This material is neither intended to be distributed to Mainland China investors nor to provide securities investment consultancy services within the territory of Mainland China. This material or any portion hereof may not be reprinted, sold or redistributed without the written consent of J.P. Morgan.

Flows & Liquidity

Quantity-based vs. price-based financial conditions metrics

- **While there has been some relative tightening of financial conditions measured via price-based metrics as a result of the recent rise in bond yields, quantity-based metrics such as credit and money creation suggest financial conditions remain supportive.**
- **Market (trading) liquidity has deteriorated mostly for cash USTs in recent weeks and appears to remain rather low for Nikkei, gold and bitcoin futures.**
- **Investors appear to be still long equities and bonds but only modestly so.**

Global Markets Strategy

Nikolaos Panigirtzoglou [AC]
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc

Mika Inkinen
(44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc

Mayur Yeole
(91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited

Krutik P Mehta
(91-22) 6157-5016
krutik.mehta@jpmchase.com
J.P. Morgan India Private Limited

Cross Asset Fund Flow Monitor

Current level shows the latest percentile of weekly flows; Min is denoted by 0 and Max by 1. As of 26th Aug 26.

MF & ETF Flows	Min	Max	4 wk avg ($bn)	2025 avg ($bn)
All Equities			13.4	8.1
All Bonds			13.6	11.3
US Equities			2.4	3.5
US Bonds			7.6	4.3
Non-US Equities			11.0	4.6
Non-US Bonds			6.0	7.0
US HG Bonds			9.1	3.4
US HY Bonds			0.1	0.4
US Lev. Loans *			0.5	0.0
US MMFs			0.8	4.0
EM Equities			3.2	0.9
EM Bonds			0.77	0.50
Japan Equities			0.7	-0.1
China Equities			-0.09	-0.15
Europe				
Europe Equities			-0.6	0.9
Europe Bonds			3.4	4.3
Europe HG Bonds			0.6	0.9
Europe HY Bonds			0.10	0.17
Europe MMFs			5.1	3.8
Other Equities			7.85	3.00

Source: Lipper, ICI, Bloomberg Finance L.P. and J.P. Morgan Flows & Liquidity.
* US LL historical flows are monthly averages converted to weekly for comparison. China onshore A-share ETFs have been excluded.

Cross Asset Positioning Monitor

Current level shows the latest percentile, Min is denoted by 0 and Max by 1.

As of 01-Sep-26	MIN	MAX	Current percentile
Equities			0.70
Govt Bonds			0.58
Credit			0.24
Dollar			0.66
Commodities ex Gold			0.77
Gold			0.58
Bitcoin			0.75
EM Equities			0.85
EM Bonds/FX			0.20
Japan Equities			0.62
Europe Equities			0.71
US Equity Sectors:			
Energy			0.76
Materials			0.57
Industrials			0.35
Discretionary			0.58
Staples			0.25
Health Care			0.61
Financials			0.41
Technology			0.67
Communication Services			0.26
Utilities			0.33

Source: J.P. Morgan Flows & Liquidity.
Cross Asset Positioning Monitor aggregates across the various position indicators of Appendix ranging from positioning proxies across various futures contracts, momentum signals as proxies of how trend-following funds/ CTAs are positioned, mutual fund betas as proxies of how mutual fund managers are positioned, risk parity fund positioning and leverage proxies, hedge fund betas as proxies of how hedge fund managers are positioned, client surveys, asset allocation estimates of private non-bank investors at global level, short interest indicators, etc.

See page 28 for analyst certification and important disclosures.

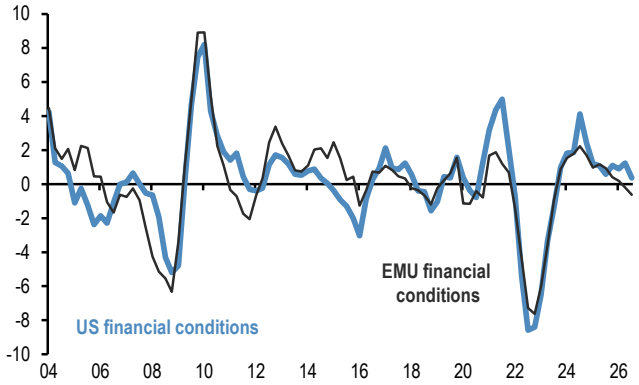
J.P. Morgan Securities plc
Nikolaos Panigirtzoglou [AC]
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

J.P.Morgan

- The past week or so has seen a renewed impetus for a sell-off in bonds, with Global Agg yields having risen by nearly 15bp to just over 4.1% and taking the YTD increase to around 60bp. This rise has in turn prompted questions in our conversations about their impact on financial conditions.
- To look at this, we update our financial conditions framework (see e.g. F&L, May 2024) built on a paper by Kasman and Mackie, Aug 2008, on quantifying the impact of financial market developments and monetary policy actions on economic activity. They drew on a methodology described in the IMF paper, "A US financial conditions index: putting credit where credit is due" by A. Swanston, who estimated the impact of changes in six financial variables on the level of US GDP after one to two years. The six financial variables are: 12-month changes in the 3-month short rate, the yield on investment grade corporate bonds, and the spread of high yield corporates over that of high grade, as well as 12-month real equity returns and the 12-month change in the real FX rate and bank lending standards for businesses as reported in loan officer surveys.
- This financial conditions indicator is depicted in Figure 1 for the US and euro area, and Figure 2 shows the components of the indicators for 4Q25 as well as 3Q26 based on quarter-to-date changes in financial variables. They suggest that after a period of relative stability US financial conditions have tightened somewhat in 3Q26 to-date, though the level overall still suggests that financial conditions are providing a modest support. The most significant change has been the rise in HG yields with some tightening also from 12-month change in short rates and the real broad exchange rate, partially offset by real equity returns as well as the 12-month change in the Fed's loan officer survey showing a decline in the proportion of banks reporting a tightening lending standards. For the Euro area, there has also been a tightening impulse from short rates and HG yields in particular, but more modest offsets. Effectively, these predominantly price-based metrics suggest some relative tightening, largely due to rising rates.

Figure 1: 12-month change in financial conditions

Positive (negative) numbers represent easing (tightening) in financial conditions.



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Figure 2: US financial conditions indicators, 12-month changes

Positive (negative) numbers represent easing (tightening) in financial conditions.

	US				Euro area			
	4Q25		3Q26		4Q25		3Q26	
	Change	Impact	Change	Impact	Change	Impact	Change	Impact
3m rate (bp)	-66	0.3	-15	0.1	-69	0.3	58	-0.3
HG yield (bp)	-30	0.3	72	-0.6	29	-0.3	61	-0.6
HY spread (bp)	-35	0.1	-28	0.1	-55	0.1	20	-0.1
Real eq return (%)	12	0.5	17	0.6	15	0.6	15	0.6
Real fx rate (%)	-3.0	0.2	2.7	-0.2	3.6	-0.2	-0.6	0.0
Loan officer survey	6.5	-0.2	-9.5	0.4	4.1	-0.1	8.7	-0.3
Total		1.1		0.4		0.4		-0.6

Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

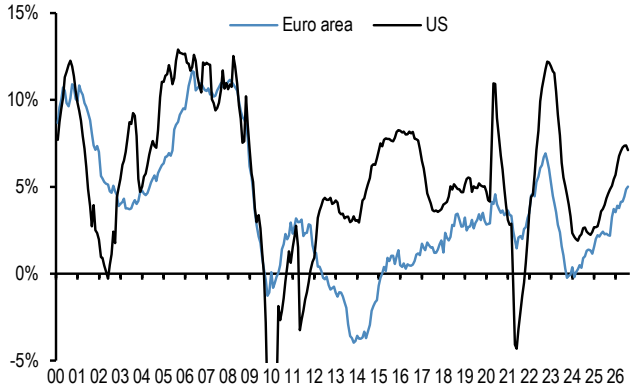
- What about the quantity side? One quantitative manifestation of financial conditions is credit creation. Turning first to bank lending. Figure 3 shows the y/y growth in bank lending, which loan growth up to July (latest available data) has remained robust, with loan growth for the US stabilising at just over 7% while Euro area loan growth has been catching up and currently stands at around 5% y/y. Another source of credit creation is through the net issuance of corporate bonds. Chart A34 in the Appendix shows the net issuance of US HG debt by month in recent years, with August rising above $90bn which marks the second strongest monthly total for August after 2020. The past few weeks have also seen a pickup in supply in European HG credit (European Credit Weekly: Supply & Demand, Aug 28th). In other words, credit creation remains supportive.

J.P. Morgan Securities plc
Nikolaos Panigirtzoglou [AC]
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

J.P.Morgan

Figure 3: Y/y loan growth for US and Euro area banks

In %. Commercial bank loans and leases from the Fed's H.8 release for the US, ECB data on loans to non-financial corporations ex. general government for the Euro area.

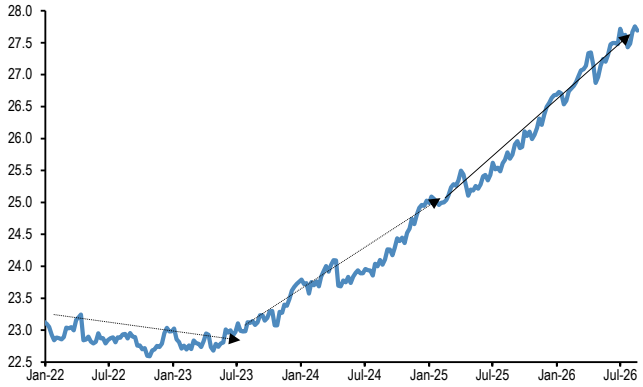


Source: Fed, ECB, J.P. Morgan Flows & Liquidity.

- Another way to look at the quantity side of financial conditions is to look at broad liquidity, e.g. M2 money supply. In our opinion, broad liquidity is a more comprehensive manifestation of financial conditions as beyond credit creation it captures additional sources of money creation such as bond buying by banks. As we have noted earlier in the year, US liquidity or M2 money supply, which we proxy by the sum of US commercial bank deposits and US MMF AUM to get a more timely metric, has been growing at a rapid pace this year (Figure 4). This pace of US money creation ran at a pace of $1.6tr in 2025, after already strong growth in 2024 of $1.2tr and $1tr from May 2023 to end-2023. The YTD pace tracks around $1tr up to Aug 19th, and which after annualizing by looking at the same period for 2025 vs. the full year to account for seasonality suggests it could approach $2tr for 2026. Figure 5 shows an equivalent proxy for the euro area, adding MMF AUM to the ECB's M2 metric. This had shown growth in Euro area money supply of €0.6tr in 2024, softening modestly in 2025 to €0.5tr. Based on data up to July and adjusting for seasonality suggests it could approach €1tr in 2026 a sharp acceleration vs. 2025.

Figure 4: Stock of US M2 money supply proxied by the sum of the stock of US commercial bank deposits and the AUM of US MMFs

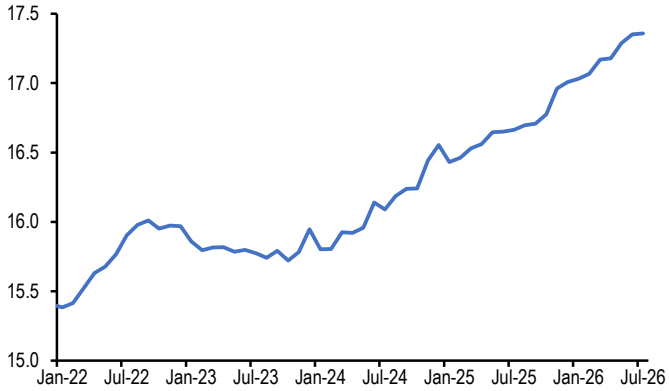
In $tr, nsa.



Source: Crane Data, Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Figure 5: Stock of Euro area money supply proxied by the sum of M2 and MMF AUM

In €tr.



Source: ECB, J.P. Morgan Flows & Liquidity.

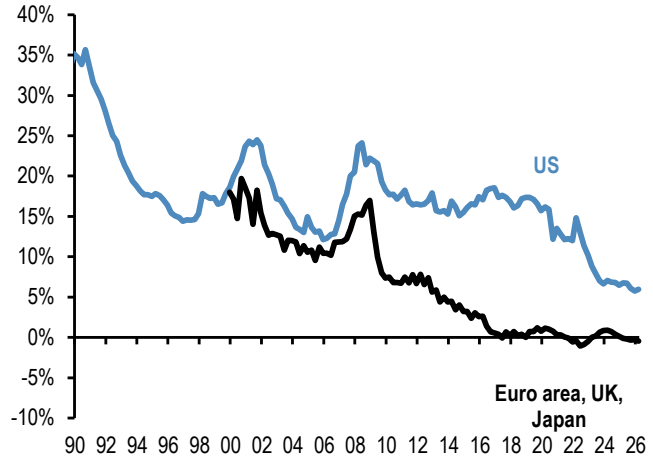
- In other words, while price-based metrics of financial conditions suggest some relative tightening in 3Q26 for the US and since the start of the year for the Euro area, quantity-based metrics whether looking at credit creation or at money creation suggest that conditions remain rather supportive for growth. Looking at the previous experience in 2022, price-based metrics suggested a sharp tightening in financial conditions to levels last seen during the financial crisis implying a high risk of contraction. By contrast, quantity-based metrics based on money supply suggested a more modest softening, which looks more consistent with the softening in GDP growth rates that took place at the time, avoiding a more marked contraction. Perhaps beyond the benign credit and money creation, an additional reason that the tightening of price-based financial conditions metrics during 2022 failed to translate into a more marked economic contraction is the fact that the net inter-

J.P. Morgan Securities plc
Nikolaos Panigirtzoglou [AC]
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

est burden on the corporate sector did not rise despite the increase in interest rates. In fact, this net interest burden for the non-financial corporate sector declined during and after 2022 as elevated corporate cash balances on the asset side got repriced faster than their longer duration liabilities (Figure 6).

Figure 6: Net Interest Paid as % of non-financial corporate cash flows from operations

Till Q1 26.



Source: Federal Reserve, ECB, BoJ, BoE, J.P. Morgan Flows & Liquidity.

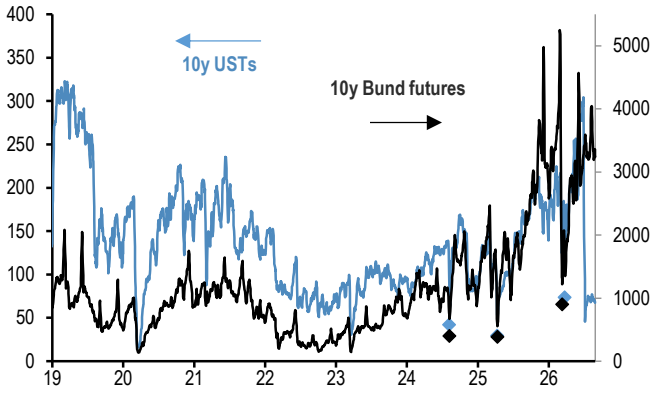
- In all, the above suggests that while there has been some relative tightening of financial conditions measured via price-based metrics as a result of the rise in bond yields, quantity-based metrics such as credit and money creation suggest financial conditions remain supportive. Based on the experience in 2022, when a sharp tightening in financial conditions in price-based metrics as a result of rises in interested rates was consistent with a more marked contraction, the softening in GDP growth rates was more consistent a modest softening in quantity-based metrics such as money creation, perhaps due to fact that the net interest burden of the non-financial corporate sector remained benign.

Market (trading) liquidity has deteriorated mostly for cash USTs in recent weeks and appears to remain rather low for Nikkei, gold and bitcoin futures

- The recent reignition of the Iran conflict coupled with rising bond yields, has caused significant market swings in asset prices. We take stock of how market (trading) liquidity conditions have evolved over the past weeks.
- Turning first to bonds, Figure 7 shows the weekly average market depth (i.e. the ability to execute a large trade proxied by the size of the tightest bids and asks) of 10y cash USTs and 10y Bund futures, with the diamonds showing the troughs in daily observations in early Aug24, after "Liberation Day" in Apr25, after the eruption of the Iran conflict in March 2026 and the most recent weeks to cob yesterday. It suggests that there had been sharp deterioration in USTs market depth in recent weeks, close to the previous lows seen in March 2026.

Figure 7: Market depth on 10y cash USTs and 10y Bund futures

5-day moving average of the daily average size of tightest three bids and asks each day, in $mn (lhs) for USTs and no.of contracts (rhs) for Bund futures.



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

- An alternative metric of liquidity is to look at market breadth. As mentioned previously in our publication, our metric for market breadth is based on the Hui-Heubel ratio from the academic literature, which effectively captures the price impact of volumes on prices or market breadth. The equation below shows the construction behind this indicator based on the ratio of intraday prices changes divided by turnover:
  - Hui-Heubel Liquidity ratio = (Pmax – Pmin) / Pmin / (V/OI)
- where Pmax is the highest daily price over a 5-day rolling period, Pmin is the lowest daily price over the same peri-

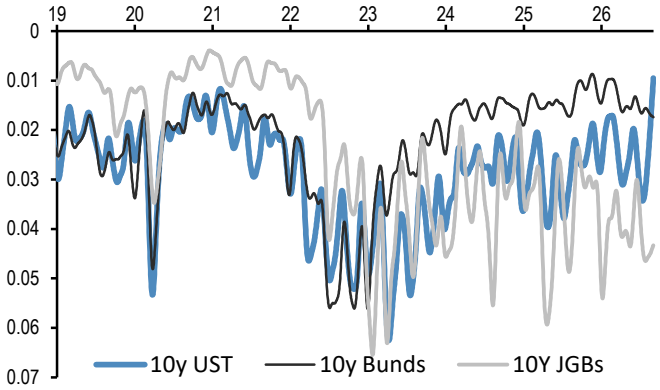
J.P. Morgan Securities plc
Nikolaos Panigirtzoglou [AC]
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

od, V is the average daily volume for a particular futures contract over a 5-day period, and OI is the average open interest over the same period. So V/OI effectively captures turnover. The lower this liquidity ratio is, the higher the number of trades behind each percentage price change, and thus the higher the market breadth of liquidity.

- Figure 8 shows the Hui-Heubel ratio for futures contracts for 10y USTs, Bunds and JGBs. Taken at face value, this metric suggests that there has been some improvement in market breadth in futures contracts for 10y USTs, but this is likely influenced by the spike in aggregate open interest in recent weeks due to the futures roll.

Figure 8: Hui and Heubel liquidity ratio for futures on 10y USTs, Bunds and JGBs

Y axis in reverse order as a higher ratio implies lower market liquidity. The lines are smoothed using a Hodrick-Prescott filter with a Lambda parameter of 10000. See text for details on the construction of this ratio.

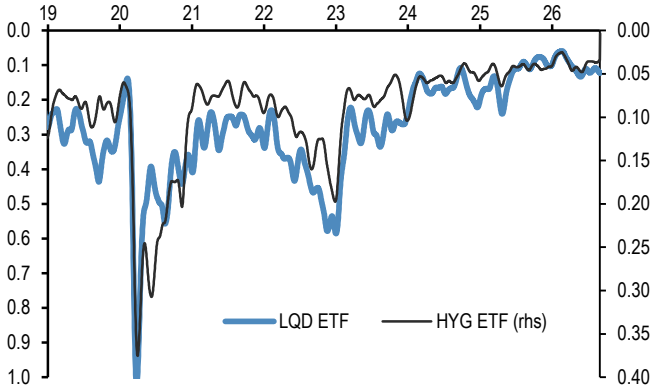


Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

- In contrast to government bonds, corporate bonds have seen little change in market liquidity as shown by Figure 9 which depicts the Hui-Heubel ratios for two of the most liquid corporate bond ETFs, LQD and HYG, which are important vehicles for price discovery in corporate bond markets. It suggests that there has, if anything, been even significantly less of a deterioration in market liquidity than in the aftermath of the Iran conflict last March or in April 2025 during the "Liberation Day" announcement, which itself was relatively modest in the context of previous episodes or relative to equities or government bonds.

Figure 9: Hui and Heubel liquidity ratio for LQD and HYG ETFs

Y axis in reverse order as a higher ratio implies lower market liquidity. The lines are smoothed using a Hodrick-Prescott filter with a Lambda parameter of 10000. See text for details on the construction of this ratio.

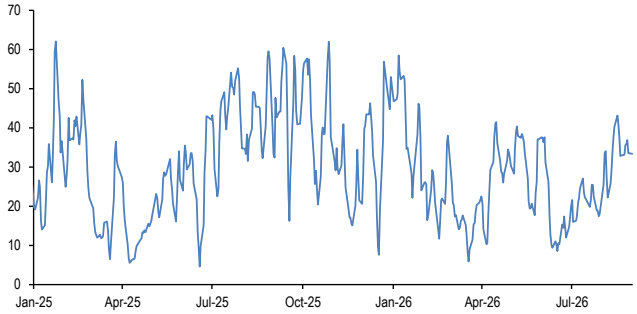


Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

- Turning to equities, Figure 10 depicts our market depth metric based on the size of the tightest bids and asks on the S&P 500 e-mini futures contracts. In contrast to USTs, it shows little deterioration in market depth in recent weeks. This is also true for our market depth proxies for SX5E e-mini futures (VG1) shown in Figure 11. That said, the market depth for Nikkei 225 e-mini futures (NK1) shown in Figure 12 has been hovering around historically low levels since last April.

Figure 10: Market depth of S&P500 E-mini futures (ES1)

Based on the average number of contracts on the tightest Bid/Ask in ES1 futures. 3-day moving averages using daily data of bid/ask under 1-minute sampling.



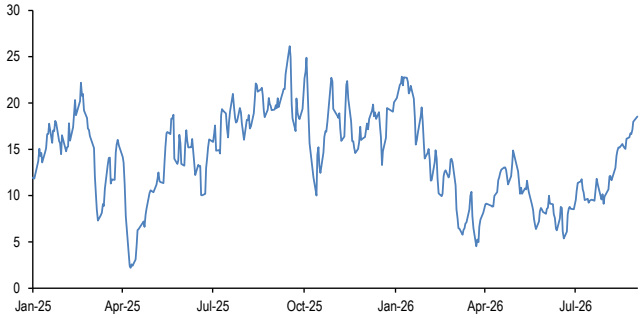
Source: J.P. Morgan Flows & Liquidity.

J.P. Morgan Securities plc
Nikolaos Panigirtzoglou [AC]
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

J.P.Morgan

Figure 11: Market depth on SX5E E-mini futures (VG1)

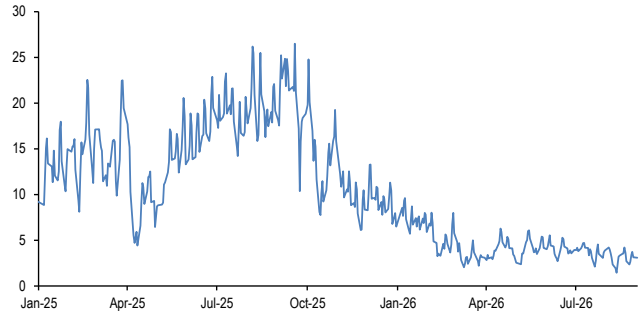
Based on the average number of contracts on the tightest Bid/Ask in VG1 futures. 3-day moving averages using daily data of bid/ask under 1-minute sampling.



Source: J.P. Morgan Flows & Liquidity.

Figure 12: Market depth on Nikkei 225 E-mini futures (NK1)

Based on the average number of contracts on the tightest Bid/Ask in NK1 futures. 3-day moving averages using daily data of bid/ask under 1-minute sampling.

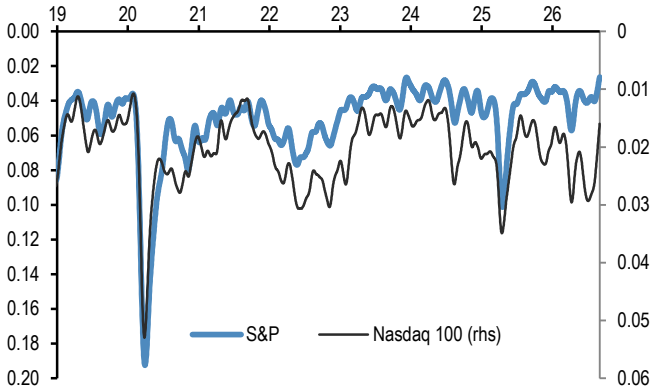


Source: J.P. Morgan Flows & Liquidity.

- An alternative metric of equity market liquidity is to look at market breadth. Figure 13 shows our market breadth metric for the S&P 500 e-mini as well as the Nasdaq e-mini futures contract, while Figure 14 shows the equivalent metric for Eurostoxx 50 and Nikkei futures. Figure 13 and Figure 14 suggest that, similar to market depth, market breadth appears to be significantly lower for Nikkei futures.

Figure 13: Hui and Heubel liquidity ratio for futures on S&P 500 and Nasdaq

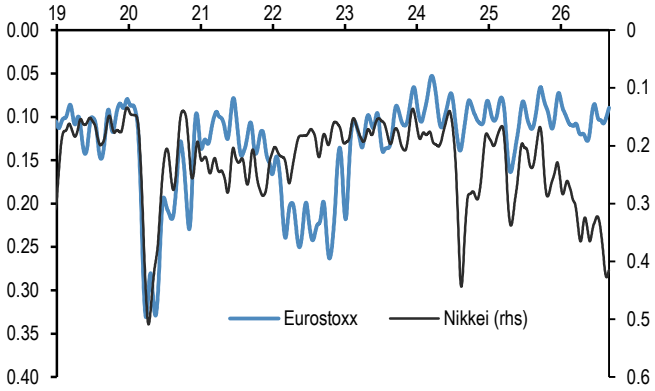
Y axis in reverse order as a higher ratio implies lower market liquidity. The lines are smoothed using a Hodrick-Prescott filter with a Lambda parameter of 10000. See text for details on the construction of this ratio.



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Figure 14: Hui and Heubel liquidity ratio for futures on Eurostoxx 50 and Nikkei 225

Y axis in reverse order as a higher ratio implies lower market liquidity. The lines are smoothed using a Hodrick-Prescott filter with a Lambda parameter of 10000. See text for details on the construction of this ratio.



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

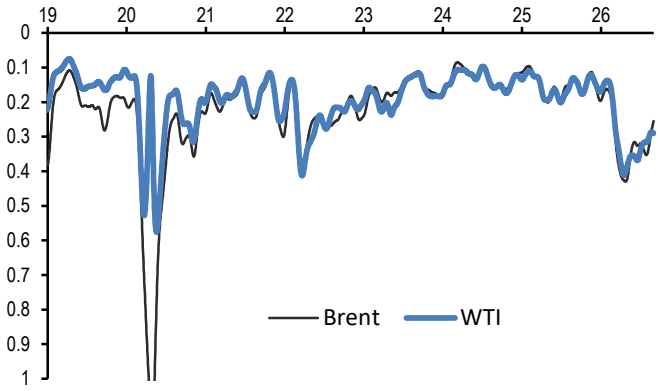
- What about oil futures? Figure 15 shows the Hui-Heubel ratios of Brent and WTI futures. This suggests that, in contrast to last March when the Iran conflict first erupted, there has been little deterioration over the past week following the reignition of the Iran conflict.

J.P. Morgan Securities plc
Nikolaos Panigirtzoglou [AC]
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

J.P.Morgan

Figure 15: Hui and Heubel liquidity ratio for Brent and WTI futures

Y axis in reverse order as a higher ratio implies lower market liquidity. The lines are smoothed using a Hodrick-Prescott filter with a Lambda parameter of 10000. See text for details on the construction of this ratio.

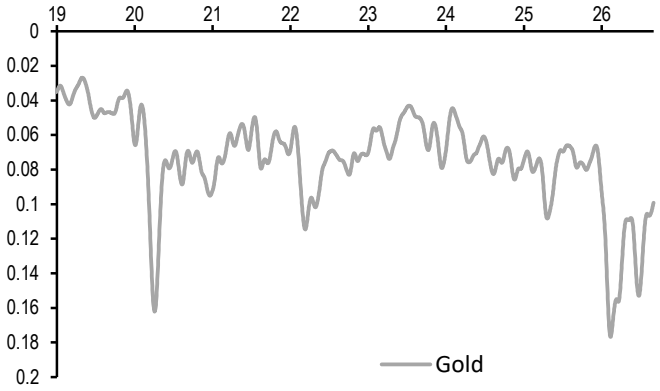


Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

- Finally, what about the trading liquidity of debasement trade instruments such as gold and bitcoin futures? Figure 16 shows the Hui-Heubel metric for gold futures, while Figure 17 shows the equivalent metric for bitcoin and ethereum. Although there has been little deterioration in recent weeks, market breadth appears to remain rather low for both gold and bitcoin futures. This rather low liquidity likely amplified the debasement trade rally post July's FOMC meeting and its reversal post Jackson Hole.

Figure 16: Hui and Heubel liquidity ratio for Gold futures

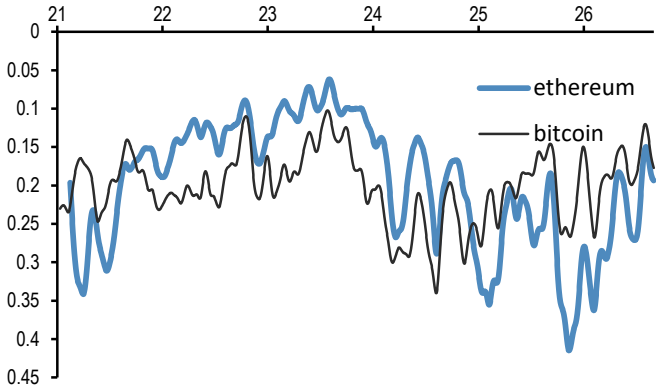
Y axis in reverse order as a higher ratio implies lower market liquidity. The lines are smoothed using a Hodrick-Prescott filter with a Lambda parameter of 10000. See text for details on the construction of this ratio.



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Figure 17: Hui and Heubel liquidity ratio for Bitcoin and Ethereum futures

Y axis in reverse order as a higher ratio implies lower market liquidity. The lines are smoothed using a Hodrick-Prescott filter with a Lambda parameter of 10000. See text for details on the construction of this ratio.



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

- In all, market liquidity has deteriorated mostly for cash USTs in recent weeks and appears to remain rather low by historical standards for Nikkei, gold and bitcoin futures.

J.P. Morgan Securities plc
Nikolaos Panigirtzoglou [AC]
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

J.P.Morgan

Investors appear to be still long equities and bonds but only modestly so

- Our cross-asset positioning monitor continues to suggest that investors are still long equities and bonds but far from extreme territory. The equity positioning in our cross-asset positioning monitor (regularly shown on the front page of our publication and shown in Figure 18 (below for convenience), had peaked in January at just above 80% and bottomed in July at around 55%. It currently stands at 70% (Figure 19).

Figure 18: Cross Asset Positioning Monitor

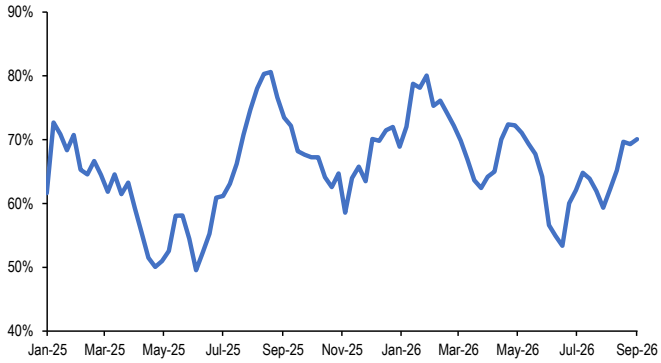
Current level shows the latest percentile, Min is denoted by 0 and Max by 1.

As of 01-Sep-26	MIN	MAX	Current percentile
Equities			0.70
Govt Bonds			0.58
Credit			0.24
Dollar			0.66
Commodities ex Gold			0.77
Gold			0.58
Bitcoin			0.75
EM Equities			0.85
EM Bonds/FX			0.20
Japan Equities			0.62
Europe Equities			0.71
US Equity Sectors:			
Energy			0.76
Materials			0.57
Industrials			0.35
Discretionary			0.58
Staples			0.25
Health Care			0.61
Financials			0.41
Technology			0.67
Communication Services			0.26
Utilities			0.33

Source: J.P. Morgan Flows & Liquidity.
Cross Asset Positioning Monitor aggregates across the various position indicators of Appendix ranging from positioning proxies across various futures contracts, momentum signals as proxies of how trend following funds/ CTAs are positioned, mutual fund betas as proxies of how mutual fund managers are positioned, risk parity fund positioning and leverage proxies, hedge fund betas as proxies of how hedge fund managers are positioned, client surveys, asset allocation estimates of private non-bank investors at global level, short interest indicators, etc.

Figure 19: Broader equity positioning proxy from our cross-asset monitor

Percentile of its history since 2015.



Source: J.P. Morgan Flows & Liquidity.

- Bond positioning started the year at low levels at below 40% but rose steadily to approach 70% by early July. Since then it downshifted to 58%, i.e. to modestly above neutral (Figure 20).

Figure 20: Broader bond positioning proxy from our cross-asset monitor

Percentile of its history since 2015.



Source: J.P. Morgan Flows & Liquidity.

- The most overweight asset classes in our cross-asset positioning monitor are EM Equities and Commodities ex Gold. The most underweight assets classes are EM Bonds/FX and Corporate Credit. Across equity sectors, investors appear to be most overweight in Energy and Technology and most underweight in Staples and Communication Services.

Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc

Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc

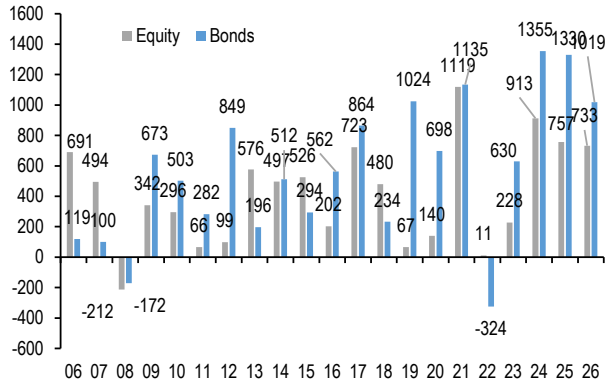
Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited

Krutik P Mehta (91-22) 6157-5016
krutik.mehta@jpmchase.com
J.P. Morgan India Private Limited

Appendix

Chart A1a: Global equity & bond fund flows

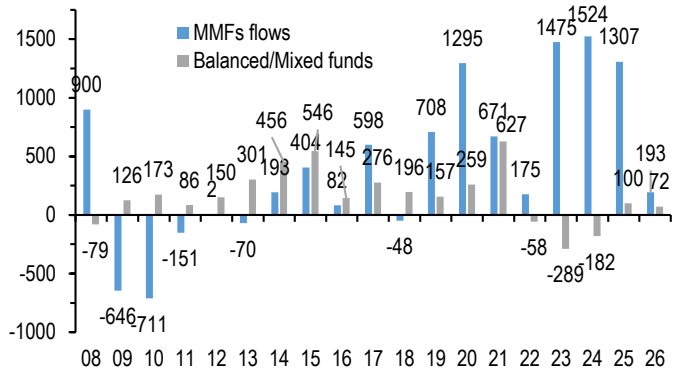
$bn per year of Net Sales, i.e. includes net new sales + reinvested dividends for Mutual Funds and ETFs globally, i.e. for funds domiciled both inside and outside the US. Flows come from ICI (worldwide data up to Q1'26). Data since then are a combination of monthly and weekly data from Lipper and Bloomberg.



Source: ICI, LSEG Lipper, Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Chart A1b: Quarterly Balanced/Mixed funds & MMFs flows worldwide

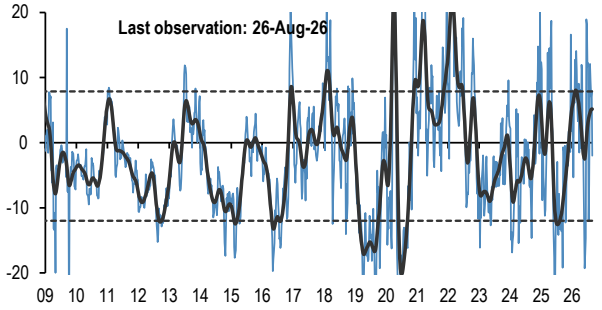
$bn per quarter of Net Sales, i.e. includes net new sales + reinvested dividends for Mutual Funds and ETFs globally, i.e. for funds domiciled both inside and outside the US. Data come from ICI (worldwide data) and are till Q1'26.



Source: ICI, J.P. Morgan Flows & Liquidity.

Chart A2: Fund flow indicator

Difference between flows into Equity and Bond funds: $bn per week. Difference between flows into Equity vs. Bond funds in $bn per week. Flows include Mutual Fund and ETF flows globally, i.e. funds domiciled both inside and outside the US (source: Lipper). The thin blue line shows the 4-week average of difference between Equity and Bond fund flows. Dotted lines depict ±1 StDev of the blue line since 2009. The thick black line shows a smoothed version of the same series. The smoothing is done using a Hodrick-Prescott filter with a Lambda parameter of 100. China onshore A-share ETFs have been excluded.



Source: LSEG Lipper, J.P. Morgan Flows & Liquidity.

Table A2: Trading turnover monitor

Volumes are monthly and Turnover ratio is annualised (monthly trading volume annualised divided by the amount outstanding). UST Cash is primary dealer transactions in all US government securities. UST futures are from Bloomberg Finance L.P. JGBs are OTC volumes in all Japanese government securities. Bunds, Gold, Oil and Copper are futures. Gold includes Gold ETFs. Min-Max chart is based on Turnover ratio. For Bunds and Commodities, futures trading volumes are used while the outstanding amount is proxied by open interest. The diamond reflects the latest turnover observation. The thin blue line marks the distance between the min and max for the complete time series since Jan-2005 onwards. Y/Y change is change in YTD notional volumes over the same period last year.

As of Jun-26	MIN	MAX	Turnover ratio	Vol (tr)	y/y chng
Equities					
EM Equity			1.4	$2.1	135%
DM Equity			1.4	$16.2	44%
Govt Bonds					
UST cash			12.3	$17.7	5%
UST futures			0.8	$14.9	8%
JGBs			49.1	¥5,035	11%
Bund futures			1.5	€10.1	18%
Credit					
US HG			1.1	$0.8	15%
US HY			0.5	$0.1	-1%
US Convertibles			3.6	$0.04	15%
Commodities					
Gold			52.4	$1.4	39%
Oil			80.1	$2.3	0%
Copper			1.9	$0.7	70%
Digital Assets					
CME Bitcoin			115.0	$0.061	-34%
CME Ethereum			134.8	$0.023	25%

* Data with one month lag

Source: Bloomberg Finance L.P., Federal Reserve, Trace, Japan Securities Dealer Association, WFE, J.P. Morgan Flows & Liquidity.

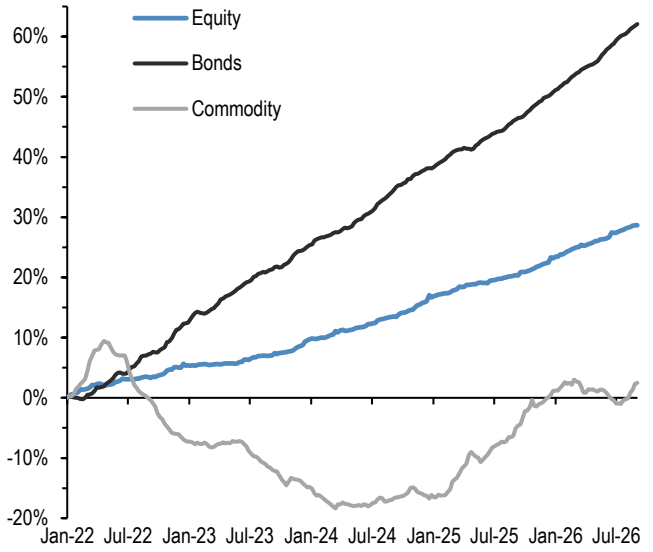
Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc
Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited
Krutik P Mehta (91-22) 6157-5016
krutik.mehta@jpmchase.com
J.P. Morgan India Private Limited

J.P.Morgan

ETF Flow Monitor (as of 2nd September)

Chart A3: Global Cross Asset ETF Flows

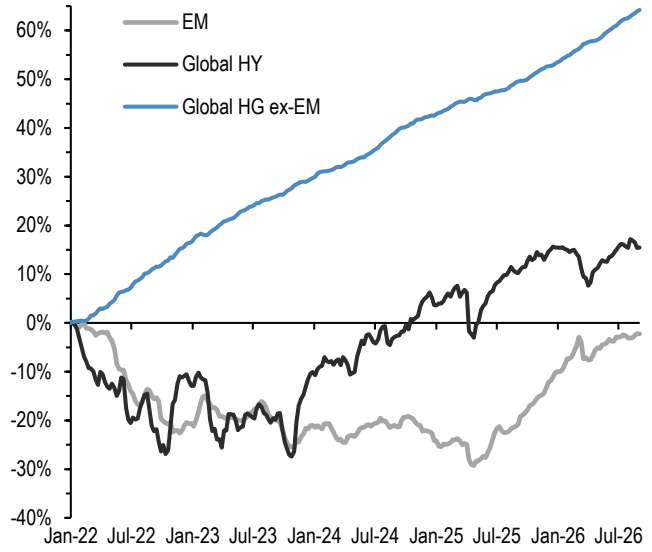
Cumulative flows into ETFs as a % of AUM



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity. China onshore A-share ETFs have been excluded.

Chart A4: Bond ETF Flows

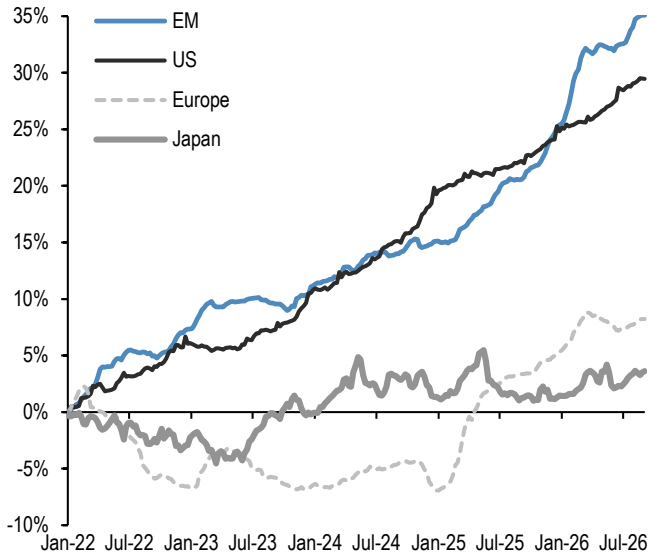
Cumulative flows into bond ETFs as a % of AUM



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Chart A5: Global Equity ETF Flows

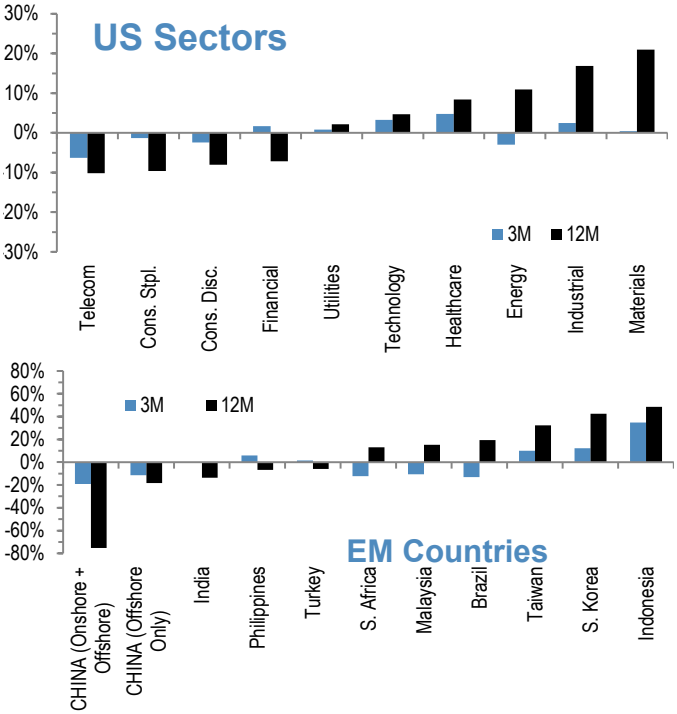
Cumulative flows into global equity ETFs as a % of AUM



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.
Note: We include ETFs with AUM > $200mn in all the flow monitor charts. In Chart A5 for Japan, we subtract the BoJ buying of ETFs. China onshore A-share ETFs have been excluded.

Chart A6a: Equity Sectoral and Regional ETF Flows

Rolling 3-month and 12-month change in cumulative flows as a % of AUM. Both sorted by 12-month change



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc

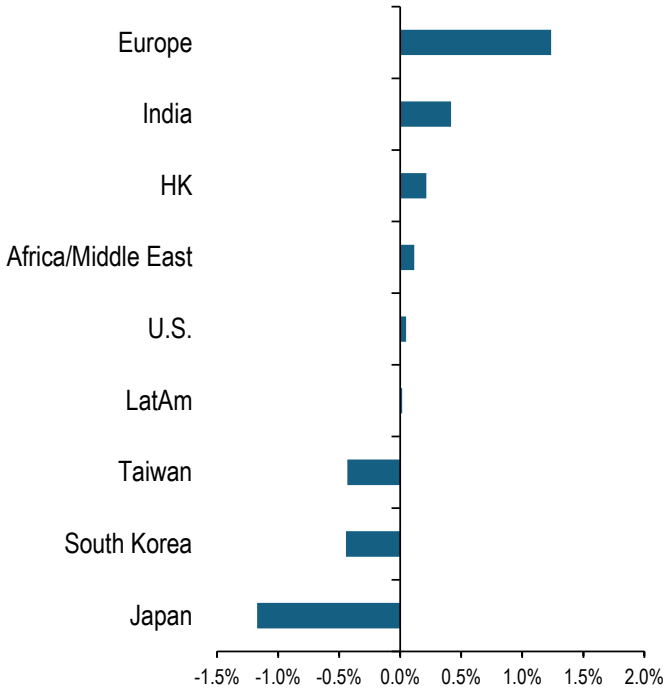
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc

Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited

Krutik P Mehta (91-22) 6157-5016
krutik.mehta@jpmchase.com
J.P. Morgan India Private Limited

Chart A6b: Regional Equity Allocation Monitor Implied by ETFs

In %.



Source: Bloomberg Finance L.P., MSCI and J.P. Morgan Flows & Liquidity.
Note: Our regional equity allocation monitor implied by ETFs is based on a comparison of the share of each region in the equity ETF space relative to their corresponding shares in global equity indices.

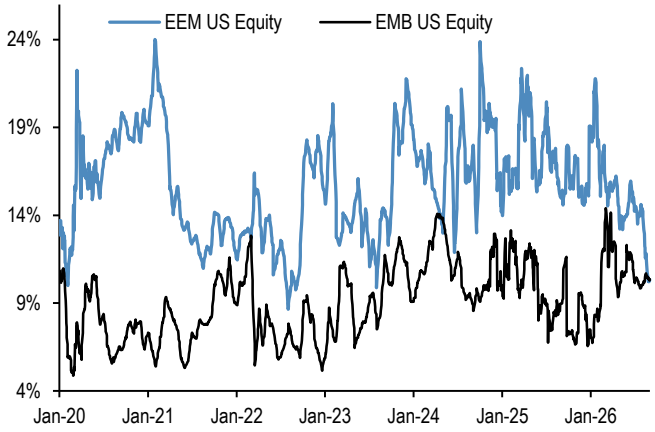
Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc
Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited
Krutik P Mehta (91-22) 6157-5016
krutik.mehta@jpmchase.com
J.P. Morgan India Private Limited

J.P.Morgan

Short Interest Monitor

Chart A7: Short interest on the EEM and EMB US ETF

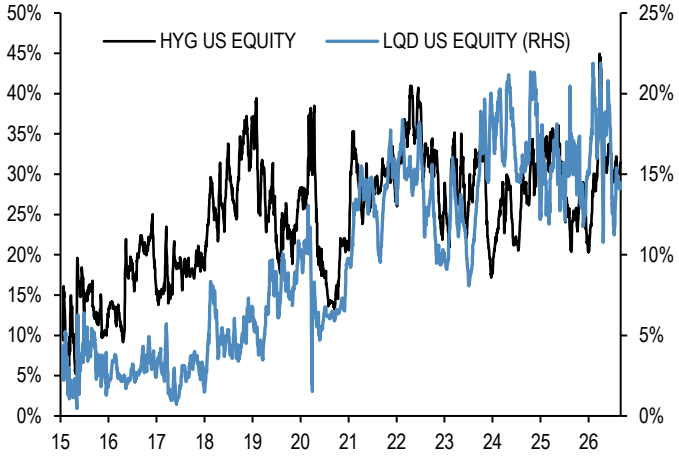
Short Interest as a % share of shares outstanding.



Source: S3, J.P. Morgan Flows & Liquidity.

Chart A8: Short interest on the LQD and HYG US ETF

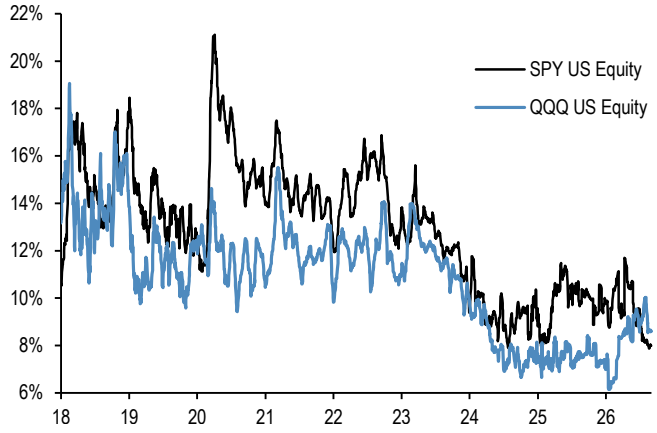
Short Interest as a % share of shares outstanding.



Source: S3, J.P. Morgan Flows & Liquidity.

Chart A9: Short interest on the SPY and QQQ US ETF

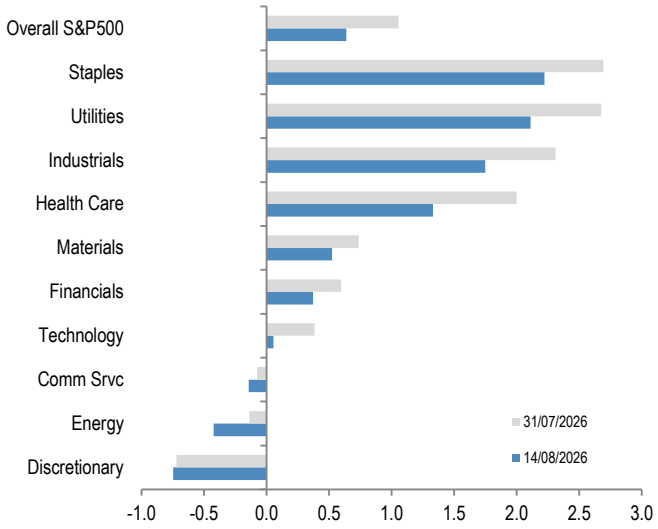
Short Interest as a % share of shares outstanding. Last obs is for 1st Sept 2026.



Source: S3, J.P. Morgan Flows & Liquidity.

Chart A10: S&P500 sector short interest

Short interest as a % of shares outstanding based on z-scores. A strategy which overweights the S&P500 sectors with the highest short interest z-score (as % of shares o/s) vs. those with the lowest, produced an information ratio of 0.7 with a success rate of 56% (see F&L, Jun 28,2013 for more details).



Source: NYSE, Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc

Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc

Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited

Krutik P Mehta (91-22) 6157-5016
krutik.mehta@jpmchase.com
J.P. Morgan India Private Limited

Chart A11a: Cross Asset Volatility Monitor 3m ATM Implied Volatility (1y history), as of 31st Aug-2026

This table shows the richness/cheapness of current three-month implied volatility levels (red dot) against their one-year historical range (thin blue bar) and the ratio to current realised volatility. Assets with implied volatility outside their 25th/75th percentile range (thick blue bar) are highlighted. The implied-to-realised volatility ratio uses 3-month implied volatilities and 1-month (around 21 trading days) realised volatilities for each asset.

Asset	Current	Low	Low date	High	High date		Upside	Downside	Implied/realized volatility
S&P 500	14%	13%	11-Sep-25	24%	27-Mar-26		10%	0%	1.87x
EuroSTOXX	15%	13%	18-Sep-25	26%	27-Mar-26		11%	2%	1.90x
Nikkei 225	24%	19%	04-Sep-25	33%	31-Mar-26		9%	5%	1.00x
Hang Seng	17%	17%	23-Dec-25	24%	26-Mar-26		7%	0%	1.19x
MSCI EM	23%	13%	03-Sep-25	38%	01-Jul-26		15%	10%	1.24x
Gold	23%	15%	19-Sep-25	33%	26-Mar-26		11%	7%	0.93x
Oil (brent)	44%	27%	19-Sep-25	89%	30-Mar-26		45%	17%	1.28x
Copper	19%	16%	10-Sep-25	37%	03-Feb-26		17%	3%	1.19x
BB commodity index	17%	13%	10-Dec-25	25%	30-Mar-26		8%	3%	1.32x
EUR/USD	6%	5%	15-Jun-26	8%	13-Mar-26		2%	1%	1.77x
USD/NOK	8%	8%	17-Dec-25	11%	30-Mar-26		3%	0%	1.40x
USD/JPY	8%	7%	16-Jul-26	10%	27-Mar-26		3%	1%	0.94x
GBP/USD	6%	6%	14-Aug-26	8%	27-Mar-26		2%	0%	2.21x
USD/CHF	7%	6%	29-May-26	9%	29-Jan-26		2%	1%	1.12x
10y US swaps	74%	62%	27-Jan-26	96%	27-Mar-26		23%	12%	11.40x
10y Eur swaps	61%	43%	26-Feb-26	97%	27-Mar-26		36%	18%	1.17x
CDX IG	40%	37%	29-May-26	62%	27-Mar-26		22%	3%	1.96x
CDX HY	36%	31%	09-Jan-26	57%	30-Mar-26		21%	5%	1.88x
iTraxx	41%	37%	09-Jan-26	70%	27-Mar-26		29%	3%	1.83x
iTraxx X/O	41%	38%	16-Jun-26	66%	27-Mar-26		25%	3%	1.77x

Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Note: Swaps volatility is 3m 10y payer ATMF implied annualized BP vol and credit volatility is 3m 5y on-the-run ATM spread volatility. MSCI EM, Gold, Oil, Copper, BB Commodity Index and Treasury futures are 3m implied vol from Bloomberg.

Definitions:

Current:	Latest available closing level (31-Aug-26)
Low:	Lowest closing level in the last 1y
Low date:	Date the lowest closing level was reached (or the first time it was reached in the case of several identical low closing levels)
High:	Highest closing level in the last 1y
High date:	Date the highest closing level was reached (or the first time it was reached in the case of several identical high closing levels)
Graph:	Shows the current level and the 25th/75th percentile relative to the 1y high/low
Upside:	Implied return/volatility percentage points from current level up to the High (note: return is calculated as simple difference for spread products)
Upside (σ):	Upside in terms of standard deviations (Upside / Current 1y realized volatility)
Downside:	Implied return/volatility percentage points from current level down to the Low (note: return calculated as simple difference for spread products)
Downside (σ):	Downside in terms of standard deviations (Downside / Current 1y realized volatility)
Implied/realized volatility:	Current 3m implied volatility / current realized 3m volatility

Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc

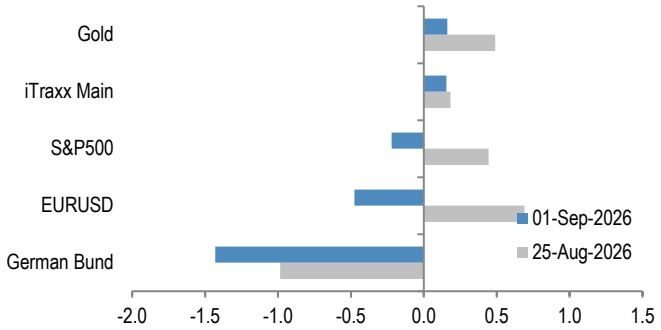
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc

Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited

Krutik P Mehta (91-22) 6157-5016
krutik.mehta@jpmchase.com
J.P. Morgan India Private Limited

Chart A11b: Option skew monitor

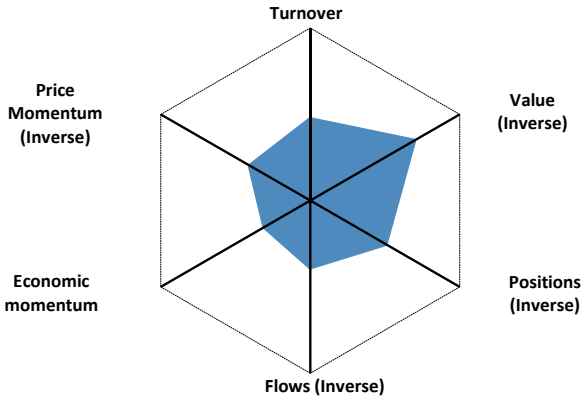
Skew is the difference between the implied volatility of out-of-the-money (OTM) call options and put options. A positive skew implies more demand for calls than puts and a negative skew, higher demand for puts than calls. It can therefore be seen as an indicator of risk perception in that a highly negative skew in equities is indicative of a bearish view. The chart shows z-score of the skew, i.e. the skew minus a rolling 2-year avg skew divided by a rolling two-year standard deviation of the skew. A negative skew on iTraxx Main means investors favour buying protection, i.e. a short risk position. A positive skew for the Bund reflects a long duration view, also a short risk position.



Source: J.P. Morgan Flows & Liquidity.

Chart A11c: Equity market health map

Each of the six axes corresponds to a key indicator for markets. The position of the blue line on each axis shows how far the current observation is from the extremes at either end of the scale. Overall, the larger the blue area within the hexagon, the better the outlook for the S&P500. All variables are expressed as the percentile of the distribution that the observation falls into. I.e. a reading in the middle of the axis means that the observation falls exactly at the median of all historical observations. **Turnover**: Percentile rank of the 21-day rolling S&P500 turnover since 2007. **Value**: Inverse of percentile rank of our quarterly S&P 500 Equity Risk Premium (ERP) estimate since 1957 as described in "A fair value model for US Bonds, Credit and Equities", Panigirtzoglou and Loeys, Jun 2005. **Positions**: Percentile rank of the difference between government bonds and equity positioning from the cross-asset positioning monitor on the front page of our publication since 2016. **Flows**: Inverse of percentile rank of the difference between equity and bond fund flows from the cross-asset fund flow monitor on the front page of our publication since 2007. **Economic momentum**: Percentile rank of the 2-month change in the global manufacturing PMI since 1998, see "REVISITING: Using the Global PMI as trading signal", Nikolaos Panigirtzoglou, Jan 2012). **Price momentum**: Inverse of the percentile rank of the z-score of the difference in the momentum signal of S&P500 vs. 10y USTs since 2016 (based on the average z-score of Short- and Long-term momentum signal in our Trend Following Strategy framework shown in Tables A3 and A4 in the Appendix). China onshore A-share ETFs have been excluded. Last obs. as of 28th Aug.



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

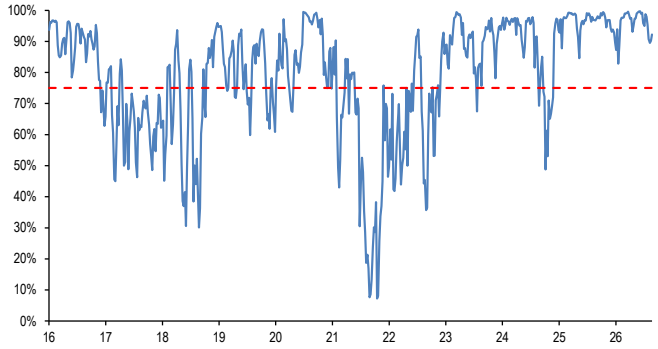
Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc

Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc

Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited

Krutik P Mehta (91-22) 6157-5016
krutik.mehta@jpmchase.com
J.P. Morgan India Private Limited

Chart A11d: Implied probability of the S&P500 rising over the next six months with a cutoff set at 75%



Source: J.P. Morgan Flows & Liquidity.

Chart A11e: Logistic regression model for direction of the S&P 500 over a 6 month horizon & Ex-ante probability of an up-move from the logistic regression algorithm vs. the ex-post realised 6-month return in the S&P 500

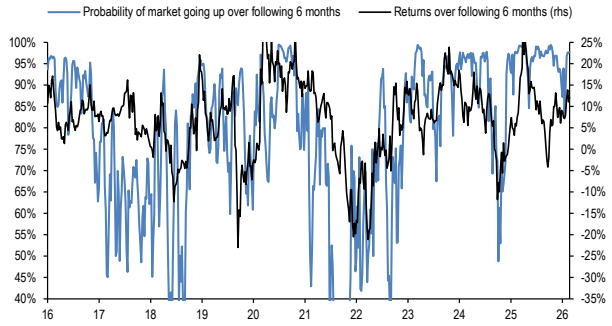
In %.

Dependent Variable: S&500 UP (1) or DOWN (0) over the next six months
Method: ML - Binary Logit (Newton-Raphson / Marquardt steps)

Sample (adjusted): 1/08/2016 12/20/2024
Included observations: 468 after adjustments

Coefficient covariance computed using observed Hessian

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	3.42	0.84	4.08	0.00
TURNOVER	2.97	0.72	4.15	0.00
VALUE	-3.47	0.90	-3.88	0.00
POSITIONS	-0.77	0.55	-1.39	0.16
FLOWS	-1.79	0.53	-3.38	0.00
ECON_MOMENTUM	3.35	0.62	5.42	0.00
MOMENTUM	-1.36	0.62	-2.19	0.03



Source: J.P. Morgan Flows & Liquidity.

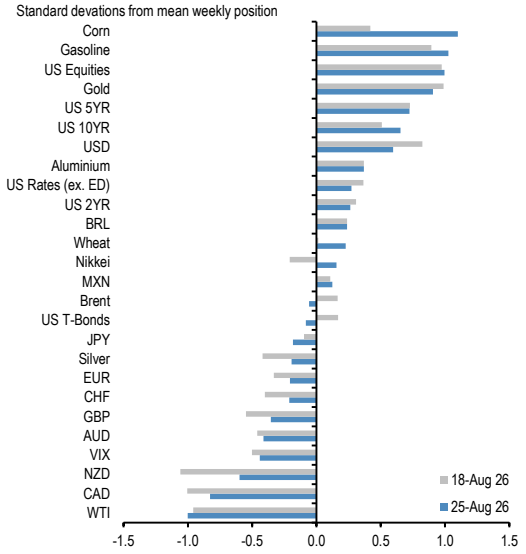
Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc
Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited
Krutik P Mehta (91-22) 6157-5016
krutik.mehta@jpmchase.com
J.P. Morgan India Private Limited

J.P.Morgan

Spec position monitor

Chart A12: Weekly Spec Position Monitor

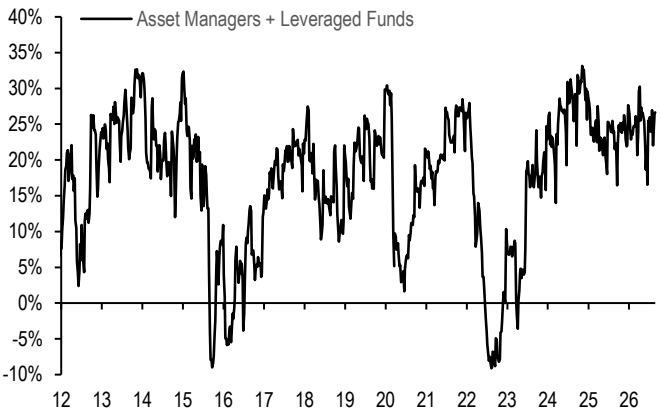
Net spec positions are proxied by the number of long contracts minus the number of short contracts using the speculative category of the Commitments of Traders reports (as reported by CFTC). To proxy for speculative investors for equity and US Treasury bond futures positions we use Asset managers and leveraged funds (see Chart A13), whereas for other assets we use the legacy Non-Commercial category. This net position is then converted to a dollar amount by multiplying by the contract size and then the corresponding futures price. We then scale the net positions by open interest. The chart shows the z-score of these net positions. US rates is a duration-weighted composite of the individual UST futures contracts excluding the Eurodollar contract.



Source: Bloomberg Finance L.P., CFTC, J.P. Morgan Flows & Liquidity.

Chart A13: Positions in US equity futures by Asset managers and Leveraged funds

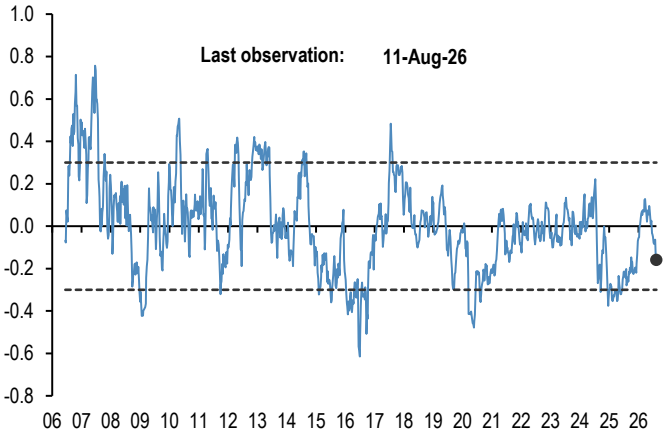
CFTC positions in US equity futures by Leveraged funds and Asset managers (as a % of open interest). It is an aggregate of the S&P500, DowJones, NASDAQ and their Mini futures contracts.



Source: CFTC, Bloomberg Finance L.P. and J.P. Morgan Flows & Liquidity.

Chart A14: Spec position indicator on Risky vs. Safe currencies

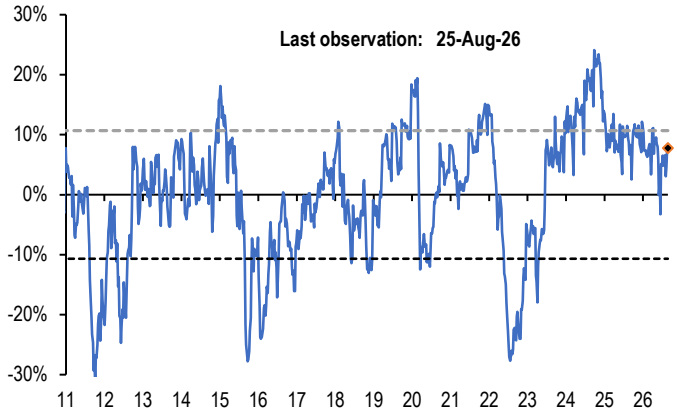
Difference between net spec positions on risky & safe currencies. Net spec position is calculated in USD across 5 'risky' and 3 'safe' currencies (safe currencies also include Gold). These positions are then scaled by open interest and we take an average of 'risky' and 'safe' assets to create two series. The chart is then simply the difference between the"risky" and "safe" series. The final series shown in the chart below is demeaned using data since 2006. The risky currencies are: AUD, NZD,CAD, MXN and BRL. The safe currencies are: JPY, CHF and Gold.



Source: Bloomberg Finance L.P., CFTC, J.P. Morgan Flows & Liquidity.

Chart A15: Spec position indicator on US equity futures vs. intermediate sector UST futures

Difference between net spec positions on US equity futures vs. intermediate sector UST futures. This indicator is derived by the difference between total CFTC positions in US equity futures by Asset managers + Leveraged Funds scaled by open interest minus the Asset managers + Leveraged Funds spec position on intermediate sector UST futures (i.e. all UST futures duration weighted ex ED and ex 2Y UST futures) also scaled by open interest.



Source: CFTC, Bloomberg Finance L.P. and J.P. Morgan Flows & Liquidity.

Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc

Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc

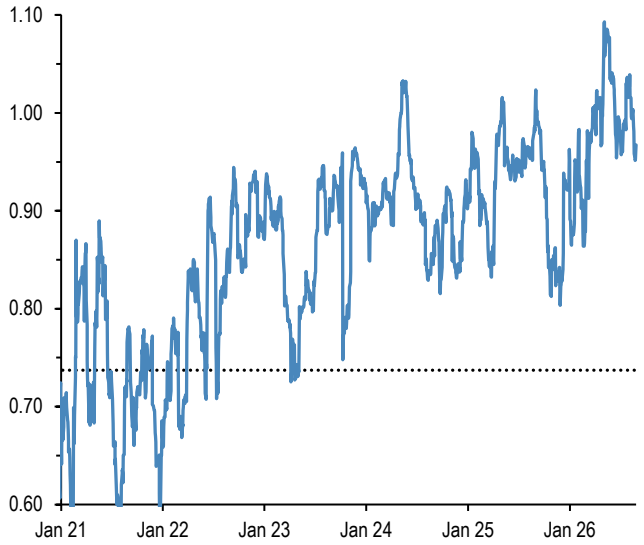
Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited

Krutik P Mehta (91-22) 6157-5016
krutik.mehta@jpmchase.com
J.P. Morgan India Private Limited

Mutual fund and hedge fund betas

Chart A16: 21-day rolling beta of 20 biggest active US bond mutual fund managers with respect to the US Agg Bond Index

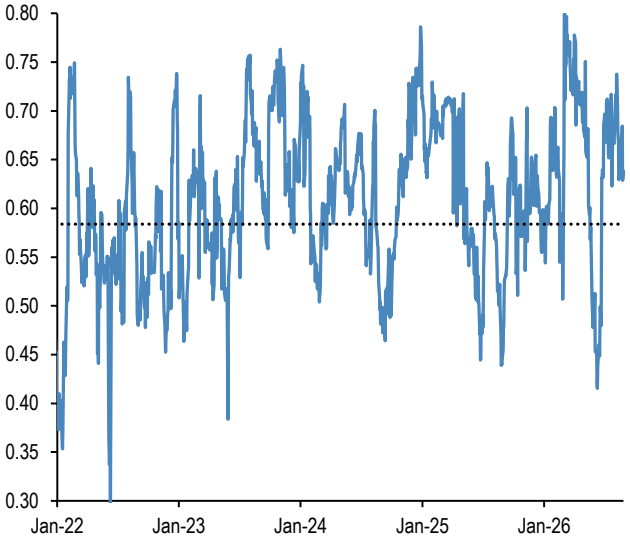
The dotted line shows the average beta since 2013.



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Chart A17: 21-day rolling beta of 20 biggest active Euro bond mutual fund managers with respect to the Euro Agg Bond Index

The dotted line shows the average beta since 2013.



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Chart A18: Performance of various types of investors

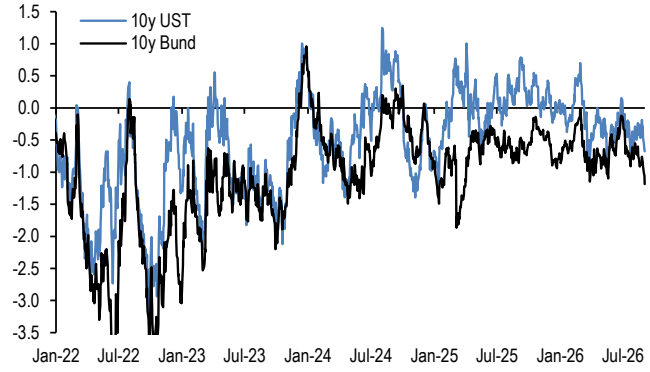
The table depicts the performance of various types of investors in % as of 31st Aug 2026.

Date	2020	2021	2022	2023	2024	2025	2026
Investors							
Equity L/S	13.4%	9.3%	-7.0%	11.3%	13.0%	15.5%	7.6%
Macro ex-CTAs	4.9%	4.3%	11.5%	1.3%	6.0%	10.2%	4.3%
CTAs	1.2%	8.8%	14.7%	-2.5%	2.9%	-1.1%	6.2%
Risk Parity Funds	3.5%	4.7%	-18.6%	6.0%	5.0%	17.3%	8.7%
US Balanced MFs	13.2%	14.4%	-13.0%	13.8%	11.4%	14.4%	8.9%
Benchmark							
MSCI AC World	16.3%	16.4%	-18.4%	22.2%	17.5%	22.3%	14.7%
Barclays Global Agg	5.6%	-2.5%	-11.2%	7.1%	3.4%	4.9%	0.3%
S&P Riskparity Vol 10	11.5%	12.8%	-16.2%	15.0%	5.4%	15.9%	18.0%
60 US Equity : 40 US Bonds	13.3%	14.8%	-15.4%	18.6%	16.4%	12.7%	8.1%

Source: Bloomberg Finance L.P., HFR, Pivotal Path, J.P. Morgan Flows & Liquidity.

Chart A19: Momentum signals for 10Y UST and 10Y Bunds

Average z-score of Short- and Long-term momentum signal in our Trend Following Strategy framework shown in Tables A3 and A4 below in the Appendix.



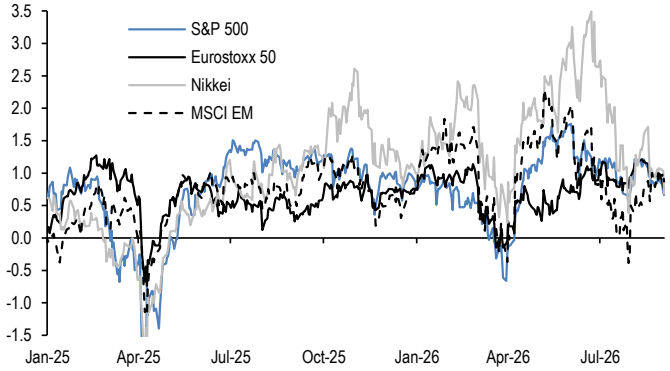
Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc
Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited
Krutik P Mehta (91-22) 6157-5016
krutik.mehta@jpmchase.com
J.P. Morgan India Private Limited

J.P.Morgan

Chart A20: Momentum signals for S&P500

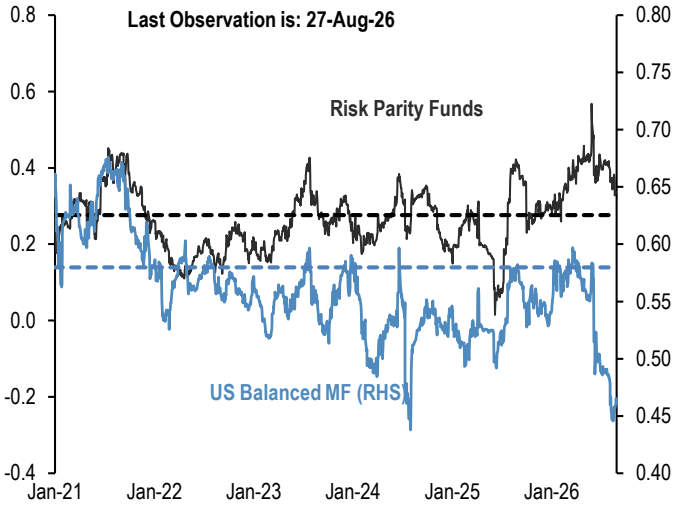
Average z-score of Short- and Long-term momentum signal in our Trend Following Strategy framework shown in Tables A3 and A4 below in the Appendix.



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Chart A21: Equity beta of US Balanced Mutual funds and Risk Parity funds

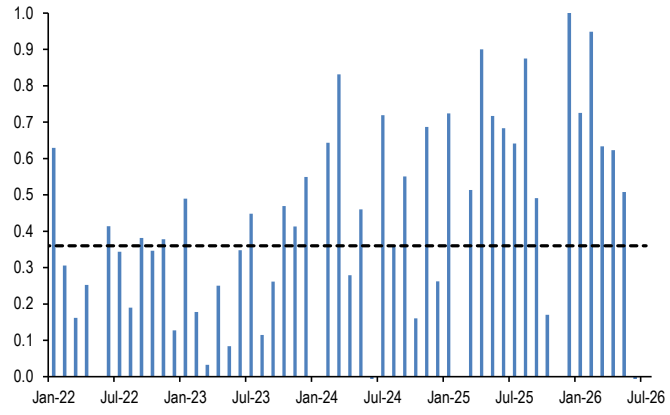
Rolling 42-day equity beta based on a bivariate regression of the daily returns of our Balanced Mutual fund and Risk Parity fund return indices to the daily returns of the S&P 500 and BarCap US Agg indices. Given that these funds invest in both equities and bonds we believe that the bivariate regression will be more suitable for these funds. Our risk parity index consists of 40 daily reporting Risk Parity funds. Our Balanced Mutual fund index includes the top 20 US-based active funds by assets and that have existed since 2006. Our Balanced Mutual fund index has a total AUM of $700bn, which is around half of the total AUM of $1.5tr of US based Balanced funds which we believe to be a good proxy of the overall industry It excludes tracker funds and funds with a low tracking error. Dotted lines are average since 2015.



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Chart A22: Equity beta of monthly reporting Equity Long/Short hedge funds

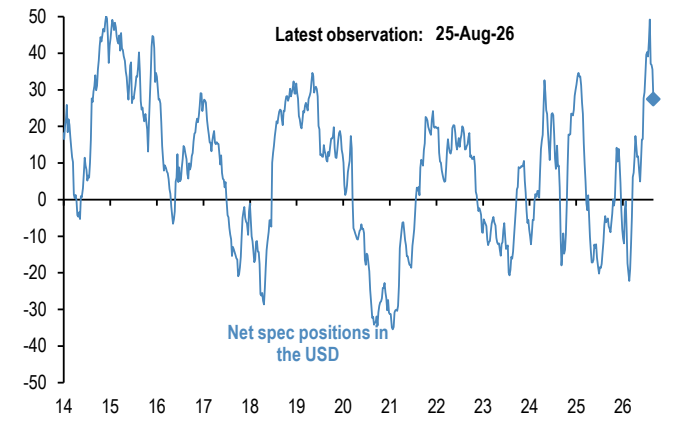
Proxied by the ratio of the monthly performance of Pivotal Path Asset-Weighted Equity Diversified hedge fund index divided by the monthly performance of MSCI AC World Index. Latest obs. is July 26 based on provisional data.



Source: Bloomberg Finance L.P., Pivotal Path, J.P. Morgan Flows & Liquidity.

Chart A23: USD exposure of currency hedge funds

The net spec position in the USD as reported by the CFTC. Spec is the non-commercial category from the CFTC.



Source: CFTC, Barclays, Datastream, Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc

Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc

Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited

Krutik P Mehta (91-22) 6157-5016
krutik.mehta@jpmchase.com
J.P. Morgan India Private Limited

CTAs – Trend following investors' momentum indicators

Table A3: Simple return momentum trading rules across various commodities

Optimal look-back period of each momentum strategy combined with a mean reversion indicator that turns signal neutral when momentum z-score more than 1.5 standard deviations above or below mean, and a filter that turns neutral when the z-score is low (below 0.05 and above -0.05) to avoid excessive trading. Look-backs, current signals and z-scores are shown for shorter-term and longer-term momentum separately, along with performance of a combined signal. Annualised return, volatility and information ratio of the signal; current signal; and z-score of the current return over the relevant look-back period; data from 1999 onward.

		Lookback (moving avg, days)	Annualized return (%)	Vol (%)	IR	Current signal	Time since last change (days)	Z-score	% Change of return index from its moving average
WTI	short	21	6.3	22.8	0.28	1	0	1.5	9.0%
	long	462				0	1	1.6	47.8%
Brent	short	84	4.2	21.4	0.20	1	13	0.9	11.2%
	long	504				0	4	1.9	53.0%
Unleaded gas	short	105	3.5	23.2	0.15	1	19	1.0	14.5%
	long	483				0	47	2.5	67.0%
Heat Oil	short	63	4.3	22.1	0.20	0	3	2.5	25.8%
	long	483				0	131	3.7	114.5%
Gasoil	short	63	8.7	21.3	0.41	0	17	2.6	28.7%
	long	378				0	52	3.8	111.2%
Nat gas	short	105	13.6	35.8	0.38	-1	40	-0.2	-3.5%
	long	315				-1	152	-0.5	-16.3%
Emission allowances	short	42	10.4	28.8	0.36	1	11	0.1	1.0%
	long	483				1	60	0.2	7.8%
TTF	short	21	43.5	43.5	1.00	1	17	1.4	16.1%
	long	294				1	132	1.4	85.6%
Gold	short	21	3.2	10.7	0.30	-1	1	-1.0	-2.6%
	long	483				1	63	0.8	9.9%
Silver	short	10	6.3	19.7	0.32	0	0	-1.5	-5.2%
	long	462				1	54	0.7	17.7%
Palladium	short	42	11.2	23.2	0.49	0	1	0.0	0.1%
	long	273				-1	76	-0.5	-12.5%
Platinum	short	105	3.7	18.7	0.20	-1	2	-0.7	-6.2%
	long	273				-1	5	-0.5	-8.3%
Aluminium	short	105	5.7	15.2	0.38	-1	52	-0.4	-3.1%
	long	357				1	57	0.7	10.5%
Copper	short	147	7.4	17.2	0.43	1	144	0.5	6.3%
	long	399				1	150	1.0	23.0%
Lead	short	126	0.7	19.2	0.04	-1	62	-0.2	-2.1%
	long	357				-1	163	-0.4	-7.5%
Nickel	short	42	11.5	22.9	0.50	-1	3	-0.2	-1.9%
	long	336				-1	1	-0.1	-1.8%
Zinc	short	126	8.3	19.6	0.42	1	112	1.1	12.5%
	long	399				1	242	1.2	27.1%
Wheat	short	168	4.4	23.3	0.19	0	5	1.7	20.8%
	long	294				0	4	1.7	25.5%
Kansas wheat	short	147	8.8	20.9	0.42	0	5	1.9	23.2%
	long	483				1	42	1.4	29.9%
Corn	short	63	7.6	16.6	0.46	0	6	1.8	14.4%
	long	399				1	7	0.4	7.3%
Soybeans	short	42	4.9	14.5	0.34	1	0	1.4	7.3%
	long	231				1	15	0.9	10.9%
Cotton	short	168	5.8	18.5	0.31	1	59	0.9	12.7%
	long	483				1	24	0.5	12.6%
Sugar	short	63	6.7	21.6	0.31	0	11	2.1	18.8%
	long	252				1	19	1.1	19.8%
Coffee	short	63	8.0	24.0	0.33	1	5	0.3	2.8%
	long	273				1	28	0.1	1.0%
Cocoa		10	5.0	31.5	0.16	1	4	1.3	4.8%

* For cocoa, uses only short-term momentum and a z-score threshold of 3 rather than 1.5 as for other contracts.

Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Table A4: Simple return momentum trading rules across international equity indices, bond futures and FX

Optimal look-back period of each momentum strategy combined with a mean reversion indicator that turns signal neutral when momentum z-score more than 1.5 standard deviations above or below mean, and a filter that turns neutral when the z-score is low (below 0.05 and above -0.05) to avoid excessive trading. Look-backs, current signals and z-scores are shown for shorter-term and longer-term momentum separately, along with performance of a combined signal. Annualised return, volatility and information ratio of the signal; current signal; and z-score of the current return over the relevant look-back period; data from 1999 onward.

		Lookback (moving avg, days)	Annualized return (%)	Vol (%)	IR	Current signal	Time since last change (days)	Z-score	% Change of return index from its moving average
S&P 500	short	84	7.8	12.3	0.63	1	24	0.3	1.3%
	long	315				1	56	1.1	10.9%
Nasdaq 100	short	84	9.4	16.2	0.58	-1	1	-0.1	-1.0%
	long	462				1	45	1.0	20.4%
Nikkei	short	63	3.5	13.3	0.27	-1	10	-0.6	-3.7%
	long	420				0	110	2.0	30.9%
FTSE 100	short	168	5.3	12.1	0.44	1	129	0.6	3.7%
	long	504				0	58	1.6	17.9%
Eurostoxx 50	short	168	4.9	16.6	0.29	1	105	0.6	5.5%
	long	294				1	112	0.9	10.0%
MSCI EM	short	42	12.7	11.5	1.10	1	9	0.5	2.4%
	long	357				1	37	1.3	20.3%
LQD credit return	short	168	0.4	3.4	0.13	-1	39	-0.4	-0.9%
	long	273				-1	37	-0.3	-1.0%
HYG credit return	short	10	2.4	6.5	0.37	-1	1	-0.2	-0.3%
	long	189				-1	1	-0.1	-0.8%
2Y USTs	short	252	0.9	1.1	0.79	-1	132	-1.0	-1.2%
	long	462				-1	130	-0.7	-1.3%
5Y USTs	short	252	1.5	2.8	0.55	-1	125	-1.0	-2.4%
	long	420				-1	96	-0.7	-2.5%
10Y USTs	short	42	2.0	3.6	0.57	-1	5	-0.7	-1.0%
	long	441				-1	96	-0.6	-2.9%
2Y Schatz	short	189	0.6	0.8	0.81	0	13	-1.9	-1.6%
	long	504				0	129	-1.9	-3.4%
5y Bobl	short	63	1.4	1.9	0.76	0	0	-1.6	-1.5%
	long	483				-1	382	-1.4	-4.6%
10y Bund	short	105	2.3	3.4	0.67	-1	42	-1.3	-2.6%
	long	462				-1	731	-1.1	-5.8%
10Y JGB	short	126	0.9	2.3	0.38	0	3	-2.1	-2.2%
	long	273				0	131	-2.7	-4.1%
10Y Gilts	short	42	2.4	4.1	0.59	0	0	-1.7	-2.7%
	long	399				0	0	-1.5	-8.1%
10y OAT vs Bund	short	189	0.4	1.5	0.27	-1	35	-0.7	-0.6%
	long	294				-1	13	-0.3	-0.3%
10y BTP vs. Bund	short	84	2.2	6.3	0.35	-1	5	-0.1	-0.3%
	long	273				0	11	0.0	-0.1%
Euro	short	42	3.2	6.4	0.50	0	0	0.0	0.0%
	long	273				-1	140	-0.6	-3.5%
Yen	short	21	3.5	6.3	0.57	-1	6	-0.5	-0.7%
	long	462				-1	24	-1.3	-10.5%
Sterling	short	168	1.6	7.1	0.22	-1	3	-0.2	-1.0%
	long	294				-1	134	-0.3	-1.7%
AUD	short	42	3.8	7.8	0.48	1	21	0.3	0.9%
	long	420				1	159	0.3	3.2%
CAD	short	168	1.4	5.9	0.25	-1	87	-0.7	-2.4%
	long	504				-1	369	-0.9	-5.7%
G10 FX	short	42	2.1	5.2	0.40	-1	24	-0.3	-0.4%
	long	189				1	5	0.2	0.9%
EMCI	short	42	2.5	4.9	0.51	0	3	0.0	-0.1%
	long	189				1	298	0.2	0.7%

Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

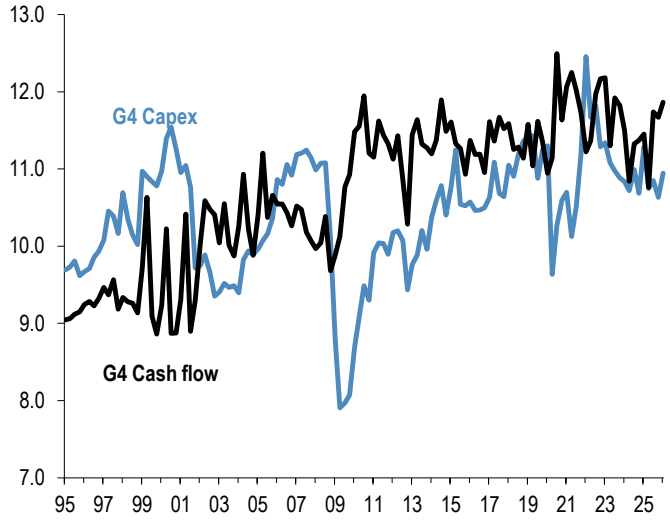
Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc
Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited
Krutik P Mehta (91-22) 6157-5016
krutik.mehta@jpmchase.com
J.P. Morgan India Private Limited

J.P.Morgan

Corporate Activity

Chart A24: G4 non-financial corporate capex and cash flow as % of GDP

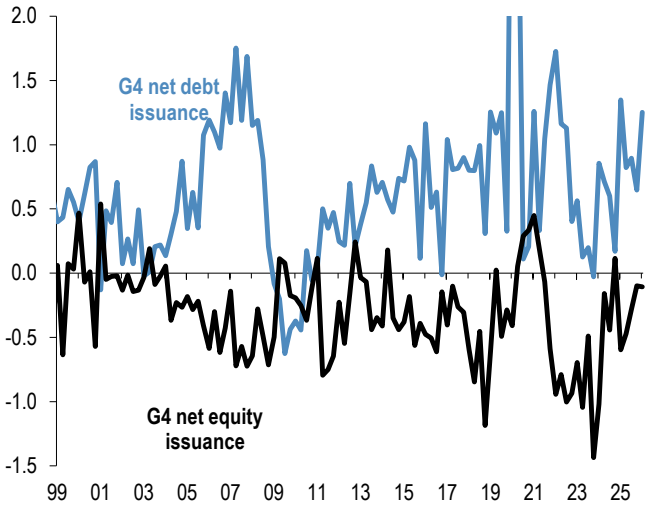
% of GDP, G4 includes the US, the UK, the Euro area and Japan. Last observation as of Q1 2026.



Source: ECB, BOJ, BOE, Federal Reserve flow of funds, J.P. Morgan Flows & Liquidity.

Chart A25: G4 non-financial corporate sector net debt and equity issuance

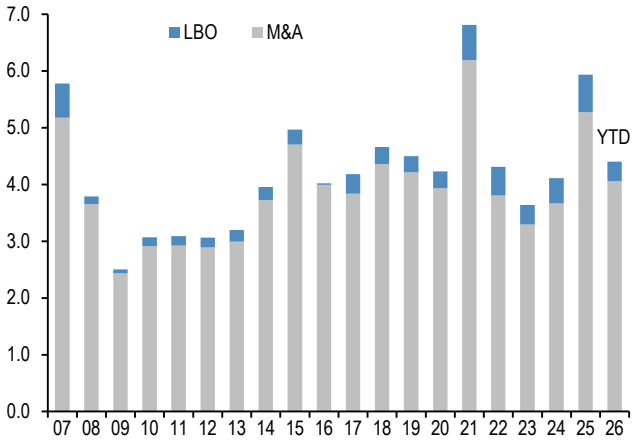
$tr per quarter, G4 includes the US, the UK, the Euro area and Japan. Last observation as of Q1 2026.



Source: ECB, BOJ, BOE, Federal Reserve flow of funds, J.P. Morgan Flows & Liquidity.

Chart A26: Global M&A and LBO

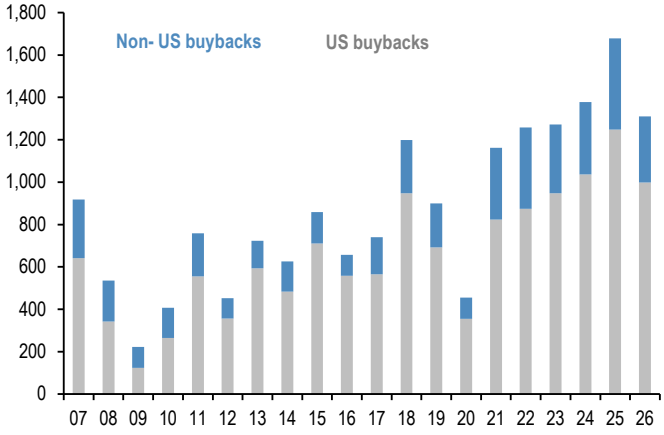
$tr. M&A and LBOs are announced.



Source: Dealogic, J.P. Morgan Flows & Liquidity.

Chart A27: US and non-US share buyback

$bn, are as of Aug 26. Buybacks are as announced.



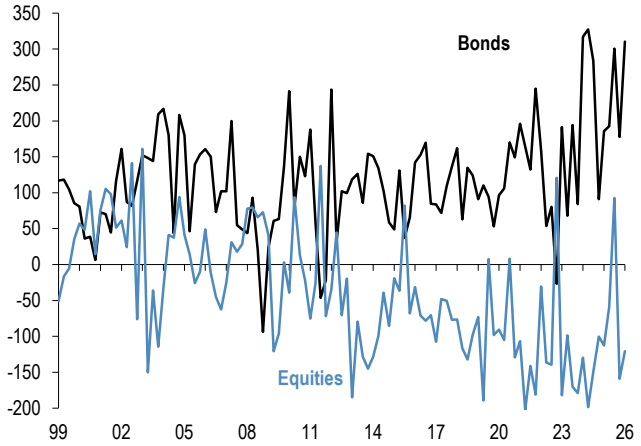
Source: Bloomberg Finance L.P., LSEG, J.P. Morgan Flows & Liquidity.

Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc
Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited
Krutik P Mehta (91-22) 6157-5016
krutik.mehta@jpmchase.com
J.P. Morgan India Private Limited

Pension fund and insurance company flows

Chart A28: G4 pension funds and insurance companies equity and bond flows

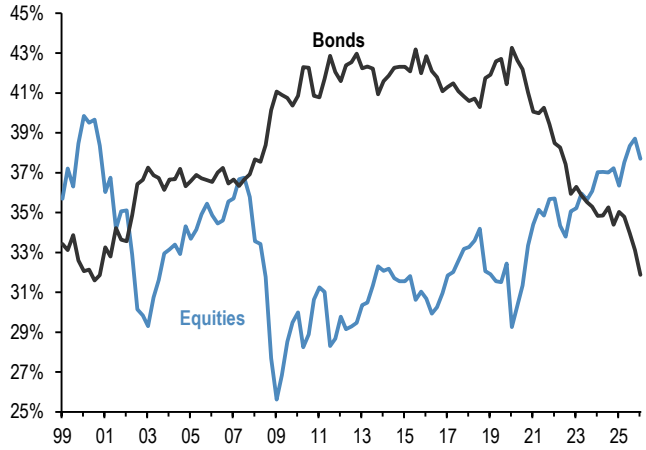
Equity and bond buying in $bn per quarter. G4 includes the US, the UK, Euro area and Japan. Last observation is Q1 2026.



Source: ECB, BOJ, BOE, Federal Reserve flow of funds, J.P. Morgan Flows & Liquidity.

Chart A29: G4 pension funds and insurance companies equity and bond levels

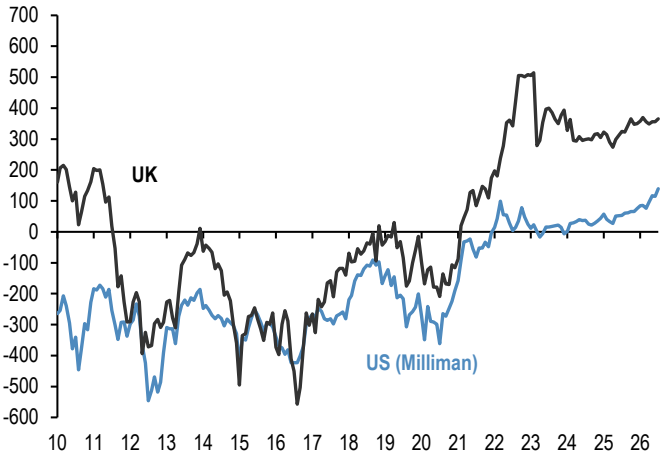
Equity and bond as % of total assets per quarter. G4 includes the US, the UK, Euro area and Japan. Last observation is Q1 2026.



Source: ECB, BOJ, BOE, Federal Reserve flow of funds, J.P. Morgan Flows & Liquidity.

Chart A30: Pension fund deficits

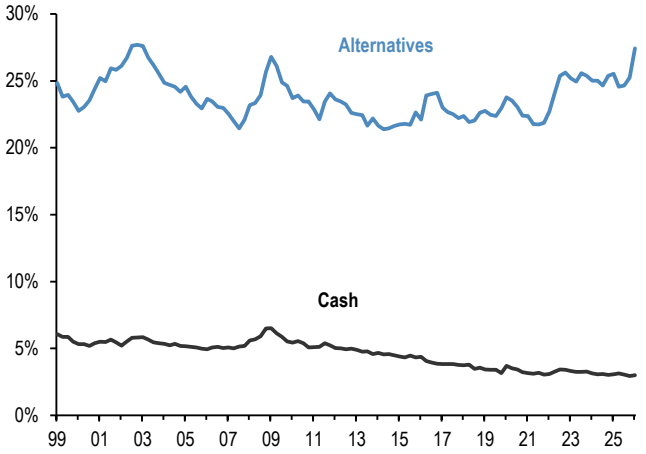
US$bn. For US, funded status of the 100 largest corporate defined benefit pension plans, from Milliman. For UK, funded status of the defined benefit schemes eligible for entry to the Pension Protection Fund, converted to US$ at today's exchange rates. Last obs. is July'26 for US & UK.



Source: Milliman, UK Pension Protection Fund, J.P. Morgan Flows & Liquidity.

Chart A31: G4 pension funds and insurance companies cash and alternatives levels

Cash and alternative investments as % of total assets per quarter. G4 includes the US, the UK, Euro area and Japan. Last observation is Q1 2026.



Source: ECB, BOJ, BOE, Federal Reserve flow of funds, J.P. Morgan Flows & Liquidity.

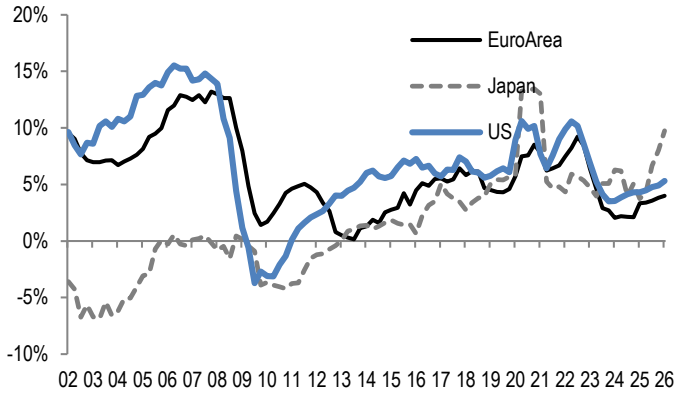
Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc
Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited
Krutik P Mehta (91-22) 6157-5016
krutik.mehta@jpmchase.com
J.P. Morgan India Private Limited

J.P.Morgan

Credit Creation

Chart A32: Credit creation in the US, Japan and Euro area

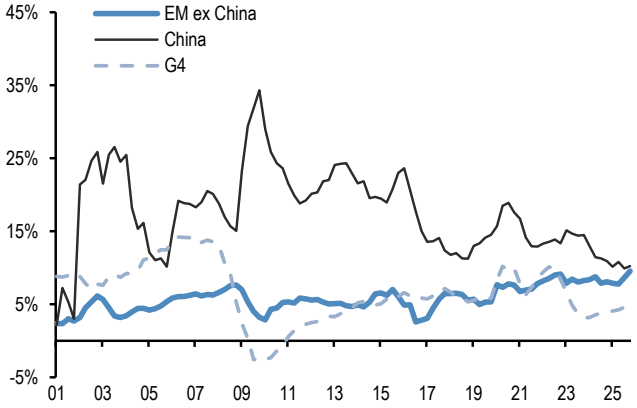
Rolling sum of 4-quarter credit creation as % of GDP. Credit creation includes both bank loans as well as net debt issuance by non-financial corporations and households. Last obs. is Q1'26 for Japan, Euro Area and US.



Source: Fed, ECB, BoJ, Bloomberg Finance L.P., and J.P. Morgan Flows & Liquidity.

Chart A33: Credit creation in EM

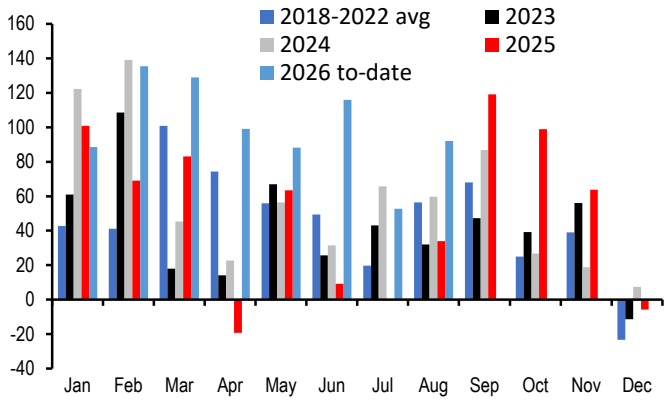
Rolling sum of 4-quarter credit creation as % of GDP. Credit creation includes both bank loans as well as net debt issuance by non-financial corporations and households. The chart uses the FX rates as of the latest observation to calculate the credit creation at constant exchange rates. Last obs. is for Q4'25.



Source: G4 Central banks FoF, BIS, ICI, Barcap, Bloomberg Finance L.P., IMF, and J.P. Morgan Flows & Liquidity.

Chart A34: Monthly net issuance of US HG bonds

$bn. Up to August 27th.



Source: Dealogic, J.P. Morgan Flows & Liquidity.

Table A5: Equity and Bond issuance

$bn, Equity supply and corporate announcements are based on announced deals, not completed. M&A is announced deal value and buybacks are announced transactions. Y/Y change is change in YTD announcements over the same period last year.

Equity Supply	21-Aug	4 wk avg	13 wk avg	y/y chng
Global IPOs	1.9	3.3	11.8	175%
Secondary Offerings	6.9	16.1	17.0	40%
Corporate announcements				
M&A - Global	95.9	97.8	124.3	37%
- US Target	16.8	40.6	64.8	58%
- Non-US Target	79.1	57.2	59.5	21%
Net bond issuance	**Feb-26**	**3 mth avg**	**YTD avg**	**y/y chng**
USD	8	144	179	-50%
Non-USD	162	129	277	-4%

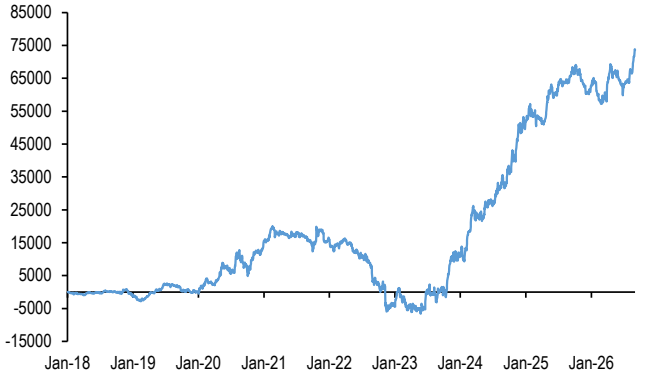
Source: Bloomberg Finance L.P., Dealogic, Thomson Reuters, J.P. Morgan Flows & Liquidity.

Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc
Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited
Krutik P Mehta (91-22) 6157-5016
krutik.mehta@jpmchase.com
J.P. Morgan India Private Limited

Bitcoin monitor

Chart A35: Our Bitcoin position proxy, based on open interest in CME Bitcoin futures contracts

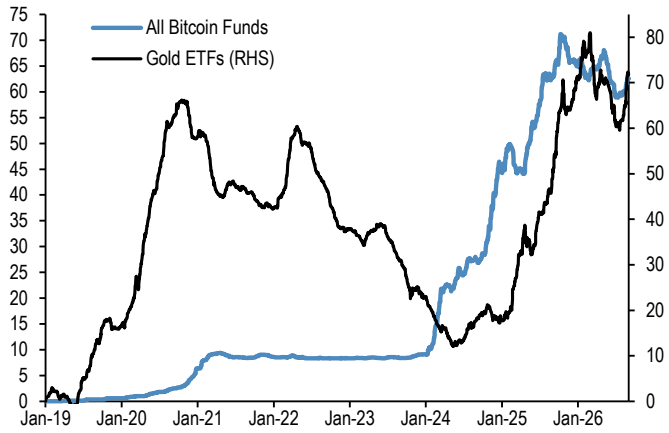
In number of contracts. Last obs. for 1st September 2026.



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Chart A36: Cumulative Flows in all Bitcoin funds and Gold ETF holdings

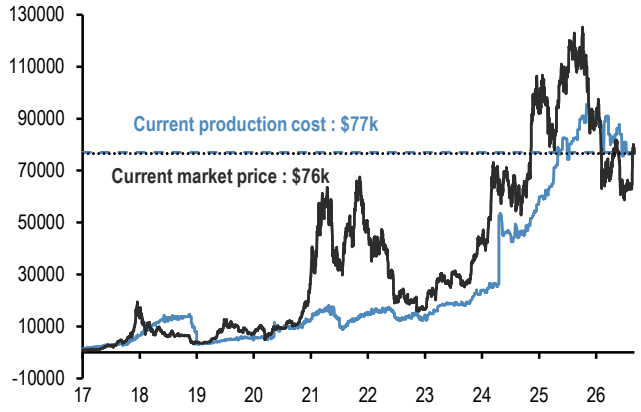
Both the y-axis in $bn.



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Chart A37: Ratio of bitcoin market price to production cost

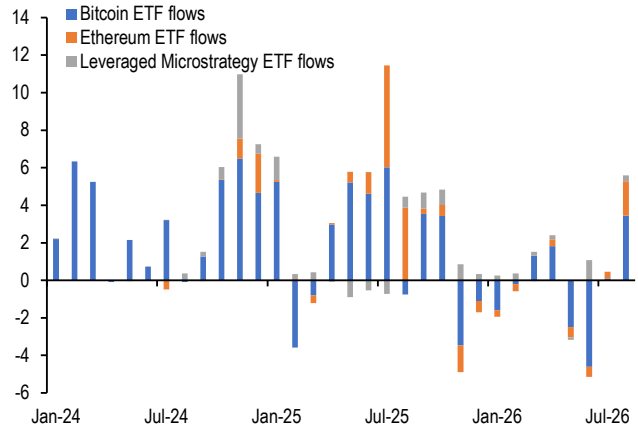
Based on the cost of production approach following Hayes (2018).



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Chart A38: Monthly flows into spot bitcoin ETFs, spot ethereum ETFs and leveraged MicroStrategy ETF

$bn.



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc
Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited
Krutik P Mehta (91-22) 6157-5016
krutik.mehta@jpmchase.com
J.P. Morgan India Private Limited

J.P.Morgan

Japanese flows and positions

Chart A39: Tokyo Stock Exchange margin trading: total buys minus total sells

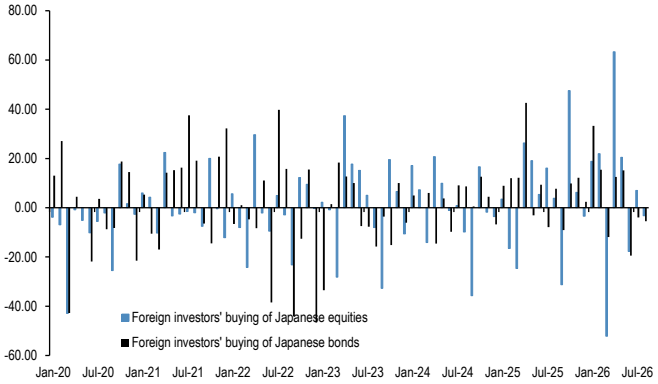
In bn of shares. Topix on right axis.



Source: Tokyo Stock Exchange, Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Chart A40: Monthly net purchases of Japanese bonds and Japanese equities by foreign residents

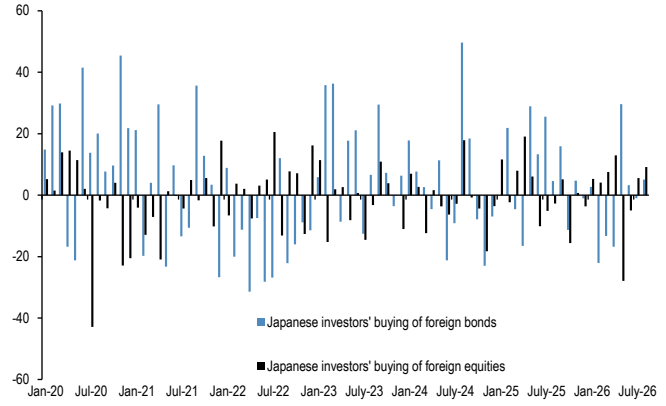
$bn, Last weekly obs. is for 21st Aug' 26.



Source: Japan MoF, Bloomberg Finance L.P., and J.P. Morgan Flows & Liquidity.

Chart A41: Monthly net purchases of foreign bonds and foreign equities by Japanese residents

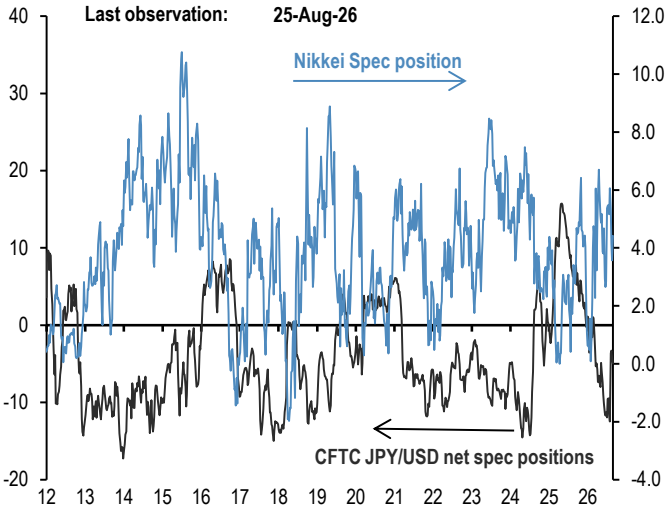
$bn, Last weekly obs. is for 21st Aug' 26.



Source: Japan MoF, Bloomberg Finance L.P., and J.P. Morgan Flows & Liquidity.

Chart A42: Overseas CFTC spec positions

CFTC spec positions are in $bn. For Nikkei we use CFTC positions in Nikkei futures (USD & JPY) by Leveraged funds and Asset managers.



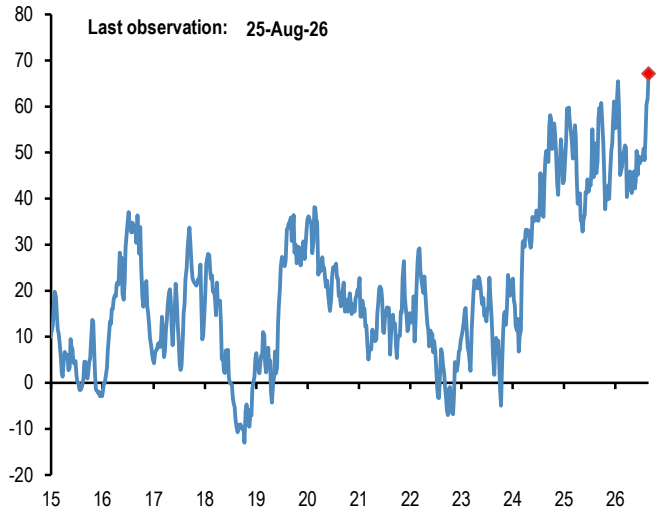
Source: Bloomberg Finance L.P., CFTC, J.P. Morgan Flows & Liquidity.

Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc
Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited
Krutik P Mehta (91-22) 6157-5016
krutik.mehta@jpmchase.com
J.P. Morgan India Private Limited

Commodity flows and positions

Chart A43: Gold spec positions

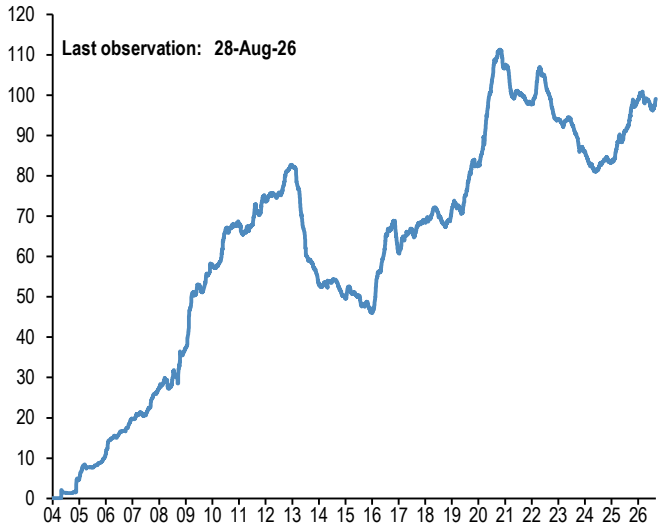
$bn. CFTC net long minus short position in futures for the Managed Money category.



Source: CFTC, Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Chart A44: Gold ETFs

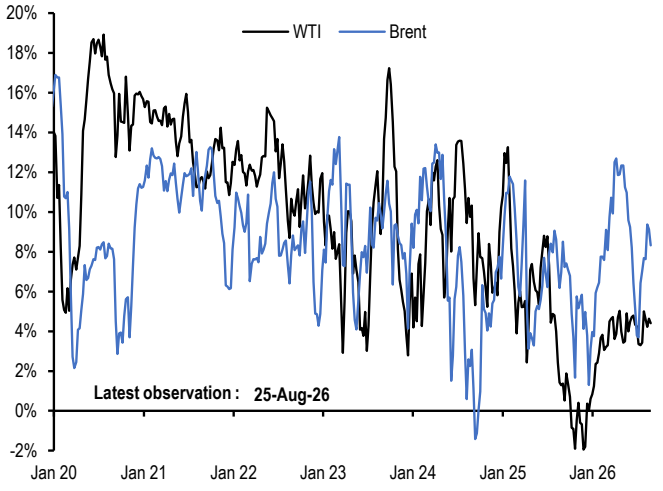
Mn troy oz. Physical gold held by all gold ETFs globally.



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Chart A45: Oil spec positions

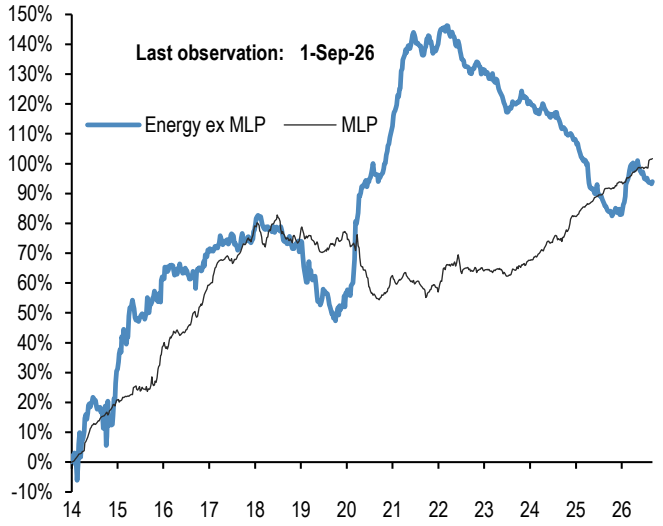
Net spec positions divided by open interest. CFTC futures positions for WTI and Brent are net long minus short for the Managed Money category.



Source: CFTC, Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Chart A46: Energy ETF flows

Cumulative energy ETFs flows as a % of AUM. MLP refers to the Alerian MLP ETF.



Source: CFTC, Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

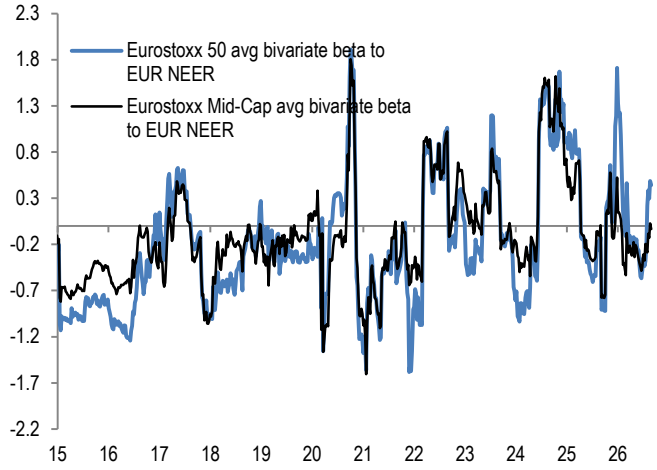
Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc
Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited
Krutik P Mehta (91-22) 6157-5016
krutik.mehta@jpmchase.com
J.P. Morgan India Private Limited

J.P.Morgan

Corporate FX hedging proxies

Chart A47: Average beta of Eurostoxx 50 companies and Eurostoxx Mid-Cap to trade-weighted EUR

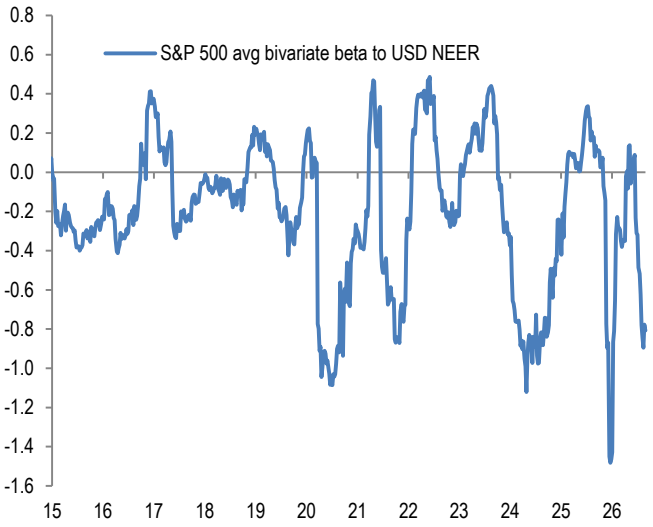
Rolling 26 weeks average betas based on a bivariate regression of the weekly returns of individual stocks in the Eurostoxx 50 index to the weekly returns of the MSCI AC World and JPM EUR Nominal broad effective exchange rate (NEER).



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Chart A48: Average beta of S&P500 companies to trade-weighted US dollar

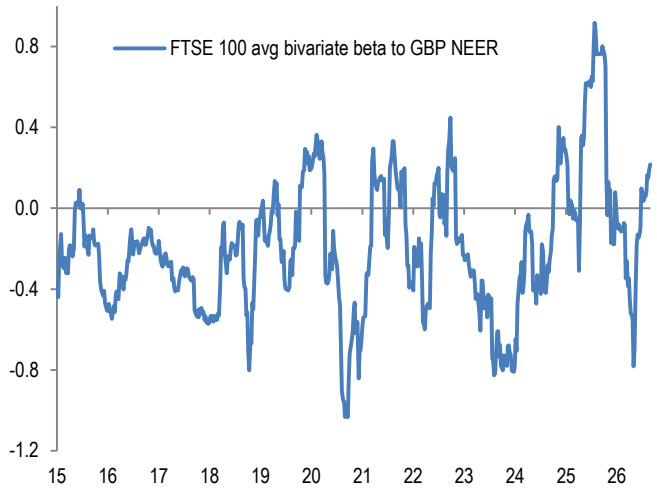
Rolling 26 weeks average betas based on a bivariate regression of the weekly returns of stocks in the S&P500 index to the weekly returns of the MSCI AC World and JPM USD Nominal broad effective exchange rate(NEER).



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Chart A49: Average beta of FTSE 100 companies to trade-weighted GBP

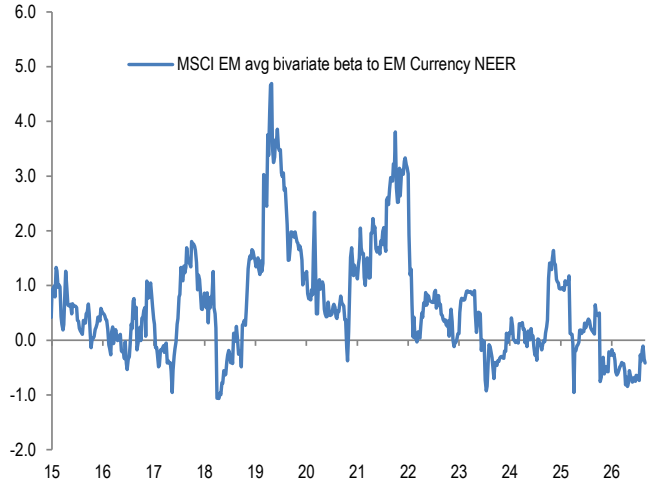
Rolling 26 weeks average betas based on a bivariate regression of the weekly returns of individual stocks in the FTSE 100 index to the weekly returns of the MSCI AC World and JPM GBP Nominal broad effective exchange rate (NEER).



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Chart A50: Average beta of MSCI EM companies to trade-weighted EM Currency Index

Rolling 26 weeks average betas based on a bivariate regression of the weekly returns of individual stocks in the MSCI EM index to the weekly returns of the MSCI AC World and JPM EM Nominal broad effective exchange rate (NEER).



Source: Bloomberg Finance L.P., J.P. Morgan Flows & Liquidity.

Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc

Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc

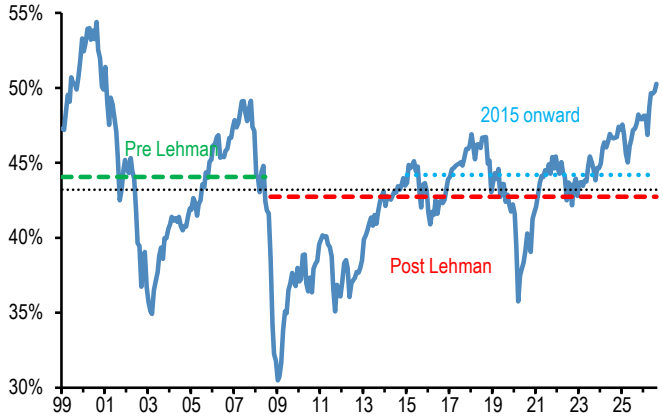
Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited

Krutik P Mehta (91-22) 6157-5016
krutik.mehta@jpmchase.com
J.P. Morgan India Private Limited

Non-Bank investors' implied allocations

Chart A51: Implied equity allocation by non-bank investors globally

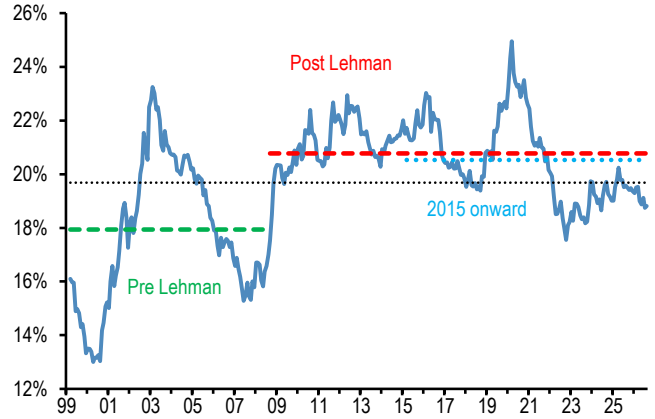
Global equities as % total holdings of equities/bonds/M2 by non-bank investors/ Commodities including gold held by private investors. Dotted lines are averages.



Source: Bloomberg Finance L.P., LSEG DataStream, J.P. Morgan Flows & Liquidity.

Chart A52: Implied bond allocation by non-bank investors globally

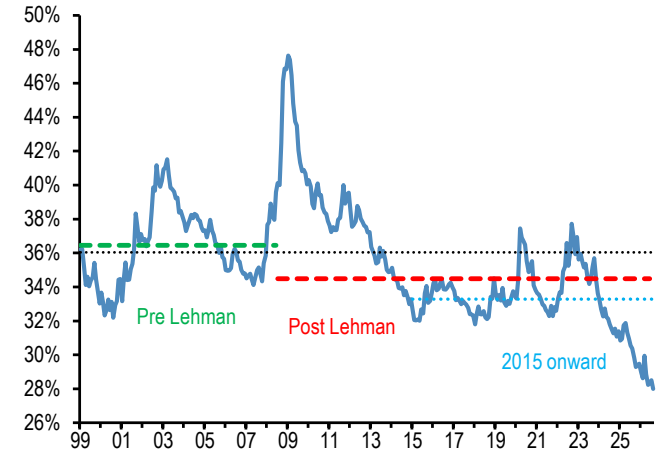
Global bonds as % total holdings of equities/bonds/M2 by non-bank investors/ Commodities including gold held by private investors. Dotted lines are averages.



Source: Bloomberg Finance L.P., LSEG DataStream, J.P. Morgan Flows & Liquidity.

Chart A53: Implied cash allocation by non-bank investors globally

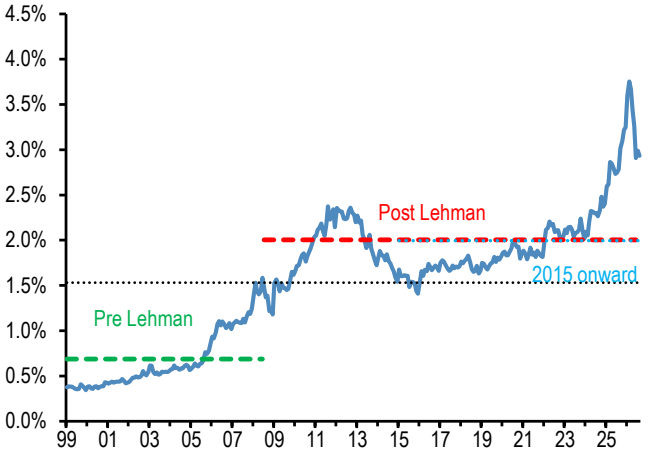
Global cash held by non-bank investors as % total holdings of equities/bonds/M2 by non-bank investors/Commodities including gold held by private investors. Dotted lines are averages.



Source: Bloomberg Finance L.P., LSEG DataStream, J.P. Morgan Flows & Liquidity.

Chart A54: Implied commodity allocation (including privately held gold) by non-bank investors globally

Proxied by the open interest of commodity futures ex gold and privately held gold as % of the stock of equities, bonds, cash held by non-bank investors globally and commodities including gold held by private investors.



Source: Bloomberg Finance L.P., LSEG DataStream, J.P. Morgan Flows & Liquidity.

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

An analyst listed on the front cover has personal holdings in digital or crypto assets.

Company-Specific Disclosures: J.P. Morgan does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision. Important disclosures, including price charts and credit opinion history tables (if applicable), 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.

Explanation of Equity Research Ratings, Designations and Analyst(s) Coverage Universe:
J.P. Morgan uses the following rating system: Overweight (over the duration of the price target indicated in this report, we expect this stock will outperform the average total return of the stocks in the Research Analyst's, or the Research Analyst's team's, coverage universe); Neutral (over the duration of the price target indicated in this report, we expect this stock will perform in line with the average total return of the stocks in the Research Analyst's, or the Research Analyst's team's, coverage universe); and Underweight (over the duration of the price target indicated in this report, we expect this stock will underperform the average total return of the stocks in the Research Analyst's, or the Research Analyst's team's, coverage universe. NR is Not Rated. In this case, J.P. Morgan has removed the rating and, if applicable, the price target, for this stock because of either a lack of a sufficient fundamental basis or for legal, regulatory or policy reasons. The previous rating and, if applicable, the price target, no longer should be relied upon. An NR designation is not a recommendation or a rating. Some stocks under coverage have a rating but no price target; in these cases, we expect the stock will outperform/perform in line/underperform the average total return of the stocks in the Research Analyst's, or the Research Analyst's team's, coverage universe of the relevant duration of the region. In our Asia (ex-Australia and ex-India) and U.K. small- and mid-cap Equity Research, each stock's expected total return is compared to the expected total return of a benchmark country market index, not to those Research Analysts' coverage universe. If it does not appear in the Important Disclosures section of this report, the certifying Research Analyst's coverage universe can be found on J.P. Morgan's Research website, https://.

J.P. Morgan Equity Research Ratings Distribution, as of July 04, 2026

	Overweight (buy)	Neutral (hold)	Underweight (sell)
J.P. Morgan Global Equity Research Coverage*	53%	36%	12%
IB clients**	83%	80%	73%
JPMS Equity Research Coverage*	51%	37%	12%
IB clients**	95%	92%	87%

***Please note that the percentages may not add to 100% because of rounding.**
****Percentage of subject companies within each of the "buy," "hold" and "sell" 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 Neutral rating falls into a hold rating category; and our Underweight rating falls into a sell rating category. Please note that stocks with an NR designation are not included in the table above. This information is current as of the end of the most recent calendar quarter.

Equity Valuation and Risks: For valuation methodology and risks associated with covered companies or price targets for covered companies, please see the most recent company-specific research report at http://, contact the primary analyst or your J.P. Morgan representative, or email research.disclosure.inquiries@jpmorgan.com. For material information about the proprietary models used, please see the Summary of Financials in company-specific research reports and the Company Tearsheets, which are available to download on the company pages of our client website, http://. This report also sets out within it the material underlying assumptions used.

History of Investment Recommendations:
A history of J.P. Morgan investment recommendations disseminated during the preceding 12 months can be accessed on the Research &

Commentary page of http:// where you can also search by analyst name, sector or financial instrument.

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 J.P. Morgan's implementation of the FICC research exemption and guidance on relevant FICC research categorisation.

All research material made available to clients are simultaneously available on our client website, J.P. Morgan Markets, unless specifically permitted by relevant laws. Not all research content is redistributed, e-mailed or made available to third-party aggregators. For all research material available on a particular stock, please contact your sales representative.

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.

Digital assets, which may also be referred to as virtual or crypto assets or crypto currencies (e.g. bitcoin), discussed in this research report are subject to a rapidly changing regulatory landscape. The application of relevant laws in respect of such assets may be unsettled, and the legality of any digital asset investment may be unclear. Prior to making any investment decision regarding any digital asset, investors should seek their own legal advice and be aware of any legal considerations regarding the purchase, holding or selling of such an investment. For relevant regulatory advisories on digital assets, including bitcoin and ethereum, 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 https://www.finra.org/sites/default/files/2020-08/Security_Futures_Risk_Disclosure_Statement_2020.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. Where more than one legal entity is listed under an analyst's name, the first legal entity is responsible for the production unless stated otherwise. 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 in the legal entity disclosures, this material has been distributed by the legal entity responsible for production, or where more than one legal entity is listed under the analyst's name, the first legal entity will be responsible for distribution. 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 Participant of ASX Limited, a Clearing and Settlement Participant of ASX Clear Pty Limited and a Clearing Participant of ASX Clear (Futures) Pty Limited. 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 / 0800-7700810 (For Hearing Impaired) / ouvidoria.jp.morgan@jpmchase.com.

Canada: J.P. Morgan Securities Canada Inc. is a registered investment dealer, regulated by the Canadian Investment Regulatory Organization 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.

Colombia: Banco J.P. Morgan Colombia S.A. is supervised by the Superintendencia Financiera de Colombia (SFC). Any reference in this material to products or services offered abroad by entities other than the Bank in Colombia is included exclusively for descriptive purposes. Such references do not constitute, and should not be construed as, promotional activity or the provision of financial products or services within Colombian territory, as defined under applicable Colombian regulation.

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 authorised as a credit institution by the Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht, BaFin) and jointly supervised by the BaFin, the German Central Bank (Deutsche Bundesbank) and the European Central Bank (ECB). 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: Ashutosh Sharma; ashutosh.j.sharma@jpmchase.com; +912261575002. Grievance Officer: Ramprasadh K, jpmipl.research.feedback@jpmorgan.com; +912261573000. Registration granted by SEBI and certification from NISM in no way guarantee performance of the intermediary or provide any assurance of returns to investors. Please visit Terms and Conditions and Most Important Terms and Conditions (MITC). The annual Compliance audit report is available at http://www.jpmipl.com/#research.

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., J.P. Morgan Grupo Financiero is member of the Mexican Stock Exchange ("Bolsa Mexicana de Valores") and the Institutional Stock Exchange ("Bolsa Institucional de Valores"), and it is authorized to act as a broker dealer by the National Banking and Securities Exchange Commission ("Comisión Nacional Bancaria y de Valores").

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.

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.

Singapore: This material is issued and distributed in Singapore by or through J.P. Morgan Securities Singapore Private Limited (JPMSS) [MDDI (P) 070/08/2026 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.

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 Conduct Authority (FSCA).

Taiwan: J.P. Morgan 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. **To the extent that J.P. Morgan Securities (Taiwan) Limited produces research materials on securities not listed on the Taiwan Stock Exchange or Taipei Exchange ("Non-Taiwan Listed Securities"), these materials shall not constitute securities recommendations for the purpose of applicable Taiwan regulations, and, for the avoidance of doubt, J.P. Morgan Securities (Taiwan) Limited does not act as broker for Non-Taiwan Listed Securities.** 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. The registered address is 548 One City Center Building, 50th Floor, Ploenchit Road, Lumphini, Pathum Wan, Bangkok 10330.

UK: Research is produced 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 or J.P. Morgan Markets Limited ("JPMML Ltd") which is authorised and regulated by the Financial Conduct Authority. Unless specified to the contrary, this material is distributed in the UK by JPMS plc and 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.

A description of J.P. Morgan EMEA's policy for prevention and avoidance of conflicts of interest related to the production of Research 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. Artificial intelligence tools may have been used in the preparation of this material, including assisting in data analysis, pattern recognition, and content drafting for research 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 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") ©2026. 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

Any mentions of third-party trademarks, brand names, products, and services are for referential purposes only and any mention thereof is not meant to imply any sponsorship, endorsement, or affiliation.

Sustainalytics: Certain information, data, analyses and opinions contained herein are reproduced by permission of Sustainalytics and: (1) includes the proprietary information of Sustainalytics; (2) may not be copied or redistributed except as specifically authorized; (3) do not constitute investment advice nor an endorsement of any product or project; (4) are provided solely for informational purposes; and (5) are not warranted to be complete, accurate or timely. Sustainalytics is not responsible for any trading decisions, damages or other losses related to it or its use. The use of the data is subject to conditions available at https://www.sustainalytics.com/legal-disclaimers. ©2026 Sustainalytics. All

J.P. Morgan Securities plc
Nikolaos Panigirtzoglou [AC]
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

J.P.Morgan

Rights Reserved.

"Other Disclosures" last revised August 29, 2026.

Copyright 2026 JPMorgan Chase & Co. All rights reserved. This material or any portion hereof may not be reprinted, sold or redistributed without the written consent of J.P. Morgan. It is strictly prohibited to use or share without prior written consent from J.P. Morgan any research material received from J.P. Morgan or an authorized third-party ("J.P. Morgan Data") in any third-party artificial intelligence ("AI") systems or models when such J.P. Morgan Data is accessible by a third-party.

Completed 02 Sep 2026 07:04 PM BST

Disseminated 02 Sep 2026 07:04 PM BST

