Flows & Liquidity

Quant funds' role in recent market gyrations

- **Our analysis suggests that risk parity funds, CTAs and to some extent balanced mutual funds have likely acted to amplify swings in risk markets over the past few weeks.**
- **While this week's rapid normalization of volatilities leaves little room for tactical risk parity funds to further amplify the rally from here, we believe that momentum traders such as CTAs have room to further amplify this month's equity rally.**
- **The flow trajectory for Grayscale Bitcoin Trust steepened in recent weeks.**
- **What makes this flow trajectory even more impressive is its contrast with the equivalent flow trajectory for gold ETFs, which overall saw modest outflows since mid-October.**
- **This contrast lends support to the idea that some investors such as family offices that previously invested in gold ETFs, may be looking at bitcoin as an alternative to gold.**
- **Momentum traders have also amplified the recent bitcoin rally. The sharp spike in prices this week appears to have taken bitcoin close to overbought levels on our momentum signal framework, something that could potential trigger profit taking or mean reversion flows.**

- One of the most striking features of this week's market moves has been the sudden collapse in volatility post US election. This is shown in Figure 1 which depicts 1-month implied volatilities for US equities (VIX Index) and US rates (MOVE Index). Effectively all of the previous increase in volatilities in October was abruptly unwound this week in a day or two.
- Longer-dated 3-month implied volatilities have seen a similarly rapid swing as shown by Figure 2 which depicts 3-month implied volatilities across five asset classes including equities, rates, credit, currencies and commodities in both the US and outside the US (Figure 2). The mirror image of this week's decline in implied volatilities has been a collapse of the volatility risk premium embedded in option markets from above average to below average (Figure 3).

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Global Markets Strategy
Global Quantitative & Derivatives Strategy

Nikolaos Panigirtzoglou [AC]
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com
Bloomberg JPMA FLOW <GO>
J.P. Morgan Securities plc

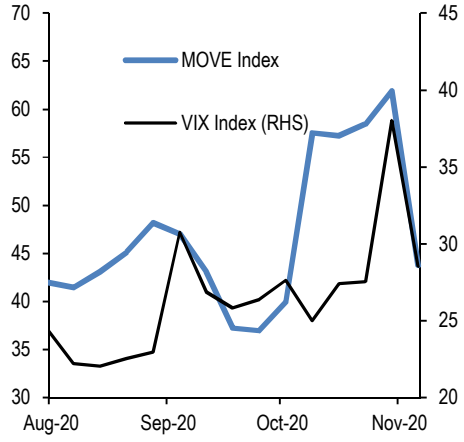
Mika Inkinen
(44-20) 7742 6565
mika.j.inkinen@jpmorgan.com
J.P. Morgan Securities plc

Nishant Poddar, CFA
(91-22) 6157-3255
nishant.poddar@jpmchase.com
J.P. Morgan India Private Limited

Ekansh Agarwal
(91-22) 6157 3723
ekansh.agarwal@jpmchase.com
J.P. Morgan India Private Limited

Figure 1: 1-month implied US equity (VIX Index) and rate (MOVE Index) volatilities

MOVE index is the yield curve weighted index of the normalized implied volatility on 1-month treasury options. VIX Index captures the expected volatility of the S&P500 Index. Last obs is 5th Nov 2020



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

See page 22 for analyst certification and important disclosures.

Nikolaos Panigirtzoglou
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

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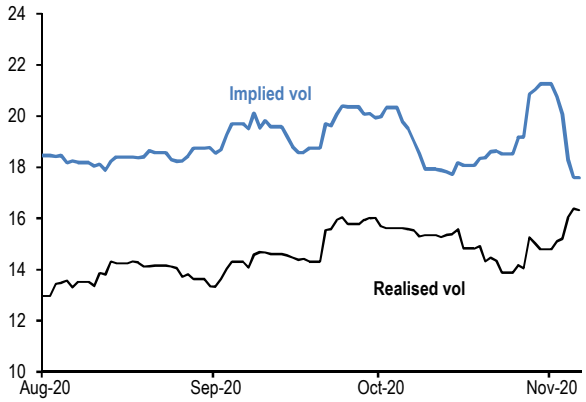
Figure 2: 3-month implied and 1-month realised vols across asset classes

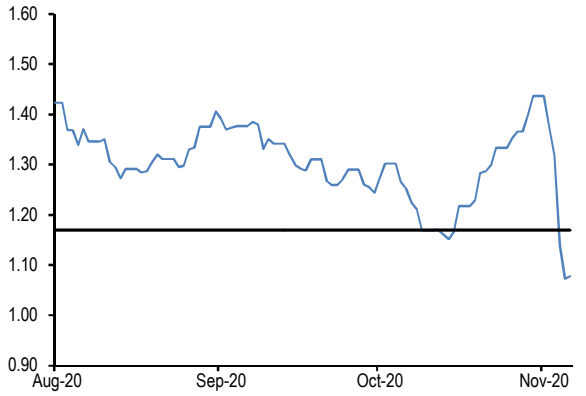
Weighted average of 14 vols across 5 asset classes. We apply a 20% weight on each of the five asset classes. The 14 vols used are: V2X Index, VIX Index, VNKY Index, JPMVXYG7 Index, JPMVXYEM Index, CL1 Comdty, HG1 Comdty, GC1 Comdty, C 1 Comdty, iTraxx, CDX.IG, DX.HY, Euro 10y swap rate, US 10y swap rate. 3-month implied vols are used for the cross-asset implied vol metric. Realised vols are instead calculated over 1-month (20 business day) rolling window.



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

Figure 3: 3-month implied to 1-month realized vol ratio across asset classes

Based on the cross-asset Implied and Realised vol metrics shown in Figure 1. These metrics are based on 3-month implied vols and 1-month realized vols on 14 indices across 5 asset classes.



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

- This week's sharp decline in volatilities across asset classes is shifting attention to vol targeting or vol control funds. This universe consists mostly of tactical risk parity funds, with around $150bn of AUM, and vol control funds (embedded in variable annuity products) with around $300bn of AUM (we exclude here strategic risk parity funds typically embedded within pension funds as they tend to target very long-dated volatilities). However, if one also looks at funds that tend to respond to changes in short-dated volatilities because of their VaR based risk management frameworks, then the universe of both explicit and implicit vol targeters becomes much larger. For example balanced or 60:40 mutual funds that belong to this category of implicit vol targeters is a $1.5tr universe in the US and $6.5tr globally.

- Indeed, when we look at the performance vs. benchmark of these two types of funds, i.e. risk parity funds and balanced mutual funds, what we find is excess underperformance during the October correction and excess outperformance during this week's rally. This is shown in Figure 4 which, as risk parity fund benchmark, uses a 21:64:15 Equity:Bond:Commodity portfolio that is levered 1.5x to match the vol of our risk parity fund index. It also uses a 60:40 Equity:Bond portfolio as benchmark for balanced mutual funds. The excess underperformance vs. the respective benchmark during the October correction, for risk parity funds in particular, and the excess outperformance in November, are pointing to de-levering in October and re-levering in November. It is likely that the pressure on risk parity funds, which are stricter vol targeters than balanced mutual funds, to delever in October was not only induced by the rise in vol but also by the rise in bond-equity correlation as shown in Figure 5.

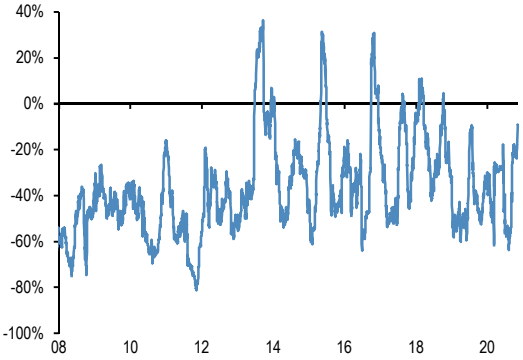
Figure 4: Difference in Risk Parity fund and US balanced mutual fund performance vs. benchmark

	Performance by investor type		Performance vs. benchmark**	
	Risk parity funds	Balanced mutual funds	Risk parity funds	Balanced mutual funds
12 Oct - 30 Oct	-4.3%	-4.6%	-1.9%	0.0%
30 Oct - 5 Nov	4.6%	4.9%	1.5%	0.3%

* Start of equity market sell-off.
** A 21:64:15 equity:bond:commodity benchmark levered by 1.5x to match the volatility of our risk parity fund index, and a 60:40 equity:bond portfolio for US domiciled balanced mutual funds.
Source: J.P. Morgan

Figure 5: Bond-equity correlation

3-month rolling correlation between daily returns of MSCI World Local vs. GBI Global hedged into USD indices.



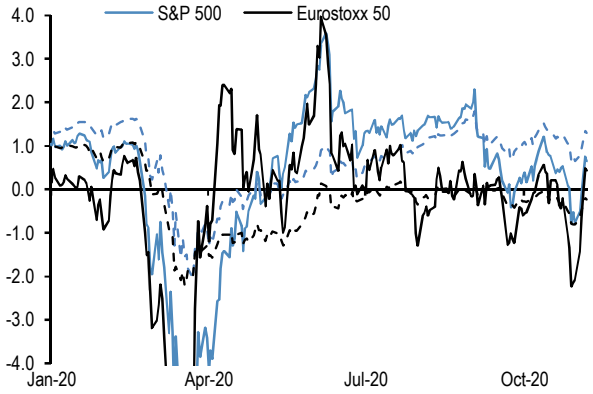
Source: Bloomberg Finance L.P., J.P. Morgan

Nikolaos Panigirtzoglou
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

- What about momentum traders such as CTAs? It is likely that CTAs and other momentum traders have also exacerbated the swings in equity markets over the past few weeks. This is indeed shown in Figure 6 by our momentum signals for the S&P500 and Eurostoxx50 indices which after seeing a sharp fall in the last two weeks of October, they rebounded steeply this week. Indeed, for the latter momentum reached extreme bearish territory, suggesting that profit taking or mean reversion signals may have contributed to the subsequent rally. Figure 6 also shows that these momentum signals are some way from overbought territory, typically associated with a z-score 1.5 stdevs or more in our framework, pointing to further room for momentum traders to amplify this month's equity rally.

Figure 6: Z-scores of momentum signals for S&P 500 and Eurostoxx 50 equity indices

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



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

- In all, our analysis suggests that risk parity funds, CTAs and to some extent balanced mutual funds have likely acted to amplify swings in risk markets over the past few weeks. While this week's rapid normalization of volatilities leaves little room for tactical risk parity funds to further amplify the rally from here, we believe that momentum traders such as CTAs have room to further amplify this month's equity rally.

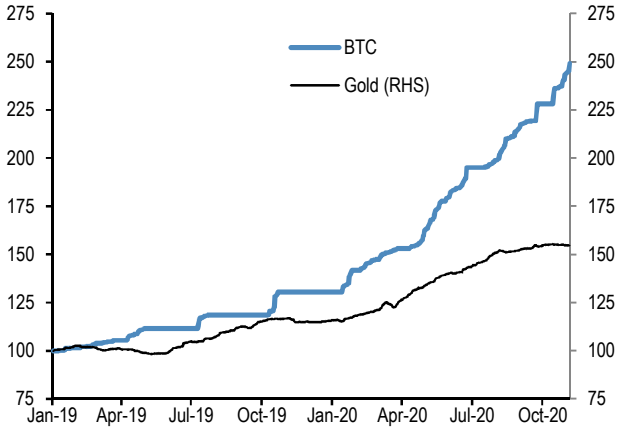
Momentum traders have likely amplified the recent bitcoin rally. Bitcoin close to overbought levels

- Corporate endorsements of bitcoin and in particular the endorsement by Paypal a couple of weeks ago appear to have propagated further demand for bitcoin. This is particularly evident in the Grayscale Bitcoin Trust which saw a steepening of its cumulative flow trajectory in recent weeks. In our opinion, the ascend of Grayscale Bitcoin Trust suggests that bitcoin demand is not only driven by the younger cohorts of retail investors, i.e. millennials, but also institutional investors such as family offices and asset managers. These institutional investors appear to be the biggest investors in the Grayscale Bitcoin Trust perhaps reflecting their preference to invest in bitcoin in fund format.

- What makes the October flow trajectory for the Grayscale Bitcoin Trust even more impressive is its contrast with the equivalent flow trajectory for gold ETFs, which overall saw modest outflows since mid-October (Figure 7). This contrast lends support to the idea that some investors that previously invested in gold ETFs such as family offices, may be looking at bitcoin as an alternative to gold. As we had highlighted in our previous F&L of October 23rd, the potential long-term upside for bitcoin is considerable if it competes more intensely with gold as an "alternative" currency given that the market cap of bitcoin would have to rise 10 times from here to match the total private sector investment in gold via ETFs or bars and coins.

Figure 7: Outstanding shares for Grayscale Bitcoin Trust and total known ETF holdings of Gold

Sh. outstanding (mn) for Grayscale Bitcoin Trust and Gold holdings in in troy ounce mn. With reference to 1st Jan 2019.



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

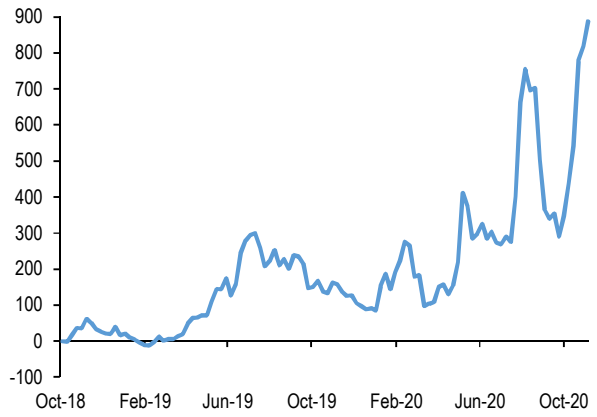
- What about our more tactical bitcoin position indicators which are more relevant for the near term? Bitcoin looks even more overbought on our CME futures position indicator shown in Figure 8. To infer positioning in bitcoin futures, we use our open interest position proxy methodology that we also apply to other futures contracts, where we look at the cumulative weekly absolute changes in the open

Nikolaos Panigirtzoglou
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

interest multiplied by the sign of the futures price change every week. The rationale behind this position proxy is that when there is a price increase, the net long position of spec investors increases also with the magnitude of the increase determined by the absolute change in the open interest. It does not matter whether the open interest rises or falls as the net long position can increase either via fresh longs (increase in open interest) or a reduction of previous shorts (reduction in open interest). And vice versa. When there is a price decrease, the net long position of spec investors decreases also with the magnitude of the decrease determined by the absolute change in the open interest. It does not matter whether the open interest rises or falls as the net long position can decrease either via fresh shorts (increase in open interest) or reduction of previous longs (reduction in open interest).

Figure 8: Our Bitcoin position proxy based on open interest in CME Bitcoin futures contracts

$mn

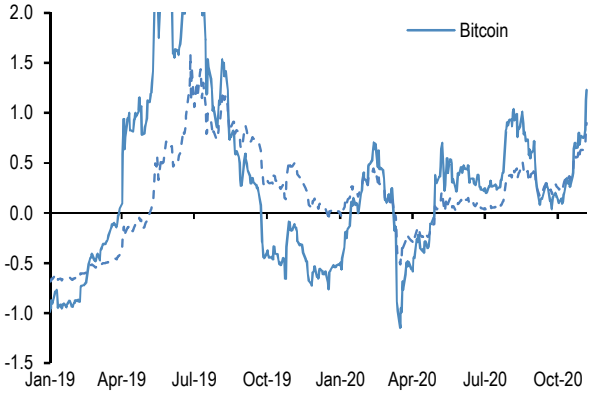


Source: J.P. Morgan

- Our tactical position proxy based on CME futures contracts spiked to a record high as the bitcoin price approached $16k this week pointing to more overbought conditions in futures space (Figure 8).
- What about momentum-based investors? We extend our framework for estimating positioning by momentum-based investors (Tables A5 and A6 in the Appendix) that we utilize for equity, bond, commodity and FX futures to bitcoin. To recap briefly, we optimize our momentum signals separately using moving averages for lookbacks up to one year and between one and two years. Given we use moving averages, this effectively means using momentum up to half a year and between half a year and a year for the shorter- and longer-term momentum signals respectively. The signals also incorporate a mean reversion overlay which turns the signals neutral if momentum reaches 'extreme' levels, with a z-score beyond +/- 1.5, as well as a lower threshold of 0.1 to avoid over-trading when momentum is close to neutral. The original motivation for shifting to this framework using multivariate regressions were two-fold. The first was that there were periods where our previous measures relying on multivariate regressions to estimate betas of CTA returns to equities, bonds etc. provided results that were strongly suggestive of changes in correlation structure of returns between different asset classes being the key driver rather than genuine position shifts. And the second was that basing these position metrics on underlying price momentum also allows for a more granular set of position indicators across asset classes, including bitcoin as the listed futures market has matured and liquidity has improved.
- Figure 9 shows the shorter- and longer-term momentum signals for bitcoin, where we find moving averages with lookbacks of 5 months and 13 months, respectively, optimal in maximizing the information ratios of the signals. It suggests that following the sharp rise in prices since the start of the week, the z-score of the shorter-term momentum signal has risen sharply from around 0.7 on Monday Nov 2nd to around 1.2 based on intra-day prices at the time of writing. This is approaching 'extreme' levels, which we typically consider at a z-score of +/- 1.5, with a risk of triggering profit taking or mean reversion signals. Indeed, it would take a further 5-6% price rise for the z-score to 1.5, which given the volatility of bitcoin does not represent a very large move.

Figure 9: Z-score of momentum signals for Bitcoin

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



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

Nikolaos Panigirtzoglou
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

- In all, momentum traders have likely amplified the recent bitcoin rally. The sharp spike in prices this week appears to have taken bitcoin close to overbought levels on our momentum signal framework, something that could potential trigger profit taking or mean reversion flows.

Nikolaos Panigirtzoglou
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

J.P.Morgan

Table A1: Weekly flow monitor

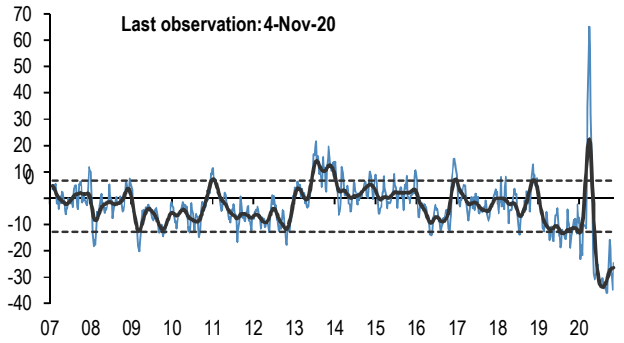
$bn, Includes Global Mutual Fund flows from EPFR and globally domiciled ETF flows from Bloomberg. US Equities includes US Domiciled MFs from ICI and ETF flows from Bloomberg.

MF & ETF Flows	4-Nov	4 wk avg	13 wk avg	2020 avg
All Equity	6.48	3.7	3.1	-3.4
All Bond	-1.34	9.3	12.0	9.2
US Equity	0.16	-17.6	-15.8	-4.7
Intl. Equity	6.33	14.2	13.6	-1.15
Taxable Bonds	-2.92	8.2	11.6	6.8
Municipal Bonds	-0.67	1.0	1.7	2.0

Source: EPFR, Bloomberg, ICI, J.P. Morgan.

Chart A1: Fund flow indicator

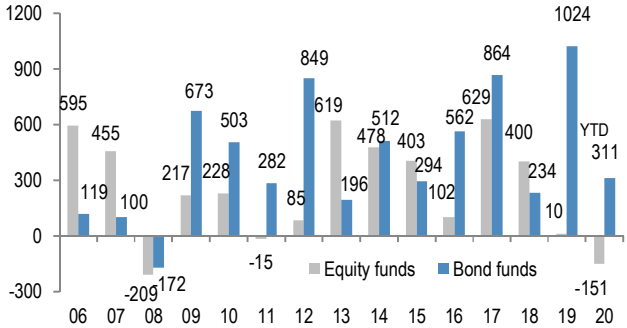
Difference between flows into Equity and Bond funds: $bn per week. Flow includes US domiciled Mutual Fund and globally domiciled ETF flows. We exclude China On-shore funds from our analysis. The thin blue line shows the 4-week average of difference between Equity and Bond fund flows. Dotted lines depict ±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: Bloomberg, ICI, J.P. Morgan.

Chart A2: Global equity & bond fund flows

$bn per year of Net Sales, i.e. includes net new sales + reinvested dividends for MF and ETFs. Flows are from ICI (worldwide data up to Q2'20). Data since then are a combination of monthly and weekly data from ICI, EPFR and ETF flows from Bloomberg.



Source: ICI, EPFR, EFAMA, Bloomberg J.P. Morgan.

Table A2: 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. More details on net bond issuances in Chart A40.

Equity Supply	6-Nov	4 wk avg	13 wk avg	y/y chng
Global IPOs	1.0	7.5	8.9	60%
Secondary Offerings	5.1	8.6	12.7	73%
Corporate announcements				
M&A - Global	45.1	87.0	90.5	-14%
- US Target	28.6	50.0	39.6	-33%
- Non-US Target	16.5	36.9	50.9	2%
Net bond issuance	**Sep-20**	**3 mth avg**	**YTD avg**	**y/y chng**
USD	78	115	63	28%
Non-USD	25	9	33	4%

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

Table A3: Trading turnover monitor

Volumes are monthly and Turnover ratio is annualized (monthly trading volume annualised divided by the amount outstanding). UST Cash are primary dealer transactions in all US government securities. UST futures are from Bloomberg. 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-20	MIN	MAX	Turnover ratio	Vol (tr)	y/y chng
Equities					
EM Equity*			1.3	$1.0	82%
DM Equity*			1.5	$7.6	38%
Govt Bonds					
UST cash			9.5	$9.6	0%
UST futures			0.4	$5.4	-25%
JGBs*			21.1	¥1,767	14%
Bund futures			0.9	€4.4	-4%
Credit					
US HG			0.6	$0.4	10%
US HY			0.9	$0.1	17%
US Convertibles			1.7	$0.0	24%
Commodities					
Gold			34.9	$0.9	19%
Oil			77.0	$1.1	-47%
Copper			1.8	$0.3	-27%

* Data with one month lag

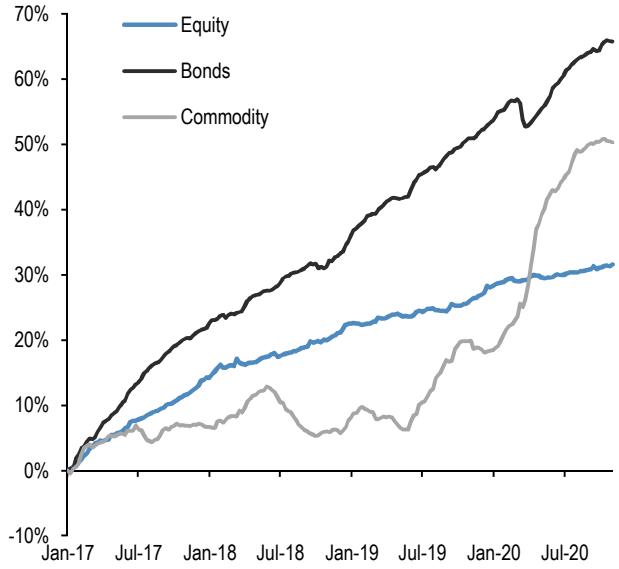
Source: Bloomberg, Federal Reserve, Trace, Japan Securities Dealer Association, WFE, J.P. Morgan. * Data with one month lag.

Nikolaos Panigirtzoglou
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

ETF Flow Monitor (as of Nov 04th)

Chart A3: Global Cross Asset ETF Flows

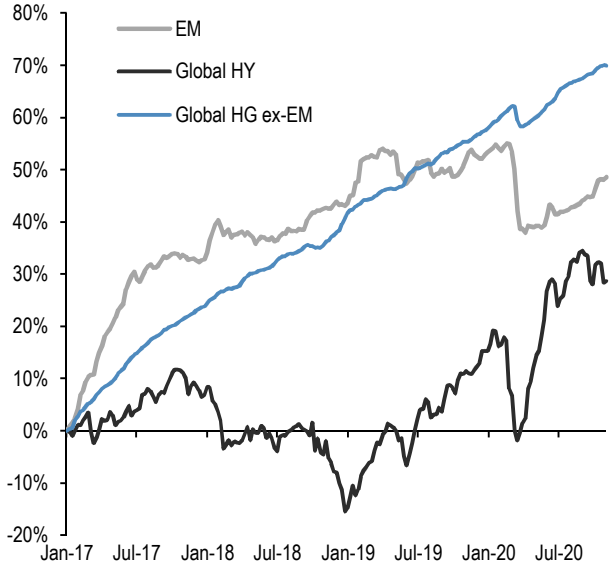
Cumulative flow into ETFs as a % of AUM



Source: J.P. Morgan. Bloomberg

Chart A4: Bond ETF Flows

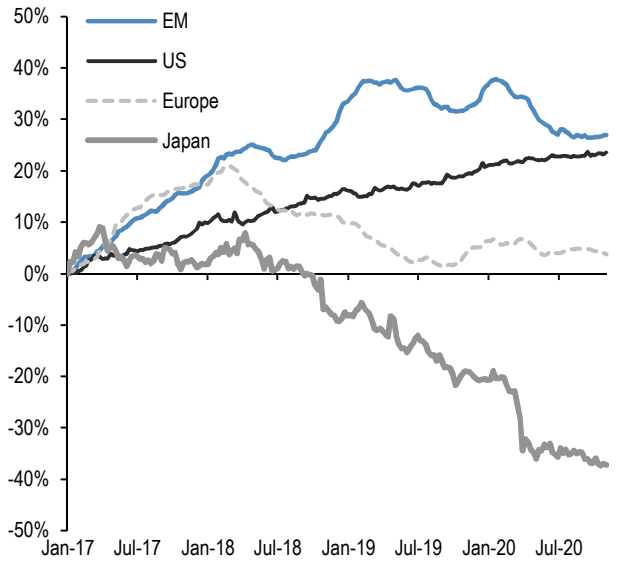
Cumulative flow into bond ETFs as a % of AUM



Source: J.P. Morgan. Bloomberg

Chart A5: Global Equity ETF Flows

Cumulative flow into global equity ETFs as a % of AUM

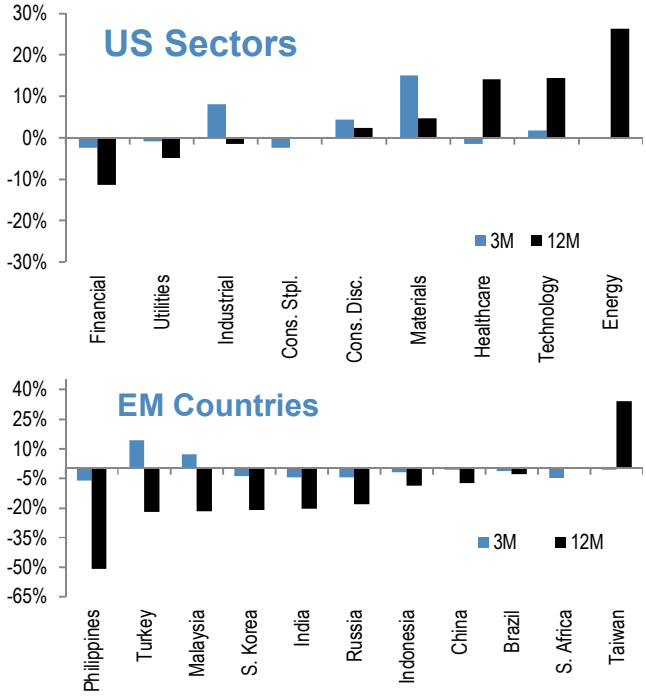


Source: J.P. Morgan. Bloomberg

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



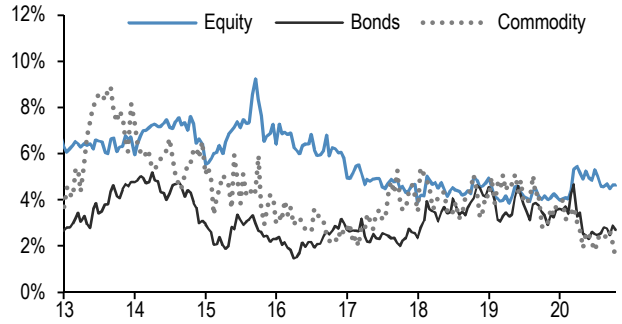
Source: J.P. Morgan. Bloomberg.

Nikolaos Panigirtzoglou
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

ETF Short Interest Monitor (as of Oct 15)

Chart A7: Cross Asset ETF Short Interest

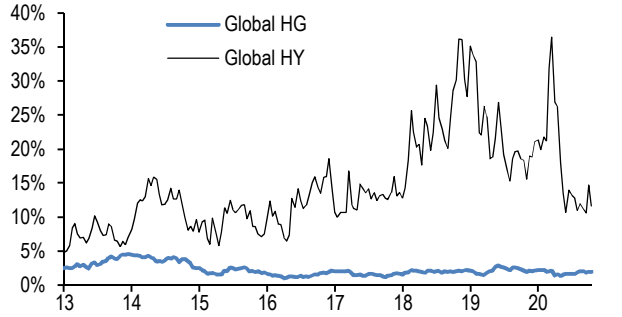
Short interest as a % of outstanding shares. Short interest is for US Domiciled ETFs and is available bi-monthly from Bloomberg. Short interest is weighted by AUM



Source: J.P. Morgan. Bloomberg.

Chart A8: Bond ETF Short Interest

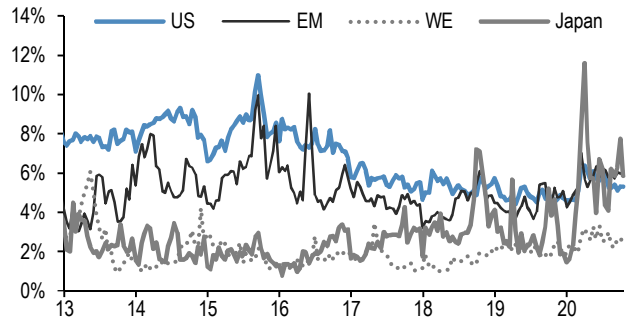
Short interest as a % of outstanding shares. Short interest is for US Domiciled ETFs and is available bi-monthly from Bloomberg. Short interest is weighted by AUM



Source: J.P. Morgan. Bloomberg.

Chart A9: Equity ETF Short Interest

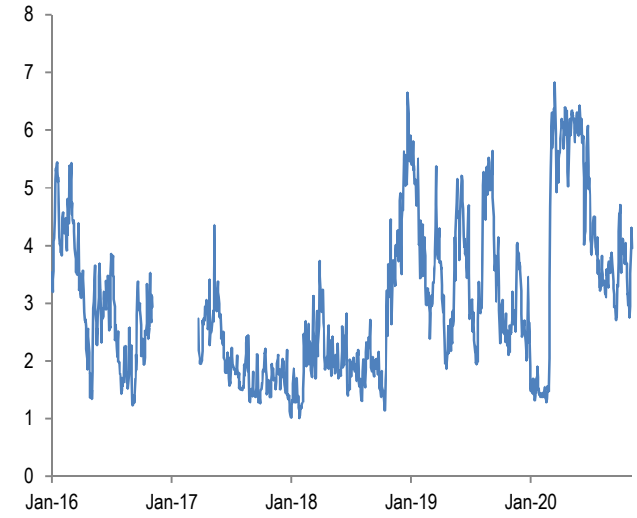
Short interest as a % of outstanding shares. Short interest is for US Domiciled ETFs and is available bi-monthly from Bloomberg. Short interest is weighted by AUM



Source: J.P. Morgan, Bloomberg.

Chart A10a: Quantity-On-Loan on the SPY US ETF

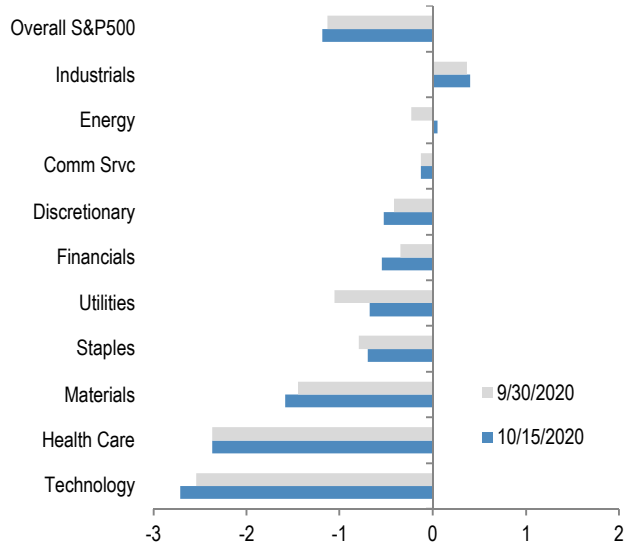
On loan quantity as a % share of share outstanding. Last obs is for 4th Nov 2020.



Source: Datalend, J.P. Morgan

Chart A10b: S&P500 sector short interest

Short interest as a % of shares outstanding based on z-scores. A strategy which overweight's 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, J.P. Morgan.

Nikolaos Panigirtzoglou
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

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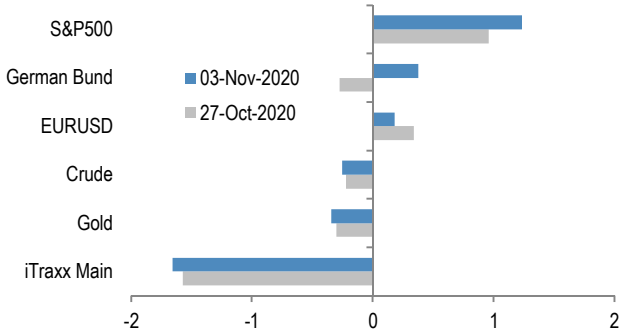
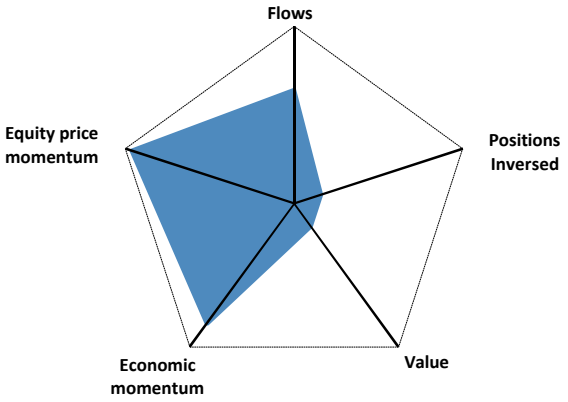
Chart A11: Option skew monitor

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

Chart A12: Market health map



Trading signal for S&P500 and 10Y UST using Artificial Intelligence

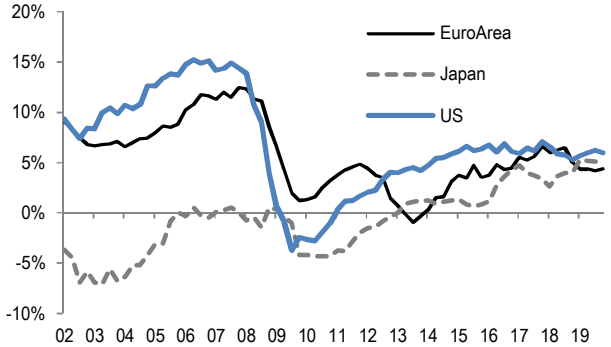
	1 Month	2 Month	3 Month	6 Month
S&P 500 Index	Down	Down	Up	Up
10Y UST Yield	Up	Up	Up	Up

Explanation of Market health 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. The dotted line shows the same but at the beginning of 2012 for comparison. 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 tradeoff 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 A18. **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.

Credit growth

Chart A13: Credit creation in the US, Japan and Euro area

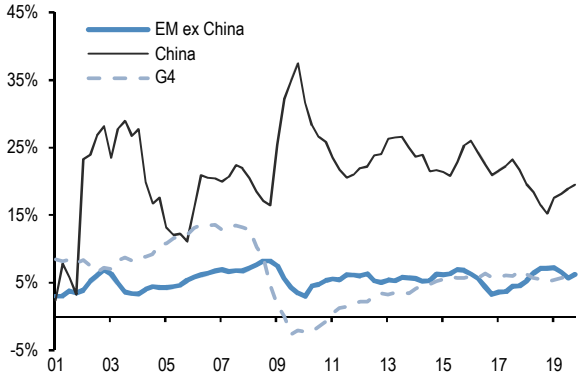
Rolling sum of 4 quarter credit creation as % of GDP. Credit creation includes both bank loans as well as net debt issuance by non-financial corporations and households. Last obs. is for Q4'19.



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

Chart A14: 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 Q4'19.



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

Nikolaos Panigirtzoglou
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

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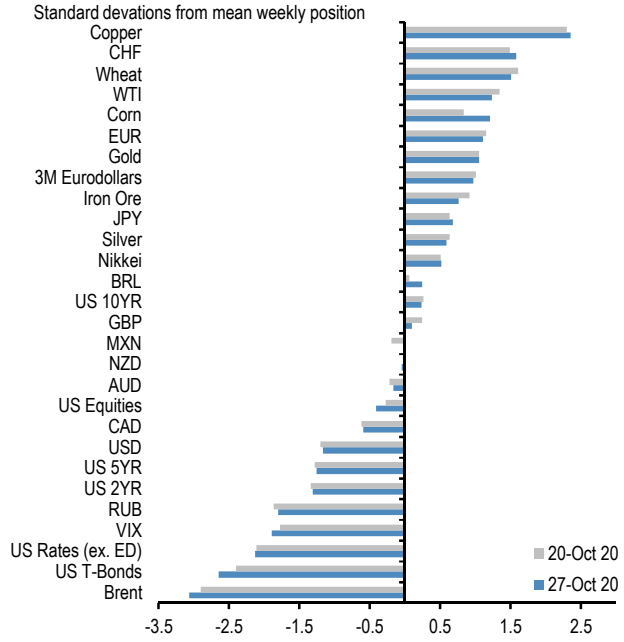
Spec position monitors

Chart A15: Weekly Spec Position Monitor

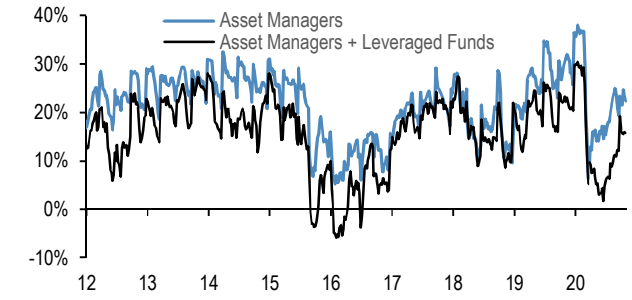
Net spec positions are proxied by the number of long contracts minus the number of short contracts using the speculative category of the Commitments of Traders reports (as reported by CFTC). To proxy for speculative investors for equity futures positions we use Asset managers (see Chart A16), whereas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



Source: Bloomberg, CFTC, J.P. Morgan

Chart A16: 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, Dow Jones, NASDAQ and their Mini futures contracts.

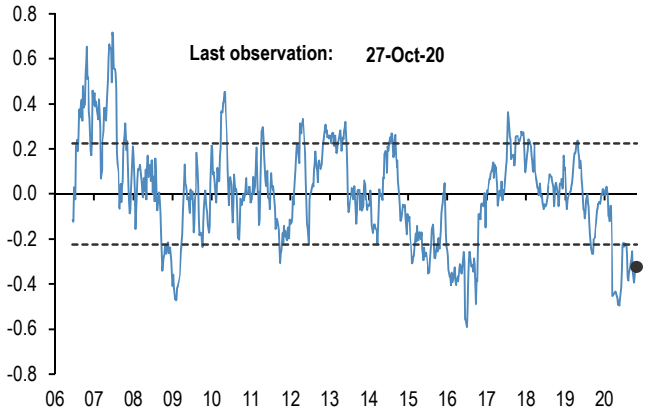


Source: CFTC, Bloomberg and J.P. Morgan

Chart A17: 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, RUB, MXN and BRL. The safe currencies are: JPY, CHF and Gold.

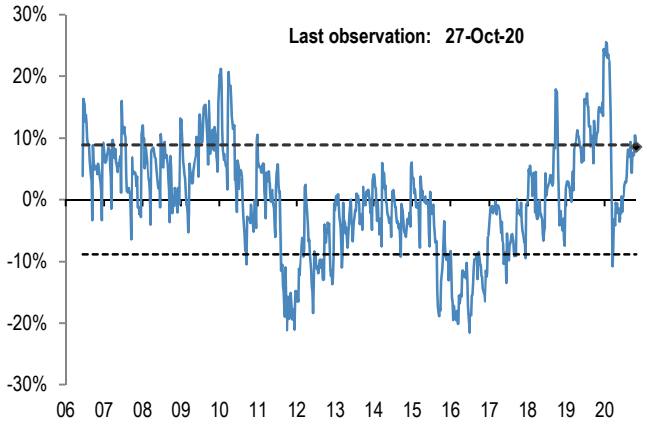


Source: CFTC, J.P. Morgan

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

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

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



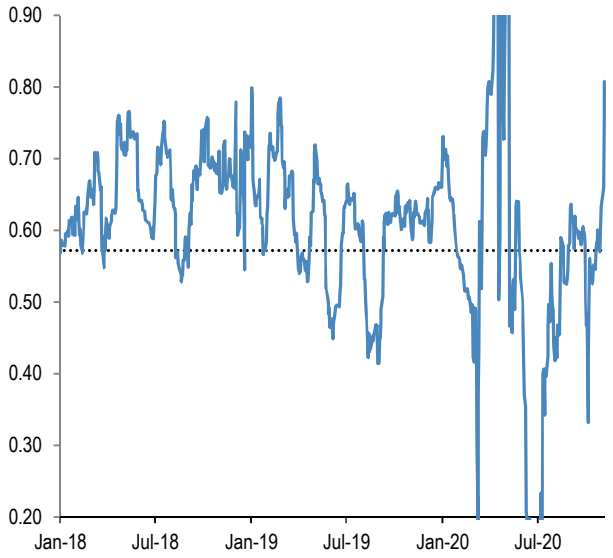
Source: CFTC, Bloomberg and J.P. Morgan

Nikolaos Panigirtzoglou
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

Mutual fund and hedge fund betas

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

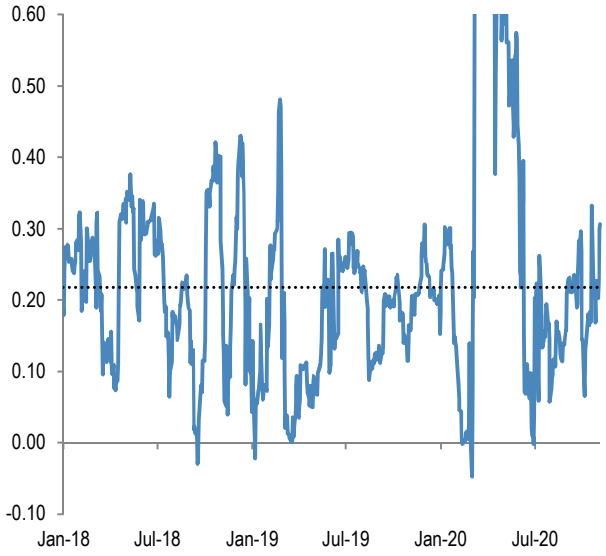
The dotted line shows the average beta since 2013.



Source: Bloomberg, J.P. Morgan

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

The dotted line shows the average beta since 2013.



Source: Bloomberg, J.P. Morgan.

Chart A21: Performance of various type of investors

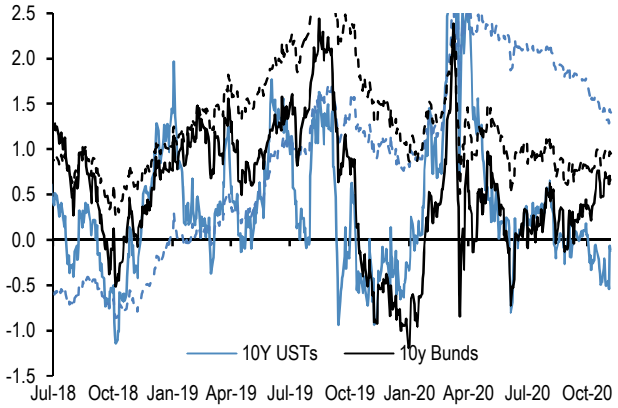
The table depicts the performance of various types of investors in % as of 4th Nov 2020.

Date	2015	2016	2017	2018	2019	2020
Investors						
Equity L/S	1.4%	2.2%	11.8%	-5.9%	12.8%	0.0%
Macro ex-CTAs	-0.1%	3.4%	2.3%	-1.3%	5.2%	4.9%
CTAs	0.0%	-2.9%	2.5%	-5.8%	9.2%	-0.8%
Risk Parity Funds	-5.1%	10.0%	13.5%	-6.5%	18.6%	-1.9%
Balanced MFs	-0.5%	8.4%	14.0%	-4.9%	20.1%	4.5%
Benchmark						
MSCI AC World	-2.4%	7.9%	24.0%	-9.4%	26.6%	3.9%
Barclays Global Agg	1.0%	3.9%	3.0%	1.8%	8.2%	5.0%
60 Equity : 40 Bonds	-0.4%	8.0%	16.1%	-1.9%	22.2%	6.9%
S&P Riskparity Vol 10	-4.1%	8.1%	8.0%	-4.0%	19.0%	2.3%

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

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

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



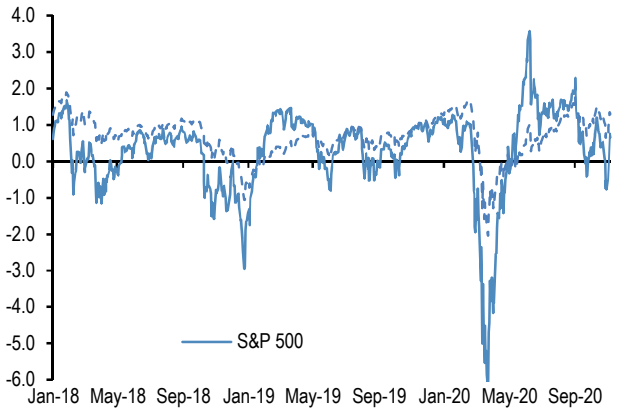
Source: Bloomberg, J.P. Morgan.

Nikolaos Panigirtzoglou
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

J.P.Morgan

Chart A23: Momentum signals for S&P 500

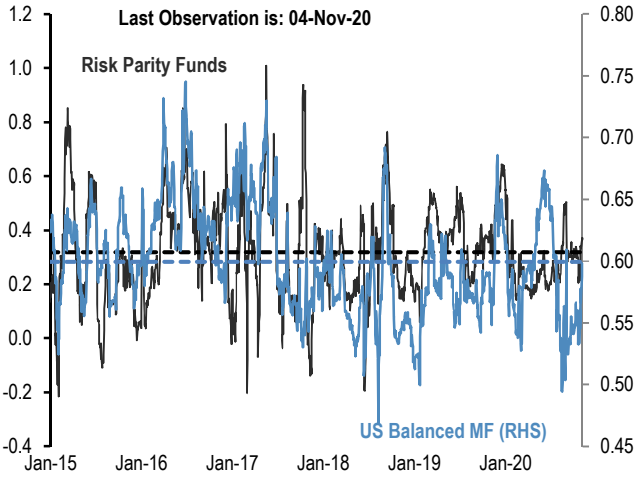
z-score of the momentum signal in our Trend Following Strategy framework shown in Tables A5 and A6 in the Appendix. Solid lines are for the shorter term and dotted lines for longer-term momentum.



Source: Bloomberg, J.P. Morgan.

Chart A24: Equity beta of US Balanced Mutual funds and Risk Parity funds

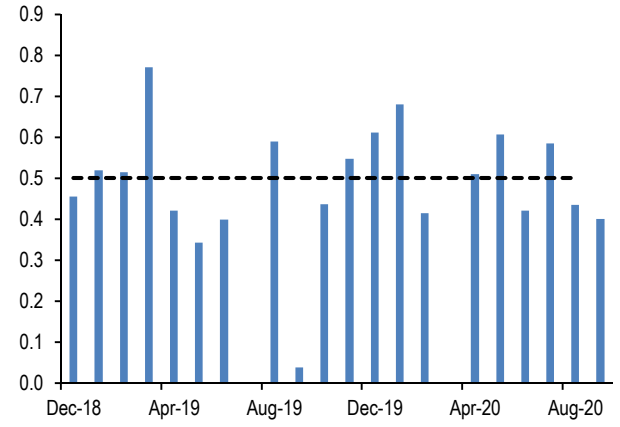
Rolling 21-day equity beta based on a bivariate regression of the daily returns of our Balanced Mutual fund and Risk Parity fund return indices to the daily returns of the S&P 500 and Barcap US Agg indices. Given that these funds invest in both equities and bonds we believe that the bivariate regression 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, SG CTA Index, J.P. Morgan.

Chart A25: Equity beta of monthly reporting Equity Long/Short hedge funds

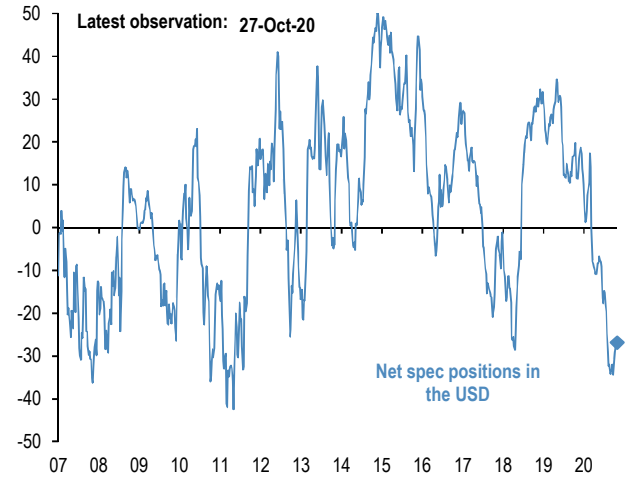
Proxied by the ratio of the monthly performance of HFRI Asset-Weighted Equity Hedge fund index divided by the monthly performance of MSCI AC World index



Source: Bloomberg, HFR, J.P. Morgan

Chart A26: 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 J.P. Morgan

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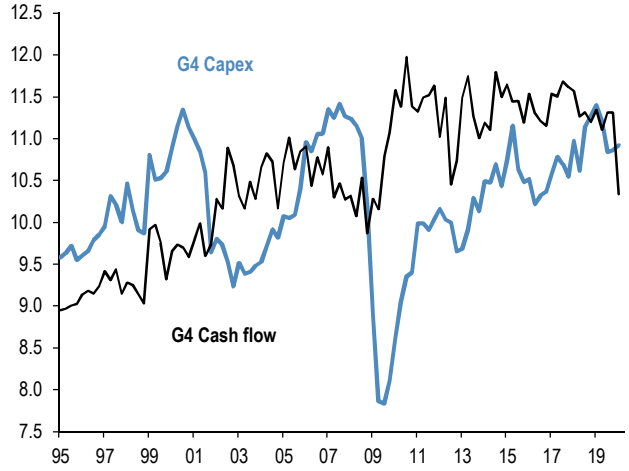
Nikolaos Panigirtzoglou
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

J.P.Morgan

Corporate activity

Chart A27: G4 non-financial corporate capex and cash flow as % of GDP

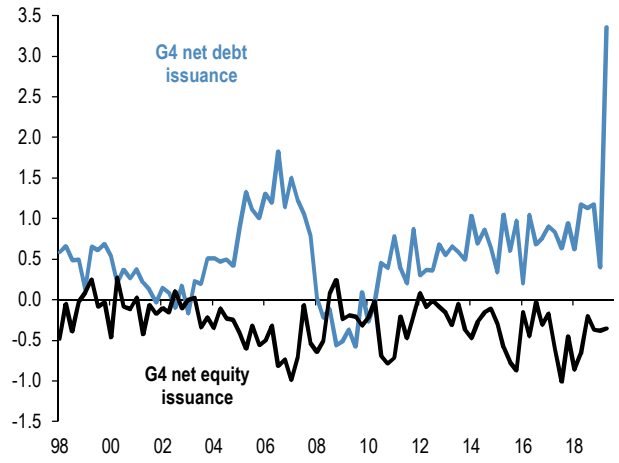
% of GDP, G4 includes the US, the UK, the Euro area and Japan. Last observation as of Q1 2020.



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

Chart A28: G4 non-financial corporate sector net debt and equity issuance

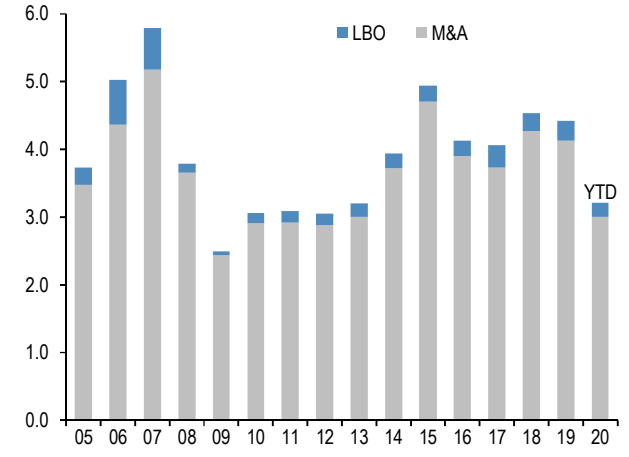
$tr per quarter, G4 includes the US, the UK, the Euro area and Japan. Last observation as of Q1 2020.



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

Chart A29: Global M&A and LBO

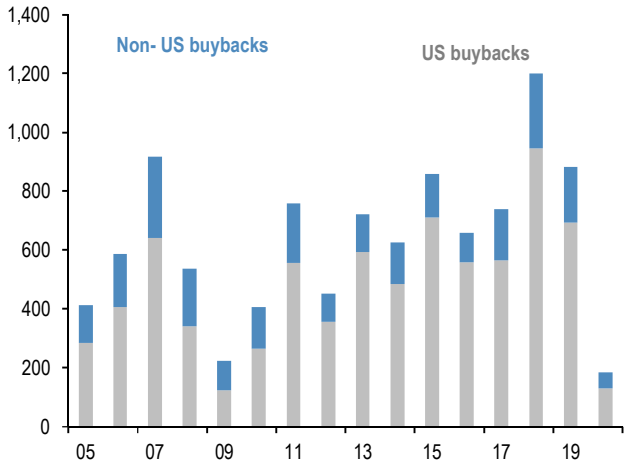
$tr. YTD 2020 as of Nov 04. M&A and LBOs are announced.



Source: Dealogic, J.P. Morgan.

Chart A30: US and non-US share buyback

$bn, 2020 are as of May'20. Buybacks are announced.



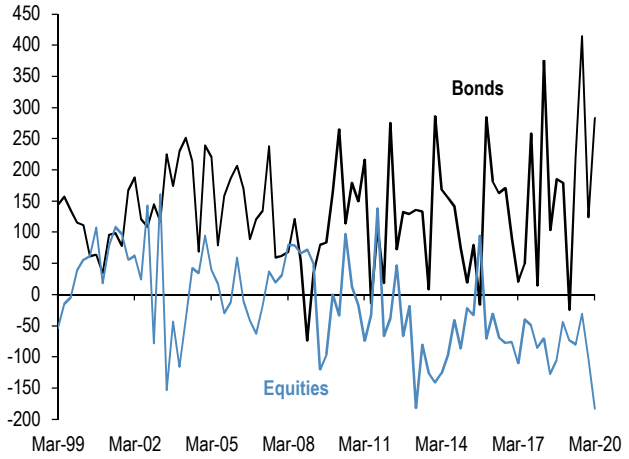
Source: Bloomberg, Thomson Reuters, J.P. Morgan

Nikolaos Panigirtzoglou
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

Pension fund and insurance company flows

Chart A31: G4 pension funds and insurance companies equity and bond flows

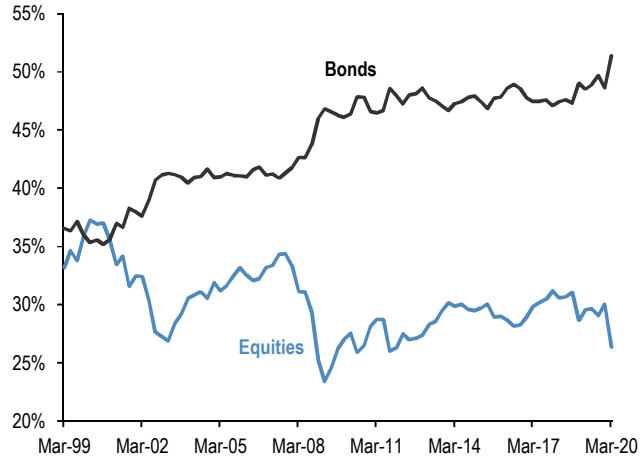
Equity and bond buying in $bn per quarter. G4 includes the US, the UK, Euro area and Japan. Last observation is Q1 2020



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

Chart A32: G4 pension funds and insurance companies equity and bond levels

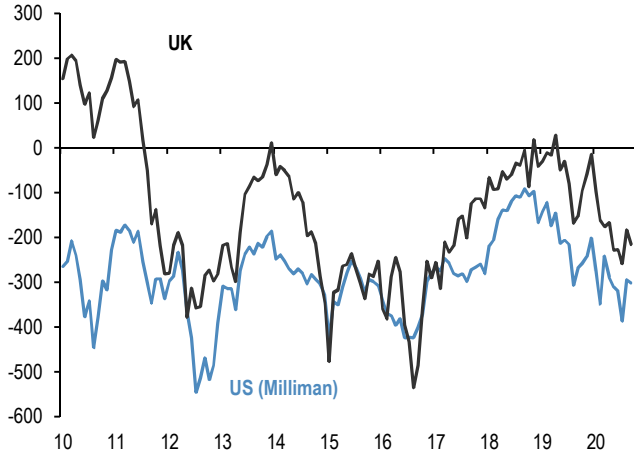
Equity and bond as % of total assets per quarter. G4 includes the US, the UK, Euro area and Japan. Last observation is Q1 2020.



Source: ECB, BOJ, BOE, Federal Reserve flow of funds

Chart A33: Pension fund deficits

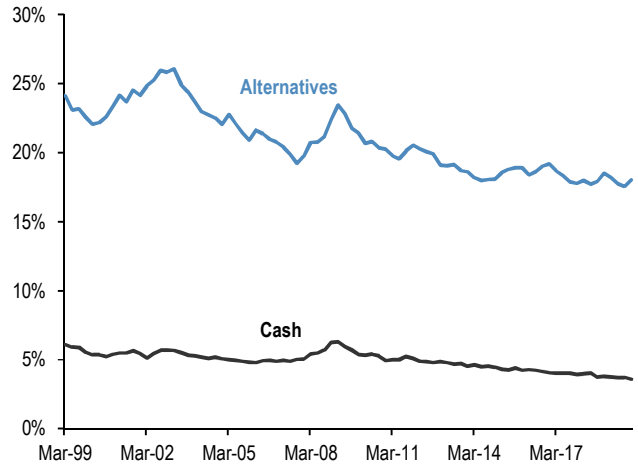
US$bn. For US, funded status of the 100 largest corporate defined benefit pension plans, from Milliman. For UK, funded status of the defined benefit schemes eligible for entry to the Pension Protection Fund, converted to US$ at today's exchange rates. Last obs. is Sepl'20.



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

Chart A34: 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 Q4 2019.



Source: ECB, BOJ, BOE, Federal Reserve flow of funds

Nikolaos Panigirtzoglou
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

J.P.Morgan

Funding market monitor

Table A4: Bank deposits and ECB reliance

Deposits are non-seasonally adjusted Euro area non-bank, non-government deposits as of August 2020. We take total deposits (item 2.2.3. in MFI balance sheets minus "deposits from other financial institutions", which includes deposits from securitized vehicles and financial holding corporations among others. We also subtract repos (item 2.2.3.4) from the total figures to give a cleaner picture of deposits outside interbank borrowing. ECB borrowing and Target 2 balances are latest available. ECB borrowing is gross borrowing from regular MROs and LTROs. The Chart shows the evolution of Target 2 balance for Spain and Italy along with government bond spreads. The shaded area denotes the period between May 2011 and Aug 2012 when convertibility risk premia were elevated due to Greece exit fears.

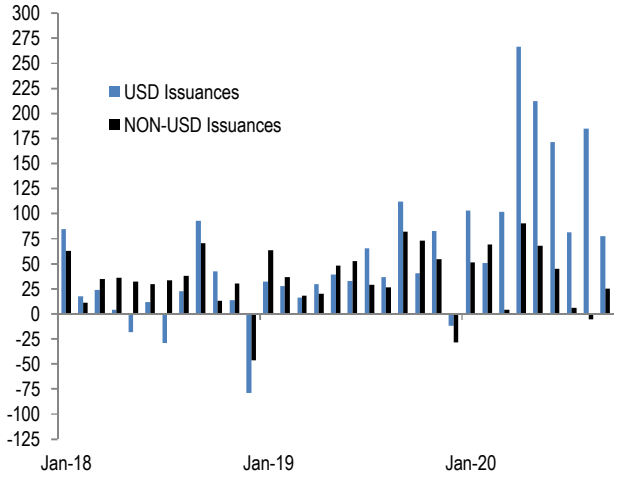
€bn	Target 2 bal.	Target 6m chng	ECB borrowing	Depo 3m chng	Depo 12m chng
Austria	-48	-11	67	1.1%	7.5%
Belgium	-64	-12	78	-0.1%	5.9%
Cyprus	9	1	2	0.1%	-1.1%
Finland	67	3	20	2.6%	17.6%
France	20	129	195	1.5%	14.6%
Germany	1115	180	285	1.2%	4.8%
Greece	-73	-36	39	2.8%	8.5%
Ireland	52	16	3	2.3%	13.6%
Italy	-546	-55	367	3.1%	9.0%
Luxembourg	229	4	8	0.0%	5.7%
Netherlands	70	7	144	2.4%	9.1%
Portugal	-82	-8	32	0.4%	7.8%
Spain	-465	-57	261	0.4%	8.2%

Source: Bloomberg, ECB, National Central Banks, J.P. Morgan

Source: Bloomberg, National Central Banks, J.P. Morgan

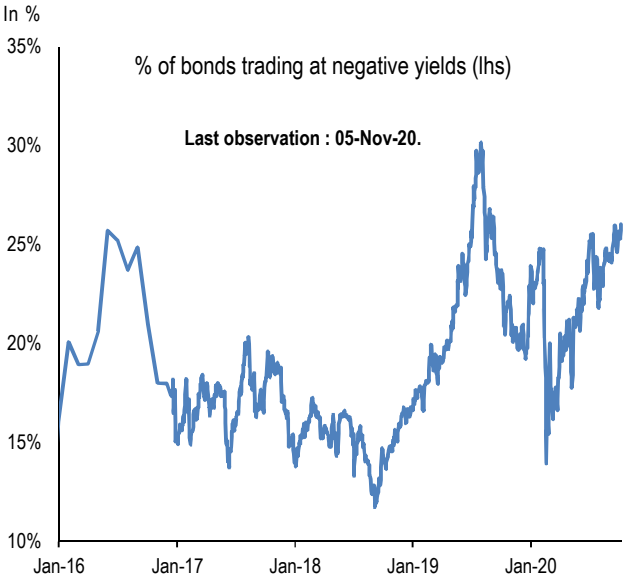
Chart A35: USD and Non-USD net bond issuances

Gross issuance minus redemptions in $bn per month. Non-USD issuance includes bonds issued in EUR, GBP and JPY. Non-USD bond issuance is converted to USD at today's exchange rate through the full historical period. In this way net bond issuance fluctuations are unaffected by currency changes. Our bond issuance figures include only Non-Government bonds issued globally, excluding short-term debt (maturity less than 1-year) and self-funded issuance (where the issuing bank is the only book runner).Last observation is Sep 2020.



Source: Dealogic, J.P. Morgan

Chart A36: Market value of negative yield bonds as a % of total outstanding in Bloomberg Barclays Global Agg Index



Source: J.P. Morgan

Nikolaos Panigirtzoglou
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

J.P.Morgan

Italian stress market monitor

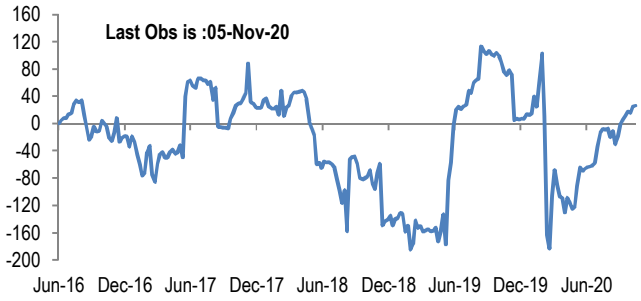
Chart A37: Open Interest for 10Y Italian Government Bond Futures

In thousands.

Source: J.P. Morgan.

Chart A38: Position proxy for 10Y Italian Government Bond Futures (IKA Comdty)

Number of contracts in thousands across all expiries. Cumulative weekly absolute change in open interest multiplied by the sign of the BTP futures price change every week.



Source: Bloomberg, J.P. Morgan calculations

Chart A39: Position proxy for 10Y French Government Bond Futures (OATA Comdty)

Number of contracts in thousands across all expiries. Cumulative weekly absolute change in open interest multiplied by the sign of the OAT futures price change every week.

Source: Bloomberg, J.P. Morgan calculations.

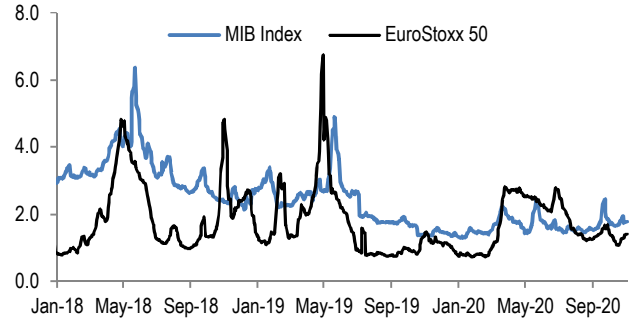
Chart A40: Currency hedge fund EUR exposure

Net spec position in the EUR as reported by the CFTC. Spec is the non-commercial category from the CFTC.

Source: Bloomberg, CFTC, J.P. Morgan calculations.

Chart A41: Quantity on loan for MIB and EuroStoxx 50 index stocks

Quantity on Loan as a % shares outstanding. The Quantity on Loan on individual stock are weighted by their market cap.



Source: Datalend, J.P. Morgan.

Chart A42: Italy Target 2 balance

In €bns. Last observation is Sep'20

Source: ECB, Bloomberg, J.P. Morgan calculations

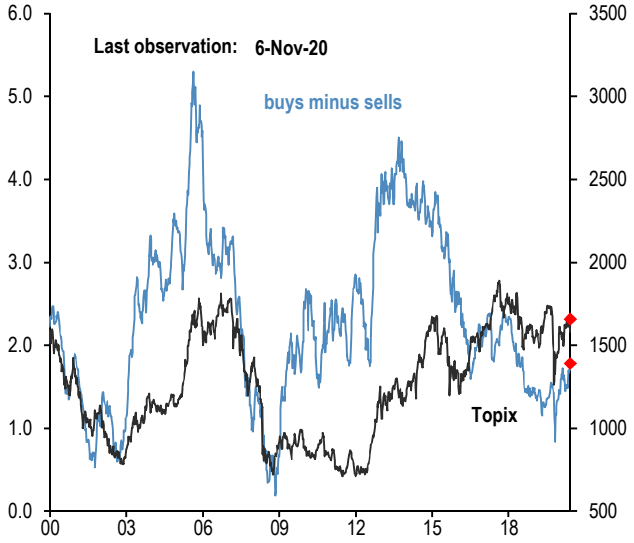
Nikolaos Panigirtzoglou
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

J.P.Morgan

Japanese flows and positions

Chart A43: Tokyo Stock Exchange margin trading: total buys minus total sells

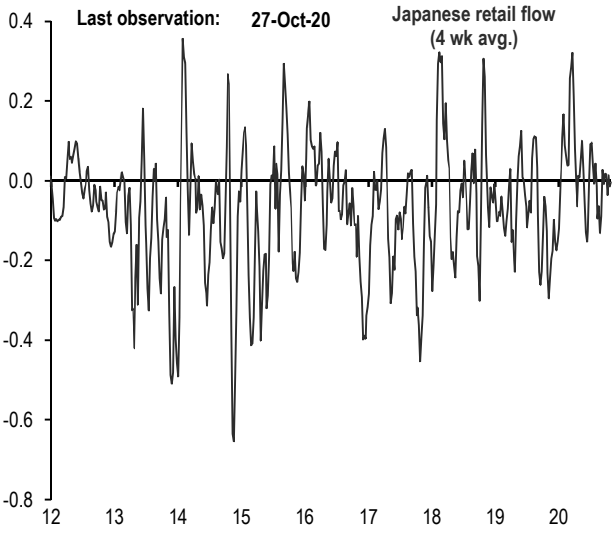
In bn of shares. Topix on right axis.



Source: Tokyo Stock Exchange, J.P. Morgan.

Chart A44: Domestic retail flows

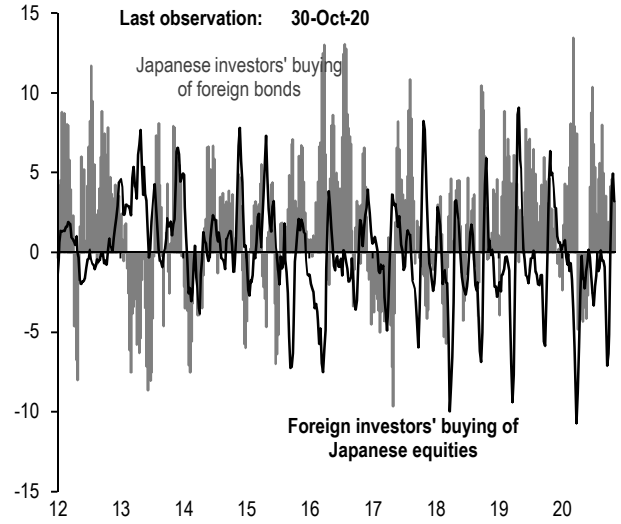
In JPY tr. Retail flows are from Tokyo stock exchange.



Source: TSE, J.P. Morgan calculations.

Chart A45: Japanese equity buying by foreign investors. Japanese investors' buying of foreign bonds

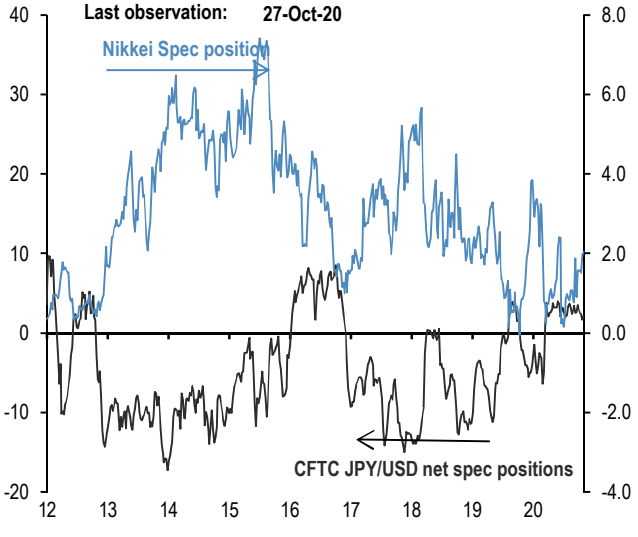
$bn, 4 week moving average.



Source: Japan MoF, J.P. Morgan.

Chart A46: 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.



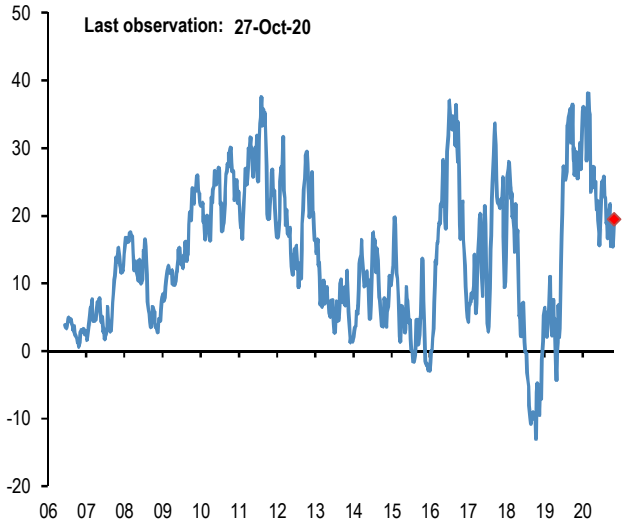
Source: Bloomberg, CFTC, J.P. Morgan calculations.

Nikolaos Panigirtzoglou
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

Commodity flows and positions

Chart A47: Gold spec positions

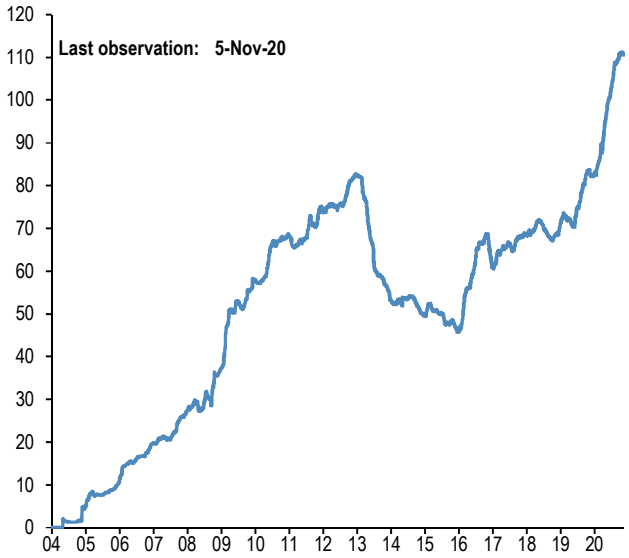
$bn. CFTC net long minus short position in futures for the Managed Money category.



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

Chart A48: Gold ETFs

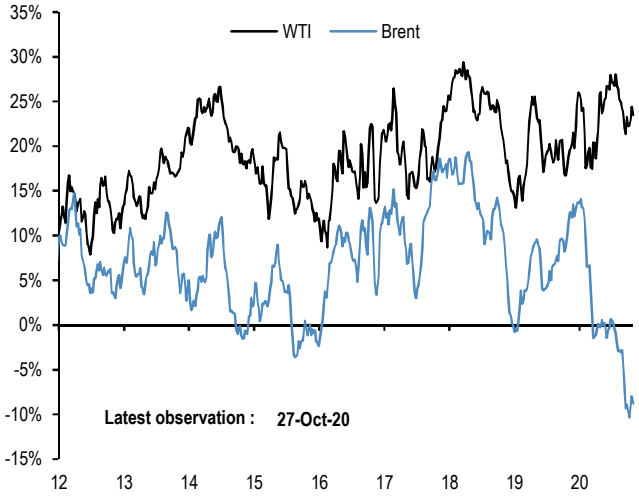
Mn troy oz. Physical gold held by all gold ETFs globally.



Source: Bloomberg, J.P. Morgan.

Chart A49: Oil spec positions

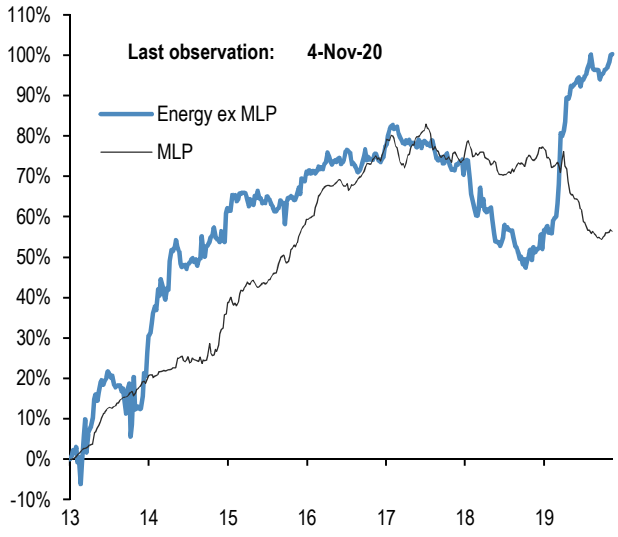
Net spec positions divided by open interest. CFTC futures positions for WTI and Brent are net long minus short for the Non-Commercial category.



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

Chart A50: Energy ETF flows

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



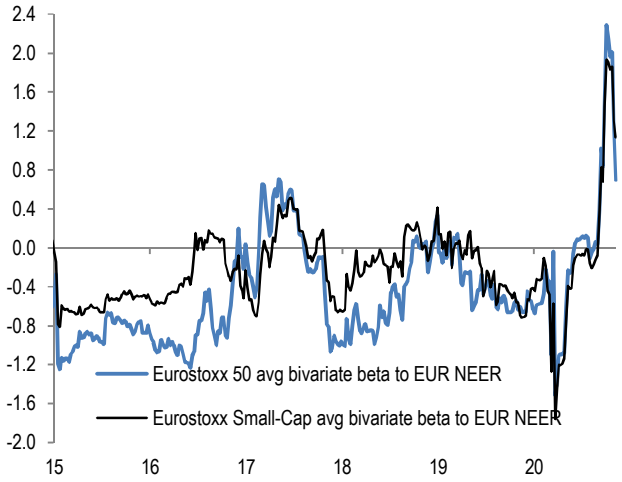
Source: CFTC, Bloomberg, J.P. Morgan

Nikolaos Panigirtzoglou
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

Corporate FX hedging proxies

Chart A51: Average beta of Eurostoxx 50 companies and Eurostoxx Small-Cap to trade weighted EUR

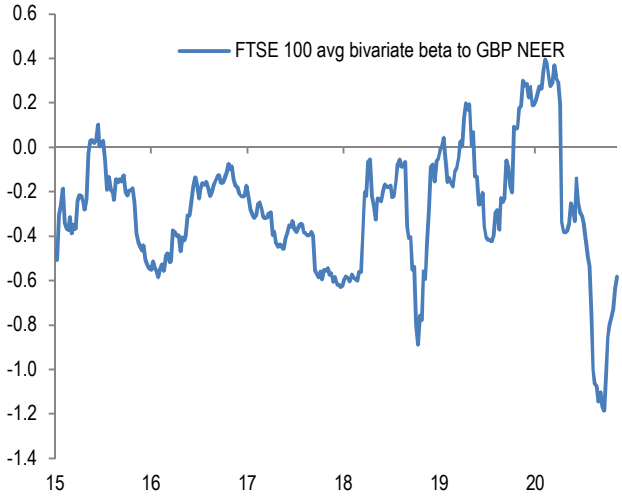
Rolling 26 weeks average betas based on a bivariate regression of the weekly returns of individual stocks in the Eurostoxx 50 index to the weekly returns of the MSCI AC World and JPM EUR Nominal broad effective exchange rate (NEER).



Source: Bloomberg, J.P. Morgan

Chart A52: Average beta of FTSE 100 companies to trade weighted GBP

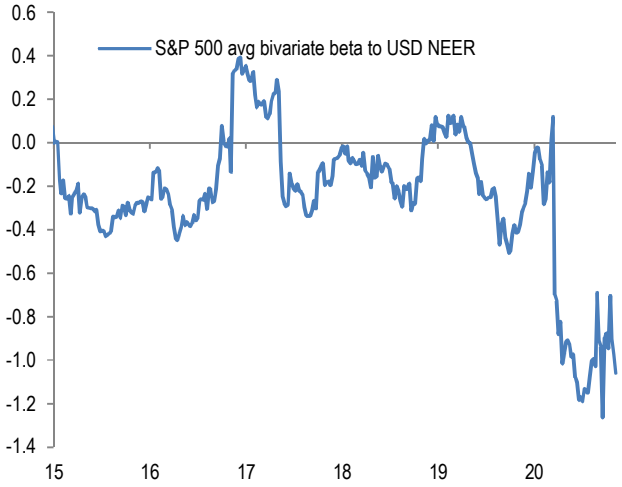
Rolling 26 weeks average betas based on a bivariate regression of the weekly returns of individual stocks in the FTSE 100 index to the weekly returns of the MSCI AC World and JPM GBP Nominal broad effective exchange rate (NEER).



Source: Bloomberg, J.P. Morgan

Chart A53: Average beta of S&P500 companies to trade weighted US dollar

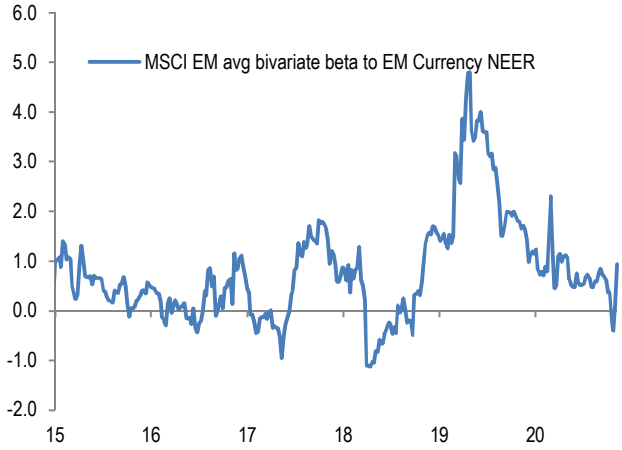
Rolling 26 weeks average betas based on a bivariate regression of the weekly returns of stocks in the S&P500 index to the weekly returns of the MSCI AC World and JPM USD Nominal broad effective exchange rate (NEER).



Source: Bloomberg, J.P. Morgan

Chart A54: Average beta of MSCI EM companies to the 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, J.P. Morgan.

Nikolaos Panigirtzoglou
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

J.P.Morgan

CTAs - Trend following investors' momentum indicators

Table A5: Simple return momentum trading rules across various commodities

Optimal lookback 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. Lookbacks, current signals and z-scores are shown for shorter-term and longer-term momentum separately, along with performance of a combined signal. Annualized return, volatility and information ratio of the signal; current signal; and z-score of the current return over the relevant lookback 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	9.8	22.4	0.44	-1	3	-0.3	-1.9%
	long	504				0	171	-1.9	-55.4%
Brent	short	105	7.9	21.8	0.36	-1	14	-0.5	-6.6%
	long	504				-1	112	-1.2	-32.7%
Unleaded gas	short	105	4.7	24.0	0.20	-1	6	-0.1	-1.5%
	long	462				-1	112	-1.0	-24.0%
Heat Oil	short	63	6.9	21.3	0.32	-1	48	-0.2	-1.5%
	long	483				-1	1	-1.4	-36.8%
Gasoil	short	63	11.7	19.9	0.59	-1	46	-0.6	-6.0%
	long	504				-1	2	-1.4	-42.6%
Nat gas	short	147	18.7	34.8	0.54	-1	2	-0.3	-6.1%
	long	294				-1	75	-0.8	-22.7%
Gold	short	21	4.2	10.7	0.39	1	0	0.8	2.2%
	long	504				0	3	1.8	22.0%
Silver	short	10	5.9	19.1	0.31	1	0	1.2	4.1%
	long	462				0	0	1.6	35.5%
Palladium	short	42	16.5	20.6	0.80	1	0	0.3	2.1%
	long	273				1	94	0.6	14.0%
Platinum	short	105	7.5	17.2	0.44	0	0	0.0	-0.1%
	long	273				0	0	0.0	0.3%
Aluminium	short	21	4.8	13.6	0.36	1	4	0.8	2.6%
	long	378				1	20	0.4	5.9%
Copper	short	147	9.6	17.8	0.54	1	109	0.9	11.4%
	long	399				1	92	0.6	14.8%
Lead	short	126	5.8	20.4	0.28	0	1	0.0	0.3%
	long	357				-1	37	-0.2	-4.9%
Nickel	short	42	13.1	22.7	0.58	1	19	0.4	3.1%
	long	336				1	24	0.3	8.3%
Zinc	short	126	10.3	19.8	0.52	1	44	1.1	13.5%
	long	399				1	20	0.5	12.7%
Wheat	short	168	2.4	22.6	0.11	1	35	1.0	11.4%
	long	294				1	36	0.7	11.2%
Kansas wheat	short	147	8.1	20.2	0.40	1	8	1.4	16.3%
	long	504				1	23	0.6	11.9%
Corn	short	63	6.7	16.4	0.41	1	6	1.2	9.5%
	long	399				1	0	0.1	1.8%
Soybeans	short	42	6.8	14.8	0.46	1	18	1.2	6.4%
	long	231				1	52	1.5	19.1%
Cotton	short	168	4.1	18.2	0.23	1	70	1.0	14.4%
	long	483				1	18	0.2	5.2%
Sugar	short	63	8.3	22.3	0.37	1	27	0.6	5.7%
	long	252				1	27	0.5	9.3%
Coffee	short	63	5.6	23.0	0.24	-1	34	-0.9	-7.9%
	long	315				-1	34	-0.4	-7.9%
Cocoa*		10	4.4	28.5	0.15	-1	6	-0.7	-2.4%

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

Source: Bloomberg, J.P. Morgan calculations

Table A6: Simple return momentum trading rules across international equity indices, bond futures and FX

Optimal lookback 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. Lookbacks, current signals and z-scores are shown for shorter-term and longer-term momentum separately, along with performance of a combined signal. Annualized return, volatility and information ratio of the signal; current signal; and z-score of the current return over the relevant lookback period; data from 1999 onward.

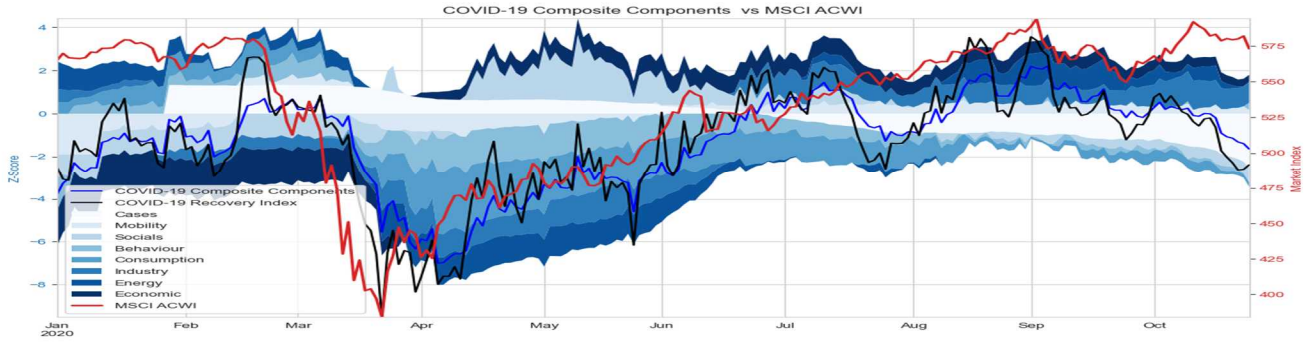
		Lookback (moving avg, days)	Annualized return (%)	Vol (%)	IR	Current signal	Time since last change (days)	Z-score	% Change of return index from its moving average
S&P 500	short	63	6.4	12.0	0.54	1	1	0.8	3.4%
	long	357				1	17	1.4	14.8%
Nasdaq 100	short	84	7.4	14.7	0.51	1	1	0.8	6.8%
	long	462				0	2	2.0	38.8%
Nikkei	short	63	5.0	13.9	0.36	1	3	0.6	3.8%
	long	420				1	116	0.7	11.5%
FTSE 100	short	147	4.6	12.4	0.37	-1	15	-0.1	-0.9%
	long	462				-1	141	-0.9	-10.3%
Eurostoxx 50	short	21	3.3	13.4	0.25	1	0	0.5	1.6%
	long	357				-1	17	-0.2	-2.8%
MSCI EM	short	42	13.9	11.4	1.22	1	3	1.0	5.3%
	long	357				1	90	0.9	15.0%
2Y USTs	short	252	0.8	1.0	0.88	1	123	0.6	0.6%
	long	483				1	162	0.8	1.4%
5Y USTs	short	252	1.9	2.8	0.68	1	64	0.7	1.6%
	long	378				1	61	1.0	2.8%
10Y USTs	short	42	2.2	3.5	0.62	-1	23	-0.1	-0.2%
	long	504				1	12	1.4	6.0%
2Y Schatz	short	252	0.3	0.8	0.40	1	16	0.1	0.1%
	long	441				0	0	0.0	0.0%
5y Bobl	short	84	1.7	1.8	0.94	1	39	0.4	0.4%
	long	483				1	164	0.5	1.0%
10y Bund	short	105	2.7	3.2	0.83	1	39	0.7	1.3%
	long	462				1	168	1.0	3.3%
10Y JGB	short	168	1.0	2.2	0.45	1	0	0.1	0.1%
	long	273				-1	169	-0.1	-0.1%
10Y Gilts	short	105	1.5	3.8	0.38	-1	0	-0.1	-0.2%
	long	504				1	62	1.0	4.2%
Euro	short	42	3.1	6.4	0.49	1	0	0.2	0.5%
	long	273				1	98	0.7	4.5%
Yen	short	21	1.8	6.3	0.29	1	11	0.8	1.3%
	long	399				1	74	0.4	3.1%
Sterling	short	168	2.1	7.3	0.30	1	77	0.8	3.4%
	long	294				1	28	0.4	2.5%
AUD	short	42	4.8	7.7	0.62	1	0	0.6	1.6%
	long	378				1	91	0.7	6.1%
CAD	short	252	0.8	6.4	0.13	1	67	0.7	3.2%
	long	504				1	3	0.4	2.4%

Source: Bloomberg and J.P. Morgan

Nikolaos Panigirtzoglou
(44-20) 7134-7815
nikolaos.panigirtzoglou@jpmorgan.com

Gauging the Economic Normalization

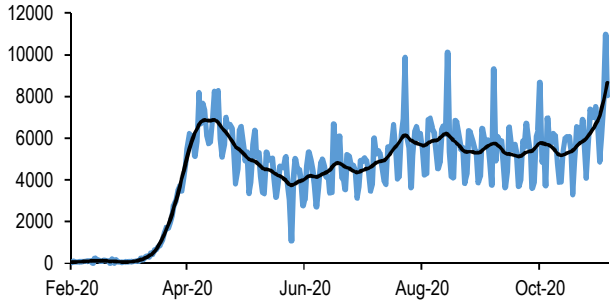
Chart A55: COVID-19 Composite showing the individual components' contributions YTD 2020



Source: J.P. Morgan.

Chart A56: Daily change in number of COVID-19 Deaths smoothed by HP filter

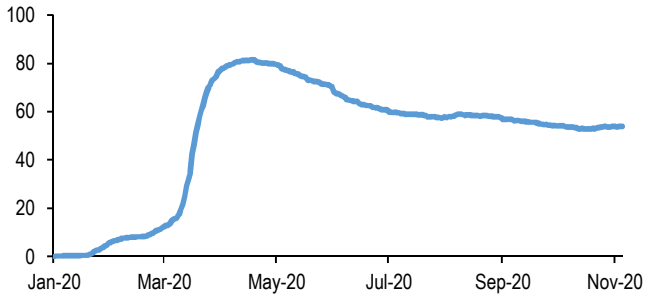
Number of deaths per day. HP filter uses lambda of 50. Last obs. is 5th Nov 2020.



Source: Worldometer, J.P. Morgan.

Chart A57: Average score of lockdown stringency Index across 147 countries as compiled by Oxford University

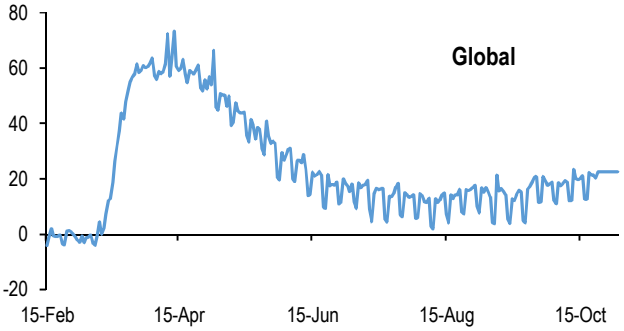
Last obs. is 5th Nov 2020



Source: Oxford University Research, J.P. Morgan

Chart A58: Google mobility data – Visits and length of stays at Residential areas minus Other areas

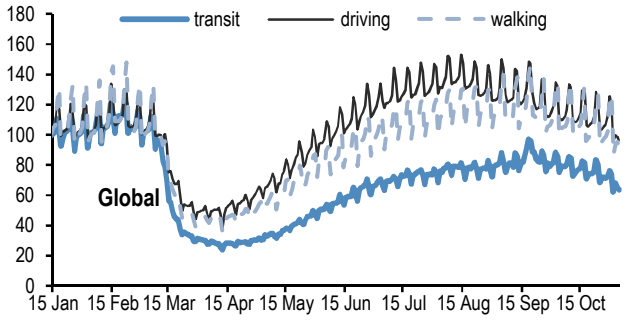
Other areas include Workplace, Transit station, Parks, Grocery & Pharmacy and Retail & Recreational places. Data is aggregated for 125 countries and are weighted based on their GDP. Baseline is defined as median volume between 3rd Jan – 6th Feb. Last obs. is 01 Nov 2020.



Source: Google mobility data, J.P. Morgan

Chart A59: Apple mobility data – Volume of requests for directions for transit, driving and walking activity as compared to baseline

Data are aggregated for 63 countries and weighted based on their GDP. Baseline is defined as volume on 13th Jan 2020. Last obs. is 04 Nov 2020.



Source: Apple mobility data, J.P. Morgan

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