GOAL - Global Opportunity Asset Allocator

Rotation inoculation - growth and vaccine outlook still supports procyclical shift

- We still think there is potential for a broader procyclical shift across and within assets in the rest of the year. Growth concerns might linger near term due to fading US fiscal support and focus on growing election uncertainty, rising COVID-19 cases and delays on vaccines as well as oil price volatility. But growth pricing across and within assets remains conservative relative to our economists' bullish, above-consensus growth outlook. The most important catalyst to drive relaxation on near-term risks and generate growth optimism for next year is likely to be more clarity on the timeline and availability of vaccines.
- While the S&P 500 made new all-time highs during the summer, this in our view was not due to a large pick-up in growth optimism but further declines in US real yields. The equity rally was concentrated on US Tech stocks, which had a sharp correction since then. Global equities ex US have been flat since June and credit was relatively range-bound. And of course, the rally has come without any notable bond sell-off with oil prices also in a wide range.
- Outside of US equity futures and options positioning there have been few signs of a significant bullish shift in sentiment. Our Risk Appetite Indicator (RAI) has also been range-bound and remains negative. A shift into positive territory should come alongside a change in the drivers as well - we expect growth to take over from monetary policy. A more procyclical shift is likely to drive a gradual pick-up in bond yields, which should be digested well by equities considering elevated equity risk premia. Still we expect the weaker Dollar trend to continue and support risk appetite.
- After the recent setback and consolidation since June, we upgrade equities to OW for 3m, supported by positive earnings sentiment and still elevated equity risk premia. For balance, we downgrade credit to N for 3m - we remain constructive on lower-quality credit but see less buffer for rising yields in IG. Also credit has outperformed in the recent 'risk off'. On a 12m basis, we keep our modestly pro-risk allocation with OW equities, commodities and cash, N credit and UW bonds - we see low return potential for 12m across assets. Due to the large gap between valuations and positioning, both right and left tail risk seems elevated - with less potential for multi-asset diversification, we remain OW cash for 3m and 12m horizons.

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Asset allocation: Equity to OW for 3m, remain modestly pro-risk for 12m

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1. **We still think there is potential for a broader procyclical shift across and within assets in the rest of the year.** After the setback in June, there has been more of a risk-on tone with the S&P 500 making new all-time highs during the summer. But the rally was concentrated on US Tech stocks, which had a sharp correction since then. Global equities ex US have been flat since June and credit was relatively range-bound. And of course, the August rally has come without (and possibly because of) any notable bond sell-off and oil prices also in a wide range.

Growth concerns might linger near term due to fading US fiscal support and growing election uncertainty, rising COVID-19 cases and delays of vaccines as well as oil price volatility. But growth pricing across and within assets remains conservative relative to our economists' bullish, above-consensus growth outlook - global growth has continued to broadly pick up over the summer, with better data both in manufacturing and services. Still the most important catalyst to drive relaxation on near-term risks and generate growth optimism for next year is likely to be more clarity on the timeline and availability of vaccines.

After the recent setback and consolidation since June, we upgrade equities to OW (from N) for 3m (remain OW for 12m). Equity risk premia remain elevated and should provide a buffer for rising bond yields with better growth. A strong recovery in earnings growth (global earnings sentiment is now positive) coupled with a lower cost of equity should drive high single digit returns for global equities over a 12m horizon. We have shifted more cyclical on sectors and themes tactically but still prefer growth vs. value on a strategic horizon. We are neutral across regions - in Dollar terms regional performance has been relatively similar YTD. In the near term, elevated uncertainty on US elections and a better global growth outlook might benefit non-US equities more, but in the medium term a large weight in structural growth stocks is likely to support the S&P 500. Also, with the leadership transition in Japan and renewed concerns on a no-deal Brexit, there are increased political risks outside the US.

For balance, we downgrade credit from OW to N as tighter credit spreads are likely to become a speed limit for returns from here, especially for IG. Also, in the recent risk-off, credit has outperformed equity. From current levels, our credit strategy team's spread forecasts imply some further tightening through year-end - but there is little buffer for rising bond yields suggesting lower total returns from here. The risks to this baseline case remain skewed to the tighter spreads, in their view. We continue to prefer down-in-quality parts of credit like USD and EUR HY. We also still like EMBI, which can help add duration to a portfolio otherwise underweight duration while providing some carry - within EM credit we also prefer HY to IG.

We remain UW bonds both on a 3m and 12m horizon - from a return contribution and risk reduction perspective we think sovereign bond allocations, at least in DM, are less attractive. Our rates team expects a gradual increase in G4 10-year yields (US 10y YE target: 1.05%) and prefers 10y Bunds vs. UST. We remain OW commodities for 12m - our commodities team highlighted growing conviction in their US$65/bbl price for

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Q3 2021. With elevated volatility of spot oil prices, we remain N for 3m. But our commodities team recommends a long Dec-21 Brent position and after the recent setback we like selective energy-related assets, e.g. NOK and energy.

Due to the large gap between valuations and positioning, both right and left tail risk seems elevated - we remain OW cash for 3m and 12m horizons. After the strong recovery, we still expect a somewhat more 'fat and flat' return profile for global equities due to elevated valuations and ongoing growth and inflation uncertainty in the medium-term - this means the opportunity cost of cash is lower relative to the potential value, especially for investors unable to manage tail risk otherwise. And potential for multi-asset diversification is worse due to the low bond yields providing less buffer and real yields increasingly moving countercyclical.

Exhibit 1: Positioned for procyclical rotation in the rest of the year

3-Month Horizon		12-Month Horizon	
Asset Class	**Weight****	**Asset Class**	**Weight****
Equities	**OW**	**Equities**	**OW**
STOXX Europe 600	→	*S&P 500*	→
S&P 500	→	*STOXX Europe 600*	→
MSCI Asia Pac ex Japan	→	*MSCI Asia Pac ex Japan*	→
TOPIX	→	*TOPIX*	→
Cash	**OW**	**Commodities**	**OW**
Credit	**N**	**Cash**	**OW**
EMBI	↑	**Credit**	**N**
EUR HY	↑	*EMBI*	↑
USD HY	↑	*USD HY*	→
EUR IG	→	*EUR HY*	→
USD IG	→	*EUR IG*	→
Commodities	**N**	*USD IG*	→
10 yr. Gov. Bonds	**UW**	**10 yr. Gov. Bonds**	**UW**
Germany	↑	*Germany*	↑
Japan	→	*Japan*	→
US	↓	*US*	↓

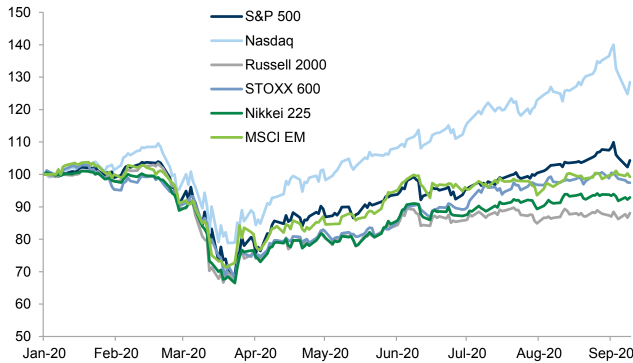
*** Arrows denote preferences within asset classes.*

Source: Goldman Sachs Global Investment Research

2. **The 6m return for the S&P 500 has been the strongest since the Great Depression in the mid 1930s - admittedly after one of the sharpest drawdowns on record.** The S&P 500 also recovered its losses much faster than usual, making it the shortest bear market on record but with a very narrow leadership, dominated by US Tech stocks - last week the Nasdaq was trading 28% above February's all-time high and was up 40% YTD. On the flipside, the Russell 2000, STOXX 600 and Nikkei 225 have not recovered and have been flat since early June in local currency terms - MSCI EM did better, helped by Asia Tech stocks.

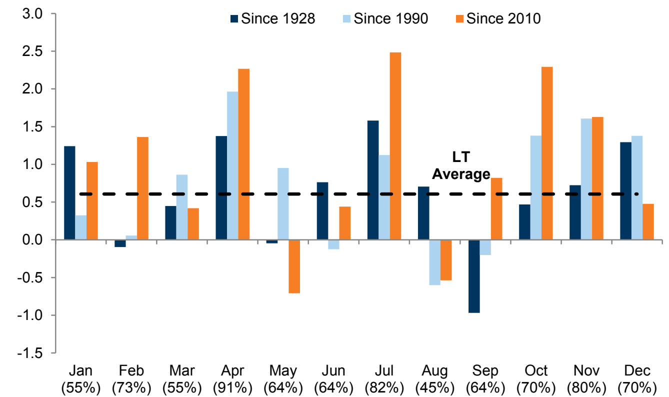
Also, the August rally was one of the strongest in 35 years with S&P 500 realised volatility close to 10%, adding to this gap. Historically equity returns have tended to be weaker in August with volatility picking up into September (Exhibit 3). Indeed, the Nasdaq had one of the largest sell-offs on record in the past 2 weeks. We think that after the sharp rebound in equities, consistent with the 'Hope'-phase early in a recovery, equity returns are likely to slow as we transition to the 'Growth'-phase. During the 'Hope'-phase equities are mainly driven by valuation expansion while during the 'Growth'-phase earnings take over as a driver and valuations often decline again.

Exhibit 2: Outside the US, which was boosted by the Tech sector, equities have been flat since June
Performance rebased to 100



Source: Bloomberg, Goldman Sachs Global Investment Research

Exhibit 3: S&P 500 returns in August/September have been weaker historically
Average of S&P 500 return per calendar month (% of positive months in brackets, since 1928)



Source: Bloomberg, Goldman Sachs Global Investment Research

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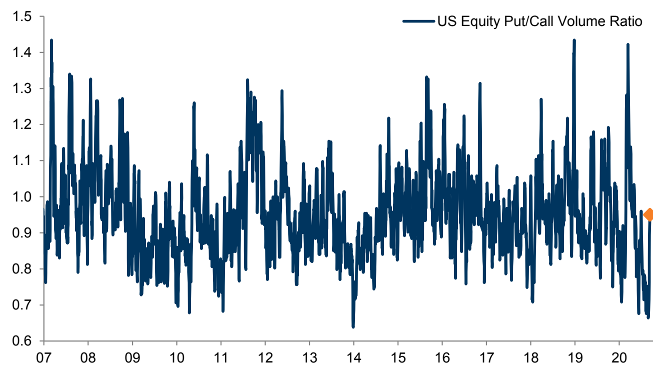
3. **The recent correction has primarily been a reversal of the summer rally of US Tech stocks.** As we wrote in our recent GOAL positioning update, there were some signs of very bullish positioning in US option markets. After increasing close to all-time highs in March, the US put/call ratio was at all-time lows before picking up in the correction (Exhibit 4). There was a significant pick-up in demand for call options, in particular for single stocks, where the volumes are at multi-year highs. As our options team highlighted, a lot of the activity has been concentrated in popular US tech names and there has been a larger portion of retail investor activity.

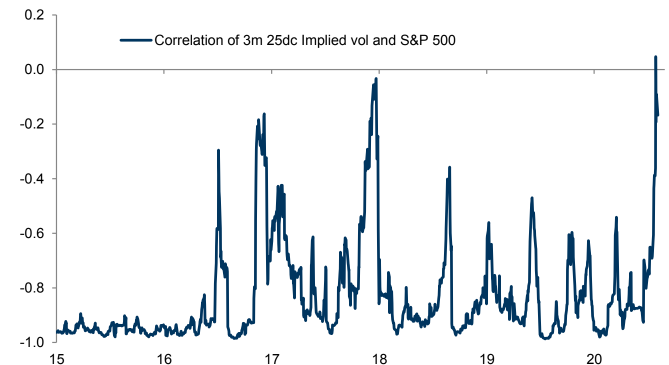
Options positioning has likely exacerbated both the August rally in US Tech stocks and the recent correction - dealers had to hedge rising delta during the up move and sold into the drawdown (they are short gamma). Before the correction, the VIX, and in particular OTM call option implied volatility, rose alongside equities (Exhibit 5) - historically this has been a warning signal for market fragility (the same was true ahead of the drawdown in March and into 2018). In fact, when bullish option positioning was at comparable levels to now, it has historically been followed by weaker near-term equity returns with lower hit ratios on average.

Exhibit 4: Put/Call ratio reached a new multi-year low
US equity put/call volume ratio



Source: Datastream, Goldman Sachs Global Investment Research

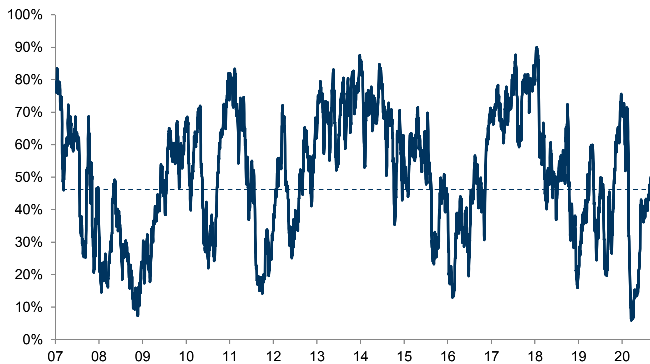
Exhibit 5: S&P 500 spot-vol correlation has turned positive
1-month correlation of S&P 500 return and 25d call implied volatility



Source: Goldman Sachs Global Investment Research

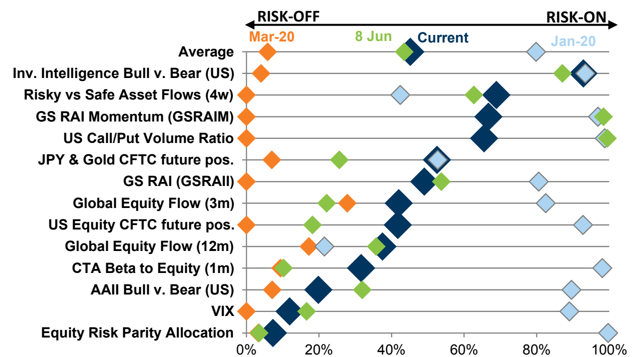
Broad sentiment and positioning do not appear very bullish yet and are well below the levels from February this year or the correction in early 2018 (Exhibit 6). As a result, we would expect drawdowns to be temporary and less deep. But we are monitoring closely if other sentiment and positioning metrics are also turning more bullish. So far fund flows indicate little broad re-risking in equities. Alongside the bullish shift in US options, US equity futures positioning has picked up materially, especially for the Nasdaq. That said, systematic investors have not re-risked significantly yet, likely due to lingering volatility and uncertainty.

Exhibit 6: Some sentiment indicators are turning from the lows
Average percentile of positioning/sentiment indicators since 2007



Source: Datastream, Haver Analytics, Goldman Sachs Global Investment Research

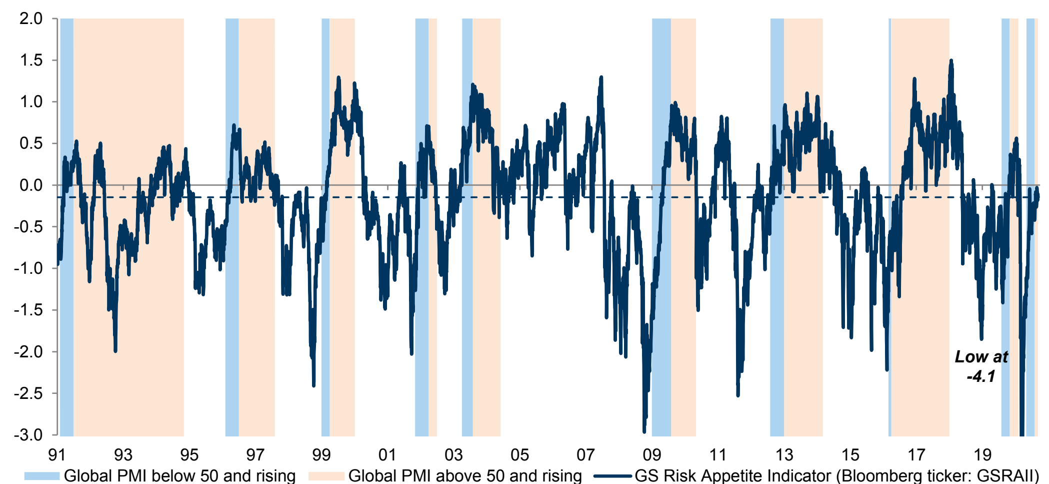
Exhibit 7: Most positioning indicators remain neutral or bearish
Percentile of different sentiment indicators since 2007



Source: Datastream, Haver Analytics, Goldman Sachs Global Investment Research

4. **Our Risk Appetite Indicator (RAI) has increased and is close to positive territory again.** The rotation attempt in May faltered due to continued concerns on growth in COVID-19 cases, in particular in the US. But risk appetite is now better supported by a strong macro backdrop with low and anchored real yields and positive macro momentum - as we highlighted in our last GOAL, since 1990 during the 'recovery' phase with rising global PMIs from levels below 50, our RAI has mostly increased. With the global manufacturing PMI at 53.6, we have entered the 'acceleration' phase, which is still supportive for risk appetite although there can be mini-cycles in sentiment.

Exhibit 8: Our RAI has increased during periods of rising PMIs but hit ratio is better when below 50



Source: Datastream, Haver Analytics, Goldman Sachs Global Investment Research

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Periods were the RAI stayed positive for longer (average length was seven months) usually had a reflationary backdrop, supported by high and rising PMIs. During those, US 10-year yields generally increased, USD HY credit spreads tightened further and commodities rallied in most cases. Equity valuations generally expand less with earnings growth taking over as a driver (consistent with the 'Growth'-phase) - most of the valuation expansion tends to happen when the RAI recovers from negative levels. Cyclicals and value outperformed defensives and growth stocks although the hit ratios were less good and the average outperformance of value vs. growth has been small (in part due to structural headwinds in recent years). Finally EM tends to outperform DM - the main exception was the recovery post the Euro-area crisis.

Exhibit 9: Historical periods when the RAI was rising from positive levels

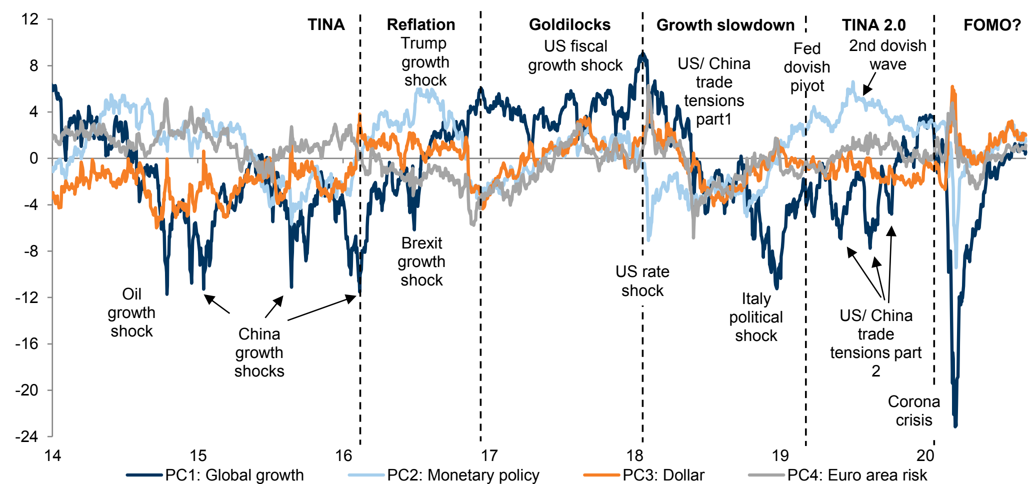
Periods with positive RAI				Global man. PMI			S&P 500 12m forw. P/E			US 10-year yield			USD HY credit spreads			Equity styles (MSCI World)			GSCI
Zero	Peak	Months	Change	At zero	At peak	Change	At zero	At peak	Change	At zero	At peak	Change	At zero	At peak	Change	Cyc vs Def	Val vs Gro	EM vs. DM	Global
Mar-91	Aug-91	5	0.4	40.7	52.9	12.2	13.7	14.0	2%	8.0	8.2	0.1	848	607	-241	-3%	-1%	17%	4%
Feb-92	Apr-92	2	0.5	52.7	52.6	-0.1	15.3	14.7	-4%	7.4	7.6	0.2	576	489	-87	-4%	1%	15%	-1%
Jun-93	May-94	11	0.4	49.6	58.2	8.6	14.6	13.4	-9%	5.9	7.2	1.3	488	359	-129	7%	8%	28%	-1%
Mar-96	Jul-96	4	0.7	46.9	49.7	2.8	14.7	14.9	1%	6.5	7.0	0.6	388	345	-43	-1%	0%	0%	15%
Feb-99	Dec-99	10	1.2	54.2	59.7	5.5	22.9	23.9	4%	5.3	6.4	1.1	515	476	-39	6%	-9%	38%	44%
Dec-01	Mar-02	3	0.6	48.1	54.8	6.7	21.6	20.5	-5%	5.0	5.3	0.3	812	734	-78	7%	0%	10%	11%
Nov-02	Jul-03	8	1.2	53.7	56.0	2.3	16.0	17.2	7%	4.2	4.5	0.3	901	567	-334	5%	3%	11%	19%
May-09	Sep-09	4	1.0	45.1	53.3	8.2	14.0	14.6	4%	3.2	3.5	0.3	1323	809	-514	6%	3%	6%	15%
Nov-10	Feb-11	3	0.8	53.9	55.7	1.8	12.7	13.2	4%	2.5	3.7	1.2	579	453	-126	5%	2%	-9%	7%
Aug-12	Sep-13	13	1.0	50.2	53.9	3.7	12.4	13.9	12%	1.6	3.0	1.3	591	460	-131	3%	3%	-14%	-1%
Aug-16	Jan-18	18	1.4	51.6	54.5	2.9	17.0	18.5	9%	1.6	2.7	1.1	546	332	-214	25%	-1%	8%	21%
Oct-19	Jan-20	3	0.5	50.8	52.1	1.3	17.2	18.4	7%	1.8	1.8	0.0	389	348	-41	-2%	-4%	3%	2%
	Average:	**7**	**0.8**	**51.0**	**55.0**	**4.1**	**16.0**	**16.4**	**3%**	**4.4**	**5.1**	**0.7**	**663**	**498**	**-165**	**4%**	**0%**	**9%**	**11%**
	Median:	**5**	**0.7**	**51.2**	**54.7**	**3.3**	**15.0**	**14.8**	**4%**	**4.6**	**4.9**	**0.4**	**577**	**468**	**-127**	**5%**	**1%**	**9%**	**9%**
	Hit ratio:		***12/12***			***11/12***			**9/12**			***12/12***			***12/12***	***8/12***	***7/12***	***10/12***	***9/12***

Source: Datastream, Haver Analytics, Goldman Sachs Global Investment Research

5. **Thus a shift of the RAI into positive territory should come alongside a change in the drivers of risk appetite as well.** For most of the recovery the main support for risk appetite has come from both fiscal and monetary policy support (PC2), in particular lower real yields, and since the summer a weaker Dollar (PC3). After a sharp pick-up in the early part of the recovery growth optimism (PC1) has struggled to turn positive. We think better growth sentiment, supported by our economists' view of strong, above-consensus growth into next year, should become the main driver of risk appetite.

Exhibit 10: Monetary policy and the Dollar have been the key drivers of risk sentiment

RAI principal components



Source: Datastream, Haver Analytics, Goldman Sachs Global Investment Research

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Benchmarking our RAI PC1 'Global Growth' factor to the global manufacturing PMI indicates a lag, especially after the recent 'risk off' move. Recent lead indicators have been more mixed in Europe, possibly linked to rising COVID-19 cases. But our economists expect that slowdown to be temporary, in part due to lower fatality rates and continued fiscal support. The key catalyst for rising growth optimism could be encouraging newsflow on the timing and availability of COVID-19 vaccines - several Phase 3 trials are underway, with potential preliminary data readouts expected as early as later this month.

While monetary policy is unlikely to be a main driver from here it will likely remain very accommodative. Our economists expect only a gradual rebound in core inflation and, as a result, global central banks are likely to keep policy highly expansionary, even if growth surprises to the upside. However, longer-dated real yields might not fall much further from here - our rates team expects 5-year TIPS yields to trough around -150 bps and see less scope for longer-dated inflation expectations to increase. **Our FX team thinks low US real yields and better global growth coupled with a high valuation should continue to drive a weaker Dollar.**

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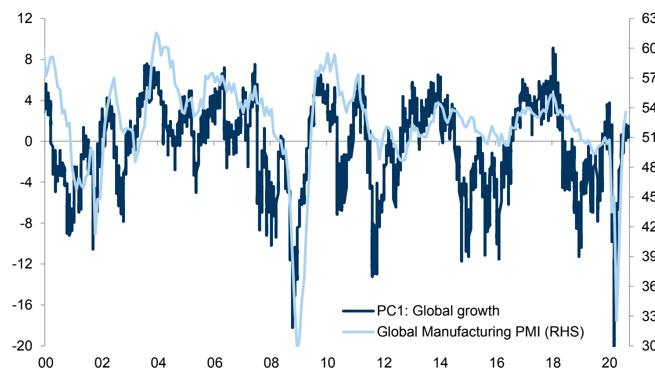
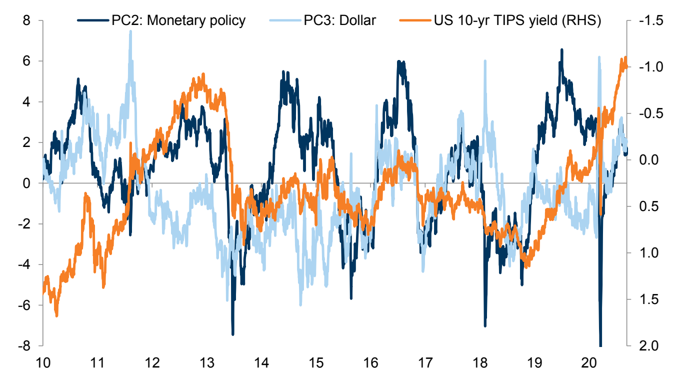
Exhibit 11: Growth sentiment has picked up again with better activity data but lagged recently



Source: Haver Analytics, Datastream, Goldman Sachs Global Investment Research

Exhibit 12: Falling real yields and a weaker Dollar have been a key support for risky assets



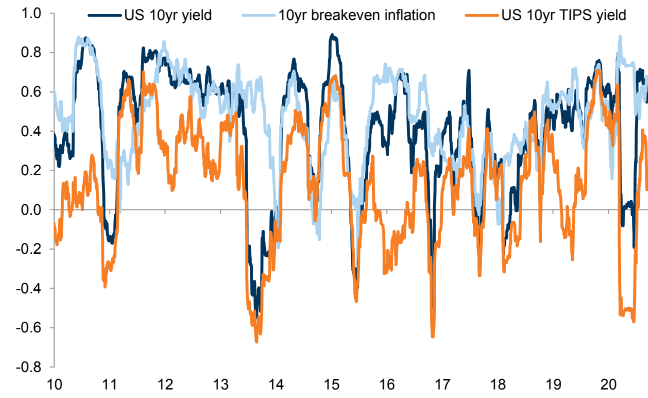
Source: Haver Analytics, Goldman Sachs Global Investment Research

6. **Equities and risky assets should be able to digest gradual increases in bond yields, both nominal and real, as long as they come alongside better growth.** While the S&P 500 has been positively correlated with US 10-year yields and breakeven inflation, it has been negatively linked with US 10-year TIPS yields for most of this year (Exhibit 13). As we have written before, with bond yields anchored close to zero, breakeven inflation and real rates are more likely to move in the opposite direction. In March inflation expectations fell faster than nominal bond yields and real yields increased sharply, which further weighed on equities (and on safe assets like Gold).

However, since then, US inflation expectations have recovered steadily and the S&P 500 correlation with real yields has turned positive again. But investors have been more bullish on inflation than on growth, as they faded deflation risk due to the unprecedented combined monetary and fiscal stimulus (Exhibit 14). The Fed's recent shift to average inflation targeting (AIT) might further support that trend, although our rates team expects this to be priced only very gradually. Eventually this should push up

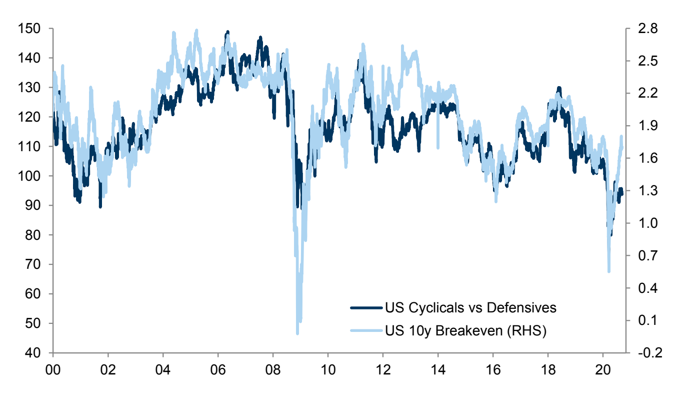
longer-dated real yields and drive steeper curves. A bigger threat for risky assets is another sharp decline in inflation expectations, e.g. due to growth concerns.

Exhibit 13: The S&P 500 correlation with US real yields has turned positive again
3-month correlation of weekly changes



Source: Bloomberg, Goldman Sachs Global Investment Research

Exhibit 14: Breakevens have repriced higher vs. cyclical equities, but remain below 2%



Source: Bloomberg, Goldman Sachs Global Investment Research

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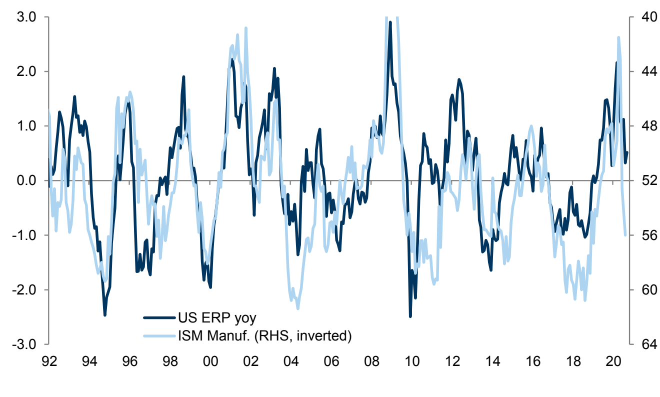
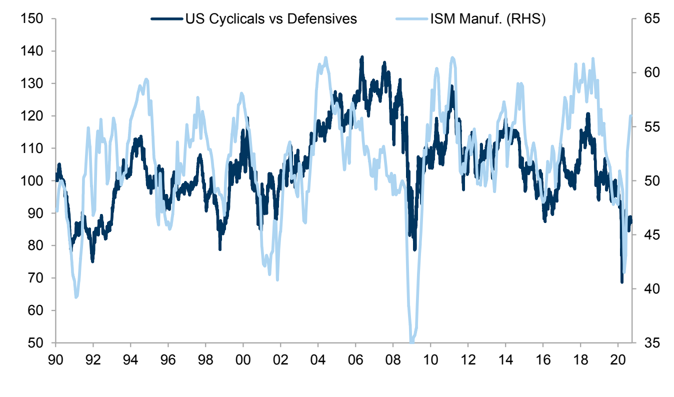
Equity risk premia (ERP) remain elevated across markets and as long as growth recovers we expect them to decline, outweighing increases in bond yields. The ERP has lagged the improvement in PMIs in the past few months (Exhibit 15). Our US equity strategy team expects the risk premium for US equities to decline to 5.7% by year-end 2020 (from a peak close to 7% in March) and to 5.2% during the first half of 2021. Our rates team forecasts US 10-years to rise by 50bp to 1.1% by year-end and to 1.4% in 12 months, but they still expect a falling cost of equity to support equity valuations into next year.

Exhibit 15: The US ERP remains relatively elevated compared to the retracement in activity data



Source: Haver Analytics, Datastream

Exhibit 16: Cyclicals vs. defensives performance has lagged the sharp increase in the ISM



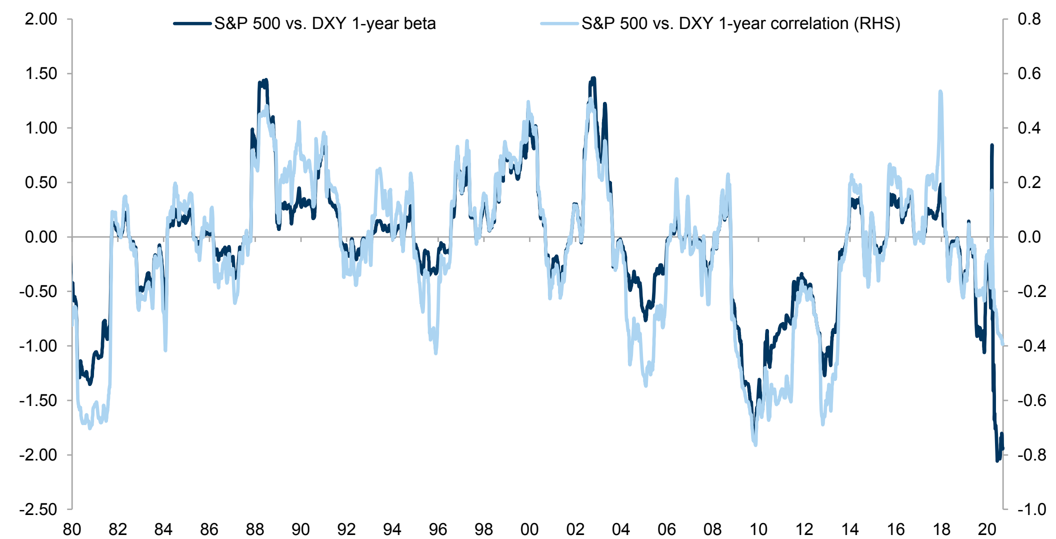
Source: Haver Analytics, Bloomberg, Goldman Sachs Global Investment Research

The leadership within equities should become less dominated by US Tech stocks. US cyclicals vs. defensives performance (and globally) has lagged the recent improvement in activity data, indicating skepticism on the durability of the recovery - investors should shift from repricing inflation (and real yields) to reflation (and growth). The rotation should get support from a recovery in commodities prices - we like NOK, energy equity and selective oily EMs to add procyclical exposure on portfolios. Our equity strategy teams (US, Europe, Asia, Japan) have increased cyclical exposure in their

sector portfolios. Also, within EM equity, we see potential for LatAm, where growth pricing remains more pessimistic, to catch-up with Asia.

7. **A weaker Dollar has also been a key support for risky assets** (Exhibit 17). A pick-up in growth optimism could start to drive more and broader Dollar weakness, e.g. vs. EM FX, especially if it is co-incident with a friendlier shift in US policy towards global trade. As we have shown in the past, most FX crosses with the Dollar (outside of the Yen) have been negatively correlated with risk appetite and risky assets. The 1-year rolling correlation of the S&P 500 with DXY is above all-time lows, and the beta over the last year has been the most negative since the GFC recovery. Our economists found a weaker Dollar tends to support global growth - especially for EM, Dollar depreciation acts as global monetary easing because of the Dollar's special role in international trade financing, cross-border borrowing, and investor portfolios as funding currency.

Exhibit 17: The beta to the Dollar across equities remains negative
1-year rolling beta/correlation based on monthly returns



Source: Bloomberg, Goldman Sachs Global Investment Research

While EUR/USD has strengthened materially vs. the Dollar other European assets have struggled to keep up with the US during the summer in local currency terms (Exhibit 18). Both sovereign bonds and IG and HY credit in Europe and the US roughly had the same performance in the last 3 months. And European equities have underperformed significantly with US equities boosted by the strong performance of the Tech sector. But for unhedged investors the regional equity performance gap has been smaller - in USD global equity indices performed similarly (Exhibit 19). We think benefits from international diversification of both equity and bond portfolios are likely to be higher compared to the last cycle.

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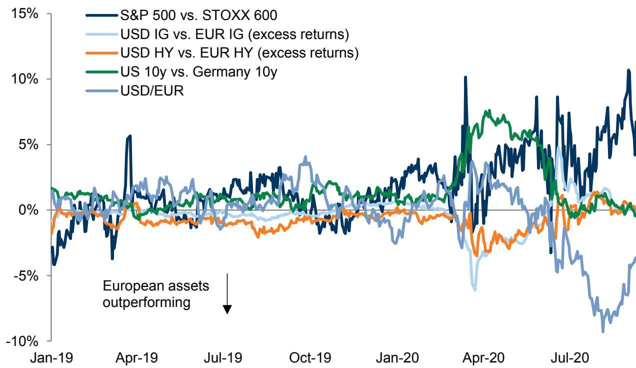
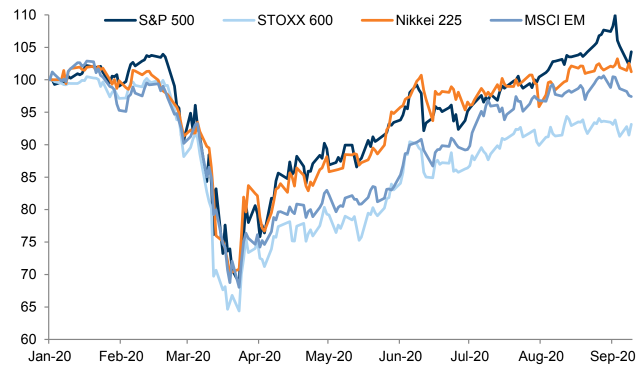
Exhibit 18: Europe has outperformed the US only in FX on cross asset basis
3m relative performance



Source: Datastream, Goldman Sachs Global Investment Research

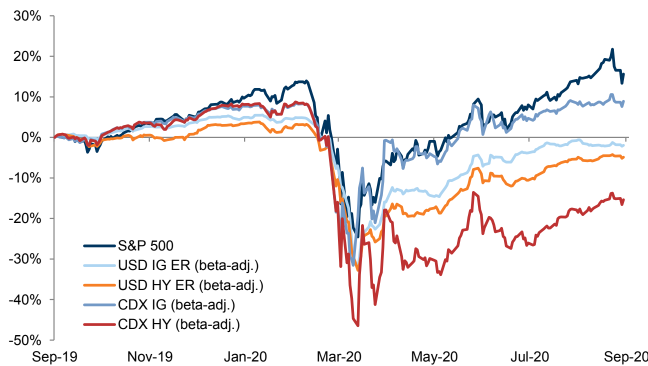
Exhibit 19: YTD Equity Indices Performance
Total Return (USD)



Source: Datastream, Goldman Sachs Global Investment Research

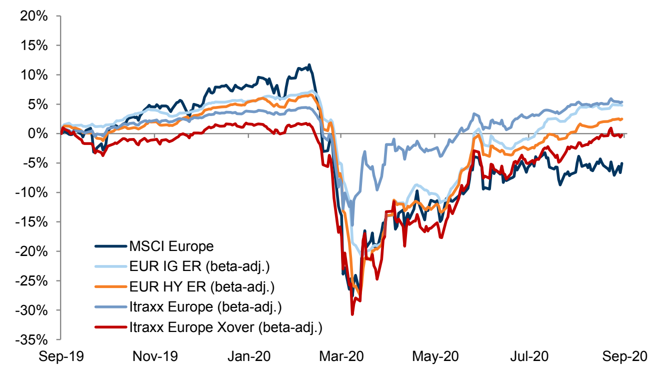
8. **USD credit has also struggled to keep up with the S&P 500 during the strong summer rally due to less exposure to US Tech.** Early in the recovery CDX IG managed to keep pace with the S&P 500, supported by the Fed, but it also underperformed in August due to the increasingly narrow leadership in equities. Part of the performance gap has closed during the equity drawdown since last week as credit has outperformed equities. In Europe in contrast, credit has generally outperformed equities. This has been due to less of a boost from the Tech sector for equities as well as European credit fundamentals being better compared to the US.

Exhibit 20: USD cash and synthetic credit vs. US equity
Credit excess returns (beta-adjusted) vs. S&P 500 total returns



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 21: EUR cash and synthetic credit vs. European equity
Credit excess returns (beta-adjusted) vs. MSCI Europe total returns



Source: Datastream, Goldman Sachs Global Investment Research

While credit yields are close to all-time lows, both credit spreads on an absolute basis and relative to dividend yields are still well above those levels (Exhibit 22). As we have discussed before, with a pick-up in growth credit valuations tend to re-rate vs. equities. Benchmarking USD HY credit spreads to S&P 500 dividend yields shows a significant lag during the recovery - this also reflects a growing relative underweight in US Tech but we would still expect that gap to narrow in a more procyclical shift (Exhibit 23). USD HY credit arguably has a more cyclical sector composition than the S&P 500 and a larger weight in Energy, which might get a boost from higher oil prices into 2021. Our credit strategy team believes, adjusting for prospective losses given default, the low

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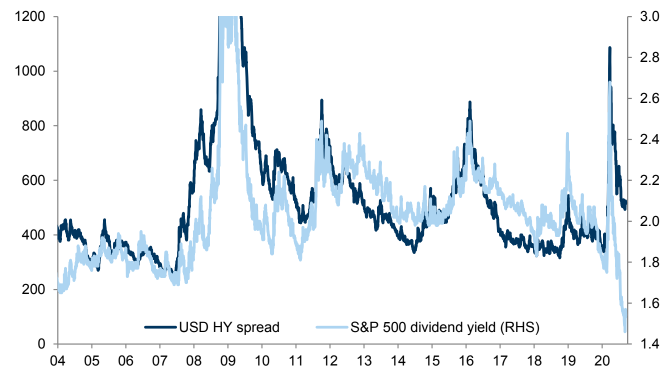
end of the rating spectrum still screens as cheaper than the high end.

Exhibit 22: While credit yields are close to all-time lows, credit spreads and the gap to dividend yields are well above those
Percentiles since 1998

	Asset	Yield (%)	*%ile*	Credit spread (bps)	*%ile*	DY - credit spread (bps)	*%ile*
US	S&P 500	1.5	*17%*				
US	USD IG	2.0	*0%*	130	*48%*	24	*23%*
US	USD HY	5.9	*1%*	516	*53%*	-362	*35%*
US	USD IG BBB	2.4	*0%*	177	*46%*	-23	*26%*
US	USD HY BB	4.5	*1%*	370	*59%*	-216	*24%*
US	USD HY CCC	12.5	*54%*	1171	*67%*	-1017	*22%*
Europe	MSCI Europe	2.6	*20%*				
Europe	EUR IG	0.7	*3%*	124	*59%*	131	*7%*
Europe	EUR HY	4.0	*13%*	441	*44%*	-186	*36%*
EM	MSCI EM	2.4	*35%*				
EM	EMBI	5.0	*5%*	423	*68%*	-185	*27%*

Source: Datastream, Haver Analytics, Goldman Sachs Global Investment Research

Exhibit 23: USD HY credit spreads have lagged the large decline in S&P 500 dividend yields in the recovery



Source: Datastream, Haver Analytics, Goldman Sachs Global Investment Research

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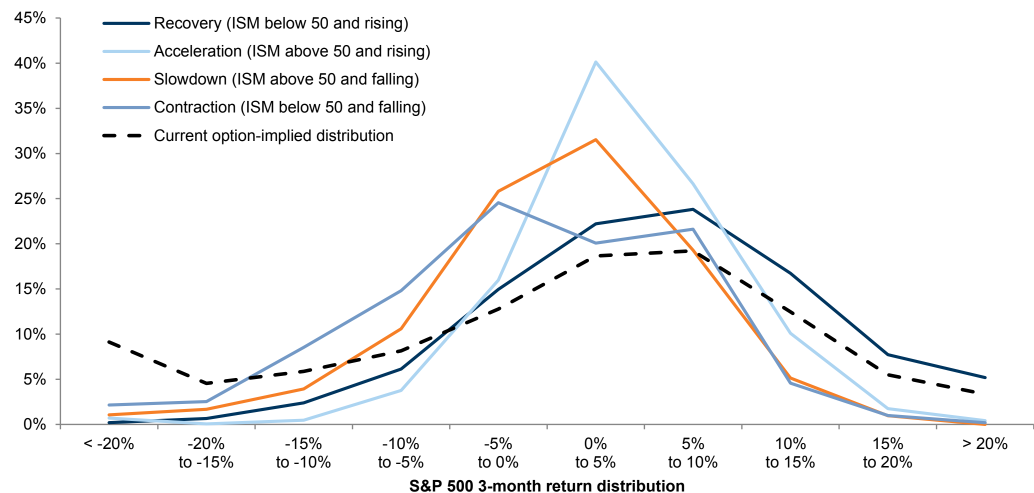
9. **Both the strong rally in August and the correction last week illustrate that tail risk in equities remains elevated.** As discussed before, right tail risk in equities tends to increase when growth momentum shifts positive from low levels, i.e. in the ISM recovery phase - the distribution for subsequent S&P 500 returns was historically positively skewed (Exhibit 24). There can still be larger equity drawdowns although left tail risk is already much lower compared with the contraction phase.

During the acceleration phase left tail risk is lower and large drawdowns have been rare - right tail risk is also lower though with the pace of equity recovery slowing. As we have shown before, large ISM declines from high levels can still drive smaller drawdowns but bear market risk has usually been low. Nevertheless, the current option-implied distribution indicates both elevated left and right tail risk. Of course the COVID-19 crisis has resulted in unusually high growth and inflation uncertainty.

Exhibit 24: During the acceleration phase there have been corrections although less deep and frequent
Distribution of S&P 500 3-month returns (since 1950)

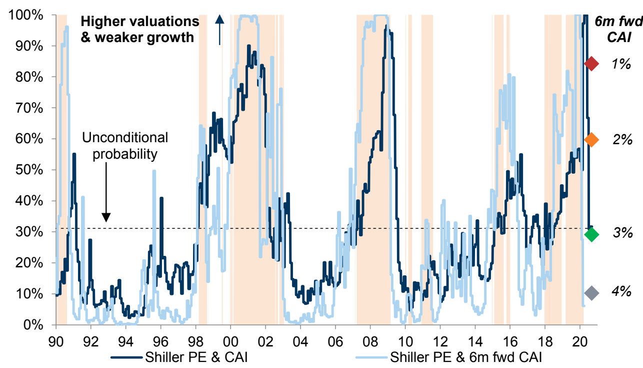


Source: Bloomberg, Goldman Sachs Global Investment Research

With elevated valuations but still somewhat neutral positioning, the growth outlook in the next 3-6 months will matter more than normal. We update our tail risk models, which combine valuations, positioning and growth: (1) based on elevated valuations and the current level of growth, as measured by our US Current Activity Indicator (CAI), the probability of a 10% S&P 500 drawdown in the next 12m is still around 50% (Exhibit 25). Assuming US growth continues to recover to above 3% in the coming 6 months, drawdown risk declines. (2) Based on our RAI alone, which is neutral, right tail risk is not particularly elevated (Exhibit 26). However, incorporating continued positive growth momentum suggests right tail risk is still high. Key driver is likely to be the timing and availability of COVID-19 vaccines. But until then lingering growth concerns related to US fiscal support and elections as well as rising COVID-19 cases could become a drag on growth again and drive elevated left tail risk.

Exhibit 25: US growth above 3% would lower equity drawdown risk in the next 12m

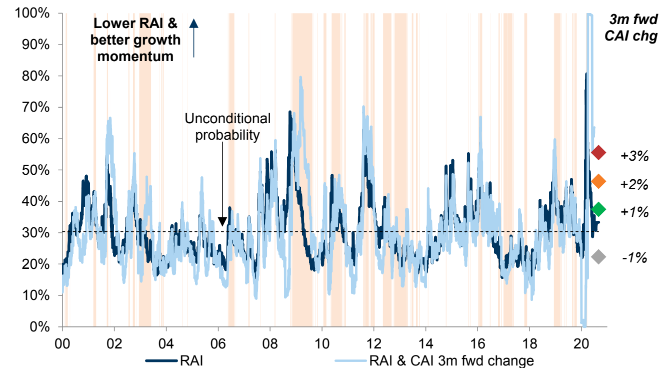
Probability of 10% S&P 500 drawdown in the next 12m (orange shading denotes a 10% drawdown in the next 12m)



Source: Haver Analytics, Datastream, Goldman Sachs Global Investment Research

Exhibit 26: Continued positive growth momentum in year-end can keep right tail risk elevated

Probability of a 20% rally for the S&P 500 in the next 12m (orange shading is either 20% up move in next 12m or 10% in next 3m)



Source: Haver Analytics, Datastream, Goldman Sachs Global Investment Research

10. **With less scope for further declines in real yields during 'risk off', we prefer to manage equity tail risk in multi-asset portfolios with selective option overlays** (see *Cross-asset volatility* section). Already during the S&P 500 drawdown in March safe assets have provided limited buffer - it was really in the subsequent recovery, with falling real yields, that they boosted performance (Exhibit 27). The drawdown in the past 2 weeks has illustrated that risk again as US 10-year bonds and most safe assets like Gold and Yen provided little buffer. With less potential for multi-asset diversification due to low bond yields and expensive safe assets, multi-asset portfolios also carry more tail risk. Also, vol of vol for the S&P 500 has trended up since the GFC (Exhibit 28), which indicates risk of more frequent, faster and deeper equity drawdowns (and sharper recoveries) - as a result vol targeting overlays have underperformed as well.

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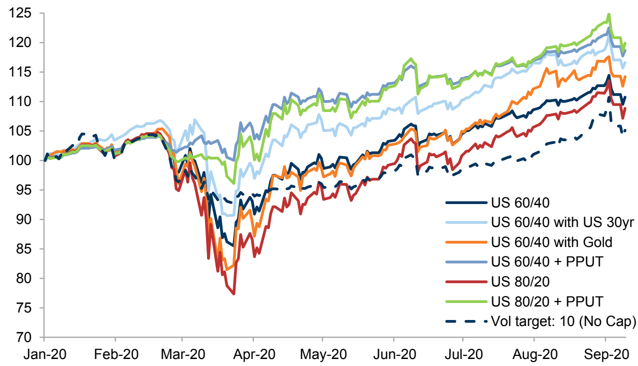
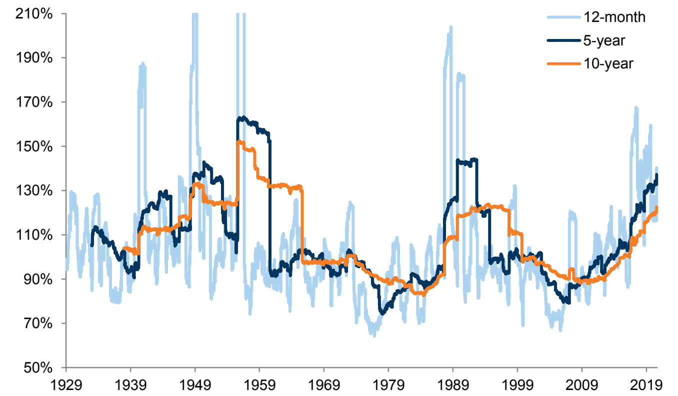
Exhibit 27: During the COVID-19 bear market, option overlays have been effective and helped run more equity risk
Performance rebased to 100



Source: Datastream, Haver Analytics, Goldman Sachs Global Investment Research

Exhibit 28: Vol of vol has been trending higher since the GFC
S&P 500 return vol of vol



Source: GFD , Datastream, Goldman Sachs Global Investment Research

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Cross-asset volatility: Back to school with volatility

Exhibit 29: Volatility for risky assets remains very elevated - FX and rates vol is lower but has picked up

	Equities						Rates				Credit			Commodities			Currencies		
	S&P 500	EURO STOXX 50	Nikkei 225	FTSE 100	MSCI EM	MSCI EAFE	USD 2-year	USD 10-year	EUR 2-year	EUR 10-year	CDX IG	CDX HY	iTraxx Europe	WTI	Gold	Copper	EUR/ USD	JPY/ USD	GBP/ USD
Implied (3-month ATM, %)																			
Current:	27.0	25.2	22.2	23.6	28.7	22.9	1.5	4.4	1.1	2.8	66.9	69.3	58.6	48.9	20.7	21.1	8.1	8.5	10.9
Percentile:	*96%*	*88%*	*71%*	*94%*	*92%*	*85%*	*6%*	*39%*	*28%*	*25%*	*92%*	*93%*	*62%*	*94%*	*90%*	*53%*	*47%*	*42%*	*85%*
1M change:	5.7	3.2	2.4	3.1	4.5	2.9	0.2	0.6	0.1	0.2	0.0	1.9	-4.5	13.0	-0.8	-0.2	0.1	0.4	1.6
Average:	15.6	19.3	19.9	15.4	21.0	17.2	3.1	4.9	2.1	3.8	50.5	46.8	56.8	32.2	15.5	22.0	8.8	9.2	8.9
95th:	26.2	30.6	27.1	24.6	31.5	29.1	4.9	7.1	5.3	6.2	72.7	78.3	86.4	50.3	23.0	33.3	13.8	12.7	12.7
5th:	10.0	12.3	13.8	10.3	15.2	10.4	1.4	3.5	0.9	2.2	38.7	30.7	40.3	17.1	9.7	15.2	5.1	5.8	5.8
Realised (%)																			
1-month:	19.9	19.5	14.6	21.2	14.7	14.1	1.2	3.6	0.8	2.5	36.8	33.9	32.6	36.4	26.6	22.9	6.0	6.9	8.0
Percentile:	*84%*	*67%*	*32%*	*88%*	*61%*	*66%*	*7%*	*28%*	*40%*	*27%*	*59%*	*62%*	*25%*	*71%*	*94%*	*74%*	*27%*	*37%*	*51%*
Average:	14.3	18.6	19.8	14.7	14.6	13.6	2.7	4.6	1.5	3.3	38.6	34.2	43.8	35.1	15.1	20.0	8.1	8.5	8.3

Source: Goldman Sachs Global Investment Research

Cross-asset implied volatility remains elevated and has picked up in September. In the past few weeks the VIX spiked to 34 and also FX and rates volatility picked up from previously very low levels (Exhibit 30). Gold volatility still remains elevated relative to rates volatility, although the gap is narrowing. On the flipside WTI implied volatility appears low compared to energy equity vol. The largest increase in equity volatility was in US where implied volatility remains at premium compared to other indices, to a large extent due to its Tech sector exposure. Nasdaq volatility is particularly elevated at the moment and dislocated from its 1-year beta to global equity (Exhibit 33). The large increase in option positioning has likely supported the strong summer rally in US equities, in particular Tech stocks, and driven a more elevated level of volatility.

Although S&P 500 realised volatility was 8% in August, implied volatility remained elevated, signaling elevated risk in the near term. The normalisation of implied S&P 500 equity volatility has been slower than the average trajectory out of bear markets, while the realised S&P 500 volatility decline was faster than usual, in part due to the low correlation between growth and value (Exhibit 36). With the recent correction, the implied-realised vol premium in US equities declined but remains elevated for US credit given the resilience during the 'risk off'. While the recent US Tech, coupled with growth concerns might keep volatility elevated near-term, we would expect further normalisation of equity volatility into year-end. Equity volatility terms structures, especially outside the US, remain very inverted (Exhibit 38) - longer-dated options are cheaper and benefit from potential roll-up. We like calendar call spreads to fade near-term elevated vol and position for medium-term upside.

Cross-asset skew has generally declined from its extremes in March as option markets have started to fade left tail risk slowly (Exhibit 39). TLT normalised skew is one of the cheapest across assets with very little upside tail risk priced, especially relative to Gold. Despite the elevated level of equity volatility, the decline in skew makes option protection strategies viable considering elevated tail risk. As we argued previously, put protection strategies are becoming more valuable for multi-asset investors due to less hedging potential from bonds and most safe assets. Given the still elevated implied volatility but a decline in skew, collar strategies are attractive to reduce equity tail risk - for example a Nasdaq 105-93 1m collar is close to zero cost (Exhibit 41).

Option markets are pricing a prolonged high equity volatility regime - selling

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longer-dated S&P 500 puts can help fund selective overlay hedges. Although US equity vol term structures are pricing lower volatility post the US elections, long dated S&P 500 vol remains elevated. After the strong rally of credit, S&P 500 2y vol looks expensive compared to credit protection - the annualised cost of a 2y 80% put on S&P 500 is high vs. buying CDX IG or HY (Exhibit 42). And S&P 500 long dated volatility is expensive versus EURO STOXX 50 - long-dated calls on EURO STOXX 50 funded out of S&P 500 allows investors to get exposure to European equities in a more asymmetric way (Exhibit 43). And finally S&P 500 long-dated vol is expensive relative to US rates vol, which prices a low probability of a large move up even after the newly introduced AIT and with the prospect of a COVID-19 vaccine (Exhibit 44).

While the arguments for a weaker Dollar are still in place, selective Dollar upside could help hedge a 'risk off' driven by higher US real rates. With US nominal rates more anchored, in the case of a negative growth shock there are higher risks of a real rates increase alongside lower Dollar rates. In this scenario, most assets are likely to suffer except for the Dollar which should rally outperform. We screen for G10 FX with the cheapest vol and risk reversal - downside on AUD looks attractive (Exhibit 45).

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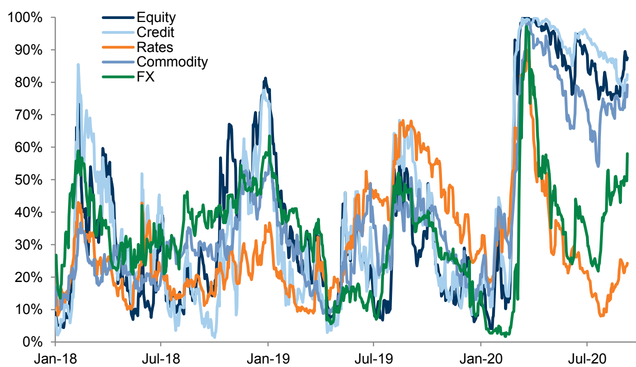
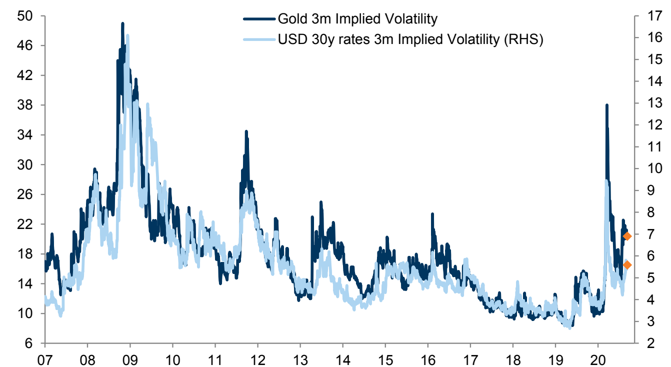
Exhibit 30: Risky asset volatility remains elevated, while FX and rates volatility has picked up
3m implied volatility percentile (last 10y)



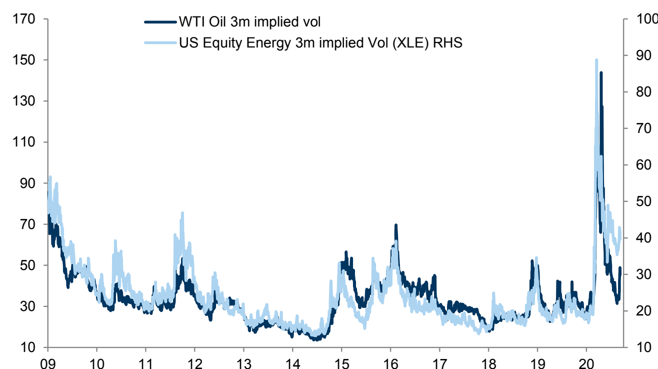
Source: Goldman Sachs Global Investment Research

Exhibit 31: Gold implied vol remains elevated vs. long-dated rates



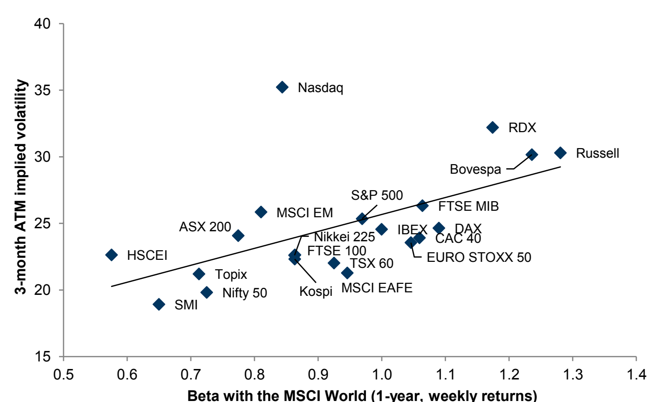
Source: Goldman Sachs Global Investment Research

Exhibit 32: Energy equity vol has lagged normalisation in WTI



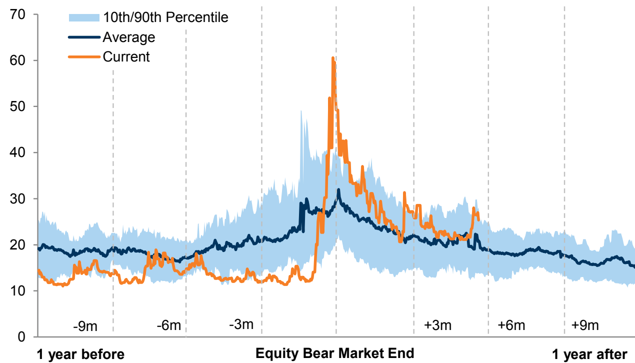
Source: Goldman Sachs Global Investment Research

Exhibit 33: Nasdaq volatility has been particularly elevated



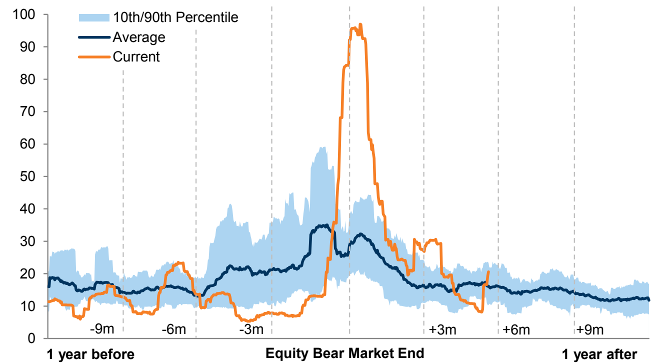
Source: Bloomberg, Goldman Sachs Global Investment Research

Exhibit 34: Implied equity volatility remains elevated compared to normal bear market recoveries...
3-month implied S&P 500 volatility (data since 1980)



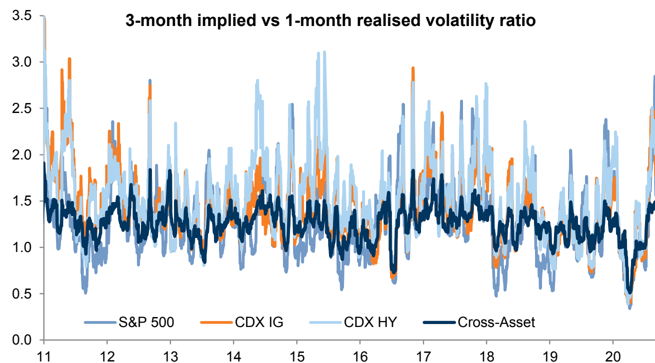
Source: Goldman Sachs Global Investment Research

Exhibit 35: ...but realised volatility has normalised faster than usual, at least until the recent correction
1-month S&P 500 realised volatility (data since 1980)



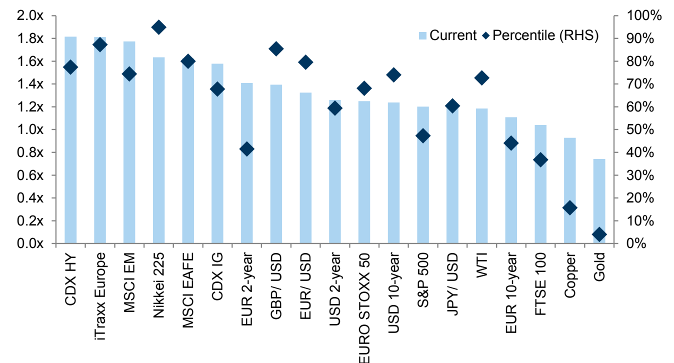
Source: Goldman Sachs Global Investment Research

Exhibit 36: Implied volatility was at a large premium compared to realised volatility, in particular for US risky assets



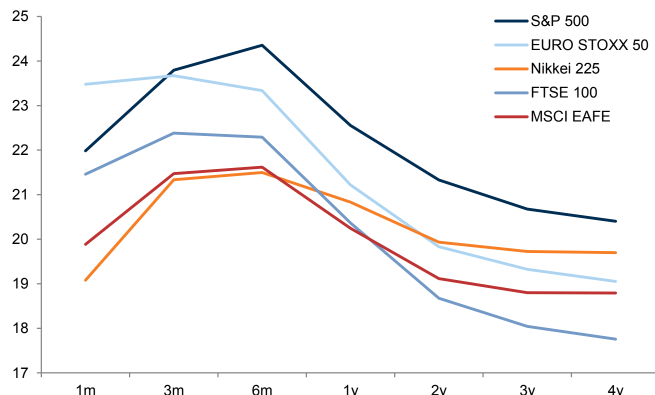
Source: Goldman Sachs Global Investment Research

Exhibit 37: S&P 500 implied vs realised volatility ratio is very elevated while for Gold it is low
3m implied vs 1m realised volatility ratio



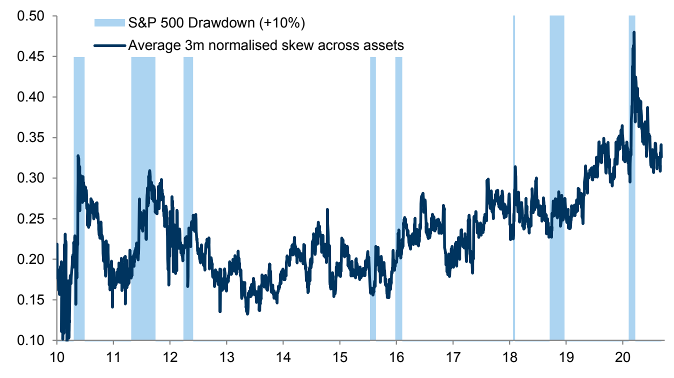
Source: Goldman Sachs Global Investment Research

Exhibit 38: Especially outside the US volatility term structures are very inverted
ATM implied volatility



Source: Goldman Sachs Global Investment Research

Exhibit 39: Cross-asset skew has declined materially since the start of the bull market



Source: Goldman Sachs Global Investment Research

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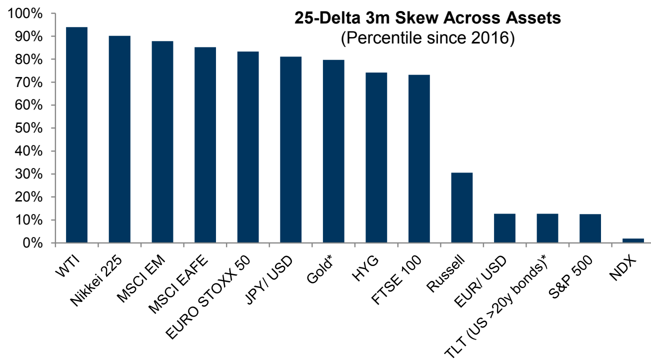
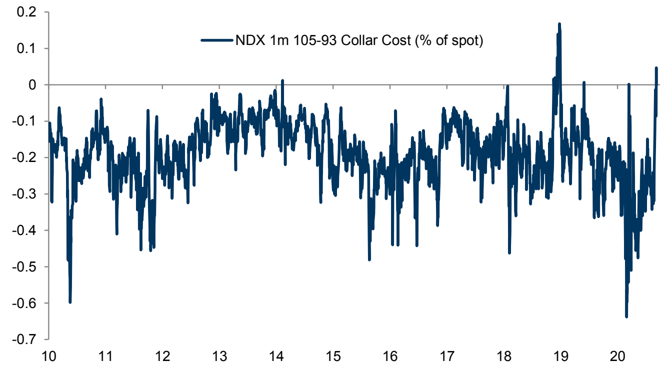
Exhibit 40: Skew on US equity and US bonds is cheap now
25-delta 3m normalised skew: (Put Implied Vol - Call implied Vol)/ ATM Vol. *For TLT and Gold Skew: (Call Implied Vol - Put Implied Vol)/ATM Vol



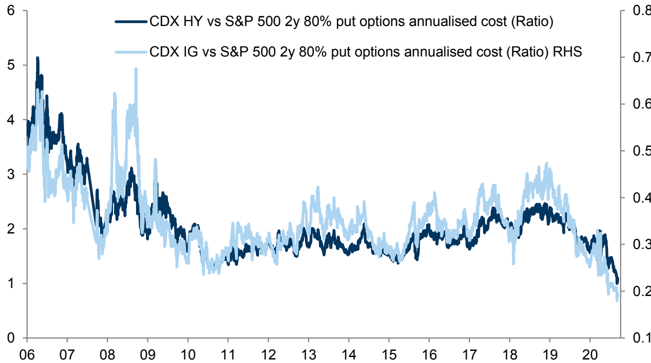
Source: Goldman Sachs Global Investment Research

Exhibit 41: With the decline in Nasdaq skew, collars have become cheaper



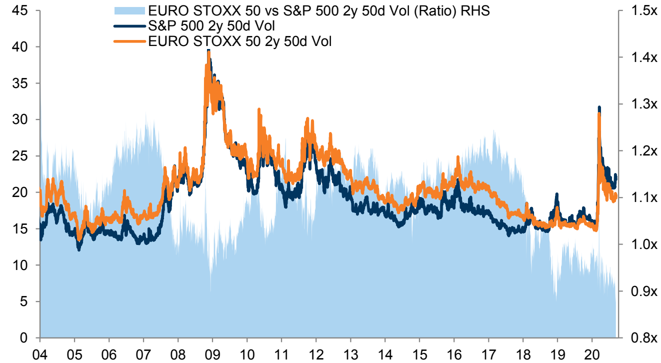
Source: Goldman Sachs Global Investment Research

Exhibit 42: CDX spreads are at all-time lows vs S&P 500 put option premia



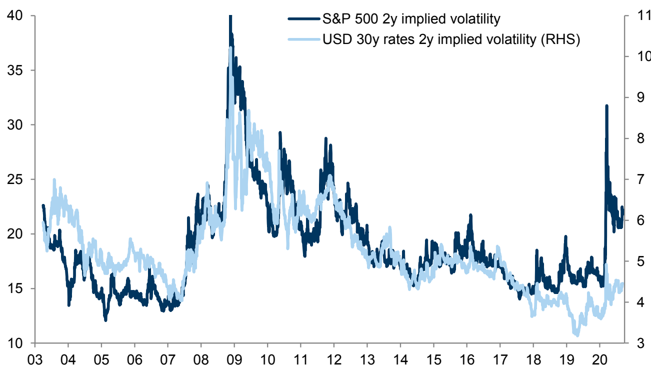
Source: Goldman Sachs Global Investment Research

Exhibit 43: S&P 500 long dated vol is also expensive compared to EURO STOXX 50...



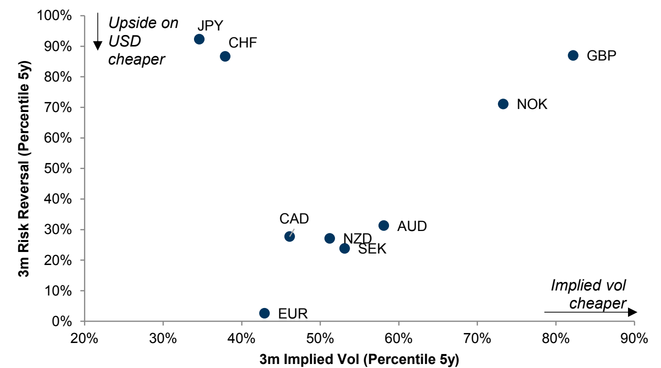
Source: Goldman Sachs Global Investment Research

Exhibit 44: ...and also versus USD rates



Source: Goldman Sachs Global Investment Research

Exhibit 45: Implied volatility and risk reversal on CAD are attractive currently
25d 3m risk reversal of G10 FX vs USD



Source: Goldman Sachs Global Investment Research

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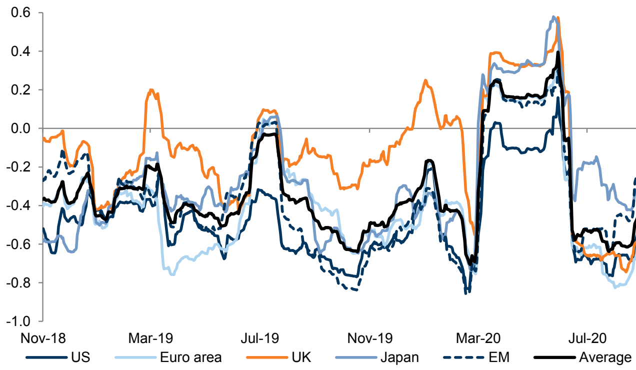
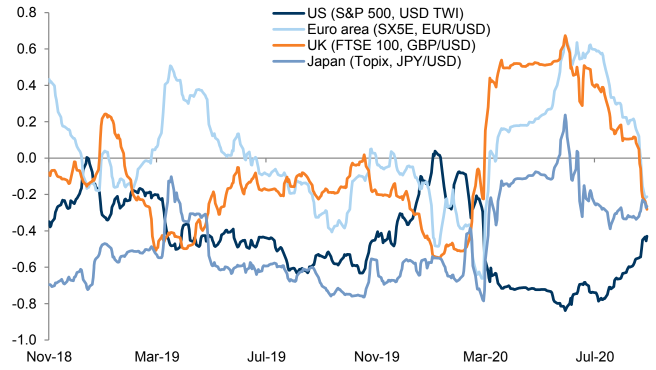
Cross-asset correlation: Equity/bond correlation picking up again

Exhibit 46: 3m rolling equity/bond correlation of weekly returns



Source: Datastream, Goldman Sachs Global Investment Research

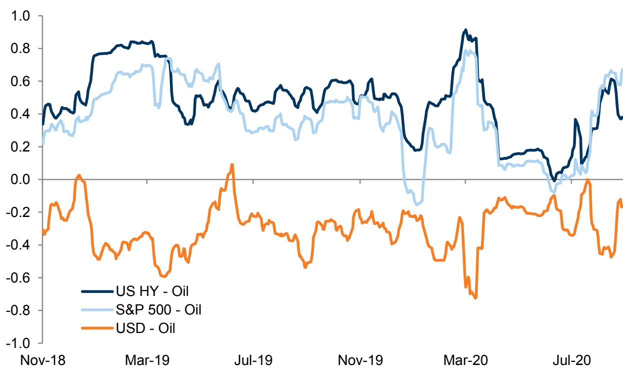
Exhibit 47: 3m rolling equity/FX correlation of weekly returns



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 48: 3m rolling commodity price correlation of weekly % changes with different assets

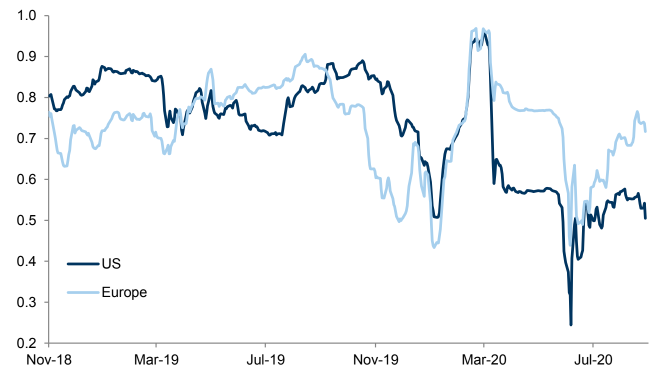
US HY returns, oil, copper and USD TWI spot return



Source: Datastream , Goldman Sachs Global Investment Research

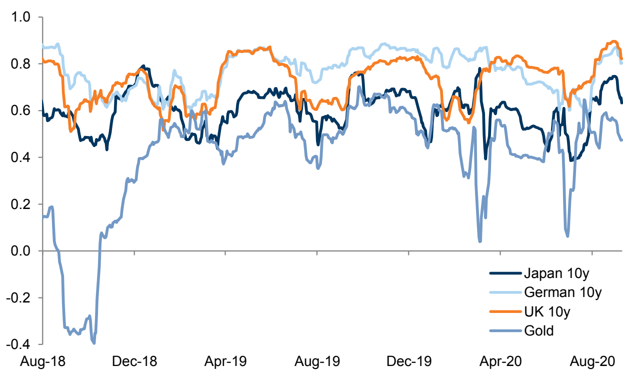
Exhibit 49: 3m rolling equity vol/CDS correlation of weekly level changes

CDX HY for the US, iTraxx Xover for Europe; ATM implied vol for S&P 500 and Euro Stoxx 50



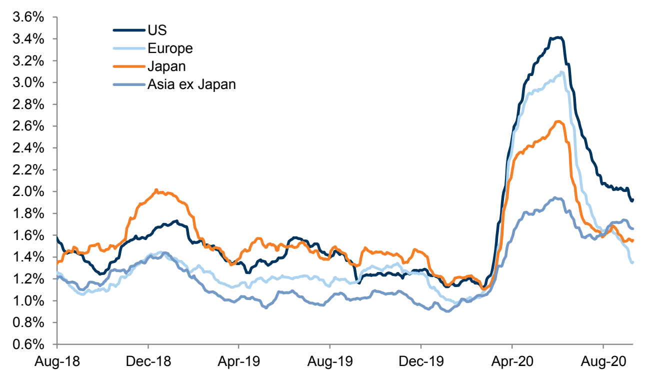
Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 50: 3m rolling correlation of weekly returns with US 10y Treasury returns



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 51: Cross-sector dispersion of weekly returns for regional equity indices



Source: Datastream, Goldman Sachs Global Investment Research

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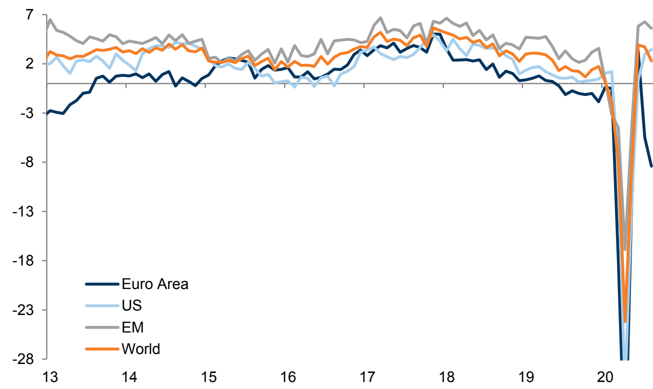
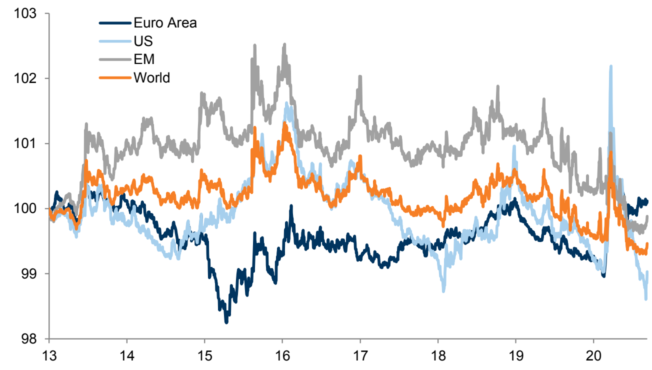
Macro monitor: Sharp rebound in growth and easier financial conditions

Exhibit 52: Current Activity Indicators (CAI)



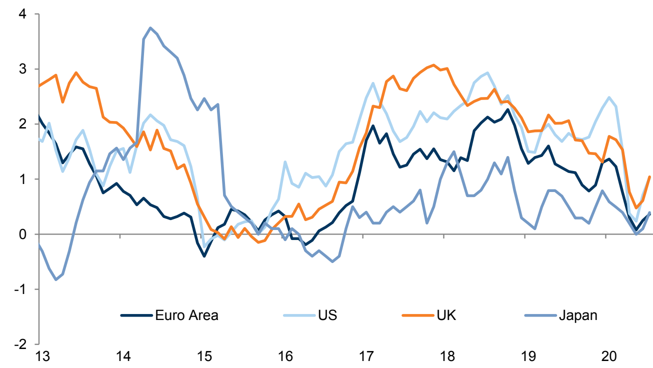
Source: Goldman Sachs Global Investment Research

Exhibit 53: Financial Condition Indices (FCI)



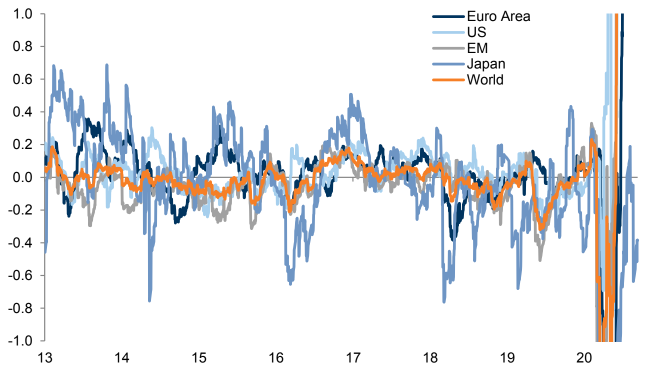
Source: Goldman Sachs Global Investment Research

Exhibit 54: Inflation (CPI, yoy)



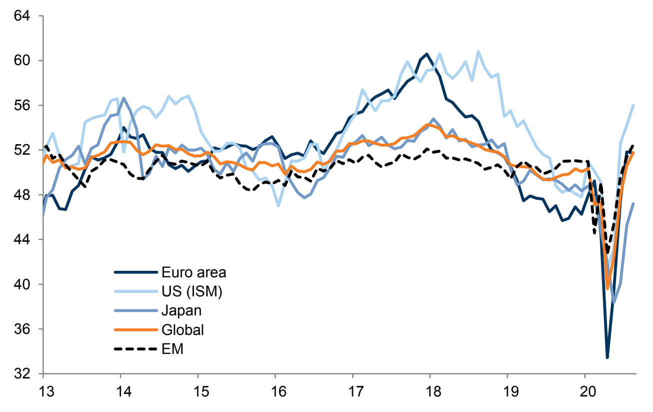
Source: Goldman Sachs Global Investment Research

Exhibit 55: Current Activity Indicator Innovations



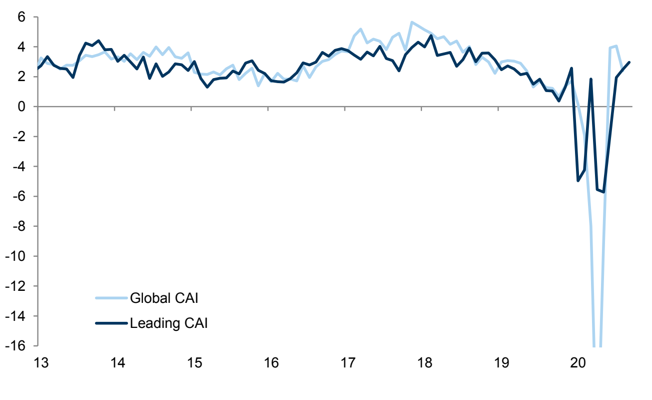
Source: Goldman Sachs Global Investment Research

Exhibit 56: Manufacturing PMIs



Source: Haver Analytics, Goldman Sachs Global Investment Research

Exhibit 57: Global Current Activity Indicator (CAI) and Leading Global Activity Indicator (LCAI)



Source: Goldman Sachs Global Investment Research

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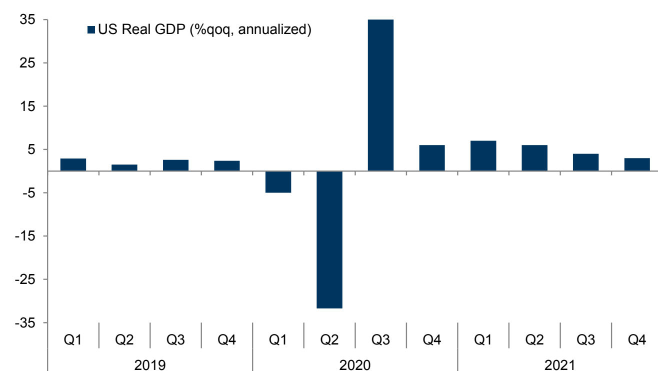
Key Macro Forecasts

Exhibit 58: GS forecasts across asset classes

	Return in % over last				Current	Forecasts				Up/ (downside) in %		
	12 m	3 m	1 m	YTD	Level	3m	6m	12m	Unit	3m	6m	12m
S&P 500 ($)	16.3	6.4	1.6	6.6	3399	3600	3700	3800	Index	5.9	8.9	11.8
Stoxx Europe 600 (€)	-1.6	0.7	1.9	-9.1	370	365	375	395	Index	-1.3	1.4	6.9
MSCI Asia-Pacific Ex-Japan ($)	12.8	8.8	0.0	3.0	558	530	560	590	Index	-5.0	0.3	5.7
Topix (¥)	6.2	-1.3	3.8	-5.4	1605	1550	1625	1700	Index	-3.5	1.2	5.9
10 Year Government Bond Yields												
US	12.0	1.7	-1.2	14.5	0.70	1.03	1.13	1.33	%	33 bps	43 bps	63 bps
Germany	-1.0	1.7	-0.4	3.0	-0.46	-0.27	-0.17	0.03	%	19 bps	29 bps	49 bps
Japan	-2.4	0.0	-0.1	-0.2	0.03	0.09	0.10	0.14	%	6 bps	7 bps	11 bps
UK	4.0	0.7	-0.7	6.2	0.24	0.39	0.48	0.59	%	15 bps	24 bps	35 bps
Credit												
Bloomberg Barclays US IG	8.2	2.8	-1.8	6.9	131	131	126	125	Bps	0 bps	-5 bps	-6 bps
Bloomberg Barclays US HY	4.0	3.2	0.1	1.4	499	492	478	465	Bps	-7 bps	-21 bps	-34 bps
iBoxx EUR IG	0.0	1.9	0.3	0.7	125	128	123	121	Bps	3 bps	-2 bps	-4 bps
BAML EUR HY	0.1	2.6	1.2	-1.5	441	439	427	425	Bps	-2 bps	-14 bps	-16 bps
JP Morgan EMBI Div.	3.8	4.7	-0.6	2.5	417	392	377	360	Bps	-25 bps	-40 bps	-57 bps
Commodities												
WTI	-34.2	-2.3	-9.3	-37.7	38	44.5	47	58	$/bbl	17.0	23.5	52.4
Brent	-35.0	-1.0	-8.1	-38.4	41	47	50	65	$/bbl	15.1	22.5	59.2
Copper	16.7	17.5	2.9	9.9	6759	6000	6250	6500	$/mt	-11.2	-7.5	-3.8
Gold	29.6	13.2	-4.6	28.0	1946	2300	2300	2300	$/troy oz	18.2	18.2	18.2
FX												
EUR/USD	6.8	4.0	0.2	5.2	1.18	1.15	1.20	1.25		-2.6	1.6	5.9
USD/JPY	-0.9	-1.4	0.3	-2.2	106	107	105	105		0.7	-1.2	-1.2
GBP/USD	5.3	2.2	-0.4	-1.9	1.30	1.28	1.33	1.44		-1.5	2.3	10.8
USD/BRL	29.6	8.3	-2.5	31.8	5.30	5.0	4.9	4.8		-5.7	-7.5	-9.4
USD/RUB	15.1	10.0	2.2	21.4	75.40	71	70	68		-5.8	-7.2	-9.8
USD/INR	2.6	-2.7	-1.8	3.0	73.55	73	72	71		-1.4	-2.1	-3.5
USD/CNY	-4.0	-3.4	-1.6	-1.7	6.85	6.70	6.60	6.50		-2.1	-3.6	-5.1

Source: Bloomberg, Datastream, iBoxx, S&P, BAML, Goldman Sachs Global Investment Research

Exhibit 59: GS forecasts path for US real GDP
%qoq, annualised



Source: Goldman Sachs Global Investment Research

Exhibit 60: GS forecasts path for US real GDP
%yoy

Source: Goldman Sachs Global Investment Research

Exhibit 61: GS real GDP growth forecasts vs. consensus

% yoy	2019	2020E		2021E	
	Realized	GS	Consensus*	GS	Consensus*
USA	2.2	-3.3	-5.0	6.0	3.7
Japan	0.7	-5.8	-5.4	3.2	2.5
Euro area	1.3	-7.9	-8.1	7.4	5.6
UK	1.5	-11.7	-9.9	6.5	6.4
Advanced Economies	1.6	-5.7	-6.1	6.2	4.2
Emerging Markets	4.2	-2.5	-1.0	7.5	5.0
World	3.1	-3.8	-3.9	7.0	5.1

** Bloomberg Consensus*

Source: Bloomberg, Goldman Sachs Global Investment Research

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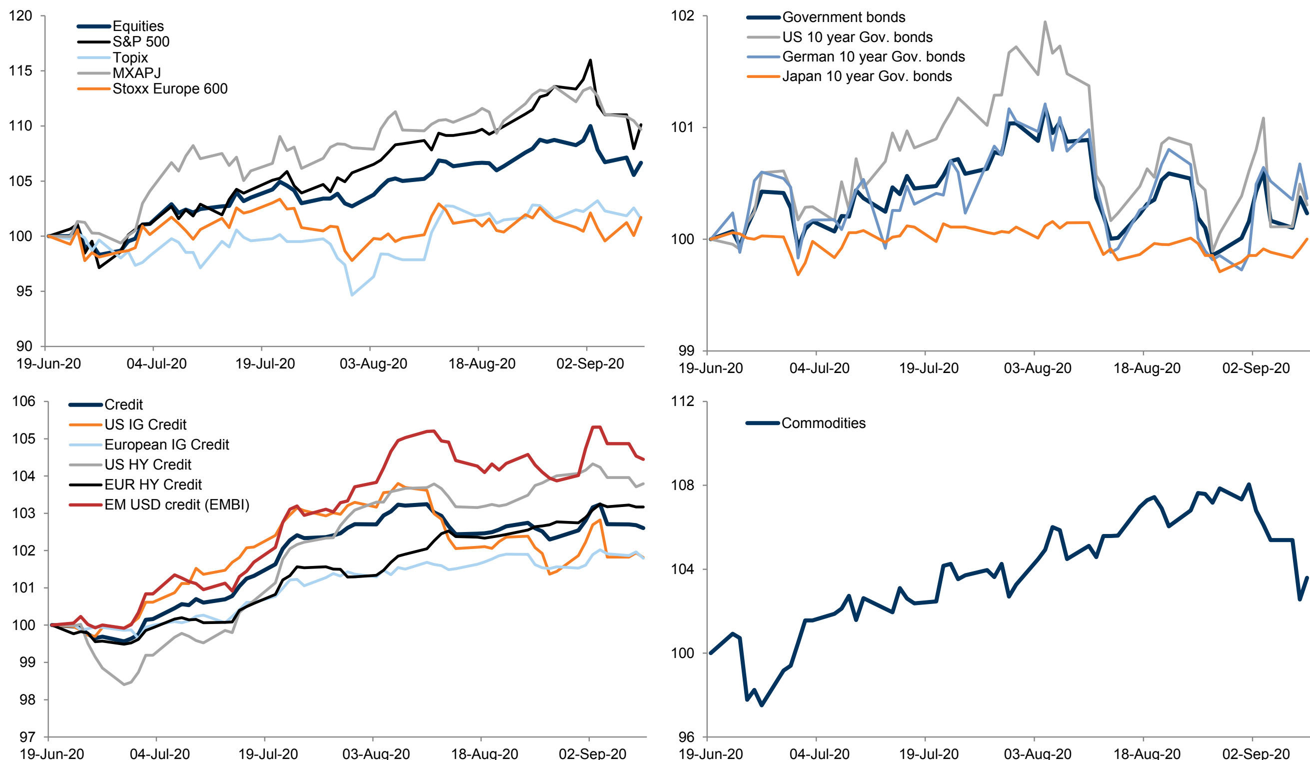
GS return forecasts and performance since our last GOAL

Exhibit 62: Goldman Sachs 3-, 6- and 12-month return forecasts by asset class

Asset Class	Benchmark Weight	3-month Total Return		6-month Total Return		12-month Total Return	
		Local currency	In USD	Local currency	In USD	Local currency	In USD
Equities	**35**	**1.2**	**0.4**	**5.3**	**6.0**	**10.8**	**13.0**
S&P 500	40	6.4	6.4	9.7	9.7	13.6	13.6
STOXX Europe 600	30	-0.5	-3.1	3.0	4.7	10.1	16.5
MSCI Asia Pac ex Japan	20	-4.6	-4.4	1.1	1.6	7.4	8.2
TOPIX	10	-2.9	-3.6	2.4	3.6	8.3	9.5
10 yr. Government Bonds	**45**	**-1.4**	**-2.4**	**-2.0**	**-1.2**	**-3.4**	**-1.4**
US	40	-2.2	-2.2	-2.9	-2.9	-4.4	-4.4
Germany	30	-1.5	-4.0	-2.6	-1.0	-4.8	0.8
Japan	30	-0.2	-0.9	-0.3	0.9	-0.7	0.5
Credit	**10**	**-0.3**	**-1.1**	**0.4**	**0.9**	**1.2**	**2.9**
Bloomberg Barclays US IG	40	-1.1	-1.1	-0.7	-0.7	-0.5	-0.5
Bloomberg Barclays US HY	20	0.4	0.4	1.7	1.7	3.7	3.7
iBoxx EUR IG	20	-0.5	-3.1	-0.4	1.2	-0.5	5.3
BAML EUR HY	10	0.2	-2.4	1.0	2.6	1.7	7.7
JP Morgan EMBI Div.	10	1.3	1.3	2.9	2.9	5.4	5.4
Commodities (GSCI Enhanced)	**5**	**5.8**	**5.8**	**10.5**	**10.5**	**27.9**	**27.9**
Cash	**5**	**0.0**	**-1.3**	**0.0**	**0.8**	**-0.1**	**2.8**
US	50	0.1	0.1	0.2	0.2	0.3	0.3
Euro area	50	-0.1	-2.7	-0.3	1.4	-0.5	5.3
FX		**3m target**	**Return**	**6m target**	**Return**	**12m target**	**Return**
EUR/$		1.15	-2.6	1.20	1.6	1.25	5.9
$/YEN		107	0.7	105	-1.2	105	-1.2

Source: Goldman Sachs Global Investment Research

Exhibit 63: Asset class performance since our last GOAL report (June 19, 2020)



Source: Datastream, Goldman Sachs Global Investment Research

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Reg AC

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