Metals Strategy: Flow update—who owns what?

Weekly data positioning recaps add little value unless put into context of price action, seasonal norms and historical flows. Thus, with Q1 behind us, some noteworthy price changes (the Palladium capitulation, strong Nickel & Zinc rallies, Golds new YTD lows) and outsized flows (abnormally large investor inflows into platinum, newfound bearish bets in Silver, strong zinc inflows), there are a few interesting questions & themes around positioning worth exploring:

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Commodities Derivatives

- **Has Silver positioning been a leader indicator; is this the return of the overpowering short precious trade (seen in 2H'18)?**
    - Despite combined CB & investor annualized inflows of over 23m oz (which would be the largest since 2016), Gold prices were largely unchanged in Q1'19, highlighting that the known flow data doesn't fully explain away price action; there was either a lack of physical OTC buying or there was active (and unknown) OTC selling
    - There are currently 10 long investors for every short in Gold; in Silver there is 1 long for every short; that serves to show there is still scope for fresh Gold shorts to enter from either a historical basis, or relative to Silver as a somewhat leading indicator. Page 2

- **Is the combined 2.4m oz Platinum investor inflows (ETF + COT) real or fake, given the lack of expected price appreciation?**
    - Potentially, but tough to confirm. A few explanations behind the lack of a larger repricing higher in platinum (only 10%) given outsized inflows: 1). The reporting data is wrong. 2) Inflows are not fresh; its simply the reallocation and shifting in ownership of unwanted metal onto exchange, due to a lack of real demand and/or event risk, 3) Platinum is wildly oversupplied more than expected
    - Applying an assumption that ~500K oz (almost all) ETF inflows YTD are 'fake' and accounting for real COT inflows, Platinum, should still be >30% higher vs current prices, based off historical flows/price correlations. However, the longer platinum doesn't own up to this (by reclaiming $1000 and/or -$200 discount to Gold, at a minimum) the larger the threat grows if there's any unwind in these investor flows. Page 3

- **Who is actually participating in Palladium given investors were not a major contributor to the large price reset?**
    - Given price volatility and limited exchange stocks, theres plenty of barriers to entry for larger investors to enter the paper market—thats indicated by Aggregate Open Interest plummeting to 22K contracts, near a 7 year low.
    - However daily average volumes have not been dented at all and given that price action is extremely technical (its 'performed' and consistently trended above the 50DMA for 9 months before mach) intraday CTAs , momentum participants and/or larger OTC players are actively playing; longer term positioning commitment to the space is low, but (daily) activity is high which may seem counter-intuitive. Page 4

- **Nickel & Zinc outperformed in Q1– is the East (SHFE) or West (LME), fresh length or short covering—behind the moves**
    - LME positioning surged 1.5m mt (to multi month high of ~7m mt), while SHFE added relatively less (+1.1m mt) but took their positioning, on an historical basis, to record highs. The combined SHFE & LME positioning sitting at ~10m mt is lofty and a warning sign given the short-lived nature of extreme positioning in zinc.
    - SHFE shorts were caught out following the rally in Iron Ore after the Vale dam disaster the end of January, and were forced to buyback ~260K mt (of Aggregate OI) taking Nickel from under $11K to over $13K. Nickel has since been able to hold these gains, straddling $13,000, led mostly by equally steady inflows across LME (Agg OI increased ~120K mt since Vale) and SHFE (~140k mt). Page 5

- **How much fire power does Copper have into key sticky resistance at $6550-6600?**
    - Aggregate Open Interest across CME (HG), LME & SHFE, own a combined 13m mt (low 11.5m mt, high >16m mt), with no sizeable inflows in 2019. Thus, given the heavy lifting required to retain $6600, its a somewhat constructive setup that Copper is rather underinvested, with scope for a combined 1m mt (to attain 5year average) up to 2-3m mt (to attain peak positioning) of inflows potentially available across all listed exchange products

- **Any clues into why Aluminum is so complacent and contained?**
    - No. SHFE participants exited out of a chunky 1.2m mt of positioning in 2019, helping to take a combined proxy (LME + SHFE) of ownership down to cyclical lows below 20mt mt highlighting the market indifference, compressed price action amidst a lack of a catalyst and conflicting fundamentals

GOLD:

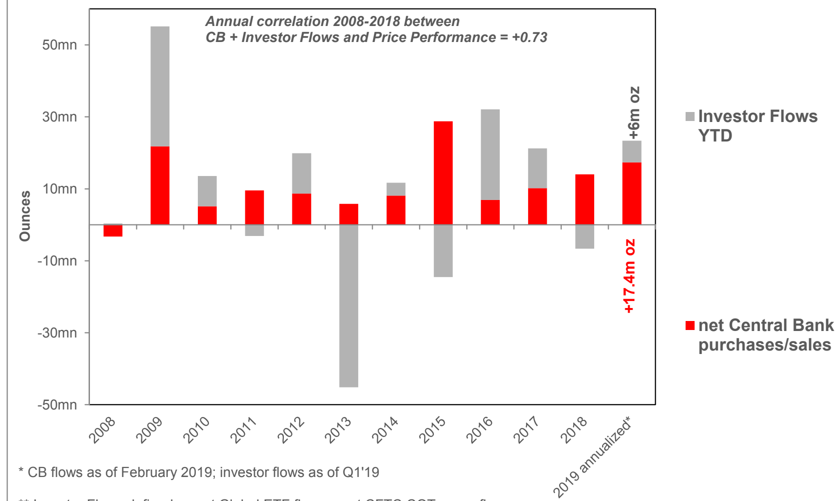
- During Q1'19, Central Banks* bought almost 90tonnes (2.9m oz; an annualized rate is 17.4m oz). Over the same period, investors (ETF & COT) added 1.5m oz to Gold holdings, almost 1/3rd less than what Central Banks accumulated. Overall despite combined CB & investor) annualized inflows of over 23m oz (which would be the largest since 2016), Gold prices were largely unchanged in Q1'19, highlighting that the known data doesn't fully explain away price action; there was either a lack of physical OTC buying or there was active unknown OTC selling.

- The most recent COT report shows net managed COT investors only own 5.6m oz (down from a YTD peak of 11m oz and brushing up against cyclical lows). The positioning exit, unlike in Silver, was driven by long liquidation—as Gold prices failed (terribly!) at $1350, almost 5.5m oz of gross investor length exited. Silver, on contrary, saw fresh shorts enter (gross spec shorts doubled from a low of 26K contracts to a YTD peak of 52K contracts in 6weeks as Silver prices failed at $15.60).

- There are currently 10 gross COT longs for every COT short in Gold; in Silver there is 1 long for every short (graph 2, panel 3). And while the relationship between the these 2 positioning proxies hasn't correlated well from 2018, it serves to show there is still scope for fresh Gold shorts to enter from either a historical basis, or relative to Silver as a somewhat leading indicator

- Thus, the further $40 repricing lower in Gold through key support at $1280 yesterday was/is probably mostly driven by the influx of fresh opportunistic shorts. The macro backdrop for owning Gold has soured considerably as prices are torn between dovish Central banks but rising risk assets, a lack of any macro, economical or geopolitical fear, a stubbornly structurally strong $ and rising yields on hopes for better ex-US data.

Sizing up known Gold flows -- Annual Central Bank vs investor activity, in 2019 (annualized*) vs previous years



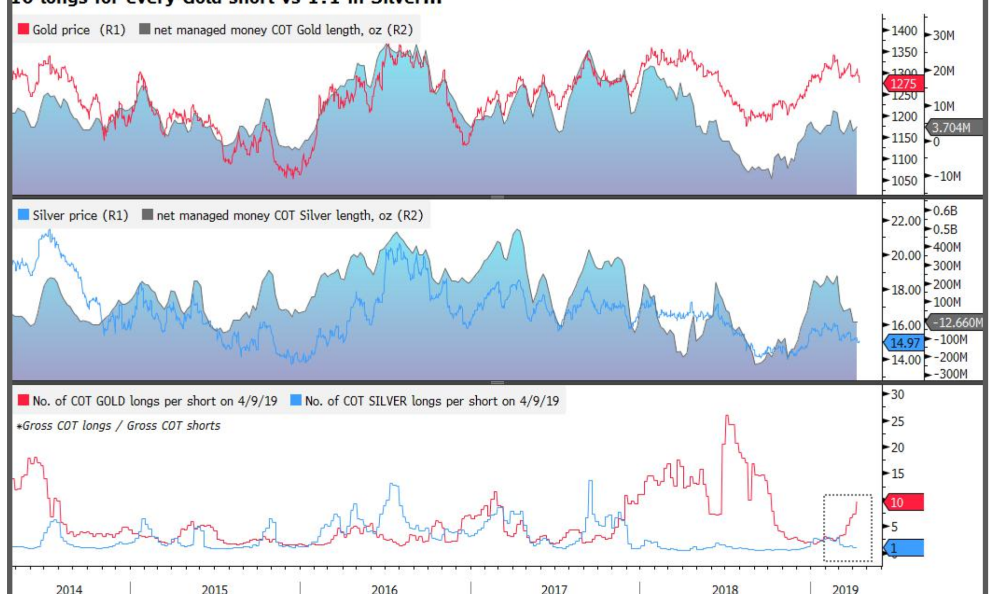
* CB flows as of February 2019; investor flows as of Q1'19

** Investor Flows defined as net Global ETF flows + net CFTC COT paper flows

Source: IMF, Bloomberg, Scotiabank Commodities Strategy, CFTC

Gold vs Silver balance of speculative power

10 longs for every Gold short vs 1:1 in Silver...

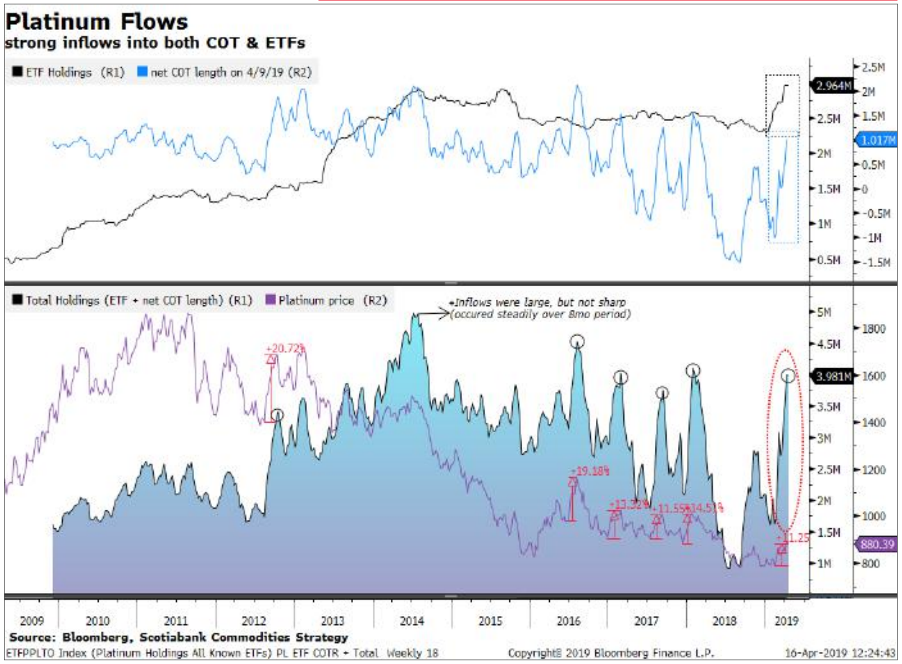


Source: Scotiabank Commodities Strategy

GOLDS Comdty (GOLD SPOT $/OZ) Gold vs Sivl no of long Daily 17APR2014-16APR2019 Copyright© 2019 Bloomberg Finance L.P. 16-Apr-2019 10:33:29

Platinum

- Inflows into Platinum products in 2019 has been astounding; ETFs have accumulated ~660k oz in Q1'19 (taking overall platinum holdings to record highs of ~3m oz) while levered money (paper) increased holdings by ~2m oz. These extremely large combined inflows only helped platinum reprice from a multi-decade low, up >10% in Q1'19 toward $900?
- Despite Platinum's trait of the gross underperformer ('let down') of the complex, very large inflows have historically been associated with more than 10% price appreciation over the past few years:
    - Theres been 5 similar instances of large *sharp* investor inflows since 2012, that were associated with price rises ranging from 12% to 21% (graph 1, panel 2).
    - If total investor holdings are above 3.5m oz (current = 4m oz), Platinum has averaged almost 50% higher the past 10 years ($1270), and has averaged a slight ($20) premium vs Gold (almost double the current spread level). Table 1A.
- There are a few explanations behind the lack of a larger repricing higher in platinum given outsized inflows:
    1. The reporting data is wrong
    2. Inflows are *not* fresh with new shares created and but not new metal secured; its simply the reallocation and shifting in ownership of unwanted / unneeded metal onto exchange/ ETF vaults*, due to a lack of real demand and/or event risk (SA elections, M&A activity)
    3. Platinum is wildly oversupplied more than expected



- The breakdown in ETF *Palladium* flows and price action the past year, highlighted the idea that metal outflows (inflows) may actually indicate strong (weak) real demand and not necessarily point to the traditional relationship between investors inflows and price appreciation (and vice versa). Thus one cant rule out the belief that *some* (not all) Platinum ETF inflows perhaps stems from above ground inventory holders opting to put metal on exchange, perhaps in the hopes that inflows beget inflows and/or price appreciation, similar to the smoke & mirror game within the LME warehouse system.
- Applying an assumption that ~500K oz (almost all) ETF inflows YTD are 'fake' and accounting for real COT inflows, Platinum, *should still be* >30% higher vs current prices (table 1B), based off historical flows/price correlations.
- Overall, if most of these recent ETF inflows mimicked the 2013/2014 period (in which the market believed producers allocated metal onto newly created SA ETF products), the recent paper inflows alone and historical & relative price levels, show that prices should be over $1000 at the very least; the longer platinum doesn't own up to this fact the larger the threat grows f there's any unwind in these investor flows.

**** Note, the Platinum ETF inflows have occurred mainly on the South African exchange (Absa PT ETF "NGPLT"), the Swiss (ZKB "ZPLA" ETF) and the German exchanges (DBs "XAD3" PT ETF) - not coincidentally all consumer and/or producer hubs.***

Table 1A		
2019 ETF inflows, oz		660,000
2019 COT inflows, oz		2,000,000
Current Investor Holdings (ETF + net COT), oz		4,000,000
Average Platinum price, the past 10 years, when holdings >3.5m oz	$	1,272
Current Platinum Price	$	890
Average Platinum-Gold spread, the past 10 years, when Platinum holdings >3.5m oz	$	(22)
Current Platinum-Gold Spread	$	(400)

Table 1B: Scenario		
Assumption that almost all (~500K oz) of YTD ETF inflows are not fresh purchases (but a reallocation onto exchange)		
I.E: Average Platinum price, the past 10years, when holdings >3m oz but < 3.5m oz	$	1,158

Palladium

- The capitulation from palladiums all-time high of $1615, toward lower $1300s where it has currently found support, has some questioning just how much of a role speculative investors played. Box 1 highlights through an historical lens that investors prof-itaking was minimal. In addition, there was not a large influx of predatory shorts (gross COT shorts actually bought back 120K oz on the palladium fall).
- ETF outflows—in this new regime—has not contributed to price declines, but to price appreciation. There was no sizable ETf flows during the Palladium repricing in March, but given the already limited holdings (multiyear lows of ~670k oz), the recent 50K oz of outflows the past month, is one sign that forward tightness could follow.
- Given price volatility and limited exchange stocks, theres plenty of barriers to entry for larger investors to enter the paper market—thats indicated by Aggregate Open Interest plummeting to 22K contracts, near a 7 year low. However that doesn't imply that *intra-day* CTAs , momentum participants and/or larger OTC players (which would not show up on Aggregate OI) are actively participating. Active month palladium price action is extremely technical (its 'performed' and consistently trended above the 50DMA for 9 months) and average daily volume data for 2019 (see note 2) indicates no dent to daily participation rates.
- Overall, while there's limited scope (and inclination thus far) for shorts to enter, theres also limited room for gross investor length to exit as positioning has largely already been cleaned up. Length can potentially rebuild, but large accumulation is unlikely given the lackluster appetite now for Chinese end-users to stockpile again given persistent uncertainties around the auto industry (slowdown in local auto sales, implication of tax cuts and threat of Trump tariffs on the industry). Palladium prices are more elastic to short-term lease/forward rates, perhaps ETF flows, and any newfound technical trend which will be capitalized on by (still active) CTAs, as was the case for most of 2018/2019; longerterm positioning commitment to the space is low, but (daily) activity is high, which may seem counter-intuitive

Note 1: Gross paper longs own 1.2m oz, a decent amount but only half of what they owned at the peak (2.6m oz in 2017 and 2013-2015 era). The below summarizes the positioning changes (Aggregate Open Interest) vs historically large 5-day moves to inform just how much of a role paper investors played…

The March 2019 $200+ 5-day move saw ~390K oz of positioning (OI) outflows. Other large 5-day repricing:

1. May 2010 ~$150 5-day fall with 390K oz of OI outflows
2. Nov 2010 ~$100 fall with 330K oz of outflows
3. June 2011 ~$100 fall with >400K oz of outflows

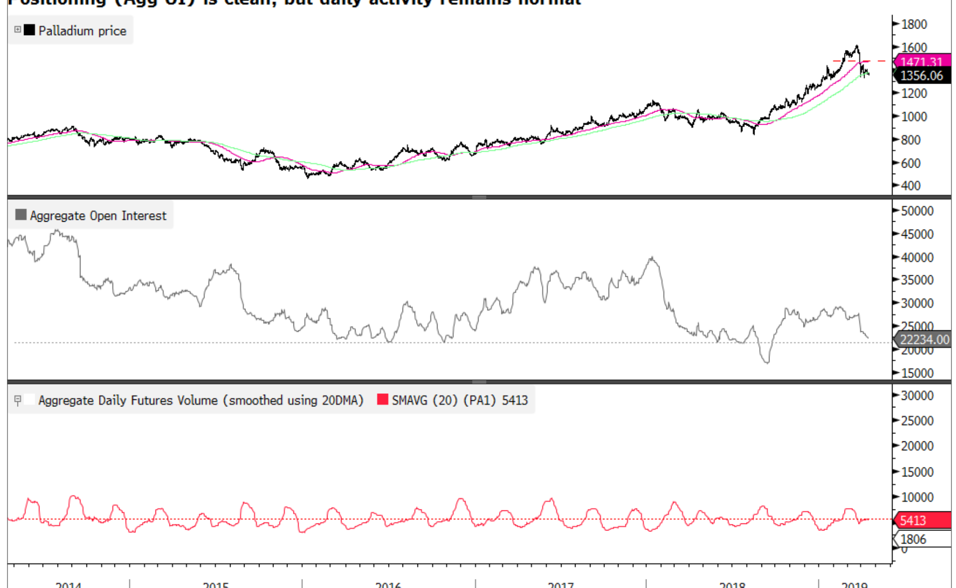
This recent $ repricing was around *double* the historically large moves, but the size of the positioning exit was similar.. IE: **IF there was *major* liquidation, positioning outflows should've and would've been much larger.**

Note 2: Average daily volumes:

- 2019 (YTD): ~5700x contracts, matching ~5700 contracts (2018), and more than the 2017 average volumes (~5600 contracts)

Palladium technicals & participation rates

Positioning (Agg OI) is clean, but daily activity remains normal



Source: Scotiabank Commodities Strategy, Bloomberg

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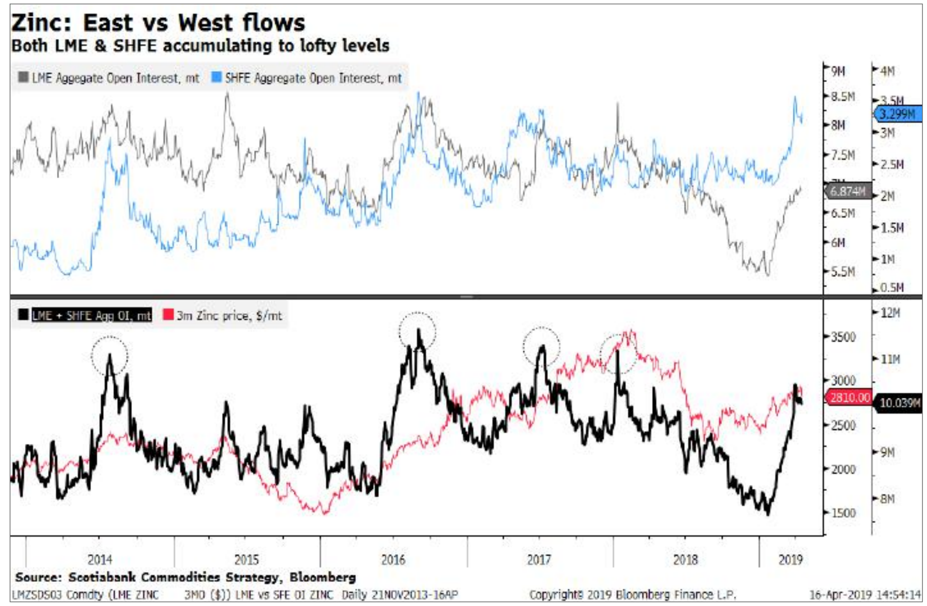
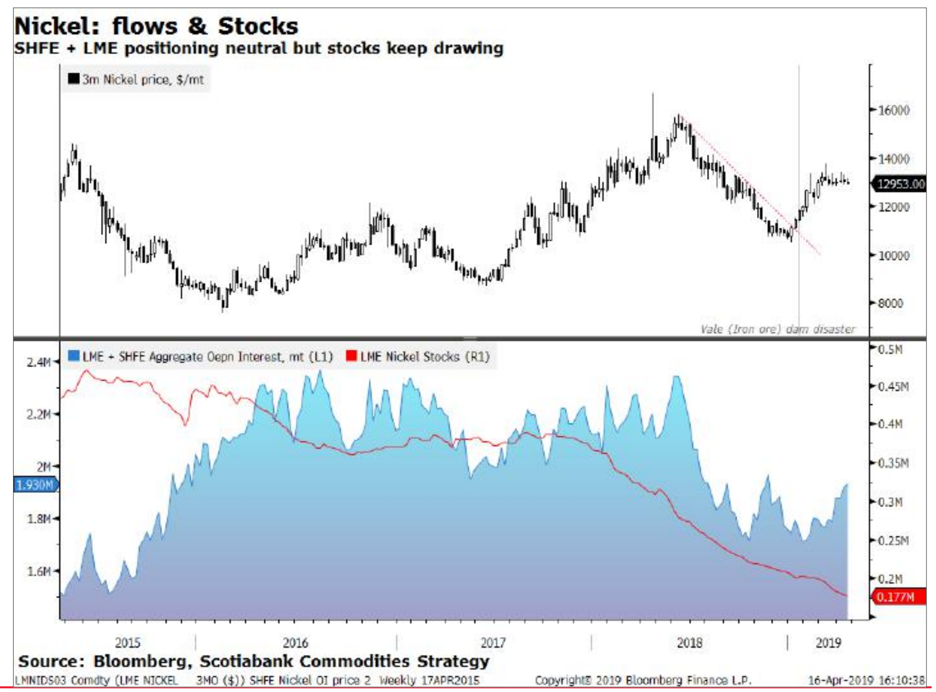
Zinc:

- Given zincs surge in Q1'19 toward psychological $3000, dissecting the type of flows behind the repricing is helpful. Both LME and SHFE participants accumulated, as stocks dwindled which shifted the curve into extreme backwardation (again) and investors began to price in the idea that stocks could reach zero before additional new supply is ramped up to feed the refined deficit.
- LME positioning surged 1.5m mt (to multi month high of ~7m mt), while SHFE added relatively less (+1.1m mt) but took their position-ing, on an historical basis, to record highs. The combined SHFE & LME positioning (chart 1, panel 2 of Aggregate Open interest) sitting at ~10m mt, is both lofty and a warning sign given the short-lived na-ture of extreme positioning in zinc.

Nickel:

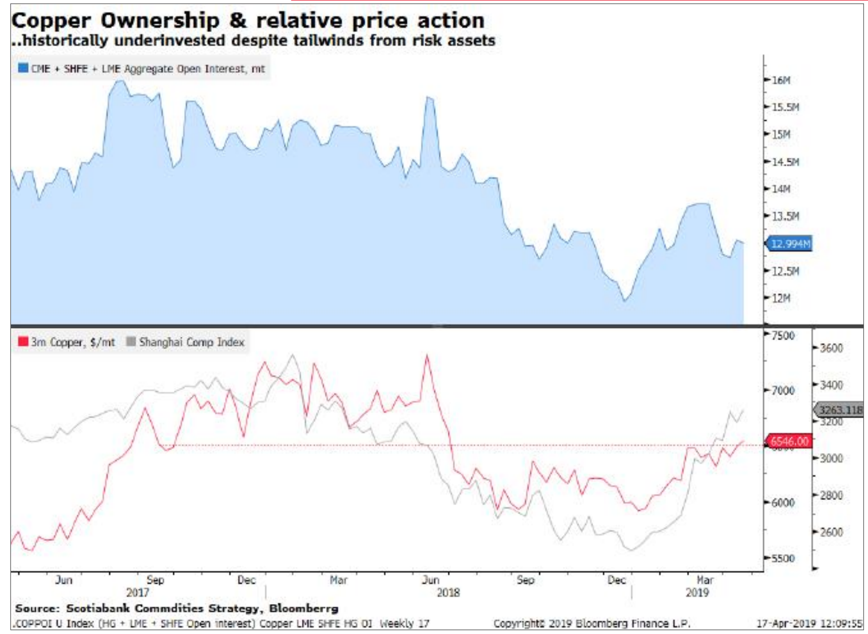
- SHFE shorts were caught out following the rally in Iron Ore after the Vale dam disaster the end of January, and were forced to buyback ~260K mt (of Aggregate OI) taking Nickel from under $11K to over $13K; they were the largest contributor to the bull market YTD gains.
- Nickel has since been able to hold these gains, straddling $13,000, led mostly by equally steady inflows across LME (OI increased ~120K mt since Vale) and SHFE (Agg OI increased ~140k mt).
- Overall combined positioning stands at under 2m mt, extremely neu-tral and at cyclical averages; potential tailwinds could stem from ei-ther underinvested LME and/or SHFE crowd, which have not yet 'reacted' to the continued drawdown in stocks (graph 2, panel 2), probably since the market has not yet seen the required curve tight-ening.





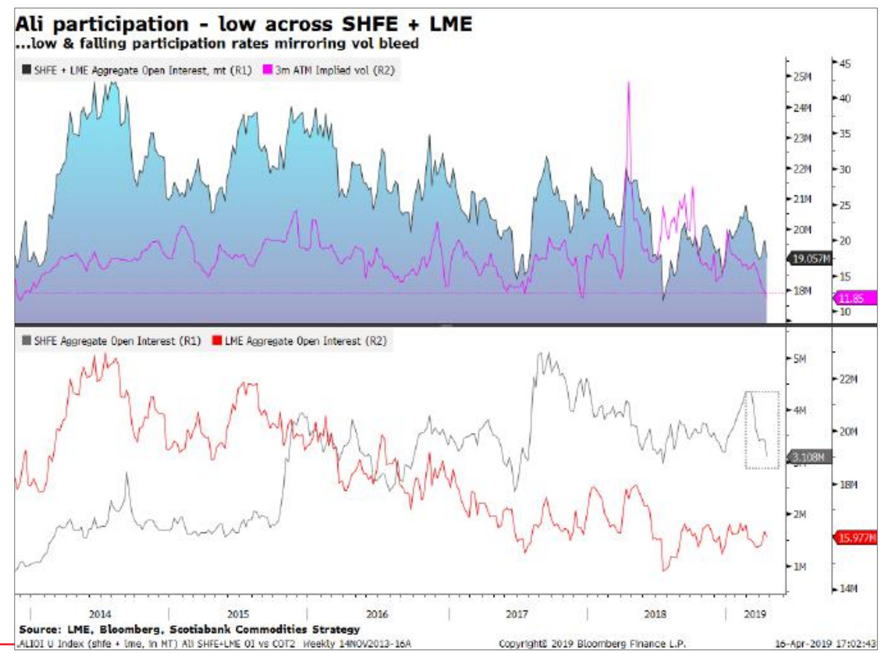
Copper:

- Despite Copper managing to breakup and hold gains above the old-$6300-ceiling, overall investor positioning (CME, LME or SHFE) remains rather muted. That has allowed pricing to remain in a tight range below $6600 (and one which have lagged Asian risk assets like ShanghaiComp) capped by a mix of heavy flows, technical selling and the recent threat of LME warehouse inflows (which have worked to really weaken front month spreads back into a contango).
- Aggregate Open Interest across CME (HG), LME & SHFE, own a combined 13m mt (low 11.5m mt, high >16m mt), with no sizeable inflows in 2019. The influx of option related upside call buying was the dominant driver of price action, less so direct outright futures purchases. Thus, given the heavy lifting required to retain $6600, its a somewhat constructive setup that Copper is rather underinvested, with scope for a combined 1m mt (to attain 5year average) up to 2-3m mt (to attain peak positioning) of inflows potentially available across all listed exchange products (graph 1, panel 1).



Aluminum:

- Ali prices have drastically underperformed its peers, and other risk assets, with volatility a reminder that it currently lacks a catalyst given many of the 2018 vol drivers/events are now resolved.
- The extreme price compression between $1840 and $1940 highlights the fundamental picture (large ex-China deficits being fed by Chinese semis and/or ramped up cheaper cost of production ROW capacity).
- Positioning also highlights this indifference, with SHFE participants exiting out of a 1.2m mt of positioning in 2019, helping to take a combined proxy (LME + SHFE) of positioning down to cyclical lows below 20mt mt (graph 2, panel 1 & 2)



**Given the lack of long-term historical data for Mifid LME COT, Ive only analyzed the exchange (LME, CME< SHFE) Open Interest data for base metals as positioning proxy for investor activity. Do note OI inflows doesn't necessarily imply new purchases and subsequent price action needs to be taken into account, as is done.*