J.P.Morgan

China & Hong Kong Local Markets Mid-Year Outlook

Upsize UW CNY FX; neutral in CNY rates ahead of July Politburo meeting; stay received 3y HKD IRS

Emerging Markets Strategy

Tiffany Wang AC
(852) 2800-1726
tiffany.r.wang@jpmorgan.com
J.P. Morgan Securities (Asia Pacific) Limited

Arindam Sandilya
(65) 6882-7759
arindam.x.sandilya@jpmorgan.com
JPMorgan Chase Bank, N.A., Singapore Branch

Executive Summary

- **CNY FX: Leaning bearish.** Our bearish view on CNY FX in the coming months is predicated on the belief that core drivers of CNY weakness in the first half look unlikely to subside meaningfully before year-end, accounting for a bumpy economic recovery, the persistence of negative carry and limited positive delta from the BoP perspective in 2H. The shifting narratives on DXY affect the expression of CNY weakness, but do not necessarily change the bearish view itself. Of note, a weaker dollar could favor switching from long USD/CNY to short CNY TWI to position for further CNY weakness. We lean bearish on the yuan in 2H and upsize UW CNY position in GBI-EM from -0.5% to -1% (vs. OW in THB and IDR) after the recent rally.
- **CNY rates: Tactically neutral ahead of the July Politburo meeting.** A bumpy recovery and dovish PBoC still favor duration longs on upticks in yields in 2H. Supply pressures are expected to pick up, but shouldn't be a primary risk to rates, assuming the PBoC stays accommodative. Intermediate yields look to have room to outperform amid larger issuance, as the CGB 10s30s looks too flat relative to a steep 1s10s. The upcoming Politburo meeting presents a non-negligible event risk of greater-than-expected fiscal support. The reduced valuation appeal of bonds as well as risks of a yield reversal if/as China data surprises bottom out keep us neutral for the time being, while we wait for the policy uncertainty to settle in the coming weeks.
- **Hong Kong FX and rates:** Market pricing now looks for a deeper inversion of HKD-USD rates in the second half, a trend broadly consistent with price actions observed around previous Fed pauses. This should be helped by a normalization in Hibor rates after its back-up in 2Q: 3m Hibor screens ~40bp too high vs. our model and should see some relief as seasonal drags start to fade. Overall, the path of least resistance looks still for HKD rates to drop and outperform USD rates amid a continued retracement lower in core rates after this week's U.S. CPI data. We stay received 3y HKD IRS. For HKD FX, USD/HKD is likely to remain above the midpoint of the trading band in 2H, and a re-test of 7.85 is still possible.

Current trade recommendations

Current outright trades	Entry date	Entry	Current	P&L	Relevant note
Receive 3y HKD IRS	28-Oct-2022	4.61	4.17	+34	Note
GBI-EM Model Portfolio	**Positions**	**Weight**			
CNY FX	UW	*-1.0% ↑*			
CNY bonds	MW	-			

Source: J.P. Morgan.

Contents

See page 20 for analyst certification and important disclosures.

Tiffany Wang [AC]
(852) 2800-1726
tiffany.r.wang@jpmorgan.com

CNY FX: Leaning bearish; upsize UW CNY FX in GBI-EM

An early upending of the China reopening rally in 1H23. Markets started 2023 with consensus bullishness on China-linked assets, as Beijing's late-year decision to end the Covid-zero policy in 2022 bolstered hopes of a strong post-reopening economic rebound. While China did deliver impressive growth in the first quarter, optimism around an extended recovery faded rather quickly: Starting from early February, China-linked assets reversed course and have given back on average 66% of the post-reopening rally since then (Figure 1). At the start of the year, our assessment of the reopening impulse to CNY FX was a cautious one: We noted that reopening was double-edged for CNY FX, taking into account the cross-currents of cyclical optimism and a worsening BoP outlook post-reopening (note), and we advocated instead for long THB FX as a cleaner China reopening play in the FX space (note). Although such a cautious CNY view has largely played out, in hindsight, we appeared to be too conservative about the scope and breath of CNY weakness in 1H23. In particular, the downward adjustment in the CFETS TWI, which has corrected to below its post-Covid extremes, looks more acute than other China-linked assets, partly underscoring the cautiousness that has continued to overwhelm the FX market.

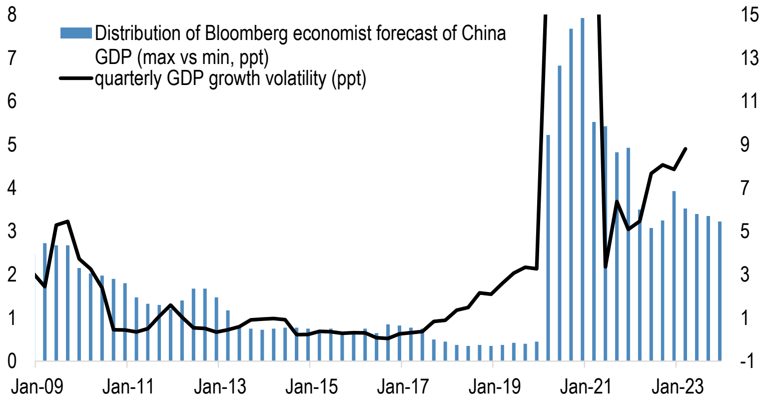
Figure 1: China-linked assets have given back on average 66% of post-reopening gains

	4Q22 Covid trough	Post-reopening peak	Current level	Trough to peak change	Post-reopening peak to current	Retracement
USD/CNH	7.343	6.7139	7.1495	-8.6%	6.5%	-76%
CNY TWI	96.6	100.9	95.8	4.4%	-5.0%	-114%
CSI300	3508.7	4201.4	3901.0	19.7%	-7.1%	-36%
HSCEI	4938.6	7773.6	6561.8	57.4%	-15.6%	-27%
MSCI China	47.6	75.8	63.1	59.3%	-16.7%	-28%
1y CGB yield	1.73	2.33	1.81	59.9	-52.1	-87%
10y CGB yield	2.64	2.93	2.65	29.0	-28.7	-99%
1y NDIRS	1.91	2.47	2.04	56.4	-43.9	-78%
5y NDIRS	2.39	3.00	2.44	60.9	-55.3	-91%
Brent oil	76.1	88.2	81.6	15.9%	-7.5%	-47%
Industrial Metal	142.2	178.8	147.6	25.7%	-17.5%	-68%
					average	-66%

Source: Bloomberg Finance L.P., J.P. Morgan.

Growth and policy uncertainty in China have become a new norm in the post-Covid era. The sharp turnaround in growth momentum was at the core of greater-than-expected CNY weakness in 1H23. While CNY FX used not to be a growth-sensitive currency, given capital account controls and heavy central bank intervention, China's cyclical outlook has become increasingly important in driving currency moves in recent years, evidenced by more synchronized moves in the J.P. Morgan China forecast revision index (FRI) and USD/CNY. Greater FX vs. growth sensitivity in a large part owes to structurally higher GDP volatility post-Covid. As growth forecasts of economists have become more divided (Figure 2), room has opened up for financial markets to monetize greater cyclical noise. Reduced predictability of China's growth is also rooted in a fundamentally different economic and policy framework as policy makers switch gears to focus more on long-term transformation, rather than short-term cyclical movements. As the cross-cycle focus of policy-making adds risks of policy under-delivery compared to the old scheme of big bang stimulus, markets are adapting to the new policy framework by adjusting lower expectations on policy support, which is not friendly for risk markets.

Figure 2: Growth volatility in China has become structurally higher post-Covid, with less consensus around economist GDP forecasts

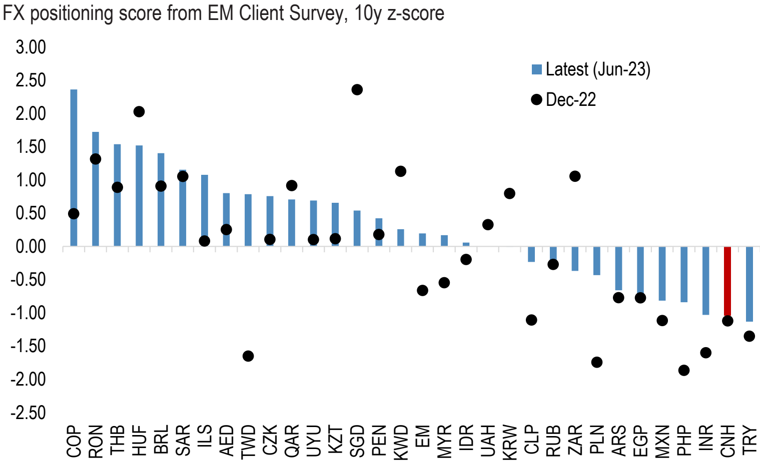


Source: Bloomberg Finance L.P., J.P. Morgan.

There is hope, but the bar to reverse CNY FX weakness remains high in 2H23. The good news for CNY FX heading into 2H23 is that positioning starts from sufficiently bearish levels: As of June, CNY FX ranks the most UW EM FX (excl. TRY), according to our EM Client Survey (Figure 3), with the positioning score hovering around post-2016 lows. Associated with the bearish positioning, CNY FX also starts the second half being cheap/fair, a big contrast to a rich valuation at the turn of the year. USD/CNY was once 1.8% or 1.4 s.d. too high against rate differentials (Figure 4) in 2Q23 before the gap narrowed to 0.3% or 0.2 s.d., and the CFETS TWI is also multi-sigma too cheap vs. China's terms of trade (Figure 5). Against this backdrop, a technical relief rally isn't entirely out of reach: The short-covering this week amid recent DXY weakness has largely closed CNY's dislocation against rate differential models. However, in our view, going forward, the bar to reverse CNY weakness remains high in 2H23. As we list below, a number of things will have to line up to turn the tide.

Figure 3: CNY FX is the most UW EM FX (excl. TRY)

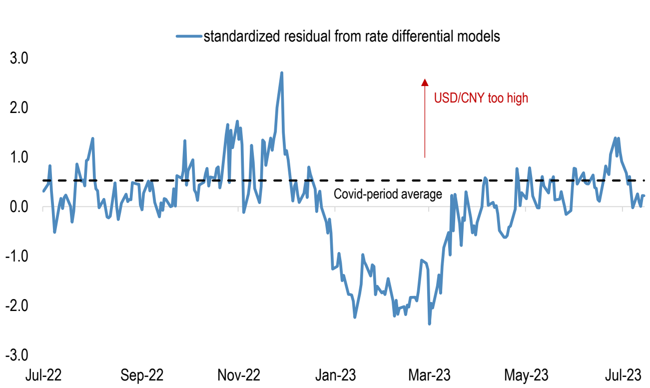
FX positioning score from EM Client Survey, 10y z-score



Source: J.P. Morgan.

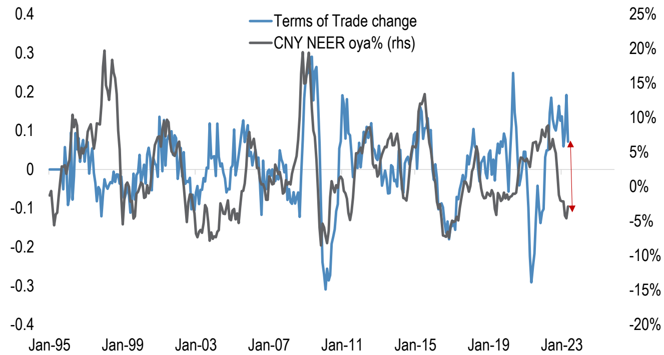
Tiffany Wang [AC]
(852) 2800-1726
tiffany.r.wang@jpmorgan.com

Figure 4: USD/CNY starts 2H23 being about fair, rather than too low, vs. the rate differential models



Source: Bloomberg Finance L.P., J.P. Morgan.

Figure 5: The CFETS basket should trade higher based off China's terms of trade



Source: Wind, J.P. Morgan.

First, policy makers will have to over-deliver to prompt a China FRI upturn 1H23, a key domestic support necessary for CNY strength. Our economists have marked down their 2023 GDP growth target to 5.5% (note), but FX markets take their cue more from revisions and/or surprises in growth, rather than the GDP number itself. In that vein, the slightly better growth path in 2H forecasted by J.P. Morgan economists (Q3: 4.9% q/q saar, Q4: 5.5% q/q saar) vs. Q2 (1.2% q/q saar) likely already bakes in some degree of targeted policy support (note), implying that a material upturn in growth revisions and risk markets in H2 will require policy makers to over-deliver. Short-circuiting ongoing CNY weakness by boosting the growth outlook will not be straightforward, however, partly because such stimulus over-delivery may yet not be forthcoming in light of the aforementioned cross-cycle policy-making and a more constrained room of easing after previous cycles of debt build-up. Also, the scope and durability of any stimulus-related rally will be highly dependent on the size and composition of policy measures (Figure 6). Specifically, growth support from monetary easing will be CNY-negative, while only fiscal measures (e.g., special CGB issuance to support consumption or others) and stronger-than-expected property market support are positive policy surprises that could generate more cyclical impulse for CNY FX.

Figure 6: Potential policy actions to support growth

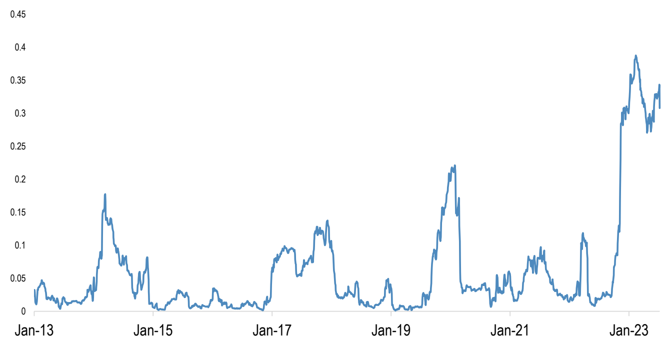
	Mildly positive/market expectation	Positive surprise
Monetary policy	♦25bp RRR cut ♦Target measures to lower financing costs, like pushing for deposit rate cut etc ♦Structural monetary support for targeted sectors to continue	♦One or two more OMO/MLF rate cut ♦Monetization of quasi-fiscal tools (eg. PSL)
Fiscal policy	♦Tax rebate for targeted industries to continue ♦Speed up issuance of this year's LGB quota ♦Local level and/or product-specific consumption support	♦Increase of LGB quota or reuse of previous years' leftovers ♦Special CGB issuance to support consumption, high-end manufacturing or even infrastructure or housing
Property	♦Local level demand side support (eg. quota, mortgage etc)	♦Nation-wide relaxation on demand side restrictions especially in Tier-I cities ♦Relaxation on three-red lines
Other industrial policy	♦Tight policy to further unwind for sectors that were hit heavily (tech, education, gaming etc)	♦ All around support or clear high-level policy reassurance to support private sector development like Xi's meeting with private entrepreneurs in late 2018

Source: Bloomberg Finance L.P., J.P. Morgan.

Second, appetite for CNY selling could remain strong as long as FX carry trades have legs. A key condition backstopping the weakness in CNY FX since last year is the widening yield differentials between RoW and China as the FX-nominal rates correlation has risen to decade highs (Figure 7). Assuming that this rate anchor stays intact, a trend reversal in CNY weakness will require a re-convergence in nominal yields. Considering far greater volatility in rate markets elsewhere, a positive China growth impulse alone may not be sufficient to trigger such a spread move, leaving a fall in rates elsewhere necessary to do the heavy lifting. With China's nominal yields at sub-3%, nearly 2% below the CFETS basket yield (Figure 8), CNY FX serves as a good funder for well-subscribed carry trades, evidenced by investors' UW CNY FX and OW high-yielders in LatAm and EMEA (Figure 3). While we see the medium-term shelf life for FX carry trades shrinking (*FX Mid-year Outlook: Ten questions (and answers) on FX in 2H23*), it is not expected to run out of steam until 2024, when the macro context becomes more conducive for global central bank cuts. The fact that FX carry trades could still have scope to perform in 2H23, coupled with residual uncertainties around the peak Fed terminal rate, could continue to pressure CNY FX on the weak side, as the appetite for CNY shorts is unlikely to fully subside in 2H23.

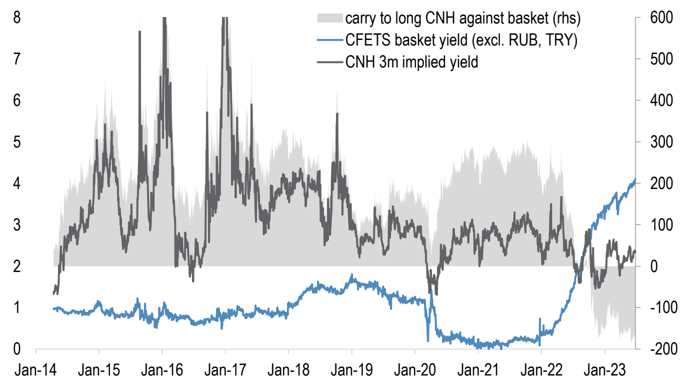
Figure 7: The FX-nominal rates correlation in China has risen to a decade high since last year

Rolling 6m R-square of USD/CNH and nominal U.S.-China rate differentials using weekly changes



Source: Bloomberg Finance L.P., J.P. Morgan.

Figure 8: Carry to short CNY remains favorable



Source: Bloomberg Finance L.P., J.P. Morgan.

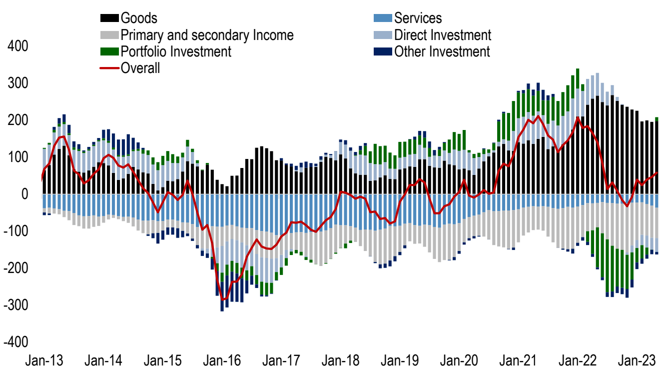
BoP flows are unlikely to offer much positive delta in 2H. China's BoP flows in 1H23 were a mixed bag. Net cross-border inflows improved from late 2022 levels (Figure 9), helped by greater-than-expected equity inflows, a slower pickup in service deficit, and slower-than-expected other investment outflows. Goods trade surplus has also stayed well above pre-Covid norms despite being on a broad narrowing path since mid-2022. However, bond outflows have continued at a monthly run rate similar to 2H22 levels, while net FDI outflows have accelerated noticeably, adding a pocket of stress. Of note, net FDI outflows totaled $35bn for the first five months of this year, according to SAFE data on cross-border flows, a sharp reversal from over $40bn of inflows for the same period last year, and marks the fastest net FDI outflows since 2016. Part of the acceleration in net FDI outflows may be attributable to the broad trend of slowdown in global deal-making in 2023: OECD noted that cross-border M&A activities globally declined further in 1Q23 from 2022 levels (link), which is also the trend observed in China. In the meantime, a continued payback of booming FDI inflows to China during Covid times, declining corporate profits and ongoing geopolitical concerns could have also contributed to slower foreign investment this year. A likely continuation of the trend, coupled with a further pickup in outbound tourism, could add outflow pressures in the second half: Assuming service-related outflows normalize further, to 75% of pre-Covid norms (from ~50% currently), it could add ~$4bn more outflows every month (Figure 10). Taking into account potential further narrowing in China's goods trade surplus, China's basic balance is destined for a deterioration in the second half. The

Tiffany Wang AC
(852) 2800-1726
tiffany.r.wang@jpmorgan.com

hope lies in better portfolio inflows, but a meaningful improvement will require proof of a cyclical upturn (for equity inflows) and/or a recovery of China's yield advantage (for bond inflows), beyond hopes of some relief on the geopolitical front, all of which remain uncertain. Taken together, we think positive delta for CNY FX looks rather limited from a BoP perspective (Figure 11).

Figure 9: China's net BoP flows recovered from 2022 lows in 1H23

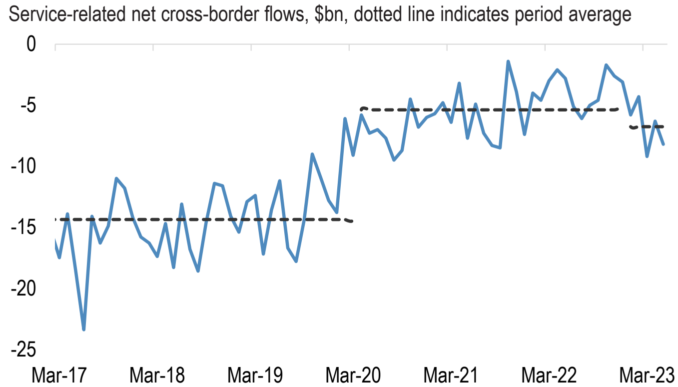
Net cross-border flows, $bn, 6m sum



Source: SAFE, J.P. Morgan.

Figure 10: Tourism-related service outflows are yet to fully normalize to pre-Covid levels

Service-related net cross-border flows, $bn, dotted line indicates period average



Source: SAFE, J.P. Morgan.

Figure 11: BoP flows are unlikely to offer big positive delta for CNY FX in 2H23

$bn, JPMe for 1H23

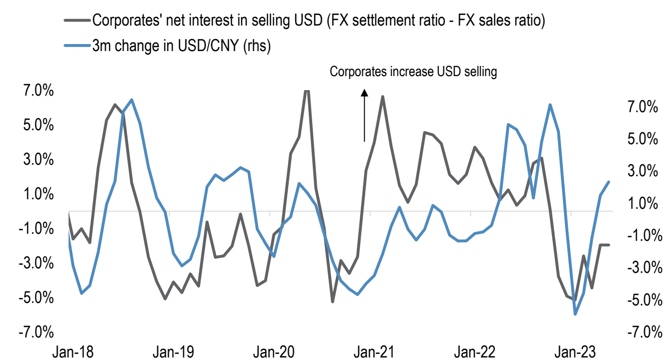
	2015	2016	2017	2018	2019	2020	2021	2022f	2023f	1H23e	2023f-new
Current account flows	293	191	189	24	103	249	353	402	160	144	262
Net FDI flows	68	-42	28	92	50	99	165	30	50	-43	-70
Capital account flows	-66	-52	29	107	58	96	51	-281	-165	-78	-135
Equity inflows	15	23	36	61	45	80	83	34	45	35	55
Bond inflows	-8	27	88	100	102	166	94	-142	-50	-50	-70
Portfolio outflows	-73	-103	-95	-54	-89	-151	-125	-173	-160	-62	-120
Other outflows&residual	-638	-541	-154	-204	-230	-415	-381	-51	-150	-43	-90
of w/: E&O	-202	-219	-207	-177	-129	-159	-134	-91	-120	-20	-50
Overall BoP	**-343**	**-443**	**92**	**19**	**-19**	**29**	**188**	**100**	**-105**	**-19**	**-33**
memo. BoP inflows (CA+FDI+gross FPI inflows+E&O)	*166*	*-18*	*134*	*99*	*171*	*436*	*560*	*234*	*85*	*66*	*127*

Source: Bloomberg Finance L.P., J.P. Morgan.

Whether/when would the stockpile of corporate dollars come to the rescue for CNY FX? USD supply from Chinese corporates on spikes in USD/CNY used to be an important organic stabilizer for CNY FX. However, a regime shift since last year is that exporters have become increasingly under-hedged (Figure 12), leaving China's elevated trade surplus failing to provide CNY much protection against the bearish trend. On our calculation, the "excess" dollar savings from Chinese corporates, defined as the unsettled foreign income from goods trade stripping out the part that's settled directly in RMB, has accumulated to ~$242bn over the past year, with $146bn and $97bn parked in onshore and offshore markets, respectively (Figure 13). On the positive side, the unhedged USD savings can be interpreted as FX conversions delayed, rather than cancelled, so a drawdown of sizable excess USD savings from corporates could eventually become a tailwind for CNY strength, but only when conditions become more conducive. The recent cut in onshore USD deposit rate is helpful at the margin, but a deeply inverted FX forward curve leaves hedging still costly for corporates. With the first Fed cut not expected until 2024, corporate flows might continue to stay on the sidelines in the near future, implying that the positive CNY impulse is unlikely to kick in a meaningful way until end-2023/early 2024.

Tiffany Wang [AC]
(852) 2800-1726
tiffany.r.wang@jpmorgan.com

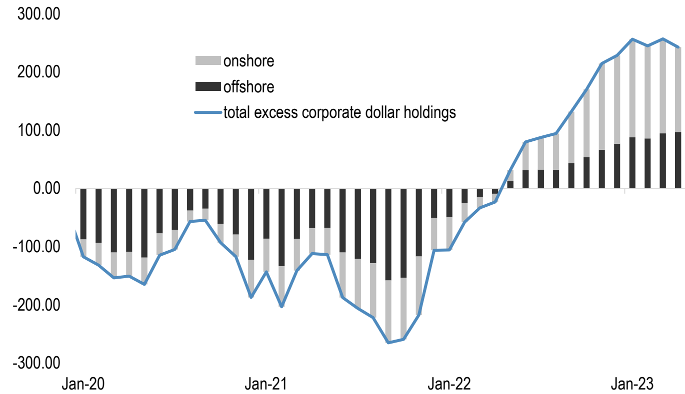
Figure 12: USD selling from Chinese corporates has become less counter-cyclical...



Source: Bloomberg Finance L.P., J.P. Morgan.

Figure 13: ...leading to excess dollar savings

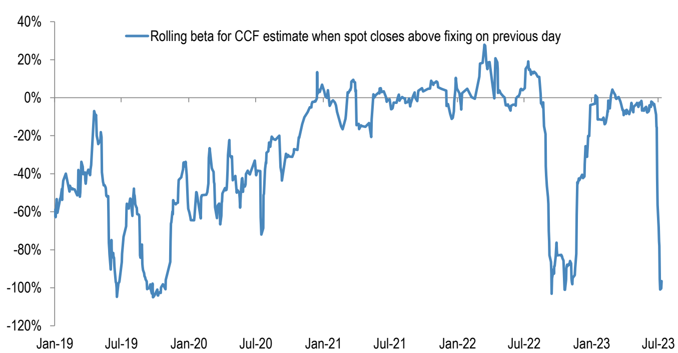
Excess dollar savings from corporates, $bn, 12m sum



Source: Bloomberg Finance L.P., J.P. Morgan.

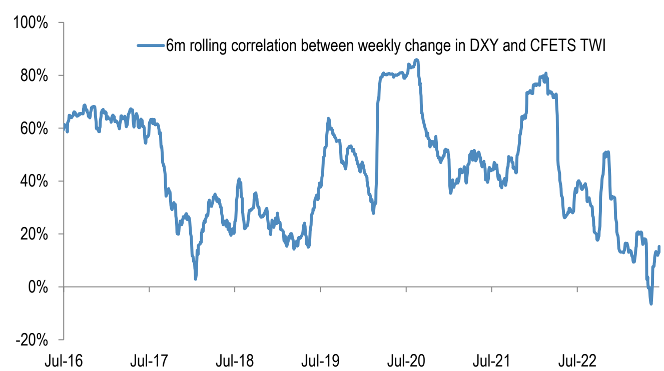
PBoC's FX management is in motion, and policy focus remains to limit the decoupling between CNY TWI and DXY. The Chinese central bank has ramped up support to CNY FX by introducing outsized downside surprises in the daily CNY fixing. PBoC's resistance looks comparable to 2019 and 2022, as the strengthening bias (or counter-cyclical factor) was set at a level that fully offset the previous day's intra-day CNY weakness (Figure 14). A big contrast of the recent CNY depreciation to previous currency stress episodes is the absence of speculative froth (note). A wider CNH-CNY basis and sharp spikes in CNH vol are widely considered alarming signs of speculative CNH shorts, which have, in the past, been associated with non-linear currency depreciation pressures, followed by various degrees of PBoC resistance. However, this time seems different (e.g., a narrow CNH-CNY basis, depressed CNH vol), making PBoC's intervention look more pre-emptive than reactive. The context of earlier and stronger-than-expected pushback from the PBoC against currency weakness is the absence of organic CNY stabilizers nowadays, most importantly, the corporate USD selling flows. Of note, fading corporate support has introduced asymmetrically more downside risks in the CNY basket as its correlation with the DXY broke down (Figure 15). As a result, the PBoC now has more work to do to circumvent a one-way move lower in the CFETS TWI on stronger DXY moves. The Chinese central bank has various tools (Figure 16) and a good track record in managing FX depreciation risks.

Figure 14: PBoC's recent resistance to CNY weakness looks comparable to 2019/2022, with stronger fixings being set to fully offset the last day's intra-day CNY move



Source: J.P. Morgan.

Figure 15: CNY TWI-DXY correlation has dropped to a multi-year low, arguing for greater PBoC support to circumvent one-way currency depreciation pressures



Source: Bloomberg Finance L.P., J.P. Morgan.

Tiffany Wang [AC]
(852) 2800-1726
tiffany.r.wang@jpmorgan.com

Figure 16: PBoC's FX toolkit

Type	Measures	FX impact
Direct intervention	Increase the strengthing bias in the daily fixing	Medium/High
Direct intervention	Stealth intervention by state banks	High
Capital control/Macro-prudential	Cut the FX required reserve ratio	Low
Capital control/Macro-prudential	Raise the risk reserve ratio on FX forwards	Low
Capital control/Macro-prudential	Tighter oversight of banks' FX transactions (eg. tighter regulation on banks' FX settlement and sales ratio)	Low/Medium
Capital control/Macro-prudential	Imposing more restrictions on outbound investment	Low/Medium
Direct intervention	Draining offshore CNH liquidity	High
Direct intervention	Direct intervention via drawdown of reserves	High

More likely

Less likely

Source: Bloomberg Finance L.P., J.P. Morgan.

Global macro context matters for the expression of CNY weakness, but does not necessarily change the bearish view. Macro noises around the global economic outlook remain high, evidenced by the elevated volatility in U.S. yields in recent months. Given the importance of rate differentials to USD/CNY, we reckon that a fluid global macro backdrop could generate uncertainty for our USD/CNY target (Figure 17). While that matters for whether long USD/CNY represents the best option to position for further depreciation in CNY, it doesn't alter the broad bearish bias. As discussed above, the PBoC appears to lean more heavily against CNY TWI falls on higher DXY moves when USD/CNY is pressured to the upside, given concerns of non-linear depreciation pressures in the absence of organic CNY stablizing flows. Such a policy bias would make long USD/CNY the best expression of the bearish CNY thesis, with PBoC putting a floor on the CNY TWI while not drawing a line in the sand on USD/CNY with bullish DXY our base case for 2H (*FX Mid-year Outlook: Ten questions (and answers) on FX in 2H23*). Of course, that view is getting challenged with a lower-than-expected U.S. inflation print this week, but we think it's too early to fully abandon the bearish CNY view. Instead, on weaker dollar moves, the expression of CNY shorts can be switched from long USD/CNY to short CNY basket. Of note, the DXY-CNY TWI correlation is tighter on weaker DXY moves, and we expect PBoC's resistance to CNY TWI weakness to be more tempered, as well, should it be associated with a lower USD/CNY and a weaker DXY. This will be reflected in an increasingly smaller strengthening bias in the yuan reference, while spot and CNY fixing are likely on course to re-converge.

Figure 17: Macro scenarios and USD/CNY

USD/CNY YE23 forecast based off rate differential models and different macro scenarios
Assumptions: U.S. yields move +50bp/0bp/-50bp in the scenarios of higher-for-longer/one more hike/early cut; CGB yields move -25bp/0bp/+25bp in the scenarios of double-dip/bumpy recovery/stronger stimulus, plus +1 s.d./-1 s.d. misalignment in USD/CNY in the scenarios of double-dip/stronger stimulus

	Higher for longer	Fed hikes one more and then hold	Early Fed cut
Double dip, China FRI lower	7.45	7.29	7.12
Targeted support, bumpy recovery, flattish FRI	7.27	7.11	6.95
Stronger-than-expected stimulus, FRI upturn	7.10	6.94	6.78

Source: J.P. Morgan.

Market strategy: We start 2H23 leaning bearish on CNY FX, a view predicated on the belief that core drivers of CNY weakness in the first half look unlikely to subside meaningfully before year-end. This takes into account a bumpy economic recovery, the persistence of negative carry and limited positive delta from the BoP perspective in 2H. Shifting narratives around the outlook in U.S. rates and DXY introduce some nuances to

Tiffany Wang AC
(852) 2800-1726
tiffany.r.wang@jpmorgan.com

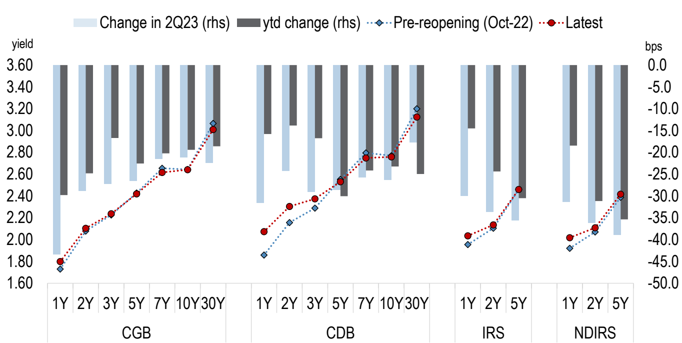
our year-end USD/CNY target (currently at 7.25), which is based off a bullish DXY bias, but it don't necessarily change the bearish CNY view overall. On weaker dollar moves, the expression of CNY shorts can be switched from long USD/CNY to short CNY basket, as the DXY-CNY TWI correlation is expected to hold on a lower DXY. We stay bearish CNY FX and upsize UW CNY FX position in GBI-EM from -0.5% to -1% (offset by OW in THB and IDR) after the recent market rally.

Tiffany Wang AC
(852) 2800-1726
tiffany.r.wang@jpmorgan.com

CNY rates: Tactically neutral ahead of the July Politburo meeting

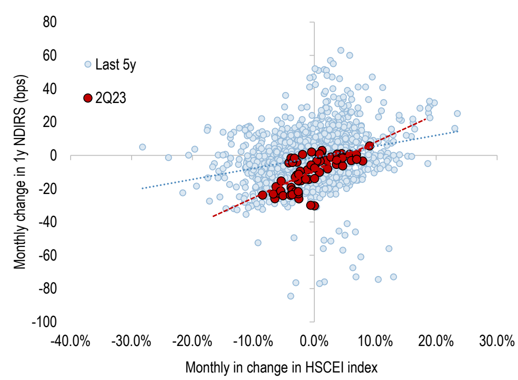
CNY rates played catch-up in 1H23. CNY rates were a latecomer in the post-LNY unwind of China reopening trades, but caught up at full speed in 2Q. While both CNY FX and equities started to reverse the post-reopening strength as early as February, CNY rates embarked the downward shift only a month later, in late March, with declines in yields accelerating in 2Q. Just three months into that rally, CNY rates have fully undone the post-reopening sell-off, with yields mostly back to pre-reopening levels (Figure 18). In the more extreme case, 10y bond futures even surpassed last year's highs at one point in 2Q23, underscoring strong consensus bullishness in the local rate markets. To put the adjustment into context, A-shares and H-shares have barely given back half of their post-reopening gains, making the adjustment in CNY rates look rather outsized in comparison to the fall in equity prices (Figure 19).

Figure 18: CNY rates have mostly fully undone the post-reopening sell-off...



Source: Bloomberg Finance L.P., J.P. Morgan.

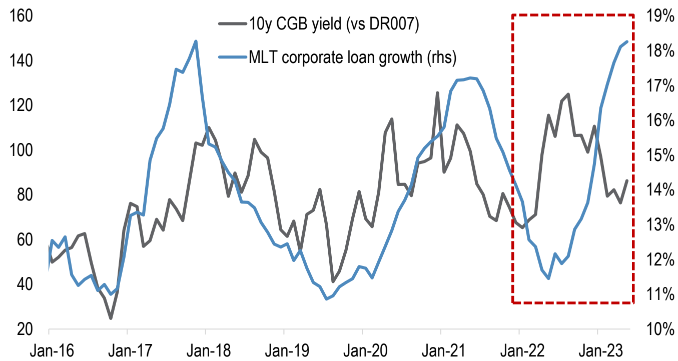
Figure 19: ...with the adjustment looking outsized compared to the drawdown in equity prices



Source: Bloomberg Finance L.P., J.P. Morgan.

Rates have become less sensitive to macro trends and credit cycles. The fallout for rates from increasingly cross-cycle policy-making, coupled with greater use of targeted monetary policy tools, is the breakdown of a correlation between key macro indicators and yield moves. This is most evidenced by the decoupling of 10y CGB yields and medium- to long-term corporate loan growth (Figure 20): The latter used to be a good barometer of credit demand cycles, which tend to lead rate cycles, but the use of targeted tools and structural reform from the PBoC to boost corporate loan demand without touching the policy rate has led to a breakdown of the correlation. In this context, monetizing China's growth momentum via CNY rates has become more difficult in the post-Covid era. A simple strategy premised on perfect foresight of quarterly growth trends (long duration when qoq GDP growth decelerates and vice versa) points to limited risk-reward since 2020 (Figure 21). Abnormally elevated growth volatilities in the post-Covid era render the ups/downs in quarterly growth less relevant for the medium-term cyclical trend, and forecasting PBoC's policy actions have also become increasingly more difficult with the Chinese central bank adopting a less counter-cyclical approach.

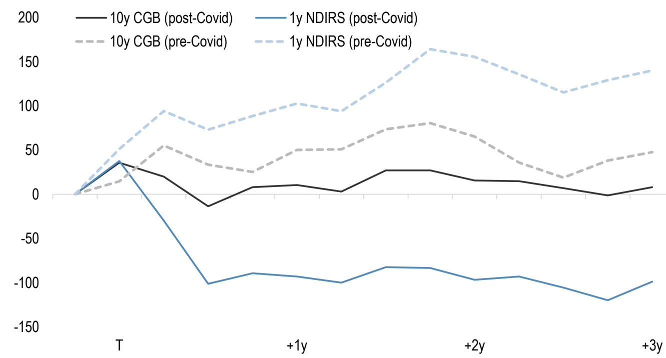
Figure 20: CGB yields have decoupled from key macro indicators



Source: Bloomberg Finance L.P., J.P. Morgan.

Figure 21: Trading CNY rates is not just about monetizing China's growth momentum in the post-Covid era

Cumulative returns in bp based off a simple strategy premised on perfect foresight of quarterly growth trends (long duration when qoq GDP growth decelerates and vice versa)

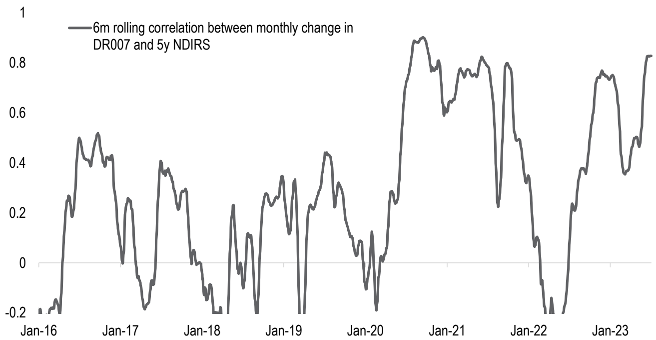


Source: Bloomberg Finance L.P., J.P. Morgan.

Risks are for repo rates to stay lower for longer, which should help to anchor CNY rates in 2H. While medium-term growth trends become less clear/important, liquidity conditions still matter greatly for CNY rates. The correlation between repo rates and swap rates picked up in 1H23, reaching the highest level in recent years (Figure 22), pointing to a more technical environment for trading CNY rates based off shifts in money market rates. Unlike late 2022, when a notable discount between repo rates and PBoC's OMO rate pointed to clear upside risks in money market rates, the absence of major deviation nowadays offers little information on where repo rates could go in 2H. Empirical evidence suggests that repo rates tend to sit below the policy rate while China PMIs stay below 50 (Figure 23). This is usually driven by ample money supply amid accommodative PBoC policies intersecting with sluggish demand. In a sense, while the bar for the inversion between repo rates and PBoC's OMO rate deepening to 2020/22 extremes remains high, the path of least resistance is still for money market rates to stay lower for longer before structural economic headwinds subside more durably. We see the 7d repo rate range at 1.7-2.0 for 2H23, a setup that should guard against any trend sell-off in rates in the near future.

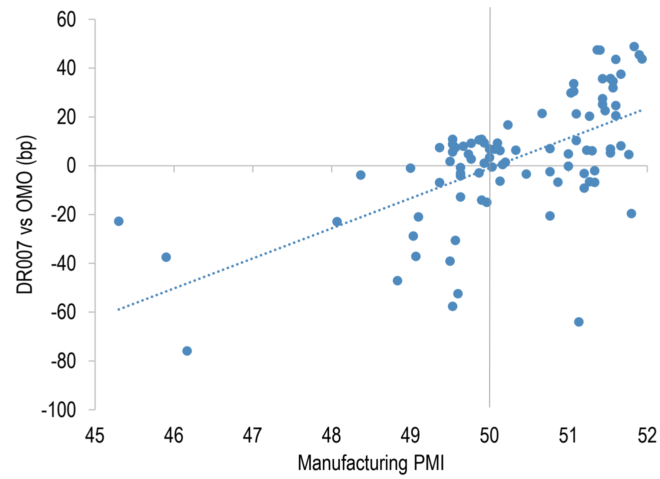
Tiffany Wang [AC]
(852) 2800-1726
tiffany.r.wang@jpmorgan.com

Figure 22: Correlation between CNY rates and money market rates has picked up to recent-year highs



Source: Bloomberg Finance L.P., J.P. Morgan.

Figure 23: Repo rates tend to sit below the policy rate while China PMIs remain below 50



Source: Bloomberg Finance L.P., J.P. Morgan.

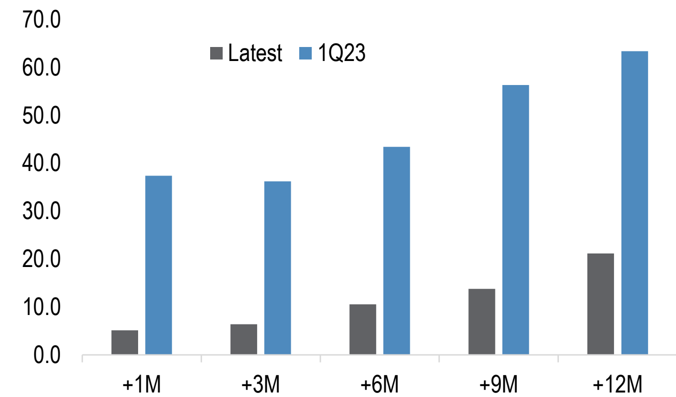
Mindful of the non-negligible event risk in the upcoming July Politburo meeting, we stay neutral CNY rates for now. While a bumpy recovery and low money market rates point to a market with risk/reward still favoring duration longs on upticks in yields, we start 2H23 being tactically neutral, accounting for a non-zero chance of positive policy surprises in the July Politburo meeting, coupled with a number of other factors listed below.

First, valuation is less bullish CNY rates now compared to 1H23. The technical backdrop is getting less favorable for receivers after the impressive bull run in 2Q. Not only have yields moved closer to pre-reopening lows, the multi-year steepness of the swap curve has also been largely corrected, with the 1y1y-1y spread having narrowed by ~30bp since early February. Being an important driver for the sharp duration rally in 2Q, the tailwind of rate markets shifting away from being overly pessimistic on PBoC tightening risks has also faded to a large extent. A total of a ~65bp rise in the 7d repo rate was priced into the swap curve in 1Q, with tightening risks expected to be front-loaded into the first six months, a big contrast to today's pricing of less than 20bp tightening over the next year (Figure 24). As the unwind of tightening expectation is closer to an end and the 1Q overrun in rates being largely undone, CNY rates screen mostly fair/low now (Figure 25), arguing for less valuation appeal to start 2H23.

Tiffany Wang AC
(852) 2800-1726
tiffany.r.wang@jpmorgan.com

Figure 24: CNY rates have largely priced out concerns over PBoC tightening

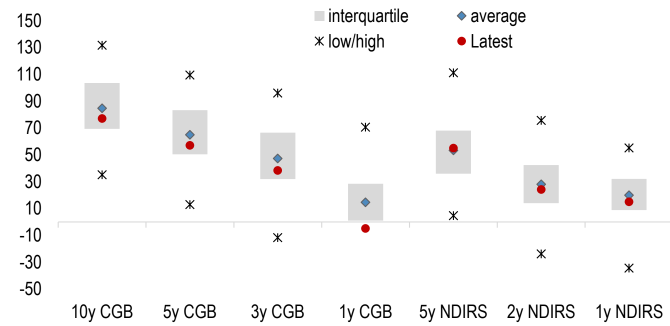
Market pricing of cumulative change in repo fixing, bps



Source: Bloomberg Finance L.P., J.P. Morgan.

Figure 25: CNY rates screen fair to low after 2Q rally

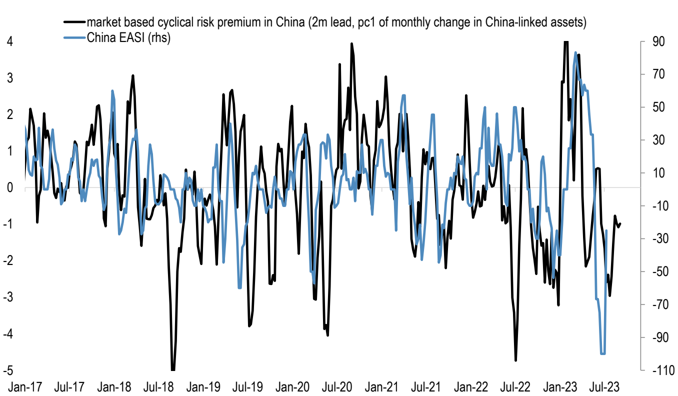
Term premium of CNY rates vs. DR007, bps



Source: Bloomberg Finance L.P., J.P. Morgan.

Second, a rebound in the China economic activity surprise index (EASI) could present upside risks to rates over the short run. The consistent downside surprises in China's activity data in 2Q resulted in a sharp decline in the JPM China EASI index, which reached its historical lows in June. A typical mean-reversion pattern in the index points to a potential technical rebound in the coming weeks, with the latest upbeat TSF data kicking off the uptrend (Figure 26). Our analysis in the past shows that CNY rates appear to be more at reversal risks relative to other China-linked assets when the EASI moves up from its local lows (Figure 27). This, coupled with the less favorable valuation in rates, warrants some caution over the short run.

Figure 26: China EASI has bottomed, looking on course for a mean reversion higher



Source: Bloomberg Finance L.P., J.P. Morgan.

Figure 27: A bottoming in China EASI has in the past been associated with more reversal risks for CNY rates

Asset returns post-China EASI rebound from its local lows (threshold set to -2 s.d. for the past 10 years)

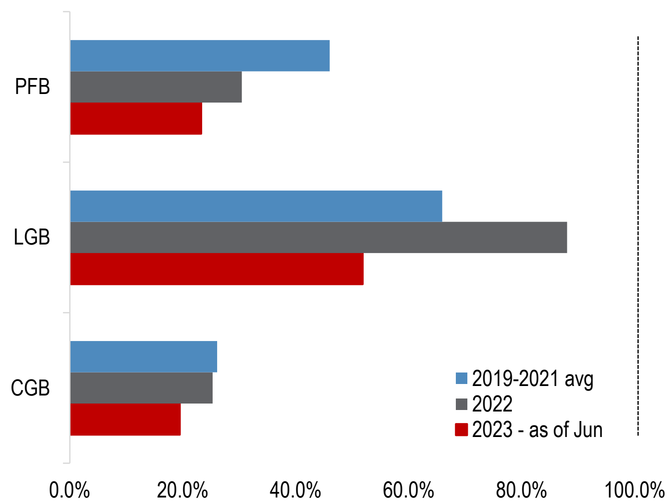
		Cumulative change in price (median)			% of times price went up		
		+1m	+2m	+3m	+1m	+2m	+3m
FX	USD/CNH	0.0%	0.4%	1.1%	40%	80%	50%
	CFETS TWI	-0.1%	-0.2%	-0.5%	40%	40%	40%
Equities	CSI300	-0.4%	-0.6%	0.1%	40%	50%	50%
	HSCEI	0.0%	-0.8%	-2.5%	50%	50%	30%
Rates (bps)	1y NDIRS	2.5	11.7	5.3	60%	70%	60%
	5y NDIRS	-0.6	5.0	-1.5	50%	60%	50%
	1y CGB	2.4	6.0	16.8	60%	70%	70%
	10y CGB	1.5	1.4	-1.2	60%	60%	40%
Commodity	Industrial metal	2.4%	2.7%	6.9%	70%	60%	70%
	Oil	2.9%	1.7%	2.3%	60%	60%	70%

Source: Bloomberg Finance L.P., J.P. Morgan.

Last, but not least, any additional fiscal support could add onto an already-heavy supply overhang in the coming months. Bond issuance in China got off to a slow start this year, with total net supply of rate bonds (CGBs, policy bank bonds and LGBs) reaching only CNY3.4tn in 1H, and the completion rate (ytd net issuance%annual issuance quota) is tracking lower than the issuance pace in previous years (Figure 28). As a result, supply pressure will likely pick up notably in coming months as fiscal measures start to add support to growth. We expect the net supply of rate bonds to reach CNY6.3tn in 2H23 (Figure 29), which would mark the heaviest issuance pressure in recent years. The market implication for CNY rates from a bond supply overhang is less straightforward compared to other markets, as China's fiscal and monetary policy tend to be coordinated. As a result, heavier issuance doesn't always translate into outright upside pressures in yields, but rising supply would still make it more challenging for the PBoC to maintain favorable liquidity conditions in 2H, risking greater volatility in money market rates going forward. On top of that, any additional fiscal support via special CGB issuance and/or increased LGB quota to boost demand would add more stress to the rate markets by generating a larger liquidity gap and upside cyclical risks. This leaves the July Politburo meeting, with more details on fiscal measures expected to be disclosed by policy makers, a event risk for CNY rates.

Figure 28: Bond supply in 1H23 trailed the pace of previous years...

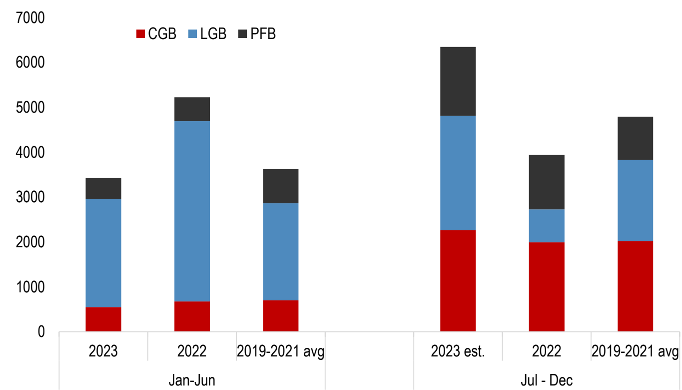
Completion rate



Source: Bloomberg Finance L.P., J.P. Morgan.

Figure 29: ...leaving heavy issuance pressure in the second half

CNY bn

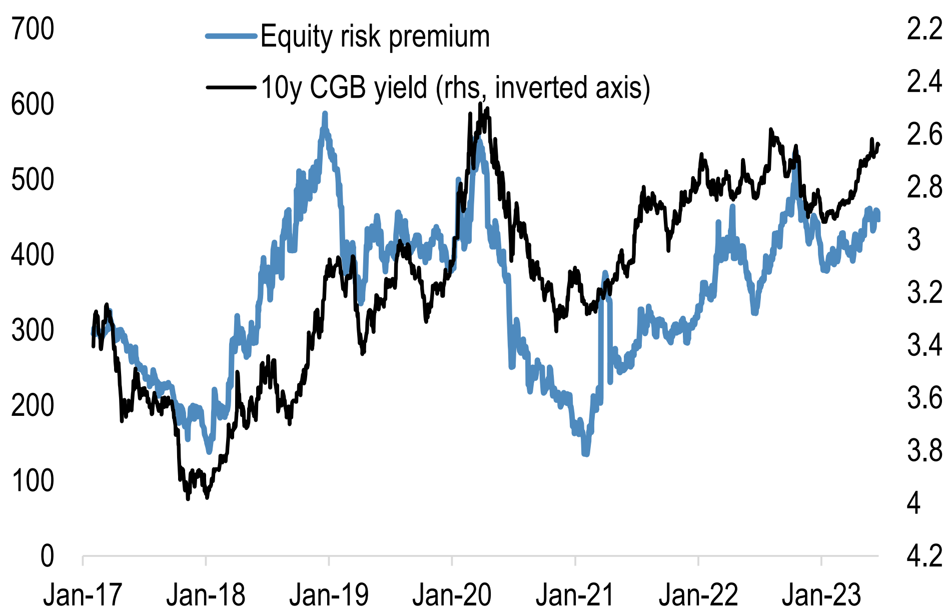


Source: Bloomberg Finance L.P., J.P. Morgan.

Market strategy: CNY rates start 2H23 sandwiched in between diminishing valuation appeal and easy liquidity conditions that favor yields staying lower for longer. A bumpy recovery, J.P. Morgan's baseline macro scenario for 2H, points to a range-bound market, with risk/reward still favoring duration longs on upticks in yields. However, the upcoming Politburo meeting presents a non-negligible event risk of greater-than-expected fiscal support, which could weigh on sentiment in the rates market, accounting for elevated leverage in the interbank system and a potential rotation from bonds to equities amid elevated equity risk premium (Figure 30). The reduced valuation appeal of bonds, as well as risks of a yield reversal if China data surprises bottom, keep us neutral for the time being while we wait for the policy uncertainty to settle in the coming weeks. Supply pressures are expected to pick up, but shouldn't be a primary risk to rates, assuming the PBoC remains accommodative. But larger issuance, especially the increase of LGB supply, which tends to be in longer tenors, could risk a steeper CGB curve in the back end as banks' demand for LGBs crowds out buying interest in CGBs. In fact, the CGB 10s30s looks too flat relative to a steep 1s10s, pointing to risks of a steepening of the back end (10s30s) and a flattening of the front end (1s10s). This leaves room for intermediate yields to outperform in 2H.

Tiffany Wang [AC]
(852) 2800-1726
tiffany.r.wang@jpmorgan.com

Figure 30: China's equity risk premium is elevated, pointing to room for bond to equity rotation should cyclical conditions become more conducive



Source: J.P. Morgan.

Market forecast and strategy summary

	Latest	Forecasts				Strategy Views
		Sep-23	Dec-23	Mar-24	Jun-24	
USD/CNY	7.14	7.30	7.25	7.15	7.10	Our bearish view on CNY FX in the coming months is predicated on the belief that core drivers of CNY weakness in the first half look unlikely to subside meaningfully before year end, accounting for a bumpy economic recovery, persistence of negative carry and limited positive delta from the BoP perspective in 2H. The shifting narratives on DXY affects the expression of CNY weakness but does not necessarily change the bearish view itself. We hold onto UW CNY position in GBI-EM and upsize the UW from -0.5% to -1% (offset by OW in THB and IDR).
CFETS TWI Index	95.8	96.5	96.5	97.0	97.0	
1y CGB yield	1.84	1.85	2.00	2.05	2.10	Tactically neutral ahead of the July Politburo meeting. A bumpy recovery and dovish PBoC point to a range bound market with risk reward still favouring duration longs on upticks in yields in 2H. Supply pressures are expected to pick up but shouldn't be a primary risk to rates while intermediate yields could have room to outperform as the CGB 10s30s looks too flat relative to a steep 1s10s. Over the short run, the upcoming Politburo meeting presents a non-negligible event risk of greater-than-expected fiscal support. The reduced valuation appeal of bonds as well as risks of an yield reversal if/as China data surprises bottom out keep us neutral for the time being while we wait for the policy uncertainty to settle in the coming weeks.
10y CGB yield	2.64	2.60	2.70	2.75	2.80	
Policy Rate (7d reverse repo rate)	1.9	1.9	1.9	1.9	1.9	

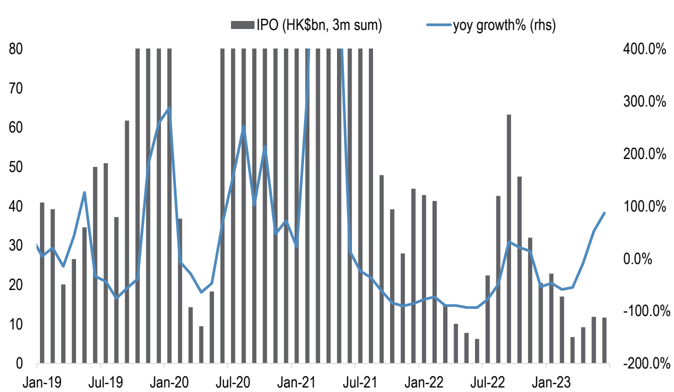
Source: Bloomberg Finance L.P., J.P. Morgan. Latest bond yield data quote from Chinabond benchmark CGB yield.

Tiffany Wang AC
(852) 2800-1726
tiffany.r.wang@jpmorgan.com

HKD FX and rates: Stay received HKD 3y IRS

Behind the turn in Hibor rates in 1H23. After remaining at subdued levels for the better part of 1Q, Hibor rates staged a notable upturn in 2Q, recouping the divergence with U.S. rates. We think there are a couple of factors behind the spike. First, HKD FX testing the strong side convertibility in 1H has led HKMA to further draw on the aggregate balance to defend the peg. The aggregate balance fell to HK$45bn, sliding from its 2021 peak at HK$457bn to the lowest level since the GFC. The drastic depletion of the liquidity base leaves the local market more susceptible to financing shocks, which tend to be associated with higher and/or greater volatility in HKD rates. Second, after the dip at the start of the year, the HKD loan-to-deposit ratio (LDR) resumed the uptrend in 2Q, rising ~3ppt from its January lows. While outstanding HKD loans remained broadly unchanged in 2Q, HKD deposits have dropped HK$84bn since March, likely reflecting some outflows amid concerning China growth and continued underperformance of the Hong Kong equity market. Although the decline was running at a much smaller pace compared to 2H22, the incremental fall could have added more stress to the market, with the aggregate balance more than halved since last year. Third, as both declining aggregate balance and a higher LDR indicate a dry-up of local liquidity, the pickup in IPOs has added strains on the margin. To be sure, the quantum of IPOs in the HK exchange market remained low by historical standards, but is picking up steam from a low base (Figure 31). IPOs in 2Q23 doubled the size of 1Q offerings, reaching HK$12bn. This could have locked up additional liquidity amid a souring funding market. Fourth, seasonal dividend payout pressures also locked up HKD liquidity and likely weighed on the financing conditions heading towards the summer (Figure 32).

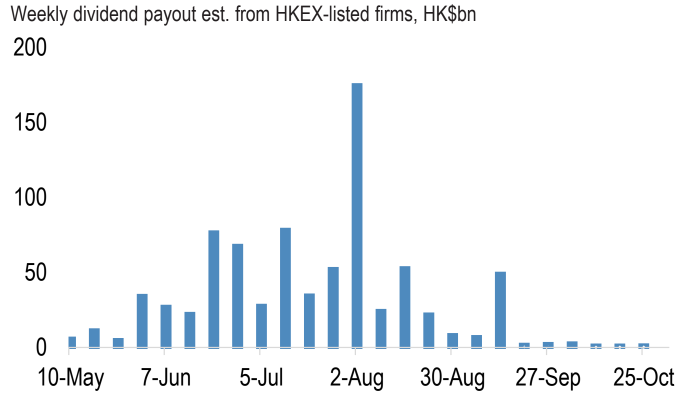
Figure 31: IPOs in Hong Kong are picking up pace from a low base



Source: Bloomberg Finance L.P., J.P. Morgan.

Figure 32: Seasonal dividend payout flows could have weighed on HKD liquidity toward half-year-end, but are expected to moderate after July

Weekly dividend payout est. from HKEX-listed firms, HK$bn



Source: Bloomberg Finance L.P., J.P. Morgan.

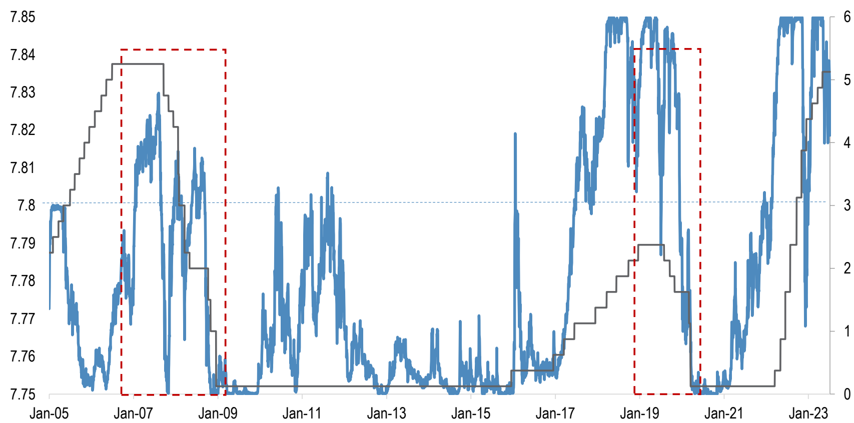
What would a Fed pause mean for HKD FX and rates? Under the Linked Exchange Rate System, HKD FX and rates are primarily a function of U.S. rates. As we expect the last Fed hike to come in 2H23, the regime shift could be a high-impact driver for the Hong Kong local markets, and it's worth revisiting how HKD FX and rates performed around the last two Fed pauses (2006/2007, 2019).

- **For HKD FX**, it's clear that volatility tends to rise with spot USD/HKD clinging to the upper-side convertibility in a less consistent pattern, and the closer we get to the first Fed cut, spot moves away from 7.85, more often featuring sharper and more

Tiffany Wang [AC]
(852) 2800-1726
tiffany.r.wang@jpmorgan.com

durable deviations (Figure 33). In the stage of maturing Fed hiking cycles, the aggregate balance has likely already settled at lower levels, elevating the volatility in funding costs that discourages carry. However, empirical experience also shows that a more linear and durable decline in USD/HKD toward the lower-side convertibility happened only when the Fed started to cut rates. In other words, the transition from Fed hikes to pauses doesn't necessarily mean the end of the carry trade, but it argues for being more selective and tactical on timing and entry levels.

Figure 33: USD/HKD tends cling to the upper-side convertibility in a more volatile fashion during Fed pauses, while a durable decline to the lower-side convertibility happens only when the Fed starts to cut



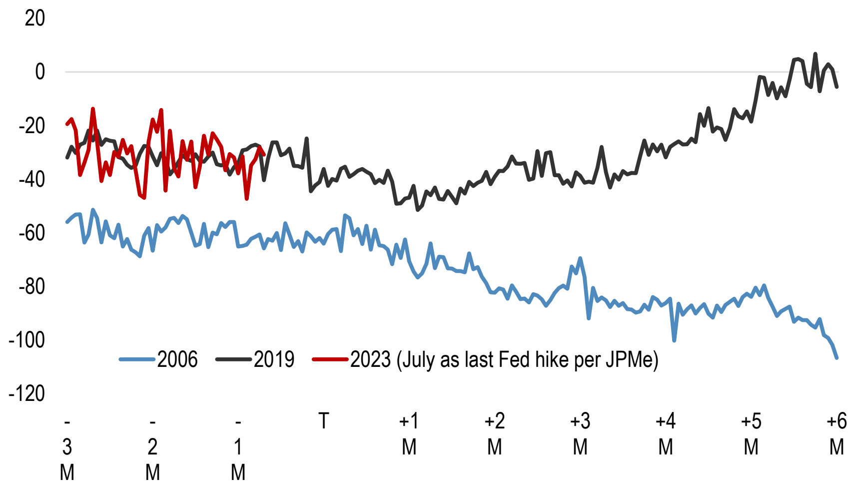
Source: Bloomberg Finance L.P., J.P. Morgan.

- **For HKD rates**, toward the last hike in the past two Fed hiking cycles, HKD-USD rate curves remained inverted (Figure 34). In fact, such inversion even deepened in the immediate aftermath of the Fed pause for both cycles, with some differentiation into the late stage of pauses. In 2019, when the Fed followed the pause with a relatively quicker cut (the first cut came seven months after the pause started), HKD-USD rates started to re-converge just three months after the Fed pause, alongside a sharp rally in U.S. yields. On the other side, when the pause was more extended, in 2006, the inversion in HKD-USD rates had a longer shelf life compared to 2019, with USD rates staying in ranges back then. This suggests that while the medium-term trend is for HKD-USD rates to re-converge as the Fed hiking cycle approaches an end, the timing of that convergence is highly dependent on how soon the first cut comes, with a more extended pause risking prolonged and/or deeper inversion of the HKD-USD curve following the Fed pause.

Tiffany Wang AC
(852) 2800-1726
tiffany.r.wang@jpmorgan.com

Figure 34: HKD-USD rate curves tend to remain inverted until the Fed cut starts

3y HKD-USD IRS spread, bps, T=the start of Fed pause



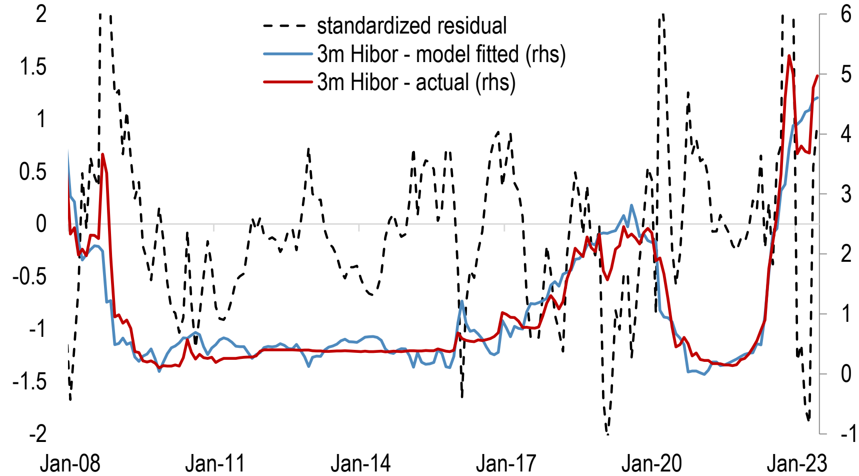
Source: Bloomberg Finance L.P., J.P. Morgan.

What's next? Market pricing now looks for 3m Hibor to drop ~25bp in 2H23 and SOFR to rise 25bp, implying expectations of further inversion of HKD-USD rates. This is in line with price actions observed around previous Fed pauses, as discussed in the previous section. Part of this should be helped by Hibor rates normalizing after a more-than-expected back-up in 2Q: Our model on 3m Hibor, based off Fed fund target rate, aggregate balance and HKD depreciation expectation, points to a fair value ~4.6, rendering current Hibor rates 40bp or ~1 s.d. too high (Figure 35). The normalization should also be aided by seasonal liquidity shocks fading, including diminishing dividend payout pressures after July (Figure 32). While we see the gentle uptrend in IPOs as likely here to stay, accounting for announced spin-off plans from big Chinese companies (link), overall equity offerings are expected to stay at subdued levels compared to previous years due to broadly weak equity momentum. Additionally, local risk premium is also more compressed, given comparatively less cyclical pessimism around China relative to last year, guarding against a 4Q22-type overrun in HKD rates. Overall, after this week's U.S. CPI data that could prompt a continued retracement lower in core rates, the path of least resistance looks still for HKD rates to drop and outperform USD rates in 2H23. We stay received 3y HKD IRS. We expect USD/HKD to remain above the midpoint of the trading band, and a re-test of 7.85 is still possible, favoring long USD/HKD on dips, but the carry trade would become increasingly more technical while the Fed starts to pause.

Tiffany Wang AC
(852) 2800-1726
tiffany.r.wang@jpmorgan.com

Figure 35: Hibor rates appear too elevated

3m Hibor regressed off Fed fund rate, aggregated balance, HKD depreciation expectation (3m risk reversal)



Source: Bloomberg Finance L.P., J.P. Morgan.

Disclosures

Analyst Certification: The Research Analyst(s) denoted by an “AC” on the cover of this report certifies (or, where multiple Research Analysts are primarily responsible for this report, the Research Analyst denoted by an “AC” on the cover or within the document individually certifies, with respect to each security or issuer that the Research Analyst covers in this research) that: (1) all of the views expressed in this report accurately reflect the Research Analyst’s personal views about any and all of the subject securities or issuers; and (2) no part of any of the Research Analyst's compensation was, is, or will be directly or indirectly related to the specific recommendations or views expressed by the Research Analyst(s) in this report. For all Korea-based Research Analysts listed on the front cover, if applicable, they also certify, as per KOFIA requirements, that the Research Analyst’s analysis was made in good faith and that the views reflect the Research Analyst’s own opinion, without undue influence or intervention.

All authors named within this report are Research Analysts who produce independent research unless otherwise specified. In Europe, Sector Specialists (Sales and Trading) may be shown on this report as contacts but are not authors of the report or part of the Research Department.

Important Disclosures

Company-Specific Disclosures: Important disclosures, including price charts and credit opinion history tables, are available for compendium reports and all J.P. Morgan–covered companies, and certain non-covered companies, by visiting https://www.jpmm.com/research/disclosures, calling 1-800-477-0406, or e-mailing research.disclosure.inquiries@jpmorgan.com with your request.

A history of J.P. Morgan investment recommendations disseminated during the preceding 12 months can be accessed on the Research & Commentary page of http://www.jpmorganmarkets.com where you can also search by analyst name, sector or financial instrument.

Explanation of Emerging Markets Sovereign Research Ratings System and Valuation & Methodology:
Ratings System: J.P. Morgan uses the following issuer portfolio weightings for Emerging Markets Sovereign Research: Overweight (over the next three months, the recommended risk position is expected to outperform the relevant index, sector, or benchmark credit returns); Marketweight (over the next three months, the recommended risk position is expected to perform in line with the relevant index, sector, or benchmark credit returns); and Underweight (over the next three months, the recommended risk position is expected to underperform the relevant index, sector, or benchmark credit returns). NR is Not Rated. In this case, J.P. Morgan has removed the rating for this security because of either legal, regulatory or policy reasons or because of lack of a sufficient fundamental basis. The previous rating no longer should be relied upon. An NR designation is not a recommendation or a rating. NC is Not Covered. An NC designation is not a rating or a recommendation. Recommendations will be at the issuer level, and an issuer recommendation applies to all of the index-eligible bonds at the same level for the issuer. When we change the issuer-level rating, we are changing the rating for all of the issues covered, unless otherwise specified. Ratings for quasi-sovereign issuers in the EMBIG may differ from the ratings provided in EM corporate coverage.

Valuation & Methodology: For J.P. Morgan's Emerging Markets Sovereign Research, we assign a rating to each sovereign issuer (Overweight, Marketweight or Underweight) based on our view of whether the combination of the issuer’s fundamentals, market technicals, and the relative value of its securities will cause it to outperform, perform in line with, or underperform the credit returns of the EMBIGD index over the next three months. Our view of an issuer’s fundamentals includes our opinion of whether the issuer is becoming more or less able to service its debt obligations when they become due and payable, as well as whether its willingness to service debt obligations is increasing or decreasing.

J.P. Morgan Emerging Markets Sovereign Research Ratings Distribution, as of July 8, 2023

	Overweight (buy)	**Marketweight** (hold)	**Underweight** (sell)
Global Sovereign Research Universe*	5%	83%	12%
IB clients**	67%	45%	75%

***Please note that the percentages may not add to 100% because of rounding.**
****Percentage of subject issuers within each of the "Overweight, "Marketweight" and "Underweight" categories for which J.P. Morgan has provided investment banking services within the previous 12 months.**
For purposes of FINRA ratings distribution rules only, our Overweight rating falls into a buy rating category; our Marketweight rating falls into a hold rating category; and our Underweight rating falls into a sell rating category. The Emerging Markets Sovereign Research Rating Distribution is at the issuer level. Issuers with an NR or an NC designation are not included in the table above. This information is current as of the end of the most recent calendar quarter.

Analysts' Compensation: The research analysts responsible for the preparation of this report receive compensation based upon various factors, including the quality and accuracy of research, client feedback, competitive factors, and overall firm revenues.

Registration of non-US Analysts: Unless otherwise noted, the non-US analysts listed on the front of this report are employees of non-US affiliates of J.P. Morgan Securities LLC, may not be registered as research analysts under FINRA rules, may not be associated persons of J.P. Morgan Securities LLC, and may not be subject to FINRA Rule 2241 or 2242 restrictions on communications with covered companies, public appearances, and trading securities held by a research analyst account.

Other Disclosures

J.P. Morgan is a marketing name for investment banking businesses of JPMorgan Chase & Co. and its subsidiaries and affiliates worldwide.

UK MIFID FICC research unbundling exemption: UK clients should refer to UK MIFID Research Unbundling exemption for details of JPMorgan's implementation of the FICC research exemption and guidance on relevant FICC research categorisation.

Any long form nomenclature for references to China; Hong Kong; Taiwan; and Macau within this research material are Mainland China; Hong Kong SAR (China); Taiwan (China); and Macau SAR (China).

J.P. Morgan Research may, from time to time, write on issuers or securities targeted by economic or financial sanctions imposed or administered by the governmental authorities of the U.S., EU, UK or other relevant jurisdictions (Sanctioned Securities). Nothing in this report is intended to be read or construed as encouraging, facilitating, promoting or otherwise approving investment or dealing in such Sanctioned Securities. Clients should be aware of their own legal and compliance obligations when making investment decisions.

Any digital or crypto assets discussed in this research report are subject to a rapidly changing regulatory landscape. For relevant regulatory advisories on crypto assets, including bitcoin and ether, please see https://www.jpmorgan.com/disclosures/cryptoasset-disclosure.

The author(s) of this research report may not be licensed to carry on regulated activities in your jurisdiction and, if not licensed, do not hold themselves out as being able to do so.

Exchange-Traded Funds (ETFs): J.P. Morgan Securities LLC ("JPMS") acts as authorized participant for substantially all U.S.-listed ETFs. To the extent that any ETFs are mentioned in this report, JPMS may earn commissions and transaction-based compensation in connection with the distribution of those ETF shares and may earn fees for performing other trade-related services, such as securities lending to short sellers of the ETF shares. JPMS may also perform services for the ETFs themselves, including acting as a broker or dealer to the ETFs. In addition, affiliates of JPMS may perform services for the ETFs, including trust, custodial, administration, lending, index calculation and/or maintenance and other services.

Options and Futures related research: If the information contained herein regards options- or futures-related research, such information is available only to persons who have received the proper options or futures risk disclosure documents. Please contact your J.P. Morgan Representative or visit https://www.theocc.com/components/docs/riskstoc.pdf for a copy of the Option Clearing Corporation's Characteristics and Risks of Standardized Options or http://www.finra.org/sites/default/files/Security_Futures_Risk_Disclosure_Statement_2018.pdf for a copy of the Security Futures Risk Disclosure Statement.

Changes to Interbank Offered Rates (IBORs) and other benchmark rates: Certain interest rate benchmarks are, or may in the future become, subject to ongoing international, national and other regulatory guidance, reform and proposals for reform. For more information, please consult: https://www.jpmorgan.com/global/disclosures/interbank_offered_rates

Private Bank Clients: Where you are receiving research as a client of the private banking businesses offered by JPMorgan Chase & Co. and its subsidiaries ("J.P. Morgan Private Bank"), research is provided to you by J.P. Morgan Private Bank and not by any other division of J.P. Morgan, including, but not limited to, the J.P. Morgan Corporate and Investment Bank and its Global Research division.

Legal entity responsible for the production and distribution of research: The legal entity identified below the name of the Reg AC Research Analyst who authored this material is the legal entity responsible for the production of this research. Where multiple Reg AC Research Analysts authored this material with different legal entities identified below their names, these legal entities are jointly responsible for the production of this research. Research Analysts from various J.P. Morgan affiliates may have contributed to the production of this material but may not be licensed to carry out regulated activities in your jurisdiction (and do not hold themselves out as being able to do so). Unless otherwise stated below, this material has been distributed by the legal entity responsible for production. If you have any queries, please contact the relevant Research Analyst in your jurisdiction or the entity in your jurisdiction that has distributed this research material.

Legal Entities Disclosures and Country-/Region-Specific Disclosures:
Argentina: JPMorgan Chase Bank N.A Sucursal Buenos Aires is regulated by Banco Central de la República Argentina ("BCRA"- Central Bank of Argentina) and Comisión Nacional de Valores ("CNV"- Argentinian Securities Commission" - ALYC y AN Integral N°51). **Australia:** J.P. Morgan Securities Australia Limited ("JPMSAL") (ABN 61 003 245 234/AFS Licence No: 238066) is regulated by the Australian Securities and Investments Commission and is a Market, Clearing and Settlement Participant of ASX Limited and CHI-X. This material is issued and distributed in Australia by or on behalf of JPMSAL only to "wholesale clients" (as defined in section 761G of the Corporations Act 2001). A list of all financial products covered can be found by visiting https://www.jpmm.com/research/disclosures. J.P. Morgan seeks to cover companies of relevance to the domestic and international investor base across all Global Industry Classification Standard (GICS) sectors, as well as across a range of market capitalisation sizes. If applicable, in the course of conducting public side due diligence on the subject company(ies), the Research Analyst team may at times perform such diligence through corporate engagements such as site visits, discussions with company representatives, management presentations, etc. Research issued by JPMSAL has been prepared in accordance with J.P. Morgan Australia's Research Independence Policy which can be found at the following link: J.P. Morgan Australia - Research Independence Policy. **Brazil**: Banco J.P. Morgan S.A. is regulated by the Comissao de Valores Mobiliarios (CVM) and by the Central Bank of Brazil. Ombudsman J.P. Morgan: 0800-7700847 / ouvidoria.jp.morgan@jpmorgan.com. **Canada**: J.P. Morgan Securities Canada Inc. is a registered investment dealer, regulated by the Investment Industry Regulatory Organization of Canada and the Ontario Securities Commission and is the participating member on

Canadian exchanges. This material is distributed in Canada by or on behalf of J.P.Morgan Securities Canada Inc. **Chile:** Inversiones J.P. Morgan Limitada is an unregulated entity incorporated in Chile. **China:** J.P. Morgan Securities (China) Company Limited has been approved by CSRC to conduct the securities investment consultancy business. **Dubai International Financial Centre (DIFC)**: JPMorgan Chase Bank, N.A., Dubai Branch is regulated by the Dubai Financial Services Authority (DFSA) and its registered address is Dubai International Financial Centre - The Gate, West Wing, Level 3 and 9 PO Box 506551, Dubai, UAE. This material has been distributed by JP Morgan Chase Bank, N.A., Dubai Branch to persons regarded as professional clients or market counterparties as defined under the DFSA rules. **European Economic Area (EEA):** Unless specified to the contrary, research is distributed in the EEA by J.P. Morgan SE ("JPM SE"), which is subject to prudential supervision by the European Central Bank ("ECB") in cooperation with BaFin and Deutsche Bundesbank in Germany. JPM SE is a company headquartered in Frankfurt with registered address at TaunusTurm, Taunustor 1, Frankfurt am Main, 60310, Germany. The material has been distributed in the EEA to persons regarded as professional investors (or equivalent) pursuant to Art. 4 para. 1 no. 10 and Annex II of MiFID II and its respective implementation in their home jurisdictions ("EEA professional investors"). This material must not be acted on or relied on by persons who are not EEA professional investors. Any investment or investment activity to which this material relates is only available to EEA relevant persons and will be engaged in only with EEA relevant persons. **Hong Kong**: J.P. Morgan Securities (Asia Pacific) Limited (CE number AAJ321) is regulated by the Hong Kong Monetary Authority and the Securities and Futures Commission in Hong Kong, and J.P. Morgan Broking (Hong Kong) Limited (CE number AAB027) is regulated by the Securities and Futures Commission in Hong Kong. JP Morgan Chase Bank, N.A., Hong Kong Branch (CE Number AAL996) is regulated by the Hong Kong Monetary Authority and the Securities and Futures Commission, is organized under the laws of the United States with limited liability. Where the distribution of this material is a regulated activity in Hong Kong, the material is distributed in Hong Kong by or through J.P. Morgan Securities (Asia Pacific) Limited and/or J.P. Morgan Broking (Hong Kong) Limited. **India**: J.P. Morgan India Private Limited (Corporate Identity Number - U67120MH1992FTC068724), having its registered office at J.P. Morgan Tower, Off. C.S.T. Road, Kalina, Santacruz - East, Mumbai – 400098, is registered with the Securities and Exchange Board of India (SEBI) as a 'Research Analyst' having registration number INH000001873. J.P. Morgan India Private Limited is also registered with SEBI as a member of the National Stock Exchange of India Limited and the Bombay Stock Exchange Limited (SEBI Registration Number – INZ000239730) and as a Merchant Banker (SEBI Registration Number - MB/INM000002970). Telephone: 91-22-6157 3000, Facsimile: 91-22-6157 3990 and Website: http://www.jpmipl.com. JPMorgan Chase Bank, N.A. - Mumbai Branch is licensed by the Reserve Bank of India (RBI) (Licence No. 53/ Licence No. BY.4/94; SEBI - IN/CUS/014/ CDSL : IN-DP-CDSL-444-2008/ IN-DP-NSDL-285-2008/ INBI00000984/ INE231311239) as a Scheduled Commercial Bank in India, which is its primary license allowing it to carry on Banking business in India and other activities, which a Bank branch in India are permitted to undertake. For non-local research material, this material is not distributed in India by J.P. Morgan India Private Limited. Compliance Officer: Spurthi Gadamsetty; spurthi.gadamsetty@jpmchase.com; +912261573225. Grievance Officer: Ramprasadh K, jpmipl.research.feedback@jpmorgan.com; +912261573000.

Investment in securities market are subject to market risks. Read all the related documents carefully before investing. Registration granted by SEBI and certification from NISM in no way guarantee performance of the intermediary or provide any assurance of returns to investors.

Indonesia: PT J.P. Morgan Sekuritas Indonesia is a member of the Indonesia Stock Exchange and is registered and supervised by the Otoritas Jasa Keuangan (OJK). **Korea**: J.P. Morgan Securities (Far East) Limited, Seoul Branch, is a member of the Korea Exchange (KRX). JPMorgan Chase Bank, N.A., Seoul Branch, is licensed as a branch office of foreign bank (JPMorgan Chase Bank, N.A.) in Korea. Both entities are regulated by the Financial Services Commission (FSC) and the Financial Supervisory Service (FSS). For non-macro research material, the material is distributed in Korea by or through J.P. Morgan Securities (Far East) Limited, Seoul Branch. **Japan**: JPMorgan Securities Japan Co., Ltd. and JPMorgan Chase Bank, N.A., Tokyo Branch are regulated by the Financial Services Agency in Japan. **Malaysia**: This material is issued and distributed in Malaysia by JPMorgan Securities (Malaysia) Sdn Bhd (18146-X), which is a Participating Organization of Bursa Malaysia Berhad and holds a Capital Markets Services License issued by the Securities Commission in Malaysia. **Mexico**: J.P. Morgan Casa de Bolsa, S.A. de C.V.and J.P. Morgan Grupo Financiero are members of the Mexican Stock Exchange and are authorized to act as a broker dealer by the National Banking and Securities Exchange Commission. **New Zealand**: This material is issued and distributed by JPMSAL in New Zealand only to "wholesale clients" (as defined in the Financial Markets Conduct Act 2013). JPMSAL is registered as a Financial Service Provider under the Financial Service providers (Registration and Dispute Resolution) Act of 2008. **Pakistan**: J. P. Morgan Pakistan Broking (Pvt.) Ltd is a member of the Karachi Stock Exchange and regulated by the Securities and Exchange Commission of Pakistan. **Philippines**: J.P. Morgan Securities Philippines Inc. is a Trading Participant of the Philippine Stock Exchange and a member of the Securities Clearing Corporation of the Philippines and the Securities Investor Protection Fund. It is regulated by the Securities and Exchange Commission. **Russia**: CB J.P. Morgan Bank International LLC is regulated by the Central Bank of Russia. **Singapore**: This material is issued and distributed in Singapore by or through J.P. Morgan Securities Singapore Private Limited (JPMSS) [MCI (P) 060/08/2022 and Co. Reg. No.: 199405335R], which is a member of the Singapore Exchange Securities Trading Limited, and/or JPMorgan Chase Bank, N.A., Singapore branch (JPMCB Singapore), both of which are regulated by the Monetary Authority of Singapore. This material is issued and distributed in Singapore only to accredited investors, expert investors and institutional investors, as defined in Section 4A of the Securities and Futures Act, Cap. 289 (SFA). This material is not intended to be issued or distributed to any retail investors or any other investors that do not fall into the classes of "accredited investors," "expert investors" or "institutional investors," as defined under Section 4A of the SFA. Recipients of this material in Singapore are to contact JPMSS or JPMCB Singapore in respect of any matters arising from, or in connection with, the material. As at the date of this material, JPMSS is a designated market maker for certain structured warrants listed on the Singapore Exchange where the underlying securities may be the securities discussed in this material. Arising from its role as a designated market maker for such structured warrants, JPMSS may conduct hedging activities in respect of such underlying securities and hold or have an interest in such underlying securities as a result. The updated list of structured warrants for which JPMSS acts as designated market maker may be found on the website of the Singapore Exchange Limited: http://www.sgx.com. **South Africa**: J.P. Morgan Equities South Africa Proprietary Limited and JPMorgan Chase Bank, N.A., Johannesburg Branch are members of the Johannesburg Securities Exchange and are regulated by the Financial Services Board. **Taiwan**: J.P. Morgan

Tiffany Wang AC (852) 2800-1726
tiffany.r.wang@jpmorgan.com
J.P. Morgan Securities (Asia Pacific) Limited
Arindam Sandilya (65) 6882-7759
arindam.x.sandilya@jpmorgan.com

Securities (Taiwan) Limited is a participant of the Taiwan Stock Exchange (company-type) and regulated by the Taiwan Securities and Futures Bureau. Material relating to equity securities is issued and distributed in Taiwan by J.P. Morgan Securities (Taiwan) Limited, subject to the license scope and the applicable laws and the regulations in Taiwan. According to Paragraph 2, Article 7-1 of Operational Regulations Governing Securities Firms Recommending Trades in Securities to Customers (as amended or supplemented) and/or other applicable laws or regulations, please note that the recipient of this material is not permitted to engage in any activities in connection with the material that may give rise to conflicts of interests, unless otherwise disclosed in the "Important Disclosures" in this material. **Thailand**: This material is issued and distributed in Thailand by JPMorgan Securities (Thailand) Ltd., which is a member of the Stock Exchange of Thailand and is regulated by the Ministry of Finance and the Securities and Exchange Commission, and its registered address is 3rd Floor, 20 North Sathorn Road, Silom, Bangrak, Bangkok 10500. **UK:** Unless specified to the contrary, research is distributed in the UK by J.P. Morgan Securities plc ("JPMS plc") which is a member of the London Stock Exchange and is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. JPMS plc is registered in England & Wales No. 2711006, Registered Office 25 Bank Street, London, E14 5JP. This material is directed in the UK only to: (a) persons having professional experience in matters relating to investments falling within article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) (Order) 2005 ("the FPO"); (b) persons outlined in article 49 of the FPO (high net worth companies, unincorporated associations or partnerships, the trustees of high value trusts, etc.); or (c) any persons to whom this communication may otherwise lawfully be made; all such persons being referred to as "UK relevant persons". This material must not be acted on or relied on by persons who are not UK relevant persons. Any investment or investment activity to which this material relates is only available to UK relevant persons and will be engaged in only with UK relevant persons. Research issued by JPMS plc has been prepared in accordance with JPMS plc's policy for prevention and avoidance of conflicts of interest related to the production of Research which can be found at the following link: J.P. Morgan EMEA - Research Independence Policy. **U.S.**: J.P. Morgan Securities LLC ("JPMS") is a member of the NYSE, FINRA, SIPC, and the NFA. JPMorgan Chase Bank, N.A. is a member of the FDIC. Material published by non-U.S. affiliates is distributed in the U.S. by JPMS who accepts responsibility for its content.

General: Additional information is available upon request. The information in this material has been obtained from sources believed to be reliable. While all reasonable care has been taken to ensure that the facts stated in this material are accurate and that the forecasts, opinions and expectations contained herein are fair and reasonable, JPMorgan Chase & Co. or its affiliates and/or subsidiaries (collectively J.P. Morgan) make no representations or warranties whatsoever to the completeness or accuracy of the material provided, except with respect to any disclosures relative to J.P. Morgan and the Research Analyst's involvement with the issuer that is the subject of the material. Accordingly, no reliance should be placed on the accuracy, fairness or completeness of the information contained in this material. There may be certain discrepancies with data and/or limited content in this material as a result of calculations, adjustments, translations to different languages, and/or local regulatory restrictions, as applicable. These discrepancies should not impact the overall investment analysis, views and/or recommendations of the subject company(ies) that may be discussed in the material. J.P. Morgan accepts no liability whatsoever for any loss arising from any use of this material or its contents, and neither J.P. Morgan nor any of its respective directors, officers or employees, shall be in any way responsible for the contents hereof, apart from the liabilities and responsibilities that may be imposed on them by the relevant regulatory authority in the jurisdiction in question, or the regulatory regime thereunder. Opinions, forecasts or projections contained in this material represent J.P. Morgan's current opinions or judgment as of the date of the material only and are therefore subject to change without notice. Periodic updates may be provided on companies/industries based on company-specific developments or announcements, market conditions or any other publicly available information. There can be no assurance that future results or events will be consistent with any such opinions, forecasts or projections, which represent only one possible outcome. Furthermore, such opinions, forecasts or projections are subject to certain risks, uncertainties and assumptions that have not been verified, and future actual results or events could differ materially. The value of, or income from, any investments referred to in this material may fluctuate and/or be affected by changes in exchange rates. All pricing is indicative as of the close of market for the securities discussed, unless otherwise stated. Past performance is not indicative of future results. Accordingly, investors may receive back less than originally invested. This material is not intended as an offer or solicitation for the purchase or sale of any financial instrument. The opinions and recommendations herein do not take into account individual client circumstances, objectives, or needs and are not intended as recommendations of particular securities, financial instruments or strategies to particular clients. This material may include views on structured securities, options, futures and other derivatives. These are complex instruments, may involve a high degree of risk and may be appropriate investments only for sophisticated investors who are capable of understanding and assuming the risks involved. The recipients of this material must make their own independent decisions regarding any securities or financial instruments mentioned herein and should seek advice from such independent financial, legal, tax or other adviser as they deem necessary. J.P. Morgan may trade as a principal on the basis of the Research Analysts' views and research, and it may also engage in transactions for its own account or for its clients' accounts in a manner inconsistent with the views taken in this material, and J.P. Morgan is under no obligation to ensure that such other communication is brought to the attention of any recipient of this material. Others within J.P. Morgan, including Strategists, Sales staff and other Research Analysts, may take views that are inconsistent with those taken in this material. Employees of J.P. Morgan not involved in the preparation of this material may have investments in the securities (or derivatives of such securities) mentioned in this material and may trade them in ways different from those discussed in this material. This material is not an advertisement for or marketing of any issuer, its products or services, or its securities in any jurisdiction.

Confidentiality and Security Notice: This transmission may contain information that is privileged, confidential, legally privileged, and/or exempt from disclosure under applicable law. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution, or use of the information contained herein (including any reliance thereon) is STRICTLY PROHIBITED. Although this transmission and any attachments are believed to be free of any virus or other defect that might affect any computer system into which it is received and opened, it is the responsibility of the recipient to ensure that it is virus free and no responsibility is accepted by JPMorgan Chase & Co., its subsidiaries and affiliates, as applicable, for any loss or damage arising in any way from its use. If you received this transmission in error, please immediately contact the sender and destroy the material in its entirety, whether in electronic or hard copy format. This message is

Tiffany Wang [AC] (852) 2800-1726
tiffany.r.wang@jpmorgan.com
J.P. Morgan Securities (Asia Pacific) Limited
Arindam Sandilya (65) 6882-7759
arindam.x.sandilya@jpmorgan.com

subject to electronic monitoring: https://www.jpmorgan.com/disclosures/email

MSCI: Certain information herein (“Information”) is reproduced by permission of MSCI Inc., its affiliates and information providers (“MSCI”) ©2023. No reproduction or dissemination of the Information is permitted without an appropriate license. MSCI MAKES NO EXPRESS OR IMPLIED WARRANTIES (INCLUDING MERCHANTABILITY OR FITNESS) AS TO THE INFORMATION AND DISCLAIMS ALL LIABILITY TO THE EXTENT PERMITTED BY LAW. No Information constitutes investment advice, except for any applicable Information from MSCI ESG Research. Subject also to msci.com/disclaimer

"Other Disclosures" last revised July 08, 2023.

Completed 17 Jul 2023 11:07 AM HKT

Disseminated 17 Jul 2023 11:08 AM HKT