Goldman Sachs | Global Macro Research

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TOP of MIND

WILL SLAYING INFLATION REQUIRE RECESSION?

In the fight to combat high inflation, the Fed and ECB have embarked on aggressive tightening paths. But how much damage to economic growth will they ultimately have to inflict to win this fight? At the core of this question in the US lies a heated debate about whether the Fed can rebalance an overheated labor market—a key requirement to tame inflation—without a sharp rise in unemployment. We speak with the Peterson Institute's Olivier Blanchard—who says "No"—and our own Jan Hatzius as well as other GS economists—who say "Yes"—and discuss the implications of these differing views for recession risk. Our strategists then assess what each view could mean for markets, with Blanchard's more hawkish scenario suggesting substantial downside for risk assets from here. As for Europe, Hatzius and Blanchard agree: the ECB will ultimately have to tighten less than the Fed to slay inflation, so the risk of a central bank-induced recession is larger in the US than in Europe. But Europe's energy crisis is nonetheless likely to push the region into recession, in our view.

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Some observers seem to be hoping for an immaculate conception outcome in which job openings decrease and unemployment doesn't increase, but I see zero probability of that outcome.

- Olivier Blanchard

I don't see compelling evidence of a structural mismatch between job openings and available workers… So, I think [labor market] overheating can be relieved by a reduction in job openings without a sharp rise in unemployment… While it's true that such an adjustment would be unprecedented, 2021 was also an incredibly unusual environment.

- Jan Hatzius

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Investors should consider this report as only a single factor in making their investment decision. For Reg AC certification and other important disclosures, see the Disclosure Appendix, or go to www.gs.com/research/hedge.html.

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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

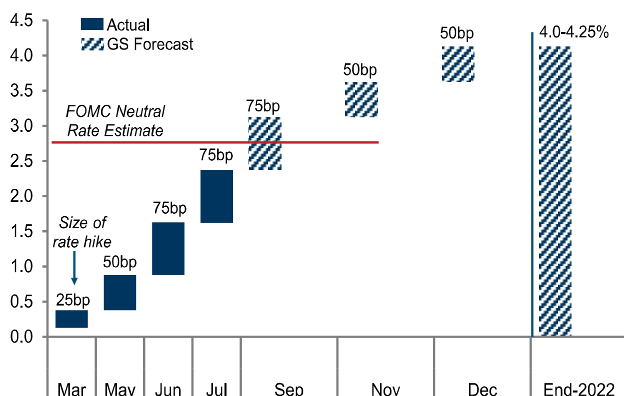
- We expect more Fed tightening (a 75bp hike in Sept vs. 50bp previously and 50bp hikes in Nov and Dec vs. 25bp hikes previously, for an end-2022 Fed funds rate of 4-4.25%) on the back of recent hawkish Fed commentary and an upside surprise in August CPI inflation data.

Datapoints/trends we're focused on

- Recession risk; we think the economy remains on a narrow path to a soft landing, but that any recession would be mild.
- Core PCE inflation, which we expect to fall to 4.2% by Dec-22, but ongoing firmness in shelter inflation poses upside risk.
- Jobs-workers gap, which currently stands at 5.2mn.

A more hawkish Fed tightening path

2022 rate hikes at FOMC meetings, %



Source: Federal Reserve, Goldman Sachs GIR.

Japan

Latest GS proprietary datapoints/major changes in views

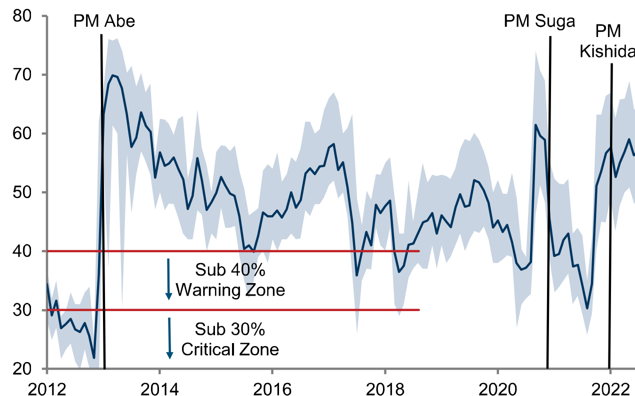
- We raised our 3Q22 real GDP forecast to 2.2% on solid capex demand.
- We raised our avg. core CPI forecasts to 2.2%/2.7% for 2022/23 to reflect upcoming price hikes for many food items and expectations of a weaker yen and higher LNG prices.

Datapoints/trends we're focused on

- Politics; we expect the Kishida Administration to continue to expand fiscal measures to tackle heightened inflation amid the recent sharp decline in the Cabinet's approval rating.
- Restarting nuclear power plants, which we expect would have only a limited impact on energy imports and the trade deficit.

The Kishida Cabinet's approval rating in steep decline

Administration's approval ratings, %



Source: Real Politics Japan, Goldman Sachs GIR .

Europe

Latest GS proprietary datapoints/major changes in views

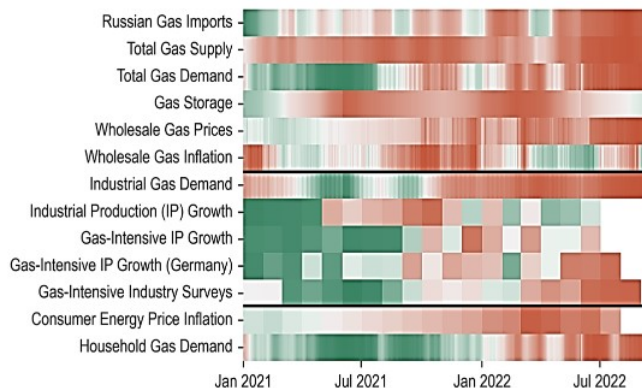
- We expect more ECB tightening (a 75bp hike in Oct vs. 50bp previously and a 50bp hike in Dec vs. 25bp previously for a 2.25% terminal rate) given high Euro area inflation and the hawkish tilt of other central banks.
- We expect more BoE tightening (50bp hikes at the next four meetings for a 4% terminal rate) following PM Truss' new energy bill freeze, which we expect to result in higher core inflation and wage growth while boosting GDP growth.

Datapoints/trends we're focused on

- EA growth; we expect a mild recession in 2H22, but recent gas tensions skew risk toward a more severe downturn, and leading indicators suggest IP cuts could be in the pipeline.

An intensified Euro area energy crisis

Euro area energy crisis dashboard, percentile (0-100: red-green)



Source: Bloomberg, Haver Analytics, Eurostat, Goldman Sachs GIR.

Emerging Markets (EM)

Latest GS proprietary datapoints/major changes in views

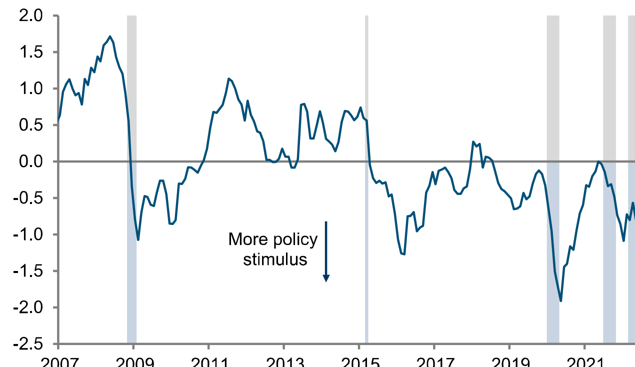
- We recently lowered our 2022 China GDP forecast to 3% on weaker-than-expected July data and energy constraints.
- We recently raised our 2022 CEEMEA GDP forecast to 2.2% due to better-than-expected regional growth in 1H22.
- We recently lowered our CY2022 India growth forecast to 7% following weaker-than-expected growth in Q2.

Datapoints/trends we're focused on

- China macro policy, which continues to ease as the economy faces headwinds from Covid and weak property demand and may persist after Oct's 20th Party Congress.
- EM inflation, which we expect to peak in coming months, but remain higher for longer in LatAm and CEEMEA.

Macro policy in China continues to ease

China domestic macro policy proxy, z-score



Note: Shaded areas refer to periods when China CAI 3mma growth was below 5.5%.

Source: Haver Analytics, Wind, CEIC, Goldman Sachs GIR.

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Will slaying inflation require recession?

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In the fight to combat high inflation, US and European central banks have embarked on aggressive tightening paths that seem all but guaranteed to continue in the near term, especially given the hotter-than-expected August US CPI report. But how much damage to economic growth will they ultimately have to inflict to win this fight? In the US, a heated debate has emerged about whether the Fed can rebalance an overheated labor market—a key requirement to tame inflation—without a sharp rise in unemployment. And in the Euro area, the ECB is stuck between a rock and a hard place as the region remains in the throes of an energy crisis that is both weighing on growth and contributing to high inflation. How much more tightening will be needed to lower inflation, whether that will spark a recession, and what that means for markets, is Top of Mind.

We speak with Olivier Blanchard, former Chief Economist of the IMF, and Jan Hatzius, GS Head of Global Investment Research and Chief Economist, who are on opposite sides of the US labor market debate. Blanchard sees no chance of job openings declining without a large increase in unemployment. He points to the historical record, in which a substantial decline in job vacancies has never occurred without a sharp increase in unemployment. And, he says, it's obvious that firms react to economic downturns both by decreasing hiring and laying off workers. He also believes that the recent deterioration in match efficiency—the process through which unemployed workers match with open positions—will persist, so we can't expect its improvement to allow job vacancies to decline without a significant rise in unemployment this time around.

Hatzius, for his part, is more optimistic that the labor market can rebalance without a sharp rise in unemployment. While he concedes that this has never happened before, he argues that pandemic-era shifts in demand and supply that led to substantial labor market overheating were also unprecedented. And he believes that as these shifts unwind in the post-pandemic era, job vacancies can decline without a substantial rise in unemployment, finding favorable evidence for this view in the recent data.

GS senior US economist Joseph Briggs provides more detail around Hatzius' optimistic view, laying out the case for why the decline in match efficiency Blanchard sees as structural could be temporary—the result of Covid fears and generous unemployment benefits that discouraged unemployed workers from applying for jobs during the pandemic. As these factors continue to diminish, Briggs expects match efficiency to improve, which, he argues, should reduce the scope for a sharp increase in unemployment alongside a decline in job openings, especially given the current tightness in the labor market.

Given the above differences in view, Blanchard and Hatzius also disagree on whether inflation can be tamed without a meaningful rise in unemployment, and what that means for the growth outlook. Blanchard argues that a structural decline in match efficiency has pushed up the natural rate of unemployment (NAIRU) to the 4.5-5% range, meaning that unemployment must rise to at least that level for the labor market to stop putting pressure on inflation. But he argues that even that may not be enough to tame inflation given slightly unanchored inflation expectations in the US today and the wage-price spiral that has been unleashed by higher commodity prices. So, he sees some possibility of the unemployment rate having to rise to as high as 6%, or more, which would spark a fairly severe recession.

In contrast, Hatzius and David Mericle, GS Chief US Economist, believe that inflation can ultimately be tamed even assuming that unemployment peaks at roughly 4% by end-2024. They point out that improvements in some supply chain measures and recent declines in commodity prices are delivering a long-awaited disinflationary impulse from the goods sector, which should substantially bring down inflation more broadly. That said, they note that services inflation continues to run very hot, and are closely watching wage growth—which is still way too high—and shelter inflation—which is likely to remain elevated for some time in the official data.

On net, recent inflation, labor market, and growth trends leave Hatzius "not necessarily confident, but a little more confident" than he was earlier this year that the Fed can pull off a soft landing, even as the Fed's inflation-fighting commitment has led him and Mericle to expect more near-term rate hikes and a higher end-2022 Fed funds rate of 4-4.25%, with the risks to those expectations still skewed to the upside. And while they still put the probability of recession at 30% over the next 12 months and close to 50% over the next 24 months, they think that any such recession would likely be mild.

So, what could this all mean for markets? Praveen Korapaty, GS Chief Interest Rates Strategist, discusses the risks to US Treasury yields, arguing that risks to front-end yields and, to a lesser extent, 10y yields, are skewed to the upside given the potential for the Fed hiking cycle to extend into 2023, which would deepen yield curve inversion. And GS market strategists Dominic Wilson and Vickie Chang explore what Blanchard's more hawkish near-term scenario would mean for risk assets, finding that it would weigh on them significantly, with the S&P 500 potentially declining to just below 2900 as financial conditions tighten sharply—a large decline from recent peaks, but firmly in the range of past instances of severe recessions.

As for Europe, one thing Hatzius and Blanchard do agree on is that the ECB will ultimately have to tighten less than the Fed to combat inflation. They both note that labor markets in the Euro area look less overheated than in the US, which has led to a weaker wage-price spiral. And while concerns abound about the inflation impacts of high natural gas prices, Blanchard argues that energy price caps enacted by many governments to shield households from higher energy bills will limit pass through to inflation. Although someone will ultimately have to pay the price for this, neither Hatzius nor Blanchard are that worried about the fiscal consequences of these short-term policies. That said, while the ECB hiking cycle is likely to prove shallower than the Fed's, GS economists see higher recession risk in the Euro area than in the US, and, indeed, forecast a near-term Euro area recession. But this recession will owe more to the ongoing energy crisis than to central bank actions, unlike in the US, where the most likely cause of a near-term recession is Fed actions required to slay inflation.

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Interview with Olivier Blanchard

Olivier Blanchard is the C. Fred Bergsten Senior Fellow at the Peterson Institute for International Economics and Robert M. Solow Professor of Economics emeritus at MIT. He formerly served as Chief Economist of the International Monetary Fund. Below, he argues that job openings won't decline without a sharp increase in unemployment, making it difficult for the Fed to tame inflation without at least a mild recession, and possibly a fairly severe one.

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

Allison Nathan: A key indicator of tightness in the US labor market today is an exceptionally high number of job openings. You recently expressed skepticism that openings can decline without the unemployment rate rising materially. Why?

Olivier Blanchard: Some observers seem to be hoping for an immaculate conception outcome in which job openings decrease and unemployment doesn't increase, but I see zero probability of that outcome. The historical relationship between job openings, or vacancies, and unemployment—known as the Beveridge Curve—is crystal clear: the job vacancy rate has never substantially declined without a significant increase in unemployment. Admittedly, the current level of vacancies is unprecedented, so we are in uncharted territory, but common sense says that as a firm's sales decline, it stops or slows hiring and lays off workers. Some firms may start by decreasing hiring because it's easier to cancel job interviews than to make layoffs, and some firms may do more of one than the other, but it's absolutely obvious that, if activity declines, firms will do both, which means that vacancies will decline, and unemployment will rise. That's such basic evidence and logic that I wish it was more widely shared.

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Allison Nathan: But isn't the high level of job openings today largely the result of a pandemic-related decline in match efficiency—the process through which unemployed workers match with open positions—as Covid fears and generous unemployment benefits led fewer people to look for jobs? And if that's the case, isn't it possible that as those temporary factors unwind, job vacancies can decline without a substantial rise in unemployment?

Olivier Blanchard: A year and a half ago, I would've said that the sharp short-run shifts in demand during the height of the pandemic and the generous unemployment benefits together explained why it was difficult to fill job openings. But the most intense part of Covid has come and gone, unemployment checks are less generous, and yet match efficiency hasn't meaningfully improved. Intersectoral reallocation is still high as workers are moving across sectors, and many sectors are having a hard time finding workers. The restaurant industry, for example, is unable to find workers, presumably because they're now employed or looking for jobs in other sectors. And workers have become choosier about jobs—they're not taking offers from firms if they don't love the firm. So, while I would not be surprised if some unwinding of these dynamics occurred, much of this mismatch is likely here to stay for some time. In the past, these types of shifts have persisted for a decade or more—until another shock came along. The evidence suggests that we can't expect improving match efficiency to drive a meaningful decline in vacancies without a sharp rise in unemployment.

Allison Nathan: Isn't the sharp decline in job openings since their March peak at the same time that the unemployment rate hasn't changed much evidence that a decline in job openings doesn't have to be accompanied by an increase in the unemployment rate?

Olivier Blanchard: No. This is a well-known phenomenon known as Beveridge loops—countries "loop" around the Beveridge Curve when the economy turns because firms first react to a slowdown by decreasing hiring rather than laying off workers, so vacancies fall without much movement in unemployment. But these loops don't last long, because eventually firms start to do both. That said, if the trend of vacancies falling without unemployment rising much persisted for another few months, I would start questioning my conclusions. For the moment, I have little doubt that unemployment will increase as the Fed takes further steps to cool the economy.

Allison Nathan: More broadly, can inflation be tamed without unemployment rising?

Olivier Blanchard: I wish, but no. Three factors are behind the increase in US inflation, all of which argue for an increase in unemployment.

One, the decrease in match efficiency means that the natural rate of unemployment has increased, because more unemployment is needed to match workers with any given number of vacancies. Assuming the pre-Covid unemployment rate of 3.5% was roughly the natural unemployment rate, Larry Summers, Alex Domash, and I estimate that the natural rate of unemployment is now somewhere in the 4.5-5% range. So, the economy at the current 3.7% unemployment rate is overheating, putting pressure on inflation.

Two, the increase in commodity prices has resulted in a wage-price spiral as firms have increased prices to reflect higher input costs, workers have demanded commensurate pay increases and received them due to their strong bargaining position in the current tight labor market, and firms have further raised prices in turn. Whether this spiral continues depends on what happens to commodity and energy prices. If they were to decline sufficiently, the pressure might go away. Otherwise, as is more likely, taming the wage-price spiral will require unemployment in excess of the natural rate.

And three, inflation expectations have become slightly unanchored today, and the more unanchored expectations

become, the higher the unemployment required to convince firms and workers that form decisions based on expectations that the Fed will achieve its 2% inflation target.

The last two factors together mean that unemployment probably needs to rise above its estimated natural rate of 4.5-5% to tame inflation. How far above is difficult to say, but I wouldn't be surprised if unemployment needs to rise to 6%, and I put a small but non-zero probability on 7%.

Allison Nathan: So, do you see a US recession as likely, or even inevitable, at this point?

Olivier Blanchard: It depends on how high and quickly unemployment rises. Under the optimistic assumption that unemployment needs to reach only 5% to rein in inflation, Okun's Law—the relationship that says a 1pp increase in the unemployment rate is associated with a 2% decline in real GDP growth relative to trend—suggests that growth will need to decline by 2.5-3% relative to normal for unemployment to rise by the necessary 1.3pp from its current level. Assuming that normal growth is on the low side of 3% and the Fed wants to achieve this in a year, a mild recession is probably necessary.

However, the Fed has some leeway in how fast it fights inflation, and the recent decline in commodity prices that will push inflation lower into year-end—while not sufficient to get to its 2% inflation target—may provide some room for the Fed to move slower without sacrificing its inflation-fighting credibility, potentially sparing the economy from a recession. And if the Fed is willing to tolerate moderately higher inflation—say 3% rather than 2%—then a recession may also be avoided. So, the Fed can use time and an implicit adjustment to its target to try to calibrate the hit to growth. That said, if unemployment must rise to as high as 6-7%, the only way to avoid a recession would be to lower inflation over 3-4 years, which would likely be untenable given the damage it would inflict to the Fed's credibility. So, if that rate of unemployment is required to rein in inflation, then a fairly severe recession would be unavoidable.

Allison Nathan: What does this all imply for the path of the Fed funds rate ahead?

Olivier Blanchard: Precisely how high the Fed funds rate will need to rise to achieve the necessary amount of growth slowdown and unemployment increases is difficult to say because it will depend on the intrinsic strength of private demand and fiscal policy. A substantial fiscal consolidation is underway in the US. The effect of this consolidation is partly offset by the fact that consumers have built up savings during the pandemic that they can spend, but fiscal consolidation will play some role in slowing demand, and the larger role it plays, the less the Fed will have to increase rates. That said, given the strength of US demand today, the Fed will likely have to do more than markets currently assume.

Allison Nathan: How does the growth-inflation tradeoff differ for the ECB, and what does that mean for policy?

Olivier Blanchard: On both inflation and growth grounds, I see less of a need for higher interest rates in the Euro area relative to the US. On the inflation front, important differences exist between the two sides of the Atlantic in each of the factors driving inflation. Labor markets in the Euro area generally aren't overheated—unemployment is closer to its natural rate, so there's no similar labor demand-supply imbalance pushing up inflation. The wage-price spiral is weaker, implying that most of the inflation in the region is coming from commodity prices, in particular energy prices. That's good news in the face of declining energy prices, with the notable exception of natural gas, but the impact of that on inflation is somewhat limited by price caps. The governments of many countries have decided to separate market prices from consumer prices by putting caps on price increases. While that adds to a country's fiscal deficit because governments must pay the difference between the market rate and the cap price, it limits inflation. And, finally, inflation expectations in the Euro area are relatively stable. Taken together, this suggests that it will be easier for the ECB to reduce inflation than it will be for the Fed.

And on the growth front, the necessary slowdown in growth is more likely to happen in the Euro area compared to the US without the central bank engineering it. Much of the energy is imported, so the increase in prices translates into a loss of real income for the Euro area as a whole. This decrease in real income is likely to slow down demand, independent of interest rates. This suggests that the Euro area needs less monetary tightening than the US to bring inflation back to target.

Allison Nathan: Even if that's the case, isn't the ECB in a tougher position than the Fed given the exceptional growth and inflation risks the Euro area is facing from the prospect of severe natural gas shortages?

Olivier Blanchard: Assuming, as I do, that Russia will eventually stop sending gas to Europe and Europe won't be able to fully make up that loss through gas imports from other countries, the region may very well experience a mild supply-side recession as industrial production is forced lower by gas shortages. But the ECB can't and shouldn't do anything about a supply-side recession, in the same way that central banks couldn't help the economy much during Covid lockdowns. So, it's not great news for the European economy, but there's not much the ECB can or should do about it.

Allison Nathan: Are you worried about the effect of such a scenario on European debt dynamics? If governments continue to subsidize energy consumption, won't that put significant pressure on countries' fiscal positions?

Olivier Blanchard: Larger fiscal deficits in the short run, say, over the course of the coming winter, to shield households from the pain of higher energy prices are probably not problematic, and are worth it given the lower inflation and distributional benefits. Of course, such deficits, if they were to continue, would eventually become challenging, especially for countries like Italy that have less fiscal room. But I don't expect the current situation in European natural gas markets to prove long-lasting, so I am not very concerned about the region's public debt dynamics at this point.

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Interview with Jan Hatzius

Jan Hatzius is Head of Global Investment Research and Chief Economist at Goldman Sachs. Below, he argues that the US economy shows some early signs of heading towards a soft landing that sees lower inflation without a sharp rise in unemployment.

Allison Nathan: Are you more or less confident that the Fed can achieve a soft landing than you were when we last spoke in March, just as it had begun to embrace a decidedly more hawkish stance?

Jan Hatzius: We have long argued that the path to a soft landing is narrow, because it requires that the Fed slow GDP growth enough to relieve the pressure in the overheating areas of the economy, especially in the labor market, without pushing growth into contractionary territory, which is undoubtedly a tall order. But, while we put the probability of a recession at about 30% over the next 12 months and close to 50% over the next 24 months, I am a little more confident than I was earlier this year that the Fed will be able to achieve a soft landing, because we've seen some progress in this direction. First, the slowdown in growth to a clearly below-trend, but still positive, pace is much more of a fact and less of a forecast than it was earlier in the year. Indicators of consumer spending, housing activity, and consumer confidence now provide clear evidence that growth has slowed materially. This below-trend growth will need to persist to pull off a soft landing, and that will largely need to be achieved through financial conditions, which, after some volatility this year, today seem to be at about the right level of tightness to maintain below-trend, but still positive, growth.

Second, despite the higher-than-expected US CPI for August, some inflation indicators have improved. Commodity prices have declined sharply, which has yet to fully feed through to CPI, and the Dollar has strengthened substantially, which has yet to fully show up in import and consumer goods prices. Supply constraints are also generally improving, which is apparent in measures like suppliers' delivery times in the PMIs as well as anecdotally; corporates that I speak with generally say that supply bottlenecks are unclogging. That said, services inflation continues to run very hot. In particular, despite some incipient signs of deceleration in rent inflation for new leases, it will likely take a lot longer for rent and owners' equivalent rent to return to more normal levels in official inflation measures. And, while wage surveys conducted by the Federal Reserve banks and other organizations like the National Federation of Independent Businesses point to some nascent signs of a deceleration in wage growth, it is clearly way too high at the moment.

Beyond wages, the labor market more broadly has shown early signs of adjustment, with employment growth starting to decelerate, and some decline in job openings and quits rates. Many of these shifts admittedly remain quite tentative, but they are nonetheless more visible than they were three or six months ago. So, I'm not necessarily confident that the Fed will pull off a soft landing, but I am a little more confident than I was.

Allison Nathan: Even if the labor market has begun to adjust, some observers argue that matching open jobs with people looking for jobs has become structurally harder, suggesting that NAIRU has moved higher—potentially to the 4.5-5% range—and that unemployment will likely have to rise above that level to break the wage-price spiral, potentially as high as 6+%. Do you agree?

Jan Hatzius: I agree that the labor market is very overheated, although these days I prefer to assess the labor market balance through the lens of the jobs-workers gap rather than the indicators many economists and I, myself, were focused on a couple of years ago, including the unemployment rate, the unemployment rate relative to the natural rate, and the employment-population ratio, because those indicators don't provide the full picture and therefore failed to foresee the large inflation surge in 2021. The relationship between total number of jobs and total number of workers is a more intuitive and simpler measure of labor market balance. And while the jobs-workers gap is exceptionally large and clearly shows overheating in the labor market, I don't see compelling evidence of a structural mismatch between job openings and available workers. Rather, we've found that matching workers with jobs became harder during the pandemic largely because Covid fears and generous unemployment benefits kept a large share of unemployed workers from applying for jobs. So, I think this overheating can be relieved by a reduction in job openings without a sharp rise in unemployment, and we forecast unemployment to peak at around 4% by end-2024.

Allison Nathan: Reducing job openings without a sharp rise in unemployment has never happened before, so why are you confident that it doesn't need to happen this time?

Jan Hatzius: While it's true that such an adjustment would be unprecedented, 2021 was also an incredibly unusual environment. GDP grew at its fastest pace relative to potential in at least four decades, and supply, and labor supply in particular, was exceptionally constrained by the pandemic-related effects I mentioned. But these trends are reversing in the current post-pandemic environment. Demand has slowed significantly, and supply is improving. As the labor market moves to a lower level of utilization in this environment, we think it can rebalance in a way that is substantially tilted towards a decline in job openings rather than towards an increase in the unemployment rate.

Recent data is favorable to this view. The job openings rate is down 0.4pp since March—the biggest decline observed in history outside of recession—even after the somewhat surprising increase in job openings reported in the July JOLTS survey. The quits rate has declined by 0.2pp since March and employment growth as reflected in payrolls, the household employment survey, and the ADP is still solid but showing some signs of deceleration. At the same time, the unemployment rate has risen only modestly, and even that increase was driven by a rise in labor force participation.

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Together, this provides encouraging signs that job openings can decline without a massive increase in the unemployment rate.

Allison Nathan: Isn't it too soon to take comfort from the recent data because companies will naturally cancel interviews before they lay off workers in a downturn? So, wouldn't we expect the recent pattern even if unemployment is ultimately set to rise sharply?

Jan Hatzius: It's certainly possible that the downturn could prove to be deeper than we expect and today's decline in job openings turns into tomorrow's layoffs. If the roughly 1% growth we're currently experiencing is only an intermediate step towards, say, -2% growth, that would clearly be the case. But no law of nature says that once growth is at 1%, it must go to -2%, so a sharper downturn isn't necessarily ahead.

Allison Nathan: More broadly, if the high number of job openings relative to the number of workers looking for a job can be mostly attributed to temporary pandemic-related effects, are you concerned that we haven't seen more normalization by now given that many of these effects are largely behind us?

Jan Hatzius: I'm not that concerned. These adjustments tend to happen in stages, and the deceleration in growth has only occurred over the last couple of quarters—growth was still very strong in 4Q21. And lags in reporting mean that such shifts take a while to show up in the data. It's hard to be confident about the timeline, and these adjustments likely won't happen in a straight line. But I wouldn't say that we should have seen more of them by now.

Allison Nathan: So, you think it's possible to tame inflation without unemployment rising much?

Jan Hatzius: Yes. In addition to the labor market rebalancing without a sharp rise in unemployment that we expect, the temporary forces that drove a large part of the pandemic-era inflation pressure are now abating. Goods inflation is clearly lessening. That could prove short-lived if energy prices surge again, but supply bottlenecks increasingly seem to be behind us for good. Dollar appreciation doesn't look like it's reversing anytime soon. And the rent and services side of the economy, while further behind, also look to be at least heading in the right direction. All of that is happening alongside a still sub-4% unemployment rate.

The key question is whether these shifts are sufficient to bring inflation down to the Fed's 2% inflation target or something more like 2.5% or 3%, which I see important differences between. At 3%, my sense is the Fed would probably be inclined to tighten more. At 2.5%, I think it would seriously consider staying put as long as inflation trends don't appear to be reaccelerating. That's taming inflation, in my view, even if inflation doesn't return all the way back to 2%.

Allison Nathan: In the context of this soft landing, we now expect the Fed to hike rates to 4-4.25% by end-2022 and maintain that level of the Fed funds rate through 2024. How are the risks around that expected path skewed?

Jan Hatzius: The risks are skewed to the upside in the near term. While a sharp downturn in activity could cut the cycle short, the bigger risk is that inflation proves more stubborn than we expect and/or the Fed doesn't feel sufficiently confident that it has slayed inflation by year end, causing the hiking cycle to extend into 2023. By mid-2023, the balance of risk is probably to the downside, albeit potentially from a higher level, because once tightening ends, there's risk that an easing cycle could ensue. So, some yield curve inversion makes sense.

Allison Nathan: If we do need to see more aggressive Fed action and we end up in a Fed-induced recession in the US, how severe is it likely to be?

Jan Hatzius: I don't think it would be particularly severe. The presumably high level of job openings at the start of the recession suggests that labor market multipliers would be less than in prior cycles. We've found that a given hit to activity has a smaller impact on employment when the jobs-workers gap is large. And if the labor market holds up better, that will short-circuit some of the unfavorable dynamics that can deepen a recession. Private sector balance sheets also look relatively healthy, which should provide some cushion against negative multiplier effects. That said, it's hard to be very confident—we shouldn't rule out the risk of "unknown unknowns".

Allison Nathan: How does the growth-inflation tradeoff for the ECB compare to that of the Fed?

Jan Hatzius: I see similarities as well as differences. Headline inflation is not that different between the US and Europe. But Euro area labor markets look less overheated and wage growth in the region has not increased anywhere near the degree that it has in the US. Risk of significant deterioration in periphery credit quality also suggests a bigger tightening in financial conditions for a given increase in the Euro area deposit rate.

That said, inflation is still rising in the Euro area versus probably falling in the US. And the ECB is probably a fundamentally more hawkish institution. When we compare ECB statements to those of other major G10 central banks, word counts are much more tilted towards inflation-related language than growth-related language. The ECB also seems to be more concerned about inflation expectations than the Fed, which is consistent with the ECB's greater focus on inflation, but also likely relates to the fact that the US has a somewhat longer history of anchored inflation expectations than the Euro area, and especially the periphery. Together, these factors suggest continued aggressive tightening from the ECB in the near term, but ultimately a shallower hiking cycle than the Fed. We forecast a terminal ECB rate of 2.25%.

Allison Nathan: European governments have increasingly stepped in to shield households from surging energy prices. Are you concerned about the fiscal impacts of this?

Jan Hatzius: I'm not that worried about the fiscal consequences because these policies are intended to be temporary. If they become embedded in the system and no efforts are made to create or source additional gas supply over the medium term, that would be more problematic. But given the extreme projected increases in, for example, UK utility bills, using public balance sheets to address this type of short-term emergency is a reasonable response.

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A snapshot of US inflation

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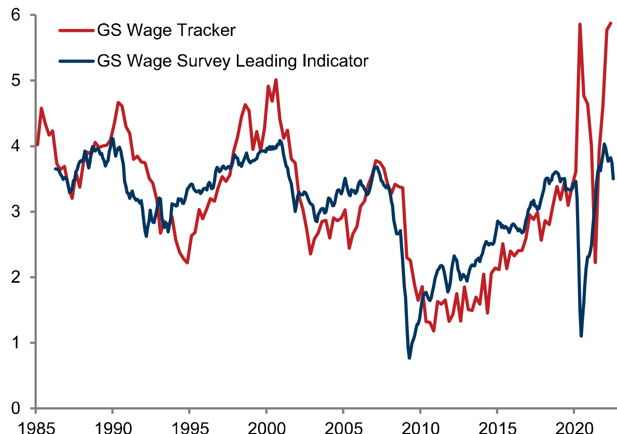
Wage growth is high, but looks set to slow somewhat

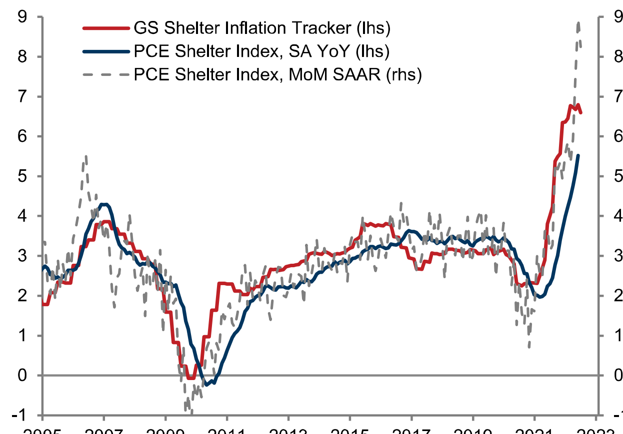
Percent change, year ago



The GS Wage Tracker extracts a common signal from ECI, avg hourly earnings, comp/hour, median weekly wages, and the Atlanta Fed's Wage Tracker. The Wage Survey Leading Indicator extracts a common signal from surveys of consumers & businesses that ask qs about expected income & wage growth.

Shelter inflation has been persistently high

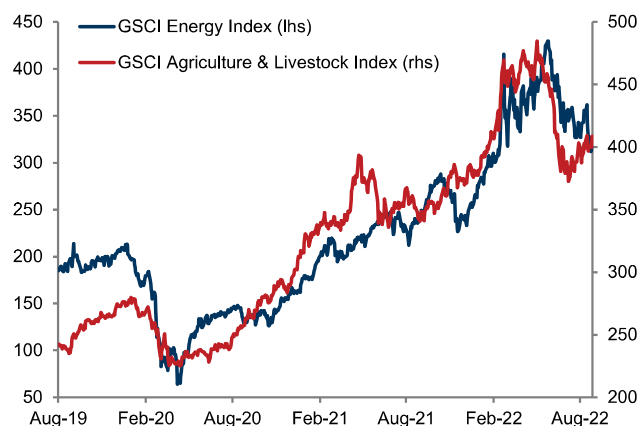
Percent change, year ago (lhs), annual rate (rhs)



The GS Shelter Inflation Tracker is the weighted average of four alternative rent measures: Zillow Observed Rent Index, CoStar National Asking Rent, REIS Effective Rent per Apartment, and Census Vacant Multifamily Median Rent.

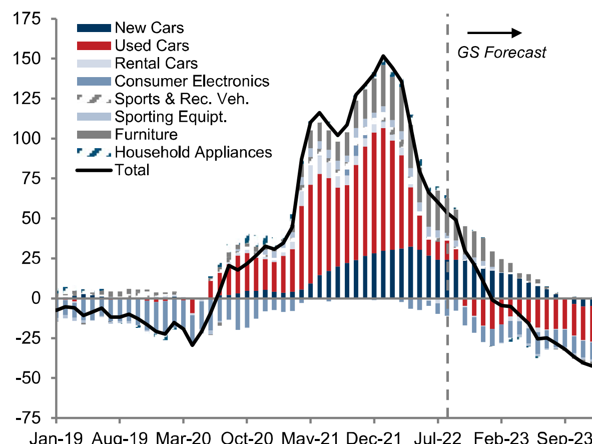
Commodity prices have come down from recent highs

Dec 31, 1982 = 100 (lhs), Jan 2, 1970 = 100 (rhs)



Inflation from supply-constrained categories has fallen sharply

Contributions to year-on-year core PCE inflation, bp



We expect the disinflationary impulse from core goods to help reduce core PCE to 4.2% by Dec-22 and 2.6% by Dec-23

GS core PCE inflation forecast

		July 2022	Dec. 2022		Dec. 2023	
	Weight	YoY	YoY	Contribution to Change	YoY	Contribution to Change
Core PCE	**100.0**	**4.6**	**4.2**	**-0.4**	**2.6**	**-2.0**
Core Goods	**27.6**	**5.4**	**3.0**	**-0.7**	**-1.5**	**-1.7**
New Vehicles	*2.6*	10.5	7.4	-0.1	-2.1	-0.3
Used Vehicles	*1.6*	4.7	-10.7	-0.2	-17.0	-0.3
Household Appliances	*0.5*	5.0	0.5	0.0	0.7	0.0
Video, Audio, Computers	*2.4*	-2.9	-4.3	0.0	-5.1	0.0
Recreational Vehicles	*0.7*	3.3	2.5	0.0	1.1	0.0
Jewelry, Watches	*0.8*	0.7	0.1	0.0	0.3	0.0
Clothing & Footwear	*3.3*	4.9	4.3	0.0	0.7	-0.1
Pharma & Medical	*4.2*	3.3	3.6	0.0	-0.2	-0.1
Pets Products	*0.7*	8.9	8.9	0.0	2.8	0.0
Expenditures Abroad	*0.1*	-3.6	-7.9	0.0	-1.1	0.0
Residual Core Goods	*10.7*	7.6	5.2	-0.3	-0.4	-0.7
Core Services	**72.4**	**4.2**	**4.6**	**0.3**	**3.9**	**-0.2**
Housing	*17.1*	5.9	6.9	0.2	4.8	-0.2
Ground Transportation	*0.3*	-0.3	2.9	0.0	2.2	0.0
Air Transportation	*1.0*	18.7	20.9	0.0	-1.0	-0.2
Food Services & Accommodation	*8.0*	5.6	6.0	0.0	4.4	-0.1
Financial Services & Insurance	*8.4*	-1.5	-1.0	0.0	3.0	0.4
Medical Services	*17.8*	2.4	2.2	0.0	3.1	0.1
Foreign Travel	*1.4*	12.0	15.6	0.0	4.1	-0.1
Residual Core Services	*18.5*	5.5	5.6	0.0	4.4	-0.2

We expect sharp declines in both core and headline CPI by the end of the year and into 2023

GS core and headline CPI inflation forecasts

		August 2022	Dec. 2022		Dec. 2023	
	Weight	YoY	YoY	Contribution to Change	YoY	Contribution to Change
Core CPI	**100.0**	**6.3**	**5.8**	**-0.6**	**2.7**	**-3.6**
Apparel	*3.1*	5.0	4.1	0.0	0.6	-0.1
New Cars	*5.2*	10.1	7.0	-0.2	-2.1	-0.6
Used Cars	*5.2*	7.8	-2.7	-0.5	-14.6	-1.2
Medical Care Commodities	*1.9*	4.1	4.0	0.0	-0.2	-0.1
Health Insurance	*1.1*	24.3	14.2	-0.1	-15.4	-0.4
Medical Services ex Insurance	*7.6*	3.1	3.4	0.0	3.7	0.0
Pets	*1.4*	10.1	9.0	0.0	2.8	-0.1
Household Furnishings + Ops.	*6.1*	9.9	7.9	-0.1	3.4	-0.4
Personal Care	*2.8*	6.1	6.7	0.0	3.6	-0.1
Rent + OER	*39.8*	6.4	6.9	0.2	4.8	-0.6
Public Transportation	*1.2*	21.1	25.9	0.1	5.6	-0.2
Private Transportation Services	*6.3*	9.6	10.0	0.0	10.1	0.0
Miscellaneous goods and services	*18.3*	5.2	5.6	0.1	4.3	-0.2
Headline CPI	**100.0**	**8.2**	**6.8**	**-1.5**	**2.5**	**-5.8**
Core CPI	*77.7*	6.3	5.8	-0.4	2.7	-2.8
Food	*13.5*	11.4	10.7	-0.1	5.6	-0.8
Energy	*8.8*	23.9	10.0	-1.2	-4.8	-2.5

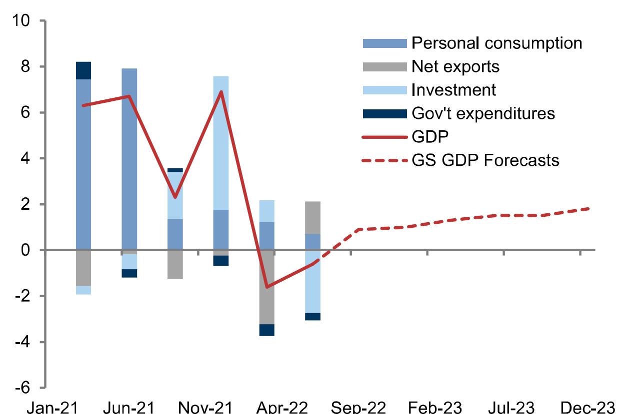
Source for exhibits: Department of Commerce, Census Bureau, CoStar, Zillow, REIS, S&P, University of Michigan, Federal Reserve, Goldman Sachs GIR.

Special thanks to US economics team for charts; see latest US Monthly Inflation Monitor here.

A healthy deceleration, not a recession

Despite two consecutive quarters of negative growth…

US real GDP annualized quarterly growth, percent



Source: Haver Analytics, Goldman Sachs GIR.

…most NBER recession indicators have been positive

NBER Recession Indicators		
Most Important		
Monthly		
	Recent Trend**	As of
Nonfarm payrolls*	3.0%	August
Real personal income ex. Transfers	1.2%	July
Quarterly		
Real GDP	-0.6%	Q2
Real GDI	1.4%	Q2
Less Important		
Monthly		
Industrial Production	1.9%	July
Real manufacturing and trade sales	-3.7%	June
Household employment	0.8%	August
Aggregate weekly hours index	2.2%	August
Monthly real PCE	0.6%	July

*The business cycle dating committee reports that these are the "two measures [they] have put the most weight on" in recent decades.

**For monthly indicators, we report the three-month annualized percent change. For quarterly indicators, we report the latest quarter-on-quarter annualised rate.

Source: Haver Analytics, NBER, Goldman Sachs GIR.

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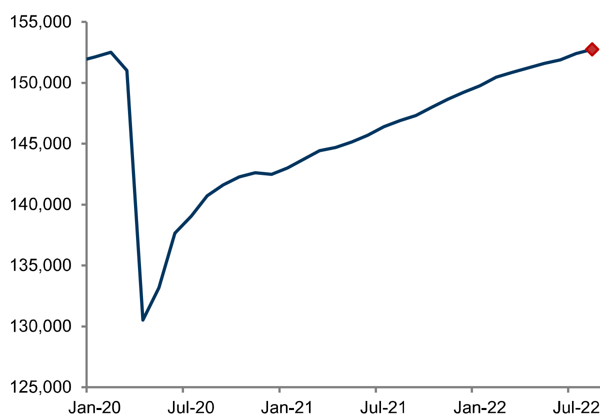
Nonfarm payrolls have grown at a relatively rapid pace…

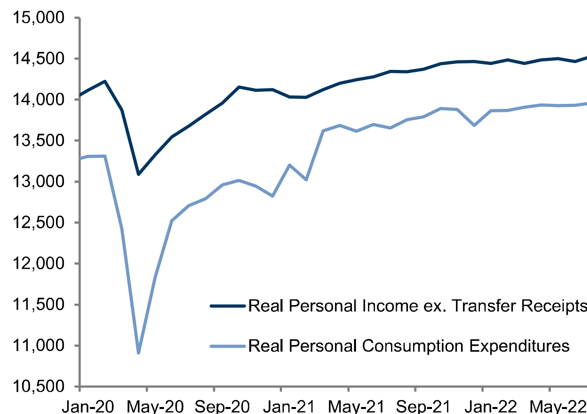
Nonfarm payrolls, monthly



Source: Department of Labor, Goldman Sachs GIR.

…while consumer spending and real income have continued to rise, although at a slower pace

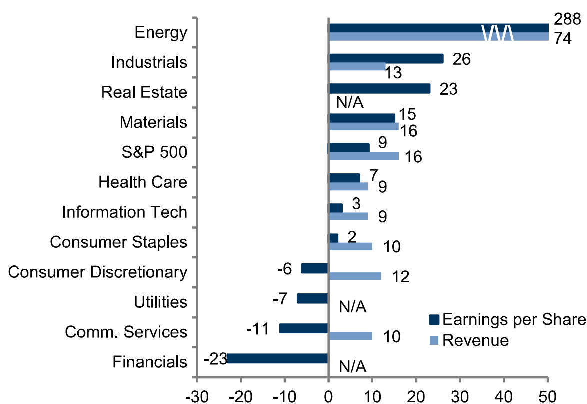
Billions of chained 2012 Dollars, monthly



Source: Haver Analytics, Goldman Sachs GIR.

Earnings and revenues are still growing for most sectors

Q2 earnings results, year-on-year growth

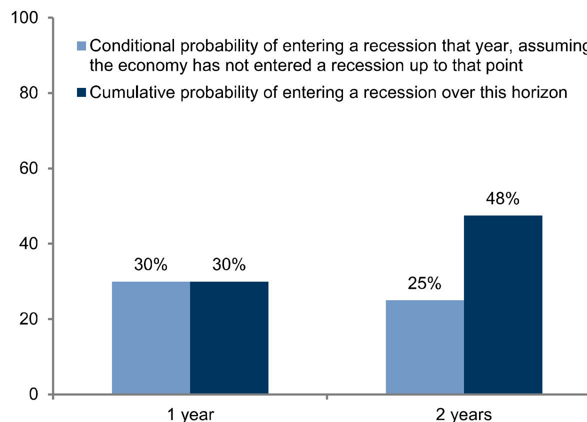


Note: Q2 earnings results for energy extend beyond axis.
Source: Bloomberg, Goldman Sachs GIR.

Special thanks to US economics team for charts.

For now, we see recession odds of 30% over the next 12 months

GS recession odds, percent



Source: Goldman Sachs GIR.

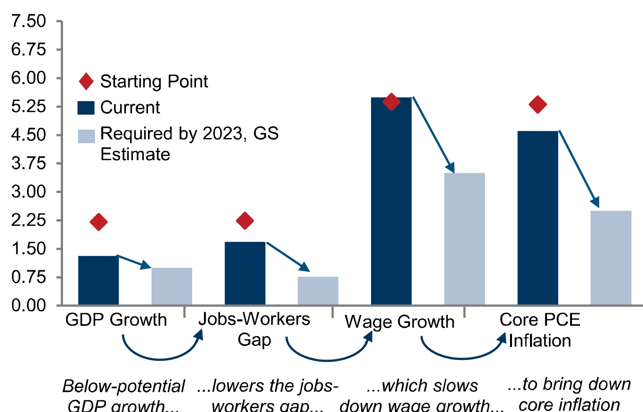
Taming inflation without recession

David Mericle lays out the conditions necessary to tame US inflation without a recession, finding that progress is encouraging in some respects, but limited in others

Whether the Fed can sufficiently lower inflation without a recession is the key question today. This would require that it slow GDP growth to a below-potential, though not necessarily recessionary, pace in order to rebalance the labor market and reduce wage growth to a pace consistent with 2% inflation. Progress towards this goal is encouraging in some respects, but limited in others.

Taming inflation without a recession: the requirements

The slowdown required to rebalance the labor market and calm wage growth and inflation, %



Note: Current GDP growth shows GS forecast for next four quarters; jobs-workers gap shows August estimates; core PCE inflation shows July estimates.
Source: Goldman Sachs GIR.

Q: Has the Fed made progress in slowing GDP growth to a below-potential pace?

A: Yes, significant progress has been made in slowing growth to the around 1% rate we estimate is needed to meaningfully reduce labor demand.

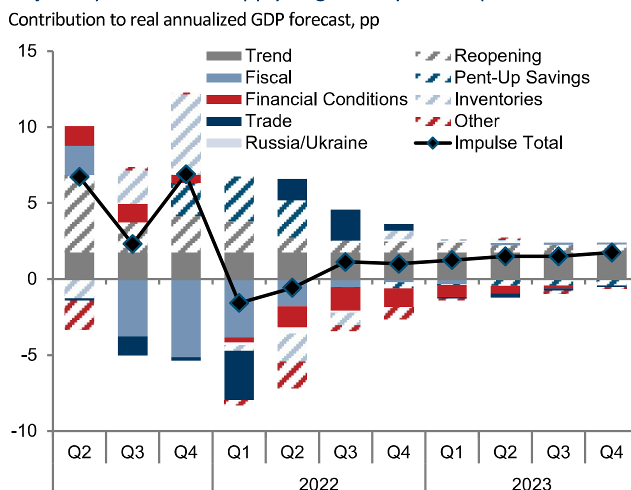
Despite the Q2 GDP release that showed a second consecutive quarter of negative growth, we think the US economy is experiencing a healthy deceleration, not a recession, as evidenced by consumer spending trends and Q2 corporate earnings communication.

In the first half of the year, the main restraint on the economy was the decline in fiscal support. The expiration of pandemic transfer payments in conjunction with high inflation led to a sharp decline in real disposable income from a very elevated level last year. While the sharpest drop-off is now behind us and real income is growing again after likely bottoming out in June, there is still a bit of further fiscal drag to come, and the new fiscal package will do little to change the picture.

Going forward, the burden of keeping the economy on a below-potential growth path will fall more heavily on the large tightening in financial conditions engineered by the Fed. We expect the combination of fiscal and monetary policy tightening to keep the economy on a below-potential trajectory of just over 1% GDP growth over the next four quarters.

The economy is now likely on the below-potential growth trajectory needed for supply to gradually catch up with demand

Contribution to real annualized GDP forecast, pp



Source: Goldman Sachs GIR.

Q: How much progress has been made in rebalancing the labor market?

A: While the jobs-workers gap has started to narrow, there is still a very long way to go to rebalance supply and demand in the labor market enough to lower wage growth to a sustainable pace.

Labor supply has recovered only modestly this year, and the further we move past peak Covid fears and peak fiscal support, the harder it becomes to be confident that those who left the labor force during the last two years will return soon. This, combined with a demographic headwind, leads us to think that the recovery in the labor force participation rate is mostly behind us, especially following the rise in participation in August. As a result, the jobs-workers gap will likely need to shrink mostly through a reduction in labor demand.

Total labor demand has moderated somewhat this year. Job openings have fallen by around 600k since March, and our nowcast points to a further decline in August. This combination of a slight recovery in labor supply and falling, albeit still-high, labor demand has slightly reduced the jobs-workers gap from a peak of 5.9mn in March to 5.2mn in August. We estimate that the gap needs to decline to 2mn to lower wage growth to a sustainable pace, meaning that we still have a long way to go.

Whether or not further progress can be made without sparking a recession depends on whether labor demand can continue to fall mainly through a reduction in job openings without a large increase in the unemployment rate. We are cautiously optimistic on this front (see pgs. 12-13), though much hinges on how large the tradeoff between job openings and unemployment will prove to be at extremely low levels of unemployment that have seldom been seen before.

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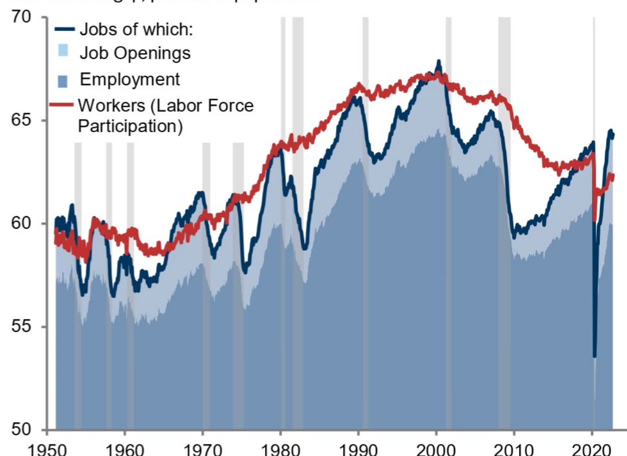
The jobs-workers gap has closed by about one-fifth of the amount we estimate is necessary

Jobs-workers gap, percent of population



Note: We use one-month lagged job openings to better account for the timing of data releases. Pre-Dec 2000 job openings use the newspaper help-wanted index based on methodology by R. Barnichon, SF Fed.
Source: Goldman Sachs GIR.

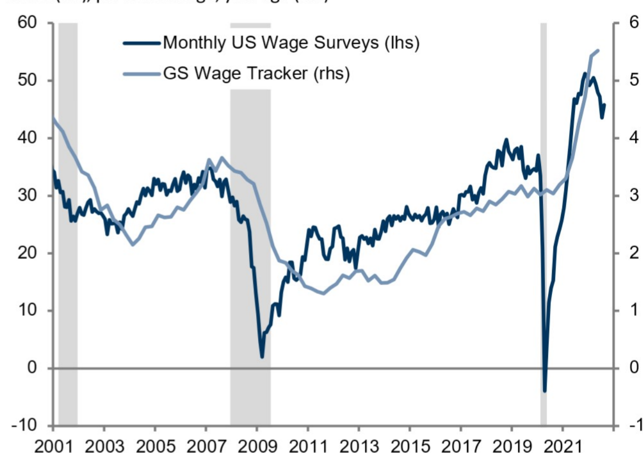
Q: How much progress has been made in bringing down wage growth and inflation more broadly?

A: Little convincing progress has been made so far.

Wage growth has recently moved sideways at around 5.5% year-on-year, 2pp above the 3.5% pace that we estimate is compatible with 2% inflation. Worryingly, wage growth is now broader-based than it was last year, when it was concentrated at the low end of the pay scale. That said, the reduction in the jobs-workers gap is still in its very early stages, so it is too soon to expect wage growth to have cooled much, and, more encouragingly, business surveys that ask firms whether they are raising wages or planning to do so suggest that wage growth should begin to moderate, though they so far point to only a partial decline in wage growth to roughly 4.5%.

Wage growth is still too high, but appears set to moderate somewhat

Index (lhs), percent change, year ago (rhs)



Note: Monthly US wage surveys are an average of Dallas Fed manufacturing, Dallas Fed services, Richmond Fed manufacturing, Richmond Fed services, NY Fed services, and NFIB. When available, we average current and expected wage changes for each survey. Values before the introduction of the more recent surveys are backcasted statistically.
Source: Federal Reserve, NFIB, Goldman Sachs GIR.

On the broader inflation front, improvements in some supply chain measures, declines in commodity prices, and Dollar appreciation are delivering a long-awaited and much-needed disinflationary impulse from the goods sector. The impact is already apparent in the pullback in long-term household inflation expectations and the slowdown in producer price inflation. We caution, however, that the disinflationary impulse from core goods is likely to be limited for now, and that our commodity strategists expect commodity prices to rebound.

Unfortunately, measures of the underlying trend rate of inflation remain very elevated and most have continued to rise this year. The largest and most persistent category, shelter, is likely to remain quite high for some time in the official inflation data despite the deceleration in timelier web-based measures. And high inflation is increasingly broad-based across the service sector, a concerning sign that it is becoming normalized.

In addition, our composite measure of business inflation expectations continues to run in the 5-6% range and has not moderated as commodity prices have fallen by nearly as much as the usual correlation between the two would imply. And our index of companies' announced intentions to raise or lower prices remains consistent with a very high rate of inflation.

Taken together, this raises a concern about the feasibility of taming inflation without a recession: Can the Fed afford to rebalance supply and demand gently through below-potential growth—a process that is necessarily gradual—without high wage growth, high inflation, and high inflation expectations becoming normalized in the meantime? On this we are admittedly more uncertain given the mixed messages from different measures of inflation expectations, the historical uniqueness of the current episode, and uncertainty about future commodity price movements and supply-side developments. One important reason for optimism, though, is that long-term household inflation expectations remain anchored, a key difference from the 1970s.

Q: What does all this likely mean for Fed policy over the near term?

A: Fed officials do not appear to be satisfied enough with the pace of progress to slow the pace of tightening just yet.

The July FOMC meeting made it clear that the Fed leadership was tentatively planning to slow the pace of tightening to reduce the risk of overtightening and inadvertently pushing the economy into a recession. But, while the economy has been moving in the right direction, recent remarks from Fed officials seem to suggest that the progress isn't quite uniform or rapid enough for them to slow the pace of rate hikes just yet. As a result, we expect a 75bp hike in September, followed by a 50bp hike in November and a 50bp hike in December.

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Taming labor demand without recession

Joseph Briggs discusses why US job openings can decline significantly without a corresponding rise in unemployment

Taming inflation without a recession requires that job openings decline significantly without a corresponding rise in unemployment (see pgs. 6-7), which could occur if firms reduce their demand for labor by cutting job openings rather than laying off workers. Some observers have recently called into question whether such a decline is possible (see pgs. 4-5), but we are cautiously optimistic.

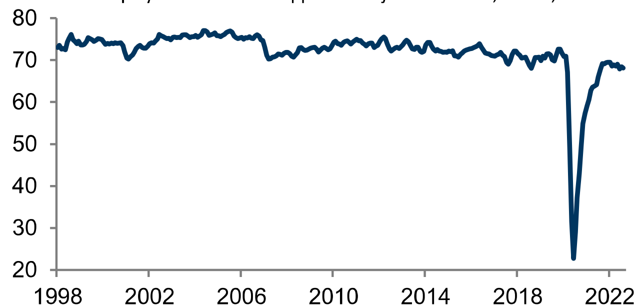
A temporary decline in match efficiency

Driving the view that job openings can't decline without a substantial rise in unemployment is a belief that match efficiency—the process through which unemployed workers match with open positions—has structurally declined, meaning that more job openings are needed to make a given number of hires. If that's true, it would make it difficult for job openings to decline without the unemployment rate rising, because as labor demand falls, some workers will inevitably be laid off, and if they can't easily match with jobs among remaining openings, then more of the reduction in total labor demand will show up as a rise in unemployment rather than a decline in job openings.

However, we are skeptical that the current elevated level of job openings reflects a long-lasting structural decline in match efficiency, because none of the most obvious potential types of mismatch between jobs and workers look particularly high. Mismatch across industries has only slightly increased since the start of the pandemic, mismatch across occupations (between the types of occupations people are looking for and the occupations featured in job postings) has actually declined, and while mismatch across geographies has increased, that doesn't account for the overall imbalance between job openings and searchers. And although job searchers have shifted their focus towards jobs that offer greater flexibility and work-life balance, employers have responded by increasing openings offering these benefits.

Matching workers with jobs has been difficult primarily because fewer unemployed workers actually applied for jobs

Share of unemployed workers who applied for a job last month, 3mma, %



Source: Goldman Sachs GIR.

Instead, the main reason why it has been harder to match workers and jobs since the start of the pandemic is that a large share of unemployed workers stopped applying for jobs, likely because virus fears and unusually generous unemployment and fiscal benefits lowered the incentive to actively search for work. Indeed, the surge in job openings relative to job searchers looks much less dramatic after adjusting for the number of unemployed persons that were actively searching. We therefore suspect that it will become easier to match workers with open jobs now that the economy has mostly reopened from the pandemic, which should allow companies to hire enough workers to meet labor needs with fewer job postings.

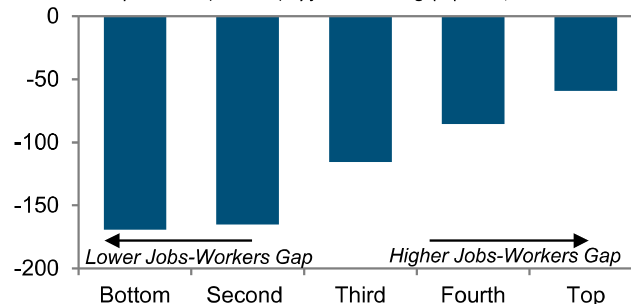
An unprecedented situation

Observers are also skeptical that the labor market can rebalance without a sharp rise in unemployment for the simple fact that this has never happened before. Historically, every decline in the job openings rate by more than 0.5pp during recessions has been accompanied by a spike in unemployment. But we think the unprecedented tightness of the current labor market reduces the scope for a sharp increase in unemployment this time around.

We have found that the impact of slower growth—which we anticipate will be the main driver of a reduction in job openings—on net hiring tends to be much smaller when there is significant pent-up demand for workers, and that in prior downturns the job openings rate declined more and the unemployment rate increased less in states where labor demand was much higher than labor supply.

Slower growth has a much smaller effect on employment when demand for workers is very high

Cumulative impact on payroll employment over 12m of a -1pp shock to the GS Current Activity Indicator (ex. labor) by jobs-workers gap quintile, thousands



Source: Goldman Sachs GIR.

A small tradeoff

Recent evidence suggests the tradeoff between job openings and unemployment is currently very small. Since peaking in March, the job openings rate has declined by 0.4pp—one of the largest ever increases outside of recessions—even after a surprise increase in job openings in the July JOLTS report (we remain skeptical that job openings actually increased in July given clear ongoing declines in timelier measures such as LinkUp and Indeed). And although the unemployment rate rose by 0.2pp in August, this was driven by an increase in labor force participation rather than deterioration in the labor market.

Going forward, we expect that the tradeoff between fewer job openings and higher unemployment will remain small. We forecast that the job openings rate will decline from 6.9% today to 5.5% by end-2023 and to 5% by end-2024, while the unemployment rate will only rise modestly from 3.7% today to 3.8% at end-2023 and 4.0% at end-2024. That said, we see risks of a larger increase in unemployment if the tradeoff increases as job openings fall further.

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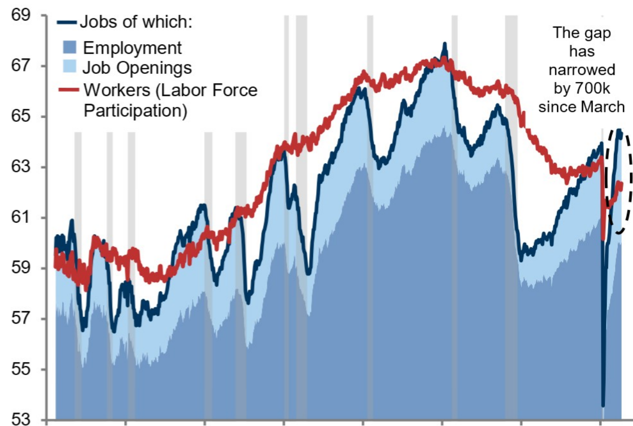
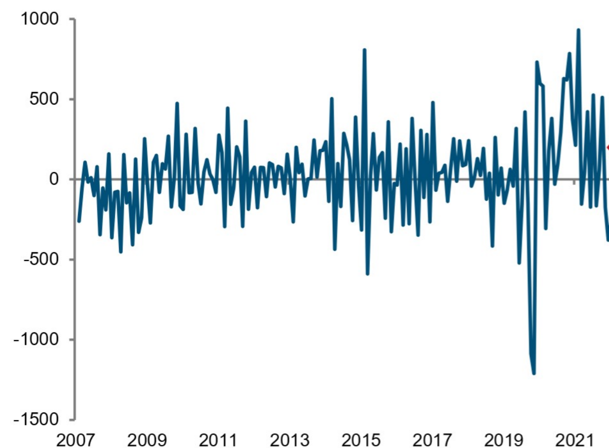
The labor market rebalancing in pics

The labor market adjustment in the US is underway…
US jobs-workers gap, percent of population

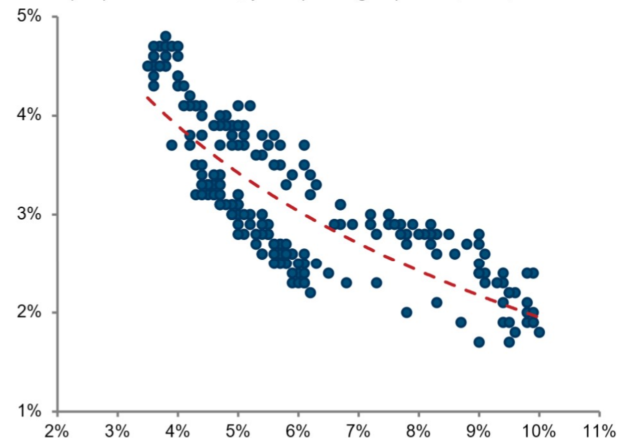


Note: We use one-month lagged job openings to better account for the timing of data releases. Pre-Dec 2000 job openings use the newspaper help-wanted index based on methodology by R. Barnichon, SF Fed.

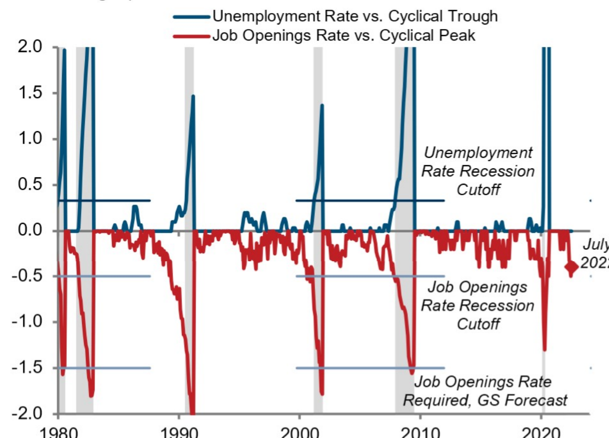
…as the number of open positions has fallen from its March peak
Monthly change in total nonfarm job openings, thousands



A decline in job openings has historically been associated with a rise in the unemployment rate…
Unemployment (x-axis), job openings (y-axis), rate, 2000-2019

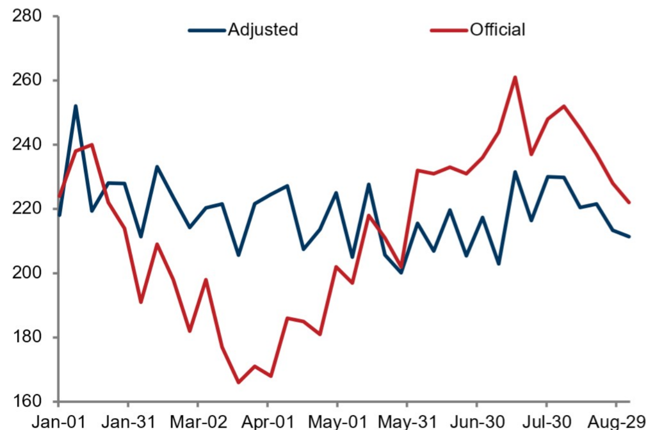


…but job openings have so far declined without unemployment rising much
Percentage points



The quits rate has slightly declined, confirming that the labor market is loosening at the margin
Quits as a percent of total employment

Initial jobless claims have declined following earlier rises
Initial jobless claims, thousands



Note: Adjusted uses an average of 2017-2019 seasonal factors (as of 3/31) and holds MA and CT claims, which likely overstate the actual figures, flat after July 2.

Source for all exhibits: US Bureau of Labor Statistics, Goldman Sachs GIR.
Special thanks to US economics team for charts.

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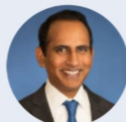
Q&A on US rates



Praveen Korapaty, GS Chief Interest Rates Strategist, answers key questions on the risks to US rates and curve shape ahead

Q: We and the market are now expecting the Fed to remain quite hawkish in the near term—with the Fed funds rate likely to peak around 4.25%—but to end the rate-hiking cycle this year. How are the risks around these expectations skewed?

A: Even though substantial near-term hikes have been priced, the risks around front-end rates remain skewed to the upside given the potential for the rate hiking cycle to extend into 2023, for two main reasons. First, the Fed won't really know if enough has been done to tame inflation until after the fact given lags in the effects of policy showing up in data. Given their stated focus on controlling inflation even at the risk of economic pain, this suggests some risk of further rate hikes beyond December. Second, concerns about an imminent recession have faded over the past few months on the back of favorable data, and our economists have grown a little more confident about the possibility of a soft landing (see pg. 6-7), which reduces the likelihood of near-term rate cuts. So, the balance of risk for front-end rates still remains clearly to the upside.

Q: What about the risks around the US 10y rate?

A: The risk is similarly skewed towards a higher rate, although by a smaller magnitude than the front-end. The front-end tends to move with a higher beta with respect to Fed hikes than longer maturities do, so to the extent that upside risk to the Fed funds rate materializes, front-end rates should move more. It may seem odd that we see upside risk to current yields when market pricing of the 10y rate is already in the ballpark of our year-end forecast of 3.3%, but we see two reasons for this. The 10y rate can be thought of as the average of the 5y rate and the 5y5y rate. In terms of the 5y, it's important to emphasize that unlike our modal expectations of a 4-4.25% peak rate, market expectations of a roughly 4.25% peak rate embed significant odds of rate cuts in the coming years. And if a soft landing scenario or an extended hiking cycle scenario play out, those cuts will need to come out of the market, which should mechanically push 5y rates higher. And in terms of the 5y5y—which could be thought of as a proxy for the unobservable neutral rate, or the rate at which full employment and price stability are maintained—the risk is also skewed to the upside given that investors are likely to revise their estimates of the neutral rate up if the policy rate is increased to levels closer to current terminal rate pricing and the economy holds up. And indeed, our economists' baseline has growth rebounding next year, so there's potential for the market to push its estimate of the neutral rate higher. So, risks to both the 5y and the 5y5y are skewed to the upside, which translates into upside risk for the 10y.

Q: So, what does this all imply for the shape of the yield curve?

A: If inflation continues to move gradually lower as we expect, albeit from very high levels, the Fed is able to downshift to a slower pace of hikes, and concerns about an imminent recession remain at bay, we expect the yield curve to remain inverted, but to a much smaller extent than was the case in recent months when recession fears were front and center. Some investors seem to be expecting a further re-steepening of the yield curve from here, but as long as the Fed is still hiking, we don't expect inversion to go away entirely. And should the hiking cycle be more aggressive than we expect—potentially reigniting recession concerns—that inversion would likely increase once again. But given our current forecasts, "peak curve inversion" for this cycle is now likely behind us.

Q: What would a scenario in which reining in inflation requires substantially higher unemployment—as Olivier Blanchard, Larry Summers, and others expect (see pgs. 4-5)—mean for rates?

A: In a scenario in which the Fed is forced to engineer a much higher, say, 6% unemployment rate to combat inflation, front-end rates would rise significantly higher—potentially well above our expectations. But 10y rates likely wouldn't, because the economic damage inflicted by such significant moves at the front-end would likely lead to significant rate cuts further down the line, which would force the yield curve to re-invert at the deep levels we saw up until very recently. So, the 10y rate in this scenario may not look much different from our current baseline, but our expectations for front-end yields, and therefore curve shape, would differ dramatically.

Q: What would a world in which inflation remains structurally higher mean for rates?

A: If we're talking about slightly higher inflation, say 2.5% inflation—or 50bps above the current 2% target on average—yields likely won't behave too dissimilarly from the last thirty years; I would expect average yields to rise by a similar magnitude, i.e., 50bp or so. But if we're talking about sticky 4% inflation, that would mark a different regime. In that environment, the high interest rates of the early 1990s could be revisited. And, at that point, it would no longer be just a higher rates story, but a story of increased macro volatility and potentially truncated business cycles. Markets aren't pricing this, as the view is the Fed will certainly do everything they can to avoid that scenario.

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Market outcomes if the hawks are right

Dominic Wilson and Vickie Chang explore what a sharp rise in unemployment delivered by the Fed would mean for risk assets, finding that it would weigh on them significantly

A critical debate has emerged with respect to the US economic outlook between those who think that the current high inflation problem can be resolved without a recession—the GS research view (see pgs. 6-7)—and those who think that a significant and sustained rise in unemployment is likely to be needed—and ultimately delivered by the Fed—for inflation to fall back to acceptable levels—the view espoused by Olivier Blanchard (see pgs. 4-5), as well as other prominent former policymakers including Larry Summers and Bill Dudley. Here, we examine the high-level difference in market outcomes between those two scenarios.

Mapping the pessimistic view

To start, we compare our own central forecast—in which the unemployment rate rises to only 4% by end-2024—to a stylized version of Blanchard's outcomes. Specifically, we construct a scenario that reflects the "moderate" version of the outcomes he describes, in which a 5% unemployment rate is needed and a more "severe" version in which the unemployment rate needs to rise to 6% (he leaves open the possibility of a higher unemployment rate than this, but these two scenarios are sufficient to frame the basic possibilities). Using an Okun's Law coefficient of two, as he does, this translates into GDP growth outcomes that are either 200bp or 400bp below our own forecasts on a 1-year basis (to be clear, these representations are ours and the purpose is only to capture the general contours of Blanchard's more hawkish view).

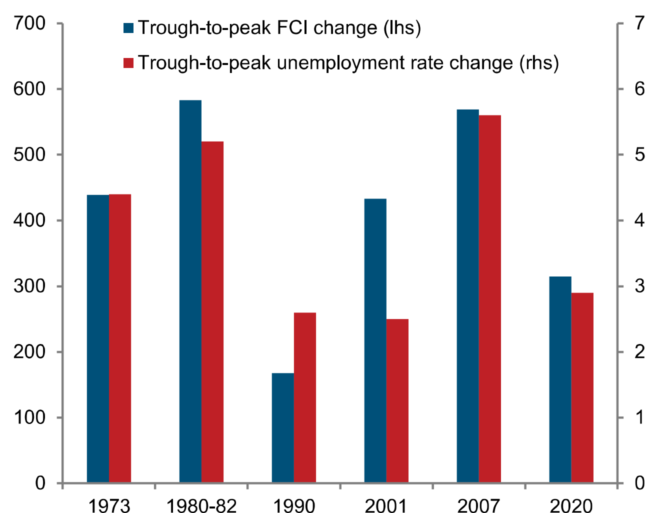
To translate these into market outcomes, we look at the mix of policy and growth shifts that would be needed for the market to move to a particular economic scenario and then map those shifts into implications for asset markets. In our view, GS's central forecast is close to what is currently priced into markets, at a broad level at least. Our latest Fed forecast—75bp in September and 50bp in November and December—is close to the forwards, and our bond yield forecasts are also generally not far from current market pricing. Benchmarking the market's growth view is more difficult, but our GDP growth forecasts are currently close to consensus forecasts for 2022 and 2023. The historical relationship between the performance of cyclical vs. defensive equities and the ISM also suggests that the market is pricing outcomes that are broadly in line with those that we expect.

To consider the more hawkish alternatives, we base our analysis on our ability to decompose the mix of equity and bond performance into "growth" and "policy" shocks and to split shifts in US financial conditions into shifts in those growth and policy views. First, we estimate the additional tightening in financial conditions (FCI) that would be needed to generate the additional slowdown in growth and rise in the unemployment rate of the more hawkish scenarios. Our standard rule of thumb is that a 100bp tightening in financial conditions is needed to push GDP growth down 100bp for a year, which would translate into a required FCI tightening of 200bp or 400bp in the two scenarios, respectively.

The experience of past recessions suggests that these estimates may be too high given the tendency for recessions to generate their own negative momentum. Comparing the peak tightening in financial conditions to the peak rise in the unemployment rate in all recessions since 1970 suggests that financial conditions rose only a little more than 100bp for every 1ppt rise in the unemployment rate (not the 200bp implied by our rules of thumb). We split the difference and assume that 150bp and 300bp of FCI tightening is needed in the moderate and severe scenarios, respectively. We then calculate the policy "shock" necessary to deliver that level of FCI tightening, assuming that the tightening will be delivered entirely by shifts in monetary policy, as it has been through 2022. Finally, we use our macro framework to estimate the impact that these shifts would have on a core set of US assets.

We compare the trough-to-peak tightening in financial conditions with the trough-to-peak change in the unemployment rate across recessions to benchmark the FCI tightening that may be required

Bp (lhs), % (rhs)



Note: We combine the 1980 and 1981 recessions into one event. For 2020, we take the "underlying" unemployment rate adjusted for the unusually high proportion of workers on temporary layoff.
Source: Haver Analytics, Goldman Sachs GIR.

Significant negative implications for markets

In the moderate version of the hawkish scenario, this approach predicts that the S&P 500 would need to fall a little less than 15%, US 5-year bond yields rise by close to roughly 90bp relative to what we would expect under our own forecast, and the trade-weighted USD would rise by a further 4%. In the more severe version, these predicted shifts are larger (27% lower in S&P 500, ~180bp higher in US 5-year bond yields, and 8% higher for the trade-weighted USD). These are equivalent to the S&P 500 below 3400 and 5-year yields around 4.5% in the moderate case and the S&P 500 just below 2900 and 5-year yields around 5.4% in the more severe case. Our expectation is that the yield curve would invert further in these scenarios as the market prices in significant rate cuts down the line as the Fed tightens into a recession. So, in that case, the

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impact on longer-dated yields could be smaller, perhaps significantly so (see pg. 14).

Our approach suggests that equities would have further to fall, yields would rise, and the Dollar would strengthen if the additional FCI tightening implied by these scenarios materialized

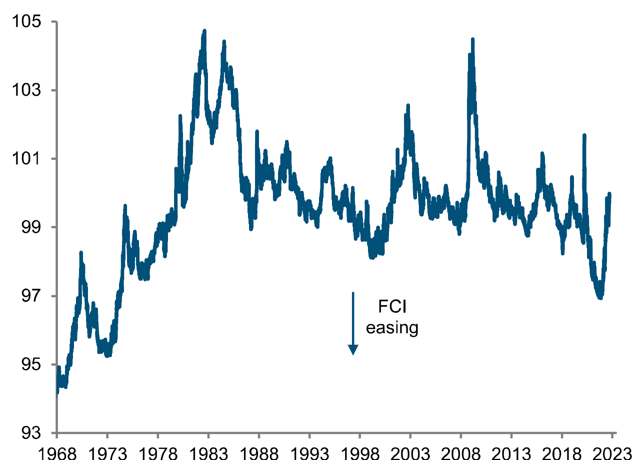
	Impact of Moderate Hawkish Scenario	Impact of Severe Hawkish Scenario
S&P 500	-14%	-27%
UST 5y	91bp	182bp
USD TWI	4%	8%

Source: Goldman Sachs GIR.

The implied FCI tightening in these scenarios is historically large, particularly since a sharp tightening has already occurred this year, but it is not unprecedented. The two scenarios imply a cumulative FCI tightening of 460bp and 600bp, respectively, over the entire cycle, when including the tightening that has already occurred. The larger of these two is comparable to the financial conditions tightening during the Global Financial Crisis and the recessions of the early 1980s. While those may seem like extreme comparisons, the current tightening cycle comes on the heels of a period in which financial conditions were historically easy, and these scenarios are designed precisely to describe a situation in which the Fed must push policy into a tight enough position to engineer a sharp recession.

The implied FCI tightening in these two hawkish scenarios is large, but not historically unprecedented

GS US FCI, index

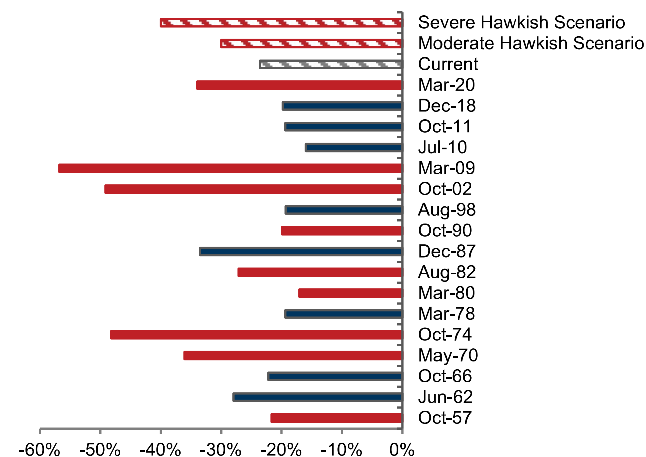


Source: Goldman Sachs GIR.

The cumulative equity market declines from the highs this year of ~30% and ~40% implied by the two simple versions of this scenario would again be large but firmly in the range of past experiences.

The equity market declines implied in these two scenarios would take the market to fresh lows, but would not be unusually large relative to the corrections of previous recessions

S&P 500 peak-to-trough equity corrections of >15%



Note: Red bars denote overlap with recessions.
Source: Goldman Sachs GIR.

This approach conceives of these scenarios purely from the US perspective. In practice, asset market outcomes would depend on whether the kind of tightening and recession profiles that we show here are unique to the US or would be broadly replicated across other major economies. A global recession and tightening shock would generally be assumed to be worse for risk assets, while complicating the FX impacts. Simple versions of the same exercise that include similar policy shocks in Europe to slow growth there further imply less appreciation in the trade-weighted USD, but also the potential for more upward pressure on bond yields.

This description is highly stylized, and there are uncertainties at every step. How much would financial conditions need to tighten to deliver the necessary growth slowdown? Would the market price a deeper curve inversion on aggressive Fed tightening into a recession, dampening the upside to longer-dated yields and/or cushioning the impact on risk assets? Has the market already embedded a larger or smaller risk of this outcome than we assume? It is particularly hard to be confident in the extent to which lower equity and credit prices or higher bond yields would drive a tightening in financial conditions, given the complex interplay between them. But the basic story is clear. If only a severe recession—and a sharper Fed response to deliver it—will tame inflation, then it is likely that the downside to both equities and government bonds could still be substantial, even after the damage that we have already seen.

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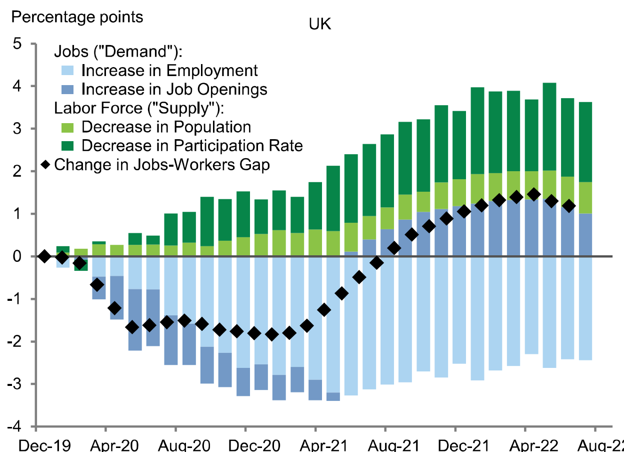
Overheating in global labor markets

The jobs-workers gap has increased since the start of the pandemic across most G10 economies

Change in jobs-workers gap from 4Q19, percentage points

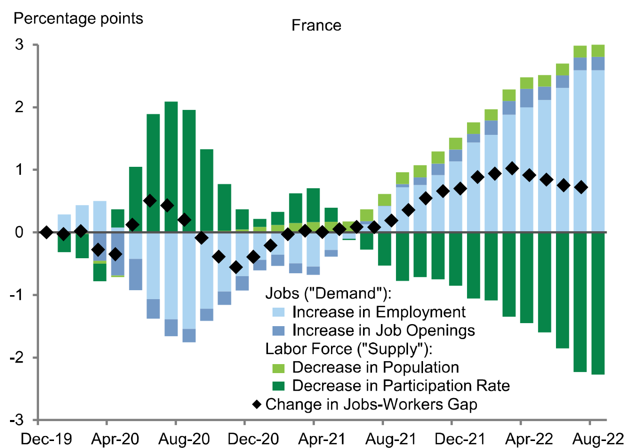
The jobs-workers gap in the UK has decreased slightly from its pandemic peak, primarily driven by a moderation in job openings

Decomposition of changes in jobs-workers gap, Dec 2019=0



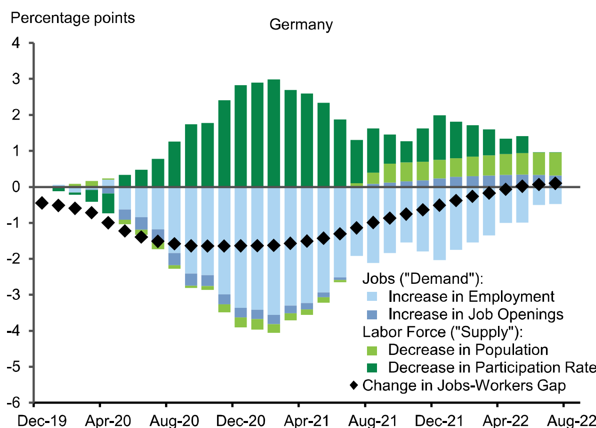
The jobs-workers gap in France has decreased from its pandemic peak, driven by a rise in the participation rate

Decomposition of changes in jobs-workers gap, Dec 2019=0



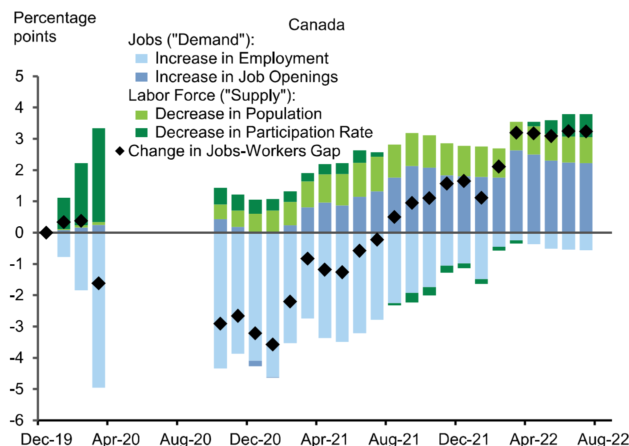
The jobs-workers gap has continued to rise in Germany, driven by a decline in employment

Decomposition of changes in jobs-workers gap, Dec 2019=0



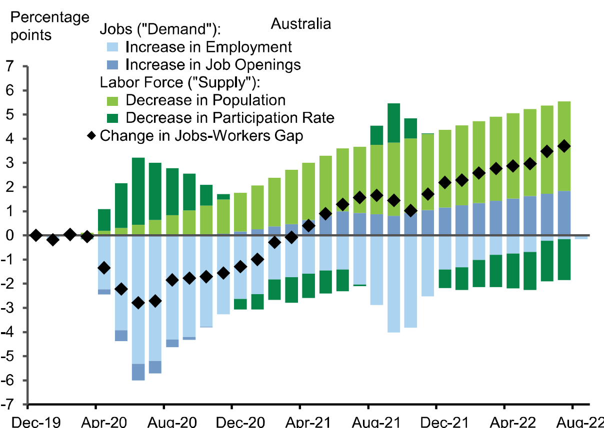
The jobs-workers gap has also risen in Canada, driven primarily by an increase in job openings

Decomposition of changes in jobs-workers gap, Dec 2019=0



The jobs-workers gap in Australia has risen to record-highs, driven by a decline in labor supply

Decomposition of changes in jobs-workers gap, Dec 2019=0



Note: The Canada jobs-workers gap has missing observations from March 2020 to October 2020 due to missing job openings data.

Source for all exhibits: Haver Analytics, Goldman Sachs GIR.

Special thanks to Global economics team for charts.

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Central bank policy snapshot

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	Interest Rate Policy	Balance Sheet and Other Policy	Outlook
Fed	**Federal funds rate: 2.25%-2.50%** Last changed: July 2022 (+75), the second consecutive 75bp rate hike. Prior to these two past hikes, the last 75bp increase was in 1994.	• This month the Fed runoff caps have doubled from their initial levels to their announced peak of $60bn for Treasuries and $35bn for MBS per month. If principal payments exceed the stated caps in a given month, the Fed will roll over the excess.	• We expect the Fed to deliver a 75bp rate hike in September, a 50bp hike in November, and a 50bp hike in December, which would take the Fed funds rate to 4.00-4.25% by the end of 2022.
ECB	**Deposit facility rate: 0.75%** Last changed: September 2022 (+75bp), the second rate rise in 11 years and the largest rate hike on record. **Main refinancing operations rate: 1.25%** **Marginal lending facility rate: 1.50%** Last changed: September 2022.	• The ECB launched a new anti-fragmentation tool, named the Transmission Protection Instrument or, TPI. • The ECB furthermore reaffirmed that (1) it will use PEPP reinvestments flexibly to counter risks to the transmission mechanism related to the pandemic and (2) that maturing securities from the APP will be reinvested for an extended period.	• We expect the ECB to hike by 75bp in October followed by a 50bp hike in December and 25bp hike in February for a terminal rate of 2.25%, though we see risks skewed towards a higher terminal rate in the event of more persistent inflationary pressures and stronger second-round effects. • We view the TPI as a potentially powerful tool that could ultimately be effective in anchoring sovereign credit in Europe; however, the TPI will not alleviate fundamental fragmentation risk.
BOE	**Bank Rate: 1.25%** Last changed: August 2022 (+50bp), the largest hike increment in 27 years.	• The BoE stated it is provisionally minded to commence gilt sales shortly after its September meeting at a pace of £10 billion per quarter over the first year of the program. • The BoE plans to review the asset-sales program as part of an annual review, where the pace of sales for the subsequent twelve-month period will be announced.	• We expect the BoE to hike by 50bp in September, followed by three more 50bp hikes at the November, December, and February meetings before a step-down to a 25bp hike in March. We forecast a terminal Bank Rate of 4.0%. • We expect the gilt-sales program to begin before the end of September, with a total balance sheet unwind (sales and redemptions) of around £80 billion over the first year.
BOJ	**Deposit Rate: -0.10%** Last changed: January 2016, when the Bank introduced its negative interest rate policy (NIRP). **10y JGB yield target: ~0%, with tolerance band of -/+ 25bps** (yield curve control policy, YCC).	• With the introduction of YCC in September 2016, the BoJ shifted its main target to keeping 10y JGB yield curve at 0% and as such, the quantity purchase of JGB became a passive instrument. • The BoJ decided at its April monetary policy meeting to offer to purchase 10-year JGBs at +25bp every business day through fixed-rate purchase operations, to defend the 0.25 upper limit on 10 year yield.	• We expect the BoJ to maintain NIRP throughout 2022. • We expect YCC to remain in place until after the end of Governor Kuroda's term in April 2023.

Source: Federal Reserve, European Central Bank, Bank of England, Bank of Japan, Goldman Sachs GIR.

Summary of our key forecasts

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GS GIR: Macro at a glance

Watching

- **Globally,** we expect below-trend Q4/Q4 real GDP growth of 1.9% in 2022 as the sizable growth drags from the Russia-Ukraine conflict, tighter financial conditions, sluggish real income growth, and a substantial slowdown in housing activity more than offset medical improvements and a consumption boost from pent-up savings. We expect the global inflation surge to peak in the coming months, and think the combination of a moderation in demand growth, improvements in goods and labor supply, and tighter monetary policy will be sufficient to bring inflation back toward DM central banks' targets over the next two years.
- **In the US,** we expect Q4/Q4 growth will be flat in 2022, reflecting a large fiscal drag and a negative impulse from tighter financial conditions. We see a 30% probability of entering a recession over the next year and nearly even odds at a two-year horizon, although we think any recession would likely be mild. We expect core PCE inflation to decline to 4.2% by end-2022, although further supply chain disruptions, stronger wage growth, or firmer shelter inflation could keep inflation somewhat higher for longer. We see the unemployment rate declining to 3.6% by end-2022 before rising to 3.8% by end-2023, and 4.0% by end-2024.
- **We expect the Fed** to deliver a 75bp hike in September, followed by a 50bp hike in November and a 50bp hike in December, which would take the Fed funds rate to 4.0-4.25% by end-2022, though continued inflationary pressures could extend the hiking cycle beyond this year. On the fiscal policy front, we expect the fiscal deal recently signed into law to have a very modest net fiscal impact and the student debt relief program to only provide a small income boost.
- **In the Euro area,** we expect a modest recession in 2H22, driven by continued significant gas supply disruptions owing to the war in Ukraine and slowing growth momentum. We expect headline inflation to average 8.3% in 2022 and 4.8% in 2023.
- **We expect the ECB** to hike by 75bp in October followed by a 50bp hike in December and 25bp hike in February for a terminal rate of 2.25%, though we see risks skewed towards a higher terminal rate in the event of more persistent inflationary pressures and stronger second-round effects.
- **In China,** we expect full-year real GDP growth of 3.0% in 2022. On a sequential basis, we expect a sharp rebound of 14.0% qoq ann. growth in Q3 ahead of the 20th Party Congress in mid-October. We see the risks to our baseline as broadly balanced, with upside risks from stronger-than-expected policy stimulus and downside risks from uncertainty associated with Covid, housing, and external demand.
- **WATCH EUROPEAN NATURAL GAS.** Tensions in the European natural gas market continue to loom large, with Russia suspending gas flows through the Nord Stream gas pipeline indefinitely, skewing risk towards a more severe and protracted downturn in Europe.

Goldman Sachs Global Investment Research.

Growth

Source: 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 "Lessons Learned: Re-engineering Our CAIs in Light of the Pandemic Recession," Global Economics Analyst, Sep. 29, 2020.

Forecasts

Economics

GDP growth (%)	2022 GS (Q4/Q4)	2022 GS (CY)	2022 Cons. (CY)	2023 GS (CY)	2023 Cons. (CY)
Global	1.9	3.1	2.9	2.9	2.5
US	0.0	1.6	1.6	1.2	0.9
China	3.3	3.0	3.5	5.3	5.2
Euro area	0.8	2.9	2.8	0.8	0.5

Policy rates (%)	2022 GS	2022 Mkt.	2023 GS	2023 Mkt.
US	4.13	4.00	4.13	3.58
Euro area	2.00	3.08	2.25	3.01
China	2.00	2.48	2.00	2.65
Japan	-0.10	0.06	-0.10	0.12

Markets

Interest rates 10Yr (%)	Last	E2022	E2023
US	3.37	3.30	3.15
Germany	1.64	1.50	1.60
Japan	0.25	0.25	0.35
UK	3.04	2.65	2.20

Commodities	Last	3m	12m
Crude Oil, Brent ($/bbl)	94	125	125
Nat Gas ($/mmBtu)	8.25	6.60	3.80
Copper ($/mt)	8,080	6,700	9,000
Gold ($/troy oz)	1,726	1,850	1,950

FX	Last	3m	12m
EUR/$	1.01	0.97	1.05
GBP/$	1.17	1.14	1.25
$/JPY	142	145	125
$/CNY	6.9	7.00	6.70

Credit (bp)		Last	4Q22	2Q23
USD	IG	140	175	140
	HY	442	625	465
EUR	IG	210	229	175
	HY	535	655	491

Equities

S&P 500	E2022 GS	E2022 Cons.	E2023 GS	E2023 Cons.
Price	4,300	–	--	–
EPS	$226	$228	$234	$243
Growth	8%	9%	3%	7%

Returns (%)	12m	YTD	E2022 P/E
S&P500	6.0	-14.0	18.4x
MXAPJ	15.0	-19.0	12.8x
Topix	6.0	0.0	14.2x
STOXX 600	7.0	-12.0	12.0x

Consumer	2022 CPI (%, yoy)	2022 Unemp. Rate	2023 CPI (%, yoy)	2023 Unemp. Rate
US	7.9	3.6	3.7	3.8
Euro area	8.3	6.6	4.8	6.5
China	2.1	–	2.0	–

Wage Tracker 2022 (%)	Q1	Q2	Q3	Q4
US	5.8	5.9	–	--
Euro area	--	–	–	--
China	--	–	–	--

Source: Bloomberg, Goldman Sachs Global Investment Research. For important disclosures, see the Disclosure Appendix or go to www.gs.com/research/hedge.html.

Market pricing as of September 12, 2022.

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.

Goldman Sachs Analyst Index (GSAI)

The US GSAI is based on a monthly survey of GS equity analysts to obtain their assessments of business conditions in the industries they follow. The results provide timely "bottom-up" information about US economic activity to supplement and cross-check our analysis of "top-down" data. Based on analysts' responses, we create a diffusion index for economic activity comparable to the ISM's indexes for activity in the manufacturing and nonmanufacturing sectors.

Macro-Data Assessment Platform (MAP)

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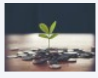

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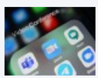

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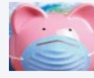

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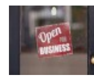

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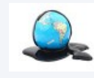

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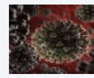

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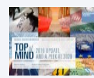

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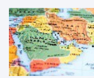

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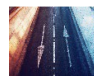

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