Flows & Liquidity

Has bitcoin equalised with gold already?

- We believe that the valuation and position backdrop has become a lot more challenging for bitcoin at the beginning of the New Year.

- While we cannot exclude the possibility that the current speculative mania will propagate further, pushing the bitcoin price up towards the consensus region of between $50k-$100k, we believe that such price levels would prove unsustainable.

- Risk markets look vulnerable ahead of this week’s Georgia runoffs.

- We note that the spectacular bitcoin rally of the past few weeks has moved bitcoin into more challenging territory not only in terms of its positioning backdrop, but also in terms of its valuation. We had previously used two valuation metrics for bitcoin, one based on its comparison to gold and one based on its mining cost or intrinsic value.

- Bitcoin's competition with gold has already started in our mind as evidenced by the more than $3bn of inflows into the Grayscale Bitcoin Trust and the more than $7bn of outflows from Gold ETFs since mid-October (Figure 1). There is little doubt that this competition with gold as an "alternative" currency will continue over the coming years given that millennials will become over time a more important component of investors' universe and given their preference for "digital gold" over traditional gold. Considering how big the financial investment into gold is, a crowding out of gold as an "alternative" currency implies big upside for bitcoin over the long term. As we had mentioned previously in the Oct 23rd F&L, "Bitcoin's competition with gold," private gold wealth is mostly stored via gold bars and coins the stock of which, excluding those held by central banks, amounts to 42,600 tonnes or $2.7tr including gold ETFs. Mechanically, the market cap of bitcoin at $575bn currently would have to rise by x4.6 from here, implying a theoretical bitcoin price of $146k, to match the total private sector investment in gold via ETFs or bars and coins.

- But this long term upside based on an equalization of the market cap of bitcoin to that of gold for investment purposes is conditional on the volatility of bitcoin converging to that of gold over the long term. The reason is that, for most institutional investors, the volatility of each class matters in terms of portfolio risk management and the higher the volatility of an asset class, the higher the risk capital consumed by this asset class. It is thus unrealistic to expect that the allocations to bitcoin by institutional investors will match those of gold without a convergence in volatilities. A convergence in volatilities between bitcoin and gold is unlikely to happen quickly and is in our mind a multi-year process. This implies that the above $146k theoretical bitcoin price target should be considered as a long-term target, and thus an unsustainable price target for this year.

Figure 1: Cumulative Flows in Bitcoin Trust & Gold ETF holdings

Both the y-axis in $bn

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

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See page 22 for analyst certification and important disclosures.
• In fact, an argument can be made that, in terms of risk capital, bitcoin has largely equalized with gold already. To see this, one could compare the volatilities of bitcoin and gold or the volatilities of the biggest bitcoin and gold funds given many institutional investors are only allowed or prefer to invest in fund format. The 3m realized vol for bitcoin currently stands at 57% vs. 17% for gold. In other words, the ratio of the two vols suggests that bitcoin currently consumes x3.4 more risk capital than gold. This ratio rises further if one looks at the biggest bitcoin and gold funds. The 3m realized vol for the Grayscale Bitcoin Trust stands at 87% vs. 17% for GLD, the largest gold ETF by AUM. I.e., the ratio of the two vols suggests that the Grayscale Bitcoin Trust currently consumes x5.1 more risk capital than gold. Taking the average of the x3.4 and x5.1 ratios, suggests that bitcoin and its biggest fund on average consume x4.3 more risk capital than gold and its biggest fund, which is very much close to the x4.6 ratio needed to equalize the market cap of bitcoin to that of gold for investment purposes. In other words, bitcoin has already almost equalized gold in risk capital terms. In our opinion this challenges the consensus idea that a price in the region of $50k-$100k region is a sustainable bitcoin target for 2021 in the absence of a significant decline in bitcoin volatility.

• Our second valuation metric is based on the mining cost or intrinsic value of bitcoin. The ratio of the bitcoin market price to its intrinsic value is shown in Figure 2. The current ratio is higher than its previous mid-2019 peak and matches its end-2017 peak, again raising concerns about valuations. This is not say that the mining cost is driving the market value. The opposite is likely true. In the early years, bitcoin’s production cost had naturally stronger influence on the price because new coin generation was a higher percentage of existing stock or supply. Now that more than 18m bitcoins have been mined already (vs. max supply of 21m) and new coin generation is a smaller percentage of the existing supply, the influence of the production cost on the price has likely diminished. Thus, in the current conjuncture, the market price is likely driving the production cost rather than the other way round. However, this causality does not mean that the bitcoin price would be diverging from its mining cost on a sustained basis. Similar to gold, when the bitcoin market price is well above the production cost, mining activity and mining difficulty should increase pushing the cost of production up towards the market price, thus inducing some convergence. But similar to previous episodes, some of that convergence could happen with an adjustment in the market price also. We thus view the acute divergence of Figure 2 as another valuation challenge for bitcoin.

Figure 2: Ratio of Bitcoin market price to intrinsic value
Intrinsic value estimated using the cost of production approach following Hayes (2018)

Source: Bitinfocharts.com, J.P. Morgan

• What about positioning? There is little doubt that the institutional flow impulse into bitcoin is what distinguishes 2020 from 2017. And there is no better metric to capture this institutional impulse than the flow trajectory of the Grayscale Bitcoin Trust in Figure 1. This is because many institutional investors are only allowed or prefer to invest in bitcoin in fund format for regulatory or other reasons. In fact, many of them are not even allowed to hold restricted shares of the Grayscale Bitcoin Trust via private placements given the 6-month lock up period, and are thus forced to pay a premium by buying these shares in the secondary market.

• It is, however, wrong to view all these institutional flows of last year as entirely driven by long-term investors. We believe that a significant component of last year’s institutional flows into bitcoin reflect speculative investors seeking to front run other more real-money institutional investors. The frothy positioning in CME bitcoin futures is one manifestation of this speculative institutional flow which encompasses momentum traders such as CTAs and quantitative crypto funds. Indeed, bitcoin futures, the preferred vehicle of speculative investors, saw a sharp increase in open interest in recent weeks (Figure 3), pointing to intense buildup of futures positions. This is also true with our more carefully calculated bitcoin futures position proxy shown in Figure 4, which experienced a similarly steep ascent in recent weeks to unprecedented territory. As a
reminder to our readers, 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 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). Looking at Figure 3 and Figure 4 it is difficult to not be concerned about a buildup of institutional speculative long futures positions in bitcoin.

Figure 3: Open interest in CME Bitcoin futures contracts
$mn. Last obs. for 31st Dec 2020.

Source: CME, J.P. Morgan.

Figure 4: Our Bitcoin position proxy based on open interest in CME Bitcoin futures contracts
$mn Last obs. for 31st Dec 2020.

Source: J.P. Morgan

- What about momentum traders? There is little doubt that momentum traders, such as CTAs and quantitative crypto funds, amplified the past weeks’ surge. How much vulnerability do these momentum traders pose for bitcoin at the moment? Clearly, the past weeks’ price surge to above $30k has shifted our bitcoin momentum signals to even higher territory. This is shown in Figure 5 which depicts our short and long lookback period momentum signals for bitcoin. Figure 5 shows that the short lookback period momentum signal rose this week to 3.0 stdevs, and the long lookback period to 2.3 stdevs, i.e. to even higher levels than the previous peaks of mid-2019. Both are well above our 1.5stdev threshold typically associated with overbought conditions and a high risk of mean reversion.

Figure 5: 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
What about retail investors? The speculative mania by retail investors characterized the bitcoin surge during 2017. Unfortunately, there are some signs that retail interest has also increased sharply. For example, as we had argued previously the broadening of corporate support for bitcoin, e.g. via Paypal and Square, has been facilitating and enhancing over time the usage of bitcoin by Millennials. And while we do not yet have data for 4Q volumes, one way to gauge the impact from retail purchases via Paypal is to look at volumes on itBit. These volumes have increased markedly since Oct 21st when Paypal announced the launch of services to enable trading and holding of cryptocurrencies.

Figure 6: Daily volume on ItBit
In $mm per day

Source: Cryptocompare.com, J.P. Morgan

Moreover, data on the distribution of bitcoin balances held in wallet accounts is also suggestive of retail participation. Figure 8 shows percentage change in total bitcoin held in wallet accounts by bucket of bitcoin balance, e.g. < 1 shows the % change in bitcoin held in wallet accounts with a balance of less than one bitcoin. It shows that between the start of 2020 and 2021 accounts with less than one bitcoin or between one and ten bitcoin have seen a marked increase in holdings that is more likely to be retail driven. Similarly, there has been a significant increase in balances held in accounts between 1,000 and 10,000 bitcoin, which is more likely to be institutionally driven. By contrast, balances held in accounts with more than 10,000 bitcoin have declined significantly, suggesting early investors and miners have been selling bitcoin to facilitate the increase of new entrants.

Figure 7: Unique wallet accounts on blockchain.com
# of accounts, log scale.

Source: Blockchain.com

Figure 8: % increase in bitcoin held in wallet accounts by bucket of wallet balance
In %

Source: Bitinfocharts.com, J.P. Morgan
Taking all the above together, we believe that the valuation and position backdrop has become a lot more challenging for bitcoin at the beginning of the New Year. While we cannot exclude the possibility that the current speculative mania will propagate further pushing the bitcoin price up towards the consensus region of between $50k-$100k, we believe that such price levels would prove unsustainable.

Risk markets look vulnerable ahead of this week’s Georgia runoffs

- Risk markets rallied further during the last two weeks of the year. The equity selling due to pension fund rebalancing we had estimated for the end of last year was likely easily absorbed as other institutional and retail investors bought more equities. However, given momentum, we still see vulnerability for risk markets in the near term. This is not only because of elevated positioning by momentum traders, as shown by Chart A23 in the Appendix, but also because of the risk of an increase in volatility into this week’s Georgia Senate runoffs. There is a risk that market focus could shift toward the near-term risk of tax rises in the event that Democrats win both run-offs, inducing a rise in volatility. In turn, a potential rise in volatility would induce position reduction by vol sensitive investors, who had previously propelled risk markets during November/December. Over the medium term, however, we still see the backdrop supportive given global non-bank investors’ equity allocations are only modestly above their post-Lehman averages and ongoing strong liquidity support.
Table A1: Weekly flow monitor

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

<table>
<thead>
<tr>
<th>MF &amp; ETF Flows</th>
<th>30-Dec</th>
<th>4 wk avg</th>
<th>13 wk avg</th>
<th>2020 avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Equity</td>
<td>14.95</td>
<td>18.4</td>
<td>16.0</td>
<td>-3.4</td>
</tr>
<tr>
<td>All Bond</td>
<td>16.75</td>
<td>9.5</td>
<td>11.0</td>
<td>9.2</td>
</tr>
<tr>
<td>US Equity</td>
<td>0.61</td>
<td>-3.9</td>
<td>-9.0</td>
<td>-4.7</td>
</tr>
<tr>
<td>Intl. Equity</td>
<td>14.34</td>
<td>19.9</td>
<td>19.4</td>
<td>-1.15</td>
</tr>
<tr>
<td>Taxable Bonds</td>
<td>8.64</td>
<td>9.3</td>
<td>11.7</td>
<td>6.8</td>
</tr>
<tr>
<td>Municipal Bonds</td>
<td>0.30</td>
<td>1.8</td>
<td>1.7</td>
<td>2.0</td>
</tr>
</tbody>
</table>


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 SDev 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.


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.

<table>
<thead>
<tr>
<th>Equity Supply</th>
<th>18-Dec</th>
<th>4 wk avg</th>
<th>13 wk avg</th>
<th>Y/Y chng</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global IPOs</td>
<td>6.0</td>
<td>12.8</td>
<td>10.5</td>
<td>57%</td>
</tr>
<tr>
<td>Secondary Offerings</td>
<td>5.4</td>
<td>17.9</td>
<td>14.2</td>
<td>62%</td>
</tr>
</tbody>
</table>

Corporate announcements

| M&A - Global | 76.0    | 116.0    | 107.7     | -9%      |
| - US Target  | 34.9    | 51.7     | 48.6      | -23%     |
| - Non-US Target | 41.1  | 64.3     | 59.1      | 4%       |

Net bond issuance

<table>
<thead>
<tr>
<th>Sep-20</th>
<th>3 mth avg</th>
<th>YTD avg</th>
<th>Y/Y chng</th>
</tr>
</thead>
<tbody>
<tr>
<td>USD</td>
<td>78</td>
<td>115</td>
<td>63</td>
</tr>
<tr>
<td>Non-USD</td>
<td>25</td>
<td>9</td>
<td>33</td>
</tr>
</tbody>
</table>


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 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.

<table>
<thead>
<tr>
<th>As of Nov-20</th>
<th>MIN</th>
<th>MAX</th>
<th>Turnover ratio</th>
<th>Vol (tr)</th>
<th>Y/Y chng</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EM Equity*</td>
<td>1.0</td>
<td>0.8</td>
<td>$0.8</td>
<td>77%</td>
<td></td>
</tr>
<tr>
<td>DM Equity*</td>
<td>1.3</td>
<td>6.5</td>
<td>$6.5</td>
<td>37%</td>
<td></td>
</tr>
<tr>
<td>Govt Bonds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UST cash</td>
<td>12.1</td>
<td>12.4</td>
<td>$12.4</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>UST futures</td>
<td>0.8</td>
<td>11.7</td>
<td>$11.7</td>
<td>-24%</td>
<td></td>
</tr>
<tr>
<td>JGBs*</td>
<td>24.6</td>
<td>2037</td>
<td>¥2,037</td>
<td>14%</td>
<td></td>
</tr>
<tr>
<td>Bund futures</td>
<td>0.9</td>
<td>64.5</td>
<td>$64.5</td>
<td>-3%</td>
<td></td>
</tr>
<tr>
<td>Credit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>US HG</td>
<td>0.6</td>
<td>0.4</td>
<td>$0.4</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>US HY</td>
<td>0.9</td>
<td>0.1</td>
<td>$0.1</td>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>US Convertibles</td>
<td>1.8</td>
<td>0.0</td>
<td>$0.0</td>
<td>23%</td>
<td></td>
</tr>
<tr>
<td>Commodities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gold</td>
<td>48.8</td>
<td>1.2</td>
<td>$1.2</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Oil</td>
<td>61.4</td>
<td>1.1</td>
<td>$1.1</td>
<td>-45%</td>
<td></td>
</tr>
<tr>
<td>Copper</td>
<td>2.2</td>
<td>0.4</td>
<td>$0.4</td>
<td>-23%</td>
<td></td>
</tr>
</tbody>
</table>

* Data with one month lag

ETF Flow Monitor (as of Dec 30th)

**Chart A3: Global Cross Asset ETF Flows**
Cumulative flow into ETFs as a % of AUM

- Equity
- Bonds
- Commodity

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

**Chart A4: Bond ETF Flows**
Cumulative flow into bond ETFs as a % of AUM

- EM
- Global HY
- Global HG ex-EM

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

**Chart A5: Global Equity ETF Flows**
Cumulative flow into global equity ETFs as a % of AUM

- EM
- US
- Europe
- Japan

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

**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

**US Sectors**

**EM Countries**

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

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.
ETF Short Interest Monitor (as of Dec 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 Finance L.P. Short interest is weighted by AUM

![Cross Asset ETF Short Interest Chart](image1)

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

**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 Finance L.P. Short interest is weighted by AUM

![Bond ETF Short Interest Chart](image2)

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

**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 Finance L.P. Short interest is weighted by AUM

![Equity ETF Short Interest Chart](image3)

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

**Chart A10a: Quantity-On-Loan on the SPY US ETF**
On loan quantity as a % share of share outstanding. Last obs is for 01st Jan 2021.

![Quantity-On-Loan on the SPY US ETF Chart](image4)

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)

![S&P500 sector short interest Chart](image5)

Source: NYSE, J.P. Morgan.
Chart A11: Option skew monitors
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 average 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.

![Skew Chart](image1)

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

Chart A12: Market health map

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.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>1 Month</th>
<th>2 Month</th>
<th>3 Month</th>
<th>6 Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>S&amp;P 500 Index</td>
<td>Down</td>
<td>Down</td>
<td>Up</td>
<td>Up</td>
</tr>
<tr>
<td>10Y UST Yield</td>
<td>Up</td>
<td>Up</td>
<td>Up</td>
<td>Up</td>
</tr>
</tbody>
</table>

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

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.

![Credit Growth Chart](image2)


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.

![Credit Creation EM Chart](image3)

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

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.

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.

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.
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.

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.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity L/S</td>
<td>1.4%</td>
<td>2.2%</td>
<td>11.8%</td>
<td>-5.9%</td>
<td>12.8%</td>
<td>7.0%</td>
</tr>
<tr>
<td>Macro ex-CTAs</td>
<td>3.8%</td>
<td>2.8%</td>
<td>5.6%</td>
<td>9.8%</td>
<td>2.9%</td>
<td>6.6%</td>
</tr>
<tr>
<td>CTAs</td>
<td>0.0%</td>
<td>-6.1%</td>
<td>2.2%</td>
<td>-8.1%</td>
<td>9.2%</td>
<td>6.0%</td>
</tr>
<tr>
<td>Risk Parity Funds</td>
<td>-5.1%</td>
<td>10.0%</td>
<td>13.5%</td>
<td>-6.5%</td>
<td>18.4%</td>
<td>4.6%</td>
</tr>
<tr>
<td>US Balanced MFs</td>
<td>-0.5%</td>
<td>8.4%</td>
<td>14.0%</td>
<td>-4.9%</td>
<td>20.1%</td>
<td>13.2%</td>
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</tbody>
</table>

Benchmark

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>MSCI AC World</td>
<td>-2.4%</td>
<td>7.9%</td>
<td>24.0%</td>
<td>-9.4%</td>
<td>26.6%</td>
<td>16.3%</td>
</tr>
<tr>
<td>Barclays Global Agg</td>
<td>1.0%</td>
<td>3.9%</td>
<td>3.0%</td>
<td>1.8%</td>
<td>8.2%</td>
<td>5.6%</td>
</tr>
<tr>
<td>60 US Equity : 40 US Bonds</td>
<td>1.2%</td>
<td>8.8%</td>
<td>14.3%</td>
<td>-1.9%</td>
<td>22.2%</td>
<td>13.2%</td>
</tr>
<tr>
<td>S&amp;P Riskparity Vol 10</td>
<td>-4.9%</td>
<td>12.8%</td>
<td>10.4%</td>
<td>-4.3%</td>
<td>22.8%</td>
<td>11.5%</td>
</tr>
</tbody>
</table>

Chart A21: Performance of various type of investors

The table depicts the performance of various types of investors in % as of 31st Dec 2020.

<table>
<thead>
<tr>
<th>Date</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
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<td>Jan-18</td>
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</tr>
<tr>
<td>Jul-18</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Jan-19</td>
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<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Jul-19</td>
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<td></td>
</tr>
<tr>
<td>Jan-20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jul-20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan-21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.
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.


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.


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


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 Finance L.P., 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.

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.

Chart A29: Global M&A and LBO
$tr, YTD 2020 as of Dec 16. M&A and LBOs are announced.

Chart A30: US and non-US share buyback
$bn, 2020 are as of May'20. Buybacks are announced.
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.

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.

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 Nov’20.

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.
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.

<table>
<thead>
<tr>
<th>€bn</th>
<th>Target 2 bal.</th>
<th>Target 6m chng</th>
<th>ECB borrowing</th>
<th>Depo 3m chng</th>
<th>Depo 12m chng</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>-37</td>
<td>9</td>
<td>67</td>
<td>1.3%</td>
<td>7.8%</td>
</tr>
<tr>
<td>Belgium</td>
<td>-32</td>
<td>47</td>
<td>78</td>
<td>0.7%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Cyprus</td>
<td>8</td>
<td>-1</td>
<td>0</td>
<td>0.9%</td>
<td>-0.9%</td>
</tr>
<tr>
<td>Finland</td>
<td>58</td>
<td>-15</td>
<td>22</td>
<td>0.4%</td>
<td>14.9%</td>
</tr>
<tr>
<td>France</td>
<td>62</td>
<td>130</td>
<td>195</td>
<td>0.3%</td>
<td>14.3%</td>
</tr>
<tr>
<td>Germany</td>
<td>1047</td>
<td>129</td>
<td>335</td>
<td>1.2%</td>
<td>5.2%</td>
</tr>
<tr>
<td>Greece</td>
<td>-74</td>
<td>-27</td>
<td>39</td>
<td>2.5%</td>
<td>10.1%</td>
</tr>
<tr>
<td>Ireland</td>
<td>22</td>
<td>-26</td>
<td>7</td>
<td>2.7%</td>
<td>13.9%</td>
</tr>
<tr>
<td>Italy</td>
<td>-520</td>
<td>-7</td>
<td>367</td>
<td>4.0%</td>
<td>11.0%</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>235</td>
<td>9</td>
<td>16</td>
<td>0.0%</td>
<td>7.8%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>55</td>
<td>-26</td>
<td>144</td>
<td>0.0%</td>
<td>8.6%</td>
</tr>
<tr>
<td>Portugal</td>
<td>-82</td>
<td>-12</td>
<td>32</td>
<td>0.5%</td>
<td>8.4%</td>
</tr>
<tr>
<td>Spain</td>
<td>-457</td>
<td>-26</td>
<td>261</td>
<td>0.4%</td>
<td>8.7%</td>
</tr>
</tbody>
</table>

Source: Bloomberg Finance L.P., ECB, 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

In %

% of bonds trading at negative yields (lhs)

Source: J.P. Morgan

Last observation : 17-Dec-20.
Italian stress market monitor

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

In thousands.

Last obs is :17-Dec-20

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.

Last Obs is :17-Dec-20

Source: Bloomberg Finance L.P., 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.

Last Obs is :17-Dec-20

Source: Bloomberg Finance L.P., 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.

Last obs is :29-Dec 20


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 Oct'20

Japanese flows and positions

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

In bn of shares. Topix on right axis.


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.

Commodity flows and positions

**Chart A47: Gold spec positions**

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

![Gold spec positions chart](chart.png)

*Last observation: 29-Dec-20*


**Chart A48: Gold ETFs**

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

![Gold ETFs chart](chart.png)

*Last observation: 3-Jan-21*


**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 Managed Money category.

![Oil spec positions chart](chart.png)

*Latest observation: 29-Dec-20*


**Chart A50: Energy ETF flows**

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

![Energy ETF flows chart](chart.png)

*Last observation: 16-Dec-20*

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).

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).

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).

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).

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 signals 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.

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Lookback (moving avg, days)</th>
<th>Annualized return (%)</th>
<th>Vol (%)</th>
<th>IR</th>
<th>Time since last change (days)</th>
<th>Z-score</th>
<th>% Change of return index from its moving average</th>
</tr>
</thead>
<tbody>
<tr>
<td>WT</td>
<td>short 21</td>
<td>10.2</td>
<td>22.4</td>
<td>0.45</td>
<td>1</td>
<td>13</td>
<td>1.0</td>
</tr>
<tr>
<td>Brent</td>
<td>long 504</td>
<td>1.1</td>
<td>19</td>
<td>1.1</td>
<td>1</td>
<td>142</td>
<td>0.5</td>
</tr>
<tr>
<td>Unleaded gas</td>
<td>short 105</td>
<td>4.4</td>
<td>23.9</td>
<td>0.18</td>
<td>1</td>
<td>23</td>
<td>1.3</td>
</tr>
<tr>
<td>Heat Oil</td>
<td>long 462</td>
<td>6.6</td>
<td>21.3</td>
<td>0.31</td>
<td>0</td>
<td>10</td>
<td>2.0</td>
</tr>
<tr>
<td>Gasoil</td>
<td>short 63</td>
<td>11.2</td>
<td>19.9</td>
<td>0.56</td>
<td>0</td>
<td>5</td>
<td>1.9</td>
</tr>
<tr>
<td>Natgas</td>
<td>long 147</td>
<td>19.5</td>
<td>34.9</td>
<td>0.56</td>
<td>1</td>
<td>105</td>
<td>-11</td>
</tr>
<tr>
<td>Gold</td>
<td>short 21</td>
<td>4.0</td>
<td>10.7</td>
<td>0.37</td>
<td>1</td>
<td>2</td>
<td>2.0</td>
</tr>
<tr>
<td>Silver</td>
<td>long 504</td>
<td>6.4</td>
<td>19.0</td>
<td>0.33</td>
<td>0</td>
<td>0</td>
<td>2.0</td>
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<tr>
<td>Palladium</td>
<td>short 105</td>
<td>15.8</td>
<td>20.6</td>
<td>0.77</td>
<td>1</td>
<td>10</td>
<td>-0.1</td>
</tr>
<tr>
<td>Platinum</td>
<td>long 273</td>
<td>7.9</td>
<td>17.3</td>
<td>0.46</td>
<td>1</td>
<td>23</td>
<td>1.1</td>
</tr>
<tr>
<td>Aluminium</td>
<td>short 21</td>
<td>5.1</td>
<td>13.6</td>
<td>0.37</td>
<td>1</td>
<td>6</td>
<td>0.5</td>
</tr>
<tr>
<td>Copper</td>
<td>long 378</td>
<td>10.3</td>
<td>17.8</td>
<td>0.58</td>
<td>0</td>
<td>0</td>
<td>1.5</td>
</tr>
<tr>
<td>Lead</td>
<td>short 126</td>
<td>6.0</td>
<td>20.4</td>
<td>0.29</td>
<td>1</td>
<td>20</td>
<td>0.2</td>
</tr>
<tr>
<td>Nickel</td>
<td>long 357</td>
<td>13.5</td>
<td>22.7</td>
<td>0.59</td>
<td>1</td>
<td>49</td>
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<td>short 273</td>
<td>10.6</td>
<td>19.8</td>
<td>0.54</td>
<td>1</td>
<td>18</td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td>long 357</td>
<td>7.9</td>
<td>17.3</td>
<td>0.46</td>
<td>1</td>
<td>23</td>
<td>1.1</td>
</tr>
<tr>
<td>Wheat</td>
<td>short 168</td>
<td>2.2</td>
<td>22.6</td>
<td>0.10</td>
<td>1</td>
<td>65</td>
<td>0.7</td>
</tr>
<tr>
<td>Kansas whea</td>
<td>long 294</td>
<td>8.1</td>
<td>20.3</td>
<td>0.40</td>
<td>1</td>
<td>38</td>
<td>1.1</td>
</tr>
<tr>
<td>Corn</td>
<td>short 63</td>
<td>6.8</td>
<td>16.4</td>
<td>0.42</td>
<td>1</td>
<td>28</td>
<td>0.6</td>
</tr>
<tr>
<td>Soybeans</td>
<td>long 357</td>
<td>6.7</td>
<td>14.7</td>
<td>0.45</td>
<td>1</td>
<td>13</td>
<td>1.0</td>
</tr>
<tr>
<td>Cotton</td>
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<td>4.5</td>
<td>18.2</td>
<td>0.24</td>
<td>1</td>
<td>100</td>
<td>1.2</td>
</tr>
<tr>
<td>Sugar</td>
<td>long 357</td>
<td>8.1</td>
<td>22.3</td>
<td>0.37</td>
<td>1</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>Coffee</td>
<td>short 63</td>
<td>5.2</td>
<td>23.0</td>
<td>0.22</td>
<td>1</td>
<td>15</td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td>long 315</td>
<td>4.8</td>
<td>28.5</td>
<td>0.17</td>
<td>1</td>
<td>12</td>
<td>-0.5</td>
</tr>
</tbody>
</table>

* 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 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 signals 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.

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Lookback (moving avg, days)</th>
<th>Annualized return (%)</th>
<th>Vol (%)</th>
<th>IR</th>
<th>Time since last change (days)</th>
<th>Z-score</th>
<th>% Change of return index from its moving average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>short 21</td>
<td>10.2</td>
<td>22.4</td>
<td>0.45</td>
<td>1</td>
<td>13</td>
<td>1.0</td>
</tr>
<tr>
<td>Silver</td>
<td>long 504</td>
<td>1.1</td>
<td>19</td>
<td>1.1</td>
<td>1</td>
<td>142</td>
<td>0.5</td>
</tr>
<tr>
<td>Palladium</td>
<td>short 105</td>
<td>4.4</td>
<td>23.9</td>
<td>0.18</td>
<td>1</td>
<td>23</td>
<td>1.3</td>
</tr>
<tr>
<td>Platinum</td>
<td>long 462</td>
<td>6.6</td>
<td>21.3</td>
<td>0.31</td>
<td>0</td>
<td>10</td>
<td>2.0</td>
</tr>
<tr>
<td>Aluminium</td>
<td>short 63</td>
<td>11.2</td>
<td>19.9</td>
<td>0.56</td>
<td>0</td>
<td>5</td>
<td>1.9</td>
</tr>
<tr>
<td>Copper</td>
<td>long 147</td>
<td>19.5</td>
<td>34.9</td>
<td>0.56</td>
<td>1</td>
<td>105</td>
<td>-11</td>
</tr>
<tr>
<td>Lead</td>
<td>short 273</td>
<td>7.9</td>
<td>17.3</td>
<td>0.46</td>
<td>1</td>
<td>23</td>
<td>1.1</td>
</tr>
<tr>
<td>Nickel</td>
<td>long 378</td>
<td>5.1</td>
<td>13.6</td>
<td>0.37</td>
<td>1</td>
<td>6</td>
<td>0.5</td>
</tr>
<tr>
<td>Zinc</td>
<td>short 357</td>
<td>10.3</td>
<td>17.8</td>
<td>0.58</td>
<td>0</td>
<td>0</td>
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</tr>
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<td>1</td>
<td>65</td>
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</tr>
<tr>
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* 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
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 17 Dec 2020.


Chart A57: Average score of lockdown stringency Index across 147 countries as compiled by Oxford University
Last obs. is 17 Dec 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 13 Dec 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 16 Dec 2020.

Source: Apple mobility data, J.P. Morgan
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