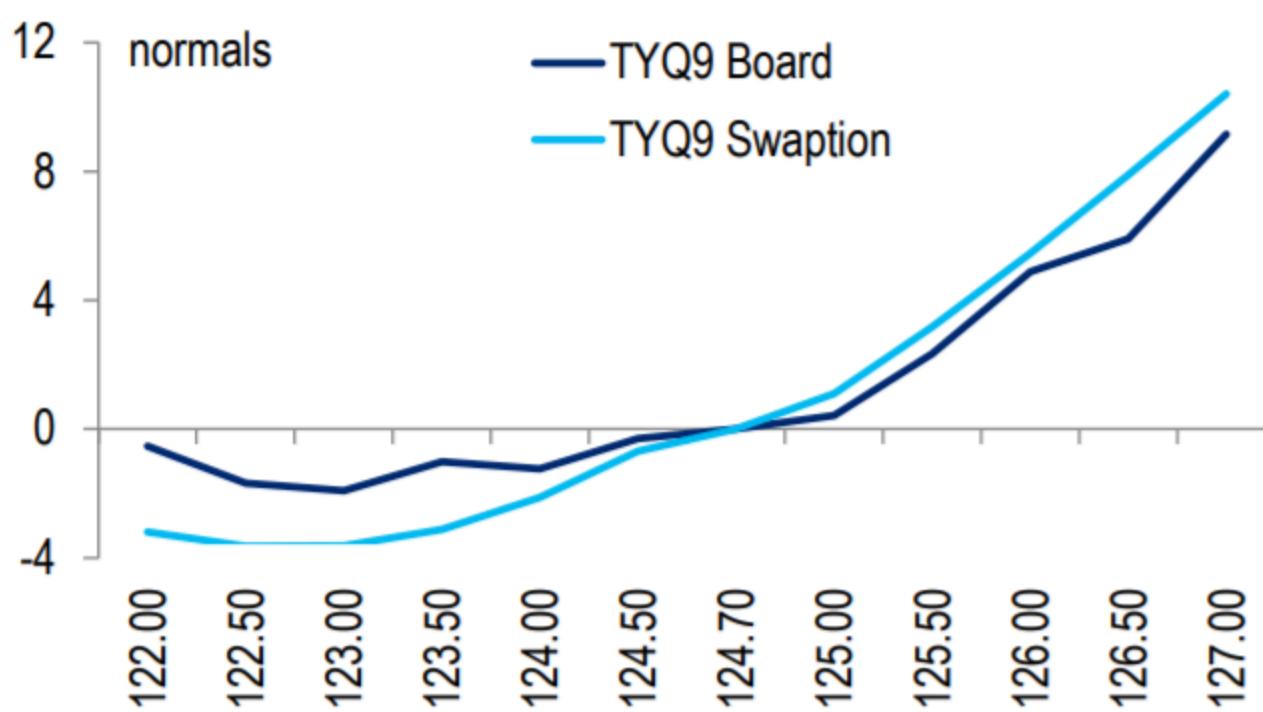
Note: Close of 5/16/19. The table shows implied ATM (interpolated) Board vols vs CTD-matched swaption vols with corresponding realized volatilities. Source: Citi Research

Board/swaption vol ratios are especially low in OTM call/receiver strikes, implying that the market sees a further relative outperformance of swaption vols if rates decline further (Figure 25). However, we do not expect the positive spreads-rates directionality to persist. As explained above, we believe convexity-driven demand is temporary and may, in fact, decline in a further rally. Previous episodes where Board vol cheapened to swaptions were typically short-lived, so we would expect the relative valuation of Board and swaption volatilities to normalize going forward. We like expressing this view by buying delta-hedge TYQ9 calls vs CTD-matched swaption receivers (pricing as of 12pm on 5/17/2019):

- Buy 1000 TYQ9 126.5 calls for 19/64th
- Sell \$124.1mn receivers on the 9/30/2019-4/30/2026 swap with expiration on 7/26/2019, struck at 2.03% at 26.3 cents

Note: Futures trading involves substantial risk of loss.

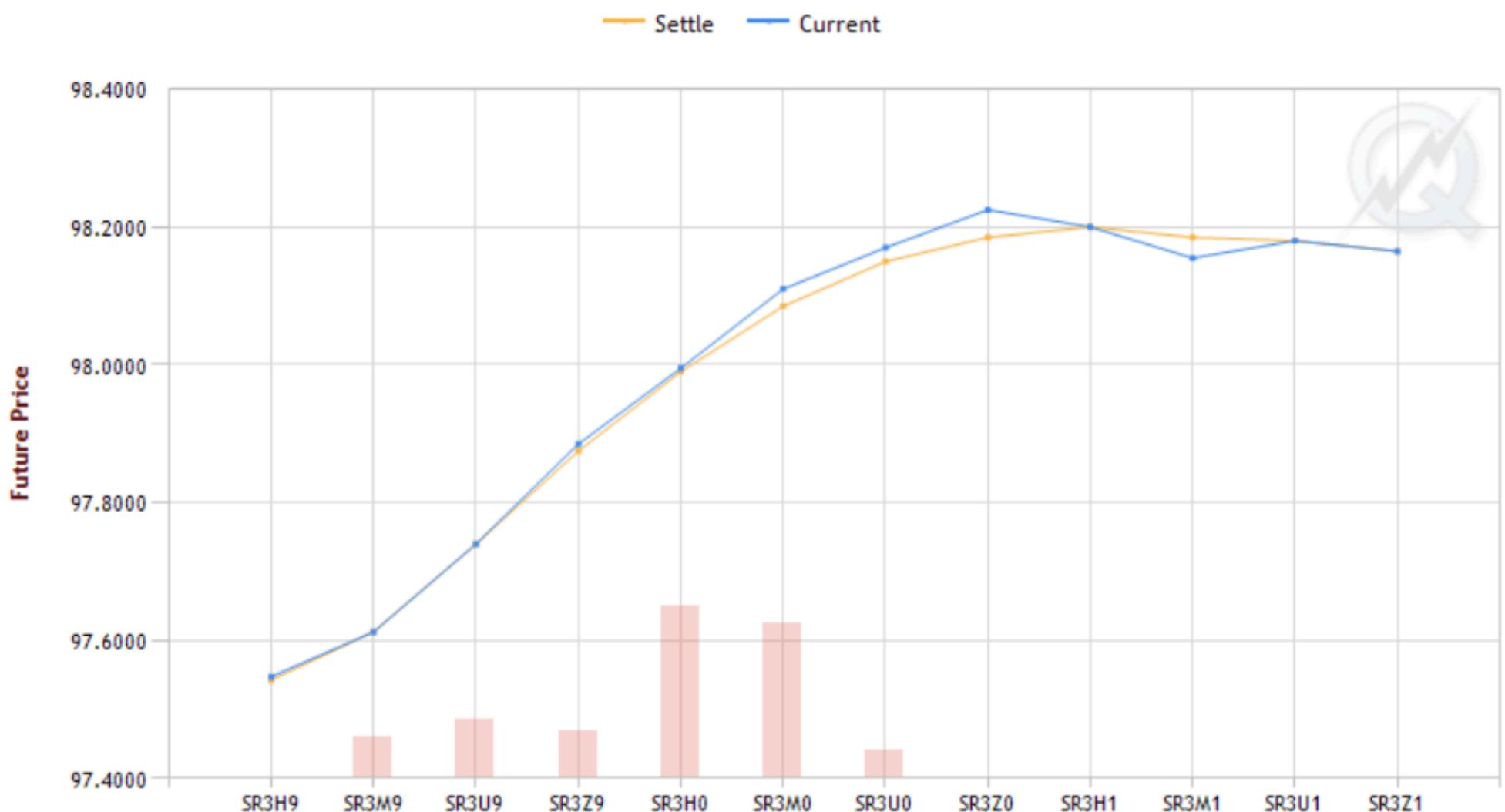
**Figure 25. Receiver skew looks rich to call skew**



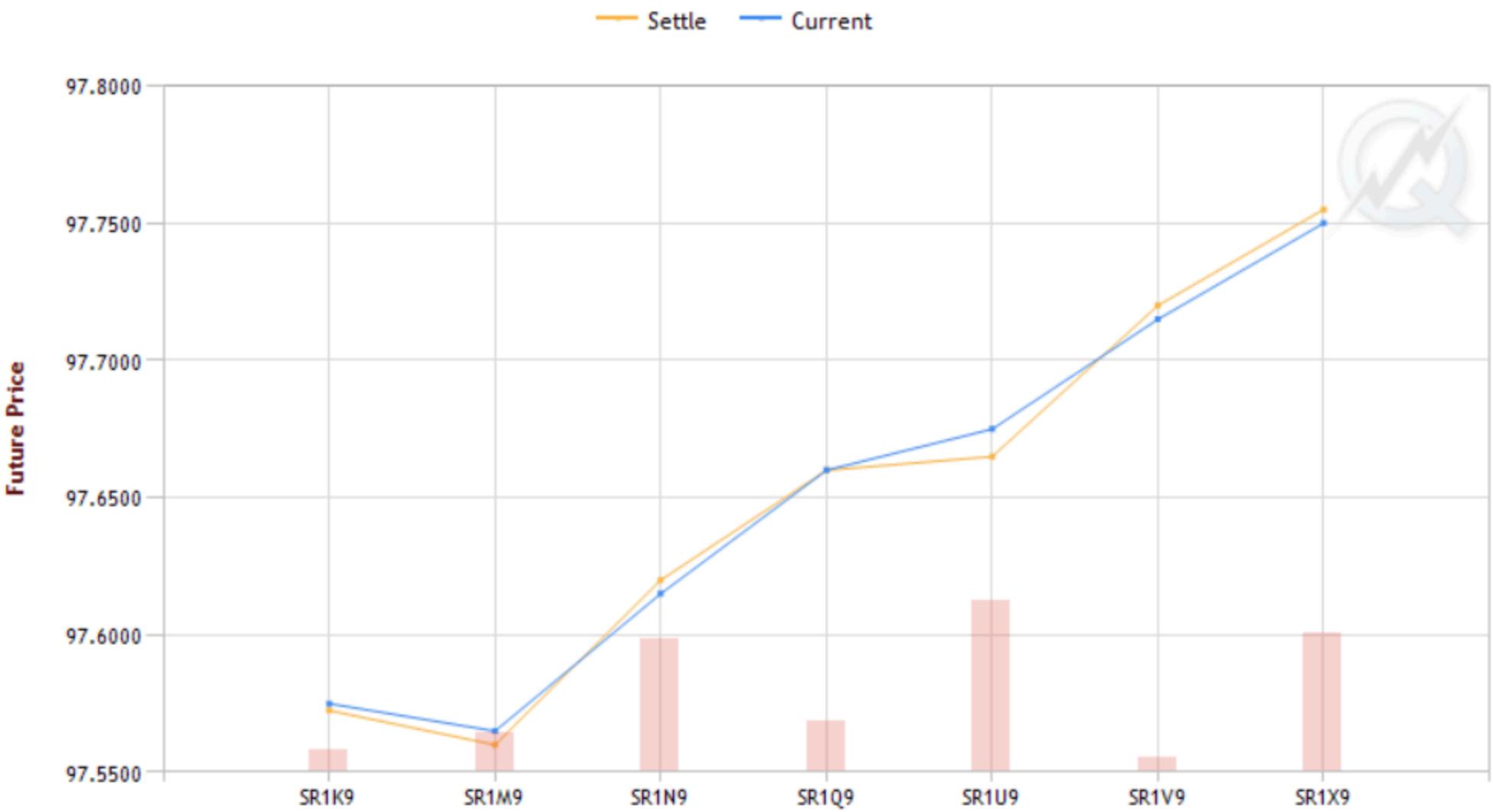
Note: Close of 5/16/19. Swaption strike= Board strike yield+invoice spread. Source: Citi Research

We will be delta-hedging the trade daily at 3pm NY time. A combination of a risk-off and sizable China UST selling is one risk to our trade, but, as discussed above, we don't think this is very likely.

**3M-SOFR Price Term Structure with Today's Volume**

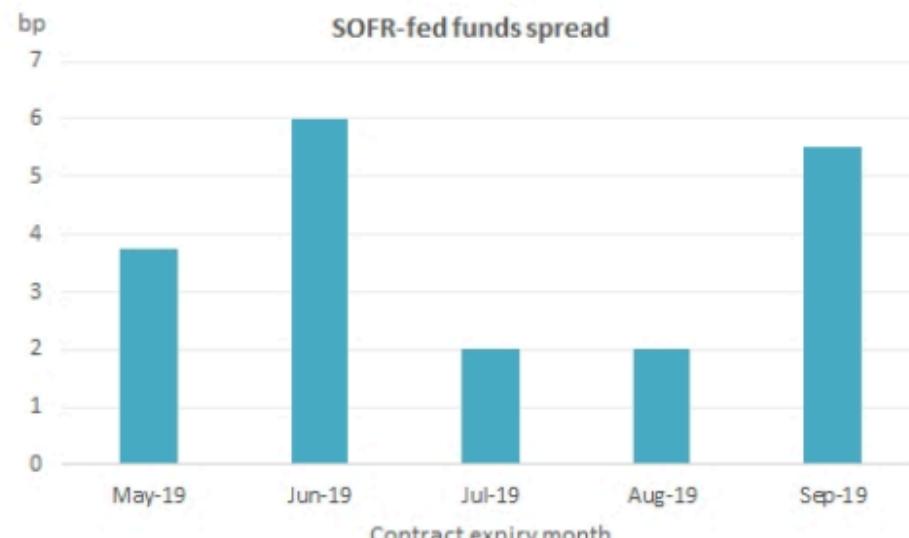


## 1M-SOFR Price Term Structure with Today's Volume



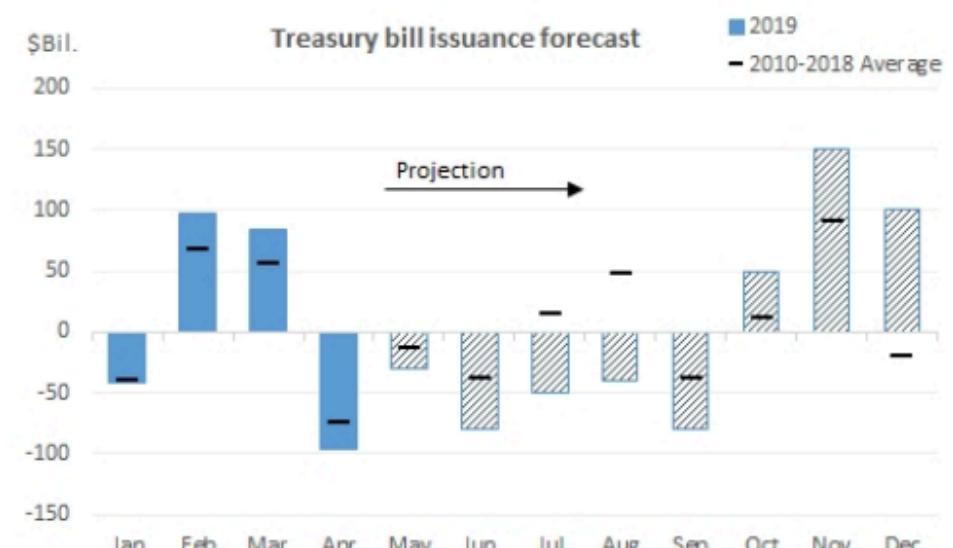
Treasury bill supply is expected to decline over the next several months. The SOFR futures market is pricing for a bigger drop in repo rates relative to fed funds in July and August. Bill issuance volatility stemming from the debt ceiling impasse adds uncertainty to repo rates around late summer. A decline in repo rates in September would cheapen the back contract relative to the front and is bullish for the calendars.

Figure 33: SOFR futures are pricing a bigger rate drop relative to fed funds expectations for July and August



Source : Bloomberg Finance LP, Deutsche Bank

Figure 34: Bill supply is forecast to decline through September under the debt limit impasse



Source : US Treasury, Deutsche Bank

Positioning is overall bearish for the calendars. Asset managers still own significant long positions with ~4500K net futures contracts as of May 7, the latest CFTC data available. While they have pared back positions marginally in FV, TY, and UXY since the last roll cycle, asset managers increased net longs in TU to a new record level.

In bond futures, asset managers have been migrating from US to WN over the past year, which may help explain the general cheapening bias in the WN calendar spread in recent roll cycles. A continuation of this trend during this cycle would be bearish for the WN calendar.

## Treasury-OIS

For Treasury-OIS spreads, we estimated the model using monthly data from 2014 to February 2019. The explanatory variables used in this model include net primary dealer financing, Tier 1 leverage ratio, bank holding company annual asset growth rate, and the 6-month change in the weighted average maturity of government money fund assets. Estimation results are given in the table below.

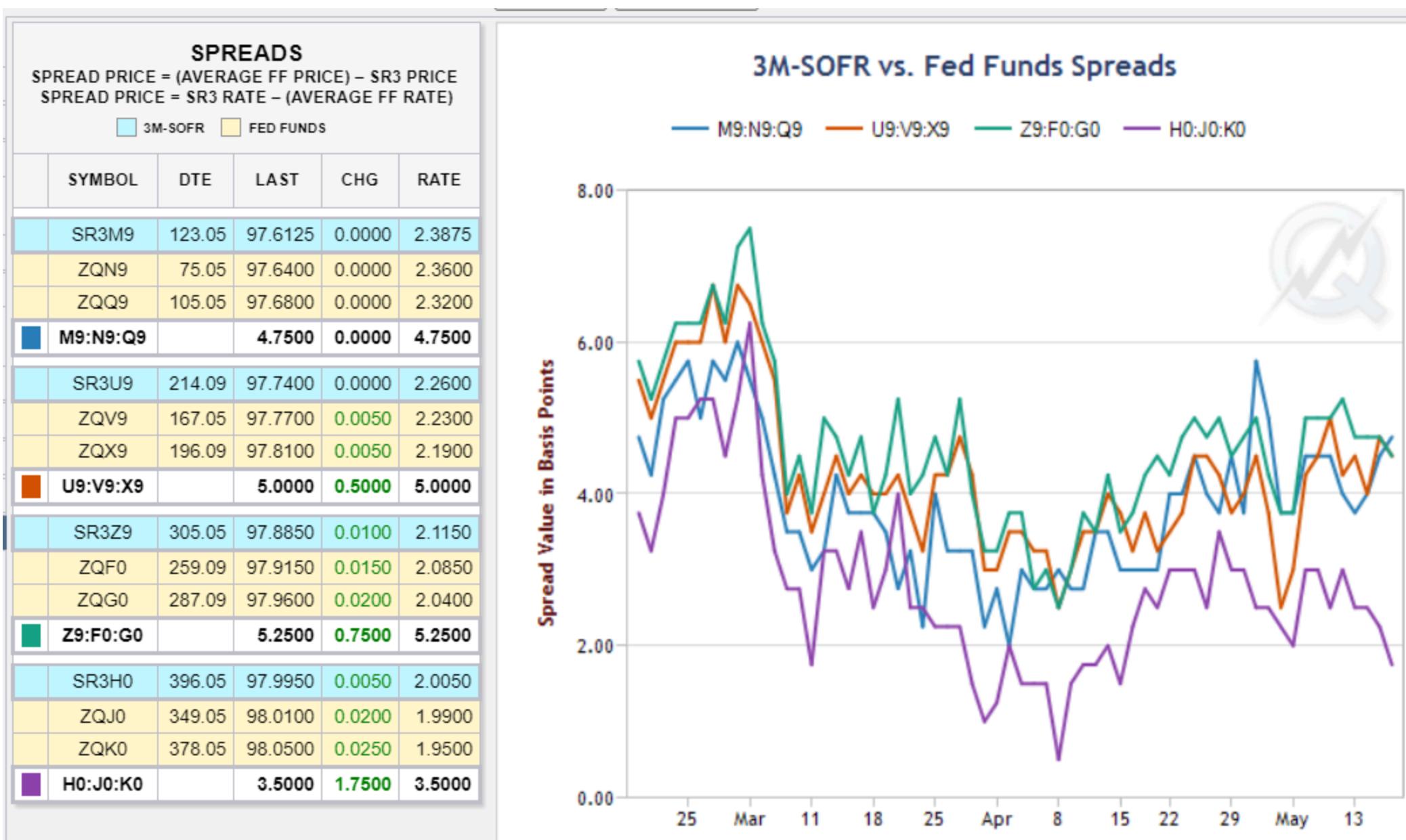
Figure 25: Treasury-OIS model details

	coef.	t-stats	coef.	t-stats	coef.	t-stats	coef.	t-stats
Dealer Financing	0.2	9.8	0.1	8.6	0.1	8.9	0.2	9.1
Leverage Ratio	-963.6	-4.0	849.6	3.7	2122.8	8.4	5000.7	17.6
Asset Growth Rate	-289.5	-6.5	-105.6	-2.6	62.3	1.4	150.1	2.9
Government MMF WAM 6-month Change	0.9	5.9	0.9	6.2	0.9	5.4	0.8	4.2
Market	16.8		22.7		29.9		55.4	
Model	19.9		28.8		36.1		57.4	
SE	4.47		4.18		4.63		5.22	
Adj. R-squared	0.72		0.80		0.88		0.94	

Source : Deutsche Bank

**Net dealer financing** is calculated as the monthly average of weekly observations of total Treasury “securities out” outstanding transactions, less total “securities in” outstanding transactions. These data are taken from the FR 2004 report of primary dealer transactions. Securities dealers run a matched repo book, and beyond the matched book use repo markets to finance securities inventories. Netting “securi-

Deutsche Bank AG/London

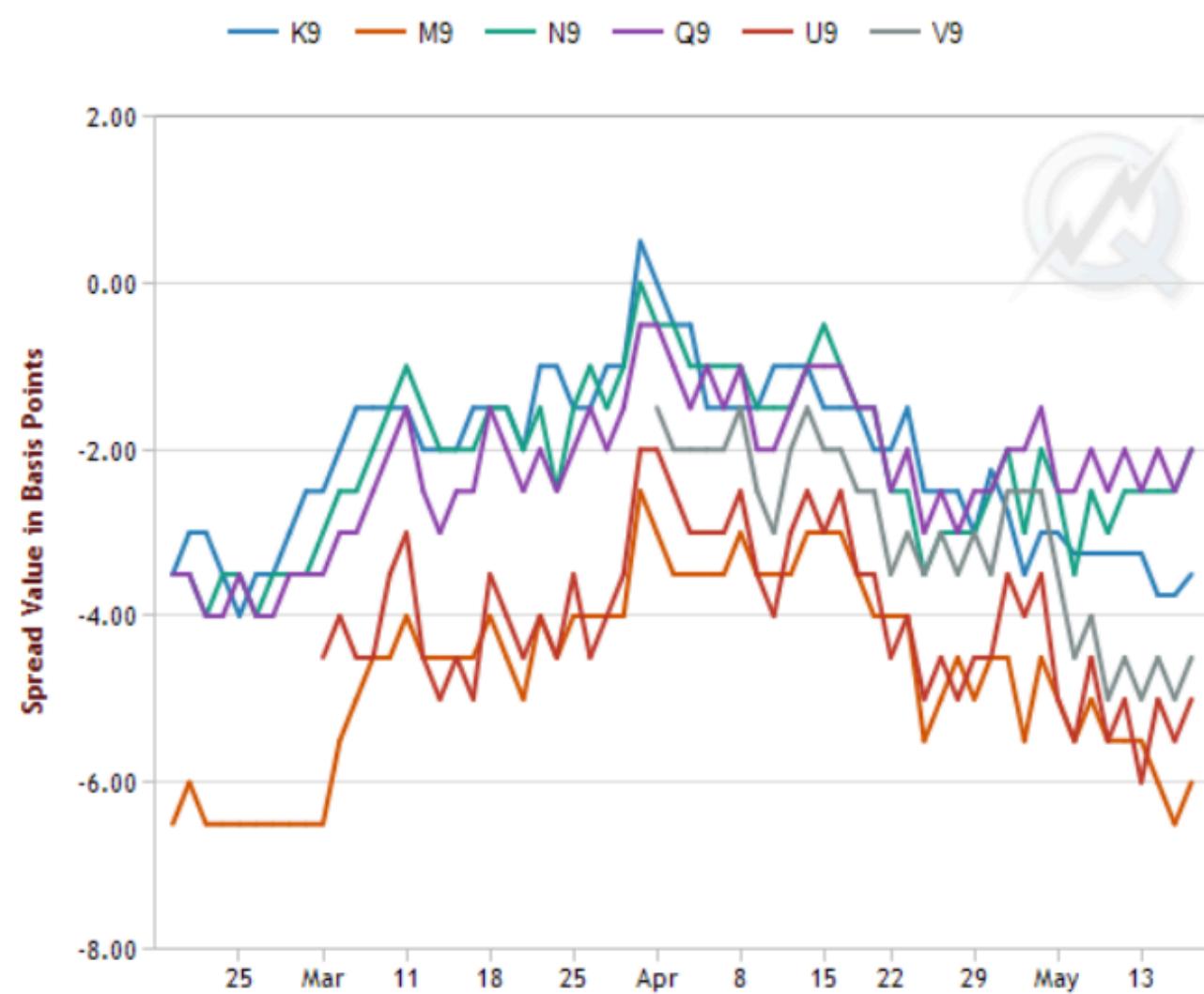


## SPREADS

SPREAD PRICE = SR1 PRICE – FF PRICE

	FF	SR1	SPREAD
K9	97.6100	97.5750	-3.5000
M9	97.6200	97.5650	-5.5000
N9	97.6400	97.6150	-2.5000
Q9	97.6800	97.6600	-2.0000
U9	97.7150	97.6750	-4.0000
V9	97.7700	97.7150	-5.5000

## Fed Funds vs. 1M-SOFR Spreads



## SPREADS

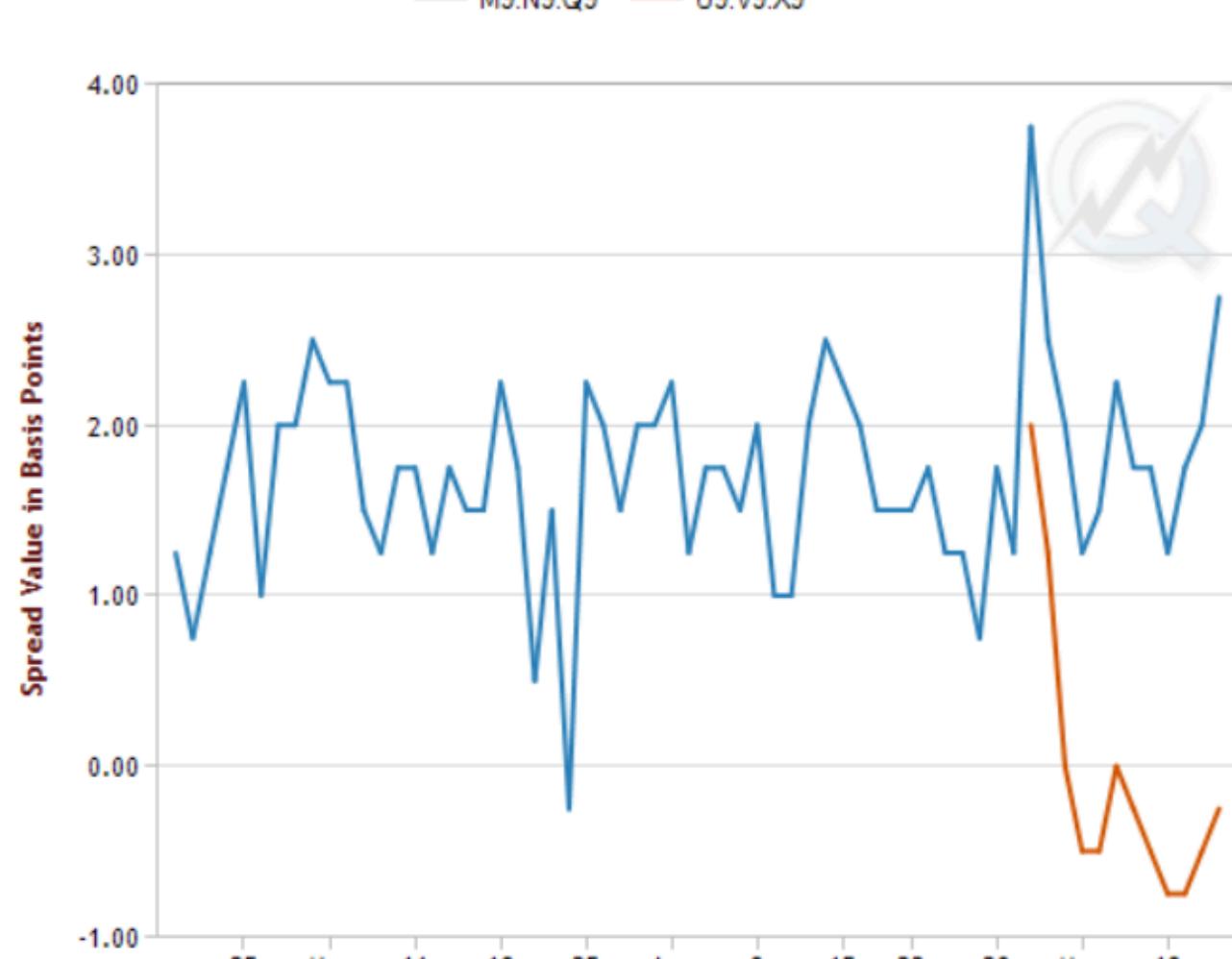
SPREAD PRICE = (AVERAGE SR1 PRICE) – SR3 PRICE  
SPREAD PRICE = SR3 RATE – (AVERAGE SR1 RATE)

■ 3M-SOFR ■ 1M-SOFR

	SYMBOL	DTE	LAST	CHG	RATE
	SR3M9	123.05	97.6125	0.0000	2.3875
	SR1N9	75.05	97.6150	-0.0050	2.3850
	SR1Q9	105.05	97.6600	0.0000	2.3400
■	M9:N9:Q9		2.5000	-0.2500	2.5000
	SR3U9	214.09	97.7400	0.0000	2.2600
	SR1V9	167.05	97.7150	-0.0050	2.2850
	SR1X9	196.09	97.7500	-0.0050	2.2500
■	U9:V9:X9		-0.7500	-0.5000	-0.7500

## 3M-SOFR vs. 1M-SOFR Spreads

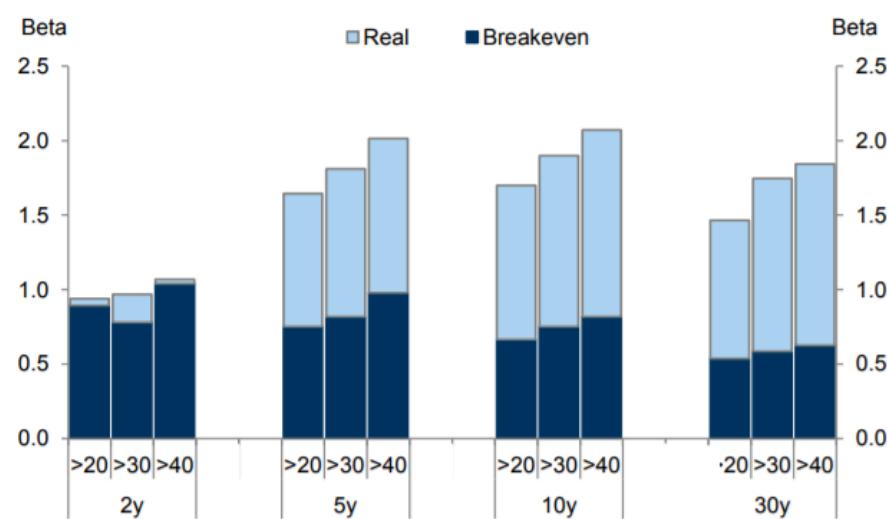
■ M9:N9:Q9 ■ U9:V9:X9



■ **Filtered positioning argues for higher yields over the next six months.** We introduced a new framework for using the CFTC's weekly positioning data, creating a "filtered positions" series by taking only changes in net position that are directional with the market, and using these series in conjunction with the magnitude of contemporaneous yield changes. Of the classes of investors considered, we find the filtered asset manager position fares best in anticipating yield changes over the subsequent six months, succeeding 74% of the time when a rally is expected, and 67% of the time when a sell-off is expected. Currently, the market has rallied by more than the filtered asset manager position would have implied over the last 6 months, suggesting that the bias is to higher yields over the next six months. While near-term risks from trade tensions and a more sluggish Q2 remain, this is consistent with our view for higher yields into year-end on the back of an improved growth backdrop.

**Exhibit 1: Yields appear to have heightened sensitivity to risky asset behavior in periods of elevated trade war concerns**

Estimated beta of changes in US real yields and breakevens to changes in S&P 500, by volume of search interest in "Tariff" news\*



\*Google Trends scales search volume in a given week relative to peak popularity for the term.

Source: Goldman Sachs Global Investment Research, Google

**Exhibit 2: Our filtered positions indicator suggests a bias towards higher yields over the next six months**

6m residual of changes in yield on changes in filtered position (z-score) and 6m-ahead change in 10y yields (bp)



See "Filtering CFTC positioning data for a signal" (GS Research) for details on methodology

Source: Goldman Sachs Global Investment Research

NO LOIS VARIABLE FOR ICE'S INSANE "LEVEL 3" "WATERFALL" QUOTES???  
JUST REGRESS THE 3X6,6X9 FRAs, first few EDs, and yes Repo, and FX Swap Rates (both secured but kosher with their absurd methodology)

Figure 23: Model attribution of changes in Treasury-OIS and LIBOR-OIS spreads since January 31, 2019. Total contributions and change in market values expressed in terms of LIBOR-Treasury swap spreads.

	(bps)	2Y	5Y	10Y	30Y
Treasury-OIS	Dealer Financing	4.3	3.5	4.0	4.6
	Leverage Ratio*	0.0	0.0	0.0	0.0
	Asset Growth Rate*	0.0	0.0	0.0	0.0
	Government MMF WAM 6-month Change	0.0	0.0	0.0	0.0
LIBOR-OIS	Bills/MMF Assets	-0.7	-0.5	-0.5	-0.8
	Prime MMF Assets 6-month Change	-0.5	-0.4	-0.3	-0.3
	Commercial Paper Outstanding	-3.5	-2.5	-1.5	-0.7
	10Y Euribor-Libor Swap Spread	1.0	0.8	0.8	1.2
	Total contribution	-7.9	-6.1	-5.5	-5.1
	Change in market	-7.4	-7.4	-7.1	-8.4

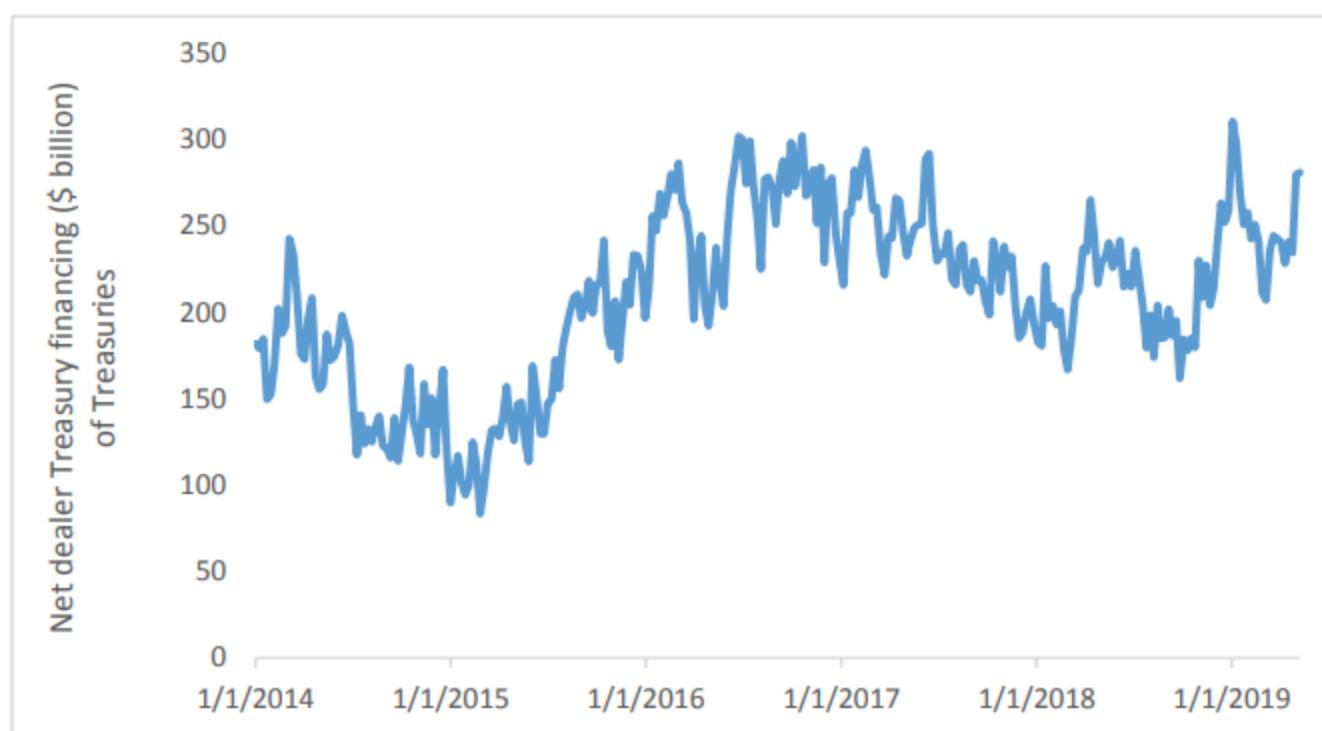
Footnote: We assume Leverage Ratio and Asset Growth Rate remain at current levels for the period as data for the most recent quarter have not been made available.

Source : Deutsche Bank

On the Treasury OIS side, net dealer repo financing rose sharply in the most recent data releases, rising \$44 billion in the week ending May 1st. It is the sharp change in this variable that has dragged model value lower to market levels.

On the Treasury OIS side, net dealer repo financing rose sharply in the most recent data releases, rising \$44 billion in the week ending May 1st. It is the sharp change in this variable that has dragged model value lower to market levels.

Figure 24: Sharp increase in net dealer financing

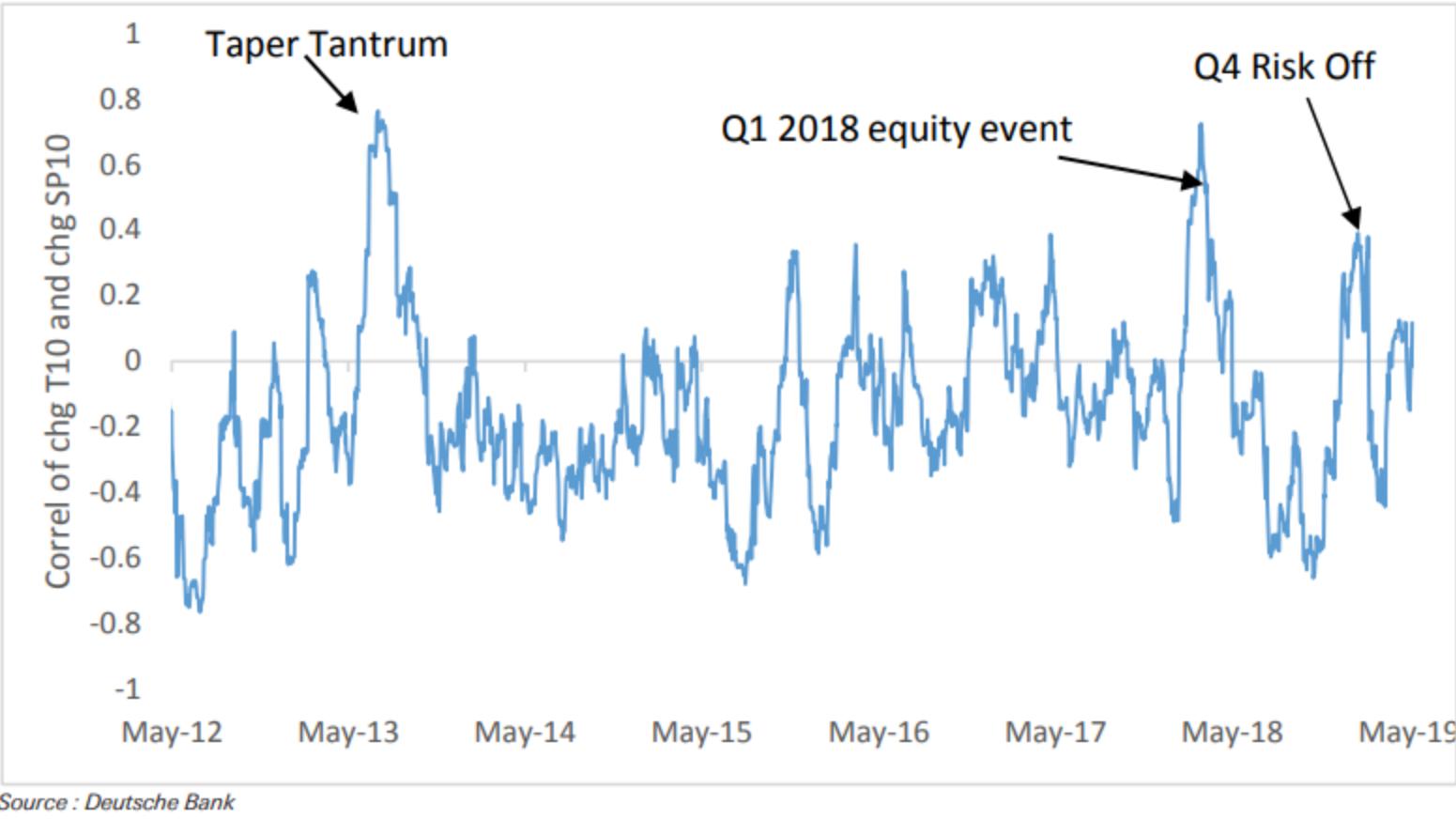


Source : Federal Reserve, Haver Analytics

Note that the increase in net dealer financing was before the May refunding settlement, for which data will be published next week. The model attributes roughly 4 bp of Treasury cheapening to OIS across the curve since the end of January to the increase in dealer financing.

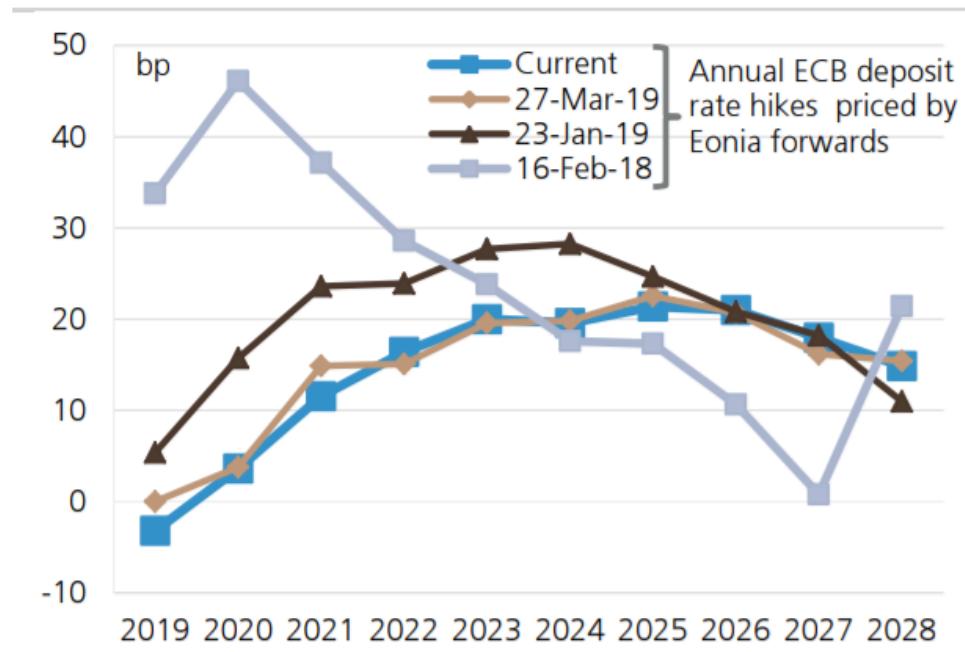
On the LIBOR side, the model attributes LIBOR-OIS spread tightening largely to a decline in CP outstanding. CP outstanding issued by financial companies declined by \$44 billion since the end of January. The model attributes significant LIBOR-OIS tightening across the curve to this decline.

**Figure 22: Correlation of 10y rate chg and 10y spread chg suggests negative convexity hedging a major contributor to spread compression**



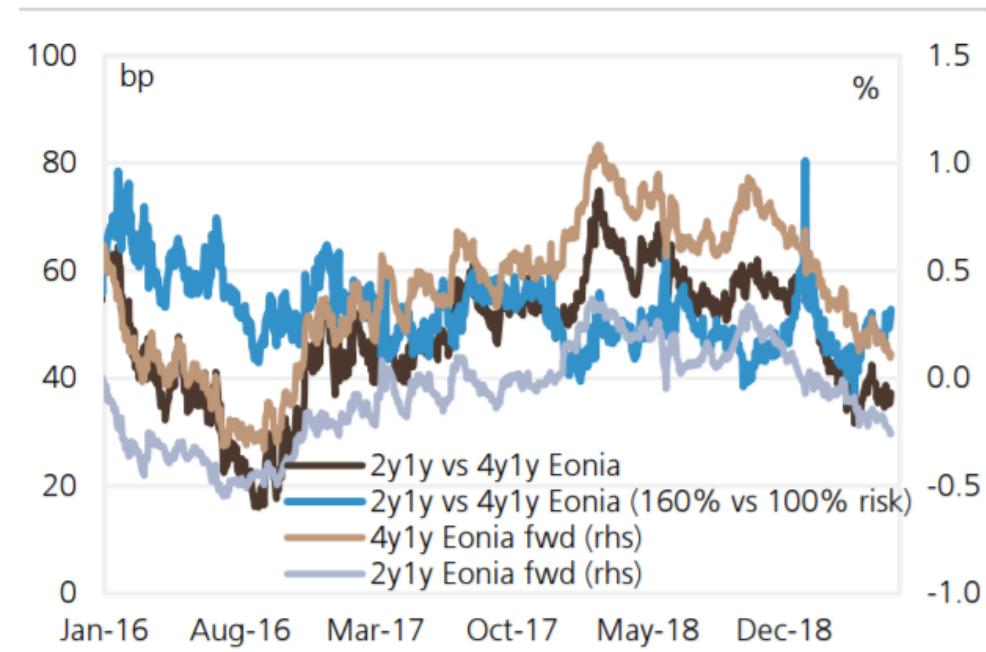
Source : Deutsche Bank

**Figure 23: Rate hike expectations have been scaled back**



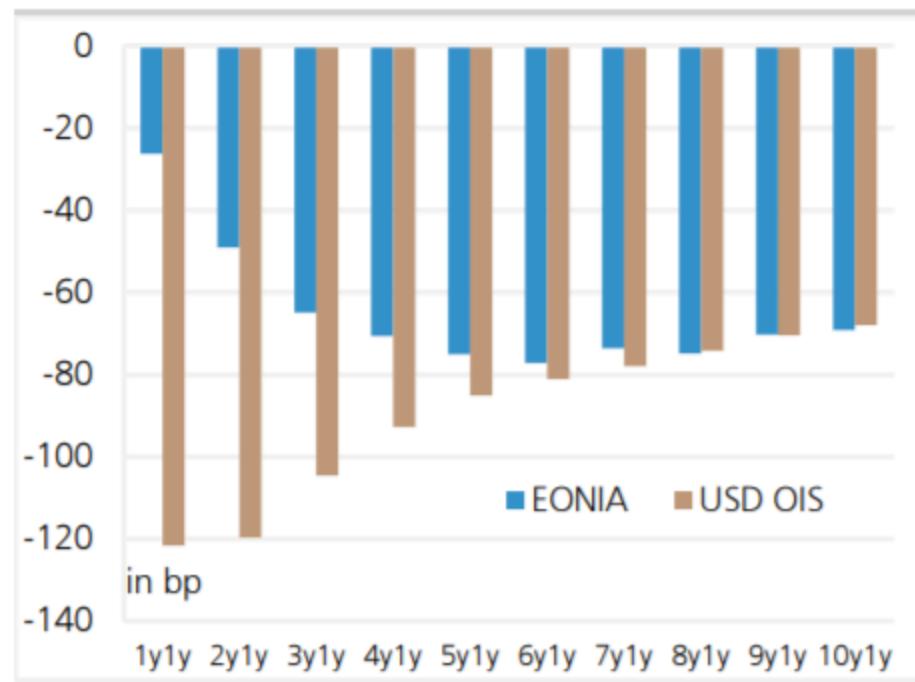
Source: Bloomberg, UBS

**Figure 24: We position for re-steepening of the Eonia curve**



Source: Bloomberg, UBS

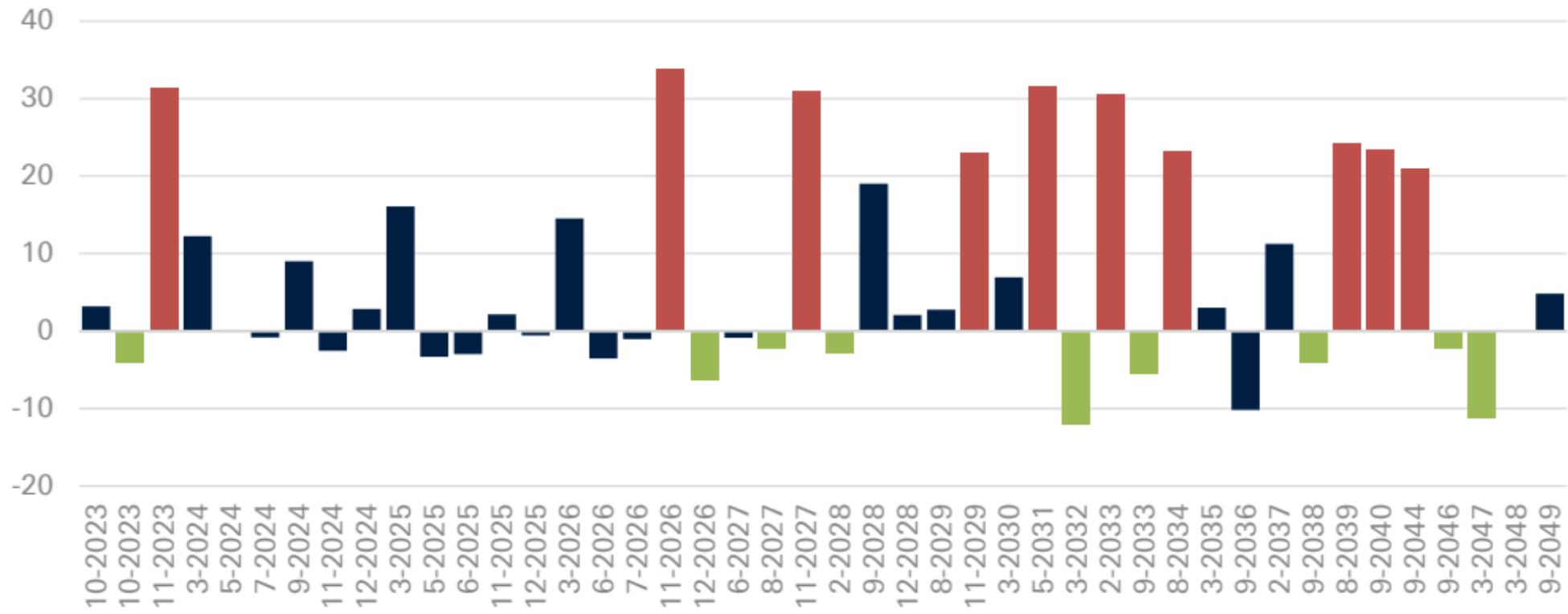
**Figure 25: Change in money market rates since Nov-2018**



Source: Bloomberg, UBS

First, in [Figure 61](#) we select 10 high coupon (red bars) and 10 low coupon (green bars) bonds from the BTPs curve with the aim of having as little curve exposure between the various pairs as possible while maintaining a significant price differential between the two bonds.

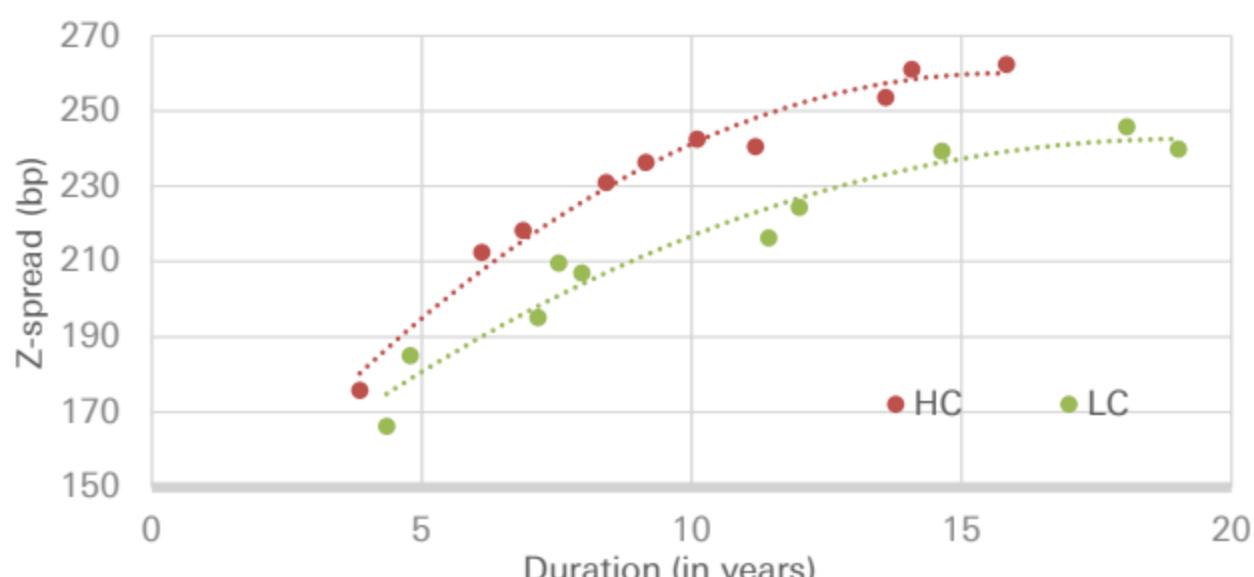
[Figure 61: Selection of high coupon and low coupon bonds on the BTPs curve \(Y-axis: distance from Par Price\)](#)



Source : Deutsche Bank, Bloomberg Finance LP

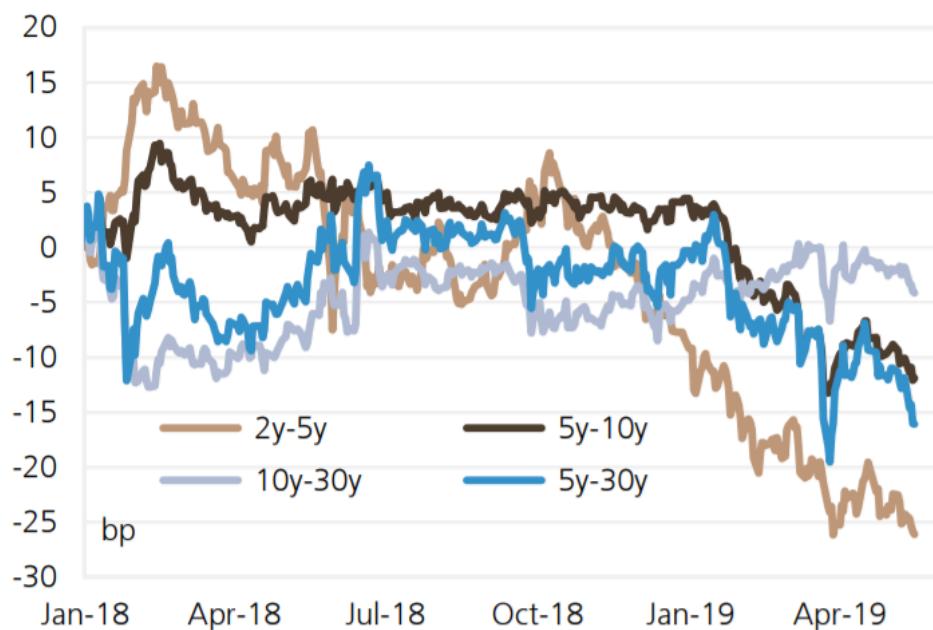
[Figure 62](#) shows that high coupon BTPs tend to trade at a discount (cheaper) versus low coupon ones, with this discount becoming larger as we move to longer tenors. This is because high coupon bonds trade at higher prices and in case of default (depending on when the bond was purchased) the loss-given-default is higher for high coupon bonds. What we are interested in is the relative pricing of risk among BTP/Bund spread, the Italian curve and HC/LC BTP pairs.

[Figure 62: High coupon BTPs are trading cheaper than low coupon ones](#)



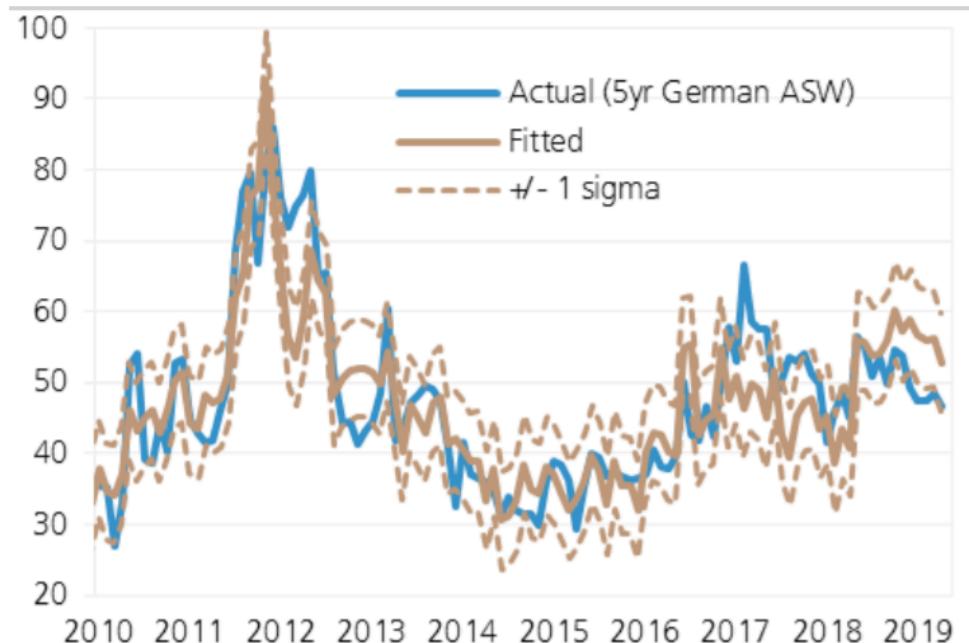
Source : Deutsche Bank, Bloomberg Finance LP

**Figure 26: The EUR curve has bull-flattened but 10s30s has stayed steep** (Cumulative changes since Jan-2018)



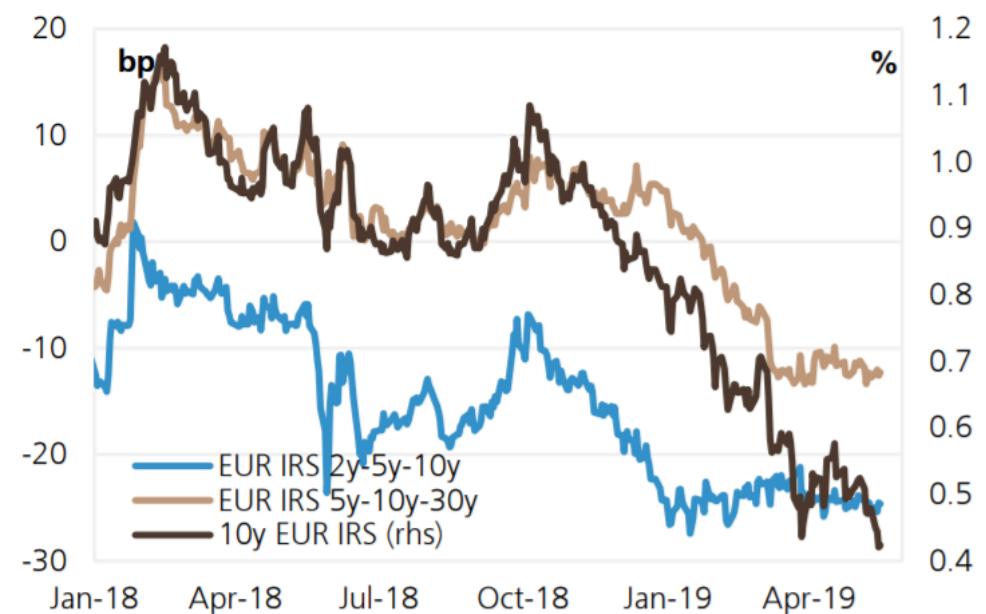
Source: Bloomberg, UBS

**Figure 29: Bobl ASW still screens cheap versus fair**



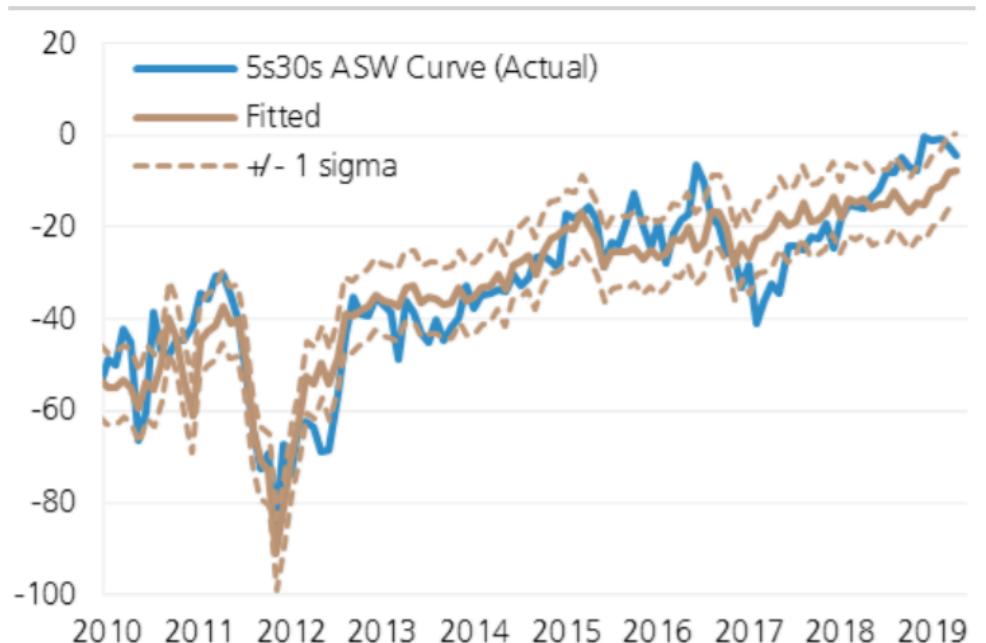
Source: Bloomberg, UBS

**Figure 27: Flat-lining of EUR 2s5s10s suggests that the belly of the curve may have reached 'peak' richness**



Source: Bloomberg, UBS

**Figure 30: Bobl-Buxl curve is flattening, converging to fair**



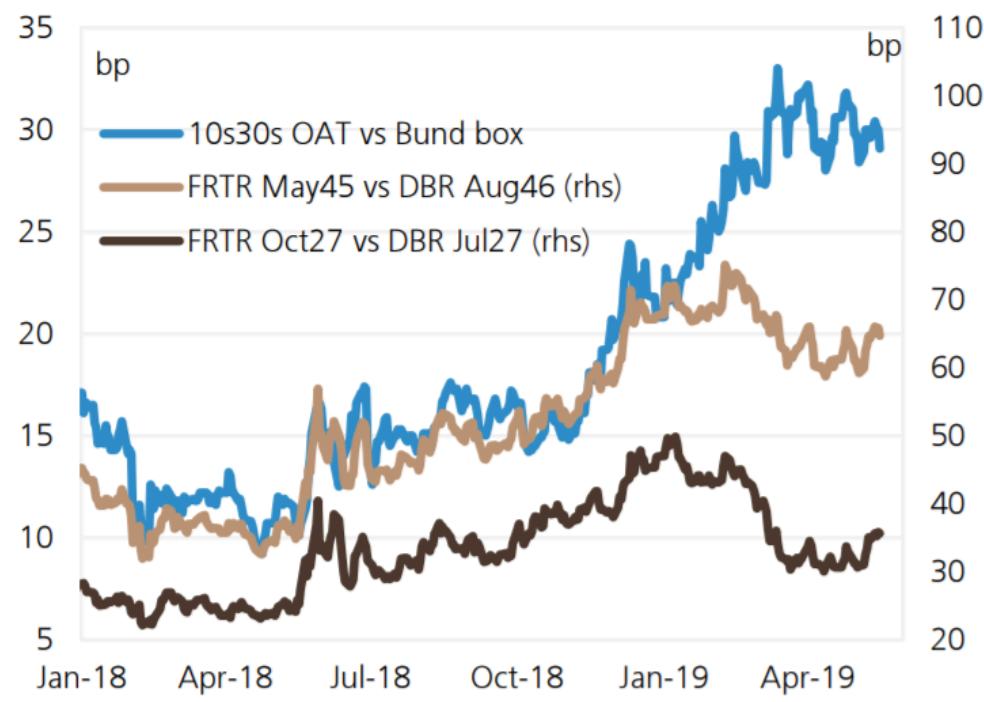
Source: Bloomberg, UBS

**Figure 31: Changes in spread vs Germany in 2019**

(in bp)	2y	5y	7y	10y	15y	30y
AT	2	6	6	1	0	-2
BE	10	4	4	-9	-10	-7
FR	-4	-5	-1	-8	-5	-3
IE	12	-7	1	-17	-16	-10
ES	-6	-23	-24	-22	-21	-18
IT	-1	17	18	22	29	36
PT	-7	-27	-23	-37	-33	-39
GR		-111		-64	-48	

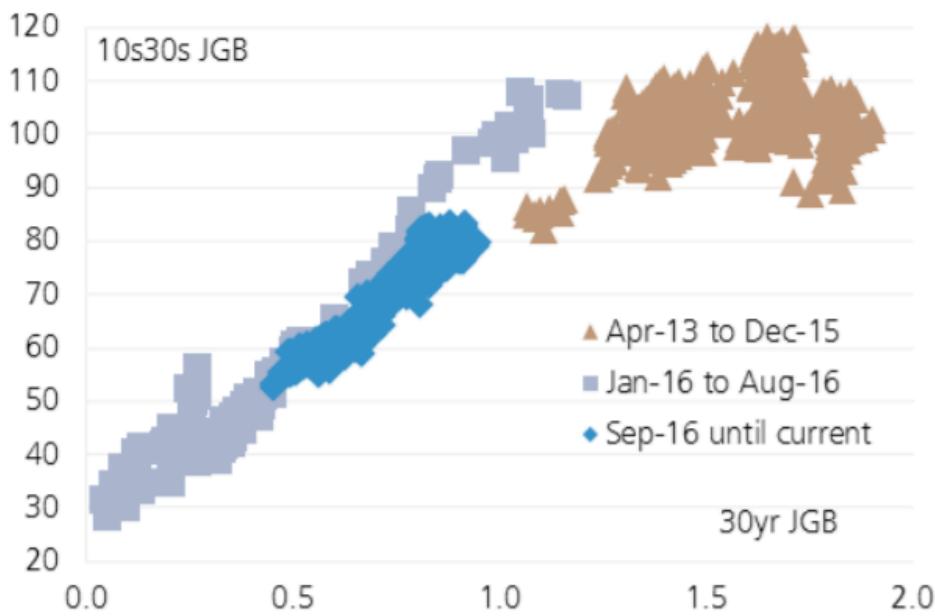
Source: Bloomberg, UBS

**Figure 32: 10s30s OAT credit curve still steep**



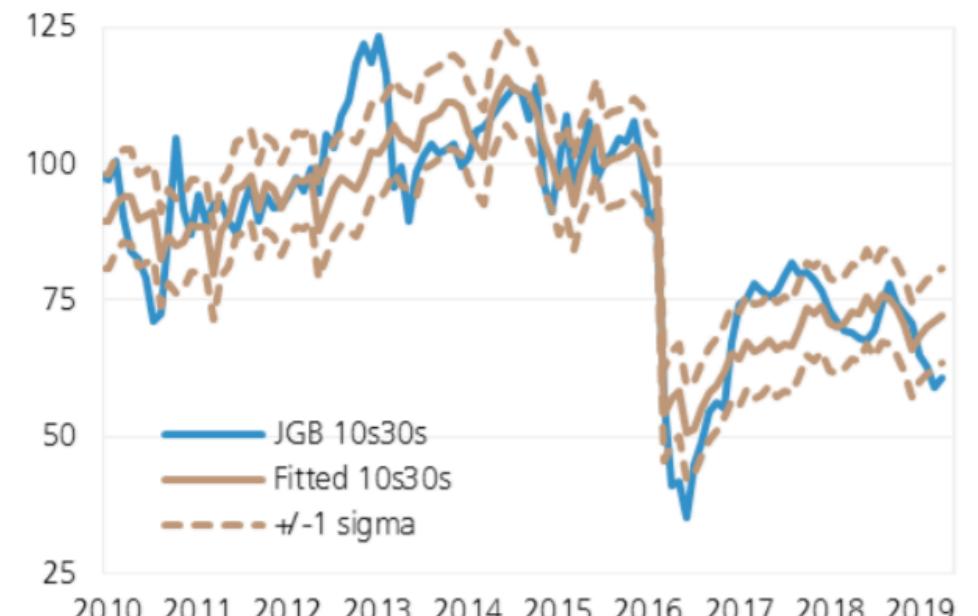
Source: Bloomberg, UBS

**Figure 38: Under negative rates and YCC, JGB10s30s is directional with 30y JGBs**



Source: Bloomberg, UBS

**Figure 39: JGB 10s30s is still too flat relative to model estimates**



Source: Bloomberg, UBS

## General Collateral

GC was very well bid today. GC opened trading 2.48 and trended lower all day, ultimately hitting a low of 2.31. Regs traded 2.46. Money market fund data shows a sizeable increase in AUMs this past week and with incremental GSE in the marketplace, we expect GC to be in the mid-to-low 2.40s for all of next week. However, we could see some upward pressure on Friday as a result of the holiday weekend.

Beimnet Abebe

Specials

GC O/N Rates		
Rates	17-May	16-May
GCF TSY	2.462	2.487
SOFR*	2.410	2.430
GCF MBS	2.465	2.501

Source: Bloomberg

\*Estimate

Mids	O/N	1 Week	Refunding Date
GC	2.46	2.47	N/A
2 Year	2.45	2.43	2.40
3 Year	2.45	2.45	2.42
5 Year	2.30	2.25	2.20
7 Year	2.48	2.45	2.45
10 Year	2.40	2.35	2.15
30 Year	2.45	2.40	2.30

Source: Citi

## Specials

Today's specials market saw GC in the high-2.40s with current issues trading on a similar spread to overnights. Fives were the best performer of the current issues trading around 2.35 and once again marginally richening in term markets to 2.20 mid for the 5/30 refunding date. Similar to yesterday, both old tens and old bonds outperformed the current issues with the old issues trading around 2.38 and 2.35, respectively.

Aidan Flanagan

	TSY GC	TSY GC / FF OIS	TSY GC / LIBOR	TSY / MBS Basis
1W	2.47	8.59	7.40	-1.00
2W	2.49	10.33	-	-1.0
1M	2.50	11.80	6.11	-2.0
3M	2.50	13.1	-2.39	-4.0
6M	2.46	14.3		-5.0
9M	2.40	14.4		-5.0
12M	2.35	14.5		-5.0
15M	2.31	16.4		-5.5
18M	2.27	17.20		-6.0

Notes: All Money Market Yields

## Short End Treasury

Color will be provided on Monday.

Zach Schaffer

	Bills	OIS Spd	TSY GC Spd	TED Spd		
1M	2.335	/	2.320	-5.00	-16.80	-10.69
2M	2.350	/	2.345	-1.70	-14.80	-17.19
3M	2.338	/	2.328	-2.95	-16.05	-18.44
6M	2.350	/	2.345	3.10	-11.20	-13.27
12M	2.258	/	2.250	-0.05	-14.45	-19.35

Source: Bloomberg

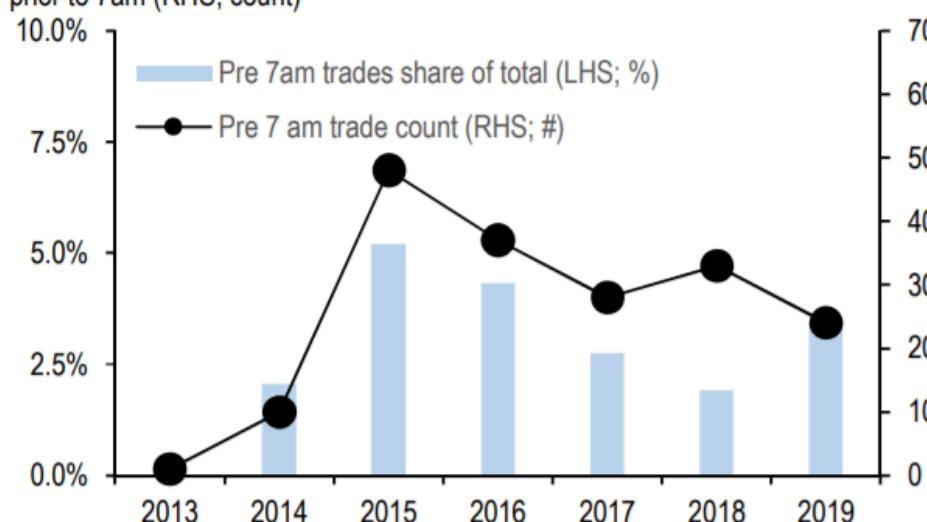
RRP Takedown	
# CPs	Total (bn)
2	9.7

Source: Citi

- Assume that the RFR is equal to the daily compounded RFR over the length of time (equal to the benchmark length) leading up to but preceding the start date of the benchmark tenor – “**the compounded ex-ante rate**”
- Assume that the RFR is equal to the daily compounded RFR over the applicable term for the benchmark rate – “**the compounded ex-post rate**”

### Exhibit 5: Trading in OIS rates around the 3M tenor tends to be very light prior to 7 am Eastern time

Share of 3M\* OIS traded pre 7am EST (LHS; %) and number of trades in 3M OIS prior to 7am (RHS; count)

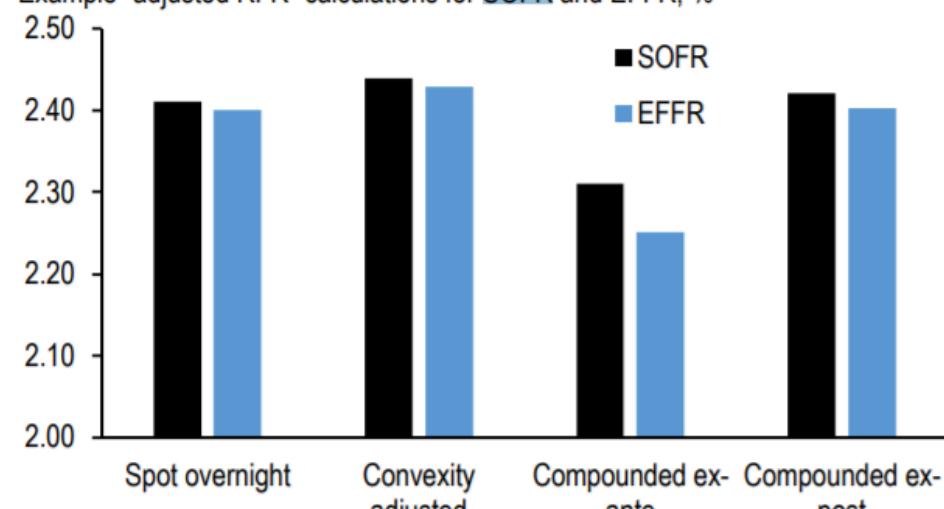


\* We take all trades within a 2 to 4 month tenor.

Source: J.P. Morgan DTCC

### Exhibit 6: The choice of RFR adjustment methodology has meaningful implications for the ultimate spread level

Example “adjusted RFR” calculations for SOFR and EFFR; %



Note: Calculations are for the 1/11/19. See main text for details on computation methodology  
Source: J.P. Morgan, NYFRB

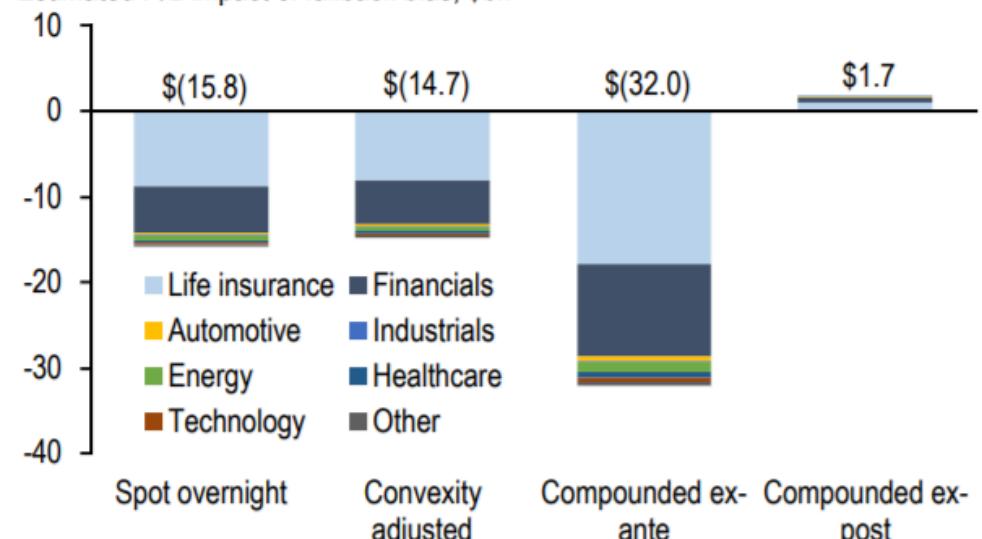
**Exhibit 7: Fallback calculations are likely to be biased systematically higher than FRA/OIS expectations, regardless of RFR methodology**  
 Estimate of fallback calculation for 3M Libor based off RFR adjustment and spread adjustment methodologies, 5-year lookback; bps

RFR	Method	Implied vs known FRA/OIS			
		Median	Mean	Median	Mean
SOFR	Spot overnight	30.9	33.3	-	-
SOFR	Convexity adjusted	30.2	32.7	-	-
SOFR	Compounded ex-ante	39.0	39.0	-	-
SOFR	Compounded ex-post	24.1	25.8	-	-
FF	Spot overnight	26.0	29.3	5.0	6.0
FF	Convexity adjusted	25.7	28.7	4.8	5.5
FF	Compounded ex-ante	31.8	34.7	10.8	11.5
FF	Compounded ex-post	19.9	23.1	-1.1	-0.1

Note: Known FRA/OIS levels taken as the 5-year mean and median level of FRA/OIS. Data as of 2/18/19, in order to accommodate 3M ex-ante calculation.

Source: J.P. Morgan, NYFRB

**Exhibit 8: The upward bias on fallback estimates adversely impacts those with large receive-fixed swap exposures vs Libor**  
 Estimated P/L impact of fallback bias; \$bn



Note: We take the difference between fallback implied and known FRA/OIS as "bias risk" for various fallback methodologies, multiplied by the dollar duration of swap exposures for banks (excluding exposures swapped to OIS) and for corporates (excluding those without a CSA). Life insurance includes the largest 25 life insurance companies. Corporate sample from the JULI index as of May 2019. All swaps are assumed to be struck at par as of the issuance date. For details on how we identify and model these populations see [I love it when a plan comes together](#), J. Younger et al., 2/1/19.

Source: J.P. Morgan, NAIC, SNL financial, DTCC

### Update on Japan lifer's investment plans for FY20 vs FY19

[FY20 asset allocation plans](#) for Japanese life insurance have a similar pattern to FY19. They show a continued preference for foreign bonds on an unhedged basis given the high hedging costs. Long-end JGBs still remains unattractive unless the yield rises to around 1% - indicating a similar hurdle rate for investments. Euro Area bonds (esp France and some periphery countries too) should continue to find favour under this investment thesis.

**Figure 40: Japan insurers' investment plan this fiscal year vs. previous year**

Pointers	FY2019	FY2020
<b>Foreign Bonds</b>		
Nippon Life Insurance	Increase unhedged and reduce hedged foreign bond holdings	Boost unhedged foreign bond holdings; reduce fx-hedged UST
Dai-ichi Life Insurance Co.	-	Observe domestic and overseas yield levels to determine amount allocated to currency-hedged foreign bonds
Meiji Yasuda	Increase currency-hedged and unhedged foreign bonds holdings	Increase foreign bonds holdings; raising exposure to local debt
Sumitomo Life Insurance Co.	Increase foreign bond holdings-mainly in hedged euro bonds; may invest in unhedged foreign bond holdings if USD falls sharply vs JPY	Increase its holdings of foreign bonds- hedged & unhedged
Taiju Life insurance	Increased holdings; reduce hedged foreign bond holdings	Reduce holdings-currency-hedged; increase unhedged bonds
Taiyo	Increase foreign bond holdings	Increase holdings- mainly credit bonds
Daido	Overall raise foreign bonds -reduce hedged foreign bond	Increase holdings- mainly EU bonds & unhedged treasury bonds
Fukoku Mutual Life Insurance Co	Invest in unhedged reduce hedged foreign bonds	Reduce unhedged bond holdings, add hedged overseas debt
Asahi	Invest JPY1tn in unhedged foreign bonds to cut exposure to dollar assets & focus on AUS & Canadian dollar and euro-denominated bonds	Raise holdings by JPY150bn
Japan Post Insurance Co.	Increase investment in foreign bonds - unhedged	Keep foreign bond holding steady; increase fx-hedged bonds- US corp
<b>Japan Bonds</b>		
Nippon Life Insurance	Cautious about buying low yield bonds; buy 20-30yr JGB bonds if yields rises 1% or above	Maintain or slightly raise yen bond holdings; would invest in 20-30-yr JGB if yielding at least 1%
Dai-ichi Life Insurance Co.	-	Reduce domestic bonds holding amid current market conditions
Meiji Yasuda	Plans to slightly increase its yen holdings this fiscal year.	May allocate a certain percentage of new funds to yen bonds
Sumitomo Life Insurance Co.	Curb investment in super-long Japanese government bonds.	Increase domestic bonds; limit investment in super-long bonds
Taiju Life insurance	raise investment in Japanese, foreign credit products	Plans to increase holdings of Japanese bonds this FY
Taiyo	Current domestic low-yield environment will prompt it to trim exposure to the assets this fiscal year.	Increase its holdings
Daido	-	Steady holdings
Fukoku Mutual Life Insurance Co	Reduce domestic bond holdings by JPY40bn	Plans to further cut yen bonds by JPY30bn
Asahi	Cut investment in domestic bonds by JPY50bn	Reduce holdings by JPY50bn
Japan Post Insurance Co.	JGBs not attractive unless 30-yr yield rises above 1 %	Reduce domestic bond ;buy 30yrJGB if yields rise around 1%

Source: Reuters, UBS. Note: Taiju life insurance co. was formerly known as Mitsui Life insurance co.

**Figure 41: Expected ranges for asset prices**

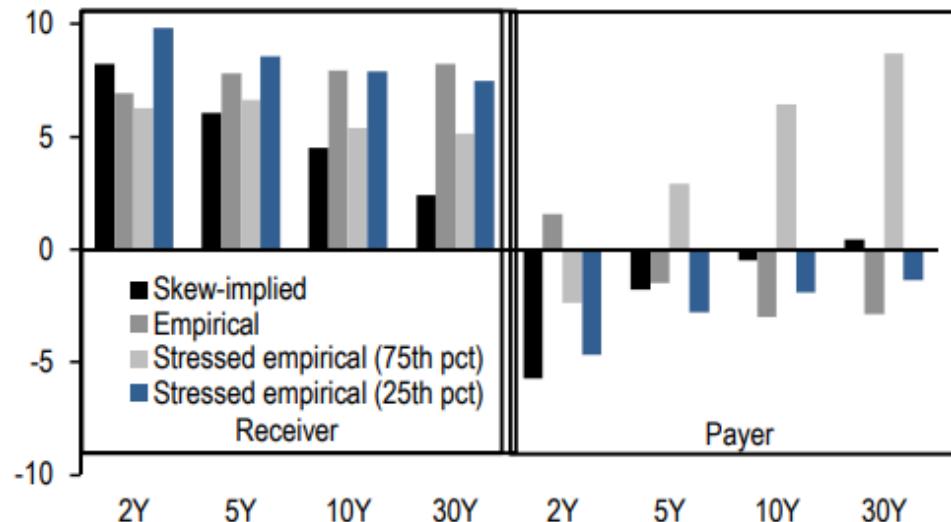
Insurance Companies	10Y JGB yield		10Y UST yield		USD/JPY		EUR/JPY	
	2018	2019	2018	2019	2018	2019	2018	2019
Nippon Life Insurance	-0.2 - 0.2%	-0.2 to 0.2%	2.0 - 3.0%	2.2 - 3.2%	¥100 - 120	¥100-120	¥110 - 130	¥120-140
Dai-ichi Life Insurance Co.	-0.2 - 0.4%	-0.2 to 0.2%	2.0 - 3.0%	2.0 - 2.8%	¥100 - 120	¥100-114	¥105 - 135	¥110 - 135
Meiji Yasuda	-0.1 - 0.2%	-0.2 to 0.2%	2.0 - 3.0%	2.1 - 2.3%	¥101 - 121	¥100-115	¥107 - 128	¥115-135
Sumitomo Life Insurance Co.	-0.2 - 0.2%	-0.2 to 0.2%	2.0 - 3.0%	2.0 - 3.0%	¥100 - 125	¥100-120	¥110 - 135	¥115-140
Taiju Life insurance*	-0.1 - 0.2%	-	2.4 - 3.2%	-	¥111 - 121	-	¥113 - 128	-
Taiyo	-0.1 - 0.1%	-	1.8 - 3.2%	-	¥100 - 125	-	¥105 - 135	-
Daido	-0.1 - 0.2%	-	2.0 - 2.9%	-	¥105 - 125	¥100-115	¥110 - 135	-
Fukoku Mutual Life Insurance Co	-0.1 - 0.15%	-0.2 to 0.2%	2.3 - 2.9%	2.3 - 3.0%	¥100 - 120	¥100-115	¥110 - 130	-
Asahi	0.0 - 0.2%	-	2.0 - 2.8%	-	¥105 - 120	-	¥112 - 128	-
Japan Post Insurance Co.	-0.1 - 0.5%	-0.25 to 0.25%	2.2 - 3.0%	2.2 - 2.7%	¥105 - 125	¥100-115	¥110 - 130	¥110-130

Source: Reuters, UBS. Note: Taiju life insurance co. was formerly known as Mitsui Life insurance co

That said, local valuations clearly hinge on headline risk and how trade negotiations evolve. **Given the current unstable equilibrium, market focus has arguably shifted away from ATMF pricing, and more to the skew.** Receivers in particular have continued to richen across the surface, led once again by the upper left of the implied volatility surface. The operative question now is: have things gone too far?

### Exhibit 3: Out-strikes look relatively cheap across the gamma sector, and we like receivers on longer tails and payers on shorter tails

Change in 3-month ATMF implied volatility for a 25-delta move in rate, skew-implied versus empirical (current as well as stressed levels) vol-rate directionality, receivers and payers by tail as indicated; abp

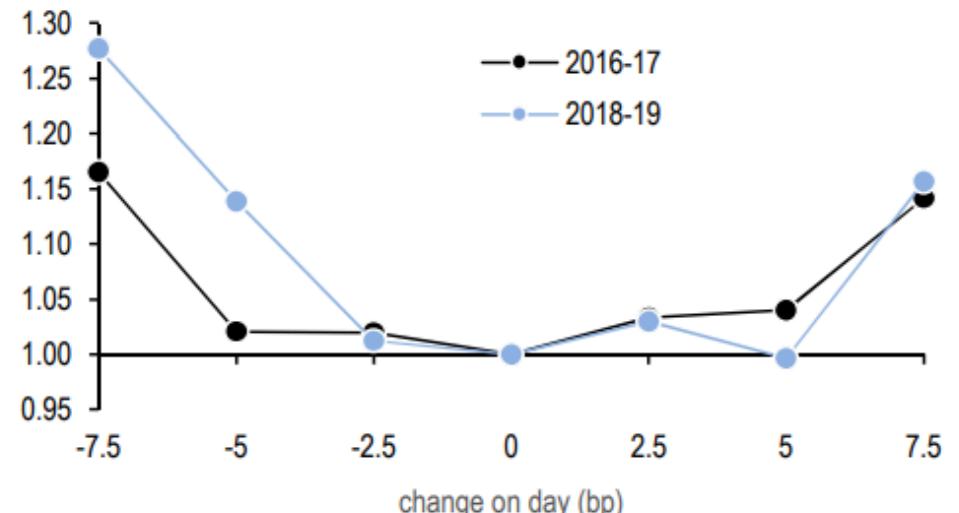


Note: We calculated the 25-delta strike for each structure. Skew-implied change in volatility is twice the ATMF versus out-strike vol differential. Empirical based on a 3-month regression of weekly changes in the ATMF volatility versus forward rate, current as of 5/10/19 and stressed based on the 75<sup>th</sup> and 25<sup>th</sup> percentile of that value over the past year.

Source: J.P. Morgan

### Exhibit 4: Price impact tends to rise on the back of large moves, but in recent years this effect is more pronounced when rates fall

Normalized volume-weighted price impact\* in hot-run 10-year Treasuries, broken out by day-on-day move in 10-year yields; unitless



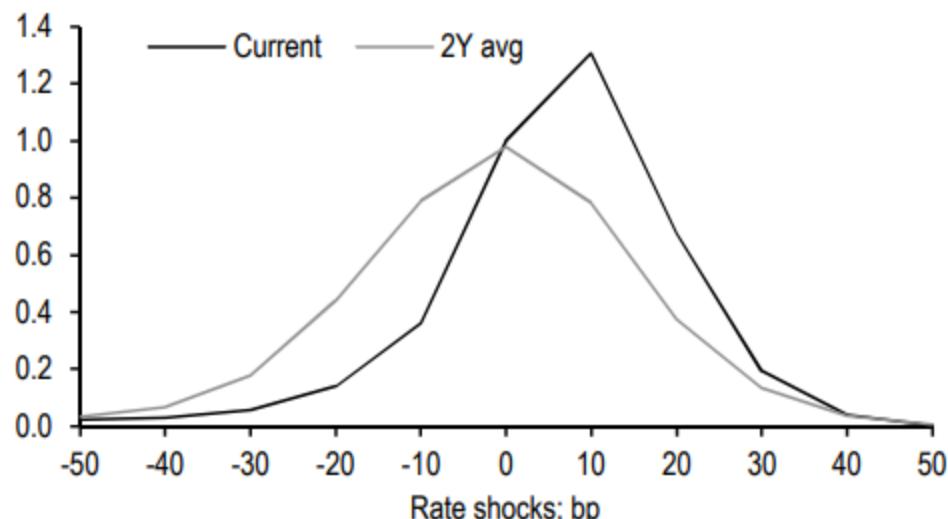
\* Price impact defined as the observed average price move per \$100mn of traded volume. The sign of the move is corrected for flow imbalance (positive for a price increase when buys outnumber sells, and negative when sells outnumber buys). For details, see *Drivers of price impact and the role of hidden liquidity*, J. Younger et al., 1/13/17.

Source: J.P. Morgan, BrokerTec

**We begin with a purely empirical approach to this question.** First, we note implied vol has outperformed in a rally for much of the past two years. However, to gauge its richness (or cheapness) we compare current levels to the range of these delivered betas, both recently and at relatively stressed levels (based on the interquartile range of observed delivery in a rally versus a sell-off; **Exhibit 3**). **On the receiver side, counter-directionality in a rally is relatively consistent over time and across tails.** This is not, however, currently priced in, which suggests upper left receiver skew is close to fair using this metric, but cheap for longer tails.

**Exhibit 5: Dealers are likely well below the peak of their retained gamma distribution, which is particularly steep and narrow relative to longer-run averages**

Estimated net long gamma risk retained by dealers, as of 5/9/19 and 2-year average; normalized to current levels

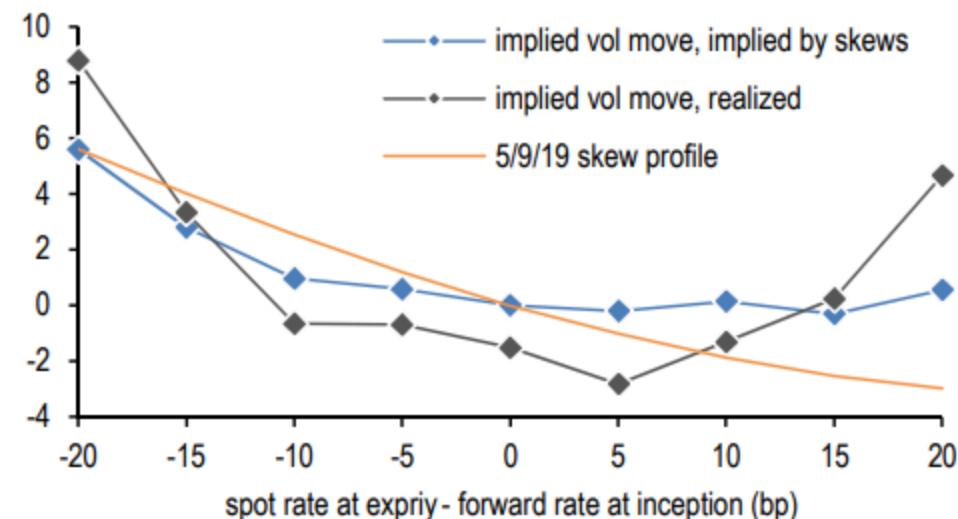


Note: We model dealer retained gamma risk as equi-notional daily sales of 1Mx10Y ATMF swaption straddles, all held to expiry.

Source: J.P. Morgan

**Exhibit 6: For sufficiently large rate moves, the rise in implied volatility has consistently outperformed that implied from skew in recent years**

Ex ante skew-implied move in 1Mx2Y implied vol\*, compared to ex post realized 1-month move in implied vol, broken out by ex post 2-year swap rate move; abp



\* We observe the 1-month ex post move in 2-year swap yields (spot 2-year 1-month out compared to 1Mx2Y at trade inception) and compute the ex ante implied vol differential for such a move as priced in at trade inception. We then compare this priced-in move in implied vol to the realized move in ATMF implied vols.

Source: J.P. Morgan

**There are a number of additional arguments in favor of owning these low-strikes in longer tails.** First, as the perceived balance of risks has shifted more in favor of downside than upside, market microstructure is more poorly equipped to handle bullish rate environments. For example, **though price impact tends to rise under large moves as a general matter, the impact is greater when yields decline versus increase—a notable change relative to a few years ago (Exhibit 4)**. To the extent this holds going forward, liquidity conditions should deteriorate more rapidly in a rally versus a sell-off. Second, with rates likely below the peak of retained gamma risk, dealer hedging flows on the back of programmatic supply continue to favor vol outperformance in a rally (**Exhibit 5**). Finally, in the long end in particular we would expect spreads to narrow on equity weakness and rate declines on the back of pension and insurance hedging. Therefore, **we recommend taking profits on 1x2 payer spreads (short the outstrikes) in 3Mx10Y, and replacing them by buying the outstrikes in 3Mx30Y receivers** (see Trade recommendations).

**On the payer side, skews look rather cheap by the same metric as well.** Here, the upper left of the grid is the more attractive point to own skew, where the current level of inversion rivals stressed conditions from earlier this year (Exhibit 3). While this suggests owning skew is attractive in shorter tails, **we hesitate to layer in ATM structures: negative rate/vol directionality has been a persistent theme since year end**, consistent with a shift in the market's macro view towards a Fed on hold and the inverted front end term structure of OIS forwards (OTM payer vol has tended to underperform as the market removes the risk of cuts from OIS). **That said**, should a regime shift occur at the front end, owning payer skew could benefit strongly from a true re-pricing of expectations—**we find that for sufficiently large rate moves, implied volatility has consistently outperformed the move implied from ex-ante skews (Exhibit 6), particularly in a selloff in excess of 20bp**. Thus we like owning OTM skew in the upper left via **buying the out-strikes of a 3Mx2Y 1x2 payer spreads shifted 20bp OTM** (see Trade recommendations).

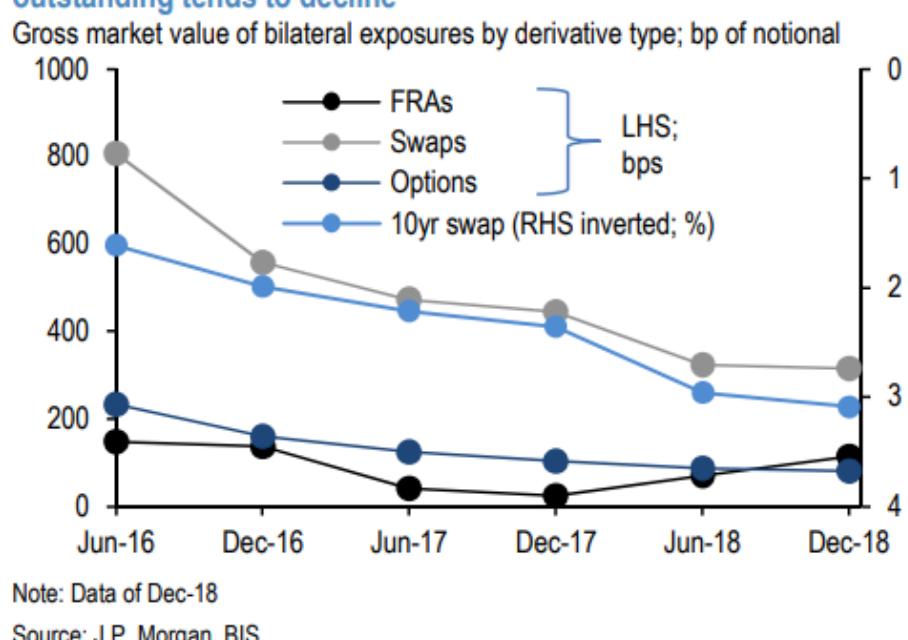
**Another risk we look to manage is the potential for convexity flows on the back of the recent decline in rates.** Though we have not yet firmly broken the range, the recent escalation inflates the downside to such positions. We therefore **unwind**

**longs in 2s versus OIS, and 5s versus Libor** (see Trade recommendations); that said, we continue to have a structural long bias and look to reenter these positions going forward.

## All you can't leave behind: An update on discounting basis risk

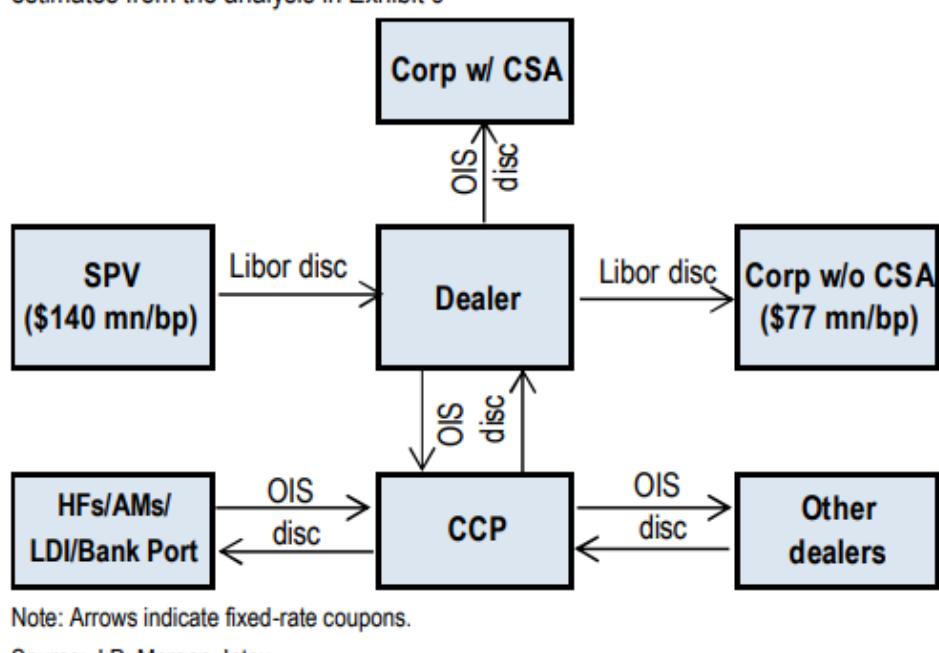
In early February we noted the impact that issuance related hedging and dealer hedging of unrealized P/L discounting risk could ultimately have on the term structure of FF/SOFR basis (see [I love it when a plan comes together: A SOFR derivatives progress report](#), J. Younger et al., 2/1/2019). More up-to-date BIS data on interest rate derivatives exposure released since then shows that the cleared share of the market increased modestly over the second half of last year (down to 84% for interest rate swaps). As we have noted in the past, while these swaps represent a relatively small fraction of the overall market, they also tend to be longer dated than the average cleared contract, and therefore tend to have higher coupon rates, meaning their MTM per unit of notional (the differential between the contract's fair and par values) tends to be significantly higher at the aggregate level (**Exhibit 7**). This furthermore tends to be rather counter-directional with the level of rates.

**Exhibit 7: As rates move higher towards historically more normal levels, the aggregate market-to-market of bilateral (uncleared) swaps outstanding tends to decline**



**Exhibit 8: Dealers face two counteracting sources of uncollateralized swap flow, in the form of hedges from legacy SPVs and non-financial corporate issuance**

Schematic of the USD swaps market, discounting as indicated and discounting risk estimates from the analysis in Exhibit 9

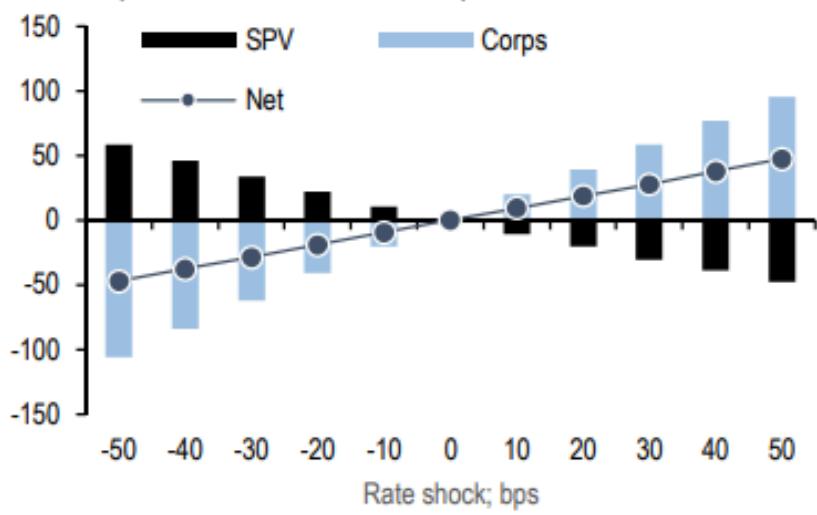


**As discussed in prior work, of particular interest is the population of bilateral swaps lacking a CSA, and therefore uncollateralized and discounted at Libor.** To the extent the duration risk in these positions is hedged with cleared exposures, dealers implicitly retain FF/Libor basis risk. This comes as a consequence of differentials in discount rates on these swaps for unrealized P/L on dealer balance sheets (for more detail, see [What's the basis for the basis?](#), J. Younger & A. Roever, 9/24/2015). From the perspective of dealers, there are two large and counteracting sources of uncollateralized swap trades: pay-fixed flows from legacy SPVs, and receive-fixed flows coming from issuance by non-financial corporates, a significant share of which lack CSAs (**Exhibit 8**). **The direction of the basis risk these uncollateralized positions deliver depends on the net exposure and MTM on dealer books.**

**On balance, we estimate that net discounting risk of SPV-related hedges is noticeably larger than for non-financial corporate issuance hedges<sup>2</sup>.** In essence, this implies that dealers retain a net narrowing exposure to the FF/Libor basis; on a hedged received exposure to uncollateralized swaps, the decline in discount rate on the (paid) floating leg of the uncollateralized swap is larger than that on the floating leg of the collateralized swap, and dealers can hedge this risk by buying FF/LIBOR basis. While the legacy SPVs are smaller in notional compared to the partially offsetting issuance flow from nonfinancial corporates without CSAs, the weighted average duration is significantly higher, sufficient to result in a short net duration risk in uncollateralized positions. In other words, unrealized P/L is positive as a general matter, but reduced when rates fall. By extension, the gradual transition of liquidity towards swaps with SOFR discounting will necessitate a similar migration of hedges, which involves paying FF/SOFR basis on longer tenors, where the concentration of net basis risk tends to lie. **On balance, the anticipation of this flow implies a FF/SOFR basis swap curve (quoted Fed funds minus SOFR) that is upward sloping.**

**Exhibit 9: Non-financial corporate issuance hedges tend to be more responsive to parallel rate shocks, driving net basis risk lower (less positive) in a rally and higher in a sell-off**

Change in net estimated net basis risk for parallel rate shocks\* from differential discounting of uncollateralized swaps facing legacy SPVs† and non-financial corporates without a CSA\*\*, \$mn/bp



\* We assume dealers run a matched book in which uncollateralized positions (discounted with Libor) are fully and precisely hedged with offsetting trades facing either corporates with a CSA in place or CCP (discounted with OIS), assuming the latter is USD cash only (to avoid issues arising from CTD optionality in the margin collateral). All trades are assumed to be struck at the par rate as of trade inception.

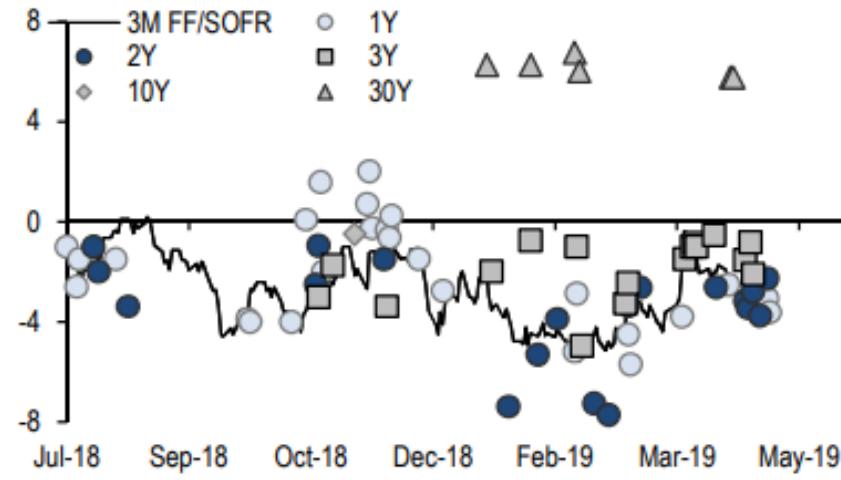
† Includes JULI constituents from issuers thought to at least partially swap their fixed-rate liabilities, including only those sectors which typically do not have CSAs in place for such hedges. We do not include the effects of rate locks, which are not public and cannot be straightforwardly extracted from public data. We assume rates of swapping activity by sector consistent with evidence from SDR data, from which we can estimate the hedging frequency of recent issuance by looking for matched coupons and maturity dates as of the announcement date.

\*\* We include all outstanding USD CDOs from the Index database which indicate an embedded swap hedge, and assume the notional is equal to the current collateral balance (i.e., an amortizing, balance-guaranteed swap). We use swap start and end dates where available, and assume 30-year maturities as of deal close date for those with missing data.

Source: J.P. Morgan, Index, DTCC

**Exhibit 10: Volumes have picked up in SOFR swaps and basis, particularly at the short end out to 3-years in tenor**

FF/SOFR basis transacted levels\* by tenor; bp



\* In addition to transacted FF/SOFR basis, we also take SOFR/Libor and SOFR OIS trades, and convert into a FF/SOFR equivalent level on the basis of their tenor.

Source: J.P. Morgan, SDR

What may be less well appreciated, however, is the convexity of this risk delivery. Differences in the profile of duration, coupon and notional on the respective legacy SPV and non-financial corporate issuance hedges leads to a net change in MTM that is directional with rates. **Interestingly, while the dollar duration of SPV hedges dominates at current rate levels, we find that the larger notional on corporate issuance hedges is the driving factor for swings in net basis delivery under parallel rate shocks (Exhibit 9).** For a large rally in rates, the negative dollar duration of corporate issuance hedges extends by more than for SPVs, reducing the net basis exposure towards zero. To the extent that the knock-on hedging flow through to SOFR/FF is anticipated by the market, **this implies that there should be an element of positive directionality between the level of rates and the FF/SOFR term structure.** Indeed, as rates have moved lower since our update in February, the FF/SOFR 30Y basis has tightened from +7bp to +4.5bp.

**One additional source of discounting risk with convexity that we have not yet discussed comes from funds transfer pricing (FTP) within consolidated banking entities.** As an example, imagine a scenario in which liability issuance related to the market making business is funded by depositing the proceeds of that transaction with their treasury. **In the case of a Formosa bond hedged with a cancelable swap, this results in a Libor-linked payable paired with a floating rate receivable tied to the internal cost of funds.** We believe in most cases the latter is linked to Libor as well, and therefore matched off. However, in cases where FTP is linked to Fed funds, market makers could be delivered basis risk (narrowers) which could be hedged with FF/Libor wideners. To the extent FTP migrates from OIS to SOFR—presumably on a timescale resembling the broader discounting transition—these hedges will have to be converted as well. Given these positions are quite long-dated, any such receive-fixed flows would tend to flatten the long end SOFR curve relative to OIS. **They also have similar convexity, contracting in a rally and extending in a sell-off, likely exacerbating the dynamic discussed above though via a different channel.**

With the increase in discussion of these dynamics, not to mention further deepening on the futures market, it should not be particularly surprising that **traded volumes in OTC SOFR derivatives have been increasing at a steady pace in recent months.** Volume in SOFR OIS and SOFR/FF basis is still most consistent in the short-end, around the 1-year tenor. However, trades have started to become more frequent further out the curve more recently, a promising sign for the market's broader development (**Exhibit 10**). Amidst the rise in transaction volumes, the FF/SOFR curve has also begun to conform to a smoother, upward sloping term structure since we published in February. Along those tenors where trade volumes have been most consistent, the FF/SOFR basis has pushed wider, while levels at the very long end have narrowed modestly. This flattening in the term structure is consistent with the contraction in net basis risk as rates have rallied, and the current convexity profile suggests that this rates/term structure directionality will remain a persistent theme.

# Methodology

- We construct zero-cost 1x2 and 1x1.5 receiver spreads for up to 3y expiries along the USD, EUR, GBP and JPY surfaces.
  - For each spread, one leg is struck ATM
  - The lower strike is selected so that the trade is zero cost
- We use the following metrics to evaluate each structure. The metrics are shown in the tables that follow.
  - **3m/1y Carry:** Calculated under a scenario in which the curve remains unchanged over time, forward rates and vols roll to spot. A higher carry is desirable, as it implies a higher expected return under the unchanged curve scenario (in Blue). We calculate 3m carry for options with less than 1y expiry and 1y carry for longer expiry options.
  - **Rate below which trade loses over a 3m/1y horizon:** Should be low compared with lowest levels for that particular rate over the past one/two years (in Blue). This metric evaluates the trade on the basis of its historical downside.
  - **Break-even rate on expiry:** Should be low compared with the current spot rate (in Grey). This metric evaluates the trade, from a terminal perspective, on the basis of its downside relative to current levels.
- We highlight tenor/expiry combinations that do the best on all three metrics.



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## USD zero-cost receiver spreads (short expiry)

USD 1x2 Receiver spreads						USD 1x1.5 Receiver spreads									
Option	Fwd rate	Moneyness of lower strike (ATM +)	Analysis on expiry		Analysis in three months			Option	Fwd rate	Moneyness of lower strike (ATM +)	Analysis on expiry		Analysis in three months		
			Break-even rate on expiry	Spot Rate	3m carry (bp of underlying swap)	Rate Level at which trade loses in 3m	Lowest rate level in last 1yr				Break-even rate on expiry	Spot Rate	3m carry (bp of underlying swap)	Rate Level at which trade loses in 3m	Lowest rate level in last 1yr
3m2y	2.17%	-20	1.77%	2.24%	0.0	1.77%	2.28%	3m2y	2.17%	-12	1.81%	2.24%	0.0	1.81%	2.28%
3m3y	2.13%	-20	1.73%	2.17%	0.0	1.73%	2.21%	3m3y	2.13%	-12	1.77%	2.17%	0.0	1.77%	2.21%
3m5y	2.16%	-19	1.78%	2.17%	0.0	1.78%	2.21%	3m5y	2.16%	-11	1.83%	2.17%	0.0	1.83%	2.21%
3m10y	2.34%	-17	2.00%	2.34%	-0.3	2.00%	2.34%	3m10y	2.34%	-10	2.04%	2.34%	0.0	2.04%	2.34%
3m20y	2.51%	-15	2.21%	2.51%	-0.3	2.21%	2.52%	3m20y	2.51%	-9	2.24%	2.51%	-0.2	2.24%	2.52%
3m30y	2.53%	-14	2.25%	2.53%	0.0	2.25%	2.55%	3m30y	2.54%	-9	2.27%	2.54%	0.0	2.27%	2.55%
6m2y	2.11%	-30	1.51%	2.24%	2.8	1.72%	2.21%	6m2y	2.11%	-18	1.57%	2.24%	1.7	1.74%	2.21%
6m3y	2.10%	-30	1.50%	2.17%	3.0	1.70%	2.17%	6m3y	2.10%	-18	1.56%	2.17%	1.9	1.73%	2.17%
6m5y	2.15%	-27	1.61%	2.17%	3.3	1.80%	2.19%	6m5y	2.15%	-16	1.67%	2.17%	2.1	1.82%	2.19%
6m10y	2.34%	-24	1.86%	2.34%	3.1	2.03%	2.34%	6m10y	2.34%	-14	1.92%	2.34%	2.0	2.06%	2.34%
6m20y	2.51%	-21	2.09%	2.51%	3.0	2.23%	2.52%	6m20y	2.51%	-13	2.12%	2.51%	1.8	2.24%	2.52%
6m30y	2.54%	-20	2.14%	2.53%	2.9	2.26%	2.55%	6m30y	2.54%	-12	2.18%	2.54%	1.8	2.29%	2.55%
9m2y	2.07%	-37	1.33%	2.24%	2.3	1.74%	2.16%	9m2y	2.07%	-22	1.41%	2.24%	1.4	1.75%	2.16%
9m3y	2.08%	-36	1.36%	2.17%	2.4	1.77%	2.14%	9m3y	2.08%	-21	1.45%	2.17%	1.5	1.79%	2.14%
9m5y	2.15%	-33	1.49%	2.17%	2.4	1.87%	2.17%	9m5y	2.15%	-20	1.55%	2.17%	1.4	1.88%	2.17%
9m10y	2.35%	-29	1.77%	2.34%	2.3	2.10%	2.35%	9m10y	2.35%	-17	1.84%	2.34%	1.4	2.13%	2.35%
9m20y	2.52%	-26	2.00%	2.51%	2.2	2.29%	2.52%	9m20y	2.52%	-16	2.04%	2.51%	1.3	2.30%	2.52%
9m30y	2.54%	-25	2.04%	2.53%	2.1	2.33%	2.55%	9m30y	2.54%	-15	2.09%	2.54%	1.3	2.34%	2.55%

Note: Rate level at which trade loses in 1y has been calculated under assumptions of constant vol. As of 15 May 2019. Source: Barclays Research



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# EUR zero-cost receiver spreads (short expiry)

EUR 1x2 Receiver spreads							EUR 1x1.5 Receiver spreads								
Option	Fwd rate	Moneyness of lower strike (ATM +)	Analysis on expiry		Analysis in three months			Option	Fwd rate	Moneyness of lower strike (ATM +)	Analysis on expiry		Analysis in three months		
			Breakeven rate on expiry	Spot Rate	3m carry (bp of underlying swap)	Rate Level at which trade loses in 3m	Lowest rate level in last 1yr				Breakeven rate on expiry	Spot Rate	3m carry (bp of underlying swap)	Rate Level at which trade loses in 3m	Lowest rate level in last 1yr
3m2y	-0.22%	-4	-0.30%	-0.24%	1.0	-0.30%	-0.24%	3m2y	-0.23%	-3	-0.32%	-0.24%	0.7	-0.32%	-0.24%
3m3y	-0.17%	-6	-0.29%	-0.19%	1.5	-0.29%	-0.19%	3m3y	-0.17%	-4	-0.29%	-0.19%	1.6	-0.29%	-0.19%
3m5y	-0.01%	-7	-0.15%	-0.04%	3.2	-0.15%	-0.04%	3m5y	-0.01%	-5	-0.16%	-0.04%	2.8	-0.16%	-0.04%
3m10y	0.45%	-10	0.25%	0.41%	3.4	0.25%	0.41%	3m10y	0.45%	-6	0.27%	0.41%	3.6	0.27%	0.41%
3m20y	0.92%	-11	0.70%	0.90%	1.8	0.70%	0.90%	3m20y	0.93%	-7	0.72%	0.90%	1.7	0.72%	0.90%
3m30y	0.99%	-12	0.75%	0.98%	0.7	0.75%	0.98%	3m30y	0.99%	-7	0.78%	0.98%	1.0	0.78%	0.98%
6m2y	-0.21%	-6	-0.33%	-0.24%	1.1	-0.29%	-0.23%	6m2y	-0.21%	-4	-0.33%	-0.24%	0.7	-0.30%	-0.23%
6m3y	-0.14%	-8	-0.30%	-0.19%	1.4	-0.25%	-0.17%	6m3y	-0.14%	-5	-0.29%	-0.19%	0.8	-0.25%	-0.17%
6m5y	0.03%	-11	-0.19%	-0.04%	1.9	-0.12%	-0.01%	6m5y	0.03%	-7	-0.18%	-0.04%	1.1	-0.12%	-0.01%
6m10y	0.48%	-14	0.20%	0.41%	2.1	0.31%	0.45%	6m10y	0.49%	-9	0.22%	0.41%	1.2	0.31%	0.45%
6m20y	0.94%	-15	0.64%	0.90%	1.9	0.75%	0.92%	6m20y	0.95%	-9	0.68%	0.90%	1.2	0.78%	0.92%
6m30y	1.00%	-16	0.68%	0.98%	1.8	0.81%	0.99%	6m30y	1.00%	-10	0.70%	0.98%	1.1	0.81%	0.99%
9m2y	-0.19%	-9	-0.37%	-0.24%	1.4	-0.30%	-0.21%	9m2y	-0.18%	-5	-0.33%	-0.24%	0.8	-0.28%	-0.21%
9m3y	-0.11%	-11	-0.33%	-0.19%	1.4	-0.23%	-0.14%	9m3y	-0.11%	-7	-0.32%	-0.19%	0.8	-0.23%	-0.14%
9m5y	0.07%	-13	-0.19%	-0.04%	1.5	-0.06%	0.03%	9m5y	0.07%	-8	-0.17%	-0.04%	0.8	-0.05%	0.03%
9m10y	0.52%	-17	0.18%	0.41%	1.5	0.38%	0.49%	9m10y	0.53%	-10	0.23%	0.41%	0.8	0.40%	0.49%
9m20y	0.96%	-18	0.60%	0.90%	1.5	0.81%	0.94%	9m20y	0.97%	-11	0.64%	0.90%	0.9	0.82%	0.94%
9m30y	1.01%	-19	0.63%	0.98%	1.4	0.85%	1.00%	9m30y	1.01%	-11	0.68%	0.98%	0.9	0.87%	1.00%

Note: Rate level at which trade loses in 1y has been calculated under assumptions of constant vol. As of 15 May 2019. Source: Barclays Research

## Methodology

- We construct zero-cost 1x2 and 1x1.5 payer spreads for up to 3y expiries along the USD, EUR, GBP and JPY surfaces.
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  - The higher strike is selected so that the trade is zero cost
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  - **3m/1y Carry:** Calculated under a scenario in which the curve remains unchanged over time, forward rates and vols roll to spot. A higher carry is desirable, as it implies a higher expected return under the unchanged curve scenario (in Blue). We calculate 3m carry for options with less than 1y expiry and 1y carry for longer expiry options.
  - **Rate above which trade loses over a 3m/1y horizon:** Should be high compared with highest levels for that particular rate over the past one/two years (in Blue). This metric evaluates the trade on the basis of its historical downside
  - **Breakeven rate on expiry:** Should be high compared with the current spot rate (in Grey). This metric evaluates the trade, from a terminal perspective, on the basis of its downside relative to current levels
- We highlight tenor/expiry combinations that do the best on all three metrics.



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## USD zero-cost payer spreads (short expiry)

USD 1x2 Payer spreads						USD 1x1.5 Payer spreads									
Option	Fwd rate	Moneyness of higher strike (ATM +)	Analysis on expiry		Analysis in three months			Option	Fwd rate	Moneyness of higher strike (ATM +)	Analysis on expiry		Analysis in three months		
			Breakeven rate on expiry	Spot Rate	3m carry (bp of underlying swap)	Rate Level at which trade loses in 3m	Highest rate level in last 1yr				Breakeven rate on expiry	Spot Rate	3m carry (bp of underlying swap)	Rate Level at which trade loses in 3m	Highest rate level in last 1yr
3m2y	2.16%	13	2.42%	2.24%	7.3	2.42%	3.15%	3m2y	2.17%	8	2.41%	2.24%	7.4	2.41%	3.15%
3m3y	2.13%	14	2.41%	2.17%	4.0	2.41%	3.20%	3m3y	2.13%	9	2.40%	2.17%	3.9	2.40%	3.20%
3m5y	2.16%	14	2.44%	2.17%	1.3	2.44%	3.21%	3m5y	2.16%	9	2.43%	2.17%	1.1	2.43%	3.21%
3m10y	2.34%	14	2.62%	2.34%	0.0	2.62%	3.28%	3m10y	2.34%	9	2.61%	2.34%	0.0	2.61%	3.28%
3m20y	2.51%	13	2.77%	2.51%	0.0	2.77%	3.36%	3m20y	2.51%	8	2.75%	2.51%	0.0	2.75%	3.36%
3m30y	2.53%	12	2.77%	2.53%	-0.1	2.77%	3.34%	3m30y	2.53%	8	2.77%	2.53%	-0.5	2.77%	3.34%
6m2y	2.11%	19	2.49%	2.24%	3.5	2.34%	3.23%	6m2y	2.11%	12	2.47%	2.24%	1.9	2.33%	3.23%
6m3y	2.10%	20	2.50%	2.17%	3.7	2.35%	3.25%	6m3y	2.10%	12	2.46%	2.17%	2.2	2.32%	3.25%
6m5y	2.15%	20	2.55%	2.17%	3.8	2.40%	3.24%	6m5y	2.15%	13	2.54%	2.17%	2.2	2.40%	3.24%
6m10y	2.34%	20	2.74%	2.34%	3.5	2.61%	3.31%	6m10y	2.34%	13	2.73%	2.34%	2.1	2.61%	3.31%
6m20y	2.51%	19	2.89%	2.51%	3.2	2.77%	3.37%	6m20y	2.51%	12	2.87%	2.51%	1.9	2.76%	3.37%
6m30y	2.53%	18	2.89%	2.53%	3.1	2.77%	3.35%	6m30y	2.53%	11	2.86%	2.53%	1.9	2.76%	3.35%
9m2y	2.07%	24	2.55%	2.24%	2.8	2.27%	3.29%	9m2y	2.07%	15	2.52%	2.24%	1.5	2.26%	3.29%
9m3y	2.08%	25	2.58%	2.17%	2.9	2.29%	3.28%	9m3y	2.08%	15	2.53%	2.17%	1.7	2.27%	3.28%
9m5y	2.15%	25	2.65%	2.17%	2.8	2.35%	3.26%	9m5y	2.15%	15	2.60%	2.17%	1.7	2.33%	3.26%
9m10y	2.35%	25	2.85%	2.34%	2.6	2.55%	3.32%	9m10y	2.35%	15	2.80%	2.34%	1.5	2.54%	3.32%
9m20y	2.52%	23	2.98%	2.51%	2.3	2.70%	3.38%	9m20y	2.52%	14	2.94%	2.51%	1.4	2.69%	3.38%
9m30y	2.54%	22	2.98%	2.53%	2.2	2.71%	3.35%	9m30y	2.54%	14	2.96%	2.53%	1.3	2.71%	3.35%

Note: Rate level at which trade loses in 1y has been calculated under assumptions of constant vol. As of 15 May 2019. Source: Barclays Research



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# Systematic Investing in CLOs

## Introducing Momentum Algorithms

- We appreciate your support in in the 2019 Institutional Investor Global Fixed-Income Research survey: [voting.institutionalinvestor.com](https://voting.institutionalinvestor.com).
- As we anticipate a global CLO market of \$800bn by end-2019 (\$760bn currently), broader acceptance of the product may entail more automation, such as the use of systematic strategies. While we don't see CLO market convention of manager/transaction analysis fully replaced in the future, we can imagine investors using predictive tools such as algorithms. With J.P. Morgan Global Index Research, we begin the conversation by introducing momentum allocation to the CLO market.
- Momentum is a part of factor investing, which employs factors (momentum, value, margin, size, etc) to determine an allocation strategy to outperform beta (in corporate credit, see [Fact or Fiction](#) by Saul Doctor). Simply, we consider going long momentum baskets of CLOs using trending prices to overweight past winners and underweight past losers.
- Using our CLOIE index as a benchmark, we begin with sub-indices then move to bond-level, applying momentum signal investing to select actual baskets of bonds catering to investor preferences (rating constrained or unconstrained).
- Back-testing suggests investing based on momentum signals can outperform the CLOIE by both capturing trends and spotting inflection points around market bottoms, even with constraints (not just allocating to riskier bonds). However, the relatively high sharpe ratios need to be taken with caution, resulting from lower volatility (less liquidity/more buy-and-hold nature in CLOs). Strategies also have practical limitations (sourcing, tiering, turnover, risk capital etc).
- We introduce 30 bond-level momentum algos in the Appendix and will expand the [CLOIE Monitor](#) to enhance transparency in this space.

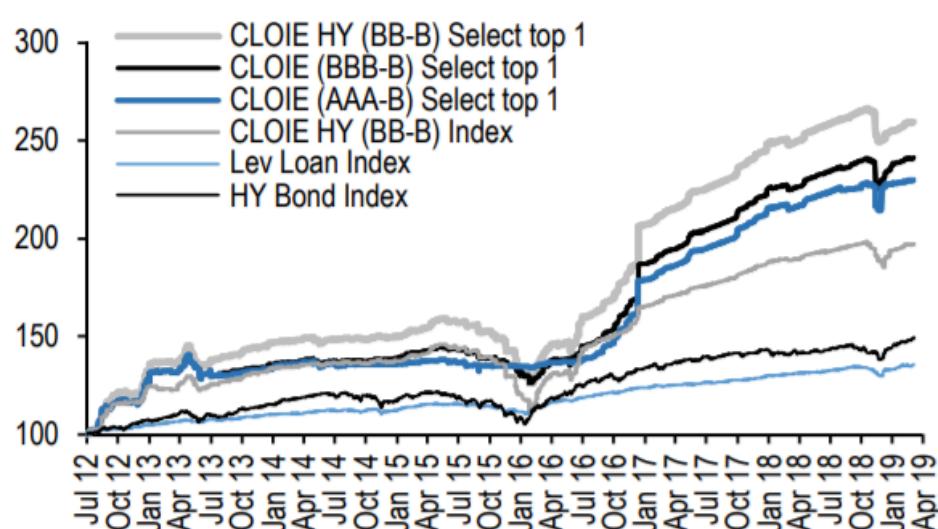
## Exhibit 1: CLO Momentum Basket Selection



Source: J.P. Morgan.

## Exhibit 2: Top 3 CLOIE sub index-level allocation strategy performance versus CLOIE Total BB-B index, Loan index, HY index

Gross Returns, Monthly Rebalance



Source: J.P. Morgan. The performance of the 3 index-level strategies are the same for both market and equal weight because there is no weighting necessary given these strategies select the top 1 sub-index. As of May 9<sup>th</sup>, 2019.

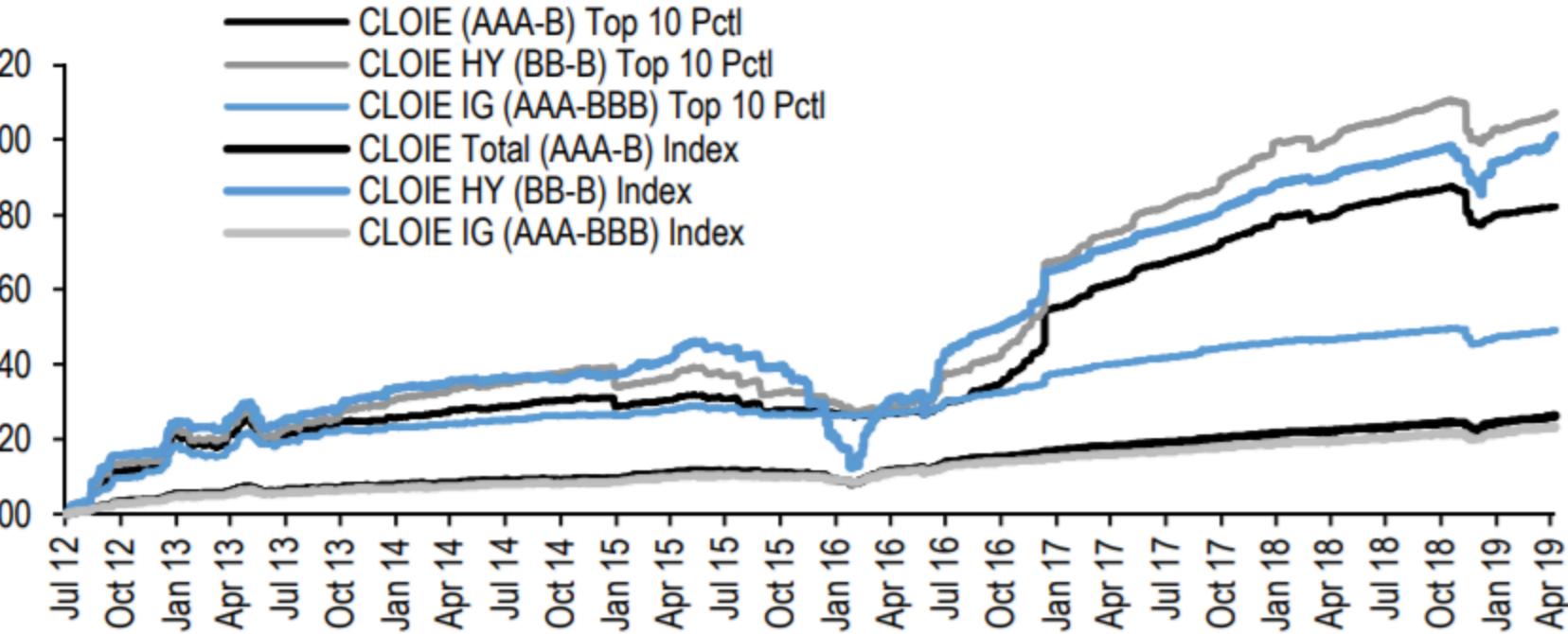
## Exhibit 3: Top 3 CLOIE sub index-level allocation strategy risk metrics versus CLOIE Total BB-B, Loan index, HY index

Strategy/Index	Max 1M Drawdown	Std Dev 1M	Annualized Vol %
CLOIE HY (BB-B) Select top 1	-6.75	3.28	8.79
CLOIE (BBB-B) Select top 1	-6.39	2.54	8.23
CLOIE (AAA-B) Select top 1	-6.39	2.25	7.97
CLOIE BB-B Index	-7.44	2.80	6.66
Leveraged Loan Index	-2.31	0.73	1.39
HY Bond Index	-2.97	1.50	4.15

Source: J.P. Morgan. See Appendix A for additional risk/return metrics and calculation methodologies. As of May 9<sup>th</sup>, 2019.

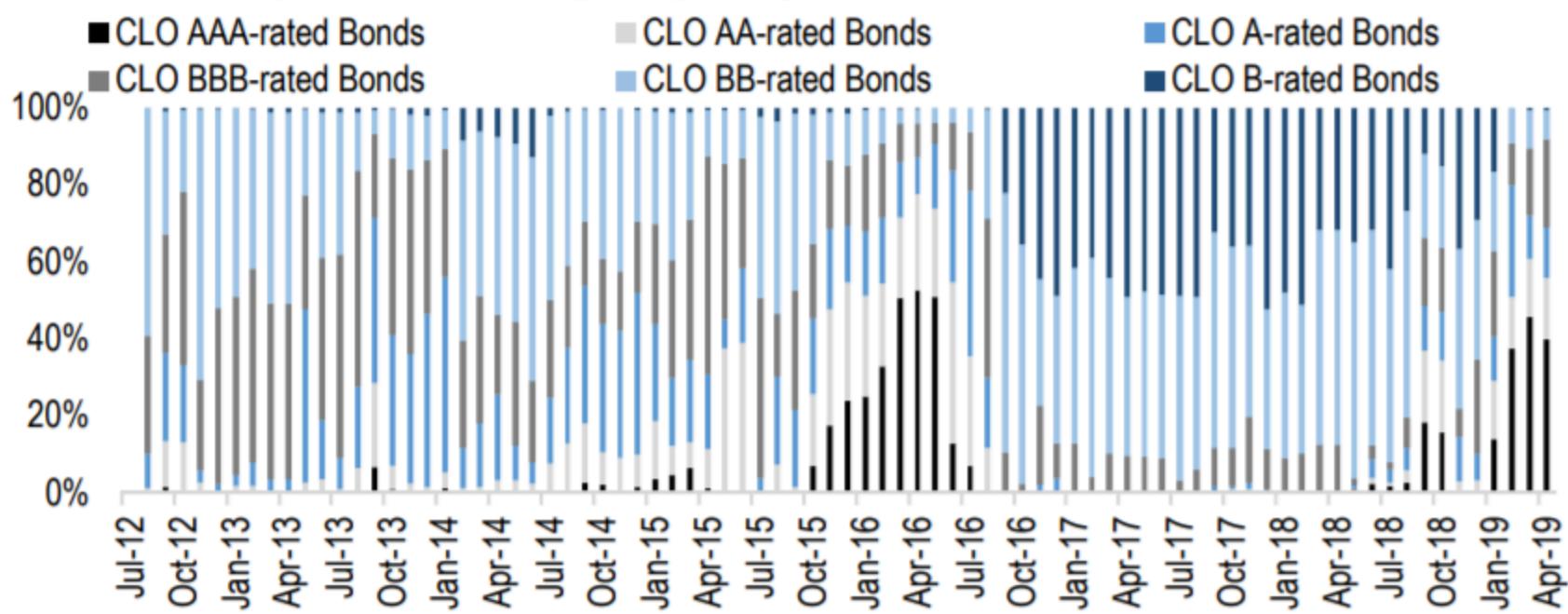
## Exhibit 4: Bond-level allocation strategy performance versus CLOIE sub-indices

Gross Returns, Monthly Rebalance



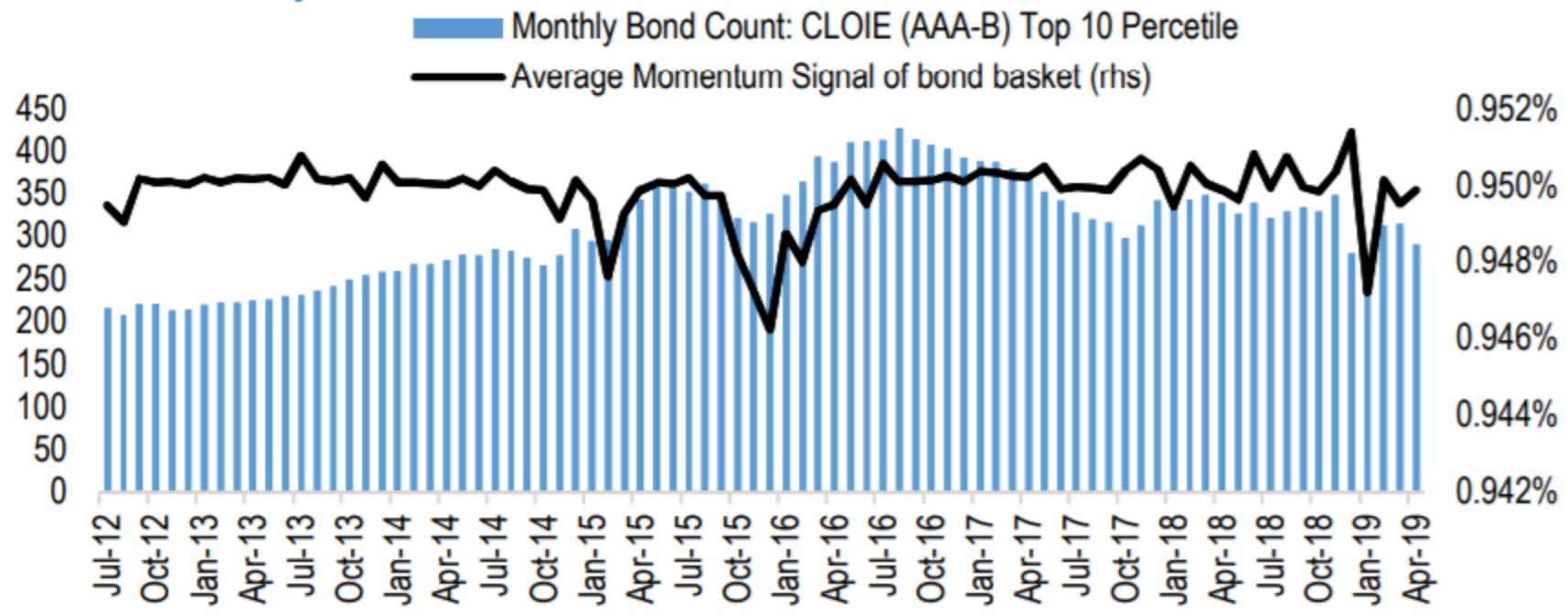
Source: J.P. Morgan. As of May 9<sup>TH</sup>, 2019.

## Exhibit 5: Select bond-level strategy equal weight, rating unconstrained, CLOIE (AAA-B) Top 10 Percentile monthly bond basket weights by rating



Source: J.P. Morgan. As of May 9<sup>TH</sup>, 2019.

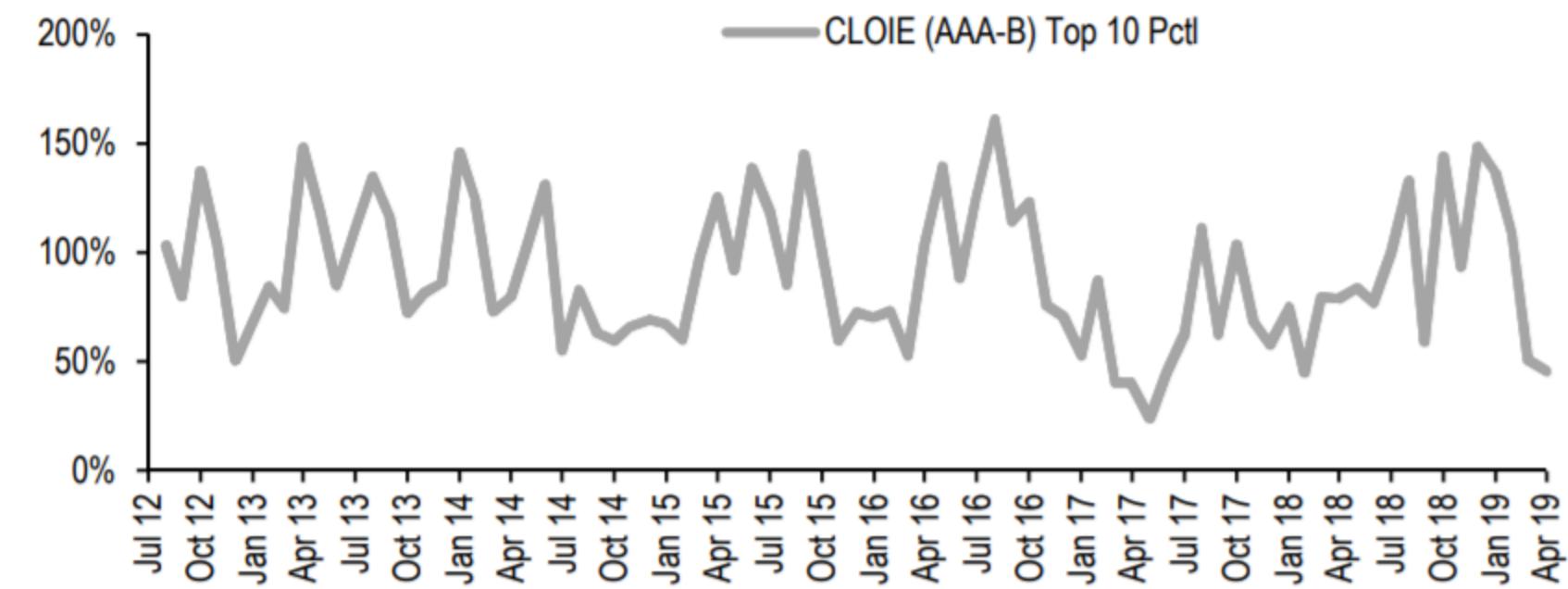
## Exhibit 6: Select bond-level strategy equal weight, rating unconstrained, CLOIE (AAA-B) Top 10 Percentile monthly bond count



Source: J.P. Morgan. As of May 9<sup>th</sup>, 2019

## Exhibit 7: Select bond-level strategy equal weight, rating unconstrained, CLOIE (AAA-B) Top 10 Percentile monthly portfolio turnover ratio

Monthly Rebalance



Turnover Ratio is calculated as the sum of absolute value weight changes between two periods. As of May 9<sup>th</sup>, 2019. Conclusion and future considerations.

## Exhibit 8: Average momentum signal by lookback period and credit bucket

%	1M	3M	6M	9M	12M
AAA	0.05	0.04	0.04	0.05	0.05
AA	0.13	0.13	0.13	0.14	0.13
A	0.20	0.18	0.18	0.20	0.20
BBB	0.31	0.27	0.27	0.29	0.29
BB	0.37	0.29	0.29	0.31	0.31
B	0.24	0.19	0.22	0.27	0.32

Source: J.P. Morgan. As of May 9<sup>th</sup>, 2019. Returns are adjusted to monthly returns to compare returns over different time horizons.

## Exhibit 9: Standard deviation of momentum signal by lookback period and credit bucket

%	1M	3M	6M	9M	12M
AAA	0.84	0.30	0.17	0.13	0.11
AA	0.82	0.53	0.42	0.37	0.32
A	1.36	0.80	0.62	0.53	0.47
BBB	2.33	1.31	1.00	0.85	0.73
BB	3.96	2.20	1.65	1.36	1.15
B	4.97	3.36	2.74	2.39	2.10

Source: J.P. Morgan. As of May 9<sup>th</sup>, 2019. Returns are adjusted to monthly returns to compare returns over different time horizons.

## What do momentum signals suggest in our CLOIE sub-indices?

Using the average monthly price signals above, we've ranked the momentum signals of each rating bucket using various lookback horizons (i.e. 1 month, 3 month, 6 month, etc.). From the table below, signals suggest increasing exposure to CLO BBB/BB bonds and reducing allocations to CLO AAA/AA bonds. In terms of the

## Exhibit 10: Relative Ranking of Average Price Signals (1=Reduce Weight, 6 = Add Weight)

	1M	3M	6M	9M	12M	
AAA	⬇️ 1	⬇️ 1	⬇️ 1	⬇️ 1	⬇️ 1	⬇️ 1
AA	⬇️ 2	⬇️ 2	⬇️ 2	⬇️ 2	⬇️ 2	⬇️ 2
A	➡️ 3	➡️ 3	➡️ 3	➡️ 3	➡️ 3	➡️ 3
BBB	⬆️ 5	⬆️ 5	⬆️ 5	⬆️ 5	➡️ 4	
BB	⬆️ 6	⬆️ 6	⬆️ 6	⬆️ 6	⬆️ 5	
B	➡️ 4	➡️ 4	➡️ 4	➡️ 4	⬆️ 6	

Source: J.P. Morgan.

## Appendix A: CLO Momentum Results in Detail

In Exhibits 1 and 2, we summarize allocation strategy results with risk and return details. We provide Gross YTD returns, Gross cumulative returns since the first rebalance July 31<sup>st</sup>, 2012. Also, Max 1M drawdown is the maximum price drop within a month for the specified index or bond basket, Std Dev 1M is the monthly volatility of momentum signals, Sharpe Ratio is Annualized Rtn % / Annualized Vol % and average turnover ratio is calculated as the sum of absolute value weight changes between two periods.

### Exhibit 1: 36 Index-level allocation strategy performance versus comparable CLOIE indices

Rating Strategy	Sub-Index Selection	Weight	YTD Rtn %	Cumulative Rtn %	Max 1M Drawdown	Std Dev 1M	Annualized Rtn %	Annualized Vol %	Sharpe Ratio
HY (BB-B)	Select top 1 Equal	5.73	163.93	-6.75	3.28	22.94	8.79	2.61	
HY (BB-B)	Select top 1 Mkt Val	5.73	163.93	-6.75	3.28	22.94	8.79	2.61	
BBB-B	Select top 1 Equal	6.10	143.89	-6.39	2.54	20.89	8.23	2.54	
BBB-B	Select top 1 Mkt Val	6.10	143.89	-6.39	2.54	20.89	8.23	2.54	
BBB-B	Select top 2 Equal	5.92	131.50	-4.99	2.54	19.55	6.35	3.08	
CLOIE (AAA-B)	Select top 1 Mkt Val	2.19	130.44	-6.39	2.25	19.44	7.97	2.44	
CLOIE (AAA-B)	Select top 1 Equal	2.19	130.44	-6.39	2.25	19.44	7.97	2.44	
HY (BB-B)	Select top 2 Equal	6.75	126.22	-9.29	3.46	18.97	8.33	2.28	
CLOIE (AAA-B)	Select top 2 Equal	2.60	117.57	-4.67	1.99	17.99	5.45	3.30	
HY (BB-B)	Select top 2 Mkt Val	7.40	109.10	-7.44	3.01	16.99	6.92	2.45	
BBB-B	Select top 3 Equal	6.53	107.15	-7.06	2.85	16.76	6.59	2.54	
BBB-B	Select top 2 Mkt Val	6.45	106.41	-4.87	2.25	16.67	5.43	3.07	
CLOIE HY (BB-B)	INDEX Mkt Val	7.40	100.98	-7.44	2.80	16.01	6.66	2.40	
CLOIE (AAA-B)	Select top 3 Equal	3.10	92.30	-4.97	1.78	14.93	4.54	3.28	
CLOIE (AAA-B)	Select top 2 Mkt Val	2.31	91.92	-3.09	1.65	14.88	4.02	3.70	
BBB-B	Select top 3 Mkt Val	6.71	88.18	-5.19	2.27	14.40	5.16	2.79	
CLOIE (AAA-B)	Select top 4 Equal	3.84	82.09	-4.20	1.58	13.60	3.92	3.47	
CLOIE (AAA-B)	Select top 5 Equal	4.22	77.85	-3.55	1.67	13.03	3.73	3.50	
CLOIE (AAA-B)	Select top 6 Equal	4.80	65.56	-4.08	1.70	11.32	3.83	2.96	
CLOIE (AAA-B)	Select top 3 Mkt Val	2.45	64.00	-4.06	1.40	11.10	3.33	3.33	
IG (AAA-BBB)	Select top 1 Equal	2.19	56.44	-2.95	1.34	9.99	3.66	2.73	
IG (AAA-BBB)	Select top 1 Mkt Val	2.19	56.44	-2.95	1.34	9.99	3.66	2.73	
CLOIE (AAA-B)	Select top 4 Mkt Val	2.70	53.68	-3.08	1.12	9.57	2.61	3.67	
IG (AAA-BBB)	Select top 2 Equal	2.60	49.07	-2.42	1.08	8.87	2.81	3.15	
IG (AAA-BBB)	Select top 2 Mkt Val	2.31	48.17	-2.33	0.97	8.73	2.49	3.50	
CLOIE (AAA-B)	Select top 5 Mkt Val	2.82	47.74	-2.37	1.00	8.66	2.24	3.86	
IG (AAA-BBB)	Select top 3 Equal	3.10	45.61	-1.93	0.94	8.32	2.28	3.66	
IG (AAA-BBB)	Select top 3 Mkt Val	2.45	40.73	-1.79	0.81	7.54	1.95	3.86	
IG (AAA-BBB)	Select top 4 Equal	3.84	40.39	-2.08	0.89	7.49	2.12	3.53	
AAA-A	Select top 1 Equal	2.19	37.22	-1.89	0.70	6.96	2.28	3.06	
AAA-A	Select top 1 Mkt Val	2.19	37.22	-1.89	0.70	6.96	2.28	3.06	
AAA-A	Select top 2 Equal	2.60	35.50	-1.42	0.66	6.68	1.80	3.70	
AAA-A	Select top 2 Mkt Val	2.31	34.42	-1.40	0.63	6.50	1.71	3.79	
AAA-A	Select top 3 Equal	3.10	31.02	-1.47	0.61	5.92	1.60	3.71	
CLOIE (AAA-B)	Select top 6 Mkt Val	2.96	27.38	-1.25	0.54	5.28	1.26	4.19	
CLOIE (AAA-B)	INDEX Mkt Val	2.96	26.29	-1.25	0.51	5.09	1.19	4.27	
IG (AAA-BBB)	Select top 4 Mkt Val	2.70	24.22	-1.08	0.43	4.72	1.06	4.45	
CLOIE IG (AAA-BBB)	INDEX Mkt Val	2.70	23.27	-1.08	0.41	4.55	1.00	4.56	
AAA-A	Select top 3 Mkt Val	2.45	21.60	-0.87	0.36	4.25	0.93	4.55	

Source: J.P. Morgan. As of May 9<sup>th</sup>, 2019.





