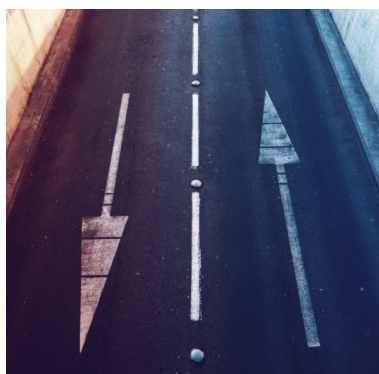


# TOP *of* MIND

## DISSECTING THE MARKET DISCONNECT



Amid growth uncertainty, inflation disappointments and dovish central bank shifts, the typical correlation between equities and bonds—that sees equities fall when bond yields decline—has broken down. How to interpret this apparent disconnect and what it's telling us about growth and future asset performance is Top of Mind. We speak with Bridgewater's Ray Dalio, who thinks recent price action makes sense given the Fed's easier stance, but that limits on further monetary policy easing—among other political and geopolitical factors—will ultimately bring about a major negative shift in growth and markets. GS strategists agree that there's no disconnect in markets because under the surface risky assets have reflected growth concerns—

not just bonds. But GS Chief Economist Jan Hatzius argues that the bond market is too concerned about growth, and perhaps not concerned enough about the direction of Fed policy, with the costs of easing now potentially outweighing the benefits. We share our views on how to position here (focus on "up in quality" for now), as does Dalio (diversify!).

“

When the Fed shifted to a much easier stance, it made sense that both interest rates fell—which was good for bonds—and stock prices rose. But the power to do this is limited. Think of central banks cutting interest rates and purchasing financial assets (QE) as shooting doses of stimulants into their economies and markets. There is now only a limited amount of stimulant left in the bottle, and the sooner we use it, the sooner it will run out.

- Ray Dalio

To the extent that there is some difference of view between bond market and equity market investors—with the bond market more pessimistic about growth than the stock market—I would side a bit more with the stock market. That's because it seems to me that the growth outlook, while clearly not as strong as in 2017/2018, is still pretty decent.

- Jan Hatzius

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# Macro news and views

We provide a brief snapshot on the most important economies for the global markets

## US

### Latest GS proprietary datapoints/major changes in views

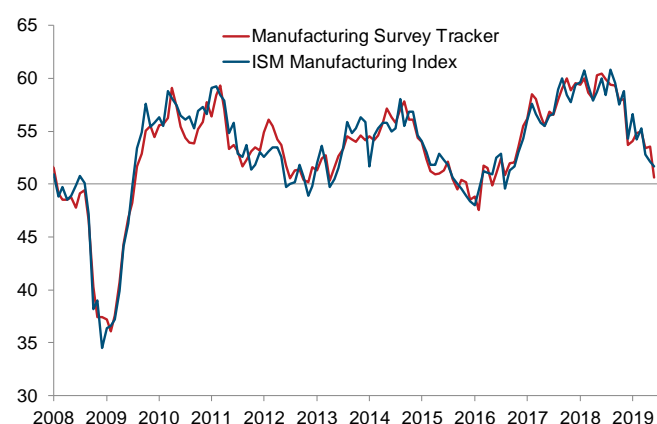
- We now see two 25bp Fed cuts this year in July/September (vs. on hold), given dovish signals at the June FOMC and potential costs of under-delivering on market expectations.

### Datapoints/trends we're focused on

- Solid jobs growth, despite softer manufacturing surveys; we think weaker 2Q activity is due mainly to inventory adjustments that may be nearing an end, and weaker net exports.
- The recent trade US-China trade truce; we still see additional US tariffs on Chinese goods as more likely than not.

### Trending down

GS manufacturing survey tracker and ISM manufacturing, index



Source: Institute for Supply Management, Goldman Sachs Global Investment Research.

## Europe

### Latest GS proprietary datapoints/major changes in views

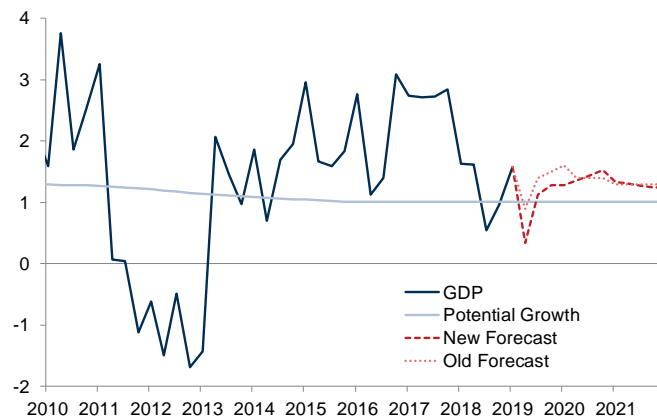
- We now expect the ECB to cut rates by 20bp, re-start net asset purchases, and deliver stronger forward guidance this year (vs. no easing), most likely in September; we expect the BOE to delay its next rate hike by a year to 4Q2020.
- We lowered our 2H2019/1H2020 Euro area GDP forecasts by 0.25pp to 1.25% on weaker global growth, among other factors.

### Datapoints/trends we're focused on

- Likely monetary policy continuity following the appointment of IMF chief Christine Lagarde as the next ECB president.

### Looking weaker

Euro area GDP vs. potential, % ann.



Source: Goldman Sachs Global Investment Research.

## Japan

### Latest GS proprietary datapoints/major changes in views

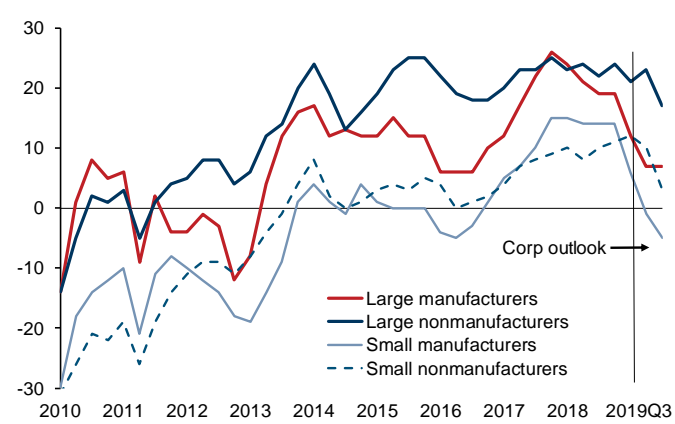
- No major changes in views.

### Datapoints/trends we're focused on

- The BOJ's remaining easing options, which are quite limited, in our view; we continue to think rate cuts are unlikely.
- Increasing odds that the government's planned tax hike will take place as scheduled in October, especially as PM Abe's LDP party adopted the policy as part of its election platform.
- A sharp deterioration in both consumer confidence and business sentiment among large manufacturers in June.

### Manufacturing strains

Japan business conditions DI, %



Source: BOJ, Goldman Sachs Global Investment Research.

## Emerging Markets (EM)

### Latest GS proprietary datapoints/major changes in views

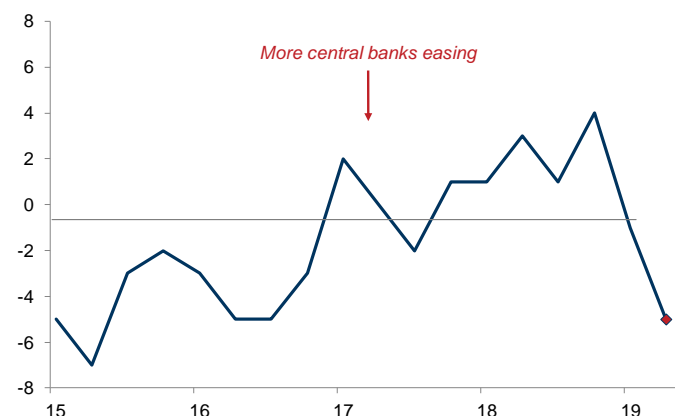
- We've lowered our 2019 China GDP growth forecast by 0.1pp to 6.3% on slower 2Q growth.

### Datapoints/trends we're focused on

- The snap replacement of Turkey's central bank governor, which raises uncertainty around our call of 300bp in rate cuts this year.
- The surprise resignation of Mexico's Finance Minister, which we view as potential negative for economic policy/fiscal discipline.
- More dovish policy across EM Asia given slower growth, though Chinese easing remains conservative relative to past downturns.

### On the accelerator

Asia-pacific monetary policy diffusion index, net no. of tightening CBs



Source: Goldman Sachs Global Investment Research.

# Dissecting the market disconnect

Amid growth uncertainty, ongoing inflation disappointments in the major economies and dovish shifts from central banks globally, the typical correlation between equities and bonds—that sees equities fall when bond yields decline—has broken down. In fact, the S&P 500 recently reached new all-time highs while 10-yr US Treasury yields fell to multi-year lows on the expectation of substantial Fed rate cuts ahead. Although markets have retraced somewhat from these extremes, the question remains: Is the bond market just more worried about growth than the equity market? Or is there more to it? How to interpret this apparent disconnect and what—if anything—it's telling us about the sustainability of growth and asset performance is Top of Mind.

## The stock-bond disconnect

10-year US Treasury yield, %; S&P 500, index (rhs)



Source: Haver Analytics, Goldman Sachs Global Investment Research.

We start by asking Ray Dalio, Founder and Co-CIO of Bridgewater Associates, how to make sense of these developments. He doesn't see a disconnect in current market pricing—after all, when interest rates decline, the present value of expected company cash flows rises; so it made sense that the Fed's shift to an easier policy stance led to both a decline in bond yields and a rise in stock prices. But he doesn't view these developments as sustainable. That's because while he thinks that fundamentals (and not just bond market pricing) warranted the Fed's recent dovish shift—he actually argues it should have come sooner—he's concerned that there's only so much monetary policy stimulant left in the bottle, and the sooner we use it, the sooner we'll run out. In his view, this limited effectiveness of monetary policy at the same time that we're late in the business cycle, political polarity and populism is on the rise and geopolitical risk—from an emerging China in particular—continue to grow, suggest a risky environment for growth and assets ahead (though it's hard to say whether a recession will hit in the next 1, 2 or 3 years).

Dalio's advice on navigating this challenging future? Rather than going to cash—which he notes only reduces risk from a volatility perspective, not from a returns perspective—he recommends rebalancing portfolios with an eye towards diversification, and potentially adding assets that are underweighted and provide intrinsic diversification, such as gold and Chinese assets.

GS strategists agree that there is little disconnect between markets today. In fact, they argue that scratching below the surface in equity, credit, and commodity markets reveals growth

concerns across risky assets—reflected in outperformance of higher-quality and defensive sectors within these assets. So bond markets—which GS economists David Mericle and William Marshall find are pricing a scenario consistent with a sharp expected slowdown in growth, if not recession (see pg. 8)—are less of an outlier than they first appear.

But GS chief economist Jan Hatzius thinks such growth concerns may be somewhat overdone. In his view, while activity has clearly slowed—our US Current Activity Indicator (CAI) for June is now tracking at less than 1.0%—this weakness largely owes to an expected inventory adjustment that is temporarily weighing on manufacturing activity, even as final demand has held up. Going forward, he believes that an increasingly positive impulse from easier financial conditions will contribute to slightly above-trend growth in 2H19 and through 2020, with recession risk still moderate—and not the most likely outcome—over the next several years. If anything, Hatzius thinks a broad look at the macro landscape suggests Fed cuts this year could be setting up for a policy mistake, and sympathizes with the view that the Fed has been perhaps too responsive to bond markets.

So what would this (slightly more sanguine) macro outlook mean for the sustainability of the broader rallies in, well, everything? Even if growth holds up as GS economists expect, GS chief interest rates strategist Praveen Korapaty expects the broader bond rally to prevail through year end before running out of steam, in large part because it's difficult to fight central banks. But he thinks event risk—like the reescalation of trade tensions that we expect, or Brexit developments—could also prompt another leg lower in yields. (Note: GS's year-end forecast for the US 10-yr: 1.75%.) GS senior rates and FX strategist George Cole also digs into why there is so much negative-yielding debt in the world today, and how sustainable this is on pg. 12.

But GS chief US equity strategist David Kostin doesn't think lower expected bond yields and Fed rate cuts on the horizon will lead to higher valuations and prices. That's because he sees offsetting headwinds from growth and policy uncertainty (think trade tensions, etc.). So he believes the S&P 500 is currently pricing close to fair value (Note: GS year-end S&P 500 forecast is 3000).

That said, how does GS recommend positioning in risky assets ahead? On a tactical basis, Kostin advises investors to focus on sectors with less sensitivity to the macro environment, such as IT and Comm. Services. More broadly, GS senior market strategists Lotfi Karoui and Caesar Maasry argue that the "up in quality" trade across equities and credit should continue to outperform. And on an asset allocation basis, GS senior multi-asset strategist Christian Mueller-Glissmann sees reason to remain neutral risky assets on a 3-month horizon, and shift to a slightly pro-risk tilt on a 12-month horizon. But all agree that a sustained improvement in fundamentals that reduces the uncertainty looming over markets will be required to see the rallies in risk assets materially extend and expand beyond more defensive sectors.

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# Interview with Ray Dalio

Ray Dalio is the Founder, Chairman, and Co-Chief Investment Officer of Bridgewater Associates. Below he argues that a risky environment for the economy and markets lies ahead, and shares his views on how to best position for it.

*The views stated herein are those of the interviewee and do not necessarily reflect those of Goldman Sachs.*



**Allison Nathan: Equities and Treasuries have both rallied sharply. Is there a disconnect between the pricing of stocks and bonds today?**

**Ray Dalio:** I don't see an inconsistency in the recent performance of stocks and bonds because stock values are fundamentally determined by the

present value of expected cash flows. So, when the Fed shifted to a much easier stance, it made sense that both interest rates fell—which was good for bonds—and stock prices rose.

But the power to do this is limited. Think of central banks cutting interest rates and purchasing financial assets—Quantitative Easing (QE)—as shooting doses of stimulants into their economies and markets. The financial world is now awash with liquidity chasing investments because of all the rate cuts and especially the QE that put \$15trn into the hands of investors since the Global Financial Crisis. The Fed and other central banks easing today will push more money and credit into financial assets, which will cause prices to rise but future expected returns to decline. In other words, it's short-term bullish and long-term bearish because future expected returns will fall and central banks are running out of stimulants; interest rates are already very close to zero, and the Fed pushing more money into the system by printing it and buying financial assets will soon push the expected returns for equities and other assets as low as they can go. When we get to the point that stimulating via rate cuts and QE isn't sufficient to offset market and economic weakness, market action will change.

**Allison Nathan: How close do you think we are to that?**

**Ray Dalio:** Pretty close. There is now only a limited amount of stimulant left in the bottle, and the sooner we use it, the sooner it will run out. I'd say that there is about a one-to-three year supply left, depending mostly on domestic and international political outcomes and the policies that result from them. The Fed only has room to cut about 2%, which isn't much because past recessions needed about 5% of cuts. These cuts, together with QE, might be enough to prevent a recession for a few more years. But interest rates in Europe and Japan have no significant room to decline at the same time that printing money and buying financial assets will have very limited effects. So we'll see "pushing on a string" in that part of the world. All told, I think monetary policies will be dangerously low on power in a couple of years when the next downturn is more likely to come.

**Allison Nathan: Given your concerns about monetary policy limitations, do you agree with the increasingly dovish stance of the Fed—not to mention the ECB—or is it setting itself up for a policy mistake?**

**Ray Dalio:** I think that the Fed's dovish shift was appropriate and that it's admirable that the Fed recognized its mistake in over-tightening monetary policy last year, which occurred because the Fed misgauged inflation and growth risks, as well as the asymmetry around those risks. Fed officials were too worried about the combination of fiscal stimulus from the 2017 tax cuts and low unemployment, figuring they would accelerate inflation, so the brakes needed to be put on. They didn't understand the powers of technological improvements on inflation, and they focused too much on the short-term spurt in growth, so markets plunged at the end of the year. Their response to that sharp fall and their sound reflections about why they were wrong about inflation and growth led to the Fed's smart and significant change in monetary policy.

**Allison Nathan: So you don't agree with the narrative that bond market pricing in and of itself is having an undue influence on the Fed's decision-making?**

**Ray Dalio:** I don't. People who make that argument presume that the Fed thinks the bond market is right, so if yields are declining or the yield curve inverts, the bond market must be seeing something that the Fed should pay attention to, and should proceed more cautiously. While this is reasonable to some extent, the bigger question is whether something fundamental is causing long rates to decline. In my view, several factors warranted lower long rates. Most obvious is slowing growth around the world, which suggests a need for easier monetary policy. Additionally, with US interest rates high in relation to those in the two other reserve currencies—the Euro and the Yen—at the same time that the US dollar has been appreciating, it's reasonable that US interest rates would fall at a faster pace than the Fed is easing.

**Allison Nathan: What's driving your pessimistic outlook on global growth?**

**Ray Dalio:** I'm focused on four factors. First, we're well along in what I call the short-term debt cycle, which is also called the business cycle. We don't see the same rates of debt growth and spending growth as we've seen in the past because balance sheets won't sustain that, so we will see a slowing. At the same time, pension and healthcare liabilities will increasingly be coming due, which will intensify the squeeze in the same sort of way that debts coming due does. Second, we're also late in the long-term debt cycle, which is what we discussed before about central banks running out of stimulants left in the bottle.

The third factor is political polarity in an election year, which will largely be a clash between socialism and capitalism. This clash is classically due to today's substantial wealth, income, and opportunity gaps, which most likely will either lead to big changes in policies that aren't good for the capital markets and the capitalists—such as a rolling back of the corporate tax rate cut and raising other taxes—or it won't lead to such changes, in



which case the clash between the rich capitalists and the poor socialists in the next downturn will be ugly. The fourth factor is increasing geopolitical risk, especially as China continues to emerge and challenge US leadership in many areas.

This period is most analogous to the late 1930s, when we were also at the end of short- and long-term debt cycles, so monetary policy was limited, the wealth gap was similarly wide, populism was on the rise, and the existing world powers of the UK and the US were being challenged by the emerging powers of Germany and Japan. Each of those factors—the downward pressures coming from the maturing IOUs, central banks not having much power to stimulate, the large wealth and political gaps within countries, and the challenging of leading world powers by strong emerging world powers—leads to difficult consequences.

**Allison Nathan: What will all of this mean for markets?**

**Ray Dalio:** This confluence of factors will create a risky environment over the next couple of years. This is especially true because a number of influences that produced the ups in markets and economies will be fading or reversing. For example, companies bought back shares and pursued mergers and acquisitions because the equity price rises lowered the return spread; so it's not as good as it was. The corporate tax cut boosted valuations, but there will not be another one of those and there is a decent possibility that it will be reversed. The big rise in profit margins over the last two decades from about 7% of revenue to about 15% today, which also shifted wealth from workers to the capital markets and capitalists, is unlikely to continue. And, as we discussed, monetary policy will have less power to stimulate. All of this will be happening when substantial unfunded liabilities in the form of public pension funds and healthcare liabilities will be coming due, which can only be met with higher taxes and/or the monetization of fiscal deficits. So, looking forward, I see a number of factors that have been supportive of markets no longer existing, and an environment of greater risk.

**Allison Nathan: Do you think these risks will culminate in a US or possibly global recession in the next few years? And how severe of a downturn is it shaping up to be?**

**Ray Dalio:** I think there will be slow growth rather than a meaningful recession in the near term. When exactly the next recession will occur is difficult to say; I can't tell you whether it'll be in the next one, two, or three years. I can say that by most measures this cyclical expansion is old and we are currently seeing global weakening.

But when the downturn comes, there is little doubt that it will exacerbate these internal and external conflicts; if they seem difficult now when times are good, imagine what they'll seem like when times are bad. That said, I don't think the next downturn will be as severe as the 2008 financial crisis. We anticipated that crisis by calculating the debts coming due, and determining that we were headed for a classic debt crisis. Next time around, I think the downturn will be like a big squeeze in a politically challenging environment, much more akin to what we saw in the late 1930s. But that makes it very risky in its own way, leaving us more susceptible to political risk, currency devaluations, and so forth.

**Allison Nathan: So is now the time to start reducing risk? How should investors be positioning today?**

**Ray Dalio:** The question really is how does one reduce risk? People seem to think that going to cash reduces risk. But that's only the case from a standard deviation perspective. When interest rates are negligible—below the inflation rate/nominal GDP growth—and you pay taxes on that, you're not getting any return. Cash over the long run is the worst performing asset class and therefore the riskiest asset class. So where do you go? To me, going to any one asset increases risk. So the best way to deal with the challenging environment I foresee is by diversifying well.

I think investors today are mostly leveraged long, meaning they own risky assets and have substantially leveraged those assets through company buybacks, private equity, and so on. In order to diversify against this—i.e. reduce exposure to leveraged long portfolios—investors should look to other stores of wealth and areas that have intrinsic diversification. For example, I think gold and Chinese assets are two assets that are now underweighted in portfolios relative to what's desirable from a portfolio construction perspective and therefore could be useful diversifiers. I know gold sounds like a kooky investment. But gold is just an alternative currency to fiat paper currencies. If your portfolio is likely to perform poorly in the adverse environment I've been describing—less effective monetary policy, the need to run larger fiscal deficits and monetize them, and challenging politics—the behavior of gold as alternative cash has some diversifying merit.

Most investors are also significantly underweighted in Chinese stock and bond markets, which has left prices of these assets lower than they otherwise would be. Such investments are controversial at the moment given the geopolitical tensions. But, even beyond that, investors are generally uncomfortable gaining exposure to markets they haven't been in before, and tend to put too much weight on cap-weighted approaches. In my experience, that's been a mistake. I have repeatedly seen investors get comfortable with new markets once they finally dip their toes in; I even remember when pension funds thought it was too risky to go into equities from bonds. I think investors are showing a similar hesitancy toward China today.

I believe that will change. China's markets are now big. Their equity and bond market caps are second to the US; they are growing fast and will be increasing in size in the benchmark indices, so foreign investments in them will pick up. I'd rather be ahead of these flows than behind them. And, from a diversification perspective, if any competitor is likely to erode US market share, it will be China. I think if investors look back on this moment one day in the distant future and see that they didn't have any exposure to China at the beginning of the 21st century—when China is already the second largest economy, and it and its markets are growing fast—they'll regret it.

Most importantly, balancing the sizes of one's exposure to different markets that are already in one's portfolio is the most powerful way of bringing about better diversification without reducing expected returns. In my opinion, balancing risk in these ways is the most crucial thing an investor can do in the current environment.

# Interview with Jan Hatzius

Jan Hatzius is Chief Economist at Goldman Sachs. Below, he argues that markets are likely too concerned about growth and soft inflation, and not concerned enough about policy mistakes.



**Allison Nathan: What do you make of the recent rally in both stocks and bonds? Are they reflecting different views of growth?**

**Jan Hatzius:** Easier monetary policy naturally supports both stocks and bonds. But to the extent that there is some difference of view between bond market and equity market

investors—with the bond market more pessimistic about growth than the stock market—I would side a bit more with the stock market. That's because it seems to me that the growth outlook, while clearly not as strong as in 2017/2018, is still pretty decent. We're looking for US growth in the 2% range in the second half of this year, and actually slightly higher than that in 2020—a touch above our estimate of the underlying trend pace of growth in the 1.75% range. So we're still cautiously optimistic about growth ahead.

**Allison Nathan: But activity has weakened substantially in June. What's driving this recent weakness, and what makes you confident that activity will rebound in the 2H of this year despite it?**

**Jan Hatzius:** Our Current Activity Indicator (CAI) for June so far is just under 1%—down from about 2% earlier in the year. This decline has largely been driven by weakness in the manufacturing surveys, which have continued to trend lower. So why are the manufacturing surveys so weak? Our read is that there is a negative inventory cycle in the economy, and this drawdown in inventories is weighing on activity even though final demand is holding up. To put some numbers on this, we estimate that 2Q GDP growth is about 1.4%, but final demand growth is about 3%, with the inventory drawdown explaining the difference. But this inventory adjustment was well telegraphed by the stronger-than-expected 1Q GDP growth of over 3%, which was boosted by an inventory buildup. So there's nothing surprising here.

Going forward, I don't think final demand will stay at a 3% pace. But I think 2% final demand is a very realistic estimate. One reason for this is that the recent easing in financial conditions should generate an increasingly positive impulse to growth, and that should be visible in areas like homebuilding, where there's a very direct impact from mortgage rates, and personal consumption, where equity prices obviously matter.

**Allison Nathan: So you don't think there's more reason to be concerned about recession risk today than, say, three months ago when the bond market started to reprice?**

**Jan Hatzius:** No, I think recession risk is still moderate. When I look at the fundamental drivers of past recessions, two jump out. One is a large amount of overheating in the real economy that requires aggressive rate hikes; we're clearly far away from that. And the other one is a large amount of overheating in the financial system generally characterized by asset bubbles and large private sector financial deficits, which we're also not

seeing. Of course, the farther out on the horizon you go, the higher the risk. But our baseline still has no recession over the next several years, and I feel quite comfortable with that. Remember: There was a large recession scare in 2015/2016 when there was similarly weak manufacturing data as today. But with the benefit of hindsight, the economy wasn't particularly close to recession then.

**Allison Nathan: Can the recent shift toward an even more dovish bias from the Fed and the ECB move the needle much on growth?**

**Jan Hatzius:** I think it helps. In the US in particular, I don't think it will be hard to generate a positive impulse from financial conditions by easing policy because there's room to cut rates, even if the impact will likely be front-loaded since the market is already anticipating these cuts. But I think the question in the US is not whether monetary easing will be effective, but whether it's necessary; to me, the economy looks fine without it. In the Euro area, it's the other way around: Easing policy further seems very sensible given that unemployment remains high and core inflation is much further away from its target. But it's unclear whether more monetary stimulus will be effective when ECB deposit rates are already at -40bps, and the ability for renewed asset purchases to make a difference is in doubt. So, one takeaway may be that fiscal policy should be playing more of a role in Europe, which I think would have some positive effects, and is needed.

**Allison Nathan: If the US economy doesn't need more stimulus, is the Fed setting up for a policy mistake by signaling that they're on the verge of cuts?**

**Jan Hatzius:** It's a question of costs and benefits. I think that when the economy is generally fine, additional stimulus provides relatively limited benefit at the risk of a relatively high cost if you ultimately overstimulate the economy—i.e. push the unemployment rate down to a level that is too low to be sustained in the longer term with inflation at about 2%. At that point, you need to increase the unemployment rate over time, which, historically, has been very difficult to do without a recession; there's never been an increase in the three-month average of the unemployment rate of more than 35 basis points that wasn't associated with a recession. And this is probably a somewhat bigger concern now because we're heading into an election year. If the Fed does deliver some insurance cuts in 2019 as we're projecting, it will be much harder to unwind those insurance cuts in 2020 if it turns out that they're not needed or maybe even counterproductive. Now, if it's a very clear-cut case, I think they would still hike. But at the margin, it's just going to be harder as we approach a probably very contentious presidential election.

**Allison Nathan: Is the market too concerned about growth and maybe not concerned enough about the Fed potentially heading in a counterproductive direction?**

**Jan Hatzius:** Yes. I think the market is too concerned about growth and low inflation, and is underestimating the extent to

which special factors are driving current weak inflation numbers. In my view, the points Chairman Powell made at the May press conference about the outliers in the core PCE numbers and the much stronger message sent by the Dallas Fed's trimmed mean PCE index are correct. So I expect a rebound in inflation. And I'm not as concerned about inflation expectations as many in the markets, partly because I don't think breakeven inflation compensation is a great measure of inflation expectations. The surveys actually still look consistent with inflation expectations that are anchored around 2%. So, I have a different sense of the relative risks and therefore of where the Fed is more likely to make a mistake. The dominant market view seems to be that the Fed has been too slow and needs to move expeditiously in the direction of easier policy. My view is that if they move too quickly and aggressively, they're raising the risk of a hard landing, maybe not in 2020, but at some point in the not-too-distant future.

**Allison Nathan: Has the Fed been too responsive to the bond market concerns?**

**Jan Hatzius:** I think so. The bond market has seemed to influence the Fed's thinking in a number of ways. One is through what's priced for the next meeting or the next couple of meetings. If substantial easing is priced, there is some reluctance to under-deliver because of a likely negative market reaction. On our estimates, the impact wouldn't be enormous, but would be material. The FOMC also appears more focused on the slope of the yield curve and on breakeven inflation rates than in the past. While it's impossible to say for sure, presented with the same set of conditions, I think the FOMCs led by former Chairs Bernanke or Yellen would have been a bit less likely to shift to a dovish bias here because they were less focused on these measures.

And I tend to agree with Bernanke and Yellen that these bond market measures need to be taken with a grain of salt. Our analysis suggests that the slope of the yield curve has some predictive power for future growth, but less so than our FCI. So it deserves some attention, but perhaps not as much as it's received. This is especially the case because there is reason to believe that yield curve inversion is just not as big of an event as in the past given flatter yield curves today; historically, large term premiums meant that investors had to build in expectations of very aggressive rate cuts—typically on the order of 100-150bp—to see yield curve inversion, and that's just not the case now. And, as I mentioned, we have not found break-even inflation rates to have much predictive power for inflation at all.

**Allison Nathan: So you think the Fed might be too responsive to the bond market today, yet you view financial conditions as an important input to central bank policy. What's the distinction?**

**Jan Hatzius:** When policymakers follow the bond market, there is danger of what former Chairman Bernanke called a "hall of mirrors" effect, in which the bond market tries to anticipate what policymakers are doing, and policymakers try to follow what the bond market is doing—all the while pushing

the monetary policy stance farther away from what's appropriate. But when central banks respond to moves in financial conditions, the opposite is true; their actions actually limit rather than reinforce market moves. For example, when the Fed responds to looser financial conditions resulting from rising stock prices by tightening policy, that limits the rise in stock prices. So, FCI targeting is a very different animal, and I think a much more stabilizing one than the Fed following the bond market.

**Allison Nathan: Has political pressure had undue influence on the Fed? How concerned should we be about the Fed's independence?**

**Jan Hatzius:** While there's obviously some cause for concern given the overtness of the pressure, I think the Fed still acts independently; Chair Powell and his colleagues don't take orders from the White House. However, the bond market is clearly responsive to political chatter. So to the extent that the FOMC puts more weight on bond market pricing in setting its policy, that's an indirect avenue for political pressure to have an impact. For me, that's another reason to resist the idea that the Fed should just deliver what the bond market is pricing.

**Allison Nathan: Taking a step back, estimates of the neutral have declined materially in recent years. Does this mean the "secular stagnation" camp has won?**

**Jan Hatzius:** It depends on what estimates you're looking at. If market pricing—which implies a negative real funds rate even a couple of years out—turns out to be right, then I think that conclusion would be correct; a negative real funds rate in perpetuity seems like a decent working definition of secular stagnation to me. But as we discussed, the bond market seems overly negative to me. The real funds rate today is solidly in positive territory. And the Fed has a range of different models of the neutral real funds rate, with the average estimate from these models currently running around 1%; this is actually slightly above the median FOMC participant's estimate of 0.5%. Numbers in that range would not be consistent with secular stagnation, in my view.

**Allison Nathan: What would make you more bearish and think the bond market is more right?**

**Jan Hatzius:** On the data side, I will be closely watching developments in final demand and the inventory cycle; if they underperform my expectations, or if the current positive impulse from financial conditions changes, those would be reasons for concern. Policy risks, especially around trade, will also be important. Despite the recent truce, we still think that the US and China are actually pretty far away from a lasting agreement, and that there is a slightly better than even chance that the US will impose some kind of tariff on the remaining \$300 billion of imports from China. While we don't think the direct economic impact would be that large, to some degree the market can make its own reality, and large negative sentiment effects that operate through tighter financial conditions or just reduced willingness to invest could lead to a sharp slowdown. So policy and politics—alongside the data—will be important in the coming months.



# Breaking down rates market pricing

William Marshall and David Mericle argue that rates market expectations of Fed cuts and low inflation hint at growth slowdown fears

The US rates market currently prices ~100bp of cuts to the Fed's policy target by end-2020. This is up from 40bp of cuts as of early May, but has reversed somewhat from the ~115bp peak reached June 25. Meanwhile, inflation breakevens are down significantly across the curve versus the start of May, nearing year-to-date lows in late June before turning higher after the June jobs report. While the signal has diminished somewhat, the expectations of sizeable rate cuts and low inflation priced by the rates market hint at a recession or at least a major growth slowdown, and appear to be quite inconsistent with the buoyant stock prices.

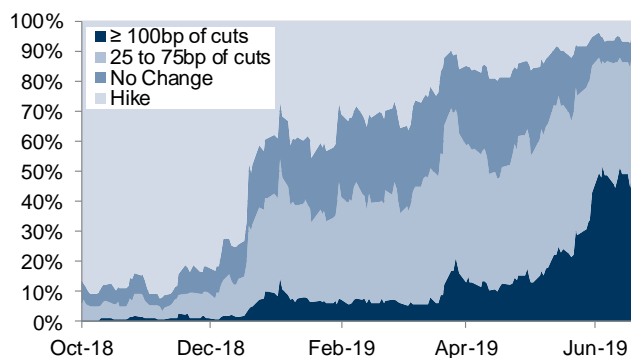
## How bearish is the rates market?

To better understand rates market expectations, we slice 1-year-ahead market pricing of the fed funds rate into four potential outcomes, ranging from rate hikes to four or more 25bp cuts<sup>1</sup>. We think of total cuts in the 25-75bp range as moderate "insurance cuts" similar in size to examples in the 1990s, when the Fed undertook shallow cuts to "buy insurance" against a downturn in growth rather than in response to actual deterioration; and cuts adding up to 100bp or more as most likely indicating a recession scenario, though it is possible that the market might expect the Fed to cut by that amount outside of a full-blown recession.

Tracking the evolution of these market-implied outcomes, market expectations of moderate cuts rose sharply in the weeks following the December FOMC meeting but have held steady since then, likely initially reflecting a view that the funds rate had been set too high, and more recently an expectation of insurance cuts. In contrast, market expectations of deeper cuts over the next year have increased substantially since early May, peaking above 50% at the end of June. This rise coincided with increasing concerns about trade war escalation. In the case of such escalation against Mexico, the initial tariff threat boosted the odds of "recession cuts" substantially, but the news that tariffs would be avoided led to only a partial reversal.

## Rising odds of recession cuts

Market-implied probability of policy actions over the next 12 months, %



Source: Bloomberg, Goldman Sachs Global Investment Research.

While the relatively benign G20 outcome and strong June payrolls report reduced market expectations of deep cuts, this decline

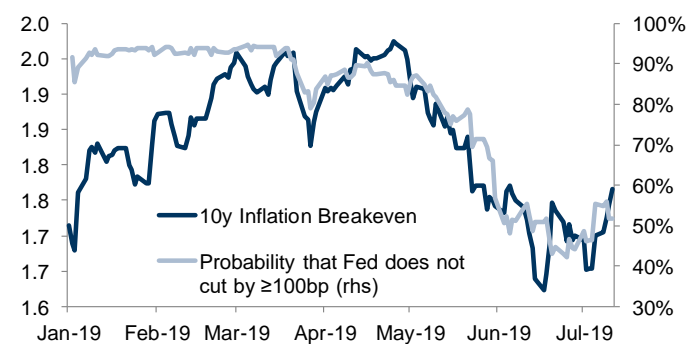
mostly translated into increased expectations of shallower insurance cuts. As a result, even now, the rates market puts 90% odds on at least some rate cuts and a 40% chance of deep "recession cuts" over the next year. Taken together, this suggests that the rates market has interpreted the recent tariff threats as signaling a persistent rise in trade war risk broadly and, alongside it, an increase in global growth concerns.

## Inflation markets echo Fed cut worries

The performance of traded inflation further underscores the relatively bearish signal that the rates market had been sending. If the rates market were simply contemplating "insurance" cuts rather than cuts due to growth deterioration, inflation breakevens would likely have been better supported. However, the downdraft in breakevens in May and June coincided with the renewal of trade war concerns and simultaneous rise in market expectations of Fed cuts, driven predominantly by the likelihood of "recession" cuts. Over the same window, traded inflation notably underperformed its usual relationship with energy prices and risk assets. All told, we think this suggests that the rates market has been more focused on the potential for Fed cuts in response to a markedly worse growth outcome.

## Moving in tandem

10-year US inflation breakeven, %; probability Fed does not cut by ≥100bp, % (rhs)



Source: Bloomberg, Goldman Sachs Global Investment Research.

## More risk from data than from Fed disappointments

That the recent increase in rate cut expectations largely reflects rising recession fears has mixed implications for the argument that financial conditions will tighten sharply if the Fed fails to deliver the easing priced. On one hand, it suggests that stock/bond market pricing are more clearly at odds, implying greater downside risk for stocks if bond market perceptions of recession risk are proven right. On the other hand, pricing out "recession" cuts (rather than preemptive insurance cuts amid healthier data) is less likely to hurt risk assets if the data hold up. This suggests more risk from the data, but less risk from the Fed disappointing market expectations for easing that is not clearly warranted by economic conditions.

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<sup>1</sup> Outcomes include rate hikes (funds rate above 2.5%); unchanged policy (funds rate between 2.25%-2.5%); modest cuts (one to three 25bp cuts, leaving funds rate between 1.5%-2.25%); and four or more 25bp cuts (funds rate below 1.5%).





# Interview with Praveen Korapaty

Praveen Korapaty is Chief Interest Rates Strategist at Goldman Sachs. Below, he argues that there's room for the recent rally in US and EU bonds to run.



**Allison Nathan: Less than a year ago, 10-year US Treasury yields were north of 3% and many saw them tracking higher. Recently, they've declined below 2% before slightly retracing. What drove the sharp re-pricing?**

**Praveen Korapaty:** The sharp rally in bond yields really had two legs. The first leg was the big move in 4Q2018 when US growth was coming off the sugar highs from fiscal stimulus in the middle of the year, and markets were concerned that the Fed had become too restrictive. But then the Fed delivered its first major dovish pivot in January, and yields basically stabilized for some time. That all ended in early May with President Trump's tweet escalating trade tensions with China, which set off the second leg down in yields.

I think the biggest factor driving this repricing was market concerns about growth. Forward yields today are pricing in a roughly 50% chance of four or more cuts through the end of 2020—and scenarios in which the Fed is expected to ease that deeply implicitly assume fairly weak growth. Aside from that, I think the Fed pivot has certainly been a factor, as well as inflation disappointments to a much smaller extent. Positioning may have also played a role; we think Treasuries were somewhat under-owned late last year, and positioning may be more balanced now.

**Allison Nathan: Is there a disconnect between how bonds and equities are pricing the growth outlook?**

**Praveen Korapaty:** Superficially, it would seem so recently with equity indices reaching all-time highs and Treasuries hitting multi-year lows, before correcting slightly following the recent payrolls report. But, looking under the hood, the message on growth is more cautious in equities than it first appears; quality names and defensive sectors have outperformed cyclicals substantially, and are now starting to look somewhat expensive. A similar pattern has occurred in credit markets, with higher quality segments outperforming. Commodities markets have also exhibited the same caution, with assets particularly geared towards growth, such as industrial metals, underperforming. So even though it's less apparent when looking at absolute levels, markets more broadly are reflecting concern about US and global growth—not just bonds.

**Allison Nathan: But stock and bonds rallying together is still not that common. Can this continue?**

**Praveen Korapaty:** I think it can continue for a little while. Ultimately, it's difficult to fight central banks; and so long as they're easing, risk assets and bonds can certainly trade well at the same time. But it's an unstable equilibrium. If growth turns out to be better than bond markets fear, or if there's an unexpected resolution in the trade war, the Fed is likely to deliver a few insurance cuts and then end its easing—at which

point bond markets are likely to correct. But if bond market concerns are realized, it's hard to imagine equities won't be the market correcting.

**Allison Nathan: You revised your yield forecasts sharply lower—with the 10-year US Treasury yield now expected to decline to 1.75% by year end. But we still expect mildly above-trend growth in 2H19, and inflation trending back towards 2% by early 2020. How do you square this?**

**Praveen Korapaty:** It's true we see US growth remaining fairly solid through year-end, and our economists don't expect a recession over the next few years. That's a major reason why we see yields edging higher in 2020 after bottoming out at 1.75% by the end of 2019.

But in the short term, the case for yields moving lower really boils down to the fact that if the Fed eases in July as we expect, it will be hard for markets to not price slightly higher odds of future cuts. Indeed, in past mid-cycle easing episodes, yields have almost always continued to decline amid Fed rate cuts. Of course, if global data turn unambiguously better, this might not be the case this time.

“ In the short term, the case for yields moving lower really boils down to the fact that if the Fed eases in July as we expect, it will be hard for markets to not price slightly higher odds of future cuts.”

That said, event risks could also prompt another leg down in yields this year. Despite the recent US-China trade truce, we don't think we've seen the end of trade tensions; and we think it's actually more likely than not that the Trump Administration will move forward with additional tariffs on China in the coming months. Second, even if trade risks abate and US growth holds up, the economic picture outside of the US has been weak, and risks to growth in places like Europe appear skewed to the downside. On top of this, other exogenous risks such as Brexit continue to hover over the market. So there are many factors that make it hard to be short bonds at this point.

**Allison Nathan: We are still seeing some inversion of the yield curve, which some people interpret as a worrying sign for growth. How does the current shape of the curve align with our slightly more optimistic growth view, and where do you expect curve shape to go from here?**

**Praveen Korapaty:** Most of the inversion right now is at the front end and in the belly of the curve; the back end is not inverted and has actually steepened since late last year. This is fairly typical for the curve when markets are expecting cuts in the near term, which, as we've discussed, is reflective of the markets' concern about the growth and inflation outlook. But, if the Fed delivers cuts over the next few months as the market and we expect—and growth holds up in line with our

forecasts—I think we'll see an eventual normalization that leads to greater steepening across the curve. This steepening bias should remain in place as long as the Fed is easing.

**Allison Nathan: Where will rates go if the Fed over/under delivers?**

**Praveen Korapaty:** That depends on how economic fundamentals and risks evolve. In the extreme cases, if growth holds up, but the Fed still cuts deeply, that might be perceived as over-delivering, and would likely lead to a steeper curve, as markets will likely price the Fed "taking back" some cuts in the future. On the flip side, if the economy weakens further, risks persist or actually come to fruition, but the Fed still says: "You know what? We've done plenty with 2-3 cuts and that's it." The market would likely interpret that as under-delivering, and would likely start to price in a policy mistake, meaning that markets may price fewer cuts this year but expectations of deeper easing further out.

**Allison Nathan: European bonds have rallied sharply as well. Do you see similar drivers in Europe as in the US?**

**Praveen Korapaty:** The drivers are similar. But in Europe, there is greater concern about the potential de-anchoring of inflation expectations. Broadly speaking, I think the case for easing is much clearer in Europe than in the US. Growth is unambiguously weaker in the Euro area, there's still clear slack in the economy, and inflation disappointments have been much larger and more consistent than in the US. So the ECB is likely to be less half-hearted in its easing attempts than the Fed. We think the ECB is set to embark on comprehensive easing again in September including rate cuts, some sort of forward guidance, and asset purchases.

**Allison Nathan: How will the potential restart of ECB asset purchases impact global bond markets?**

**Praveen Korapaty:** Another round of asset purchases should lead interest rates across Europe lower, especially on the long end, and thus drive yield curves flatter. We think the move will be most apparent in peripheral debt given that there is less space for German yields to rally relative to, say, Spanish or Italian yields.

**Allison Nathan: A large share of European debt is trading at negative yields. Is this sustainable? Why are investors buying these bonds?**

**Praveen Korapaty:** Some investors have no choice but to buy these bonds to comply with mandates. For example, if they are benchmarked to an index containing negative yielding debt, or if they need to offset short duration exposures, as may be the case for some pension funds. But even beyond this, such purchases are not as counter-intuitive as they might first seem. Obviously, if an investor buys a negative-yielding bond and holds it to maturity, they're guaranteeing a loss. But if the investor can finance it at an interest rate that's lower than the bond yield, they'll still earn positive carry. And that's largely the

situation in Europe today; in most places, financing costs are more negative than some of the negative yields on longer-maturity debt, so it's still possible to earn a positive return. In cases where investors aren't using financing, investors might simply expect yields to go even more negative, resulting in positive capital gains. In fact, that's the situation we see now; we're expecting yields to track lower throughout the Euro area. So while we prefer financing the purchase of European sovereign bonds, simply holding onto negative-yielding debt may also generate a positive return from capital gains. In that sense, these negative levels are more sustainable than might initially seem the case.

**Allison Nathan: More broadly, what are negative/ultra-low/record-low rates around the world telling us?**

**Praveen Korapaty:** I do think it's important to take a step back and look at the big picture in this way. It might just be telling us that investors are concerned about the macro outlook in many places around the world. Or it could just be that markets have come to believe that central banks are trying to out-dove each other to avoid being last to move. But the low-rate environment could also be signifying an exhaustion of policy space overseas. That could be important for US monetary policy at some point down the road, potentially forcing the Fed into an easier stance than would have otherwise been the case if global central banks elsewhere had more capacity to act. This could mean that global bond yields will have an even more important influence over US bond yields.

**Allison Nathan: Is it possible to see rate divergence in this environment?**

**Praveen Korapaty:** Yes, it's possible, though not likely. We did see this in 2017-18, when US rates were diverging from the rest of the world, which was largely the consequence of divergent monetary policy that overcame the strong correlation in global bond term premia. But we think similar divergence is much less likely going forward. The Fed is now more dovish, in line with many other global central banks, and there are no kickers like a US fiscal stimulus in the near horizon that might increase the growth disparity between the US and other developed markets. Further, the surge in negative-yielding sovereign debt will mean that many official sector investors will likely switch into Treasuries from some of this debt. All of these factors suggest more stable interest rate differentials ahead.

**Allison Nathan: So all things considered, how should investors position from here?**

**Praveen Korapaty:** At a high level, we think it makes sense to stay long bonds this year, given exogenous risks that skew yield moves to the downside, as well as the easing bias of major central banks. We'll be watching the economic data closely, but especially the Fed, with the markets clearly fixated on its every move.

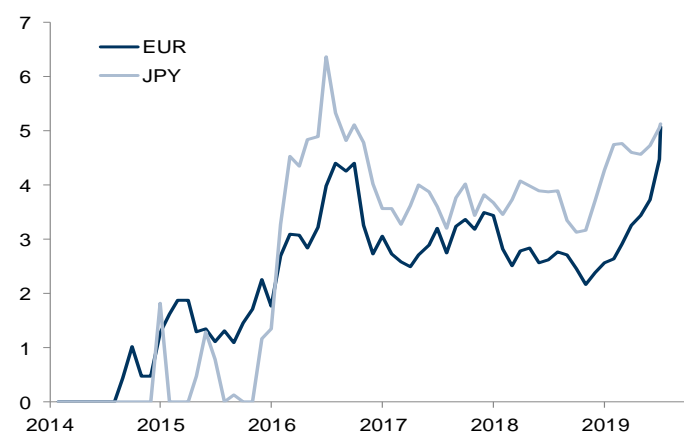
# Is negative-yielding debt sustainable?

George Cole sees European rates staying low for now, though the combination of falling inflation and negative rates are unlikely to be a stable long-term equilibrium as in Japan

Around half the sovereign debt in both Europe and Japan is trading with a negative yield, amounting to around \$5tn worth of bonds in each market. All maturities below 15-years in Germany are yielding below zero. Spanish debt is trading with a negative yield out to the 6-year point. And even in Italy, where the fiscal risk premium remains high, yields on 2-year debt are around zero. Meanwhile, Japanese debt is trading with a negative yield out to 13-years. Why are rates so low, and how sustainable are they given so much negative-yielding debt?

## Negative territory

Negative yielding sovereign debt, \$ tn



Source: Bloomberg, Goldman Sachs Global Investment Research.

## Why are rates so low?

To start, this is by policy design. In Japan, 10-year yields are pinned around zero by the Bank of Japan, and the overnight rate is set at -10bp. In Europe, policy rates are at -40bp, and are expected to fall further should the ECB cut rates deeper into negative territory next year. The recent nomination of IMF Chief Christine Lagarde to be the next ECB president has further accelerated the decline in yields on speculation that ECB policy will remain dovish.

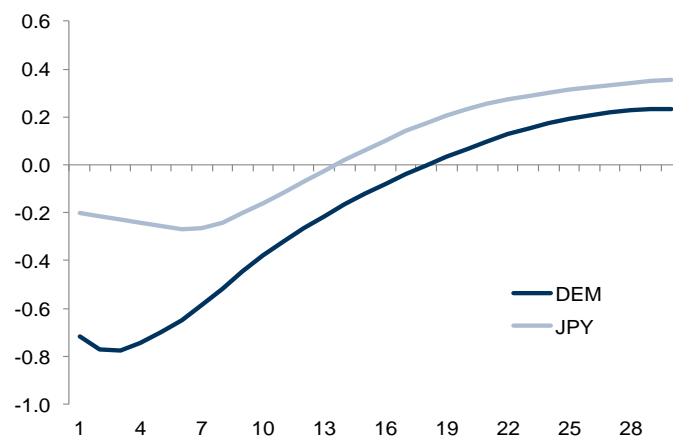
But, in the end, monetary policy reflects the underlying macroeconomic fundamentals; in both Europe and Japan, inflation is stubbornly low and growth momentum is slipping, which has scuttled plans for policy normalization and instead shifted the focus to further easing. Against this backdrop, bank profitability remains weak and credit growth muted. And beyond these cyclical factors, potential growth remains low given headwinds from demographics and productivity. In this context, flat yield curves in Europe and Japan are a reflection of the judgement of the limited capacity of either the Euro area or Japan to generate meaningful returns.

Among the major markets, German yields are the most extreme, and were recently trading below the ECB's main policy rate out to the 10-year point on the curve. For the first time since 2016, yields are now trading fully below Japan across the curve. This has two main explanations. First,

European policymakers have been more aggressive in taking policy rates negative. And negative rates in Europe, in turn, are contributing to a decline in lending rates across the economy, and keeping the EUR lower than it otherwise would be. Currently, the market is exploring a new downside range for yields in Europe; our economists estimate that rates could decline to as low as -1% before they would begin to be counterproductive.

## Germany: Yielding below Japan

German and Japanese yield curves, %



Source: Goldman Sachs Global Investment Research.

Second, the supply of safe assets in the Euro area is essentially limited to the stock of Bunds. The Euro area's institutional framework of a supranational central bank and national-level fiscal authorities means that sovereign debt markets are heterogeneous, in contrast to the homogenous debt market in Japan. The stock of Bunds is an order of magnitude smaller relative to the size of the Euro area economy than in other major developed markets. This means that there will always be a safe asset premium in the German curve. Moreover, this scarcity is exacerbated during periods of ECB QE. We estimate the 'free-float' in German bonds—the amount available for private sector purchase after taking out official and financial sector holdings—is around 25%.

## How sustainable are these negative rates?

Japan has illustrated that it is possible for low interest rates to last for a long time. In addition, as time has passed, we are learning that the lower bound is lower than previously thought in Europe. But compared with Japan, it is difficult to see falling inflation and negative rates as a stable long-term equilibrium for Europe given its unique institutional structure. The real debt burden of the weaker Euro area sovereigns risks becoming unmanageable if nominal growth falls too far. As a result, we expect the ECB to reiterate its commitment to supporting inflation in the Euro area by announcing an ECB easing package in September that combines rate cuts with more QE. This will likely see rates perhaps even lower than here, but will also mitigate some of the downside risks to growth, which in turn will help buy time to continue the essential work of further integration and reform in the Euro area.

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# Central bank policy snapshot

	Interest Rate Policy	Recent Bias	Balance Sheet Policy	Outlook
<b>Fed</b>	<ul style="list-style-type: none"> <li><b>Federal funds rate: 2.25%-2.50%</b> Last changed December 2018 (+25bp), the 9<sup>th</sup> rate increase in the current hiking cycle, which began in December 2015.</li> </ul>	<ul style="list-style-type: none"> <li><b>Dovish:</b> In June, the Fed signaled that cuts are likely, committing to “act as appropriate” without qualification. Eight of 17 FOMC members projected at least one cut in 2019, up from zero in March.</li> </ul>	<ul style="list-style-type: none"> <li>Began balance sheet normalization in October 2017. Currently allowing runoff of maturing US Treasuries and MBS worth up to a combined \$50bn/month; actual runoff averaged about \$28bn/month in 2018.</li> <li>The Fed’s balance sheet stands at about 18% of US GDP.</li> </ul>	<ul style="list-style-type: none"> <li>We expect the Fed to cut rates in July and September, by 25bp, though a 50bp cut is possible if the data/news flow disappoints or Fed officials feel a need to get ahead of bond market pricing. We now see the funds rate remaining below 2% at least until the 2020 election.</li> <li>We expect the Fed to announce the end of balance sheet runoff in July.</li> </ul>
<b>ECB</b>	<ul style="list-style-type: none"> <li><b>Main refinancing operations rate: 0%</b> Last changed: March 2016 (-5bp), the 8<sup>th</sup> cut since the ECB temporarily raised interest rates in 2011.</li> <li><b>Deposit facility rate: -0.40%</b> Last changed: March 2016 (-10bp), the 7<sup>th</sup> cut since the ECB temporarily raised interest rates in 2011.</li> </ul>	<ul style="list-style-type: none"> <li><b>Dovish:</b> Speaking at the yearly ECB forum in Sintra last month, President Draghi signaled a greater willingness to ease stating that “in the absence of improvement [...] additional stimulus will be required.”</li> </ul>	<ul style="list-style-type: none"> <li>Currently reinvesting maturing government bonds, ABS, covered bonds, and corporate bonds according to the ECB capital key, albeit with temporary deviations for operational reasons.</li> <li>The ECB’s balance sheet stands at about 40% of Euro area GDP.</li> </ul>	<ul style="list-style-type: none"> <li>We expect the Governing Council to adopt an easing bias for policy rates in July and announce a broader easing package in September, although earlier action is possible.</li> <li>We expect the ECB’s easing package to include a 20bp deposit rate cut, paired with a tiered reserve system; a return to net asset purchases, including corporate and sovereign debt; and enhanced forward guidance.</li> <li>We see the ECB’s first deposit rate hike in end-2021.</li> </ul>
<b>BOJ</b>	<ul style="list-style-type: none"> <li><b>Policy deposit rate: -0.10%</b> Last changed: January 2016, when it was first introduced, in addition to the BOJ’s target for the monetary base.</li> <li>As of September 2016, the BOJ also targets 0% for 10-year Japanese Government Bond (JGB) yields under its Yield Curve Control (YCC) framework; in July 2018, the fluctuation band around this target was expanded to around +/-20bp.</li> </ul>	<ul style="list-style-type: none"> <li><b>Neutral:</b> In June (and following the Fed’s dovish meeting), BOJ Governor Kuroda repeated prior comments on the bank’s policy stance, stating that the BOJ is prepared to ease as necessary, but room to do so remains constrained.</li> </ul>	<ul style="list-style-type: none"> <li>Targeting ¥60tn/year in JGB purchases since October 2014, when it expanded its Qualitative and Quantitative Easing program. Asset purchase program also covers commercial paper, corporate bonds, ETFs, and J-REITs.</li> <li>In practice, the pace of JGB purchases has been slowing, to around ¥30tn/year currently. In general, under YCC policy, the BOJ now emphasizes interest rate targets over its balance sheet target.</li> <li>The BOJ’s balance sheet stands at about 100% of Japanese GDP.</li> </ul>	<ul style="list-style-type: none"> <li>We expect the BOJ to remain on hold in 2019 and into 2020, while refraining from additional easing, especially as the bank’s remaining easing options appear limited, in our view.</li> <li>We expect asset purchases to continue declining towards ¥25-30tn/year in 2019.</li> <li>Risks to our view include heightened odds of Fed rate cuts, concerns over the side effects of current easing policies, and a potential sharp appreciation in the USD/JPY beyond 100.</li> </ul>
<b>BOE</b>	<ul style="list-style-type: none"> <li><b>Bank Rate: 0.75%</b> Last changed: August 2018 (+25bp), the second rate increase since the Global Financial Crisis and Brexit referendum.</li> </ul>	<ul style="list-style-type: none"> <li><b>Neutral:</b> In June, the BOE maintained its medium-term rates guidance, reiterating that UK economic conditions are consistent with monetary tightening at a “gradual pace” and “to a limited extent,” assuming a smooth Brexit transition.</li> </ul>	<ul style="list-style-type: none"> <li>Announced its latest round of asset purchases in August 2016, in response to the Brexit referendum. Currently reinvesting maturing Gilts to maintain the overall size of its balance sheet.</li> <li>The BOE’s balance sheet stands at around 20% of UK GDP.</li> </ul>	<ul style="list-style-type: none"> <li>We expect the BOE to remain on hold until Brexit is resolved given lingering two-sided risks to inflation. From there, we think the BOE will raise rates by 25bp once per year.</li> <li>We forecast the next BOE rate hike in November 2020.</li> <li>The BOE has indicated that the stock of purchased assets will not be reduced until Bank Rate reaches “around 1.5%.” On our medium-term forecast, that interest rate threshold is only reached in late 2022.</li> </ul>

Source: Federal Reserve, European Central Bank, Bank of Japan, Bank of England, Goldman Sachs Global Investment Research.

# Lower rates may not mean higher stocks

David Kostin sees equities moving largely sideways through year-end, as a boost from lower rates will likely be offset by headwinds from growth and policy uncertainty

Declining interest rates have lifted US equity valuations year-to-date, bringing the S&P 500 index to record highs on an expansion in forward P/E multiples from 14x to 18x. Indeed, multiple expansion contributed more than 90% to the index's YTD climb that has yielded 19% returns. Bullish portfolio managers have argued that lower bond yields—mixed with almost-certain Fed cuts ahead—should lead to even higher equity valuations and prices. But we believe negative revisions to 2020 EPS and lingering policy uncertainty will limit upside.

## Lower rates, higher valuations...usually...

Equity prices should increase when bond yields fall, all else equal. This is because lower yields translate into a lower discount rate for the expected stream of cash flows that determine equity prices. So it makes sense for equity multiples to expand when the Fed is cutting rates. And this has largely been the case: In seven previous Fed rate cutting cycles since 1984, S&P 500 P/E multiples expanded by a median of 3% during the 12 months following the first cut, with valuations rising in five of the seven cycles. Today, the futures market is pricing 67bp of Fed rate cuts by the end of 2019 and 31bp in 2020. The fall in bond yields and rise in equity valuations this year is thus largely consistent with both theory and historical experience.

## ...But not always

However, declining investor growth expectations or an increasing equity risk premium (ERP) can offset the boost to equity valuations from lower interest rates. This is because nominal interest rates are influenced by expectations about inflation, economic growth, and monetary policy—and changes in any one of these variables can alter the outlook for earnings growth and the ERP. If these changes are sufficiently large, as was the case in May of this year, a decrease in interest rates can instead coincide with *lower* equity valuations.

So how has the outlook for economic and earnings growth evolved this year? Well, despite the stock market rally, growth expectations have turned decidedly more negative. The GS US Current Activity Indicator (CAI) slipped to 1.4% on average during 2Q 2019, compared with 4.1% in early 2018. Consensus 2019 EPS estimates have also been cut from \$174 to \$166 (-4%), per FactSet. Equity prices have reflected this deterioration beneath the surface; our basket of Cyclical stocks (GSSBCYCL) has lagged our Defensives basket (GSSBDEFS) by 8pp since September 2018 (0% vs. +8%).

Meanwhile, macro crosswinds have had offsetting impacts on the ERP. Investor risk appetite typically rises late in the economic cycle leading to higher equity valuations; and with the US economy entering its 11th year of expansion, a narrow output gap would ordinarily support a lower ERP and higher equity valuations. However, economic policy uncertainty has remained elevated and thus constrained upside to valuations, with investors weighing the implications of US-China trade conflict as well as easier global monetary policy.

## The verdict: Modest upside from here

Ultimately, when considering the tailwind to valuations from falling interest rates and the headwinds from weak growth and high uncertainty, we believe the S&P 500 is currently trading near fair value. Therefore, we forecast only modest upside for equities in 2019 and our year-end S&P 500 target remains 3000. We expect this largely sideways move to be driven by a roughly flat P/E multiple, negative revisions to 2020 EPS (which we currently forecast at \$181), and a slightly wider yield gap (S&P 500 EPS yield – US 10-year Treasury yields).

For now, risks appear fairly symmetric around our baseline view. We have high conviction that current consensus estimates for 12% EPS growth to \$185 in 2020 will be revised lower. And while "bad news" has recently raised investor expectations for Fed dovishness, a sustained period of weak economic data would likely accelerate downward EPS revisions and raise investor concern about an impending US recession. In addition, a less dovish Fed than priced or further escalation in trade tensions would be headwinds to equities. If consensus EPS estimates are revised to \$178 (-4%) and the yield gap widens, S&P 500 could fall to 2725 by year-end.

Of course, a more dovish Fed than is priced, a US-China trade agreement, or a rotation from cash or debt to equities could increase equity valuations further. And should the yield gap ultimately hold steady along with a decline in 10-year US Treasury yields to 1.75%, as we expect, we could see further upside to the S&P 500 (to an estimated 3275 by year-end).

## Go overweight IT and Communication Services

Because equities appear to be reflecting much of the growth slowdown and dovish Fed policy, we recommend investors overweight Information Technology and Communication Services. Unlike "hard cyclicals" (e.g. Financials, Industrials) and "bond proxies" (e.g. Utilities, Consumer Staples), Info Tech and Comm. Services demonstrate little sensitivity to changes in interest rates and economic growth. Many companies in these sectors have growth profiles which are less dependent on the macro environment than idiosyncratic drivers.

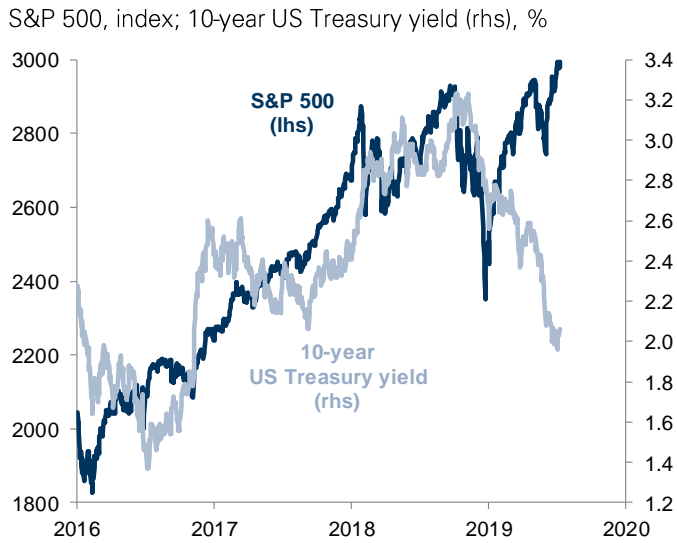
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Goldman Sachs and Co. LLC

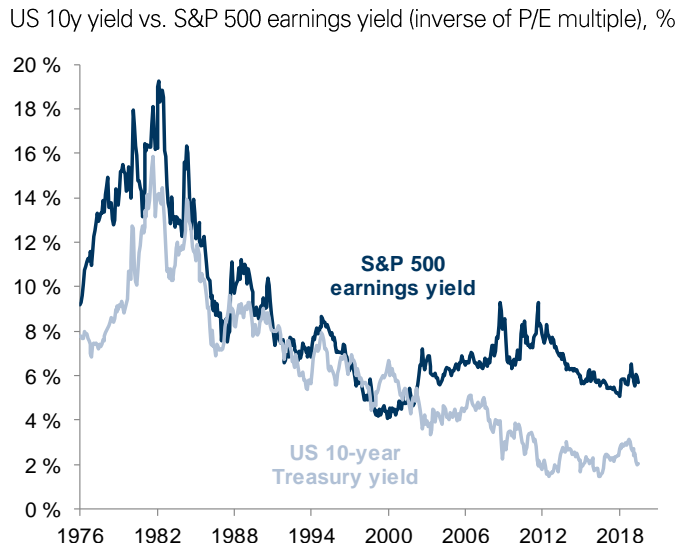
# The equities-rates dynamic in pics

Stock prices have risen alongside falling interest rates...



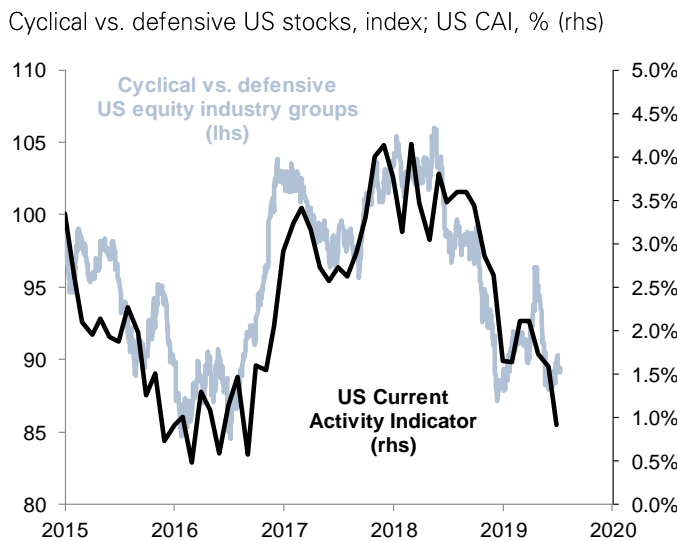
Source: FactSet, Goldman Sachs Global Investment Research.

...and the yield gap currently equals 380bp



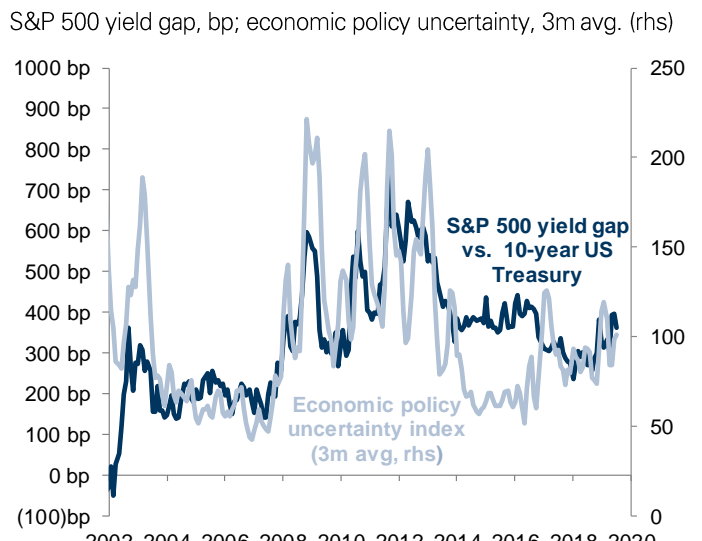
Source: FactSet, Compustat, Goldman Sachs Global Investment Research.

Cyclicals vs. defensives are pricing US growth of ~1.5%...



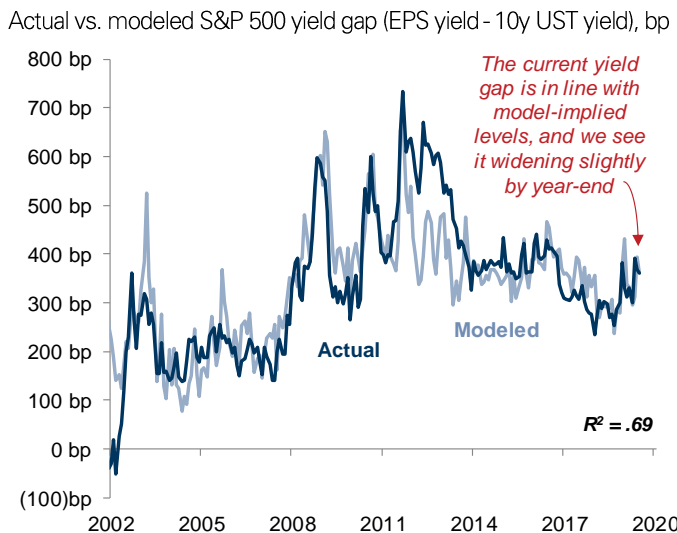
Source: FactSet, Goldman Sachs Global Investment Research.

...and policy uncertainty has weighed on equity valuations



Source: PolicyUncertainty.com, FactSet, Goldman Sachs Global Investment Research.

The S&P 500 appears to be trading near fair value...



Source: PolicyUncertainty.com, Compustat, FactSet, FRB, Univ. of Michigan, GS/GIR.

...and we see the index moving largely sideways through year-end

YE2019 S&P 500 price level based on yield gap and 2020 adj. EPS

Yield gap (S&P 500 EPS yield - 10Y UST yield)	2020 adjusted EPS				
	\$175	\$178	\$181	\$184	\$187
525 bp	2500	2525	2575	2625	2675
475 bp	2675	2725	2775	2825	2875
425 bp	2900	2950	3000	3050	3100
375 bp	3175	3225	3275	3350	3400
325 bp	3500	3550	3600	3675	3725

GS EPS est.      Cons. EPS est.

Current yield gap

Source: FactSet, Goldman Sachs Global Investment Research.

# Carry and quality over “beta”

Lotfi Karoui and Caesar Maasry argue that this year’s “bid for quality” will continue, even if the stocks-bond disconnect breaks down

Global markets lived up to their seasonal cliché during the sharp sell-off in May. But the common adage also suggests investors should stay away until September—and that has been unwise so far. At least on its face, the steep cross-asset rally in June in July has seemed to buck convention. After all, there has been high and positive correlation between bonds and risk assets. And this has been coupled with a strong “defensive flavor,” in which low-vol and high-quality assets have outperformed—a move, which, far from being confined to US equities, has been visible in the US corporate HY market, and more recently in EM equity and credit. For market participants, understanding the drivers of these two themes—and, perhaps more importantly, assessing their forward path will prove key.

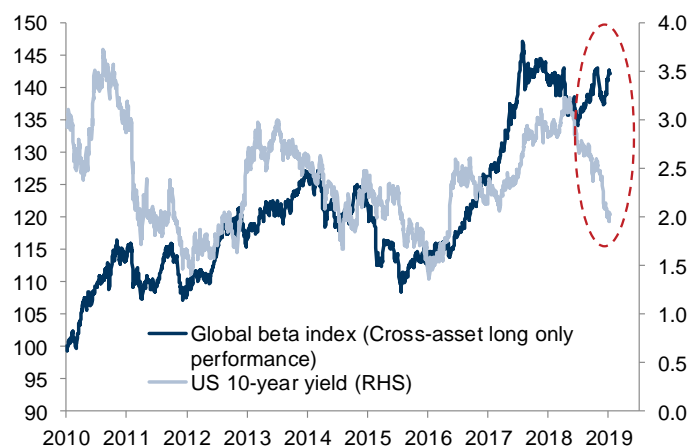
Ultimately, we don’t find either trend particularly unusual; dovish central bank shifts typically support both bonds and equities, and the outperformance of high quality assets helps square the apparent outperformance of risk assets and slowing growth data. But we also think only the second theme—the strong “bid for quality”—has room to run from here.

## Theme #1: The rates vs. risk mismatch

While markets have largely fixated on the divergence between US rates and US equities, the pattern has been more global in nature. Indeed, when looking across global equities, credit spreads, FX, and commodity prices, we find that that global risk sentiment (i.e., “beta”) rallied back towards year-to-date highs in June, as rates continued to march lower. While macro investors have keyed in on the apparent discrepancy between the rates market and risky assets, we see it as a natural response to a dovish shift in monetary policy—just as firming growth expectations typically push both rates and risk assets higher. But a key question remains: can this pattern extend?

## Risk up, bonds down

Global beta index\*; US 10-year Treasury yield, % (rhs)



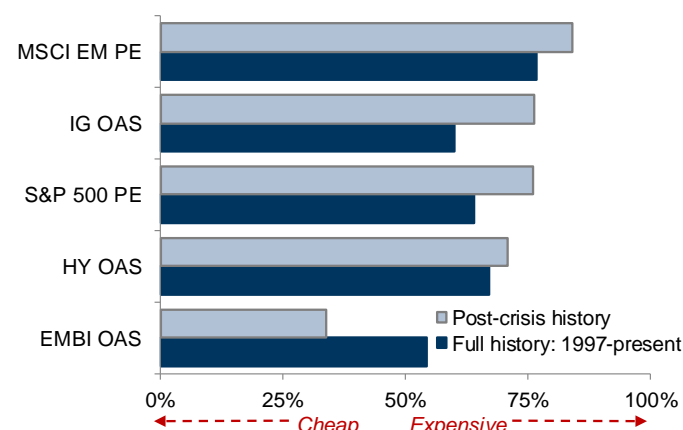
\*US 10-year Treasury yields vs. an equal-weighted performance index (of vol-adjusted returns) across global equities, credit spreads, FX, and commodity prices. Source: Goldman Sachs Global Investment Research.

## Outlook: Lower rates, but no risk rally

On the rates side of the equation, the short answer is yes; we see US 10-year Treasury yields declining by roughly 38bp to 1.75% by year-end, aided along by the actual process of Fed easing and lingering macro risks (e.g., trade tensions). But, at the same time, we think the case for a continued rally in risk assets is quite weak, for a few reasons. First, a strong and sustained bout of “risk on” eventually requires an equally strong fundamental driver, such as growth acceleration. With economic data still surprising to the downside on a global basis (our Global Current Activity Indicator which has slowed to 2.5% in June from 3.3% in January), it seems the recent combination of lower rates and higher risk assets has been pinned on the hopes that central banks—and, perhaps, the recent trade tension truce—will be able to kick-start a growth recovery. We are skeptical that central banks can engineer such an environment on their own, and trade escalation still looks more likely than not. Meanwhile, asset valuations look expensive by historical norms, both in the US and emerging markets.

## Looking stretched

Historical percentile ranks\*



\*Percentile ranks for credit spreads are inverted. Source: ICE-BAML, Haver Analytics, MSCI, Goldman Sachs Global Investment Research.

Therefore, relative to previous risk rallies in the post-crisis period—such as those set off in July 2012 or early 2016—neither fundamentals nor valuations provide grounds for sustained risk premium compression, in our view. Instead, we think risk assets will remain largely range bound, as is reflected in our asset allocation recommendations (see pg. 18), putting an eventual end to the current rates vs. risk mismatch.

## The case for carry

Against this rather muted “beta” view on risk assets, we expect a supportive backdrop for carry and yield-seeking strategies. Barring a re-escalation of trade tensions, the likely Fed insurance cuts and ECB easing measures in the coming months should keep the left tail in check while also leaving incremental room for EM central banks to ease more than the market is pricing—two positives for carry strategies in credit and EM local bonds. In fact, if the June price action is any indication, the stronger bid for “carry” has already been visible; “carry” assets such as EM local bonds and EM sovereign credit have completely retraced their May losses, with US HY not far behind. “Growthy” assets such as EM equities, copper prices, and AUD, however, have not bounced back as sharply.



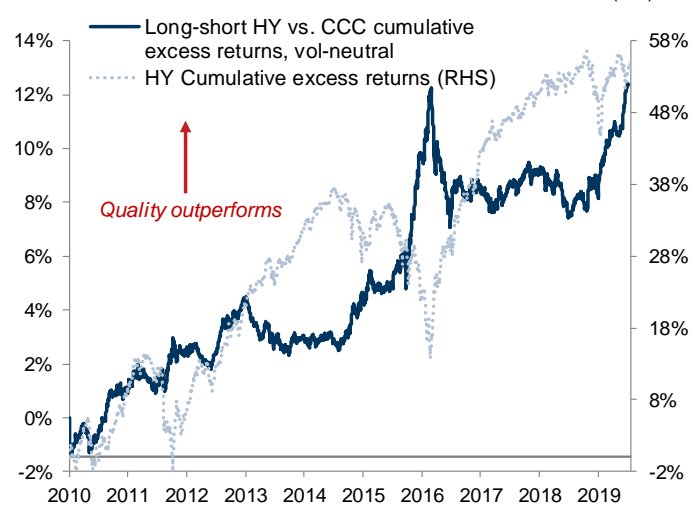
Looking ahead, we expect this carry trend to continue, leading the market in 2H amid still-soft growth.

## Theme #2: The quality rally

The rebalancing of fixed income and equity portfolios into high-quality assets has been gradually propagating over the past few years. It first manifested itself in the US equity market, with strong balance sheet stocks meaningfully outperforming their weak balance sheet counterparts since mid-2016. In US credit, the “up-in-quality” trade has shaken out in the HY market, where CCC-rated bonds have meaningfully lagged the broader market since mid-2018 (even after the Fed’s dovish pivot).

### Defensive flavor

Cum. excess returns on a monthly rebalanced long-short strategy of broad HY vs. CCC-rated bonds, %; HY cum. excess returns, % (rhs)



Source: Bloomberg-Barclays, Goldman Sachs Global Investment Research.

In EM, the “up-in-quality” bias has only started to take shape more recently but the momentum has been accelerating. In credit, two thematic long-short strategies capture this trend. First, sovereign issuers with strong fiscal balances (as a % of GDP) have been outperforming those with weaker fiscal balances on a rating-neutral basis. The same has held true for sovereign issuers with strong current account balances. For EM equities, after a period of divergence with the US, the relative performance of strong balance sheet equities has sharply rebounded since March.

Of course, the endurance of the current defensive rally now means that “owning quality” has rarely been more expensive, leaving some investors wondering if the time has come to rotate back into low-quality assets—especially against the backdrop of dovish monetary policy and reasonably low recession risk. Broadly speaking, we don’t think so.

### Outlook: Room to run

While we are mindful of expensive valuations for high-quality assets, we see plenty of reasons why the “bid for quality” will remain strong. For US equity and credit markets, these include pressures on margin growth, and the lack of fundamental upside for over-leveraged and often secularly challenged firms, which add to the structural constraints that an economy operating at full capacity imposes on growth. And in EM, a more constructive view on the low end of the quality spectrum

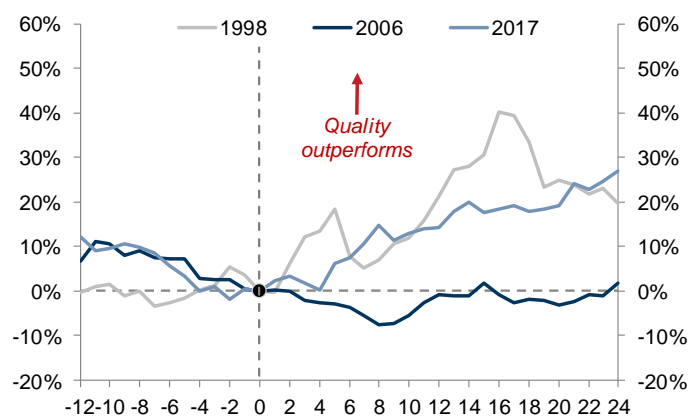
ultimately requires better growth data, which has yet to materialize.

In US equities, the recent plateau reached by the relative performance of strong balance sheet stocks in has pushed against this narrative somewhat. But whether the bid for low-quality assets eventually returns will depend to a large extent on investors’ willingness to re-embrace a mid-cycle view—and we think the bar is high. Granted, easy monetary policy will likely keep near-term recession risk in check. But for markets, low near-term risk does not always translate into a low price of risk. Although less recession-prone by historical norms, the ability of the economy to withstand negative shocks (no matter where shock originates) is, by design, diminished, given that it now operates at full capacity. As such, one can view the elevated risk premia demanded by investors to hold low-quality assets as late-cycle insurance premia against an unexpected turn in the cycle, which is likely to persist, in our view.

The evidence from previous cycles is consistent with this intuition. When revisiting the past three business cycles, we show the relative performance of strong vs. weak balance sheet stocks before and after the unemployment reaches a low of 4.5% (for context, the troughs of the past two business cycles were 3.8% in 2000 and 4.4% in 2006). With the caveat that we only have three data points in hand, the evidence suggests that low quality generally languishes when the economy operates at full employment. This was particularly visible in the post-1998 and 2017 periods. 2006 was somewhat friendlier to low-quality assets, though the performance of the “down-in-quality” trade was far from stellar.

### Performing at full-employment

Performance of long strong vs. weak balance sheet stocks before and after US unemployment dips below 4.5%



Source: Goldman Sachs Global Investment Research.

All in all, this leaves us comfortable with our “up-in-quality” bias in the cross-asset space, and our overarching preference for carry and quality over “beta.”

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# The bearish bull market in everything

Christian Mueller-Glissmann explains that the recent bull market actually has a bearish flavor, and argues that while there is reason to keep a pro-risk tilt over the next year, multi-asset portfolios will likely see lower returns ahead

On the heels of a rocky 2018, this year has been a bull market in just about everything. Most assets delivered positive returns, and a simple 60/40 portfolio of stocks and bonds had one of its strongest 1H performances since the 1960s, posting 15% gains with a Sharpe ratio of 1.94. Against this backdrop, our risk appetite indicator (RAI), which gauges market sentiment across assets, has recovered sharply year-to-date. But while the rebound in RAI would appear to be sending positive signal, a closer examination yields a counterintuitive result: The current bull market is actually quite bearish in nature. Although we see some scope for a “pro-risk” rotation on a 12-month horizon, we expect multi-asset portfolios to deliver lower returns ahead after this bearish “bull market in everything.”

## Bull market, bearish signals

In past years, falling bond yields have weighed on equities via rising growth worries. But 2019 has thus far bucked the trend: Both stocks and bonds have rallied markedly, making it difficult for investors to discern what’s truly priced in terms of growth. So what has this year’s “bull market in everything” really been telling us?

To answer this question, we first split our RAI into “risky” assets (e.g. equity and credit) and “safe” assets, such as gold and the Japanese yen. When doing so, we find that risk appetite for “risky” assets is now close to neutral, but that continued strong demand for global bonds and other “safe” assets leaves our broad measure of risk appetite negative, despite a strong recovery in 1Q from the “risk off” environment late last year. Meanwhile, fund flows have reflected a similar sense of investor caution. Over the past six months, US equity funds have seen outflows as large as during the global financial crisis, while money market funds have received large inflows, as have credit and government bond funds more recently.

Equity market performance has also displayed a distinct flight to safety. Stocks characterized by structural growth and low volatility have led the market rally year-to-date, while cyclicals, financials, and value stocks have generally underperformed. The same pattern holds in the corporate credit space, where—despite prospects for lower policy rates—there has been little evidence of a “down in quality” shift.

So all told, this year’s “bull market in everything” is not sending a universally bullish signal; on the contrary, looking under the hood of our RAI reveals that growth expectations across assets remain relatively bearish. This likely reflects structural headwinds, like the risk of secular stagnation in Europe and Japan, as well as cyclical slowdown fears reinforced by ongoing geopolitical risks (e.g., US-China trade, Iran, and Brexit).

## Stabilized by (monetary) stimulus

Despite growth concerns, risk appetite has been lifted by a dovish shift in global monetary policy. This began with the Fed’s dovish pivot to start the year—and has once again taken center-stage in June, as both the Fed and ECB have signaled that a new round of easing measures will soon be implemented. As a result, markets have been in a “bad news is good news” regime for most of 2019 with monetary policy driving a strong search for yield.

In many ways, the situation today harkens back to the first half of 2016, when negative rates and QE stabilized risk appetite. However, it is notable that a rebuild in growth expectations—boosted by President Trump’s election in Q3 and the associated hopes of reflation—was ultimately needed to re-establish more traditional “risk on” pattern, with equities rallying and bonds selling off.

We believe the same will likely hold true today—and that sustained improvements in growth will be required to drive pro-cyclical rotation across and within assets that not only sustains the current rally, but allows it to expand beyond higher-quality/more defensive parts of the market. Until then, both “risky” and “safe” assets are vulnerable to monetary policy disappointments.

## From monetary policy to growth

There are some tentative signs that growth expectations are starting to turn more positive. By our measures, growth sentiment started to recover in June, supported by easing US-China trade tensions. This has moved global growth pricing roughly in line with our Global Current Activity Indicator (CAI) after undershooting during the May “risk off.” And more broadly speaking, the combination of easier financial conditions, lower oil prices, and below-trend global growth, should help set the stage for a 2H pickup, as our economists currently expect.

Of course, improved growth prospects would leave safe assets and more defensive sectors vulnerable to a reversal from their recent strong performance. After all, in 2H2016, the return of a “risk on” environment saw S&P 500 low volatility stocks underperform by close to 10%, US 10-year yields rise by 130bps, gold decline by 18%, and yen fall by 15%. But riskier assets, and equities in particular, would likely have some room to run.

## Neutral near-term, pro-risk medium term

With all this in mind, near-term uncertainty around growth and monetary policy leave us neutral in our asset allocation for the next three months. But reflecting our view that growth will hold up amid some extra boost from monetary policy easing, we think it makes sense to remain modestly pro-risk over the next year—with an overweight allocation in equities, a neutral stance in credit/commodities, and an underweight in government bonds. That said, after the recent “bull market in everything,” multi-asset portfolios are still likely to deliver lower returns and are at risk of not being well diversified. So we also recommend an overweight in cash over the next 12 months.

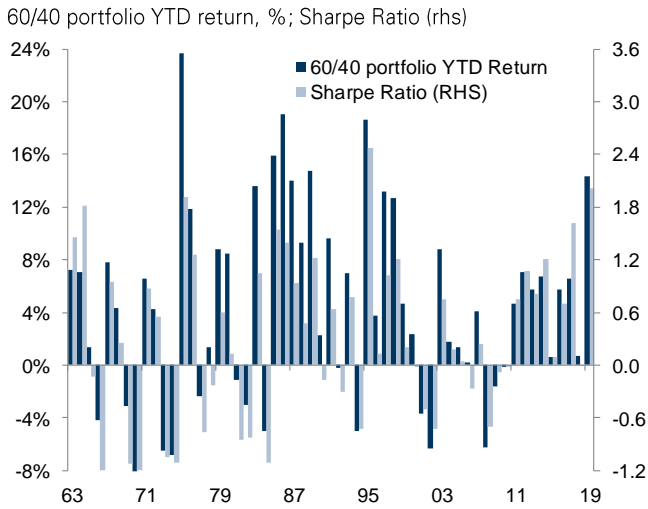
## Christian Mueller-Glissmann, Sr. Multi-Asset Strategist

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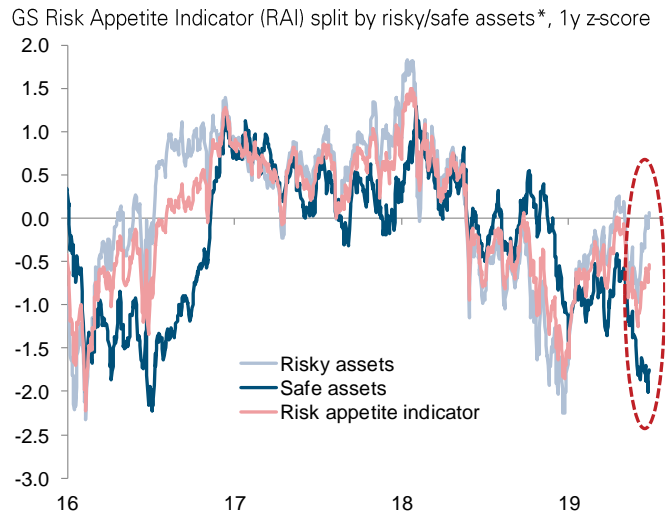
# Breaking down the bearish bull market

60/40 equity/bond portfolios had their best 1H in decades...



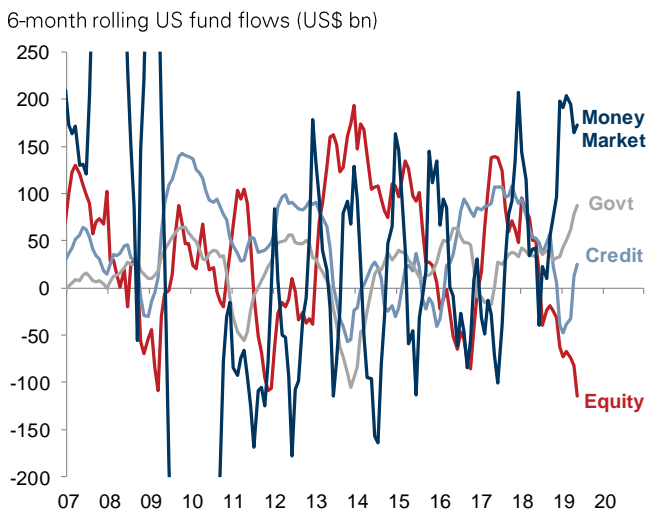
Source: Datastream, Goldman Sachs Global Investment Research.

... but investors have also increased allocations to "safe" assets



\*Risky assets include equity/credit funds, etc.; safe assets include gold/JPY, etc.  
Source: Datastream, Haver Analytics, Goldman Sachs Global Investment Research.

Equity fund flows have been as negative as during the GFC...



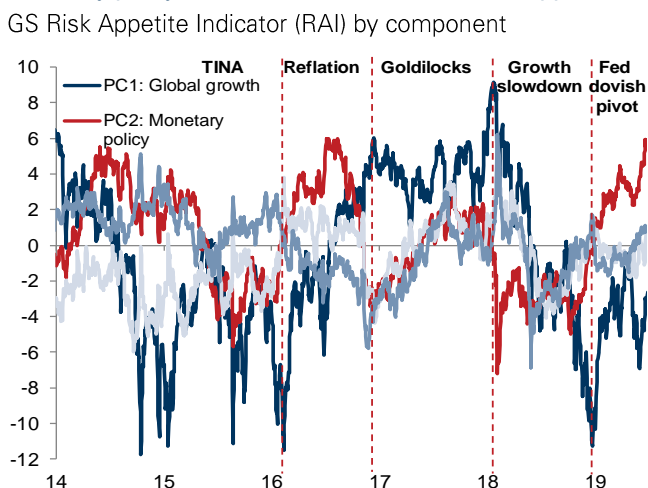
Source: Haver Analytics, ICI, Goldman Sachs Global Investment Research.

...while low-vol stocks have performed particularly strongly



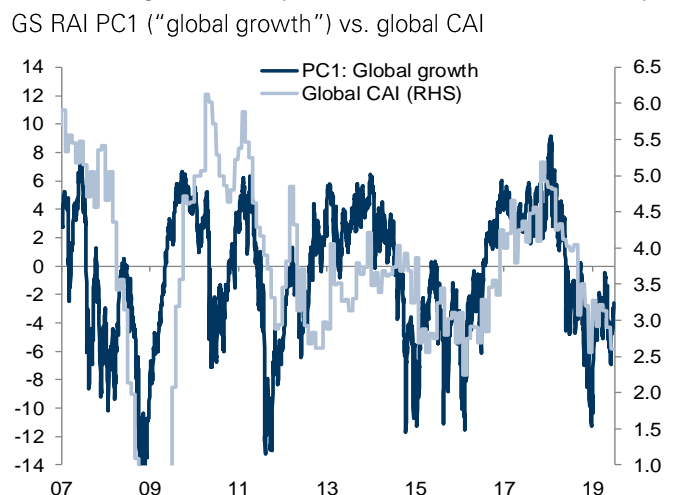
Source: Bloomberg, Goldman Sachs Global Investment Research.

Monetary policy has been the main driver of risk appetite...



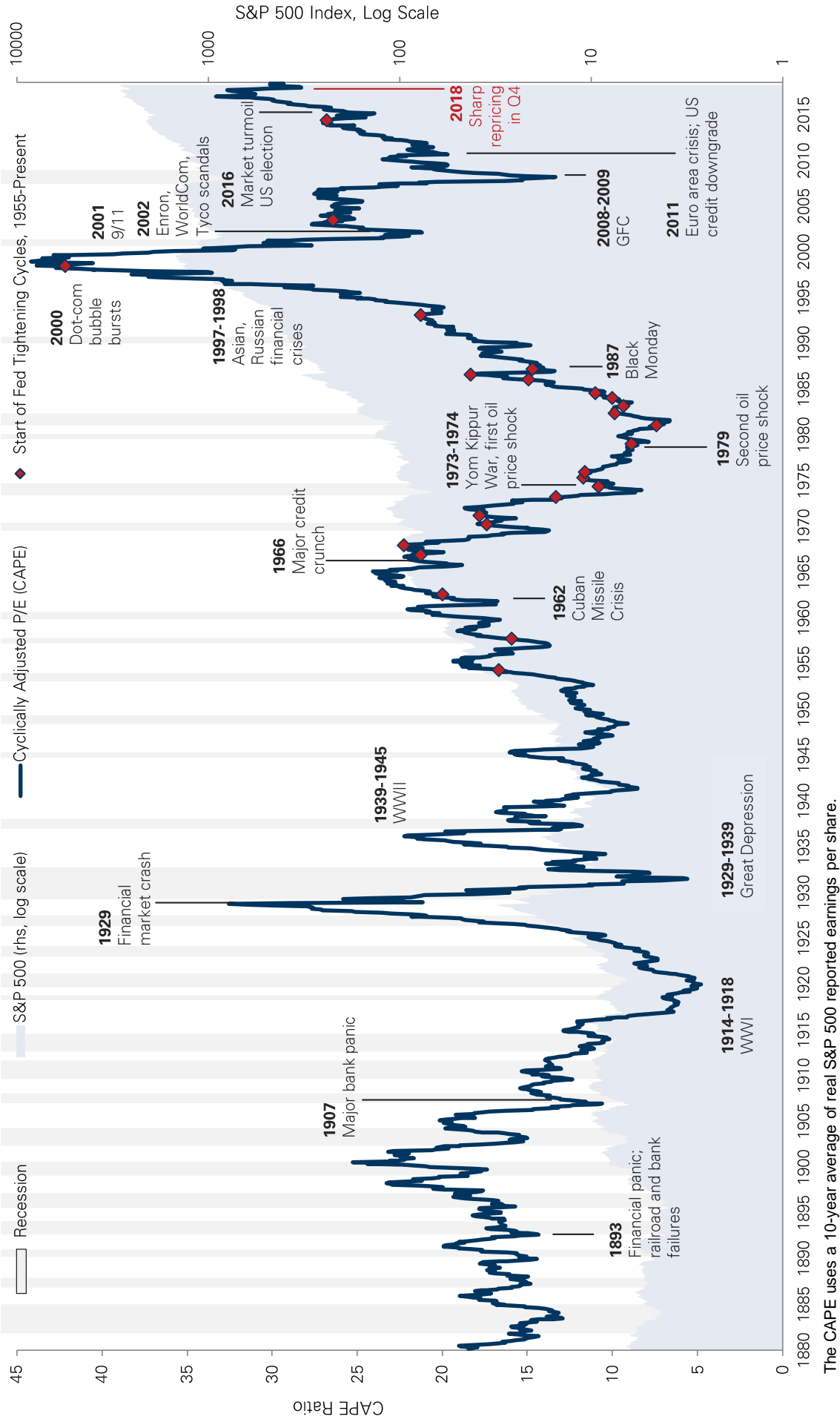
Source: Datastream, Haver Analytics, Goldman Sachs Global Investment Research.

...but better growth is likely needed to sustain the current rally



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

# Equity moves in context



The CAPE uses a 10-year average of real S&P 500 reported earnings per share. We define the start of a rate-hike cycle as the first hike after the policy rate has plateaued or been cut, using the discount rate from 1955-1971 and the federal funds rate thereafter. A rate-hike cycle ends either when the subsequent Fed move is a cut or when the policy rate is stable for the subsequent 12 months. We define a rate-hike cycle as lasting more than one month and including more than one hike.

Source: Robert Shiller, BEA, NBER indicators retrieved from FRED, Federal Reserve Board, Goldman Sachs Global Investment Research.



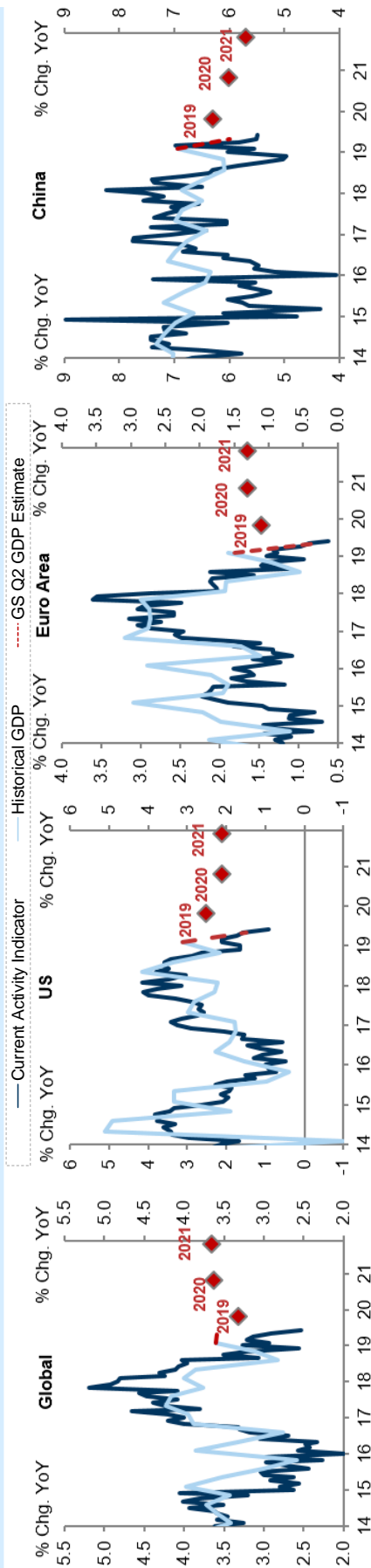
# Summary of our key forecasts

## Watching

- **Despite rising risks**, we still expect solid global growth of 3.3% in 2019, in line with consensus.
- **In the US**, we expect slightly above-trend growth of about 2.0% in 2H, with the impact of tighter financial conditions fading over time. The continued possibility of trade escalation skews risks to growth to the downside.
- **We think the Fed will cut rates twice this year**, likely in July and September. We expect moves in 25bp increments and that the funds rate will remain below 2% at least until the 2020 election.
- **In the Euro area**, we see GDP expanding at only a slightly above-potential pace of 1.25% in 2H, with geopolitical tensions and a weaker external environment, among other factors, weighing on growth; trade tensions and Italian budget frictions pose additional downside risks. Despite the coming change in the UK PM, we expect an orderly Brexit, most likely in late 2019/early 2020.
- **We expect the ECB to cut rates by 20bp, re-start net asset purchases, and deliver stronger forward guidance at its September meeting** given still-sluggish growth/inflation in the Euro area and recent dovish communication from ECB President Mario Draghi. The appointment of IMF chief Christine Lagarde to succeed Draghi points to continuity in ECB policy.
- **In China**, we expect full-year GDP growth of 6.3% in 2019, though trade tensions and weaker global growth pose downside risks.
- **WATCH TRADE**. Despite the current US-China trade truce, we still think it is more likely than not that the US imposes tariffs in the coming months before a limited agreement is reached late this year or early in 2020. We do not expect the Trump Administration to impose broad auto tariffs, and believe passage of the revised NAFTA (USMCA) is more likely than not by year-end.

Sources: Goldman Sachs Global Investment Research

## Growth



Sources: Haver Analytics and Goldman Sachs Global Investment Research. Note: GS CAI is a measure of current growth. For more information on the methodology of the CAI please see "Tracking All Over the World - Our New Global CAI." Global Economics Analyst, February 25, 2017.

## Forecasts

	Economics			Markets				Equities								
	2019		2020		Interest rates 10Yr (%)		E2020 FX		Last		E2020		E2020			
GDP growth (%)	GS	Cons.	GS	Cons.	US	Germany	Japan	UK	Last	E2019	E2020	GS	Cons.	GS	Cons.	
Global	3.3	3.3	3.6	3.3	2.05	-0.36	-0.15	0.72	1.12	1.15	1.20	3,000	--	--	--	
US	2.5	2.5	2.1	1.8	-0.36	-0.55	-0.20	-0.30	109	107	103	\$173	\$181	\$181	\$186	
China	6.3	6.2	6.0	6.0	-0.15	-0.30	-0.10	-0.10	6.9	7.05	6.80	6%	2%	4%	12%	
Euro area	1.1	1.1	1.3	1.3	0.72	0.70	1.10	\$/BRL	3.8	4.0	3.6					
Policy rates (%)	E2019		E2020		Commodities		Credit (bp)		Last		E2019		E2020		Equity Returns (%)	
US	1.88	1.69	2.13	1.55	Nat Gas (\$/mmBtu)	3.8	2.8	2.8	108	113	108	0.0	2.0	20.1	18.2x	
Euro area	-0.60	-0.56	-0.60	-0.54	Crude Oil, Brent (\$/bbl)	64.2	65.5	60	342	365	365	4.0	8.0	10.8	14.2x	
China	2.50	2.73	2.50	2.81	Copper (\$/mt)	5,809	6,400	7,000	112	119	119	2.0	6.0	6.6	13.7x	
Japan	-0.05	-0.18	-0.05	-0.20	Gold (\$/troy oz)	1,392	1,450	1,475	357	357	357	2.0	4.0	15.8	14.7x	

Sources: Bloomberg, Goldman Sachs Global Investment Research. For important disclosures, see the Disclosure Appendix or go to [www.gs.com/research/hedge.html](http://www.gs.com/research/hedge.html).

As of July 9, 2019.

# Glossary of GS proprietary indices

## Current Activity Indicator (CAI)

GS CAIs measure the growth signal in a broad range of weekly and monthly indicators, offering an alternative to Gross Domestic Product (GDP). GDP is an imperfect guide to current activity: In most countries, it is only available quarterly and is released with a substantial delay, and its initial estimates are often heavily revised. GDP also ignores important measures of real activity, such as employment and the purchasing managers' indexes (PMIs). All of these problems reduce the effectiveness of GDP for investment and policy decisions. Our CAIs aim to address GDP's shortcomings and provide a timelier read on the pace of growth.

*For more, see our CAI page and Global Economics Analyst: Trackin' All Over the World – Our New Global CAI, 25 February 2017.*

## Dynamic Equilibrium Exchange Rates (DEER)

The GSDEER framework establishes an equilibrium (or "fair") value of the real exchange rate based on relative productivity and terms-of-trade differentials.

*For more, see our GSDEER page, Global Economics Paper No. 227: Finding Fair Value in EM FX, 26 January 2016, and Global Markets Analyst: A Look at Valuation Across G10 FX, 29 June 2017.*

## Financial Conditions Index (FCI)

GS FCIs gauge the "looseness" or "tightness" of financial conditions across the world's major economies, incorporating variables that directly affect spending on domestically produced goods and services. FCIs can provide valuable information about the economic growth outlook and the direct and indirect effects of monetary policy on real economic activity.

FCIs for the G10 economies are calculated as a weighted average of a policy rate, a long-term risk-free bond yield, a corporate credit spread, an equity price variable, and a trade-weighted exchange rate; the Euro area FCI also includes a sovereign credit spread. The weights mirror the effects of the financial variables on real GDP growth in our models over a one-year horizon. FCIs for emerging markets are calculated as a weighted average of a short-term interest rate, a long-term swap rate, a CDS spread, an equity price variable, a trade-weighted exchange rate, and—in economies with large foreign-currency-denominated debt stocks—a debt-weighted exchange rate index.

*For more, see our FCI page, Global Economics Analyst: Our New G10 Financial Conditions Indices, 20 April 2017, and Global Economics Analyst: Tracking EM Financial Conditions – Our New FCIs, 6 October 2017.*

## Global Leading Indicator (GLI)

The GS GLI was designed to provide a timelier reading on the state of the global industrial cycle than existing alternatives did, and in a way that is largely independent of market variables. The GLI has historically provided early signals on global cyclical swings that matter to a wide range of asset classes. The GLI currently includes the following components: a consumer confidence aggregate, the Japan IP inventory/sales ratio, Korean exports, the S&P GS Industrial Metals Index, US initial jobless claims, Belgian and Netherlands manufacturing surveys, the Global PMI, the GS AUD and CAD trade-weighted index aggregate, global new orders less inventories, and the Baltic Dry Index.

*For more, see our GLI page and Global Economics Paper No. 199: An Even More Global GLI, 29 June 2010.*

## Goldman Sachs Analyst Index (GSAI)

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