

# TOP *of* MIND

## REFLATION RISK



Amid the accelerating economic recovery, the largest US fiscal stimulus outside of war times and the Fed's commitment to keep monetary policy very easy until higher inflation is sustained have stoked concerns that the US economy is set to overheat, sending US inflation expectations and bond yields higher. Whether these concerns are warranted, and the implications for bond yields and broader markets, is Top of Mind. Given that GS growth forecasts are at the high end among forecasters, our Fed views are at the dovish end, and yet we don't expect problematic overheating, we put our own Jan Hatzius in the hot seat. He explains that much more slack in the US economy than suggested by official estimates means that even our high

growth forecasts will generate only moderate inflationary pressures, which will lessen as this year's temporary fiscal stimulus fades. We then ask Dominic Wilson and other GS strategists what this means for bond yields (a moderate rise from here) and other assets (more upside for cyclical assets), and how to protect portfolios from reflationary risks.



There's no question that the amount of stimulus set to hit the US economy this year is unprecedented outside of major wars... but the economy is coming out of a deep hole and there's still a large gap to fill between actual and potential output... so [the stimulus] should not result in substantial overheating.

- Jan Hatzius

The market today probably still isn't fully reflecting the above-consensus growth that we expect in the coming months... This suggests more near-term upside for cyclical assets.

- Dominic Wilson

All major commodity bull markets and inflationary episodes have been invariably tied to redistributive, or populist, policies that have reduced income and wealth inequality.

- Jeff Currie



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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

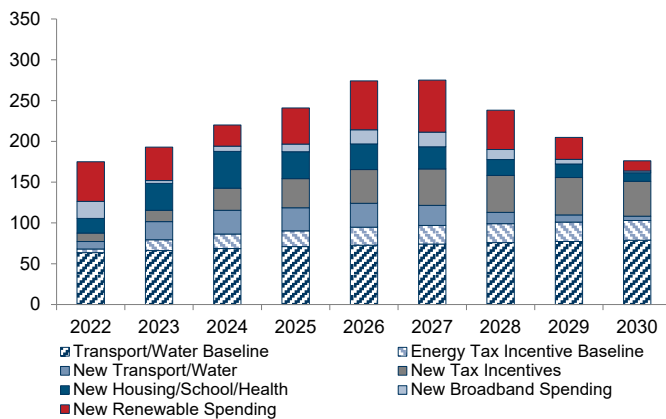
- We raised our 2Q21 GDP forecast to 10.5% qoq ann. following a sharp pickup in consumer spending in March.

### Datapoints/trends we're focused on

- The next round of fiscal spending, which we expect to be focused on infrastructure and total at least \$2tn, and will likely be at least partially offset by tax increases.
- Fed tapering/liftoff, which we continue to expect to begin in early 2022 and 1H24, respectively.
- Overheating risk; we're not that worried about large overheating given ample economic slack and a fading fiscal impulse.
- Virus/vaccines; while case growth has recently moved sideways, the daily pace of vaccinations has risen to 2.8mn.

### Fiscal spending: more ahead, but smaller growth boost

Potential federal spending from a \$2tn infrastructure package, \$bn



Source: CBO, Goldman Sachs GIR.

## Japan

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

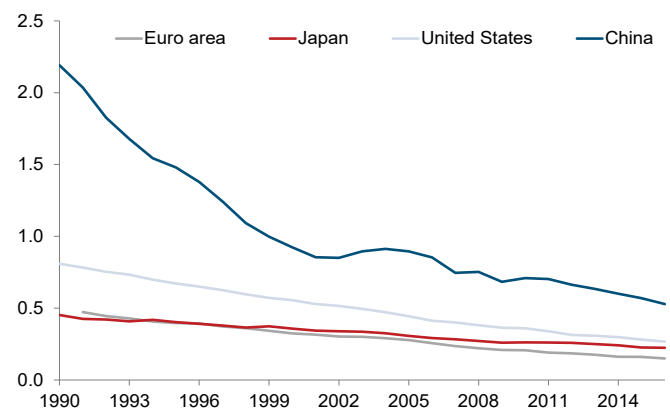
- We lowered our 1Q21 GDP forecast to -6.0% qoq ann. to reflect lower-than-expected January consumption data due to lower holiday travel and a renewed state of emergency.

### Datapoints/trends we're focused on

- Zombification risk; we expect zombie companies to be smaller in size than in the 1990s, limiting the potential macroeconomic impact of any zombification.
- Climate goals; while Japan has set a goal of achieving carbon neutrality by 2050, we anticipate the country will face many challenges to doing so, including geographic conditions and the risk of natural disasters.

### Japan has been relatively slow to reduce emissions

Greenhouse gas emissions/real GDP, kg per PPP \$ of GDP



Source: OECD, Goldman Sachs GIR.

## Europe

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

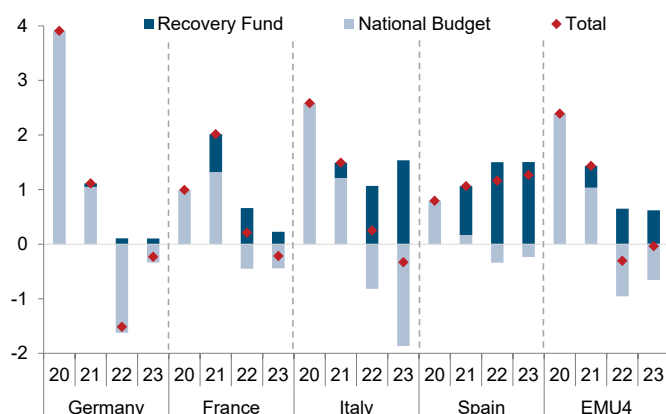
- No major changes in views.

### Datapoints/trends we're focused on

- EMU4 fiscal stance, which we expect will remain expansionary in 2021 before turning slightly contractionary in 2022/23, although German elections later this year may nudge fiscal policy more towards expansionary territory.
- Italian politics; while PM Draghi appears to be steering policy in the right direction, we believe political uncertainty remains the key risk for the economy beyond 2021.
- Virus/vaccine divergence; while case growth in the UK has declined as the vaccine rollout has moved ahead rapidly, cases in the EA have risen as the rollout continues to lag.

### Budgets: 2021 expansions, followed by contractions

Fiscal stance by funding, % of GDP



Source: Goldman Sachs GIR.

## Emerging Markets (EM)

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

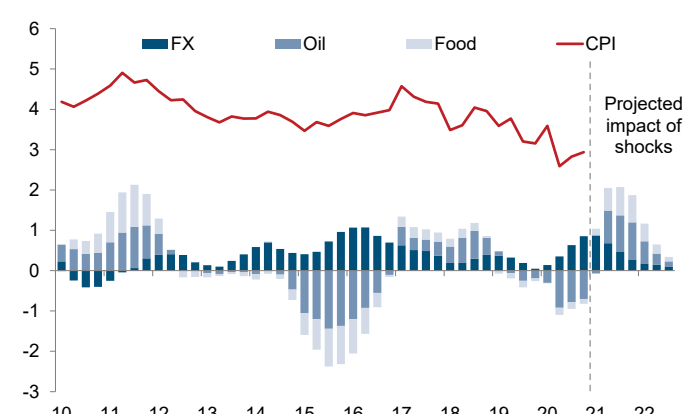
- We raised our 2021 China growth forecast to 8.5% on stronger-than-expected exports and IP data in Jan/Feb.

### Datapoints/trends we're focused on

- Inflation and central bank moves; we expect higher oil and food prices to drive EM headline inflation sharply higher, raising the risk of more hawkish EM central banks over the next 3-12 months.
- Herd immunity, which we think is unlikely in many EMs, including the majority of Asian economies, until 2022.
- EM sovereign downgrades, which have continued even as sentiment has improved, but we think the worst is now over.

### EM headline inflationary pressures set to rise

Headline CPI vs. expected impact to CPI from various shocks, % yoy



Source: Goldman Sachs GIR.

# Reflation risk

Amid the accelerating economic recovery from the COVID-19 recession, the largest US fiscal stimulus outside of war times as well as the Fed's commitment under its new Average Inflation Targeting (AIT) framework to keep monetary policy very easy until higher inflation is actually sustained have stoked concerns that the US economy is set to substantially overheat. Indeed, the likes of former Treasury Secretary [Larry Summers](#) and former Chief IMF economist [Olivier Blanchard](#) have recently voiced such concerns (see pg. 6), which they and others argue, to varying degrees, could ignite inflationary pressures similar to the late 1960/70s, or force the Fed to tighten policy more quickly than it currently expects, potentially strangling growth and jeopardizing the still nascent recovery.

Partly in response to these concerns, US bond yields have jumped as inflation expectations have risen and as the market has pulled forward its expectations for Fed liftoff from 2Q24 at the beginning of the year to 1Q23 currently. And investors have begun to grapple with what the prospect of higher bond yields means for other assets. Whether the current overheating worries are warranted, and the implications for bond yields, and markets more broadly, is Top of Mind.

We first speak with Jan Hatzius, GS Head of Global Investment Research and Chief Economist, who pushes back on the view that US fiscal support far exceeds what's needed to aid the recovery and will lead to substantial overheating. So what are those who are more worried missing? According to Hatzius, two things: one, the amount of slack in the economy is likely much higher than official estimates suggest, so even GS's above-consensus growth forecasts will leave the economy operating only slightly above potential, and, two, fiscal stimulus, and, in turn, growth, is set to decline sharply beyond this year, even assuming another sizable investment-oriented package is enacted, which will limit any overshoot of potential output.

As a result, despite GS's strong growth views, Hatzius expects inflation to rise only modestly above the Fed's target over the coming months, before moderating somewhat (see pg. 7 for an overview of GS inflation views). These views, he says, are consistent with the Fed starting to taper asset purchases in early 2022, and hiking rates in 1H24—later than the market is currently pricing. And he sees risks to the timing of liftoff as balanced, or even skewed to the later side. That said, once the hiking cycle begins, risks are skewed toward a steeper hiking path, in his view.

David Mericle, GS Chief US Economist, then discusses the risks around our US growth, Fed, and inflation views that would generate more overheating than we currently expect. But if the economy did substantially overheat, he thinks the bigger worry than the Fed allowing an inflationary spiral would be the high cost of slowing things down given the historical track record of sparking recessions in these situations.

So what does this all suggest for bond yields? Praveen Korapaty, GS Chief US Interest Rates Strategist, answers the most-asked questions about the bond yield outlook. He argues that after a brief pause, yields will move higher—on the order

of an additional 20bps for UST 10y yields—to end the year at 1.9%, driven by the growth acceleration that GS economists expect. In his view, an overshoot is certainly possible, but probably unsustainable, and a further steepening in nominal, and especially, real yield curves is likely from here.

We then turn to Dominic Wilson, GS Senior Markets Advisor within Global Investment Research, to discuss how the current situation in bond markets differs from past episodes of volatility, such as the 2013 Taper Tantrum, and what that means for asset performance. He underscores that the 2013 episode resulted from a major Fed policy shock, whereas the recent (and so far much smaller) repricing has mainly stemmed from progress on the economic recovery, which risk assets have generally digested more easily. But he finds that markets today still aren't fully reflecting the above-consensus growth that we expect in the coming months. So he recommends investors stay exposed to cyclical parts of the market in the near term, like cyclical equities and commodities, and avoid bonds, bond proxies and rate-sensitive growth assets.

Peter Oppenheimer, GS Chief Equity Portfolio Strategist, digs deeper into the differences between past reflationary cycles and the potential one ahead, which he argues suggest a broadly supportive environment for equities, but a shift in market leadership toward Value and Cyclical stocks, as well as regional markets with greater exposure to them, like Europe and Japan.

And Jeff Currie, GS Global Head of Commodities Research, explains why the current reflationary backdrop sets the stage for a commodity bull market, though perhaps not for the reasons commonly believed. He makes the case that the defining driver behind past commodity bull markets associated with reflationary episodes is expansionary policies focused on redistribution. These populist policies, he says, increase commodity-intensive spending from the large number of low-income households, substantially boosting commodity demand. In his view, it was this dynamic, generated by the War on Poverty in the 1960s—not oil supply shocks—that created the infamous inflation of the 1970s, and even the 2000s supercycle was driven by a wealth redistribution to low-income rural Chinese. Given policymakers' focus on using expansionary policy to address high income inequality today, he sees a similar bullish period for commodities ahead, and recommends owning commodities as a hedge against broader inflationary risks.

Finally, Christian Mueller-Glissmann, GS Senior Multi-Asset Strategist, reiterates the benefit of a pro-cyclical asset allocation orientation given the moderate reflation acceleration that we expect. But he agrees with Currie that the potential for inflation to overshoot—or, conversely, disappoint rising inflation expectations—warrants hedging portfolios against these tail risks. And options still look like an attractive way to do this.

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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 risk of substantial economic overheating as the economy reopens remains limited.



**Allison Nathan: Economists such as [Larry Summers](#) and [Olivier Blanchard](#) have recently raised concerns that amid an already emerging economic recovery, very expansive US fiscal policy on top of easy monetary policy risks sharply higher inflation. Our 2021 US growth forecast of 7.2% (on an annual-average basis) is one of the**

**highest among forecasters, so do you share these concerns?**

**Jan Hatzius:** Not really. There's no question that the amount of stimulus set to hit the US economy this year is unprecedented outside of major wars. Together with the reopening of the economy, this is likely to produce very strong growth of about 8% on a Q4/Q4 basis in 2021. But the economy is coming out of a deep hole and there's still a large gap to fill between actual and potential output. We estimate that US output was about 6% below potential as of late last year, which is only slightly smaller than the difference between our 8% growth forecast and our 1.75% estimate of potential growth. So even the above-consensus recovery that we expect should leave output only slightly above potential. That would suggest inflation of slightly, but not dramatically, more than 2%. Obviously, there is significant uncertainty around all of these estimates, so I think we need to be humble and willing to change our minds if the evidence changes. But at this point I agree with Treasury Secretary Janet Yellen that the American Rescue Plan Act (ARPA) should bring the economy roughly back to full employment but should not result in substantial overheating.

**Allison Nathan: What accounts for the differences between your views and those who worry more about overheating?**

**Jan Hatzius:** There are two main differences. First, Summers and Blanchard rely on the estimate of the Congressional Budget Office (CBO) that GDP was only 3% below potential in late 2020, while our estimate is twice as large. Output gaps are admittedly hard to measure, but we think there are strong reasons to believe that the CBO estimate is too small. Their figures show the economy running above potential in the two years before the pandemic, which is hard to square with the fact that inflation was, on average, below the Fed's target. Also, employment is still down 6% from the pre-pandemic level. Normally, this would indicate an output gap of significantly *more* than 6% because swings in output typically exceed swings in employment by a factor of about two, a relationship known as Okun's law. While Okun's law doesn't hold under current circumstances because weakness is so concentrated in the economy's most labor-intensive sectors, the 6% employment drop nevertheless makes an output gap of just 3% highly implausible.

Second, overheating concerns focus on the comparison of the output gap with the exceptionally large amount of fiscal support, which we estimate at 11% of GDP in fiscal 2021. That

is undeniably a very large and positive impulse. But much of it is temporary and concentrated in one-off payments and programs, such as longer and higher unemployment benefits that are eventually set to expire and will also scale down naturally as the labor market improves. Next year, we forecast that fiscal support will diminish to just 5% of GDP. This is despite our assumption of further fiscal packages focused on infrastructure and other spending that total over \$3tn, because those packages will be spread over a ten-year period and will also be partly offset by higher taxes. We expect the implied 6pp drop in fiscal support to lead to much slower growth in 2022, especially in the second half of the year. This should limit any overshoot of potential output.

**Allison Nathan: What about the argument that multiplier effects will amplify the impact of the stimulus, exacerbating overheating risks?**

**Jan Hatzius:** I don't find the discussion of multipliers very illuminating in the context of a one-off spending increase because the multiplier is a longer-run concept. So, for example, if we assume that an increase in transfer payments has a multiplier of one—meaning that it will prompt an increase in GDP equivalent to the initial increase in government spending—that doesn't mean we expect people to spend every extra dollar they receive. Rather, we assume that they will spend some of it, which will eventually generate more employment and wage growth, so that the boost to the level of GDP in two or three years' time ultimately reaches the size of the original stimulus. But this assumes that transfer payments are sustained at their higher level—otherwise the positive multiplier effects of the increase in transfer payments in year 1 will be offset by the negative multiplier effects of the *decline* in transfer payments in year 2.

Even abstracting from this issue, some parts of the ARPA are unlikely to have large effects on spending. The \$350 million for state and local aid, for example, is probably bigger than what is needed to support state and local governments, whose tax receipts have come in better than expected in recent months. The state and local aid might still make sense because it will allow these governments to replenish their rainy-day funds, reducing the risk of a downturn in state and local spending in response to a future shock. But the immediate stimulative impact is unlikely to be large.

**Allison Nathan: Does the shift in the Fed's framework towards Average Inflation Targeting (AIT) increase the risk that the Fed falls behind the curve and we end up with an inflation overshoot?**

**Jan Hatzius:** Yes, but it's important to remember that the Fed now *wants* to overshoot 2% temporarily in order to ensure that inflation averages 2% over the cycle as a whole. This desire largely stems from the Fed's discovery that treating their 2% inflation target as an effective ceiling, or at least as a symmetric target, has delivered modestly below-target inflation on average. So while 2% remains the official inflation target, in

practice this has probably increased by roughly three to four tenths, implying modestly higher inflation outcomes over time. In line with this shift, Fed officials have stated that they want to see clear evidence of realized inflation and the achievement of maximum employment before withdrawing stimulus in this cycle.

It's natural to worry that this shift toward greater inflation tolerance could lead to a repeat of the inflationary experience of the 1960s/70s, prior to the more pre-emptive inflation-fighting approach of Fed Chair Paul Volcker in the early 1980s. But this comparison misses the greater role that well-anchored inflation expectations play today in keeping inflation low and stable. Admittedly, we can't be 100% sure that inflation expectations will always remain anchored. But much better measurement of long-run inflation expectations today via consumer inflation surveys, forecaster inflation surveys, and inflation-linked government bonds suggest that any material shift in the market's expectations of longer-term inflation dynamics would be quickly detected earlier and thus much less likely to sneak up on policymakers in the same way as in the 1960s/70s.

And if the economy did look like it was starting to overheat seriously—whether that is because of even stronger growth than we expect, a smaller output gap than we estimate, or other unforeseen developments—the Fed would respond. At this point, our Fed call remains relatively dovish; we expect tapering to begin in early 2022 and rate liftoff in 1H24. But we're not dug into those forecasts. If inflation surprises sharply to the upside on a sustained basis, the Fed wouldn't just sit back and watch—they would react.

**Allison Nathan: At the other end of the spectrum, is there a point at which the Fed would become concerned that higher bond yields were becoming too restrictive, prompting them to act on the dovish side?**

**Jan Hatzius:** Yes, but Chair Powell has stated that they look at broad financial conditions rather than just interest rates to assess this risk. And financial conditions as reflected by our GS Financial Conditions Index (GSFCI) remain near the all-time easiest levels ever. So that's the key metric to watch, but we're still quite far from a point that would cause the Fed concern.

**Allison Nathan: So how do you view the risks around our relatively dovish Fed liftoff call?**

**Jan Hatzius:** In terms of the timing of liftoff, I think the risks to our 1H24 forecast—which is about a year later than market pricing—are fairly balanced or perhaps even tilted to the later side. That's because the Fed's guidance that they will taper QE first limits the extent to which rate hikes can be pulled forward. Our baseline forecast for the start of tapering is 1Q22, and the earliest plausible date is 4Q21. The FOMC has said that the tapering process will resemble 2013-2014, which we interpret as eight \$15bn steps over a year. This means that early 2023 is the first realistic point for a rate hike, even in an upside inflation scenario. This is about a year before our baseline liftoff forecast. By contrast, a disruption of the current strong

economic recovery could reasonably delay rate hikes by one, two or even more years.

In terms of the level of rates, though, risks are probably skewed to the higher side. While it's not our baseline, the Fed's willingness to let inflation run higher for longer might require earlier and more frequent hikes than what we assume in our baseline. So this potential need for the Fed to "catch up" does introduce some risk of a significantly steeper rate hiking path than we, as well as the market, expect.

**Allison Nathan: Are risks to the terminal Fed funds rate skewed to the upside, then?**

**Jan Hatzius:** The Fed's estimate of the longer-term funds rate is 2.5%, and they've said they want to wait until the economy is at full employment before hiking rates, which suggests a peak rate in this cycle perhaps slightly higher than this estimate. So a 2.5-3.0% terminal funds rate seems reasonable to me, which is only modestly above current market pricing.

But I see upside risk to this 2.5-3.0% terminal rate based on the shifting attitudes toward fiscal policy. The world seems less concerned about running larger budget deficits than was the case a decade or two ago. Just as a matter of accounting, larger public sector deficits require larger private sector surpluses, and this could mean that real rates have to rise in order to entice the private sector to save more. I'm struck by the fact that even with the substantial selloff in bond markets over the past few months, 5y5y TIPS yields are still in the 0.3%-0.4% range, which is actually slightly below the average of the five years prior to the pandemic. At a minimum, it seems likely that we will get back to the pre-pandemic average, and there's some risk that we will move meaningfully higher. This all suggests a strong curve steepening bias from here; in the short-term, the market is probably overestimating how quickly the Fed moves to rate hikes, but risks are skewed to the upside at the longer-end.

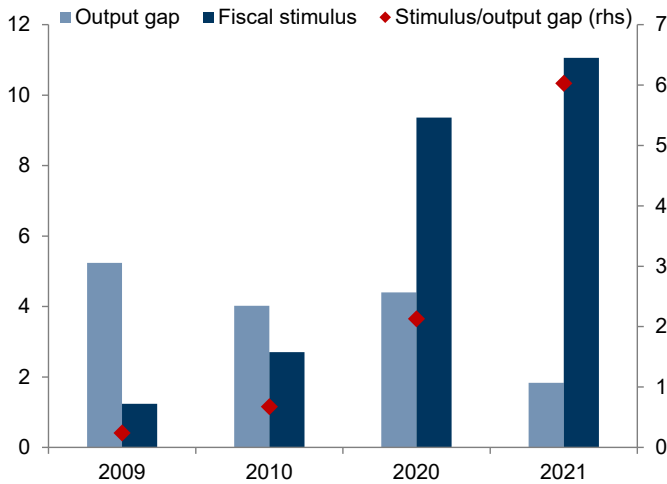
**Allison Nathan: Beyond the US, are any countries or regions at risk of overheating?**

**Jan Hatzius:** I don't think so. In fact, risks are clearly skewed in the other direction in most economies because they're generally starting from a bigger economic hole and have enacted less stimulus than the US. Specifically, real GDP was down by 2.4% year-on-year as of late 2020 in the US, compared to 5% in Europe and 8% in the UK. And while fiscal authorities in Europe, Japan, and other advanced and emerging economies provided substantial support to their economies in 2020, the incremental fiscal impulse in 2021 is less positive than in the US. As a result, even our above-consensus growth forecasts in many of these economies suggest that they will remain relatively far away from potential output and full employment in 2022, and maybe even in 2023. So it's difficult to see any kind of overheating scenario. From a policy perspective, this suggests that while the amount of support in the US seems about right, in Europe and other places, a lot more could and should be done to support the economic recovery.

# Overheating concerns in pics

## US stimulus set to exceed official output gap by ~6x in 2021

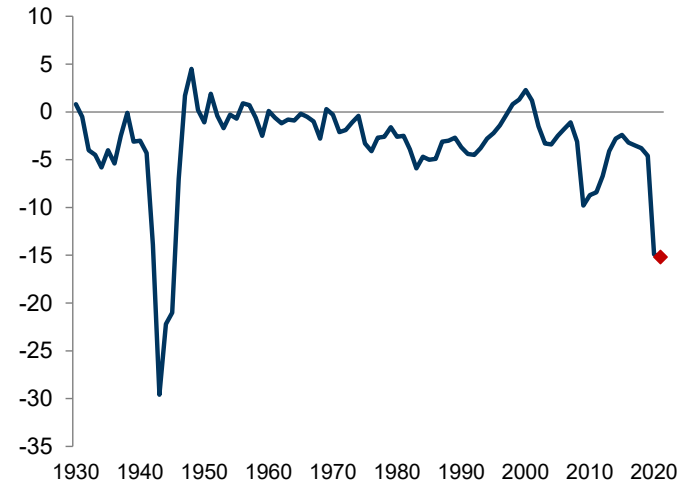
US output gap, % of potential GDP; fiscal stimulus, % of GDP



Note: Based on CBO fiscal year output gap estimate; reflects additional fiscal stimulus in response to Global Financial Crisis and COVID-19 crisis, respectively, based on year of spending; GS stimulus projections for FY20 and FY21. Source: CBO, Goldman Sachs GIR.

## The fiscal deficit this year will be the largest since WWII

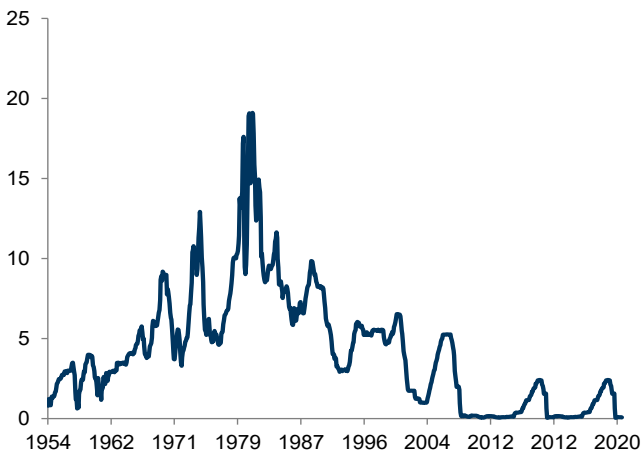
US fiscal surplus/deficit, % of GDP



Note: Based on fiscal year; GS deficit projection for FY21. Source: Haver Analytics, Goldman Sachs GIR.

## Fed funds rate remains accommodative relative to history

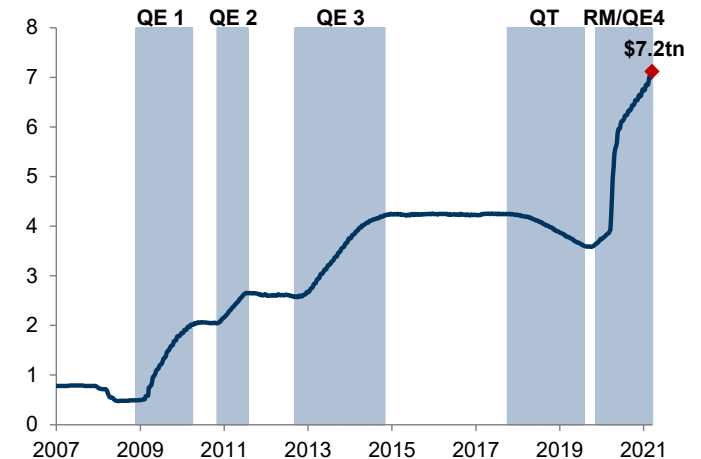
Effective fed funds rate, %



Source: Haver Analytics, Goldman Sachs GIR.

## The Fed has also further expanded its balance sheet

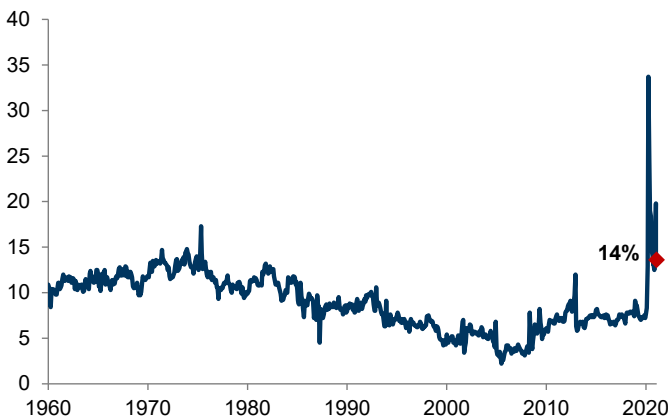
Securities held by the Federal Reserve, \$tn



Note: QT refers to quantitative tightening and RM to reserve management; based on averages of daily figures for weeks ending Wednesday. Source: Haver Analytics, Goldman Sachs GIR.

## A drawdown of pent-up savings could provide a boost

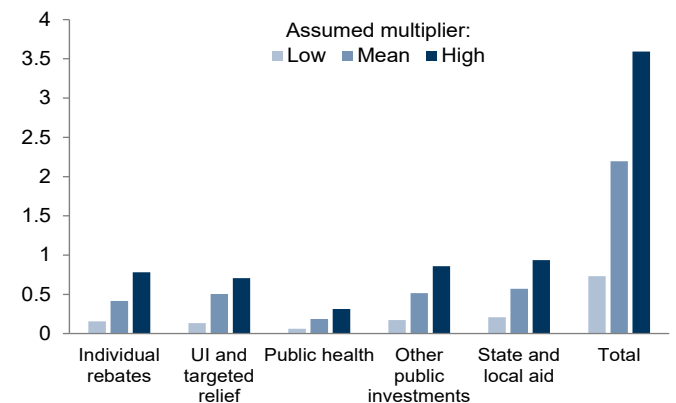
US personal savings rate as % of disposable income



Source: Haver Analytics, Goldman Sachs GIR.

## Larger multipliers could amplify the impact of fiscal stimulus

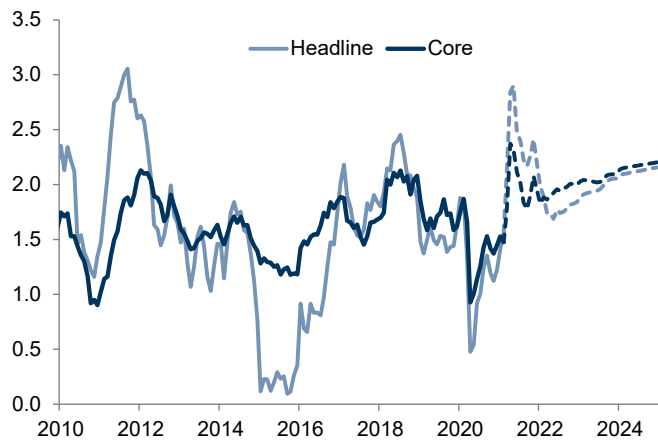
Estimated aggregate demand impact of ARP Act, \$tn



Note: Fiscal multipliers based on estimates made by [Olivier Blanchard](#). Source: Olivier Blanchard, CEA, Goldman Sachs GIR.

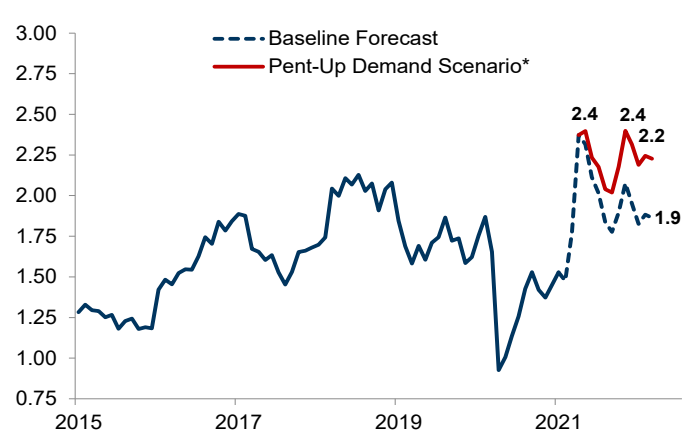
# Inflation snapshot

Core PCE to jump sharply before falling to 1.95% by year-end  
Headline and core PCE inflation, % change yoy



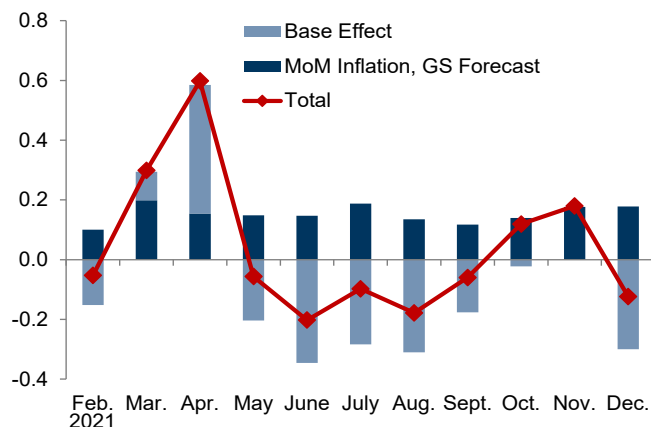
Note: Dotted lines indicate GS forecast.  
Source: Department of Commerce, Department of Labor, Goldman Sachs GIR.

Upside scenario could see rise to 2.4%, though only temporarily  
Core PCE inflation, % change yoy



Note: Pent-up demand scenario reflects a one standard deviation overshoot of virus-sensitive sectors from pre-crisis trend.  
Source: Goldman Sachs GIR.

Base effects will be a key driver of near-term inflation surge  
Contribution to change in yoy core PCE inflation rate, pp



Source: Goldman Sachs GIR.

Inflation expectations have started to rise, but from a low level  
Index of common inflation expectations, GS monthly estimate, %



Source: Federal Reserve, Goldman Sachs GIR.

We expect higher services inflation to drive core PCE to 1.95% by year-end 2021 and 2% by year-end 2022

GS core PCE inflation forecast, weight by category, expected change and contribution to change by category, % yoy

	Feb 2021		End 2021		End 2022	
	Weight	YoY	YoY	Contribution to Change	YoY	Contribution to Change
<b>Core PCE</b>		<b>1.41</b>	<b>1.95</b>	<b>0.54</b>	<b>2.00</b>	<b>0.59</b>
<b>Core Goods</b>	<b>27%</b>	<b>0.1</b>	<b>0.2</b>	<b>0.03</b>	<b>-0.6</b>	<b>-0.18</b>
New Vehicles	3%	1.2	1.6	0.01	-0.5	-0.04
Used Vehicles	1%	8.0	-2.8	-0.13	-6.5	-0.18
Household Appliances	0%	10.8	-2.7	-0.07	-3.3	-0.07
Video, Audio, Computers	2%	-3.8	-5.2	-0.03	-7.4	-0.08
Recreational Vehicles	1%	3.3	0.8	-0.02	-0.2	-0.02
Jewelry, Watches	1%	1.1	4.9	0.03	1.8	0.00
Clothing & Footwear	3%	-4.6	2.4	0.23	1.1	0.18
Pharma & Medical	5%	-2.0	0.4	0.10	2.1	0.17
Pets Products	1%	-2.1	1.7	0.02	0.9	0.02
Expenditures Abroad	0.1%	0.0	5.7	0.01	2.9	0.00
Residual Core Goods	10%	0.5	0.4	-0.01	-0.3	-0.08
<b>Core Services</b>	<b>73%</b>	<b>1.9</b>	<b>2.6</b>	<b>0.53</b>	<b>2.9</b>	<b>0.74</b>
Housing	19%	2.0	2.7	0.13	3.5	0.27
Ground Transportation	0.2%	0.0	3.2	0.01	2.2	0.01
Air Transportation	1%	-18.5	14.2	0.23	3.6	0.16
Food Services & Accommodation	6%	1.3	2.1	0.05	3.2	0.13
Financial Services & Insurance	10%	1.4	4.5	0.29	2.9	0.14
Medical Services	19%	3.5	2.4	-0.21	2.5	-0.19
Foreign Travel	0%	-10.3	6.2	0.14	3.0	0.11
Residual Core Services	19%	1.9	1.4	-0.11	2.6	0.12
<b>Mix Shift Impact (Across Categories)</b>				<b>-0.02</b>		<b>0.03</b>

Source: Goldman Sachs GIR.

Special thanks to Spencer Hill and Ronnie Walker

# The risk of overheating

David Mericle discusses the risks around his US growth, Fed, and inflation views that would generate more overheating than we currently expect

Market-implied inflation expectations have drifted substantially higher in recent months amid a debate among economists and policymakers about the risk that the economy could seriously overheat and inflation could rise well beyond the moderately above 2% level that Fed officials are targeting under their new Average Inflation Targeting (AIT) framework. But we think our optimistic growth and unemployment forecasts are still consistent with relatively tame inflation over the next several years. With this in mind, we answer four key questions about the risk of overheating.

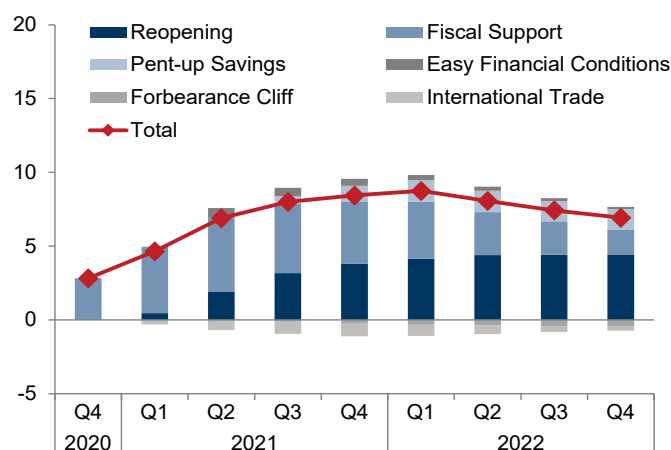
## How high is the risk of overfilling the output gap?

Concerns about overheating center around the combined size of the \$900bn Consolidated Appropriations Act passed in December and the \$1.9tn American Rescue Plan Act (ARPA) passed in March. This legislation will provide a huge boost to household disposable income that more than fills the hole in private income during the first half of this year. This is already contributing to a surge in spending in March and will also further swell the pent-up savings that households have accumulated over the course of the pandemic.

The fiscal support this year will come at a time when the economy is also benefiting from other powerful tailwinds, including the reopening of high-contact consumer services that will largely restore normal spending opportunities, spending of pent-up savings, and the boost from easy financial conditions. We estimate that the combination of these impulses will boost the level of GDP by roughly an incremental 6% in 2021 on top of an end-2020 starting point that was already benefitting from the residual effects of the CARES Act. This boost on top of the economy's potential growth pace implies a GDP growth rate roughly consistent with our 8% 2021 Q4/Q4 forecast. Starting in mid-2022, however, the combined impulse fades and becomes a drag on growth.

## Reopening, fiscal support, pent-up savings likely to deliver a growth boost big enough to close output gap by 4Q21

Effect on level of real GDP, %



Source: Goldman Sachs GIR.

Our forecast implies an overshoot of our estimate of potential GDP of about 1% next year. But the uncertainty is greater than usual, both because of the lack of modern precedents for the reopening and pent-up savings effects, and because of uncertainty about future fiscal measures. Greater fiscal support and a higher rate of spending out of pent-up savings than we expect could each plausibly add as much as 1% to the level of GDP. If both risks materialized, the level of GDP could rise above potential by as much as 3%. We also see upside risks from a quicker pace of reopening or faster spending of stimulus money, but both would likely mean a short-term burst of spending that pulls demand forward, rather than a steady multi-year boost to the level of demand.

We expect our growth forecast to translate to a further rapid decline in the unemployment rate to 4% at end-2021, 3.5% at end-2022, 3.2% at end-2023, and 3.1% at end-2024. But these upside scenarios could push the unemployment rate below 3%, which would present upside risk to inflation.

## How high is the risk of a larger inflation overshoot?

We expect this sharp decline in the unemployment rate to translate to core PCE inflation of 2.1-2.2% by 2023-2024, above the peak seen last cycle but roughly the rate that Fed officials would like to see before liftoff under their new policy framework. Our view that inflation is likely to remain fairly tame takes on board two lessons from last cycle. First, the Phillips curve that captures the inverse relationship between unemployment and inflation is alive but not very steep, and that is particularly true of the PCE index. And, second, health care legislation passed under President Obama was significantly disinflationary, and that legislation remains in place and might even expand under President Biden.

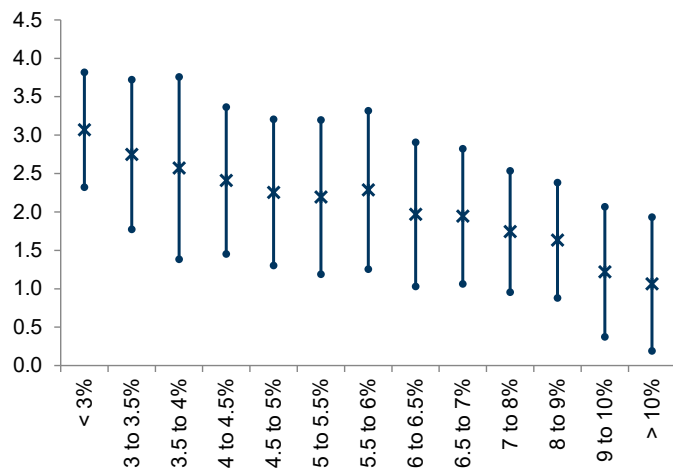
We do think that a more substantial overshoot of another 0.25-0.5pp is possible, as we've found that inflation is often more uncertain than intuition suggests, consensus inflation forecast errors have been surprisingly large, and local-level data show that moderately above-target inflation has actually been fairly common in extremely tight labor markets. The bottom line is that inflation is both cyclical and hard to forecast at multiyear horizons, and we would therefore not be shocked by a moderate upside surprise to our forecast.

But the much larger overshoots that some commentators have suggested are less realistic, in our view, for two reasons. First, only 40% of the core PCE index shows consistent cyclicity, meaning that cyclical categories would have to run at high levels of inflation to cause a large overshoot in the overall core measure. And second, healthcare inflation is likely to remain depressed by policy pressures over the coming years.



### City-level evidence shows that CPI inflation has averaged 2.5-3% in very tight labor markets

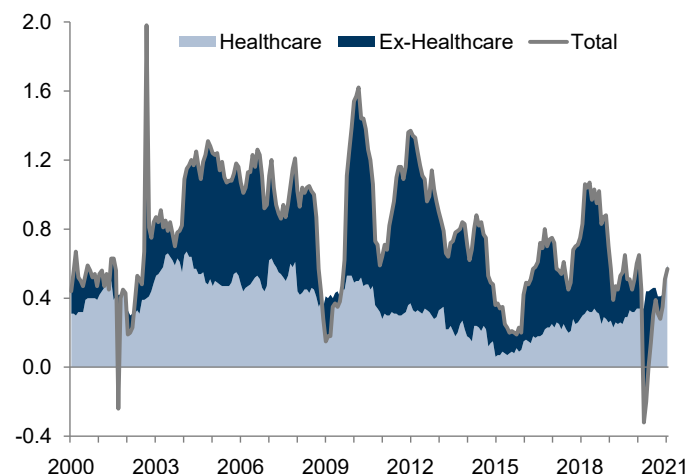
Average MSA core CPI inflation by MSA unemployment rate since 1997, one standard deviation confidence interval, % change, year ago



Source: Department of Labor, Goldman Sachs GIR.

### Healthcare inflation likely to remain depressed in coming years

Contributions to SF Fed acyclical core PCE inflation, pp



Source: San Francisco Fed, Goldman Sachs GIR.

### How high is the risk of de-anchoring inflation expectations?

Even a larger jump in inflation than we expect would only be a longer-term problem to the extent that it also dragged inflation expectations higher and became self-perpetuating. But, in recent decades, expectations have been firmly anchored on the 2% target, and empirical studies find that only 10-20% of fluctuations in realized inflation have flowed through to inflation expectations.

Going back further in history, the US experienced surges in inflation after WWII and then again in the 1960s and 1970s, the latter of which resulted in a long-lasting de-anchoring of expectations. The inflation surge after WWII has little contemporary relevance because the rise in inflation was caused mainly by food shortages and the removal of wartime wage and price controls, and because the Fed was largely prevented by the Treasury Department from raising interest rates at the time.

But the inflationary spiral beginning in the 1960s is more unsettling in that it emerged from a lengthy period in which inflation and (1-year) inflation expectations were extremely stable, and, much like then, fiscal policy today is highly expansionary and policymakers are again adopting an aggressive definition of maximum employment.

But we think the differences between that episode and today outweigh the similarities. Fed officials made a long series of major policy errors in the 1960s and 1970s that arose from serious conceptual errors and heavy political pressure that are hard to imagine today. Perhaps the most important difference is that Fed officials, having learned from past mistakes, now see keeping long-term inflation expectations anchored on 2% as a paramount goal. As a result, they are highly attentive to many high-frequency measures of household, business, professional forecaster, and market-implied measures. If these measures were to rise much above the top end of their post-2000 range, we are confident the FOMC would react forcefully.

### How high is the risk that the Fed will act too slowly?

There are a few reasons to be somewhat more worried than usual that the Fed might be slow to act. First, the abruptness of the reopening process and the size of the fiscal measures will make for a much faster than usual pace of recovery. This makes it easier to imagine a scenario in which the economy overheats before the FOMC hits the brakes hard enough. Second, the FOMC has decided to taper its asset purchases before raising rates, and past experience with unfavorable market reactions have made Fed officials understandably averse to any drastic or sudden changes to balance sheet policy. Third, the Fed's new monetary policy framework rejects pre-emptive tightening in response to a low unemployment rate and commits the FOMC to not lift off until inflation reaches at least 2%, which raises the odds of venturing into a steeper part of the Phillips curve.

But we believe that some investors worried about overheating take this narrative too far. In our view, AIT is unlikely to have particularly radical implications, the political pressure on the Fed today is not comparable to that in the 1960s/70s, and the Fed's new broad-based and inclusive maximum employment goal is unlikely to delay rate hikes should inflation rise beyond the Fed's comfort zone.

If the economy did overheat seriously, we would worry less that the Fed would allow an inflationary spiral than that the price of slowing things down would be high. It's hard to imagine a situation in which inflation expectations become unanchored and the FOMC doesn't react aggressively. But history shows us that nudging up the unemployment rate just enough to undo an overshoot is very difficult in practice without sparking a recession.

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# Inflation: wars vs. pandemics

Kevin Daly, Co-Head of CEEMEA Economics in GS Global Investment Research, and Rositsa Chankova\* compare how inflation and government bond yields have behaved around major wars and pandemics, finding that wars tend to be inflationary and see higher bond yields, but pandemics do not.

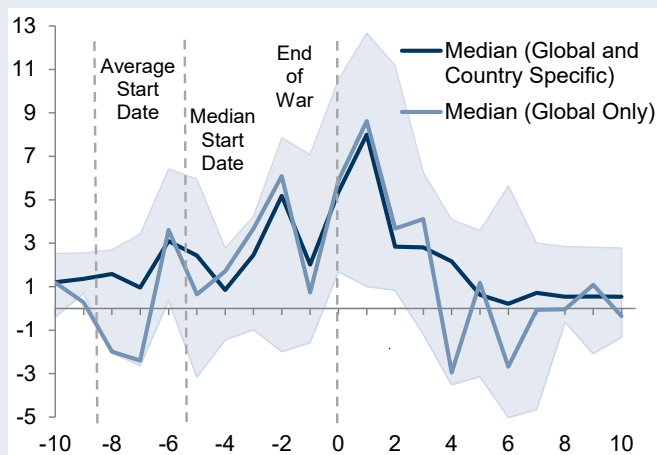
## A (very) long history of wars and pandemics

Wars					Pandemics				
Event	Years	Duration (years)	Global?	Fatalities	Event	Years	Duration (years)	Global?	Fatalities
World War II	1939-1945	6	Y	150-250m	Black Death	1331-1353	22	Y	2-3bn
World War I	1914-1918	4	Y	80-120m	Spanish Flu	1918-1920	2	Y	150-200m
Thirty Years War	1618-1647	29	Y	70-130m	Plague in Kingdom of Naples	1656-1658	2	Y	15-16m
Napoleonic Wars	1803-1814	11	Y	35-45m	Encephalitis Lethargica Pandemic	1915-1926	11	Y	6-7m
Seven Years War	1755-1762	7	Y	10-12m	Third cholera pandemic	1848-1854	6	Y	6-7m
First English Civil War	1642-1646	4		6-8m	Plague in Spain	1596-1602	6		8-9m
Vietnam War	1963-1973	10		5-8m	Asian Flu	1957-1958	1	Y	4.5-5.5m
Korean War	1950-1953	3		4-8m	Russian Flu	1889-1890	1	Y	4-5m
American Civil War	1861-1864	3		4-6m	Italian plague	1629-1631	2		3-4m
Spanish Civil War	1936-1938	2		2-3m	Hong Kong Flu	1968-1969	1	Y	2m
Franco-Spanish War	1648-1658	10		2-3m	Great Plague of Sevilla	1647-1652	5		2m
Franco-Dutch War	1672-1677	5		2-3m	Great Plague of London	1665-1666	1		1-1.5m
<b>Avg. Duration</b>		<b>7.8</b>			<b>Avg. Duration</b>		<b>5.0</b>		
<b>Med. Duration</b>		<b>5.5</b>			<b>Med. Duration</b>		<b>2.0</b>		

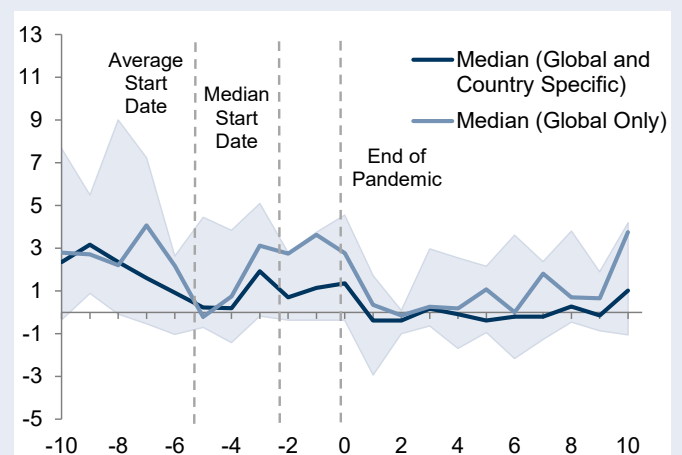
Note: 12 largest wars and pandemics, measured by deaths, excluding regional wars/pandemics without data; fatalities have been rescaled to today's global population. Source: Cirillo and Taleb (2020); Goldman Sachs GIR.

## Inflation has typically risen sharply following major wars, but not following pandemics

CPI inflation around wars, years (x-axis), % yoy (y-axis)



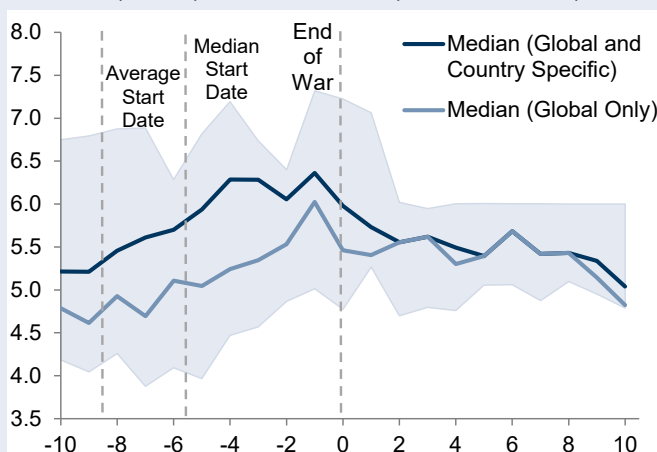
CPI inflation around pandemics, years (x-axis), % yoy (y-axis)



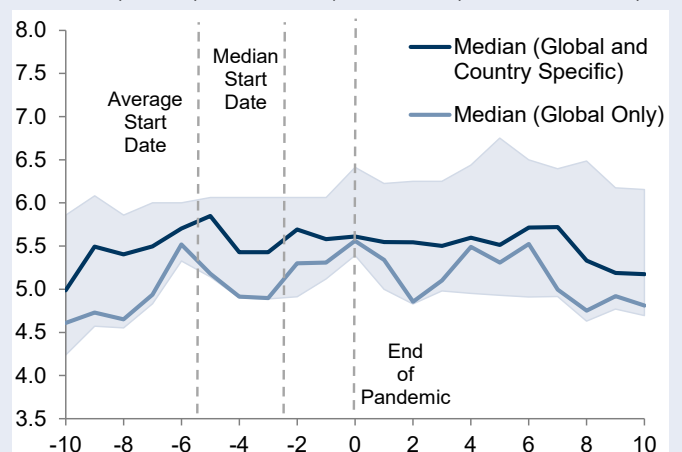
Source: BoE, Schmelzing (2018), Goldman Sachs GIR.

## Bond yields have tended to rise much more during wars than pandemics

Nominal 10y bond yields around wars, years (x-axis), % (y-axis)



Nominal 10y bond yields around pandemics, years (x-axis), % (y-axis)



Source: BoE, Schmelzing (2018), Goldman Sachs GIR.

\*Rositsa Chankova is an intern in the CEEMEA Economics team.

# All about inflation

## Measuring inflation: CPI vs. PCE

**Consumer price index (CPI).** One of the two main inflation measures, the CPI is a monthly measure of the average change over time in the prices paid by urban consumers—who represent ~93% of the total US population—for a market basket of consumer goods and services. The market basket is developed from expenditure information provided by families and individuals on their purchases, and is updated every two years. The CPI is constructed through price data compiled by the Bureau of Labor Statistics.

**Personal Consumption Expenditures (PCE) price index.** The other of the two monthly main inflation measures, the PCE measures price changes for a basket of goods that evolves on a monthly basis as household expenditure patterns shift. Because consumers tend to shift their spending over time to buy products with relatively lower inflation, the PCE tends to report lower inflation than the CPI. So the PCE likely provides a closer representation of actual price changes in the economy, which is one reason the Fed prefers to use it instead of the CPI. The PCE price index is produced by the Bureau of Economic Analysis.

## Pricing inflation: Survey and market-based indicators

**Survey-based inflation expectations.** Measures of inflation expectations based on surveys of the general public or professional forecasters and economists conducted by various institutions. Popular surveys include the New York Fed Survey of Inflation Expectations, University of Michigan's Survey of Consumer Attitudes and Behavior, and the Survey of Professional Forecasters.

**Market-based inflation expectations.** Inflation expectations derived from the prices of financial securities. Two common gauges of market-based inflation expectations are the 10y breakeven inflation rate—calculated by comparing 10y nominal Treasury yields with yields on 10y TIPS—and **inflation swaps**. Such measures of expectations include a risk premium to compensate investors for inflation uncertainty and may be affected by factors unrelated to changes in expectations.

**Treasury Inflation-Protected Securities (TIPS).** A type of US government bond that provides protection against inflation. Like US Treasury bonds, TIPS pay interest twice a year at a fixed rate and repay their principal at maturity. However, while the interest rate is fixed, the principal invested in TIPS adjusts with changes in the CPI, increasing with inflation and decreasing with deflation. As a result, TIPS interest payments fluctuate with inflation. Consider an investor who buys a 30y TIPS for \$1,000 with an annual coupon of 1%. If CPI inflation in the first year following the investment is 2%, the principal will adjust to \$1,020 ( $\$1,000 \times 1.02$ ), while the annual interest payment would be \$10.20 ( $\$1,020 \times 1\%$ ). At maturity, the TIPS investor would receive the greater of (a) the inflation-adjusted principal and (b) the original principal.

**Breakeven inflation rates.** The difference in yield between US Treasury bonds and TIPS of the same maturity. Because US Treasury bonds guarantee a nominal yield and TIPS guarantee a real yield, the breakeven rate should reflect investors' expectations of the future rate of inflation. If future inflation were to match this rate, holders of regular US Treasury bonds and TIPS would, in theory, receive the same return and therefore "break even." In practice, however, breakeven inflation rates reflect more than just inflation expectations. They include risk premia to compensate investors for the uncertainty around the future rate of inflation and can reflect the relatively lower liquidity of the TIPS market compared to the regular Treasury market.

**Inflation swaps.** Contracts in which one party agrees to swap fixed payments for floating payments tied to the inflation rate, for a given notional amount and period of time. One party (the "payer") makes a payment that varies according to the actual rate of inflation over the contract period. The other party (the "receiver") makes a fixed payment based on the expected rate of inflation plus some inflation risk premium. The fixed rate is known as the inflation swap rate, and provides information about the expected rate of inflation at the time the contract matures. Inflation swaps are used by market participants to hedge inflation risk and to speculate on the course of inflation, and by market observers more broadly to infer inflation expectations.

**Inflation forwards.** Derived from **breakeven inflation rates** or inflation swap rates with different maturities, these are usually quoted as AyBy, reflecting expected inflation over a period of A years beginning B years from now. For example, the 3y7y forward rate—in the belly of the curve—reflects average expected inflation over a three-year period beginning seven years into the future.

## The Fed's inflation framework: A shift to AIT

**Flexible average inflation targeting (AIT).** Adopted by the Fed at the 2020 Jackson Hole Symposium, under AIT the FOMC will aim for inflation moderately above 2 percent following periods when inflation has run persistently below 2 percent in order to average 2 percent over time. This framework marks a departure from the previous "let bygones be bygones" approach of policy not responding to past deviations of inflation from target, though Fed Chair Powell has emphasized that the FOMC will remain flexible and will not be tied to a particular mathematical formula.

Source: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve, Goldman Sachs GIR.

# Interview with Dominic Wilson

Dominic Wilson is Senior Markets Advisor in Global Investment Research at Goldman Sachs. Below, he discusses the recent repricing in US bond markets and the spillover effects on other asset classes.



**Allison Nathan: What drove the initial repricing in bond markets?**

**Dominic Wilson:** The initial bond repricing at its heart was mostly a reflection of progress in the economic recovery. Towards the end of 2020, the economy was coming out of a big hole, and vaccine announcements led the market to upgrade its growth

expectations sharply, but bond yields barely moved; Fed anchoring and the deeply distressed starting point of the economy was enough to keep a lid on yields even as growth improved. But vaccine progress has moved the economy closer to a point of substantial growth acceleration, creating dry tinder for the bond markets to finally start to reflect rising growth and inflation pressures. The spark that likely lit the tinder was the massive fiscal stimulus that was passed in December and even more so in March, which, unlike the earlier rounds of stimulus, hasn't been implemented in the face of an immediate emergency, but rather amid an emerging economic recovery. Investors looked at the mix of all that and said, we've basically left the bond market alone as we've repriced the growth outlook in many other places, and now we're seeing a more normal recovery profile that demands yields move higher.

**Allison Nathan: What do you make of the jump in bond yields post the recent FOMC meeting? Is the market too concerned about Fed tightening?**

**Dominic Wilson:** Relative to our expectations that temporary inflation pressures will recede as the strong pace of growth we expect in coming months slows once we've passed the peak fiscal impulse—and then will only build back slowly—the front-end of the curve looks like it's pricing in too many rate hikes. But the market is grappling with two challenges regarding the Fed here. The first relates to its reaction function, meaning whether the Fed will stick to the commitment they've made under their new Average Inflation Targeting (AIT) regime not to tighten policy until they actually see the whites of the eyes of inflation, and see them for some time. Given the Fed's historical track record of tightening earlier than that, the market wants reassurance that the Fed won't walk away from that commitment in the face of economic normalization. But I don't think that will be the problem. The Fed has done a pretty careful and credible job of pushing back on that concern, and understands the risks of abandoning its commitment.

The second challenge is the more difficult one: whether the Fed's forecasts for growth and inflation that suggest tightening is still some way off will prove correct. In other words, while the Fed can provide the market reassurance about their reaction function, they can't provide the same reassurance about the economic outlook. The reality is that we're probably entering a period of unprecedentedly rapid economic growth at the same time that fiscal and monetary policy remain exceptionally expansionary. This leaves the growth and inflation trajectories highly uncertain, and if growth and inflation are high

enough, the Fed will raise rates. So the Fed can communicate their forecast to markets, but the market can still worry that the Fed is not bullish enough, and as a result wants to price in the risk that the Fed hikes before they think they will based on their current forecasts. This source of pressure and concern will likely only rise until the economy is on the other side of the growth and inflation bump we expect.

**Allison Nathan: Do moves in other asset classes post the bond market repricing make sense?**

**Dominic Wilson:** Directionally, yes. Equities, commodities and the more cyclical parts of the market have moved broadly higher, the Dollar has faced some upward pressure, and EMs have struggled a bit, which is what we would have generally expected. But the magnitude has been a bit more surprising. In particular, some of the moves in parts of the rate-sensitive space, EM and the NASDAQ have been larger than we would've predicted. That's likely in part a reflection of the fact that investors have built up overweight positions for a long time in areas that have benefited from the multi-decade secular downward trend in real rates, namely long-duration growth assets like tech stocks. These assets have substantially outperformed in recent years, and remain heavily subscribed, owing both to that trend as well as the favorable bottom-up fundamentals of these stocks. But the rates move is now challenging that kind of positioning, forcing rotations towards more conventional cyclical parts of the market, which has amplified moves in these assets.

**Allison Nathan: Are concerns that we could be on the brink of a sharp move in bond yields, perhaps similar to the 2013 Taper Tantrum, warranted?**

**Dominic Wilson:** It's still early days, but we're really only just approaching the lower limit of the real yield moves we saw in the 2013 episode, or even the more moderate bond yield volatility that occurred in 2015/16. Beyond size, I see important differences between the current episode and these historical ones. The 2013 Taper Tantrum was a major policy shock. Fed Chair Ben Bernanke surprised the market with early talk of tapering, causing the market to pull the whole Fed profile forward. That sort of Fed communication error, or surprise, has not happened today. And while the global growth backdrop was also broadly supportive in 2013, as it is now, growth in China was slowing. As a result, the China complex, EMs more broadly and commodity currencies were pummeled. There's no China slowdown dragging EMs down today in the same way.

**Allison Nathan: So are EMs less vulnerable to rising rates today?**

**Dominic Wilson:** 2013 was a particularly bad year for EMs because they were coming off a long period of outperformance, and then the slowdown in China and a real rate shock added to that fragility. Today, the structural backdrop for EMs looks better; they aren't suffering from similar levels of overvaluation or balance sheet issues, China growth is quite solid, and the commodity outlook is more positive. That said,

rising rates and the prospect of Fed hawkishness still pose a greater challenge for the EM complex than for many other places, so there's still somewhat of a tug-of-war between these positive and negative forces, even if EMs look less vulnerable now than they did in past periods of rising rates.

One way that EMs are more vulnerable today is that the carry cushion in EM assets, and particularly in EM currencies, is lower than in the past. Historically, rates in traditionally high-yielding countries like Brazil were much higher than in the US, so even if US rates were rising, EM yields still looked attractive. Given that most EM central banks have also cut rates deeply during the pandemic, this isn't the case today. However, partly as a result of that, as well as of rising inflationary pressures, EM central banks seem more inclined to move early to withdraw some of the extraordinary recent stimulus. Brazil, Turkey and Russia have already done so, and more EMs are likely to follow. Proactively hiking rates into these pressures should act as a stabilizing force for EM bond markets and currencies, especially as central banks raise policy rates from levels that could be viewed as inappropriately stimulative. And, in any case, it's better to tighten earlier than to wait until market pressure forces a more dramatic central bank response, though recent developments in Turkey show that it can be tough for central banks to stick to this course of action.

**Allison Nathan: How should investors be positioned today?**

**Dominic Wilson:** It depends on the time horizon. The market has already priced a decent amount of growth improvement ahead. But if we map how the market has priced cyclical recoveries relative to growth views historically, the market today probably still isn't fully reflecting the above-consensus growth that we expect in the coming months, and it likely won't fully reflect it until the much stronger growth actually prints. This suggests more upside for cyclical assets in the near term, so we recommend remaining long cyclical equities, as well as commodities outside of gold. At the same time, we expect rates to continue to move moderately higher—consistent with our strong growth views (see pgs. 14-15). So investors should stay away from assets that are sensitive to higher rates, like the growth-sensitive NASDAQ, and should avoid exposure to bond and bond proxies, if not outright short them. From a global perspective, non-US DMs like Japan and Europe that have more exposure to the areas we expect to do well in this environment generally look more appealing than EMs and perhaps also the broad US market.

But beyond the next few months, the investing environment may shift. Again, we forecast that after a very strong near-term bump in growth, the overall pace of growth will remain high but slow down steadily over time and that inflation pressures will prove transient. If that plays out, it will be interesting to see whether the market anchors on the level of growth or on the momentum of growth. It often does the latter, in which case some of the heavily-cyclical trades could lose some luster and some of the rate-sensitive areas that have been underperforming—EM assets, growth stocks and perhaps bonds themselves—may move back into favor.

**Allison Nathan: What would make you more concerned about the impact of rates moves on asset performance?**

**Dominic Wilson:** Either a faster or larger move in rates to the upside than we expect would likely prove disruptive to our pro-cyclical views, but over different time horizons. Near term, no matter the driver, any rapid rise in rates—10bp+ in one day or 30bp+ in a month—would likely lead to a patch of wobbliness in the equity market, as we've already seen. But past experience suggests that the market only needs rates to stop rising—rather than to reverse—to recover from these episodes. A sustained material increase in rates would likely erode the attractiveness of equities on a more durable basis. While we're still a long way away from credit and fixed income instruments looking appealing relative to the cash flow yields on equities, a 40-50bp move higher in real yields could start to present an obstacle to equities, both in terms of relative attractiveness to other assets and via the removal of the support to equity valuations that negative real yields have provided.

**Allison Nathan: What's the most underappreciated risk in markets today?**

**Dominic Wilson:** The market seems to be quite concerned about the prospect of higher inflation and the associated implications for portfolios. I worry less about this because if inflation seems at risk of moving too high for too long, the Fed will likely just head this off by raising rates more and earlier.

The risk that the market seems too complacent about is that real rates don't stay this low forever, and that the terminal rate is actually higher than the 0.5% real rate that prevailed at the end of the last cycle. Many of the factors in the last cycle that made us willing to accept that real rates would remain low are no longer in place. Recall that the last cycle began with a massive private sector deleveraging out of a huge balance sheet problem, followed by public sector austerity within 18 months of recovery. On top of that, Chinese growth shifted downward, the commodity market collapsed, and Europe and then the UK had problems of their own. The Fed then basically began to hike alone, precipitating a large Dollar appreciation. And, amid that challenging environment, a trade war began.

Conditions today look very different. The recovery is much more synchronized, the private sector will likely want to run down the significant savings it's accumulated over the pandemic once the recovery takes off, the public sector is committed to expansionary policy for longer, and commodities have entered a bull market. The market is slowly waking up to this risk, but to the extent that portfolios are deeply structured around the notion that real rates are going to remain at low levels forever, the potential need to adjust to a materially higher terminal real rate could prove to be a more persistent challenge.

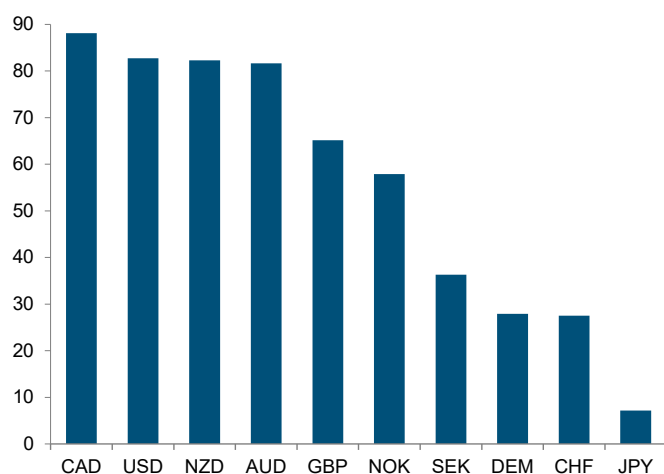
# Q&A on recent moves in bond yields

Praveen Korapaty expects the US bond selloff to continue after a brief pause, as well as further steepening of the yield curve

**Q: The fierce selloff in global bond markets over the past two months appears to be slowing. Is this just a pause amid the onset of a bond bear market, a new period of stability, or the start of a reversal?**

**A:** Since the start of the year, benchmark yields in every major bond market have moved higher. Among G10 economies, countries fall into two groups—one that includes the US, Canada, the UK, Australia and New Zealand, where 10y yields have risen by 60-90bp, and another group that mostly includes countries in continental Europe as well as Japan, where 10y yields have risen by a more modest ~25bp. While these are large moves over a short period of time, they fall well short of the spikes seen during the 2013 US Taper Tantrum or the 2015 German Bund Tantrum. And, unlike those episodes, where the selloff was the result of perceived monetary policy tightening and stretched positioning, we think the current repricing is reflationary in nature, and reflects the strong ongoing economic recovery. While yields have risen well off their lows, it's worth keeping in mind that, in most cases, those were *all-time* lows.

**G10 yields have moved higher since the beginning of 2021**  
Year-to-date move in 10y benchmark yields, bp



Source: BBG, Goldman Sachs GIR.

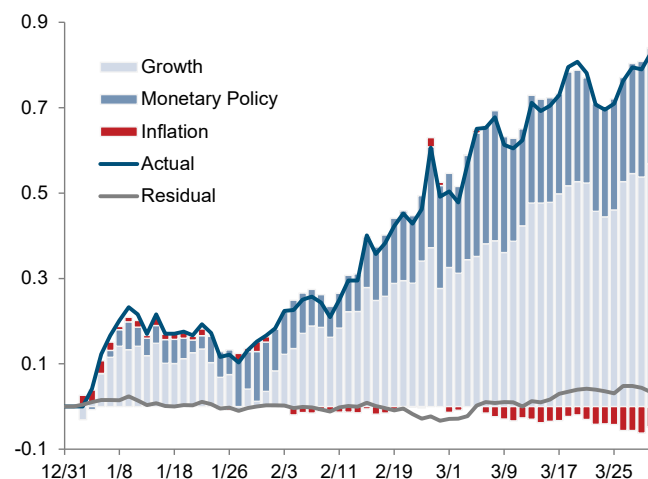
Going forward, after a brief pause, we expect the selloff to continue given our expectation for a strong acceleration in growth, which we believe markets have not yet fully priced in. We forecast year-end yields for 10y US Treasuries and Bunds of 1.9% and 0%, respectively, roughly 20bp and 30bp above current levels, respectively. So how brief a pause do we expect? We believe that most of the repricing will occur in 2Q and 3Q, coinciding with the broader opening of economies. During these two quarters, it is possible that yields exceed our forecasts given the difficulty markets may have in distinguishing between transient and permanent aspects of the economic data, but we would not expect a sizable overshoot to be sustainable.

**Q: What caused the initial selloff?**

**A:** In many cases, the exceptionally low level of bond yields following the COVID-19 shock last year suggested the market

was expecting a deep and prolonged recession. As it became clear that was unlikely to be the case, yields readjusted higher. In our view, a few specific factors drove this shift in the market's outlook. First, despite some hiccups in mass vaccination drives, market and analyst expectations about when a critical herd immunity threshold would be reached in many advanced economies have been brought forward relative to last year. Second, data have generally held up better than feared through the winter months. Third, the twin Democratic wins in Georgia—which gave the party unified control of the federal government—greatly expanded what was possible on the US fiscal front. Expansionary budget proposals also emerged in other regions like the UK. Finally, the starting point for yields in many economies, particularly in Europe, was too low, and so just pricing in a cyclical bounce led to higher yields.

**Recent yield repricing reflects the strong economic recovery**  
Year-to-date decomposition of 10y UST yields by macro factor, %



Source: Goldman Sachs GIR.

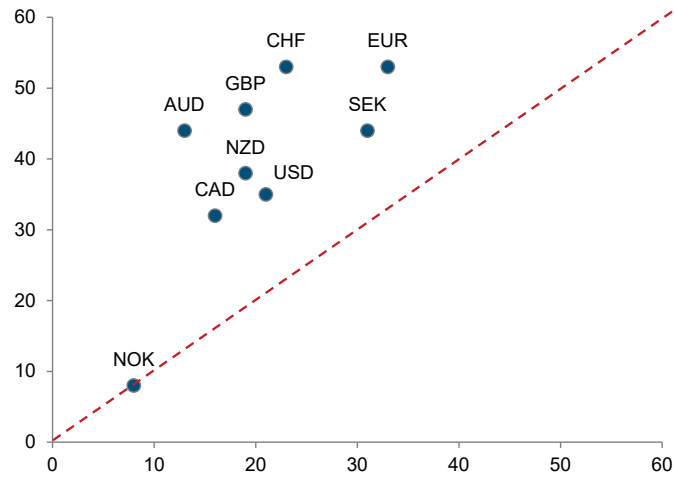
**Q: Along with higher yields, markets also appear to have pulled forward policy rate normalization. Does this make sense given that central banks have indicated that they are likely to be on hold for a while?**

**A:** If we use 1, 2, or 3y interest rate forwards to gauge how much policy rate tightening is priced, across G10 economies, markets do indeed appear to be ahead of our expectations for liftoff. Because most central banks are currently close to their respective effective lower bounds, and because forward prices are expectations over a distribution of outcomes that include scenarios with higher inflation than our base case, we would expect average market prices to reflect some tightening. However, even accounting for this, some hike pricing appears stretched to us. In the US, for instance, markets are pricing between two and three hikes by year-end 2023. The Fed's March dot plot, which shows participants' expectations of the optimal policy rate, shows no change in the median of these expectations through 2023. And our economists expect liftoff is most likely to occur in 1H24.

That said, while aggressive, we don't think market pricing is necessarily inconsistent with Fed guidance. Fed members have repeatedly noted that their guidance is outcome-based rather than calendar-based, and markets appear to be optimistic about achieving persistent above-target inflation in 2023. In other words, market hike pricing is internally consistent with market

inflation expectations, though we should note that these inflation expectations are higher than what our economists, or the Fed, expects.

**Markets are pricing liftoff ahead of our expectations**  
Months to first rate hike, market (x-axis) vs. GS forecasts (y-axis)



Source: Goldman Sachs GIR.

**Q: The Fed formally adopted a new average inflation targeting (AIT) framework last year. Have markets internalized the implications of this change?**

**A:** The Fed has been somewhat vague about the details of its goal of symmetric 2% inflation under the new framework. Fed guidance suggests liftoff won't happen until maximum employment has been achieved and inflation has "risen to 2% and is on track to moderately exceed 2% for some time." Taken literally, this means that there should be a period around and following liftoff when higher than 2% inflation is priced, but given the somewhat limited inflation shortfall we expect during this cycle, we should see a convergence back towards 2% over the long run. Traded inflation curves are extremely inverted, so they don't quite reflect this bump in the belly that would be expected under an AIT framework. That said, since markets measure headline inflation, the optimism around achieving high levels of inflation over the next one to two years could reflect not just one-offs or expectations for core inflation, but also expectations of higher commodity and especially energy prices.

**Q: What does the current mix of fiscal and monetary policy mean for the US yield curve?**

**A:** All else being equal, the Fed's new framework should mean steeper nominal yield curves. The front-end is likely to remain anchored so long as liftoff is some time away, and good news on the recovery will largely be priced as higher intermediate and longer maturity yields. Importantly, these curves will look steeper than they have in past recoveries after adjusting for where we are in the business cycle.

Real yield curves will look even steeper, again because of the Fed's new framework and employment objectives, which, in practical terms, means that the Fed will likely raise the policy rate later and possibly slower than it would have in the past given an identical set of economic data.

**Q: How have other G10 bond markets fared? What are the risks to European yields here?**

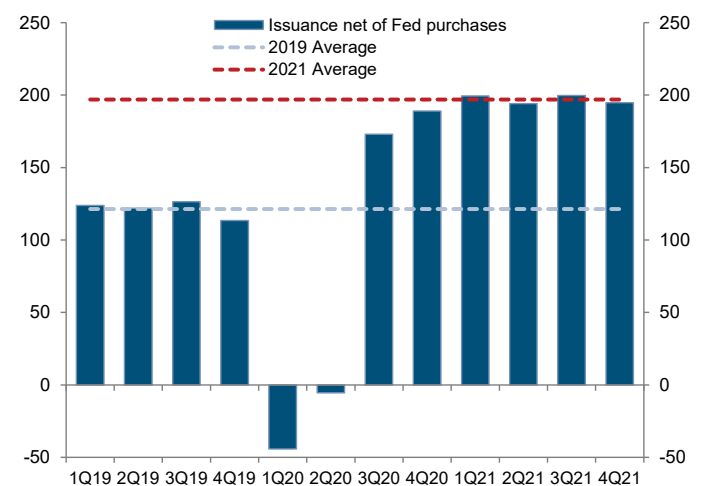
**A:** As noted earlier, G10 bond markets are bifurcated in how the recovery is being priced, with one group seeing larger year-to-date increases in benchmark yields than the other. Core Euro area yields fall into the latter category. This differentiation seems reasonable, as the former group consists of countries that have either engaged in larger fiscal expansions, or have greater exposure to the global commodity cycle. At the same time, the ECB has pushed back more strongly than other central banks against the recent selloff. Going forward, while we expect Euro area growth to lag behind some other G10 economies, we believe not enough cyclical upside is priced into yields currently—10y Bund yields are only slightly over 20bp above their lows for the year, and we think those yields can rise by another ~30bp this year.

Intra-Euro area yields are an interesting story. Italian yields have risen by a smaller amount than German yields, with the spread compression between the two owing to the emerging economic recovery, pandemic-related policy support, and, in Italy's case, political developments. But the point holds more broadly—most EMU spreads to Germany have been fairly stable, and we expect that to continue, although it is hard to make a case for further compression given the already tight levels of spreads in many cases. Increases in real yields warrant watching, though. While we are still far from levels where higher real yields would be problematic, beyond a certain threshold, yield increases would weigh fairly heavily on debt sustainability considerations, particularly in Italy.

**Q: How much of a role has supply played in the selloff?**

**A:** Not as big a role as many fear. Once we account for central bank purchases, of the G10 economies, the US is the only major source of duration supply. But even in the US, the massive amount of Fed purchases over the past year has taken enough inventory out of public hands so that, at least for now, supply hasn't been a factor. That's not to say it won't matter in the future. But, in any case, we find that these supply effects aren't large—we estimate around a 20bp rise in yields for every 10% increase in the stock of debt relative to GDP.

**Massive Fed purchases have taken USTs out of public hands**  
Average monthly net UST issuance in 10y equivalents by quarter, \$bn



Source: Haver Analytics, Goldman Sachs GIR.

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# Equities and reflation

Peter Oppenheimer argues that the coming reflationary cycle should support equities and Value and Cyclical sectors in particular

The recent swift move higher in US yields alongside rising market inflation expectations has raised the prospect of a paradigm shift in equity markets after a decade of subdued inflation following the Global Financial Crisis (GFC). In contrast to the last equity bull market, the combination of significant monetary support and fiscal expansion prompted by the pandemic—a kind of practical application of modern monetary theory—coupled with a very strong synchronized economic rebound from a record deep recession, points to a far more reflationary environment ahead. The expected drivers, magnitude and speed of this reflation should be positive for equities, in our view, and support a continued rotation toward more Cyclical and Value-oriented leadership within the equity market. But this reflationary backdrop also suggests a greater risk that higher inflation expectations in time push up bond yields and slow asset price inflation.

## From disinflation to reflation

The current cycle is likely to be distinct from the cycle that prevailed after the GFC (2009-2020) in several ways. The 2020 bear market was "event-driven," triggered by the global COVID-19 pandemic and associated government policies that abruptly closed down large parts of economies to slow its spread. The recession it produced was therefore unusual in that it wasn't the result of economic or financial triggers, such as unwinding imbalances or rising interest rates, leaving less likelihood of structural overhangs in coming years, particularly in light of the aggressive monetary and fiscal policy response. In comparison, the bull market cycle that emerged out of the financial crisis came in the wake of a "structural" bear market plagued by major imbalances and a banking crisis that took time to unwind.

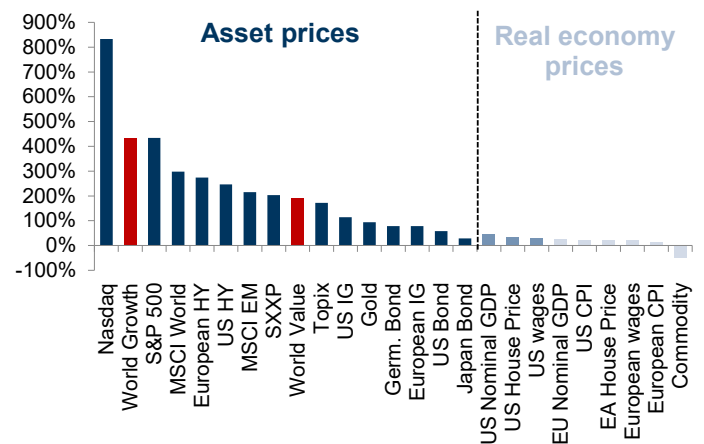
The period following the GFC was also associated with sharply declining inflation expectations, slowing long-term nominal GDP expectations, and lower revenue growth in the corporate sector, except for a small area of the market, specifically, Technology. This led to a deflationary economic and financial cycle from 2009-2020, at least in the real economy. But because this coincided with significant declines in interest rates and increased credit creation—via QE and related policies—this period also saw a significant and broad-based rise in asset prices. Since 2009, most prices in the real economy have been very subdued, while asset markets have experienced significant inflation. Within asset markets, the highest inflation has been in the longest duration growth assets—the Nasdaq and "Global Growth" stocks—and the weakest in the markets more levered to growth—such as Europe and Japan—and also in shorter duration "Global Value" stocks.

Looking ahead, the different drivers and changing mix of policy support in the current cycle suggest greater risk of a reflationary cycle that could see rising inflation expectations leading to rising bond yields, which, in turn, slow asset price inflation. On a relative basis, however, equities should protect investors against higher inflation expectations to some degree, while bonds will suffer from higher term premia. This is particularly

likely in the current environment when years of falling inflation expectations and perceived downside growth risks have resulted in rising equity risk premia (ERP) and a coincident increase in equity valuations. As global growth expectations accelerate from the COVID-led recession, and policy rates remain at the zero lower bound—forcing real rates to be negative—the ERP will likely narrow, supporting equities.

## Asset prices outpaced "real economy" prices in last cycle

Total return performance in local currency since January 2009, %



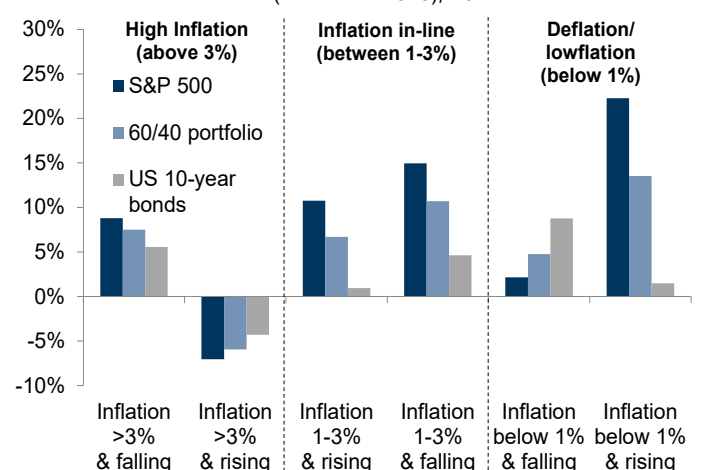
Source: Datastream, Haver Analytics, FRED, STOXX, Goldman Sachs GIR.

## Dissecting the impact of inflation on equities

While starting valuations and the ERP will likely be significant determinants of equity performance amid the current reflationary backdrop, the impact of any change in inflation on the broader stock market will depend on three main factors: the level of inflation, the speed of any change in inflation and the drivers of the change.

## Low but rising inflation is best macro backdrop for equities

Annualized real total return (data since 1910), %



Source: Robert Shiller, Goldman Sachs GIR.

**The level and direction.** Equities tend to perform best either when inflation is rising from very low levels and the risks of deflation are falling, or when inflation is moderating from high levels. Higher levels of inflation, above the 3% threshold and rising, have historically produced the worst outcomes for equities, bonds, and balanced funds. For equities in particular, the best returns tend to be when inflation is below 1% but rising; this is often associated with a recovery from a recession and also a diminishing risk of deflation, and it is therefore not



particularly supportive to bond markets.

**The speed of change.** Gradual moves in inflation expectations, and therefore bond yields, tend to be more benign for equity markets than very fast moves, which tend to hurt equity performance. S&P 500 returns, for example, have typically been negative in months when bond yields have risen by more than two standard deviations. When bond yields have surged by one to two standard deviations in a month, or around 20-40bp today, S&P 500 returns have typically been flat.

**The drivers of rising bond yields.** Generally, equities perform better when increases in bond yields are driven by rising breakeven inflation expectations as growth expectations rise, and do worse when rising nominal yields mainly reflects a rise in real yields. In particular, if moderating growth expectations are driving a decline in breakeven inflation and, therefore, rising real interest rates, equities tend to perform poorly. But if rising nominal rates are a function of stronger growth expectations, so that inflation expectations also rise, real rates are likely to remain unchanged and equities will generally fare better. Rising real rates that reflect higher term premia because of greater uncertainty in central bank policy are also likely to have a less favorable impact on equity markets in general.

In the current environment, inflation is rising from low levels, the pace of the rise is expected to be relatively gradual, especially when adjusting for transitory pandemic-related base effects, and the main driver of the inflation, and thus, rising bond yields, is expected to be better growth as the economy continues to recover from the pandemic hit. This all reinforces the likelihood that the expected reflationary backdrop will be a tailwind for equities this time around, rather than a headwind as has been the case in some past reflationary cycles.

**A (possible) shift in leadership**

Amid expected broad support for the equity complex, stronger growth and potentially higher inflation expectations could lead to a shift in equity sector leadership in the coming cycle away from the significant outperformance of Growth versus Value since the GFC, at least at the margin.

**Growth stocks have outperformed since the GFC**

MSCI world indices, relative price performance in local currency, index



Source: Bloomberg, Goldman Sachs GIR.

The last cycle was dominated by growth companies, which are characterized by long duration and benefit from falling interest

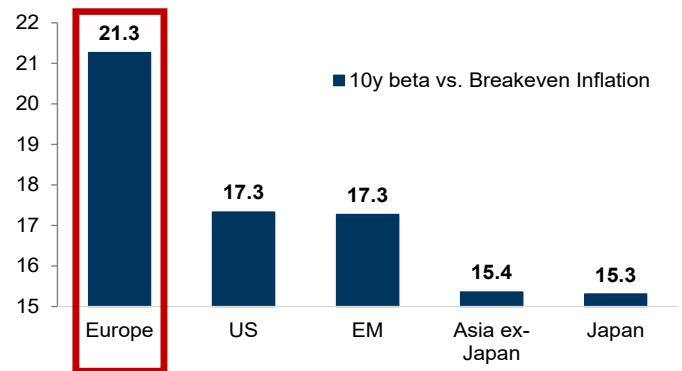
rates, significantly outperforming value companies, which are cheaper and typically found in mature and heavily-disrupted industries that were negatively impacted by lower inflation and interest rates.

Higher bond yields and inflation expectations from here would be consistent with a continued rotation of leadership towards more Cyclical and Value-oriented parts of the market. In particular, rising bond yields would be most positive for groups of Cyclical and Value sectors, especially those with high operational leverage or high sensitivity of earnings to changes in global nominal GDP, such as Banks, Autos, Resources and Construction. A strong relationship also exists between the relative performance of Growth versus Value and breakeven inflation or inflation swaps. A meaningful rise in inflation expectations therefore typically triggers a reasonable degree of rotation in leadership towards more Cyclical and Value-oriented companies.

The impact of inflation and bond yields on sector returns can also be reflected at the regional level as some markets are much more exposed to Growth sectors, such as the US and China, while others have a higher composition of Cyclical and Value companies, like Japan and Europe. Similar to Value sectors such as Commodities and Banks that have been the biggest laggards of the post-GFC era, Europe—also a big laggard—stands to benefit from higher global inflation too.

**European equities more sensitive to inflation**

10y beta of major global equity indices to breakeven inflation



Source: Bloomberg, Goldman Sachs GIR.

The increased focus on de-carbonization may also support these rotational and regional shifts in performance. While the digital revolution dominated the last cycle and, along with it technology and capital-light businesses, the de-carbonization revolution is likely to support increased growth in other sectors that have hitherto experienced mature growth, such as utilities. Such sectors may also benefit from significant increases in capex spending focused on upscaling renewables capacity and distribution.

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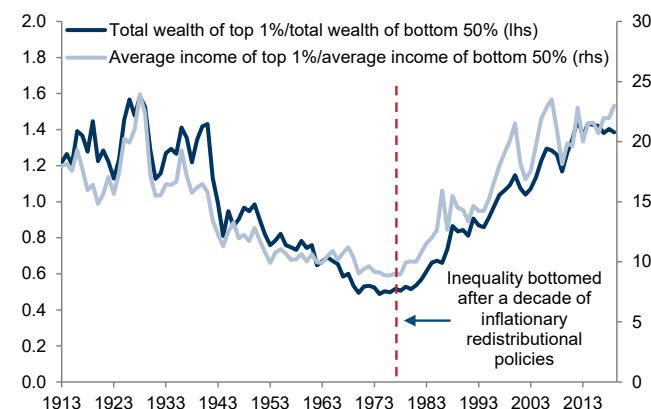
# The inequality-inflation tradeoff

Jeff Currie argues that the defining driver behind past commodity bull markets associated with reflationary episodes has been populist policies focused on redistribution

Physical inflation, as measured by commodity prices, CPI or wages, is a dynamic driven by volume. It occurs when the volume of demand exceeds the volume of supply, creating a scarcity premium in prices. In contrast, financial inflation as measured by the stock market, bond yields or even GDP is a notional value dynamic—volumes simply do not matter. As we learned in the post-financial crisis period, a few economic sectors and people can drive stocks, bonds and GDP higher without creating physical price pressures.

Precisely because volumes matter in creating physical inflation, demand driven by the relatively small number of high-income households simply can never be large enough to create physical inflation. These households, however, do control a large amount of notional wealth, and can therefore create financial inflation and drive GDP growth. This suggests a negative relationship between physical inflation and income inequality. It is not a coincidence that income equality in the US was at its peak during the 1970's—a period of high inflation and commodity prices.

## Inequality bottomed after the War on Poverty drove the 1970's commodity supercycle



Source: *Distributional National Accounts, Goldman Sachs GIR.*

Rather than technological or demographic drivers, this suggests that the commodity underperformance of the past decade, and deflationary pressures more broadly, were the inevitable consequence of global policy focused on macro and financial stability following the Global Financial Crisis (GFC). By definition, these policies took risk out of the system, and left the global economy stuck in a mid-cycle holding pattern with asset price inflation that benefited a few high-income households that don't consume a large volume of goods, driving inequality up and inflation down.

## The pandemic, not the vaccine, is the catalyst for the next supercycle

It's perhaps no surprise, then, that all major commodity bull markets and inflationary episodes have been invariably tied to redistributive, or populist, policies that have reduced income and wealth inequality. Creating physical demand requires

volume, achieved by increasing the incomes of as many households as possible, and especially those households that are most likely to spend it. It is a well-known fact that the propensity to consume is higher among lower-income households that are inherently consumption-constrained. Moreover, these households have a higher propensity to consume physical goods over services, and commodity-intensive goods—food, fuel, and capital goods—than higher-income households.

The stark health, wealth and racial inequalities in Western society that the pandemic laid bare has prompted a shift towards such populist policies, which will reach many more lower-income households ready to spend than the macro-stability policies enacted following the GFC. We see this shift as the catalyst for the next commodities supercycle, as policies are designed to increase the volume of demand and broaden access to future GDP growth. Such inclusive growth accentuates further rises in physical goods demand.

## Solving inequality requires an overheating economy

Policies to address income and wealth inequality that shift unspent savings from a few high-income households to a large number of low-income households with a higher propensity to spend—whether this is achieved through borrowing, taxing or other methods—almost ensure the strong volumetric demand growth that lies behind an overheating economy and physical inflationary pressures. Indeed, we find that wage growth compression historically has only been achieved in overheating economies as it requires reaching deep into the labor pool. This can only occur late in the business cycle when scarcity makes sticky labor look more attractive than flexible capital.

## To help reduce inequality, policymakers are incentivized to run the economy hot

		Below Capacity		Above Capacity	
		Growing Slow	Growing Fast	Growing Fast	Growing Slow
Phase of the business cycle		Recession	Recovery	Expansion	Slowdown
Wage growth vs. median	Bottom Quintile	-0.5%	0.4%	2.2%	2.6%
	Second Quintile	-0.2%	-0.2%	0.6%	1.2%
	Fourth Quintile	-0.4%	-0.8%	0.0%	0.4%
	Fifth Quintile	-0.6%	-0.6%	-0.7%	-0.2%
Inflation levels	Core CPI	4.9%	3.0%	3.1%	5.9%
	Headline CPI	4.2%	2.7%	4.0%	6.9%
	PPI	4.9%	3.0%	5.9%	3.7%
Ann. daily asset returns	Commodities	-2.1%	2.1%	17.7%	8.8%
	Equities	11.0%	15.6%	13.5%	-13.2%
	Bonds	12.2%	4.5%	5.0%	14.0%

Note: Wage and inflation data 1968-2018, asset data 1981-2020.

Source: *Haver Analytics, Distributional National Accounts, Bloomberg, FRED, GS GIR.*

There is also a long history of using infrastructure projects to help compress inequality in these environments. Today, the focus on addressing climate change favors "green levelling", or using green capex to promote income equality. But this is not dissimilar from past power-related infrastructure projects, like the Tennessee Valley Authority in FDR's New Deal, which also had the benefit of addressing environmental and social issues.

## Supply shocks are inflation's red herring—populist policies are the key

A common misperception is that oil supply shocks and cost-push inflationary pressures drove the commodity bull market and the inflationary episodes of the 1960s/70s. But the supply shocks actually created recessions, reducing the volume of physical demand and, in turn, price pressures. Rather, inflationary pressures only emerged as the result of populist

policies. It is almost entirely forgotten that OPEC's first attempt at an oil embargo in 1967 failed to increase oil prices because of insufficient demand. In contrast, after five years of Lyndon B. Johnson's populist "War on Poverty", oil demand growth accelerated from 3.9% in 1967 to 8.1% in 1973—more than sufficient to make OPEC's second attempt at an oil embargo successful.

Although the combination of rising oil prices alongside a rising unemployment rate led observers to blame cost-push inflation for the apparent ensuing period of "stagflation", in actuality, per capita demand increased markedly during this period, driven by a surge in employed people not captured by the unemployment rate given a sharp increase in the labor supply. Metals prices, however, reflected this dynamic—as the poverty rate declined, household formation rose, increasing demand for metals-intensive goods.

### Sharp rises in employment driven by higher participation rates are a better signal for commodity price pressures than the unemployment rate

Thousands (lhs), % (rhs)



Source: Haver Analytics, Goldman Sachs GIR.

Even China's commodity bull market of the 2000s was a result of redistributive policy on a global scale. Once the US decided to allow China to join the WTO, it unleashed a powerful outsourcing arbitrage that resulted in a redistribution of wealth to a large number of low-income Chinese laborers. With this newfound income, these households bought physical goods in large volumes just as low-income households in the US and Europe did in the late 1960s and 1970s.

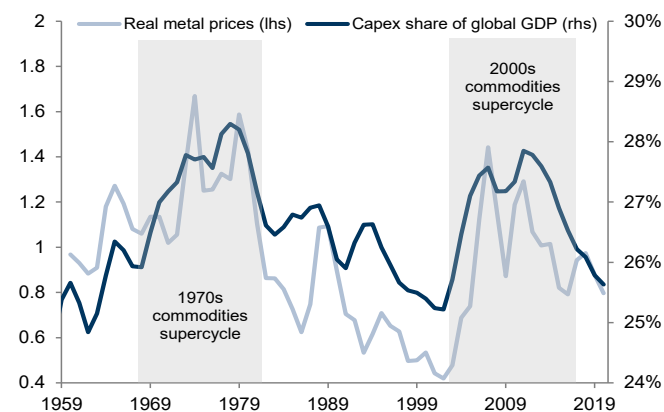
And just as it is tempting to blame supply shortages for the outperformance of commodities in the 1970s, it is tempting to blame too much supply driven by innovations in shale, nickel pig iron or smart farming, for the underperformance of commodities, and, in turn, inflation, over the past decade. However, there is little evidence of this. In oil, OPEC (in the spirit of "market stability") offset shale increases, while in metals Chinese "supply-side reforms" did the same.

### Misplaced emphasis on debt and demographics

In a similar vein, aging demographics are often blamed for lower inflation. But the strong correlation between declining poverty and rising aggregate demand suggests that demographics in and of themselves don't matter much for inflation dynamics. Instead, what is important is how many people have newfound wealth that will spend it. So the 1970s inflationary episode was associated with the baby boomers, as

is commonly understood, but from the War on Poverty that encouraged them to enter the labor market and grow their demand, not from the population growth they created.

### Metal prices reflect underlying demand dynamics better than oil prices



Source: World Bank, Maddison Project, Haver Analytics, Goldman Sachs GIR.

At the other end of the spectrum, the lack of inflationary pressures in Japan despite growing government debt owes, in our view, to the spending dynamics created by their aging and shrinking population. An aging population requires increased fiscal support from a shrinking workforce, generating a structural deficit but stagnant volumes of demand, and hence no inflation. Moreover, wealth is far more evenly distributed in Japan than in the US and most other economies. As a result, there is less need for inflationary populist policies. In fact, the upward price pressures they create would actually hurt most Japanese people that show a tendency to maintain large savings—often through JGB holdings—as well as low debt.

As a result, Japan's political economy protected voters from inflationary pressures. Periods of accommodative monetary policy were offset by more contractionary fiscal policy, and vice versa. High debt levels in Japan also provide evidence that "printing money" is not sufficient to create inflation, as the proceeds never made it to those who would spend it, but instead ended up on corporate balance sheets as excess cash. Like in the US post the GFC, this liquidity was simply recycled into the financial system.

### Hopefully this time it is different

Addressing income inequality is already igniting the next major commodity supercycle. Since the conditions for commodity and wage inflation are less stringent than that for CPI inflation, which requires letting the economy overheat far deeper into the cycle, there is hope that policymakers can navigate this. But given the powerful forces we expect to pull all physical demand higher, we recommend investors use commodities to hedge against the risk of a broader inflationary episode. After all, when did the US Democratic party last maintain a sweep through the midterm elections? It was during Lyndon B. Johnson's presidency amid his War on Poverty. Once populist policies start, they rarely stop until the people want them to. That's populism.

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# Asset (re)allocation amid reflation

## Christian Mueller-Glissmann discusses the optimal asset allocation for portfolios in the current reflationary environment

With investors moving from fading deflation risks to pricing an inflation overshoot, and as realized inflation starts to pick up, the optimal asset allocation is changing. In particular, the beneficial role of bonds in balanced portfolios will likely diminish further as reflationary pressures rise. Reflation favors greater equity exposure, which is also consistent with our current pro-risk asset allocation given expectations of a strong growth acceleration out of the COVID-19 crisis. But if inflationary pressures run too far, equities and bonds could decline together. During periods of high and rising inflation, commodities, as well non-US, short duration equities tend to outperform, suggesting portfolio tilts in these directions could prove beneficial. But as reflation optimism increases, so does the potential for disappointment. Relatively low FX and rates volatility today—which may rise should inflation-related risks increase—suggests value in hedging these risks via options.

### Low inflationary pressures have benefitted 60/40 portfolios in recent decades...

Since the early 1980s, inflation and macro volatility have declined as central bank inflation targeting ushered in the Great Moderation and as disinflationary pressures from globalization, technological disruption and demographic headwinds took hold. The growth and inflation mix during this period has been generally favorable for simple 60/40 portfolios, which have delivered strong real returns. And equity/bond correlations have been mostly negative due to low and anchored inflation, resulting in robust risk-adjusted returns. As a result, bonds have not only been in a 40-year bull market, but have also offered protection during equity drawdowns.

### ...but new reflationary pressures favor greater equity exposure...

The beneficial role of bonds in balanced portfolios has more recently been in doubt given that bond yields close to the zero lower bound offer a diminished returns buffer during "risk-off" periods. These doubts have only increased alongside concerns that an accelerating economic recovery from the pandemic-induced recession, amplified by historically large US fiscal stimulus, could lead to a strong rise in inflation and, in turn, the start of a prolonged bond bear market. During most historical bond bear markets, equities have outperformed bonds and have delivered positive real returns. This has been especially the case over the last 20 years, during which bond bear markets tended to be short and shallow.

### ...although not if inflation moves too high

But higher equity allocations present their own risks. Increased exposure to equities leaves portfolios more vulnerable to deflation or negative growth shocks.

And, importantly, equities often suffer if inflation and bond yields rise too much. Prior to the late 1990s, several bond bear markets saw bonds and equities falling together. During these periods, the rise in real rates often outpaced the increase in breakeven inflation, or inflation accelerated to surprisingly high levels. Large inflation surprises can put upward pressure on equity risk premia alongside bond premia. And high and rising inflation can also eventually force central bank tightening and broader deleveraging, which increases recession risk and macro volatility, weighing on equity returns. As a result, equities, bonds and 60/40 portfolios performed poorly during past periods of high and rising inflation.

### What's outperformed in rising/high inflation environments?

In these past periods of high and rising inflation, the broad Dollar index (DXY) tended to decline, providing opportunities for investors to protect against inflation risk by diversifying regionally within assets, and particularly by increasing allocations to non-US assets. Commodities—especially oil—have performed the best in periods of rising inflation and the worst in periods with falling inflation, irrespective of inflation levels, in large part because commodity shortages have driven many of the historical episodes of sharply higher realized inflation. Non-US equities, TIPS and gold have also helped portfolios in periods with high and rising inflation. And within equities, short duration value stocks have tended to outperform long duration growth stocks. Portfolio tilts in these directions are therefore likely to help reduce risk stemming from reflationary pressures today.

### Maintain pro-risk orientation, but hedge against risks from reflation acceleration

We continue to recommend a pro-risk asset allocation (OW equities and commodities, N credit, UW bonds) given our expectations for a strong recovery from the pandemic hit and relatively benign Fed views. The potential for reflation acceleration suggests higher equity allocations remain beneficial given the relatively moderate rise in inflation and yields that we expect (see pgs. 14-15).

That said, the combination of a strong recovery and expansionary fiscal policy raises the potential for inflation to overshoot. As a result, we favor commodities and cyclical or value parts of equities. Of course, as inflation and growth expectations continue to increase, so does the potential for disappointments. Investors therefore need to balance inflation and deflation tail risks in their portfolios.

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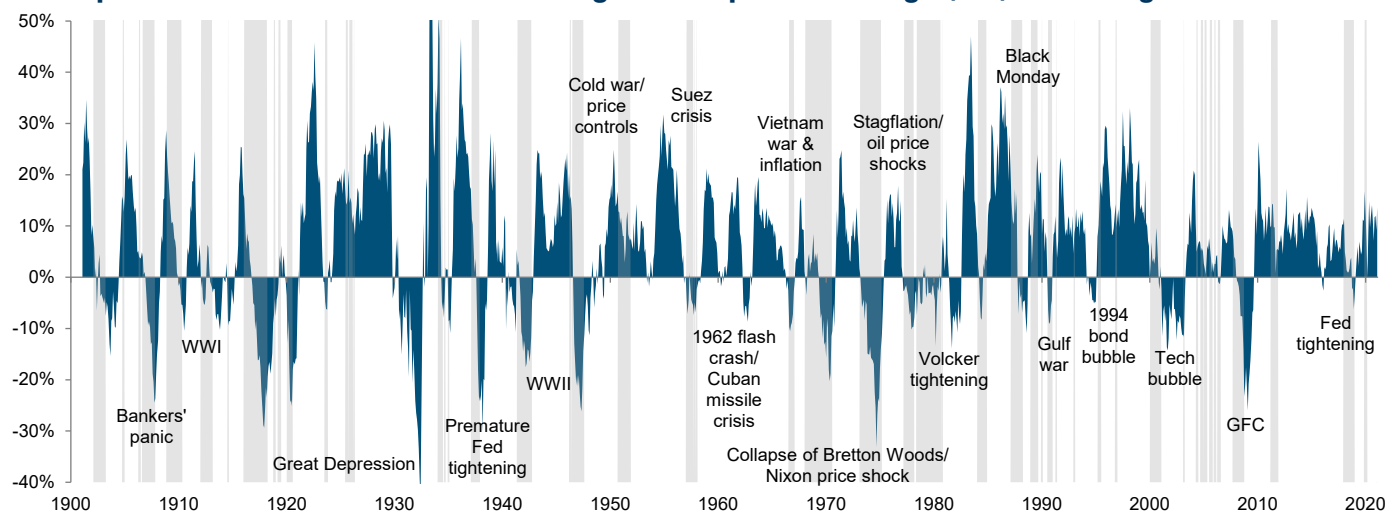
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### In recent bond bear markets, equities outperformed bonds and delivered positive real returns

Start	End	Duration (months)	US 10y drawdown		Annualized real return		
			Real	Nominal	S&P 500	US 10y bond	US 60/40
Apr-1941	Sep-1959	224	-39	24	12	-3	6
Mar-1967	May-1970	39	-22	-8	-9	-7	-8
Mar-1971	Sep-1981	128	-47	23	-2	-6	-3
May-1983	May-1984	13	-14	-9	-7	-13	-9
Jan-1987	Oct-1987	9	-17	-14	5	-23	-7
Oct-1993	Nov-1994	13	-15	-13	-1	-14	-7
Oct-1998	Jan-2000	16	-15	-12	32	-12	13
Jun-2003	Jun-2004	12	-13	-10	12	-12	2
Jun-2005	Jun-2006	12	-10	-6	3	-10	-2
Mar-2008	Jun-2008	3	-9	-7	20	-31	-4
Dec-2008	Jun-2009	5	-16	-14	11	-31	-8
Oct-2010	Apr-2011	6	-10	-8	26	-20	6
Jul-2012	Sep-2013	14	-13	-11	21	-12	7
Jan-2015	Jul-2015	5	-8	-6	9	-16	-2
Jul-2016	Mar-2017	8	-11	-9	18	-15	3
Sep-2017	May-2018	8	-11	-7	10	-16	-1
Aug-2020	Mar-2021	8	-13	-10	25	-20	5
<b>Average</b>			<b>-18</b>	<b>-5</b>	<b>5</b>	<b>-15</b>	<b>-1</b>
<b>Median</b>			<b>-13</b>	<b>-8</b>	<b>9</b>	<b>-13</b>	<b>-2</b>

Source: Haver Analytics, Datastream, Goldman Sachs GIR.

### 60/40 portfolios have often suffered during or after periods of high (3%) and rising inflation



Note: Chart shows US 60/40 portfolio real returns (yoy, monthly); grey shading indicates US CPI inflation above 3% and rising.

Source: Robert Shiller, Goldman Sachs GIR.

### Rising inflation points to pro-risk asset allocations, up to a certain level

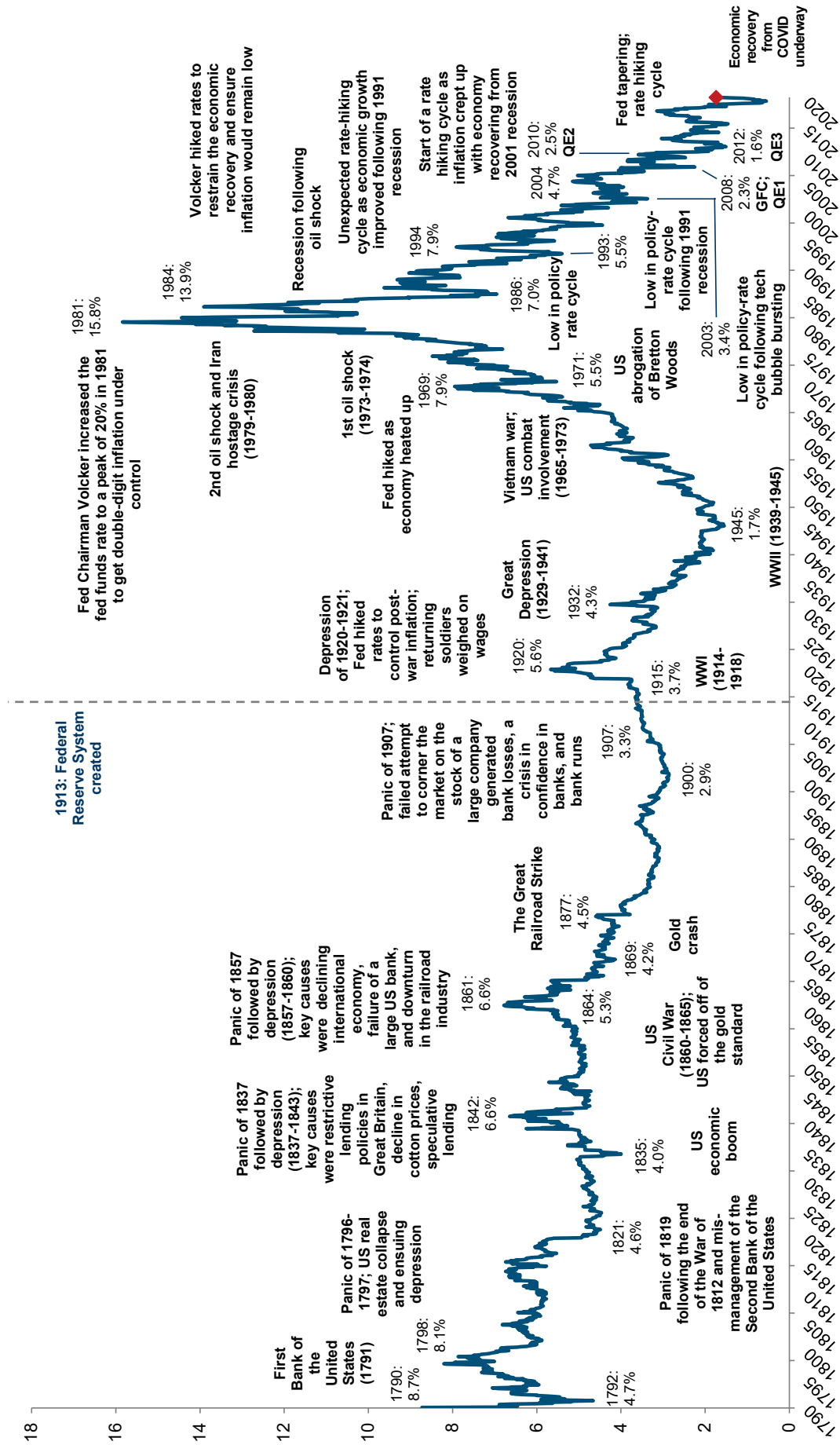
Low inflation (<1%) and rising		In-line inflation (1-3%) and rising		High inflation (>3%) and rising	
Total years: 4.7		Total years: 16.9		Total years: 15.2	
S&P 500	1.5%	Oil	1.6%	Oil	1.5%
Oil	1.1%	MSCI EM	1.3%	S&P GSCI	1.4%
60/40	0.9%	TOPIX	1.0%	Gold	1.2%
TOPIX	0.8%	S&P 500	0.8%	MSCI EM	0.6%
STOXX 600	0.7%	S&P GSCI	0.8%	TIPS 10Y	0.2%
Japan 10Y	0.4%	STOXX 600	0.6%	TOPIX	0.1%
MSCI EM	0.4%	60/40	0.5%	T-Bills	-0.1%
Gold	0.4%	Gold	0.3%	Germany 10Y	-0.2%
DJ Corp	0.3%	Japan 10Y	0.3%	US 10Y	-0.3%
TIPS 10Y	0.3%	TIPS 10Y	0.2%	US 30Y	-0.3%
Germany 10Y	0.3%	DJ Corp	0.2%	DJ Corp	-0.3%
T-Bills	0.1%	Germany 10Y	0.1%	Japan 10Y	-0.3%
US 30Y	0.0%	T-Bills	0.0%	60/40	-0.4%
US 10Y	0.0%	US 10Y	0.0%	STOXX 600	-0.4%
DX	-0.6%	US 30Y	0.0%	S&P 500	-0.4%
S&P GSCI	-0.8%	DX	-0.4%	DX	-0.8%

Note: Average monthly real total returns since 1950; gold/oil have little movement during Bretton Woods and Texas Railroad Commission; 10y TIPS history since 1959.

Source: Haver Analytics, Robert Shiller, Goldman Sachs GIR.

# The long history of US rates

## 10-year US Treasury yield



Source: Global Financial Data, Inc., Federal Reserve Board, Haver Analytics, Goldman Sachs GIR.

# Summary of our key forecasts

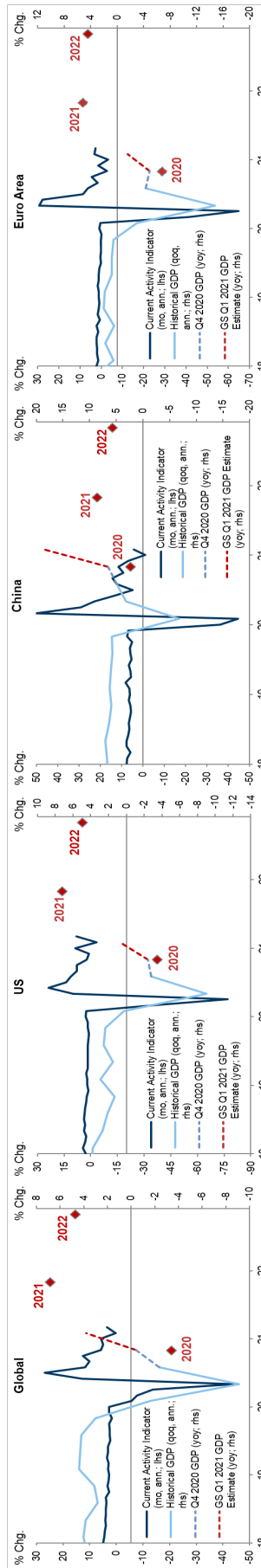
## GS GIR: Macro at a glance

### Watching

- **Globally**, we expect above-consensus global growth of 6.8% in 2021. Our optimism reflects the view that post-vaccination reopening, accommodative monetary and fiscal policy, pent-up savings, and limited scarring effects will support a continued recovery in economic activity, though the spread of more infectious virus strains poses risks.
- **In the US**, we expect above-consensus full-year growth of 7.2% in 2021 on the back of significant fiscal stimulus and widespread immunization—with 50% of the population expected to be vaccinated by May. We expect the unemployment rate to fall to 4% and core PCE inflation to reach 1.95% by year-end 2021.
- **The Fed** has adopted flexible average inflation targeting and outcome-based forward guidance, which we view as consistent with our expectation of liftoff in 1H24. The Fed has also adopted outcome-based forward guidance for asset purchases, and we expect tapering to begin in early 2022, though substantial further progress on employment and inflation could bring forward the start to 4Q21. On the fiscal policy front, the Biden administration has proposed a package focused on infrastructure and other benefits totaling \$2.2tn over 10 years, which we expect will be partially offset via higher taxes, including an increase in corporate taxes.
- **In the Euro area**, we expect 1.9% qoq non ann. growth in Q2 on the back of an expected acceleration in the vaccine rollout, though recent virus resurgence and extended lockdowns present downside risks. We expect above-consensus growth of 5.1% in 2021, and look for underlying sequential inflation to increase from the second half of the year, but expect only a gradual increase in underlying core inflation to 1.5% in late 2024.
- **We expect the ECB** will maintain a pace of PEPP purchases of around EUR 20bn per week through Q2 and exhaust the full PEPP envelope by mid-2022, but believe it will keep rates on hold until 2025. We expect the ECB to adopt a symmetric 2% inflation aim but include "soft" elements of Average Inflation Targeting (AIT) by placing some emphasis on persistent inflation misses when the strategy review concludes in September. On the fiscal side, we expect the EUR 750bn Recovery Fund, which will provide fiscal support to the countries most affected by the virus, to be ratified and disbursement to begin in Q3.
- **In China**, we expect 2021 real GDP growth of 8.5% and view the risks to this forecast as broadly balanced, with the potential for stronger-than-expected exports posing upside risk and the recent tightening of financial conditions and emission-related industrial output curbs posing downside risks.
- **WATCH CORONAVIRUS.** While the trajectory of the coronavirus remains highly uncertain, our base case assumes that declining hospitalizations will drive a continued recovery in global economic activity this year. We expect a majority of the population in most DMs to receive their first vaccine dose by mid-year, but don't see 50% vaccination being achieved in most EMs before late 2021.

Goldman Sachs Global Investment Research.

### Growth



Source: Haver Analytics and Goldman Sachs Global Investment Research. Note: GS CAI is a measure of current growth. We have recently revised our methodology for calculating this measure. 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	Interest rates 10Yr (%)				Markets				Equities												
	2021	2022	GS	Cons.	Last	E2021	E2022	FX	Last	3m	12m	S&P 500	E2021	E2022	GS	Cons.	Returns (%)	YTD	E2021	PIE	
GDP growth (%)	6.8	5.6	4.7	4.1	1.74	1.90	2.10	EUR/\$	1.17	1.21	1.28	Price	4,300	--	4,600	--	S&P500	8.0	6.0	29.2x	
	7.2	5.7	4.9	4.0	-0.30	0.00	0.05	GBP/\$	1.38	1.41	1.45	EPS	\$181	\$176	\$197	\$203	MXAPJ	14.0	2.0	21.9x	
	8.5	8.5	5.7	5.5	0.09	0.30	0.30	\$/JPY	111	108	103	Growth	27%	23%	9%	15%	Topix	-1.0	8.0	23.6x	
	5.1	4.2	4.4	4.2	0.84	1.10	1.25	\$/CNY	6.5	6.40	6.20						STOXX 600	5.0	8.0	24.8x	
Policy rates (%)					Commodities				Credit				Wage Tracker 2020 (%)								
									(bp)												
	0.13	0.17	0.13	0.29	64	75	75	USD	91	92	88	US	2.6	4.0	2.0	3.5	3.6	5.9	4.9	5.3	
	-0.50	-0.51	-0.50	-0.51	2.6	2.7	3.0	HY	310	310	300	Euro area	1.3	8.9	1.0	8.1	1.7	--	--	--	
	2.25	2.31	2.25	2.45	8,768	9,200	10,500	EUR	101	90	85	China	1.1	--	1.1	--	-2.0	-0.6	4.0	5.3	
	-0.10	-0.09	-0.10	-0.09	1,691	2,000	2,000	HY	314	305	295										

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

Market pricing as of March 31, 2021.

# 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.

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GS MAP scores facilitate rapid interpretation of new data releases for economic indicators worldwide. MAP summarizes the importance of a specific data release (i.e., its historical correlation with GDP) and the degree of surprise relative to the consensus forecast. The sign on the degree of surprise characterizes underperformance with a negative number and outperformance with a positive number. Each of these two components is ranked on a scale from 0 to 5, with the MAP score being the product of the two, i.e., from -25 to +25. For example, a MAP score of +20 (5;+4) would indicate that the data has a very high correlation to GDP (5) and that it came out well above consensus expectations (+4), for a total MAP value of +20.



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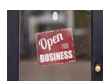
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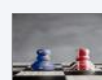
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