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

Watch the US FRIs

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

- **We use our Forecast Revision Indices (FRIs) to provide a framework on how US economic surprises under a second Trump presidency would impact markets.**
- **We continue to see room for the Trump trade to reverberate over the coming eight weeks or so in a similar fashion to 2016.**
- **Gold and bitcoin should both benefit from a second Trump presidency. Bitcoin to get an extra boost from MicroStrategy's massive bitcoin purchase program.**
- **The recent sharp narrowing of swap spreads in both the US and Europe is a reminder of the rising "inconvenience" of government bonds.**

- We have been arguing over the previous weeks that from both price and position point of view, markets had not embedded high probability of a Trump win, with perhaps the exception of credit markets. Figure 1suggests that this is still largely true after today's initial market reaction, even as there has been some further pricing in of a Trump win relative to a week ago. In turn, this suggests that over the coming weeks the so called Trump trade has room to further reverberate in markets by raising US bond yields, by boosting the dollar, by boosting US equities and in particular US regional banks and small caps and by lowering US credit spreads. As a reminder to our readers to derive the implied probabilities of Figure 1we envisage the Trump trade in a similar fashion to 2016 when the Trump trade had reverberated over a period of around eight weeks. For the current juncture, we choose the market moves since August 1st as the starting point of the Trump trade to avoid the market swings/ recession fears that had followed the weak US payroll report of August 2nd (these recession fears were subsequently unwound during September/ October).

See page 25 for analyst certification and important 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.

This document is being provided for the exclusive use of blake@sandboxfp.com.

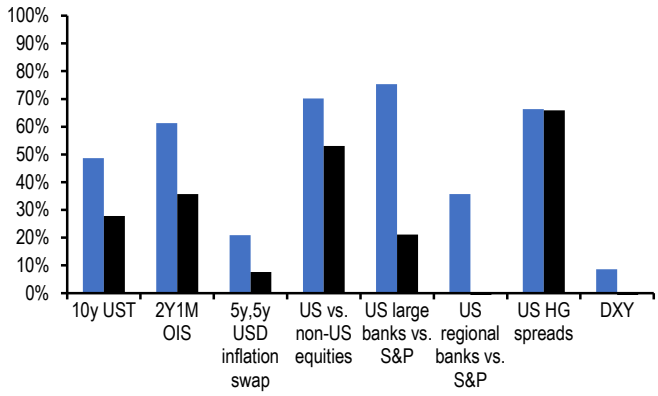
Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc
Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited
Krutik P Mehta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

J.P.Morgan

- In other words, despite today's rather muted market reaction to the election result on some asset classes, we continue to see room for shorts to be covered and for positions to be unwound further across equities, rates, fx and credit (see F&L of October 30th 2024) as the Trump win reverberates over the coming eight weeks or so in a similar fashion to 2016.

Figure 1: Implied probability of a Republican sweep from various asset classes as of Nov 6th

In %. Moves from Aug 1st to Nov 6th. Black bars indicate changes upto 29th Oct.

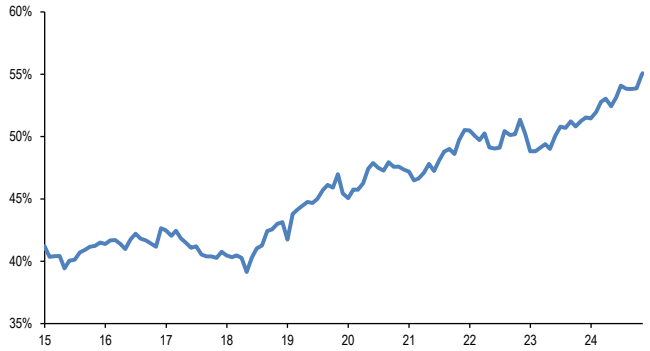


Source: Bloomberg Finance L.P., J.P. Morgan.

- Outside the reverberations over the coming weeks, over the longer term the Trump win is likely to reinforce the so called US exceptionalism. We argued previously that US exceptionalism has two main manifestations: the dominant position of US equities and the outperformance of the US economy. The first has been reflected in the rising share of US equities in global equity markets (Figure 2). The latter has been reflected in the striking divergence between economic growth surprises in the US vs. the rest of the world. This is shown by Figure 3 which depicts our Forecast Revision Index (FRI) for US GDP vs Global GDP. This US economic outperformance had also been a feature in the first Trump presidency when tariffs hit during 2028/2019 (Figure 4). With US tariffs potentially hitting the rest of the world earlier in the second Trump presidency, perhaps as soon as early next year, the current US economic outperformance could spill over into 2025. In turn this raises the question: how would US economic surprises impact markets?

Figure 2: Share of US in global equities by market value

Based on DataStream equity indices.



Source: LSEG DataStream J.P. Morgan.

Figure 3: Forecast Revision Indices for US and Global GDP over the past five years

The J.P.Morgan Forecast Revision Index (JFRI) is shows the cumulative change in the J.P.Morgan Forecast History Index (JFRI) starting at 100 in 4 January 2002. In this regard, the change in any given week shows the %-point revision to the J.P. Morgan economic research forecast of average real GDP growth over the quarters t-1, t, t+1, and t+2, where t is the quarter in which the forecast is made. See description for the JFHI for more details.For further documentation, see 'Know thyself: Evaluating and using J.P. Morgan economic forecasts', Joseph Lupton et al, J.P. Morgan, Global Issues, 23 September 2014.

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

This document is being provided for the exclusive use of blake@sandboxfp.com.

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

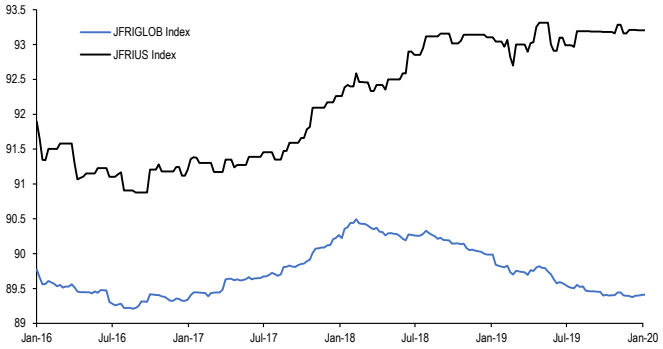
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc

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

Figure 4: Forecast Revision Indices for US and Global GDP during the first Trump presidency

The J.P.Morgan Forecast Revision Index (JFRI) is shows the cumulative change in the J.P.Morgan Forecast History Index (JFRI) starting at 100 in 4 January 2002. In this regard, the change in any given week shows the %-point revision to the J.P. Morgan economic research forecast of average real GDP growth over the quarters t-1, t, t+1, and t+2, where t is the quarter in which the forecast is made. See description for the JFHI for more details.For further documentation, see 'Know thyself: Evaluating and using J.P. Morgan economic forecasts', Joseph Lupton et al, J.P. Morgan, Global Issues, 23 September 2014.

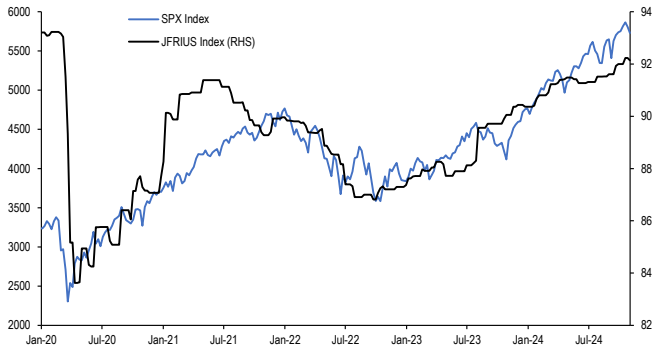


Source: Bloomberg Finance L.P., J.P. Morgan.

- To answer this question we look at the experience over the past five years which in our opinion sheds some light on the relationship between US economic surprises and markets. The S&P500 index has been tracking our US FRI rather closely as shown in Figure 5. As a result to the extent the Trump win sustains the upward trajectory in US economic growth surprises, the bull equity market would continue. This is also true with US credit. The US HG corporate credit spread has been tracking our US FRI rather closely as shown in Figure 6. Again to the extent the Trump win sustains the upward trajectory in US economic growth surprises, US credit spreads would tighten further. Higher US economic surprises should in principle lead to higher UST yields. However, for UST yields we find a closer relationship with US inflation surprises (i.e. our US CPI FRI) than US growth surprises (i.e. our US GDP FRI). This is shown in Figure 7. In other words, to the extent that the Trump win resumes the upward trajectory in US CPI surprises, UST yields would have further upside. The relationship between US economic surprises and the dollar has been more complicated. US economic surprises have most of the time exhibited negative correlation with the dollar, i.e. the dollar tended to weaken when US economic surprises were rising and vice versa. This mostly negative correlation is shown in Figure 8. This also happened during the first year of the first Trump presidency, i.e. during 2017, when then dollar weakened as US economic surprises increased as shown in Figure 9. But Figure 9 also reveals that this negative correlation reversed sign during the tariff years of 2018/2019 i.e. when US tariffs hit the world, the US dollar appreciated (to largely offset US tariffs) in tandem with rising US economic surprises. And this 2018/2019 positive correlation backdrop between US economic surprises and the dollar is likely to be repeated into 2025 if universal US tariffs are introduced by the Trump administration early next year.

Figure 5: Forecast Revision Index for US GDP vs the S&P500 index

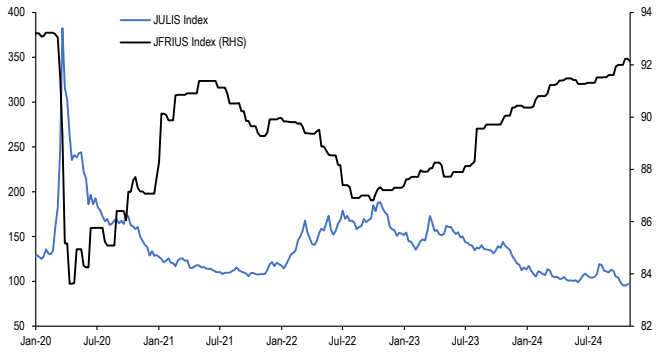
The J.P.Morgan Forecast Revision Index (JFRI) is shows the cumulative change in the J.P.Morgan Forecast History Index (JFRI) starting at 100 in 4 January 2002. In this regard, the change in any given week shows the %-point revision to the J.P. Morgan economic research forecast of average real GDP growth over the quarters t-1, t, t+1, and t+2, where t is the quarter in which the forecast is made. See description for the JFHI for more details.For further documentation, see 'Know thyself: Evaluating and using J.P. Morgan economic forecasts', Joseph Lupton et al, J.P. Morgan, Global Issues, 23 September 2014.



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

Figure 6: Forecast Revision Index for US GDP vs the US HG corporate credit spread

The J.P.Morgan Forecast Revision Index (JFRI) is shows the cumulative change in the J.P.Morgan Forecast History Index (JFRI) starting at 100 in 4 January 2002. In this regard, the change in any given week shows the %-point revision to the J.P. Morgan economic research forecast of average real GDP growth over the quarters t-1, t, t+1, and t+2, where t is the quarter in which the forecast is made. See description for the JFHI for more details.For further documentation, see 'Know thyself: Evaluating and using J.P. Morgan economic forecasts', Joseph Lupton et al, J.P. Morgan, Global Issues, 23 September 2014.



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

This document is being provided for the exclusive use of blake@sandboxfp.com.

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

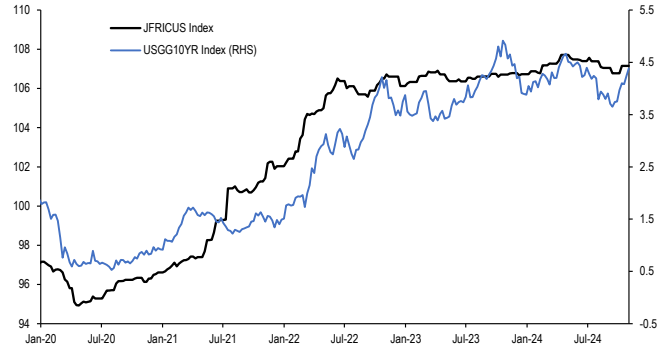
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc

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

Figure 7: Forecast Revision Index for US CPI vs the 10y UST yield

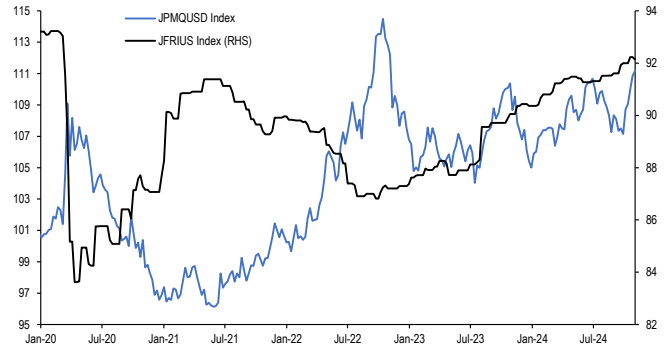
The J.P. Morgan CPI Forecast Revision Index (JFRIC) shows the cumulative change in the J.P. Morgan CPI Forecast History Index (JFRIC) starting at 8 June 2012. In this regard, the change in any given week shows the %-point revision to the J.P. Morgan economic research forecast of CPI inflation %oya over the quarters t-1, t, t+1 and t+2 where t is the quarter in which the foredxycast is made. For further documentation see 'Know thyself: JPM Inflation Forecast Revision Index', Global Issues, 2 August 2018.



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

Figure 8: Forecast Revision Index for US GDP vs the US dollar over the past five years

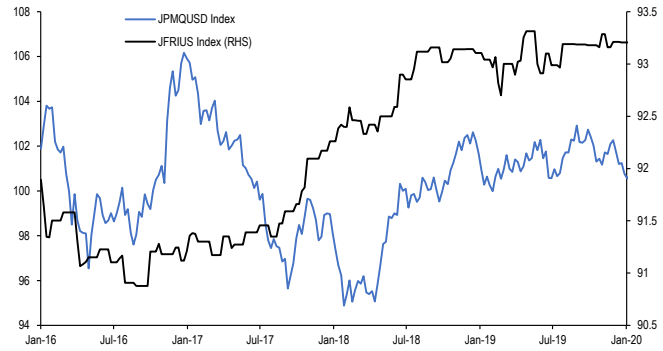
The J.P.Morgan Forecast Revision Index (JFRI) is shows the cumulative change in the J.P.Morgan Forecast History Index (JFRI) starting at 100 in 4 January 2002. In this regard, the change in any given week shows the %-point revision to the J.P. Morgan economic research forecast of average real GDP growth over the quarters t-1, t, t+1, and t+2, where t is the quarter in which the forecast is made. See description for the JFHI for more details.For further documentation, see 'Know thyself: Evaluating and using J.P. Morgan economic forecasts', Joseph Lupton et al, J.P. Morgan, Global Issues, 23 September 2014.



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

Figure 9: Forecast Revision Index for US GDP vs the US dollar during the first Trump presidency

The J.P.Morgan Forecast Revision Index (JFRI) is shows the cumulative change in the J.P.Morgan Forecast History Index (JFRI) starting at 100 in 4 January 2002. In this regard, the change in any given week shows the %-point revision to the J.P. Morgan economic research forecast of average real GDP growth over the quarters t-1, t, t+1, and t+2, where t is the quarter in which the forecast is made. See description for the JFHI for more details.For further documentation, see 'Know thyself: Evaluating and using J.P. Morgan economic forecasts', Joseph Lupton et al, J.P. Morgan, Global Issues, 23 September 2014.



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

- Can we use the US FRIs of Figure 5 to Figure 9 to derive profitable systematic trading rules? The answer is yes to a significant extent. Using a positive sign in the 13-week change in the US GDP FRI to go long US equities vs cash, US vs non US equities, US HG corporates bonds vs USTs (and to go short if the sign of the US GDP FRI is negative) produced a Sharpe ratio of 0.50, -0.13 and 0.28 respectively over the past decade (Figure 10). In other words, while the 13-week change in the US GDP FRI has been useful for trading US equities and credit, it has been less useful for trading US vs non-US equities.

Figure 10: Sharpe Ratios for using our US GDP and US CPI Forecast Revision Indices (FRIs) to trade various assets classes

See text for details about the exact trading rules

	US equities	US - non US equties	USTs	10y USTs	US HG credit	DXY	JPM Dollar Index	EM FX
Sharpe Ratio	0.50	-0.13	0.45	0.36	0.28	0.29	0.43	0.34
Annual return	8.8%	-1.3%	2.1%	1.8%	1.4%	2.0%	2.4%	2.6%
Vol	17.6%	9.7%	4.6%	5.1%	4.9%	6.9%	5.5%	7.6%

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

- For the dollar, using a negative sign in the 13-week change in the US GDP FRI to go long DXY or the JPM dollar index and to go short the JPM EM currency index (and vice versa if the sign of the US GDP FRI is negative) produced a Sharpe ratio of 0.29, 0.43 and 0.34, respectively, over the past decade (Figure 10). In other words, the 13-week change in the US GDP FRI has been overall useful for trading the US dollar and EM currencies.

This document is being provided for the exclusive use of blake@sandboxfp.com.

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

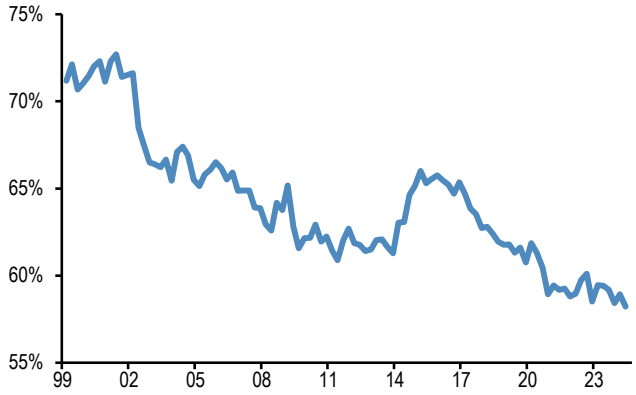
- For USTs, using a negative sign in the 4-week change in the US CPI FRI to go long USTs vs cash (and vice versa if the sign of the US CPI FRI is positive) produced a Sharpe ratio of 0.45 for the overall UST index and 0.43 for the 10y UST specifically (Figure 10).
- Of course one can imagine more sophisticated variations to improve the performance of the above trading rules but the overarching message would remain: that US growth and inflation surprises matter and the market implications from the Trump win and policies would depend on the trajectory for US economic surprises.

Gold and bitcoin should both benefit from a second Trump presidency. Bitcoin to get an extra boost from MicroStrategy's massive bitcoin purchase program.

- Despite the negative initial market reaction to the US election result, we still believe that gold would perform well under a second Trump presidency as it represents a significant component of the so called "debasement trade". This trade is likely to be reinforced by both tariffs and geopolitical tensions as well as an expansionary fiscal policy ("debt debasement"). We do not see the initial negative market reaction by gold as a rejection of the "debasement trade" under a Trump win. After all, bitcoin, the other component of the "debasement trade" rallied after the Trump win. We rather see it as continuation of the recent profit taking. After a stellar three month rally during August-October, gold have been seeing significant profit taking during November not only on Nov 6th but also during the previous four days.
- There is little doubt that the pace of central bank purchases is key to gauging the future trajectory for gold prices into 2025. Central banks flocked into gold in 2022 after the Ukraine war erupted and sanctions on Russia were imposed. Even as the PBoC effectively paused its gold purchases since last April, we see tariffs/geopolitics inducing further diversification by central banks (including the PBoC) away from dollar reserves (Figure 11) towards gold (Figure 12).

Figure 11: Share of USD in FX reserves as reported in IMF COFER data

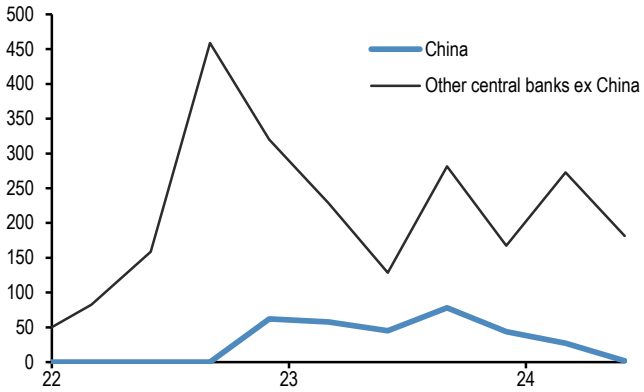
In %.



Source: IMF COFER, J.P. Morgan.

Figure 12: Quarterly gold purchases by the PBoC vs other central banks

Tonnes.



Source: World Gold Council, Bloomberg Finance L.P., J.P. Morgan.

- Retail investors are also likely to continue to support gold into 2025. We discussed in our previous publications that retail investors have been embracing the "debasement trade" in a stronger manner during October by buying bitcoin and gold ETFs. This has been seen in the uptrend of gold ETF (Figure 13) and spot bitcoin ETF flows (Figure 14) since last summer, a trend that is likely to spill over into 2025. While there was some initial divergence with bitcoin reacting positively and gold reacting negatively to the US election result, as mentioned above Trump policies are likely to be supportive of both into 2025.
- Apart from Trump polices, bitcoin is likely to get additional support from MicroStrategy which announced an aggressive bitcoin acquisition program via its "21/21 plan". The company aims at investing a massive $42bn into bitcoin over the next three years, which would be financed equally by debt and equity. For 2025 alone

This document is being provided for the exclusive use of blake@sandboxfp.com.

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

MicroStrategy would be investing $10bn into bitcoin which is roughly equal to its cumulative purchases so far since mid-2020! Figure 15 projects MicroStrategy's debt and cumulative bitcoin purchases over the next three years.

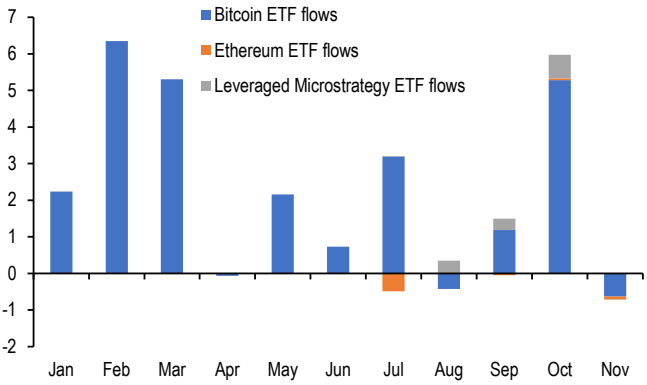
Figure 13: Total Known ETF Holdings of Gold

Millions of troy ounces.

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

Figure 14: Net monthly Bitcoin ETF , Ethereum ETF and Leveraged MicroStrategy ETF flows

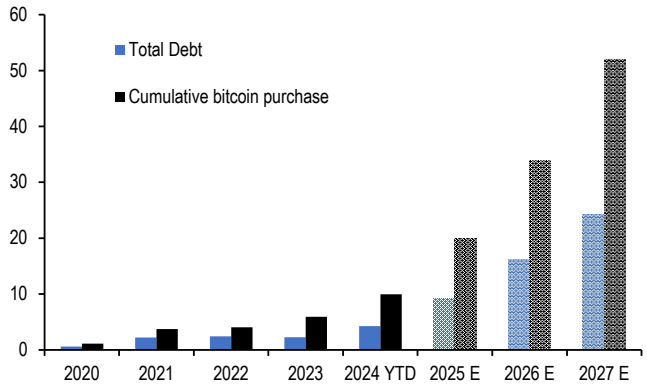
$bn



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

Figure 15: Cumulative bitcoin purchases and total debt held by MicroStrategy at the end of each year

$bn



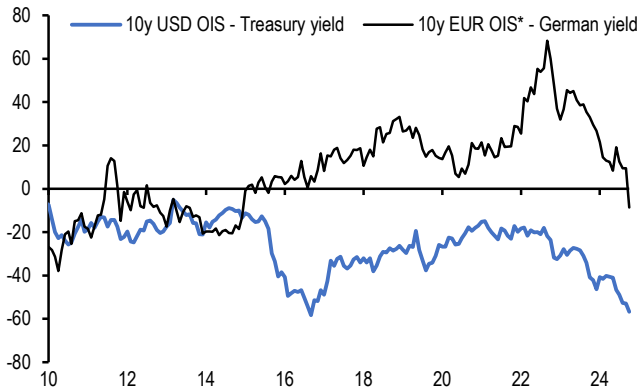
Source: SEC Filings, Bloomberg Finance L.P., J.P. Morgan.

Recent declines in swap spreads a reminder of the 'inconvenience' of government bonds

- The recent notable declines in swap spreads have raised questions in our conversations over what has been behind the declines. Our colleagues in the US and European interest rate derivatives strategy (GFIMS, Nov 1st) note a number of factors that exacerbated the moves in recent weeks, with concerns over higher UST duration supply in the event of a sweep by either party as well as more near-term given auctions for the former, and a relative abundance of collateral availability as well as net interest income hedging needs by banks for the latter. These declines also come on the back of a declining trend in spreads that started in late 2022/early 2023 (Figure 16).

Figure 16: Spread of 10y USD and EUR swaps to benchmark Treasury and German bond yields

In bps.



* EONIA -8.5bp before €STR data available.
Source: J.P. Morgan.

This document is being provided for the exclusive use of blake@sandboxfp.com.

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

- Given the persistence in the declines over the past few years, we look at some potential longer-term drivers of swap spreads. Following the transition away from term Libor rates in swaps to overnight rates such as SOFR and €STR, the swap spread is effectively a difference between two risk-free or near risk-free rates. It can be thought of as a funding premium as holding a government bond requires using balance sheet capacity while an interest rate swap does not, though in the case of euro swap spreads a flight to intra-euro area safety premium can be a factor. A paper from the NY Fed (Understanding the "Inconvenience" of U.S. Treasury Bonds, Feb 2023) notes that a key factor in swap spreads has been an 'inconvenience' premium owing to dealer balance sheet constraints. In particular, it argues that as primary dealers shifted after the financial crisis from a negative net Treasury holdings to positive net holdings, and as regulations have tightened making deploying balance sheet capacity for banks more costly, Treasuries have become less 'convenient' to hold relative to swaps that are largely off-balance sheet (as only any accumulated losses on swaps are collateralised). In addition, the paper notes that central bank balance sheet policy will exert pressure on other financial intermediaries to absorb Treasury bonds, reducing this pressure when they expand balance sheets and increasing the pressure as balance sheet runoff returns bonds to private investors.
- Another potential driver for swap spreads arises from demand for duration from underfunded pension plans (e.g. in a BIS paper titled: An Explanation of Negative Swap Spreads: Demand for Duration from Underfunded Pension Plans, Feb 2018). The argument being that demand from underfunded pension funds to hedge duration, along with dealers' balance sheet constraints, puts downward pressure on swap rates relative to Treasury yields.
- To look at these medium-term drivers, we focus on 2y and 10y US OIS spreads to Treasuries, given that SOFR rates are only available from 2018. That said, swap spreads using OIS and SOFR rates track each other closely. We then regress these swap rates on primary dealer positions, the 12-month rolling change in the Fed's SOMA bond holdings as a proxy of QE/QT policy, and the funded status of the 100 largest private defined benefit pension funds in the Milliman 100 index. Figure 17 shows the coefficients for these regressions, which are consistent with the above. In other words, higher primary dealer net Treasury positions put downward pressure on swap spreads, and higher Fed SOMA Treasury holdings and a higher funded status for defined benefit pension funds tends to put upward pressure on swap spreads. For 10y swap spreads, the latter variable was not statistically significant, possibly as longer dated yields (as an important determinant on the funded status of pension funds) are somehow correlated/captured by the other two variables in the model. Figure 18 shows the actual and fitted 10y US swap spread, which captures the declining trend in swap spreads since late 2022, consistent with the idea that these are notable medium-to-longer term drivers, though not the shorter-term variability.

Figure 17: Regression of 2y and 10y swap spreads to longer-term drivers.

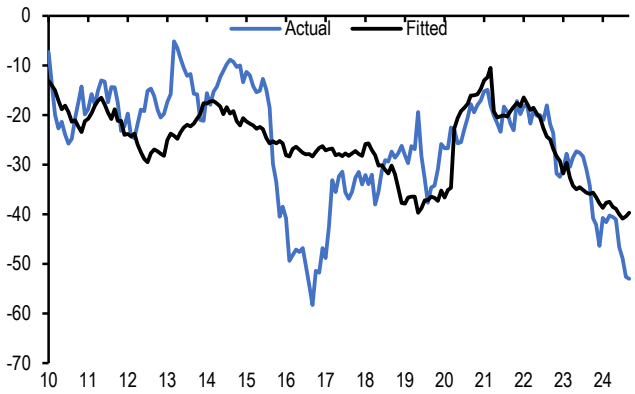
Sample (adjusted): 2010M01 2024M09

	2Y swap spread (bp)		10y swap spread (bp)	
	Coefficient	T-stat	Coefficient	T-stat
Intercept	2.565	1.911	-22.774	-11.974
Primary dealer net positions ($bn)	-0.074	-8.724	-0.060	-4.968
12-month change in Fed SOMA bond holdings ($bn)	0.003	4.564	0.006	7.611
Milliman 100 Funded Status ($bn)	0.021	5.839	0.002	0.394
R-squared	0.41		0.38	

Source: J.P. Morgan.

Figure 18: Actual vs. fitted 10y US swap spread

In bps.



Source: J.P. Morgan.

- In all, the recent tightening in swap spreads comes against a backdrop of a narrowing trend and is a reminder of the rising 'inconvenience' of holding duration exposure via government bonds rather than swaps as government bond supply makes bank balance sheet constraints more visible.

This document is being provided for the exclusive use of blake@sandboxfp.com.

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

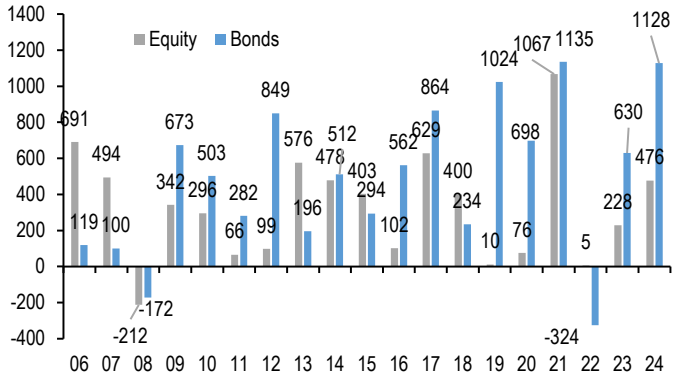
Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited

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

Appendix

Chart A1: 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 Q2'24). Data since then are a combination of monthly and weekly data from Lipper, EPFR and ETF flows from Bloomberg Finance L.P.



Source: ICI, EPFR, Lipper, Bloomberg Finance L.P., J.P. Morgan.

Table A1: Flow Monitor

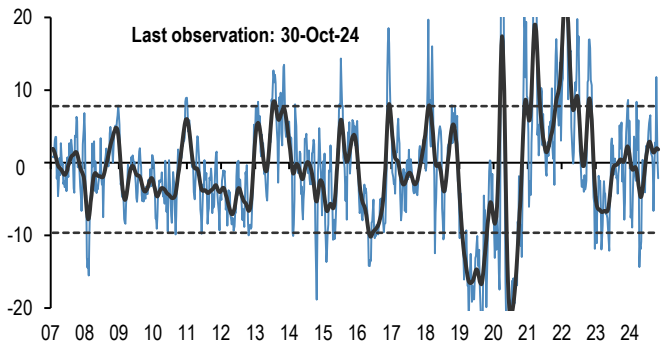
$bn per week. The first two rows include Mutual Fund and ETF flows globally, i.e.flows for funds domiciled both inside and outside the US(source: EPFR). The last four rows only include funds domiciled in the US.International Equity funds are equity funds domiciled in the US that invest outside the US (source: ICI and Bloomberg Finance L.P.).

MF & ETF Flows	30-Oct	4 wk avg	13 wk avg	2024 avg
All Equity	-1.4	15.9	14.6	11.8
All Bond	18.0	18.0	15.0	12.5
US Equity	-7.7	-2.0	-4.1	-3.9
US Bonds	5.7	10.0	8.6	7.6
Non-US Equity	6.3	17.9	18.6	15.5
Non-US Bonds	12.3	8.1	6.3	5.0
US Taxable Bonds	9.2	5.9	6.2	5.1
US Municipal Bonds	1.19	0.46	0.33	0.15
US HG Bonds	8.9	7.9	5.4	4.5
US HY Bonds	0.37	0.06	0.01	0.28
US MMFs	10.68	14.2	25.9	12.6
UCITS Flows	**Jul-24**	**3 mth avg**	**2023 avg**	**2024 avg**
Euro MMFs	34.3	16.5	15.6	11.8
Euro Equities	9.9	17.7	0.6	9.0
Euro Bonds	30.5	27.1	12.3	28.7

Source: ICI, EPFR, EFAMA, Bloomberg Finance L.P., and J.P. Morgan.

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: EPFR) 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. 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.



Source: EPFR, J.P. Morgan.

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 Oct-24	MIN	MAX	Turnover ratio	Vol (tr)	y/y chng
Equities					
EM Equity*			0.7	$0.7	4%
DM Equity*			1.0	$7.4	15%
Govt Bonds					
UST cash			11.6	$14.8	17%
UST futures			0.8	$16.1	25%
JGBs*			46.7	¥3,923	17%
Bund futures			1.6	€7.7	24%
Credit					
US HG			1.0	$0.7	26%
US HY			0.7	$0.1	13%
US Convertibles			3.0	$0.04	18%
Commodities					
Gold			40.2	$1.2	29%
Oil			106.9	$2.7	-10%
Copper			2.0	$0.4	29%
Digital Assets					
CME Bitcoin			89.1	$0.078	170%
CME Ethereum			154.0	$0.012	82%

* Data with one month lag

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

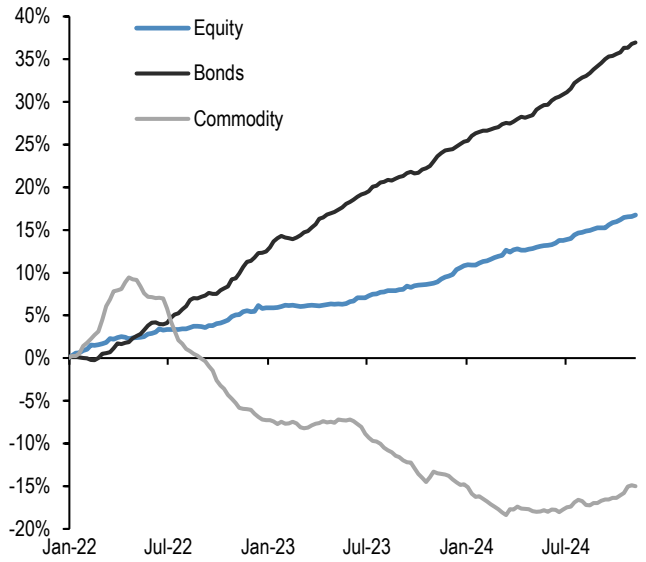
This document is being provided for the exclusive use of blake@sandboxfp.com.

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

ETF Flow Monitor (as of 6th Nov)

Chart A3: Global Cross Asset ETF Flows

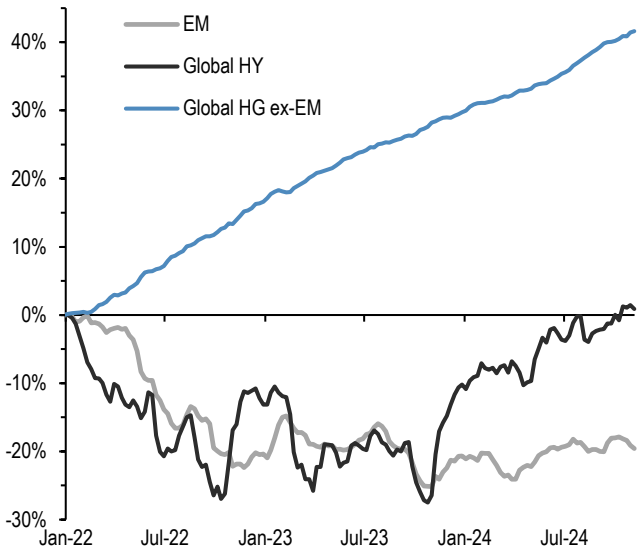
Cumulative flow into ETFs as a % of AUM



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

Chart A4: Bond ETF Flows

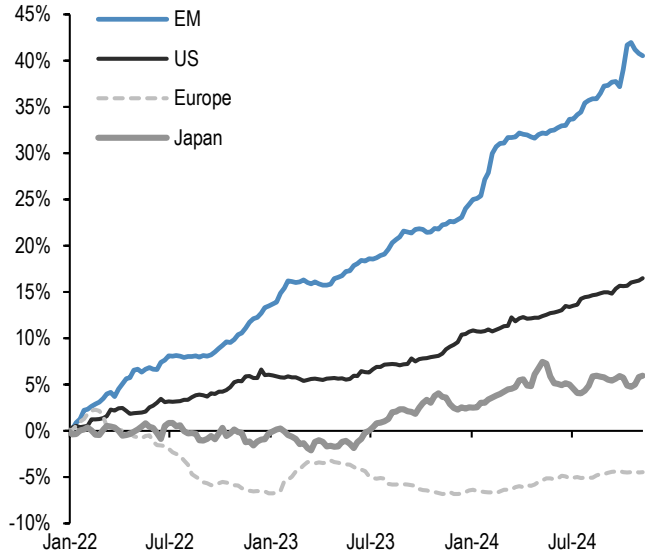
Cumulative flow into bond ETFs as a % of AUM



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

Chart A5: Global Equity ETF Flows

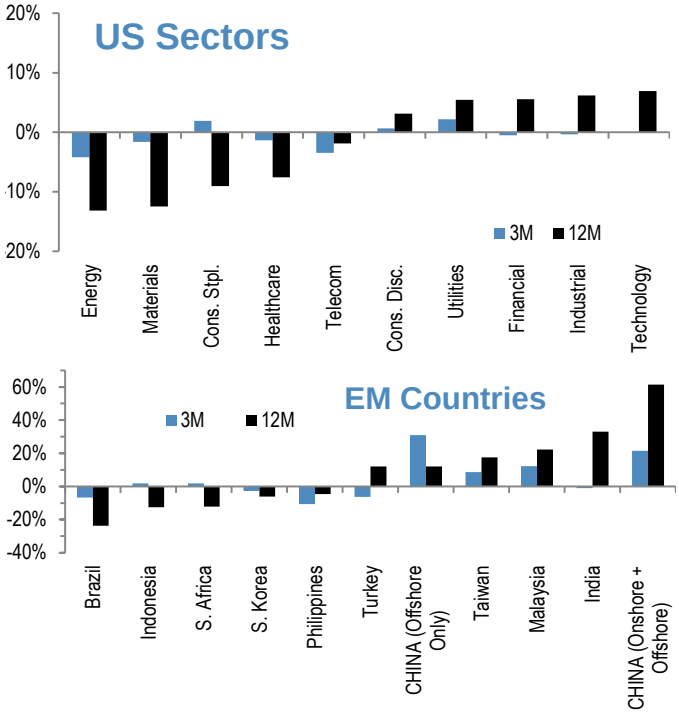
Cumulative flow into global equity ETFs as a % of AUM



Source: Bloomberg Finance L.P., J.P. Morgan.
Note: We include ETFs with AUM > $200mn in all the flow monitor charts. Chart A5 exclude China On-shore (A-share) ETFs from EM and in Japan. We subtract the BoJ buying of ETFs.

Chart A6: 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.

This document is being provided for the exclusive use of blake@sandboxfp.com.

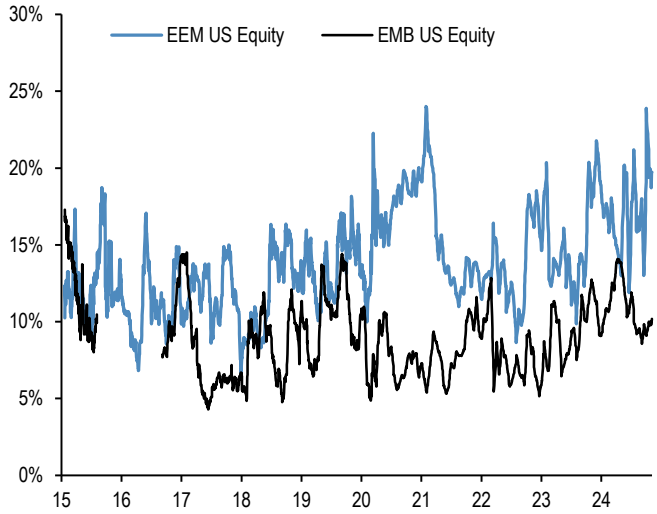
Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc
Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited
Krutik P Mehta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

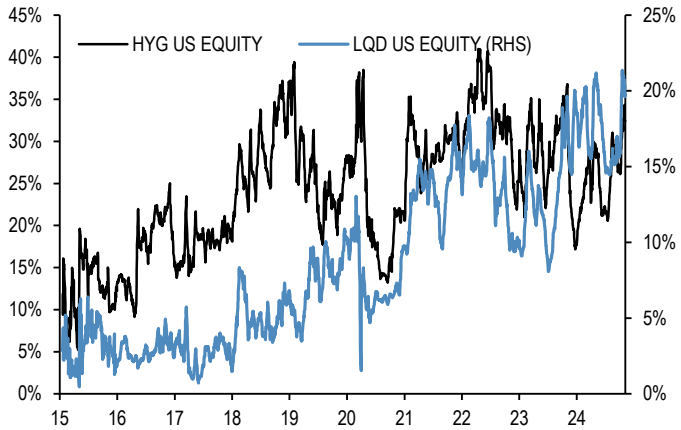
Short Interest as a % share of share outstanding.



Source: S3, J.P. Morgan

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

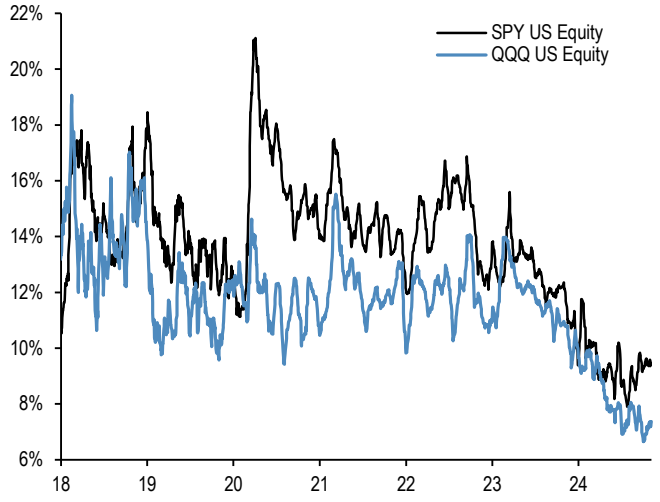
Short Interest as a % share of share outstanding.



Source: S3, J.P. Morgan

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

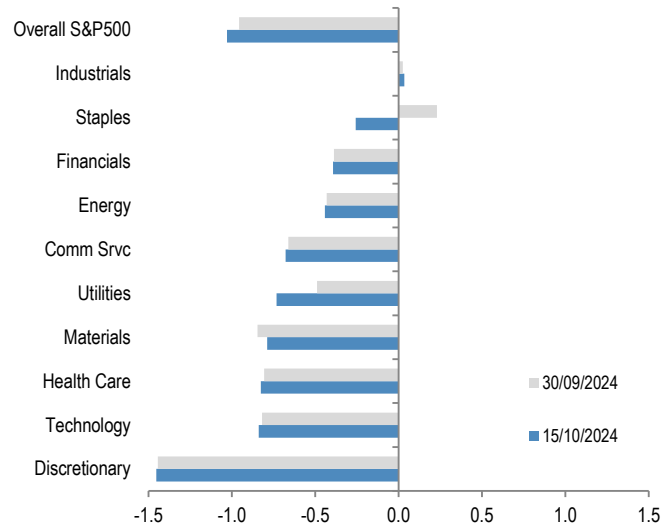
Short Interest as a % share of share outstanding. Last obs is for 4th November 2024.



Source: S3, J.P. Morgan

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

This document is being provided for the exclusive use of blake@sandboxfp.com.

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 5th Nov-2024

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	16%	11%	21-May-24	25%	05-Aug-24	8%	5%	1.58x
EuroSTOXX	16%	12%	20-May-24	20%	05-Aug-24	4%	4%	1.20x
Nikkei 225	24%	16%	02-Jul-24	37%	05-Aug-24	13%	9%	1.29x
Hang Seng	25%	18%	05-Sep-24	33%	07-Oct-24	7%	7%	0.57x
MSCI EM	20%	11%	28-Mar-24	32%	26-Jan-24	12%	8%	1.68x
Gold	16%	10%	27-Feb-24	17%	12-Aug-24	1%	6%	1.27x
Oil (brent)	34%	20%	15-Jul-24	39%	14-Oct-24	4%	14%	0.88x
Copper	22%	15%	01-Mar-24	31%	20-May-24	9%	7%	1.35x
BB commodity index	14%	12%	12-Jul-24	15%	03-Oct-24	1%	2%	1.06x
EUR/USD	7%	5%	12-Jul-24	7%	29-Oct-24	0%	2%	1.74x
USD/NOK	12%	9%	23-May-24	13%	05-Aug-24	1%	3%	1.52x
USD/JPY	12%	8%	27-Feb-24	13%	05-Aug-24	1%	4%	1.53x
GBP/USD	8%	6%	13-Mar-24	8%	03-Oct-24	0%	2%	1.23x
USD/CHF	7%	6%	12-Jul-24	9%	05-Aug-24	2%	2%	1.78x
10y US swaps	96%	88%	22-May-24	124%	13-Nov-23	28%	8%	1.30x
10y Eur swaps	81%	64%	19-Sep-24	102%	02-Jan-24	21%	17%	1.57x
CDX IG	46%	36%	20-May-24	60%	05-Aug-24	15%	9%	1.20x
CDX HY	36%	30%	12-Jun-24	46%	05-Aug-24	10%	6%	1.11x
iTraxx	46%	37%	22-Nov-23	61%	05-Aug-24	15%	8%	1.54x
iTraxx X/O	40%	32%	22-Nov-23	54%	05-Aug-24	14%	8%	1.62x

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

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 (04-Nov-24)
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

This document is being provided for the exclusive use of blake@sandboxfp.com.

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

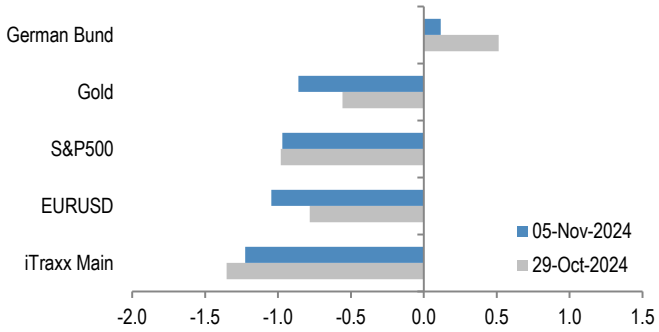
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc

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

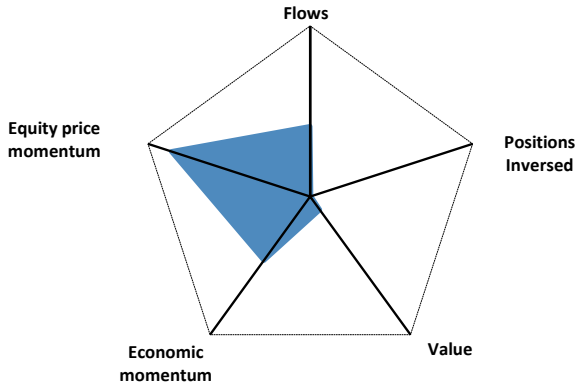
Skew is the difference between the implied volatility of out-of-the-money (OTM) call options and put options. A positive skew implies more demand for calls than puts and a negative skew, higher demand for puts than calls. It can therefore be seen as an indicator of risk perception in that a highly negative skew inequities 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.

Chart A11c: Equity-Bond metric map

Explanation of Equity - Bond metric map: Each of the five 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. For example, a reading at the centre for value would mean that risky assets are the most expensive they have ever been while a reading at the other end of the axis would mean they are the cheapest they have ever been. Overall, the larger the blue area within the pentagon, the better for the risky markets. 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. **Value**: The slope of the risk-return trade-off line calculated across USTs, US HG and HY corporate bonds and US equities(see GMOS p. 6, Loeys et al, Jul 6 2011 for more details). **Positions**: Difference between net spec positions on US equities and intermediate sector UST. See Chart A13. **Flow momentum**: The difference between flows into equity funds (incl. ETFs) and flows into bond funds. Chart A1. We then smooth this using a Hodrick-Prescott filter with a lambda parameter of 100. We then take the weekly change in this smoothed series as shown in Chart A1. **Economic momentum**:The 2-month change in the global manufacturing PMI. (See REVISITING: Using the Global PMI as trading signal, Nikolaos Panigirtzoglou, Jan 2012). **Equity price momentum**: The 6-month change in the S&P500 equity index. As of 2nd Nov 24.



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

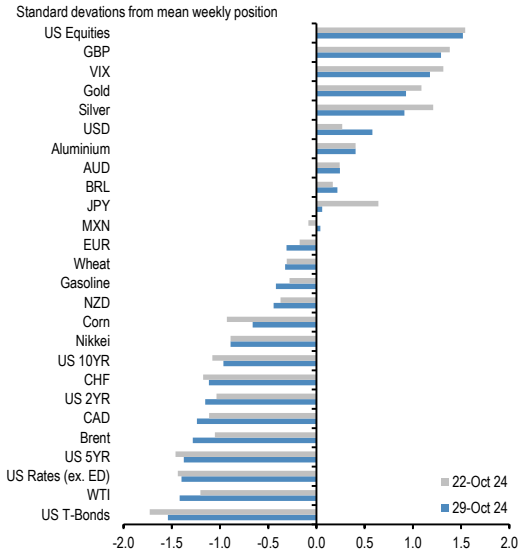
This document is being provided for the exclusive use of blake@sandboxfp.com.

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

Spec position monitor

Chart A12: Weekly Spec Position Monitor

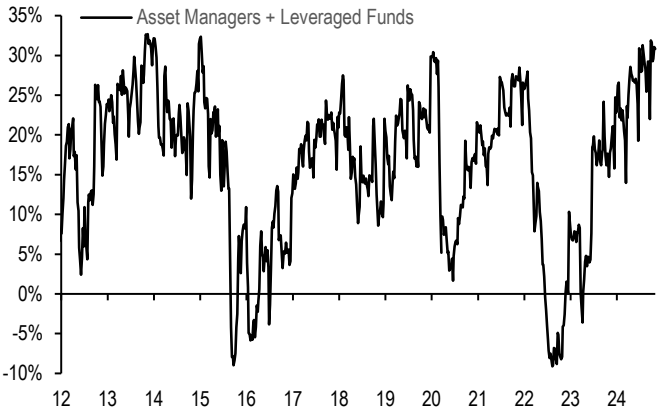
Net spec positions are proxied by the number of long contracts minus the number of short contracts using the speculative category of the Commitments of Traders reports (as reported by CFTC). To proxy for speculative investors for equity and US Treasury bond futures positions we use Asset managers and 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

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

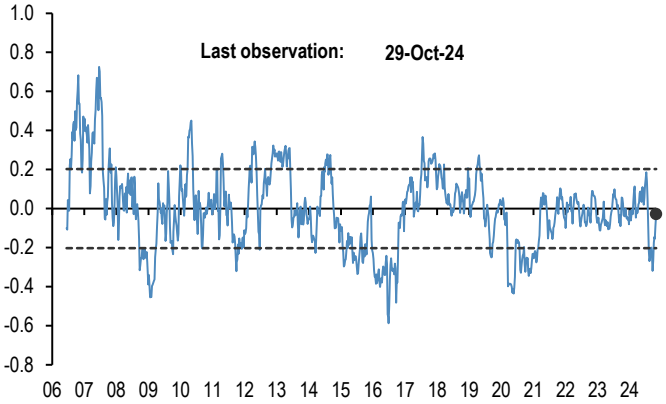
CFTC positions in US equity futures by Leveraged funds and Asset managers (as a % of open interest). It is an aggregate of the S&P500, DowJones, NASDAQ and their Mini futures contracts.



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

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

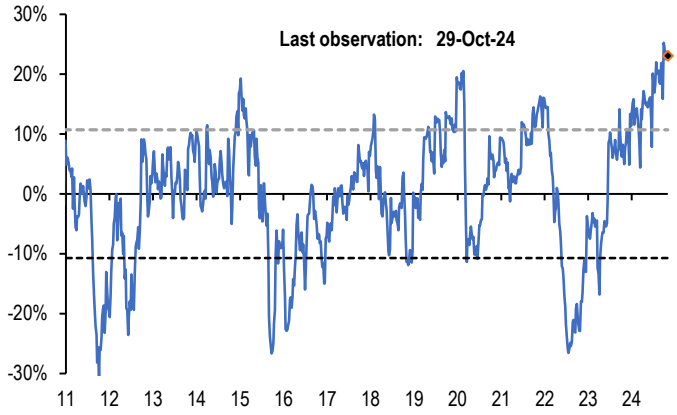
Difference between net spec positions on risky & safe currencies. Net spec position is calculated in USD across 5 'risky' and 3 'safe' currencies (safe currencies also include Gold). These positions are then scaled by open interest and we take an average of 'risky' and 'safe' assets to create two series. 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.

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

This document is being provided for the exclusive use of blake@sandboxfp.com.

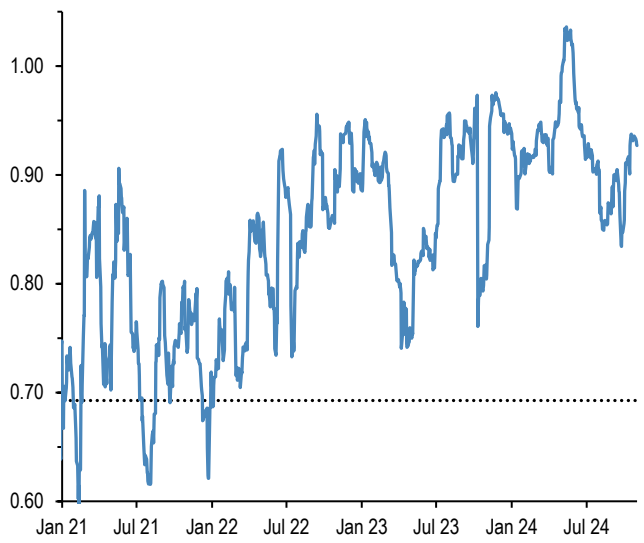
Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc
Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited
Krutik P Mehta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

J.P.Morgan

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

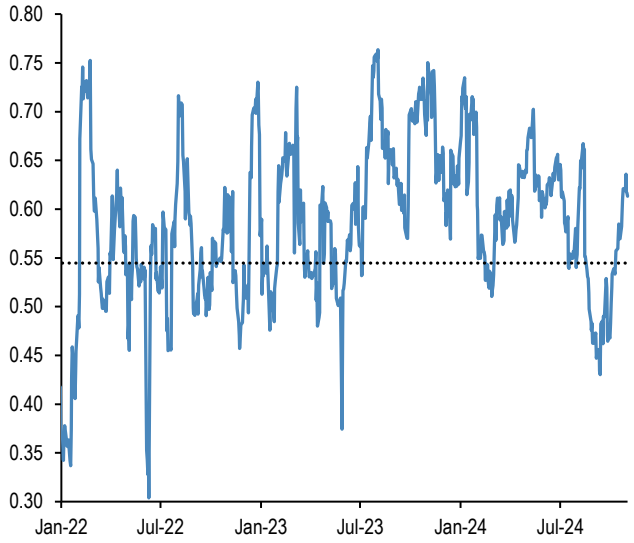
The dotted line shows the average beta since 2013.



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

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.

Chart A18: Performance of various type of investors

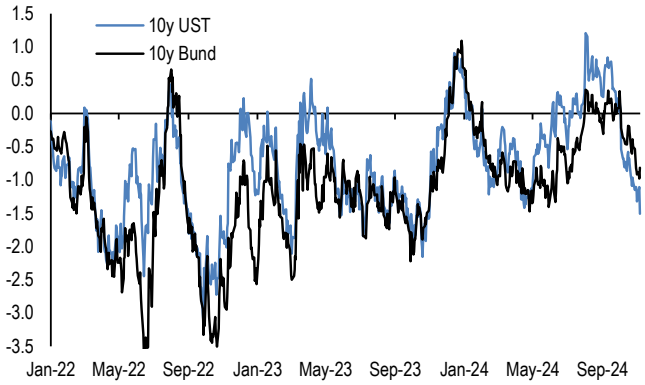
The table depicts the performance of various types of investors in % as of 5th Nov 2024.

Date	2018	2019	2020	2021	2022	2023	2024
Investors							
Equity L/S	-4.8%	12.6%	13.4%	9.3%	-7.0%	11.3%	10.3%
Macro ex-CTAs	-2.0%	5.6%	4.9%	4.3%	11.5%	1.3%	3.9%
CTAs	-3.7%	7.1%	1.2%	8.8%	14.7%	-2.5%	0.4%
Risk Parity Funds	-6.5%	18.4%	3.5%	4.7%	-18.6%	6.0%	6.3%
US Balanced MFs	-4.9%	20.1%	13.2%	14.4%	-13.0%	13.8%	11.8%
Benchmark							
MSCI AC World	-9.4%	26.6%	16.3%	16.4%	-18.4%	22.2%	17.5%
Barclays Global Agg	1.8%	8.2%	5.6%	-2.5%	-11.2%	7.1%	3.0%
60 US Equity : 40 US Bonds	-1.9%	22.2%	13.3%	14.8%	-15.4%	18.6%	14.7%
S&P Riskparity Vol 10	-4.3%	22.8%	11.5%	12.8%	-16.2%	15.0%	5.9%

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

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



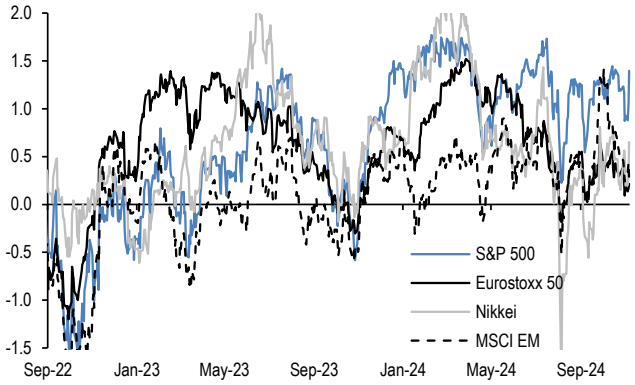
Source: Bloomberg Finance L.P., J.P. Morgan.

This document is being provided for the exclusive use of blake@sandboxfp.com.

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 A20: Momentum signals for S&P500

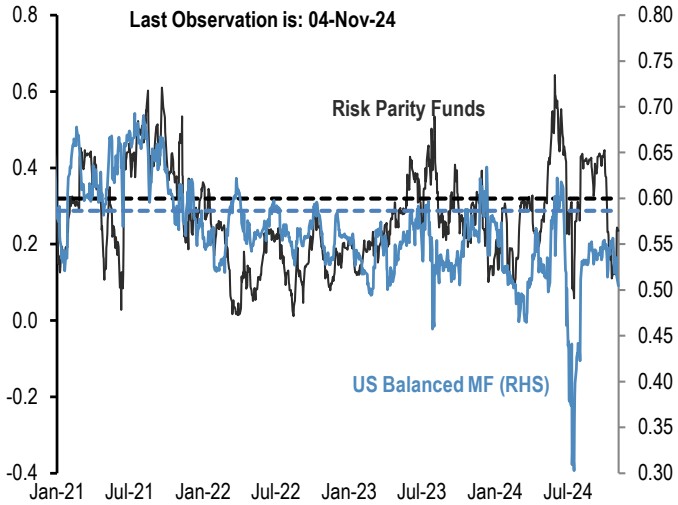
Average z-score of Short- and Long-term momentum signal in our Trend Following Strategy framework shown in Tables A3 and A4 below in the Appendix.



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

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

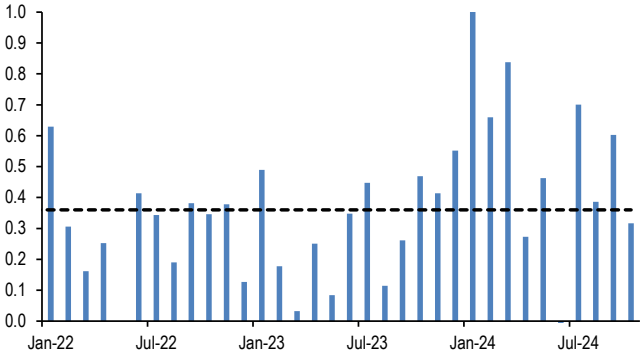
Rolling 21-day equity beta based on a bivariate regression of the daily returns of our Balanced Mutual fund and Risk Parity fund return indices to the daily returns of the S&P 500 and BarCap US Agg indices. Given that these funds invest in both equities and bonds we believe that the bivariate regression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



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

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

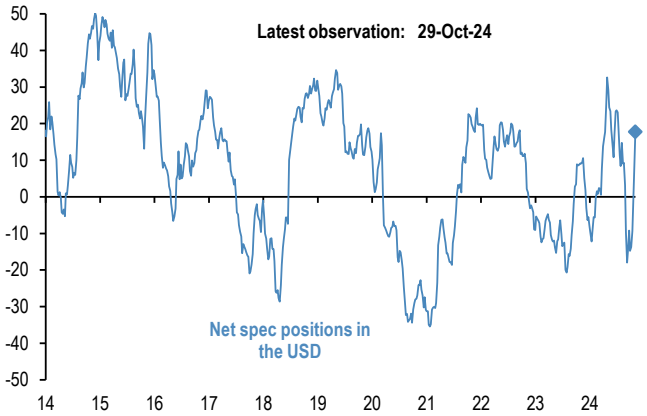
Proxied by the ratio of the monthly performance of Pivotal Path Asset-Weighted Equity Hedge fund index divided by the monthly performance of MSCI ACWorld Index.



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

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, Barclay, Datastream, Bloomberg Finance L.P., J.P. Morgan.

This document is being provided for the exclusive use of blake@sandboxfp.com.

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

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	6.0	22.6	0.26	1	1	0.2	1.3%
	long	462				0	1	0.0	0.3%
Brent	short	84	4.8	21.5	0.23	0	0	0.0	-0.2%
	long	504				0	1	0.0	-0.2%
Unleaded gas	short	105	3.8	23.5	0.16	-1	16	-0.1	-1.7%
	long	483				-1	16	-0.2	-4.3%
Heat Oil	short	63	5.6	21.8	0.26	1	1	0.2	2.3%
	long	483				-1	72	-0.3	-7.9%
Gasoil	short	63	8.7	20.7	0.42	1	1	0.2	2.5%
	long	378				-1	20	-0.2	-5.3%
Nat gas	short	105	18.4	35.4	0.52	-1	22	-0.9	-16.2%
	long	315				-1	181	-1.1	-32.9%
EU emission allowances	short	42	11.4	29.9	0.38	0	0	0.0	-0.1%
	long	483				-1	276	-0.4	-18.3%
1m fwd TTF Nat gas	short	21	42.9	30.8	1.39	-1	3	-0.1	-0.7%
	long	294				0	3	0.0	1.6%
Gold	short	21	3.3	10.5	0.32	1	17	0.4	1.2%
	long	483				0	38	1.9	22.5%
Silver	short	10	5.3	19.0	0.28	-1	3	-0.8	-2.5%
	long	462				1	113	1.0	21.8%
Palladium	short	42	12.7	22.9	0.55	1	4	0.2	1.8%
	long	273				1	13	0.2	5.8%
Platinum	short	105	4.1	18.2	0.23	1	0	0.2	1.7%
	long	273				1	17	0.2	2.7%
Aluminium	short	105	5.4	15.2	0.36	1	30	0.8	6.2%
	long	357				1	37	0.6	8.5%
Copper	short	147	7.4	17.3	0.43	0	0	0.0	-0.6%
	long	399				1	37	0.2	5.6%
Lead	short	126	1.6	19.8	0.08	-1	81	-0.6	-6.6%
	long	357				-1	78	-0.4	-9.2%
Nickel	short	42	13.2	23.3	0.56	-1	11	-0.5	-4.0%
	long	336				-1	113	-0.5	-13.0%
Zinc	short	126	8.9	20.0	0.44	1	30	0.5	5.3%
	long	399				1	39	0.6	13.5%
Wheat	short	168	3.5	23.6	0.15	-1	23	-0.5	-6.1%
	long	294				-1	109	-0.6	-9.4%
Kansas wheat	short	147	8.7	21.0	0.41	-1	23	-0.5	-6.3%
	long	483				-1	173	-1.0	-20.5%
Corn	short	63	8.1	16.9	0.48	1	10	0.3	2.4%
	long	399				-1	334	-0.9	-17.7%
Soybeans	short	42	6.2	14.7	0.42	-1	17	-0.4	-2.2%
	long	231				-1	56	-0.9	-12.0%
Cotton	short	168	5.3	18.8	0.28	-1	152	-0.5	-7.2%
	long	483				-1	153	-0.6	-15.7%
Sugar	short	63	6.9	21.7	0.32	1	21	0.5	4.8%
	long	252				1	33	0.2	4.2%
Coffee	short	63	7.2	23.5	0.31	0	0	0.0	-0.3%
	long	273				1	15	1.1	20.3%
Cocoa*		10	4.0	29.2	0.14	1	4	0.5	1.6%

* 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 calculations.

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	7.1	11.9	0.60	1	41	0.6	3.1%
	long	357				0	0	1.5	16.8%
Nasdaq 100	short	84	8.2	14.8	0.56	1	33	0.4	3.3%
	long	462				1	74	1.2	23.6%
Nikkei	short	84	2.8	14.5	0.19	1	0	0.2	1.4%
	long	294				1	38	0.5	5.8%
FTSE 100	short	168	4.7	12.0	0.39	1	2	0.1	0.7%
	long	462				1	531	0.7	7.8%
Eurostoxx 50	short	168	4.3	15.6	0.28	-1	3	-0.1	-0.7%
	long	315				1	265	0.4	5.2%
MSCI EM	short	42	12.8	11.4	1.13	1	0	0.1	0.7%
	long	336				1	205	0.7	11.7%
2Y USTs	short	252	1.0	1.1	0.89	-1	11	-0.4	-0.5%
	long	420				-1	22	-0.5	-0.8%
5Y USTs	short	252	1.8	3.1	0.60	-1	11	-0.4	-1.0%
	long	420				-1	21	-0.4	-1.5%
10Y USTs	short	42	2.3	3.7	0.61	0	11	-1.7	-2.4%
	long	504				-1	22	-0.5	-2.6%
2Y Schatz	short	189	0.7	0.9	0.74	-1	44	-1.5	-1.2%
	long	504				0	385	-2.4	-3.9%
5y Bobl	short	84	1.5	2.0	0.75	-1	11	-1.3	-1.4%
	long	483				-1	84	-1.3	-4.2%
10y Bund	short	84	2.7	3.7	0.73	-1	11	-1.1	-2.1%
	long	483				-1	246	-0.8	-4.3%
10Y JGB	short	126	0.9	2.1	0.45	1	65	0.5	0.5%
	long	273				1	4	0.2	0.3%
10Y Gilts	short	105	2.1	4.5	0.46	0	5	-2.3	-5.8%
	long	399				-1	38	-1.5	-7.6%
10y OAT vs Bund	short	189	0.6	1.4	0.41	-1	27	-0.6	-0.6%
	long	294				-1	92	-0.6	-0.6%
10y BTP vs. Bund	short	84	2.6	6.1	0.43	1	38	0.4	1.2%
	long	273				1	273	0.6	2.8%
Euro	short	42	3.0	6.1	0.48	-1	25	-0.4	-1.0%
	long	273				-1	49	-0.5	-2.9%
Yen	short	21	3.7	6.3	0.59	-1	3	-0.5	-0.8%
	long	462				0	11	-1.6	-12.8%
Sterling	short	168	1.8	7.1	0.26	-1	11	-0.1	-0.3%
	long	294				-1	11	-0.1	-0.5%
AUD	short	42	4.0	7.6	0.52	-1	21	-0.7	-1.8%
	long	420				-1	25	-0.5	-4.5%
CAD	short	168	1.2	5.9	0.19	-1	220	-0.8	-3.2%
	long	504				-1	626	-1.2	-7.5%

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

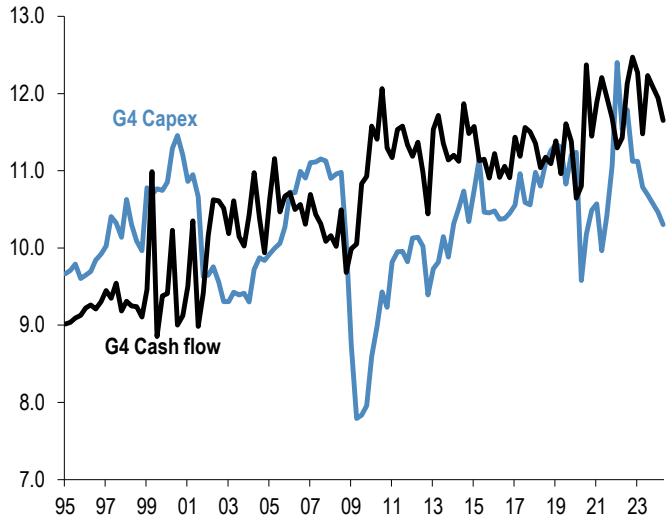
This document is being provided for the exclusive use of blake@sandboxfp.com.

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

Corporate Activity

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

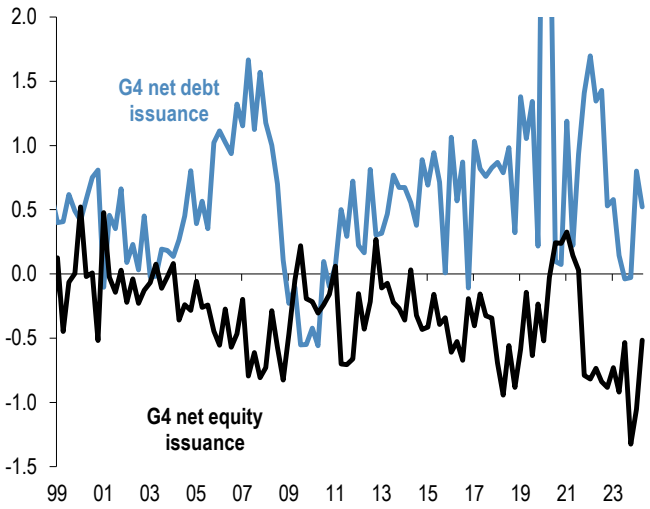
% of GDP, G4 includes the US, the UK, the Euro area and Japan. Last observation as of Q2 2024.



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

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

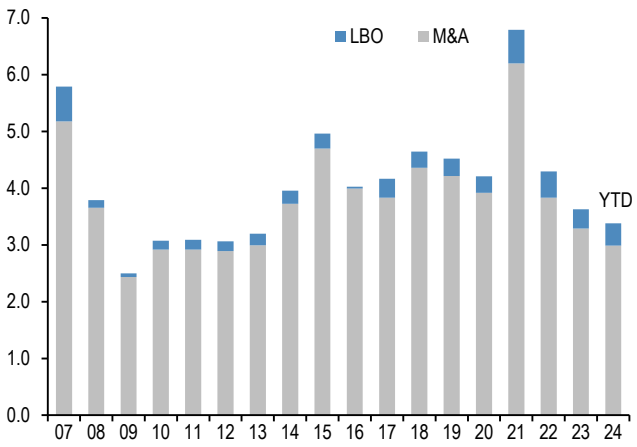
$tr per quarter, G4 includes the US, the UK, the Euro area and Japan. Last observation as of Q2 2024.



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

Chart A26: Global M&A and LBO

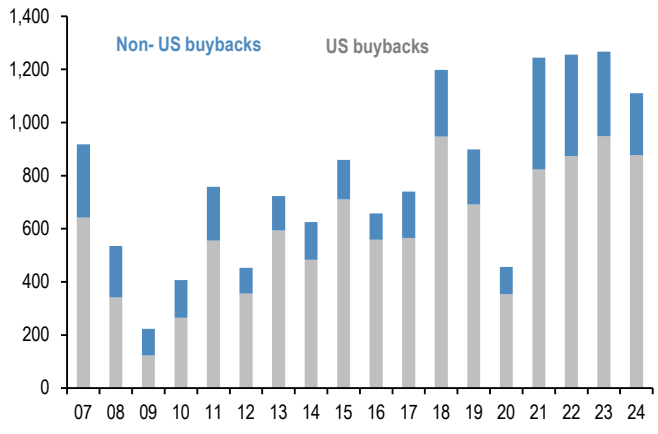
$tr. M&A and LBOs are announced.



Source: Dealogic, J.P. Morgan.

Chart A27: US and non-US share buyback

$bn, are as of November. Buybacks are announced.



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

This document is being provided for the exclusive use of blake@sandboxfp.com.

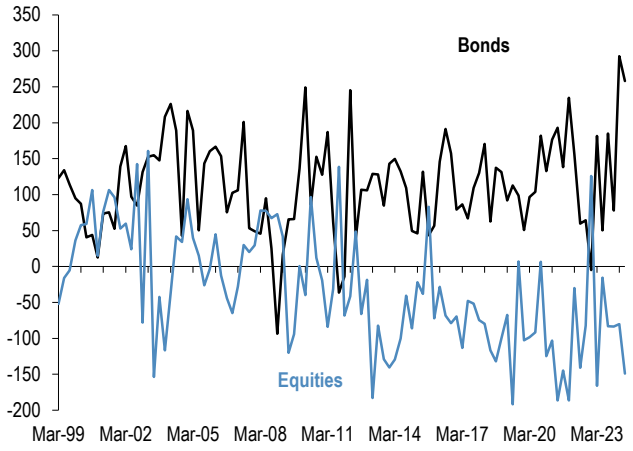
Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc
Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited
Krutik P Mehta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

J.P.Morgan

Pension fund and insurance company flows

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

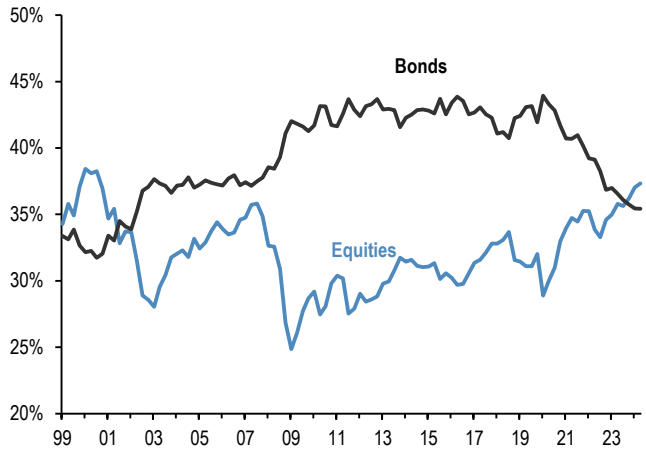
Equity and bond buying in $bn per quarter. G4 includes the US, the UK,Euro area and Japan. Last observation is Q2 2024.



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

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

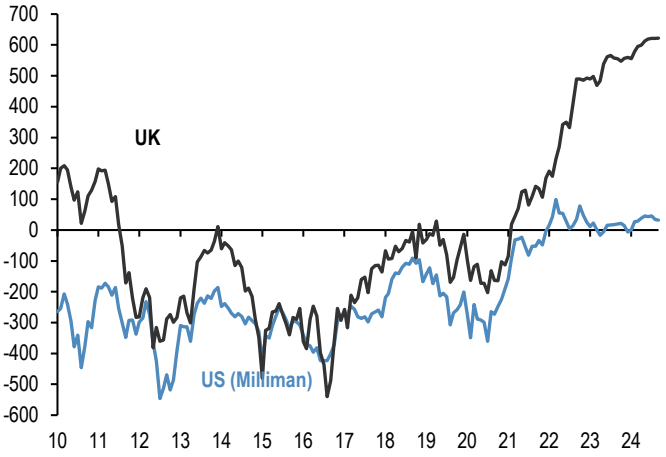
Equity and bond as % of total assets per quarter. G4 includes the US, the UK, Euro area and Japan. Last observation is Q2 2024.



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

Chart A30: Pension fund deficits

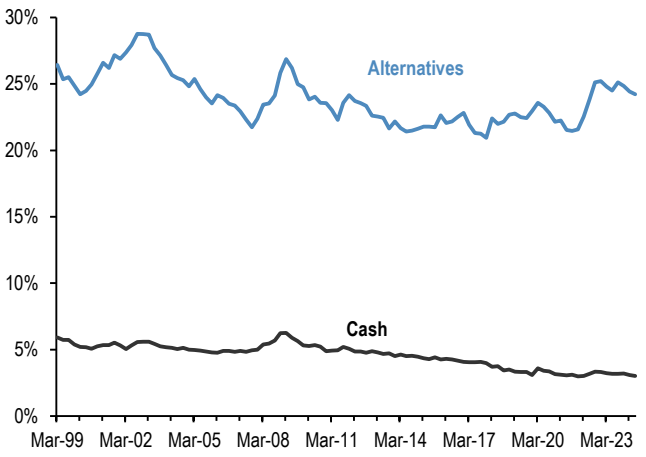
US$bn. For US, funded status of the 100 largest corporate defined benefit pension plans, from Milliman. For UK, funded status of the defined benefit schemes eligible for entry to the Pension Protection Fund, converted to US$ at today's exchange rates. Last obs. is September'24 for US & UK.



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

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 Q2 2024.



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

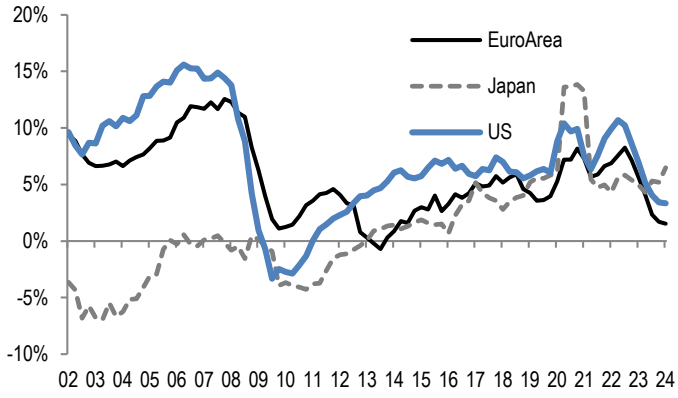
This document is being provided for the exclusive use of blake@sandboxfp.com.

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

Credit Creation

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

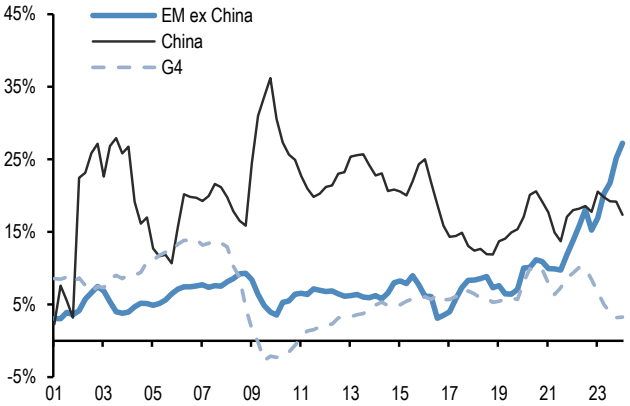
Rolling sum of 4-quarter credit creation as % of GDP. Credit creation includes both bank loans as well as net debt issuance by non-financial corporations and households. Last obs. is Q2'24 for Japan, Euro Area and US.



Source: Fed, ECB, BoJ, Bloomberg Finance L.P., and J.P. Morgan calculations.

Chart A33: Credit creation in EM

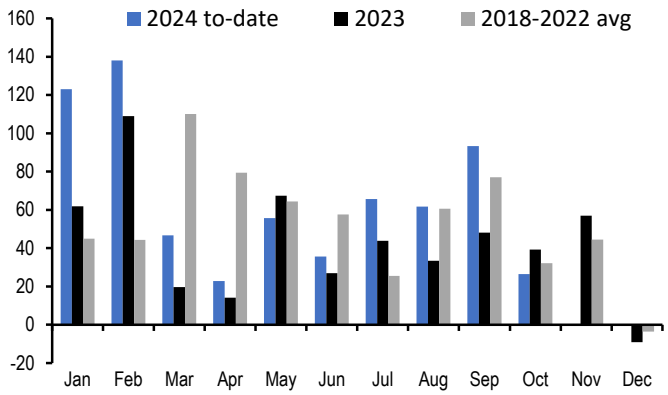
Rolling sum of 4-quarter credit creation as % of GDP. Credit creation includes both bank loans as well as net debt issuance by non-financial corporations and households. Last obs. is for Q1'24.



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

Chart A34: Monthly net issuance of US HG bonds

$bn. October 2024.



Source: Dealogic, J.P. Morgan

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	1-Nov	4 wk avg	13 wk avg	y/y chng
Global IPOs	1.5	4.9	2.7	-9%
Secondary Offerings	24.7	9.2	8.8	25%
Corporate announcements				
M&A - Global	53.1	56.2	68.5	16%
- US Target	25.4	20.9	27.0	11%
- Non-US Target	27.7	35.3	41.5	20%
Net bond issuance	**Aug-24**	**3 mth avg**	**YTD avg**	**y/y chng**
USD	194	209	235	144%
Non-USD	172	40	117	59%

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

This document is being provided for the exclusive use of blake@sandboxfp.com.

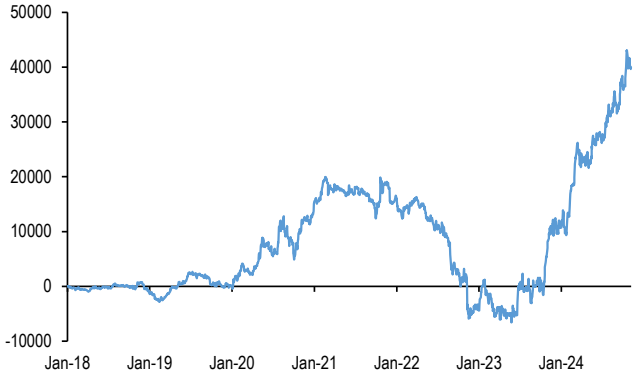
Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc
Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited
Krutik P Mehta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

J.P.Morgan

Bitcoin monitor

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

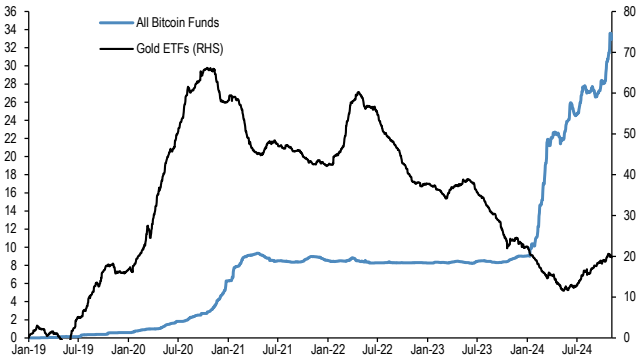
In number of contracts. Last obs. for 5th November 2024.



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

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

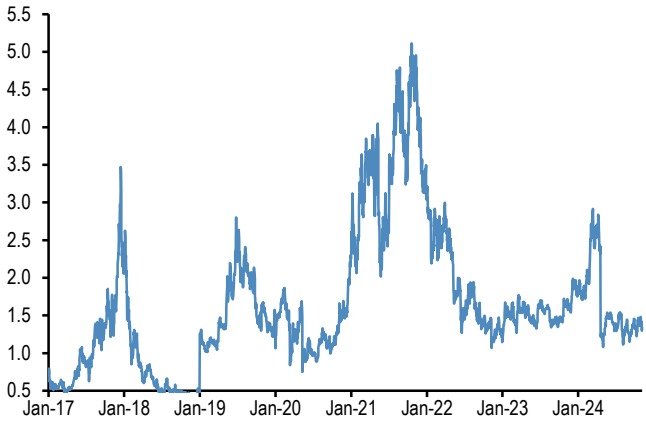
Both the y-axis in $bn.



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

Chart A37: Ratio of bitcoin market price to production cost

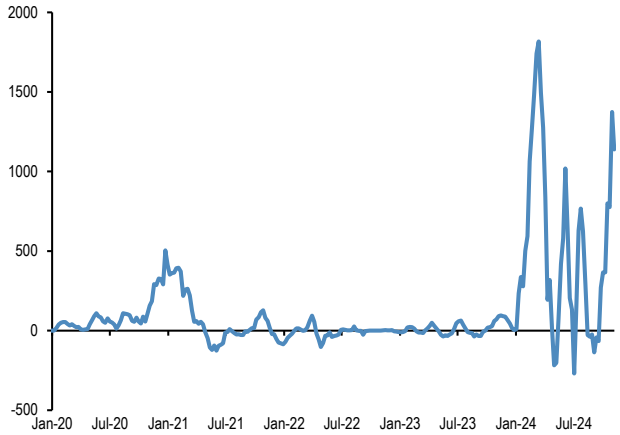
Based on the cost of production approach following Hayes (2018).



Source: Coin Metrics, J.P. Morgan

Chart A38: Flow pace into publicly-listed bitcoin funds including bitcoin ETFs

$mm per week, 4-week rolling average flow.



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

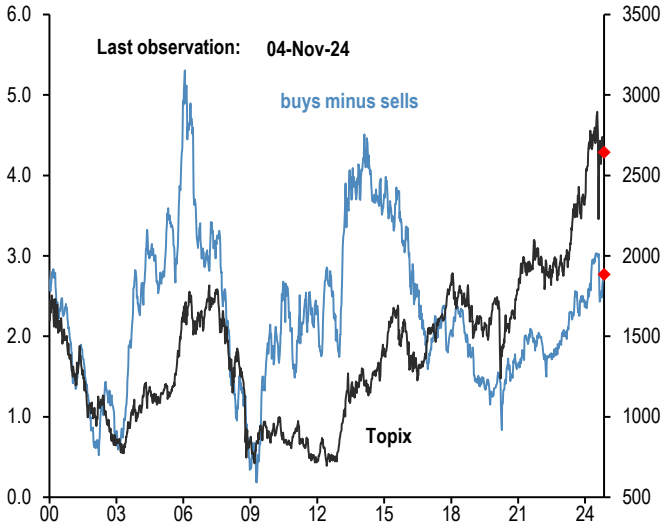
This document is being provided for the exclusive use of blake@sandboxfp.com.

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

Japanese flows and positions

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

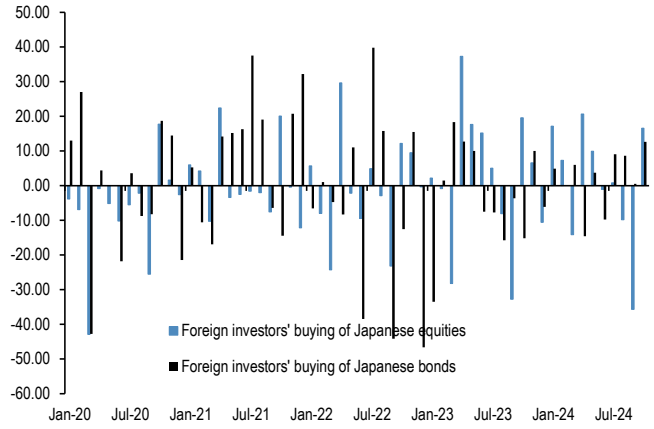
In bn of shares. Topix on right axis.



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

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

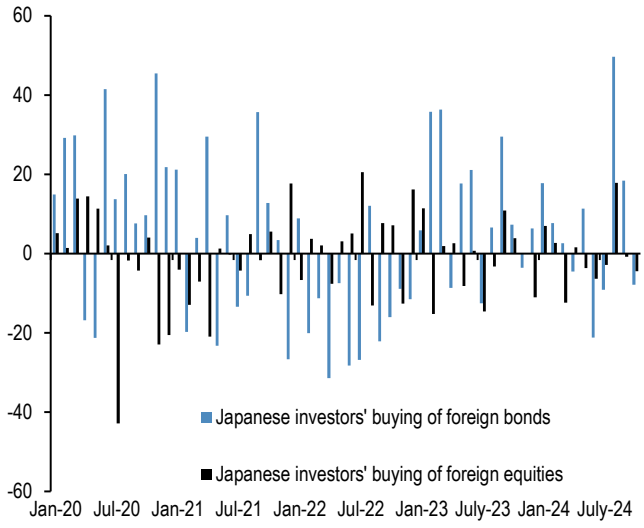
$bn, Last weekly obs. is for 25th Oct' 24.



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

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

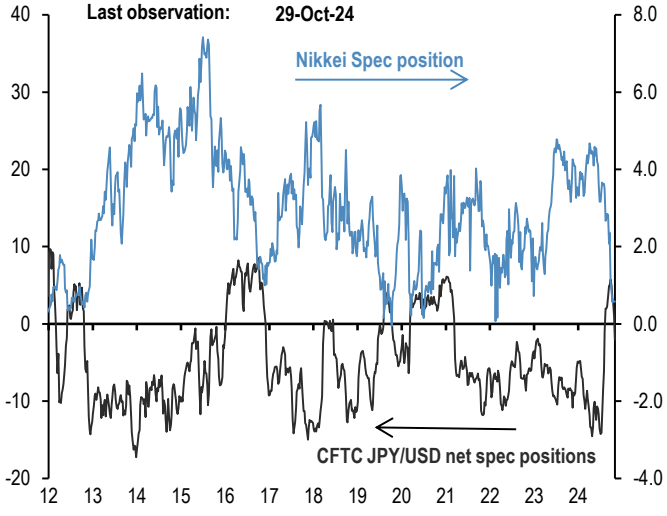
$bn, Last weekly obs. is for 25th Oct' 24.



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

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 calculations.

This document is being provided for the exclusive use of blake@sandboxfp.com.

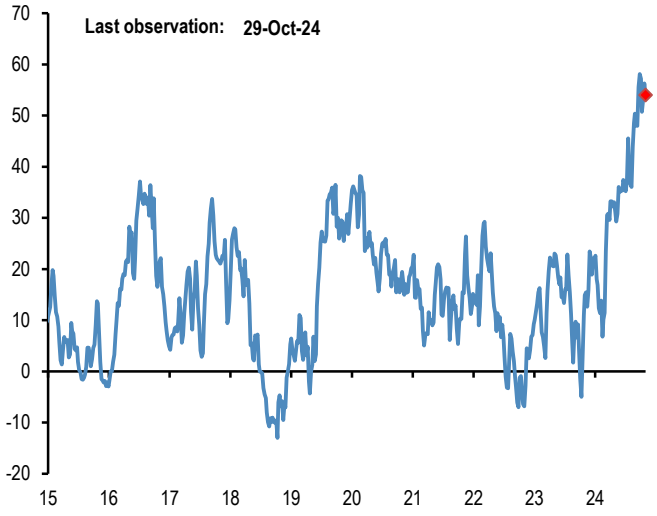
Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc
Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited
Krutik P Mehta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

J.P.Morgan

Commodity flows and positions

Chart A43: Gold spec positions

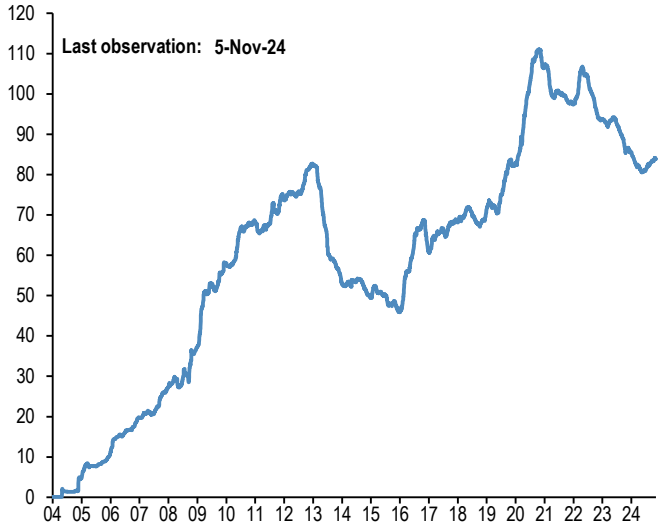
$bn. CFTC net long minus short position in futures for the Managed Money category.



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

Chart A44: Gold ETFs

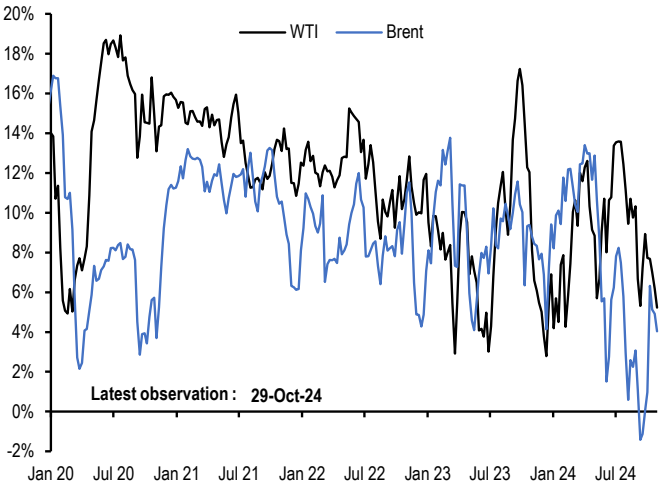
Mn troy oz. Physical gold held by all gold ETFs globally.



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

Chart A45: Oil spec positions

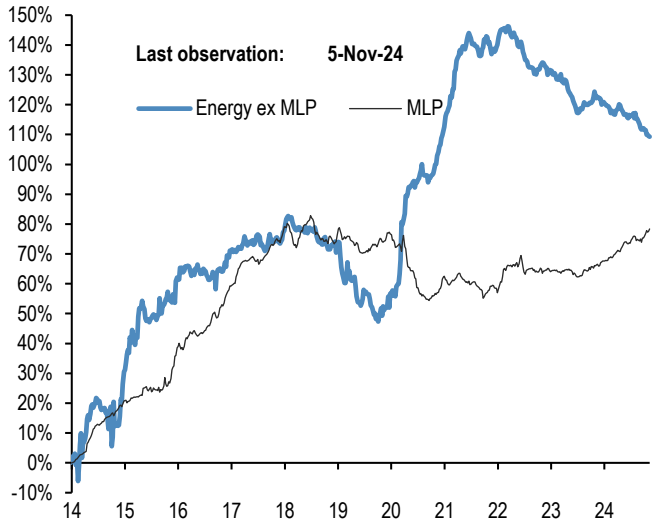
Net spec positions divided by open interest. CFTC futures positions for WTI and Brent are net long minus short for the Managed Money category.



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

Chart A46: Energy ETF flows

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



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

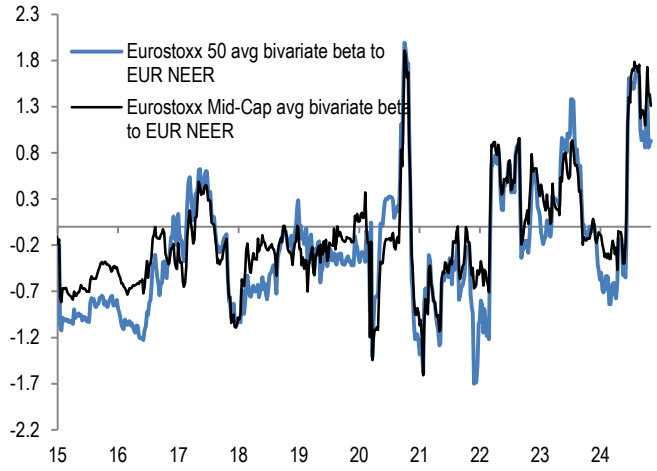
This document is being provided for the exclusive use of blake@sandboxfp.com.

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

Corporate FX hedging proxies

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

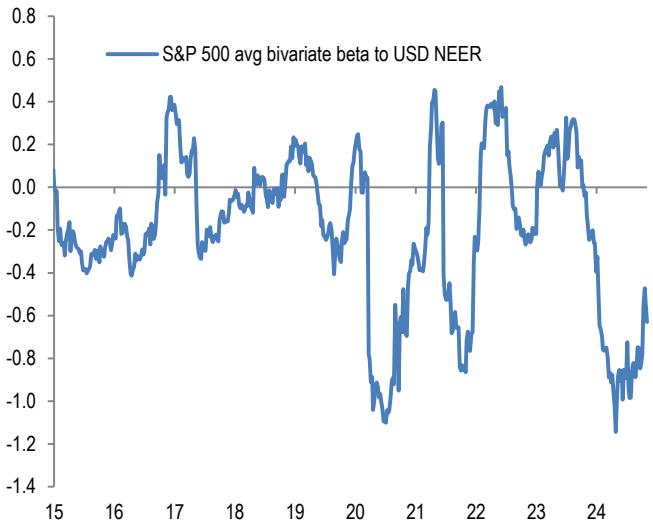
Rolling 26 weeks average betas based on a bivariate regression of the weekly returns of individual stocks in the Eurostoxx 50 index to the weekly returns of the MSCI AC World and JPM EUR Nominal broad effective exchange rate (NEER).



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

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

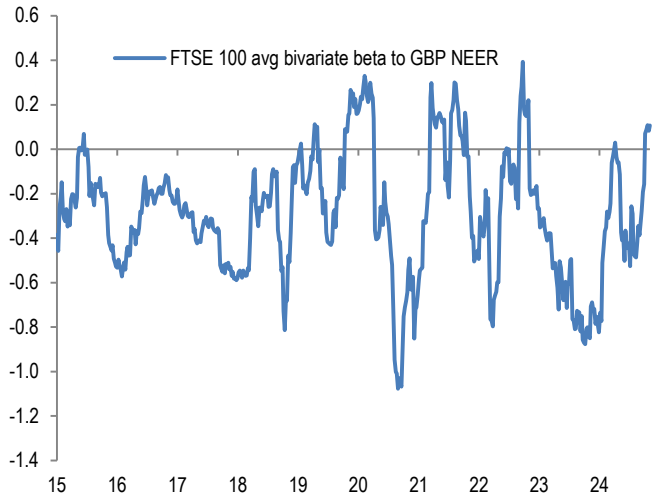
Rolling 26 weeks average betas based on a bivariate regression of the weekly returns of stocks in the S&P500 index to the weekly returns of the MSCI AC World and JPM USD Nominal broad effective exchange rate(NEER).



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

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

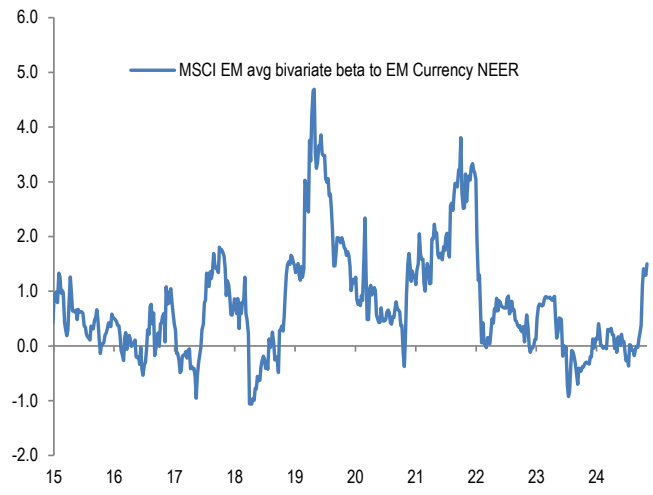
Rolling 26 weeks average betas based on a bivariate regression of the weekly returns of individual stocks in the FTSE 100 index to the weekly returns of the MSCI AC World and JPM GBP Nominal broad effective exchange rate (NEER).



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

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

This document is being provided for the exclusive use of blake@sandboxfp.com.

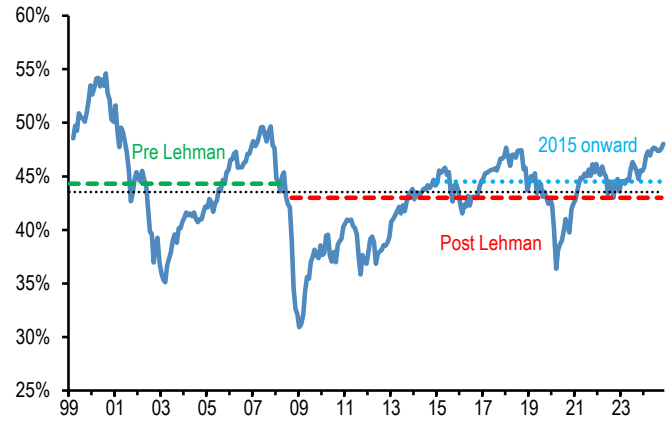
Nikolaos Panigirtzoglou [AC] (44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
J.P. Morgan Securities plc
Mika Inkinen (44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc
Mayur Yeole (91 22) 6157 3872
mayur.yeole@jpmchase.com
J.P. Morgan India Private Limited
Krutik P Mehta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

J.P.Morgan

Non-Bank investors' implied allocations

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

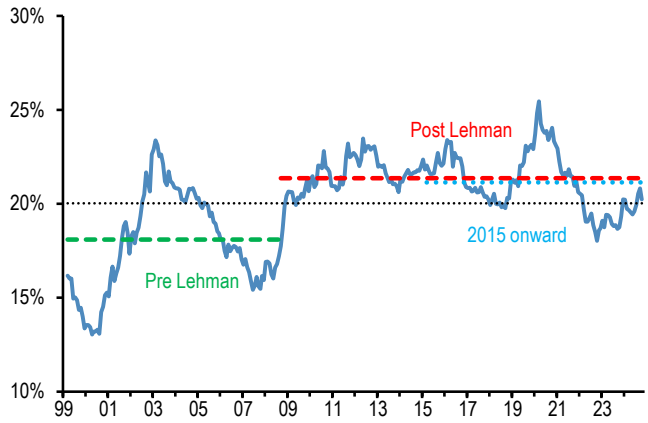
Global equities as % total holdings of equities/bonds/M2 by non-bank investors. Dotted lines are averages.



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

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

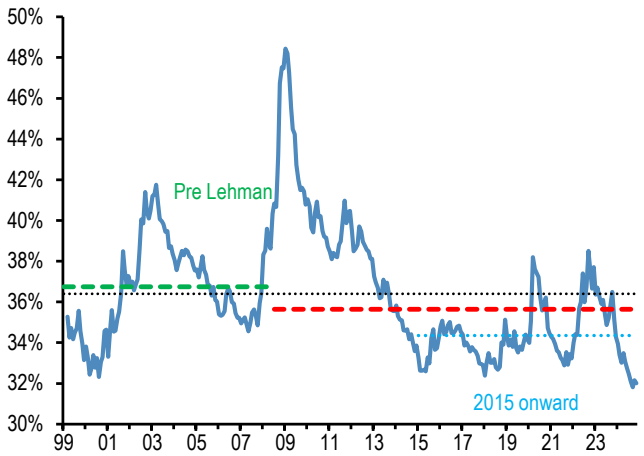
Global bonds as % total holdings of equities/bonds/M2 by non-bank investors. Dotted lines are averages.



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

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

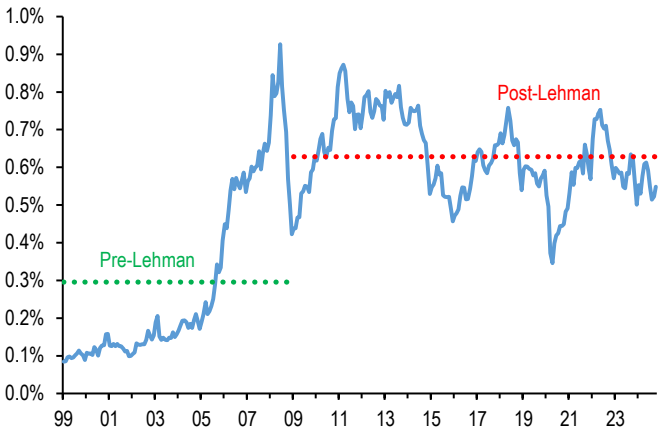
Global cash held by non-bank investors as % total holdings of equities/bonds/M2 by non-bank investors. Dotted lines are averages.



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

Chart A54: Implied commodity allocation by non-bank investors globally

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



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

This document is being provided for the exclusive use of blake@sandboxfp.com.

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

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. 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://www.jpmorganmarkets.com.

J.P. Morgan Equity Research Ratings Distribution, as of October 05, 2024

	Overweight (buy)	Neutral (hold)	Underweight (sell)
J.P. Morgan Global Equity Research Coverage*	49%	38%	13%
IB clients**	50%	46%	38%
JPMS Equity Research Coverage*	46%	41%	13%
IB clients**	71%	67%	54%

***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://www.jpmorganmarkets.com, 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://www.jpmorganmarkets.com. This report also sets out within it the material underlying assumptions used.

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

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.

This document is being provided for the exclusive use of blake@sandboxfp.com.

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.

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

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

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

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

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

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

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

Legal Entities Disclosures and Country-/Region-Specific Disclosures:
Argentina: JPMorgan Chase Bank N.A Sucursal Buenos Aires is regulated by Banco Central de la República Argentina ("BCRA"- Central Bank of Argentina) and Comisión Nacional de Valores ("CNV"- Argentinian Securities Commission - ALYC y AN Integral N°51). **Australia:** J.P. Morgan Securities Australia Limited ("JPMSAL") (ABN 61 003 245 234/AFS Licence No: 238066) is regulated by the Australian Securities and Investments Commission and is a Market 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

This document is being provided for the exclusive use of blake@sandboxfp.com.

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@jpmorgan.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. **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: Spurthi Gadamsetty; spurthi.gadamsetty@jpmchase.com; +912261573225. Grievance Officer: Ramprasadh K, jpmipl.research.feedback@jpmorgan.com; +912261573000.

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

Indonesia: PT J.P. Morgan Sekuritas Indonesia is a member of the Indonesia Stock Exchange and is registered and supervised by the Otoritas Jasa Keuangan (OJK). **Korea**: J.P. Morgan Securities (Far East) Limited, Seoul Branch, is a member of the Korea Exchange (KRX). JPMorgan Chase Bank, N.A., Seoul Branch, is licensed as a branch office of foreign bank (JPMorgan Chase Bank, N.A.) in Korea. Both entities are regulated by the Financial Services Commission (FSC) and the Financial Supervisory Service (FSS). For non-macro research material, the material is distributed in Korea by or through J.P. Morgan Securities (Far East) Limited, Seoul Branch. **Japan**: JPMorgan Securities Japan Co., Ltd. and JPMorgan Chase Bank, N.A., Tokyo Branch are regulated by the Financial Services Agency in Japan. **Malaysia**: This material is issued and distributed in Malaysia by JPMorgan Securities (Malaysia) Sdn Bhd (18146-X), which is a Participating Organization of Bursa Malaysia Berhad and holds a Capital Markets Services License issued by the Securities Commission in Malaysia. **Mexico**: J.P. Morgan Casa de Bolsa, S.A. de C.V. and J.P. Morgan Grupo Financiero are members of the Mexican Stock Exchange and are authorized to act as a broker dealer by the National Banking and Securities Exchange Commission. **New Zealand**: This material is issued and distributed by JPMSAL in New Zealand only to "wholesale clients" (as defined in the Financial Markets Conduct Act 2013). JPMSAL is registered as a Financial Service Provider under the Financial Service providers (Registration and Dispute Resolution) Act of 2008. **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) 068/08/2024 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

This document is being provided for the exclusive use of blake@sandboxfp.com.

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

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

Confidentiality and Security Notice: This transmission may contain information that is privileged, confidential, legally privileged, and/or exempt from disclosure under applicable law. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution, or use of the information contained herein (including any reliance thereon) is STRICTLY PROHIBITED. Although this transmission and any attachments are believed to be free of any virus or other defect that might affect any computer system into which it is

This document is being provided for the exclusive use of blake@sandboxfp.com.

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") ©2024. 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

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. ©2024 Sustainalytics. All Rights Reserved.

"Other Disclosures" last revised October 05, 2024.

Copyright 2024 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. It is permissible to use J.P. Morgan Data for internal business purposes only in an AI system or model that protects the confidentiality of J.P. Morgan Data so as to prevent any and all access to or use of such J.P. Morgan Data by any third-party.

Completed 06 Nov 2024 07:03 PM GMT

Disseminated 06 Nov 2024 07:03 PM GMT

This document is being provided for the exclusive use of blake@sandboxfp.com.