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TOP *of* MIND 2020 UPDATE, AND A PEEK AT 2021

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The Goldman Sachs Group, Inc.

2020, and a peek at 2021

As we head into year-end, we continue our tradition of taking stock of our **Top of Mind** themes, updating/revisiting our favorite graphics, and highlighting what to look for next year.

In a word, 2020 was unpredictable. A once-in-a-century pandemic took the world by storm. The global economy experienced what's likely the deepest and fastest recession since at least WWII. And yet many equity markets are set to end the year near record highs.

Indeed, the spread of **2020's Black Swan: Coronavirus**, which at last count has sadly infected at least 74 million people and caused more than 1.6 million deaths worldwide, dominated growth, markets, and, of course, our daily lives, throughout the year. The lockdowns in China in Q1, followed by Europe, the US and much of the rest of the world in the spring, caused the global economy to screech to a halt, pushing the world into a uniquely sharp **Recession**—with global activity falling by an estimated 20% from January to the trough in April.

Risky assets collapsed, with the S&P 500 falling by 20% in just 16 trading days (Feb 19 – Mar 12), marking the fastest bear market in history. And commodity markets bore the brunt of the hit; despite OPEC+ finally agreeing to a historic **Oil** production cut in the face of plummeting demand and a tremendous surplus of physical oil supplies with nowhere to go, on April 20 the nearby WTI oil price contract closed at -37.6/bbl—the first negative settle ever.

All of this ignited a massive policy response, with the Fed swiftly cutting rates to the zero lower bound and other central banks with room to cut also doing so. And the Fed, ECB and other central banks expanded existing asset purchase programs and, in some cases, initiated new ones. The Fed also created a number of new facilities to backstop credit markets and ensure market functioning, solidifying its position as the liquidity provider of last resort. On the fiscal side, policymakers implemented fiscal easing much larger than during the Global Financial Crisis—on the order of around 7-8% of global GDP—which pushed global public **Debt** levels to roughly 100% of GDP this year—the highest level on record.

But almost as swiftly as economies shut down, they began to **Reopen**, with the manufacturing and construction sectors—where social distancing and other virus control measures are easier to implement—leading the way. Although the reopening process has been far from smooth, today the GS Effective Lockdown Index implies that global GDP has made up about 75% of the sharp drop that occurred in the first part of the year, and that pandemic-induced shutdowns are now inflicting a roughly 8% drag (vs. 20% at the peak) on growth relative to pre-pandemic levels. This has translated into eye-popping double-digit sequential growth rates in many countries during the second half of the year, with the US in particular expected to realize average quarterly annualized growth of 19% in 2H20.

But a significant further recovery in growth—especially in consumer-facing sectors—will likely require a successful rollout of

a COVID-19 **Vaccine** that facilitates the development of herd immunity. With the UK, Canada and the US recently approving the Pfizer-BioNTech vaccine for emergency use—and vaccinations of high-risk groups having already begun—achieving this goal seems increasingly likely.

As for the growth implications of the other key event this year—the US election—we believe that the election of Joe Biden as the next US president, likely alongside a Republican-controlled Senate (with the crucial Senate majority hinging on the outcome of the January 5 Georgia runoff races), suggests that **Post-Election Policies** will be moderately supportive of growth, but not nearly as much as they likely would have been with a Blue Wave election outcome.

All told, assuming large shares of the DM population are vaccinated by mid-2021 and the EM population by the end of 2021, continued but fading fiscal stimulus in most major economies (that will push debt-to-GDP levels even higher), and still dovish monetary policy across the major central banks next year (and beyond; we don't expect first rate hikes by the Fed, ECB and BOE until 2025), we expect above-consensus global growth of 6.3% in 2021, with our growth expectations exceeding consensus in all major economies except China.

This favorable growth backdrop leads us to believe that pro-cyclical assets remain well-positioned heading into 2021, and we expect higher equity and commodity prices, tighter credit spreads, steeper rates curves and a weaker Dollar. But given that the market has already moved in a pro-cyclical direction in response to positive vaccine news, we see the largest potential gains where we see the furthest room to run: commodities, Emerging Market assets, and breakeven inflation. We also see a further 6% decline in the broad trade-weighted **Dollar** index over the next 12 months, with risks skewed toward an even weaker Dollar.

The other places where we expect continued laser-focus by governments, investors and corporates in 2021 and beyond? **Climate**, as Biden begins to implement his climate agenda, the EU Green Taxonomy moves forward, and investment vehicles like green bonds and carbon ETFs (as well as ESG investing products more broadly) continue to proliferate. And **Racial Economic Equality**, given the growing realization by all members of society that achieving such equality is not only a moral imperative, but also essential for the health and vibrancy of our economy and our world more generally.

We thank you for your readership during this very trying year, and wish you a **healthy**, happy, and prosperous 2021.

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In the words of our 2020 interviewees

"It doesn't do any good to think about what's going to happen to the economy, or for how long the stock market is going to decline or to how low. These things are unknowable. What really matters is whether price is proportional to fundamentals. It's all about value."

– Howard Marks, Co-Founder and Co-Chairman, Oaktree Capital Management

(Issue 87, March 24)

"The key [to ESG investing] is to clear out preconceptions and treat ESG like any other investing question, which requires forming a clear investment thesis."

– John Goldstein, GS Head of Sustainable Finance Group

(Issue 85, January 30)

"In many parts of the world, the virus still has a lot of room to run until we reach enough infections that herd immunity starts to slow virus spread."

– Dr. Marc Lipsitch, Professor, Harvard T.H. Chan School of Public Health

(Issue 92, August 13)

"One of the lessons we learned from the financial crisis is that you can see extraordinary action at the peak moments of crisis, but even when things are still quite bad, people can tire of taking action, and not want to do anymore."

– Jason Furman, Professor, Harvard School of Government

(Issue 87, March 24)

"Without a doubt, the most pressing [foreign policy challenge over the next four years] will be the US-China relationship, and more broadly, the future orientation of global technology and data."

– Ian Bremmer, President and Founder, Eurasia Group

(Issue 93, October 1)

"In some ways, the rise in the incidence of non-work represents the most fundamental change in the outcomes for men, and Black men in particular, in this country in many decades. And it suggests that just focusing on "earnings" gaps... presents an increasingly poor picture of what's happening in the population overall."

– Kerwin K. Charles, Dean and Professor, Yale School of Management

(Issue 91, July 16)

"By all logic, the Dollar's dominance in the global monetary system should be declining... But the reality is that the Dollar's position remains as dominant as ever."

– Eswar Prasad, Professor, Cornell University

(Issue 94, October 29)

"When you step back, recent [oil] developments are a ...culmination of an unsustainable supply management strategy that is coinciding with an enormous demand shock, and the answer has to be low prices."

– Gary Ross, CEO of Black Gold Investors and Founder of PIRA Energy Group

(Issue 88, March 31)

"In regards to both the transmission and severity of cases, this could be a very significant event."

– Dr. Michael Osterholm, Director of the Center for Infectious Disease Research and Policy, University of Minnesota

(Issue 86, February 28)

"The whole point of having a strong balance sheet is to be able to use debt aggressively when you're faced with a full-on crisis. And this is one where I would have no problem with policymakers taking the same actions twice over if it means we get out of this in one piece."

– Kenneth Rogoff, Professor, Harvard University

(Issue 90, May 28)

"You don't want to wait for that exponential growth to show up in the numbers before reimposing some restrictions."

– Dr. Zeke Emanuel, Vice Provost of Global Initiatives, University of Pennsylvania

(Issue 89, April 28)

"It's not just the rate of global growth that matters for the Dollar's value, it's how global growth compares to US growth."

– Barry Eichengreen, Professor, University of California, Berkeley

(Issue 94, October 29)

"[Under President Biden] higher taxes will be critical to pay for the more permanent measures required to make our economy, cities, and people more resilient to adverse shocks... But I don't believe these narrowly targeted taxes will hurt the economy, especially when we net out the benefits from what they're paying for."

– Jared Bernstein, economic adviser to President-elect Joe Biden

(Issue 93, October 1)

"If we end up choosing policies that are expensive, we're going to run out of enthusiasm before we've made substantial progress against climate change... carbon pricing is our best bet to achieve carbon reductions on the cheap."

– Michael Greenstone, Director of the Energy Policy Institute at the University of Chicago

(Issue 85, January 30)

"History shows that President Putin doesn't respond to sanctions. Sanctions just strengthen the relationship between China and Russia that has been developing in common cause against what they see as US unilateralism."

– Daniel Yergin, Vice Chairman of IHS Markit

(Issue 88, March 31)

"When we initiated our COVID-19 vaccine development program in late January 2020, we ambitiously set a target of 12 to 18 months for the availability of a vaccine at scale. Six months into the development effort, we're still on target for the first half of 2021."

– Dr. Richard Hatchett, CEO, Coalition for Epidemic Preparedness Innovations

(Issue 92, August 13)



"If you focus on the level [of activity], you might say that we assume a U-shaped recovery. But if you focus on growth rates, you'd probably call our forecast V-shaped. . . . But whatever growth we get will come from a much lower level."

– Jan Hatzius, GS Chief Economist and Head of Global Investment Research

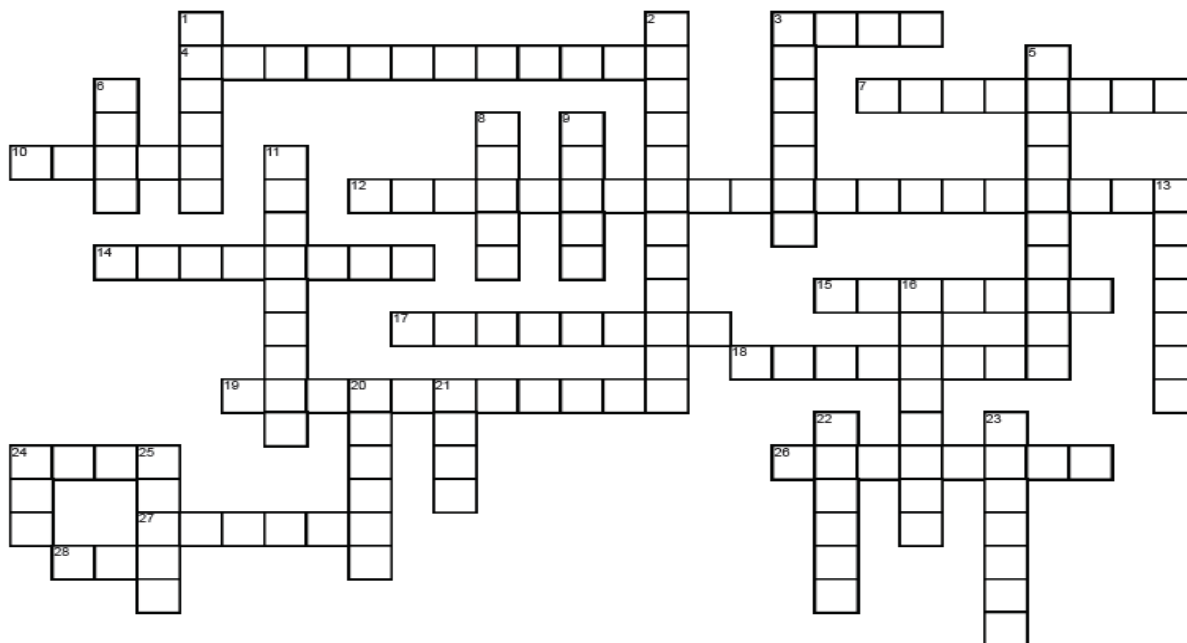
(Issue 87, March 24)

"The sense is that this infection will probably spread worldwide... stringent control measures... won't stop an epidemic, but they will slow it down and ultimately reduce the total number of cases."

– Dr. Barry Bloom, Professor, Harvard T.H. Chan School of Public Health

(Issue 86, February 28)

Revisiting 2020 themes, crossword-style



Across:

3. The Fed cut interest rates by 150bp in 2020, which compares to average easing of ___ hundred bp during post-war recessions (Issue 87).
4. Testing, ____, and vaccines are all critical parts of the medical response to the coronavirus (Issue 89).
7. The WHO uses this term for a major infectious disease that spreads within communities on multiple continents (Issue 86).
10. There are currently 18 vaccines globally in this phase of large-scale efficacy tests and 7 have been approved for limited use (Issue 92).
12. Eswar Prasad, Professor at Cornell University, argues that the ____ of the RMB was likely never an end goal for Chinese policymakers in itself, and certainly isn't one today (Issue 94).
14. Barry Eichengreen, Professor at the University of California, Berkeley, believes that the Dollar's global status has been modestly ____ for the US (Issue 94).
15. Alec Phillips, GS Chief Political Economist, argued that a Biden administration with a divided Congress—the most likely election outcome at this point—would likely result in only ____ changes to fiscal policy (Issue 93).
17. Jan Hatzius thinks it's hard to see how larger ____ would lead to weaker growth; if anything the causation runs in the other direction, in his view, especially in the near term (Issue 90).
18. According to Dr. Mark McClellan, former FDA commissioner and Director of the Duke-Margolis Center for Health Policy, this type of testing is critical not only for measuring the extent of virus exposure in different communities, but also to better understand whether past infection provides sustained immunity (Issue 89).
19. Howard Marks, Co-Founder and Co-Chairman of Oaktree Capital Management, said it's best to buy when people are ____ (Issue 87).
24. Daniel Yergin, Vice Chairman of IHS Markit, argues that while ____ is still important as a framework for oil producers, the future of the oil market will be determined by Saudi Arabia, Russia and the US (Issue 88).
26. Jared Bernstein, economic adviser to President-elect Joe Biden, notes that increasing the federal government's share of ____ spending was one of the most effective economic relief policies with the biggest multiplier in his experience (Issue 93).
27. Both Gary Ross and Daniel Yergin argue that Saudi Arabia and ____ would be reasonably well-prepared to weather a sustained period of low oil prices (Issue 88).
28. According to Dr. Michael Osterholm, Director of the Center for Infectious Disease Research and Policy at the University of Minnesota, the US was heading into a "perfect storm" as COVID-19 took hold owing to a lack of domestic supply of critical care drugs and ____ (Issue 86).

Down:

1. According to Sylvia Yeh, co-head of Goldman Sachs Asset Management's Municipal Fixed Income business, ____ are unlikely to default irrespective of their circumstances given that they have broad

powers of taxation, can cut their budgets, and continue to have access to capital markets (Issue 90).

2. A large number of coronavirus cases are mild or ____, making it more difficult to contain the spread (Issue 86).

3 Timothy Knowles and Shayne Evans, Co-Founders and Managing Partners of The Academy Group, believe that both increased ____ and a better allocation of ____ is a large part of the solution to improving school quality (Issue 91).

5. The value of the Dollar is typically ____ correlated with the health of the global economy, reflecting the currency's unique international role (Issue 94).

6. Dr. Barry Bloom, Professor at the Harvard School of Public Health, says that current estimates suggest 60-70% of the population will likely need to have protective antibodies to achieve ____ immunity (Issue 89).

8. These type of bonds were first issued in 2007, and issuance has grown over 18x from 2013-2018 (Issue 85).

9. While Kenneth Rogoff, former IMF Chief Economist and Professor at Harvard University, believes a large run-up in deficits and debt makes sense today given the size of the coronavirus shock, he cautions that they're not a free ____ (Issue 90).

11. Many climate change experts argue that it's hard to see a path to a green future that doesn't run through more efficient ____ (Issue 85).

13. Kerwin K. Charles, Dean and Professor at the Yale School of Management, believes that the rise in the incidence of ____ represents the most fundamental change in the economic outcomes of men, and Black men in particular, in this country in many decades (Issue 91).

16. A comprehensive study has shown that one key reason for the persistence of the Black earnings and income gap is that upward income ____ is lower and downward ____ is higher for Black men than for white men (Issue 91).

20. Michael Greenstone, Professor at the University of Chicago, believes that the ____ cost of carbon is the most important number you've never heard of (Issue 85).

21. GS economists have found that ____ mandates can raise the rate of actual ____ usage by 25pp on average (Issue 92).

22. Dr. Richard Hatchett, CEO of the Coalition for Epidemic Preparedness Innovations (CEPI), argues that we still don't know whether there will be sufficient vaccine ____ to achieve global herd immunity next year (Issue 92).

23. Ian Bremmer, President and Founder of Eurasia Group, believes that US policy towards China would likely look fairly similar under a Biden administration as under President Trump, with a ____ approach on issues including technology and trade (Issue 93).

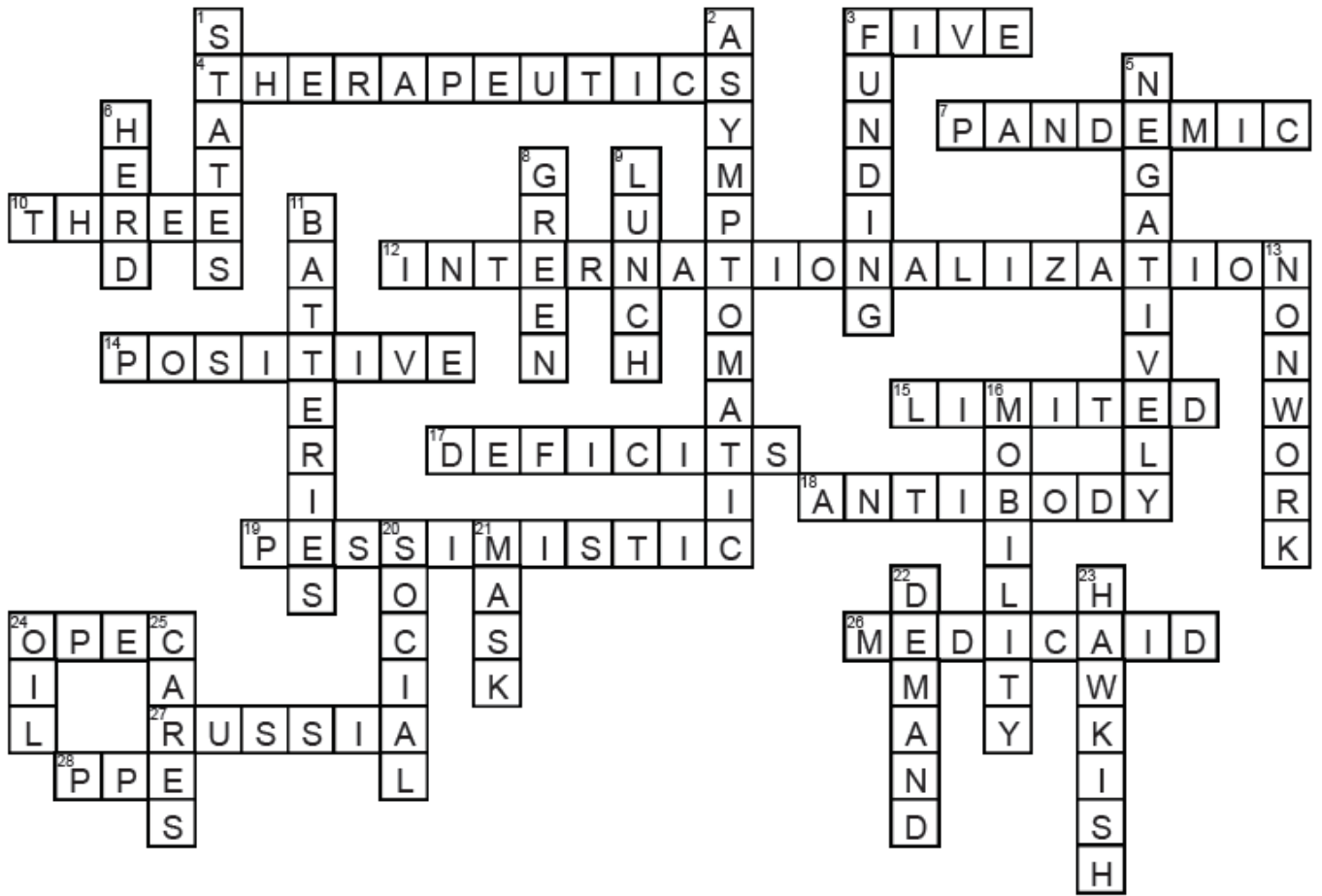
24. Jeff Currie, GS Global Head of Commodities Research, explains that negative ____ prices can occur if abundant supplies overwhelm storage and pipeline capacity (Issue 88).

25. The roughly \$2tn ____ Act provided small business loans, relief to affected industries, individual stimulus checks, expanded unemployment insurance, and state fiscal aid, among other provisions (Issue 87).

Puzzle made at <http://www.puzzle-maker.com>. Solutions on next page.

Puzzle solutions

Crossword from previous page of this report:



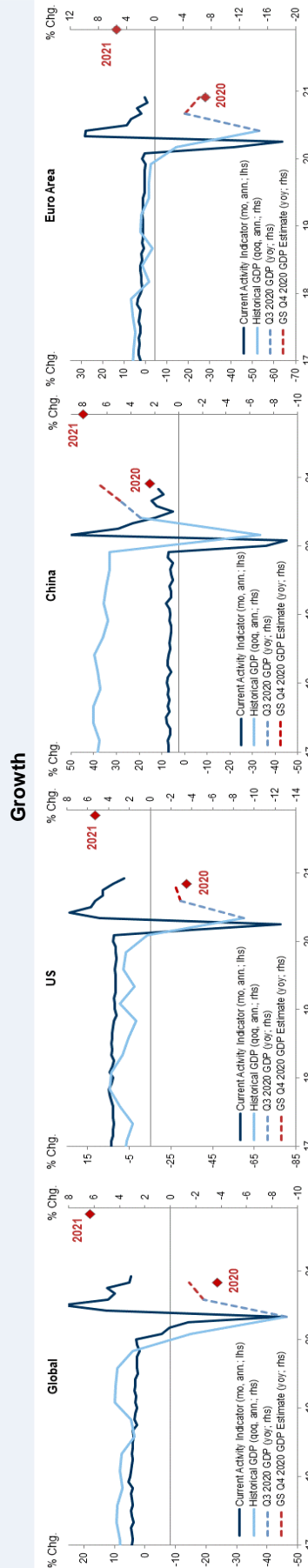
Summary of our key forecasts

GS GIR: Macro at a glance

Watching

- **Globally**, after a pandemic-induced contraction of an estimated 3.7% in 2020, we expect above-consensus global growth of 6.3% in 2021. Our optimism reflects the view that widespread immunization next year, accommodative monetary and fiscal policy, and limited scarring effects will support a continued recovery in economic activity, though the recent rise in virus cases is likely to trigger a period of softer growth this winter.
- **In the US**, we expect virus resurgence to weigh on activity through January, though services activity has proven more resilient than expected. We expect a large rebound in 1H21 on the back of widespread immunization—with 50% of the population expected to be vaccinated by April—and forecast above-consensus 5.3% growth in 2021. We expect the unemployment rate to fall to 5.2% and core PCE inflation to rise to 1.6% 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 a period of inflation around early 2025. The Fed has also adopted outcome-based forward guidance for asset purchases, committing to maintain them "until substantial further progress has been made toward the Committee's maximum employment and price stability goals." On the fiscal policy front, congressional leaders are currently negotiating a COVID-relief bill that is reportedly in the \$900bn range, which could be passed in the next few days.
- **In the Euro area**, we expect a 2.1% qoq non ann. decline in real GDP in 4Q20 and 0.9% qoq non ann. growth in 1Q21 as countries continue to contend with virus spread, but see a sharp pickup in growth from Q2 on likely widespread vaccinations. We expect full-year growth of -7.2% and 5.5% in 2020 and 2021, respectively.
- **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 next year. Given the subdued inflation outlook, we expect the ECB will keep rates on hold until 2H25. We expect the EUR 750bn Recovery Fund, which will provide fiscal support to the countries most affected by the virus, to be operational early next year.
- **In China**, we expect 2020 real GDP growth of 2.4% yoy, making China the only major economy to post positive real GDP growth this year. We expect 2021 real GDP growth of 8.0% yoy, reflecting a slightly more cautious view than consensus, based on our belief that policymakers will focus on policy normalization and the achievement of higher-quality growth next year.
- **WATCH CORONAVIRUS.** While the trajectory of the coronavirus remains highly uncertain, our base case assumes that the path of new infections and fatalities will not prevent a continued recovery in global economic activity in 2021. With the recent vaccine approvals and the start of vaccinations in the UK, Canada, and the US, we expect most DMs to vaccinate 50% of their populations by late 2Q21 and EMs to follow by late 2021.

Goldman Sachs Global Investment Research.



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	GDP growth (%)				Interest rates 10Yr (%)		Markets				Equities										
	2020	2021		Last	E2020	E2021	Last	3m	12m	S&P 500	E2021		Returns (%)		12m	YTD	E2020	PIE			
		GS	Cons.								GS	Cons.	GS	Cons.							
Global	-3.7	-3.8	6.3	5.2	US	0.92	0.75	1.30	EUR/\$	1.22	1.17	1.25	Price	4,300	--	4,300	--	S&P500	16.0	15.0	27.3x
US	-3.5	-3.5	5.3	3.9	Germany	-0.57	-0.60	-0.40	GBP/\$	1.35	1.34	1.44	EPS	\$136	\$138	\$175	\$169	MXAPJ	8.0	23.0	20.5x
China	2.4	2.0	8.0	8.2	Japan	0.01	0.00	0.10	\$/JPY	104	103	100	Growth	-17%	-16%	29%	22%	Topix	5.0	7.0	21.3x
Euro area	-7.2	-7.4	5.5	4.6	UK	0.28	0.20	0.50	\$/CNY	6.52	6.50	6.30	Credit					STOXX 600	9.0	-6.0	24.6x
Policy rates (%)					Commodities				Consumer				Wage Tracker 2020 (%)								
	2020	2021																			
	GS	Mkt.	GS	Mkt.	Last	3m	12m	Last	E2020	E2021	Consumer	2020	2021		CPI	Unemp. Rate	CPI	Unemp. Rate	Q1	Q2	Q3
US	0.13	0.11	0.13	0.13	Crude Oil, Brent (\$/bbl)	51	47	63	USD	IG	102	110	100	US	1.1	6.7	1.9	5.2	3.6	5.8	4.7
Euro area	-0.50	-0.55	-0.50	-0.56	Nat Gas (\$/mBtu)	2.7	3.25	2.75	HY	379	400	340	Euro area	0.3	9.1	0.9	9.9	1.7	--	--	
China	2.20	2.80	2.25	2.96	Copper (\$/mt)	7,814	8,200	9,500	EUR	IG	101	105	96	China	2.7	--	1.1	--	-2.0	-0.6	3.0
Japan	-0.10	-0.06	-0.10	-0.09	Gold (\$/troy oz)	1,952	2,300	2,300	HY	352	385	330	Japan								

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

Market pricing as of December 16, 2020.

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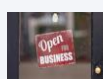
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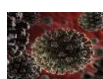
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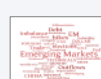
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