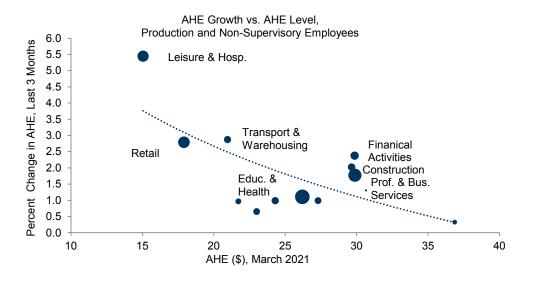


Global Views: Why the Economy Won't Overheat

1. We would attribute the modestly disappointing 559k (seasonally adjusted) US jobs gain in May to the same two factors as the much bigger miss in April. First, there may be some constraints on the number of (seasonally unadjusted) net hires that firms can process in a given month, which then translates into a weaker seasonally adjusted number in months that normally see strong seasonal net hiring. This idea is consistent with the fact that the seasonally unadjusted job gain has hovered around 1m—near the very top end of the pre-2020 range—for each of the past four months. Second, labor supply is clearly constrained in the short term. Labor force participation has been treading water since last summer at levels 1.5-2pp below the pre-pandemic peak, job vacancies have surged, and Friday's report saw a further 0.5% rise in average hourly earnings that was again concentrated in the low-paid leisure and hospitality sector, where the disincentive effects of the \$300/week unemployment benefit top-up are most pronounced.

Jan Hatzius +1(212)902-0394 | jan.hatzius@gs.com Goldman Sachs & Co. LLC

Exhibit 1: Strong Wage Growth in Leisure and Hospitality Suggests Benefits Are Reducing Labor Supply



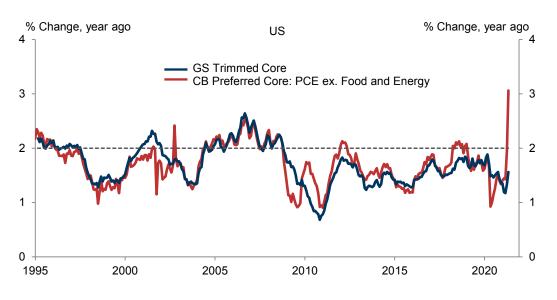
Source: Haver Analytics, Goldman Sachs Global Investment Research

2. The big wage increase comes on the heels of a 3.06% year-on-year core PCE reading in April, a 29-year high. Part of this increase was widely expected because of the base effects and the post-pandemic normalization in service sectors such as travel, entertainment, and hotel accommodation. The surprise came from supply shortages in the industrial sector which drove a big pickup in prices of durable

goods, especially used cars. Together with the increase in wage growth in recent months, this has reinforced concerns among some commentators that the US economy may be set for a damaging overheating on the back of excessive fiscal stimulus and an excessively accommodative monetary policy.

3. But there are strong reasons to believe that the inflation pickup will indeed remain transitory. On the wage side, labor supply should increase dramatically over the next 3-6 months as fear of the virus diminishes further and the \$300/week benefit top-up expires—over the next few weeks in most Republican-controlled states and on September 6 in the remaining states. On the price side, our <u>GS trimmed core PCE</u>—which systematically excludes the one-third most extreme month-to-month price changes—remains at just 1.56% year-on-year, half the standard core PCE rate. This gap illustrates the unprecedented role of outliers in the recent inflation pickup.

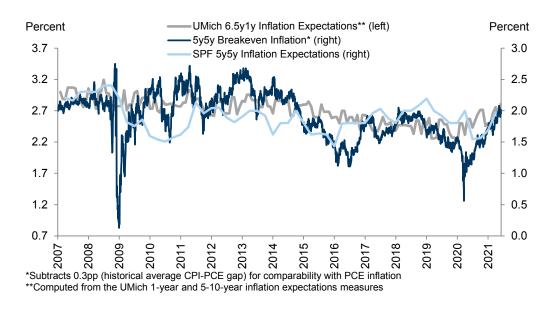
Exhibit 2: The Recent Core PCE Pickup Is Driven by Outliers



Source: Haver Analytics, Goldman Sachs Global Investment Research

4. One would expect a price surge driven by outliers to have only limited effects on longer-term inflation expectations. And this is indeed what we are seeing, at least so far. The three main measures—consumer surveys, forecaster surveys, and TIPS breakevens—have all moved higher in recent months, but in each case the increase is far more pronounced at shorter horizons than longer ones. For both the Survey of Professional Forecasters and TIPS breakevens, the 5-year 5-year forward inflation rate remains at 2% in PCE terms. For the University of Michigan survey, we can calculate a forward rate using the 5-10 year expectation corrected for the 1-year expectation. This also looks broadly consistent with a 2% longer-term PCE expectation once we adjust (roughly) for the historical gap between consumer expectations and reality. We conclude that consumers, forecasters, and bond traders still seem to expect PCE inflation of around 2% in the longer term, consistent with the speech by Fed Governor Lael Brainard last week.

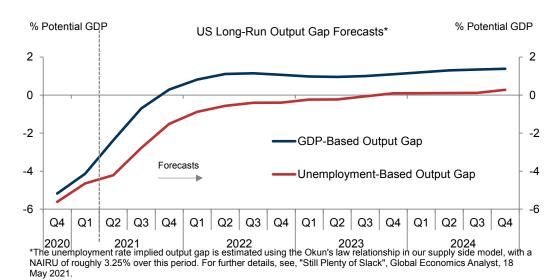
Exhibit 3: Forward Inflation Expectations Are Consistent With 2% PCE Inflation



Source: University of Michigan, Federal Reserve Board, Goldman Sachs Global Investment Research

5. Ultimately, the biggest question in the overheating debate remains whether US output and employment will rise sharply above potential in the next few years. If the answer is yes, then inflation could indeed climb to undesirable levels on a more permanent basis. But our answer continues to be no. Even though real GDP is nearly back to the pre-pandemic level, we still see significant slack in the economy based on the remaining jobs shortfall of nearly 8 million and the pandemic-driven productivity gain of 4.1% year-on-year in Q1. Moreover, we think sequential GDP growth has probably already peaked in monthly terms and will trend down from here as the fiscal impulse wanes, modestly at first and then more sharply in late 2021 and 2022.

Exhibit 4: Our Forecast Implies Only a Limited and Gradual Overshoot of Full Employment



Source: Goldman Sachs Global Investment Research

6. All this suggests that Fed officials can stick with their plan to exit only very gradually from the easy current policy stance. We still expect QE tapering to start in early 2022, with a ramp-up in guidance in August/September and a formal announcement at the December FOMC meeting. At the margin, our confidence in this call has risen slightly in the past month as the disappointing April/May job gains probably outweigh the higher inflation numbers, given Vice Chair Clarida's remark on May 17 that the tapering decision will have "more of a focus on the labor market." The timing of the first rate hike is much more uncertain because it largely depends on the behavior of inflation 2-3 years down the road, but our baseline forecast remains early 2024.

7. The longer-term outlook for where rates will settle is even more uncertain, and not only because the more distant future is always harder to forecast. Despite the long-standing love affair of macroeconomists with the notion of a "neutral," "natural," or "equilibrium" real interest rate, we don't find r* a very helpful concept. Beyond the econometric issues with popular models such as Holston-Laubach-Williams, the key economic problem is that the impact of the real interest rate on GDP is economically small, statistically insignificant (at least in recent decades), and too easily disturbed by shocks to financial conditions. This means that backing out the "neutral" rate from the behavior of the economy is challenging, to say the least. What we can say is that real rates during the 2009-2020 expansion look like a low-side outlier relative to the longer-term cross-country norm of about 1%. This makes the 5-year 5-year forward TIPS yield of about 0% look too low in a probabilistic sense, although a large increase may require actual Fed hikes that push real rates into meaningfully positive territory without large adverse economic effects—and we don't expect that test case to occur for another 4-5 years.

8. A friendly Fed supports our optimistic forecasts for global GDP growth of 6.6% in 2021 and 5.0% in 2022, both 0.6-0.7pp above the latest Bloomberg consensus. But the even more important driver is the continued pickup in global vaccinations, which are now running at 35 million or nearly 0.5% of the global population per day. Further acceleration from here will become more difficult because China is now close to its interim target of vaccinating 40% of the population. Nevertheless, we remain optimistic that 60-90% of the population in all of the world's major economies will have some degree of immunity by yearend, through vaccination, prior infection, or a combination of the two. This should allow for a dramatic improvement in service sector activity and above-consensus GDP growth almost everywhere, with China—where the virus isn't as much of a constraint on current activity—the only major exception.

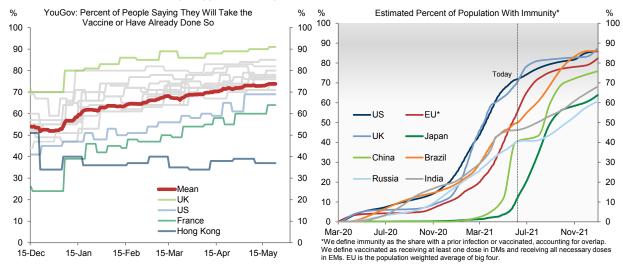


Exhibit 5: Vaccine Demand Has Trended Up, Supporting Our Optimistic Immunity Timelines

Source: YouGov, Our World in Data, Goldman Sachs Global Investment Research

- 9. Europe continues to record the <u>sharpest near-term growth improvements</u>, with manufacturing PMIs at all-time highs and service PMIs not far behind. The room for further acceleration from here looks more limited and we expect sequential GDP growth to peak in Q3 on a quarterly basis. But Europe has even further to run than the US before strong growth might raise any serious overheating concerns. While the ECB is likely to signal a <u>marginally lower Q3 PEPP purchase pace</u> at Thursday's meeting, we think the program will run for another year and the first 10bp rate hike won't occur until 2025 (versus market pricing of 2023). Across the English Channel, the gap between our views and market expectations is even greater, both in terms of our above-consensus growth forecast (8.1% vs. 6.1%) and in terms of our later-than-discounted liftoff (2025 vs. 2022); note that the latter gap reflects, in part, our expectation that the BoE will <u>run assets off the balance sheet</u> before hiking rates.
- 10. Our market views remain levered to a broadening of the global recovery at a time of friendly Fed policy and only gradually rising longer-term US Treasury yields. This should help a broad range of non-dollar currencies, most prominently the Euro. We still like commodities not only from a cyclical perspective, but also as an expression of longer-term views on underinvestment and—in the case of copper—climate change mitigation. We also maintain moderately positive views on credit and equities, though with less conviction than previously both in terms of overall direction and—in light of the peaking of US growth—in terms of our preference for cyclical sectors.

Jan Hatzius

Goldman Sachs Global Views

Disclosure Appendix

Reg AC

I, Jan Hatzius, hereby certify that all of the views expressed in this report accurately reflect my personal views, which have not been influenced by considerations of the firm's business or client relationships.

Unless otherwise stated, the individuals listed on the cover page of this report are analysts in Goldman Sachs' Global Investment Research division.

Disclosures

Regulatory disclosures

Disclosures required by United States laws and regulations

See company-specific regulatory disclosures above for any of the following disclosures required as to companies referred to in this report: manager or co-manager in a pending transaction; 1% or other ownership; compensation for certain services; types of client relationships; managed/co-managed public offerings in prior periods; directorships; for equity securities, market making and/or specialist role. Goldman Sachs trades or may trade as a principal in debt securities (or in related derivatives) of issuers discussed in this report.

The following are additional required disclosures: **Ownership and material conflicts of interest:** Goldman Sachs policy prohibits its analysts, professionals reporting to analysts and members of their households from owning securities of any company in the analyst's area of coverage. **Analyst compensation:** Analysts are paid in part based on the profitability of Goldman Sachs, which includes investment banking revenues. **Analyst as officer or director:** Goldman Sachs policy generally prohibits its analysts, persons reporting to analysts or members of their households from serving as an officer, director or advisor of any company in the analyst's area of coverage. **Non-U.S. Analysts:** Non-U.S. analysts may not be associated persons of Goldman Sachs & Co. LLC and therefore may not be subject to FINRA Rule 2241 or FINRA Rule 2242 restrictions on communications with subject company, public appearances and trading securities held by the analysts.

Additional disclosures required under the laws and regulations of jurisdictions other than the United States

The following disclosures are those required by the jurisdiction indicated, except to the extent already made above pursuant to United States laws and regulations. Australia: Goldman Sachs Australia Pty Ltd and its affiliates are not authorised deposit-taking institutions (as that term is defined in the Banking Act 1959 (Cth)) in Australia and do not provide banking services, nor carry on a banking business, in Australia. This research, and any access to it, is intended only for "wholesale clients" within the meaning of the Australian Corporations Act, unless otherwise agreed by Goldman Sachs. In producing research reports, members of the Global Investment Research Division of Goldman Sachs Australia may attend site visits and other meetings hosted by the companies and other entities which are the subject of its research reports. In some instances the costs of such site visits or meetings may be met in part or in whole by the issuers concerned if Goldman Sachs Australia considers it is appropriate and reasonable in the specific circumstances relating to the site visit or meeting. To the extent that the contents of this document contains any financial product advice, it is general advice only and has been prepared by Goldman Sachs without taking into account a client's objectives, financial situation or needs. A client should, before acting on any such advice, consider the appropriateness of the advice having regard to the client's own objectives, financial situation and needs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests and a copy of Goldman Sachs' Australian Sell-Side Research Independence Policy Statement are available at: https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html. Brazil: Disclosure information in relation to CVM Resolution n. 20 is available at https://www.gs.com/worldwide/brazil/area/gir/index.html. Where applicable, the Brazil-registered analyst primarily responsible for the content of this research report, as defined in Article 20 of CVM Resolution n. 20, is the first author named at the beginning of this report, unless indicated otherwise at the end of the text. Canada: Goldman Sachs Canada Inc. is an affiliate of The Goldman Sachs Group Inc. and therefore is included in the company specific disclosures relating to Goldman Sachs (as defined above). Goldman Sachs Canada Inc. has approved of, and agreed to take responsibility for, this research report in Canada if and to the extent that Goldman Sachs Canada Inc. disseminates this research report to its clients. Hong Kong: Further information on the securities of covered companies referred to in this research may be obtained on request from Goldman Sachs (Asia) L.L.C. India: Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (India) Securities Private Limited, Research Analyst - SEBI Registration Number INH000001493, 951-A, Rational House, Appasaheb Marathe Marg, Prabhadevi, Mumbai 400 025, India, Corporate Identity Number U74140MH2006FTC160634, Phone +91 22 6616 9000, Fax +91 22 6616 9001. Goldman Sachs may beneficially own 1% or more of the securities (as such term is defined in clause 2 (h) the Indian Securities Contracts (Regulation) Act, 1956) of the subject company or companies referred to in this research report. Japan: See below. Korea: This research, and any access to it, is intended only for "professional investors" within the meaning of the Financial Services and Capital Markets Act, unless otherwise agreed by Goldman Sachs. Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (Asia) L.L.C., Seoul Branch. New Zealand: Goldman Śachs New Zealand Limited and its affiliates are neither "registered banks" nor "deposit takers" (as defined in the Reserve Bank of New Zealand Act 1989) in New Zealand. This research, and any access to it, is intended for "wholesale clients" (as defined in the Financial Advisers Act 2008) unless otherwise agreed by Goldman Sachs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests is available at: https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html. Russia: Research reports distributed in the Russian Federation are not advertising as defined in the Russian legislation, but are information and analysis not having product promotion as their main purpose and do not provide appraisal within the meaning of the Russian legislation on appraisal activity. Research reports do not constitute a personalized investment recommendation as defined in Russian laws and regulations, are not addressed to a specific client, and are prepared without analyzing the financial circumstances, investment profiles or risk profiles of clients. Goldman Sachs assumes no responsibility for any investment decisions that may be taken by a client or any other person based on this research report. Singapore: Goldman Sachs (Singapore) Pte. (Company Number: 198602165W), which is regulated by the Monetary Authority of Singapore, accepts legal responsibility for this research, and should be contacted with respect to any matters arising from, or in connection with, this research. Taiwan: This material is for reference only and must not be reprinted without permission. Investors should carefully consider their own investment risk. Investment results are the responsibility of the individual investor. United Kingdom: Persons who would be categorized as retail clients in the United Kingdom, as such term is defined in the rules of the Financial Conduct Authority, should read this research in conjunction with prior Goldman Sachs research on the covered companies referred to herein and should refer to the risk warnings that have been sent to them by Goldman Sachs International. A copy of these risks warnings, and a glossary of certain financial terms used in this report, are available from Goldman Sachs International on request.

European Union and United Kingdom: Disclosure information in relation to Article 6 (2) of the European Commission Delegated Regulation (EU) (2016/958) supplementing Regulation (EU) No 596/2014 of the European Parliament and of the Council (including as that Delegated Regulation is implemented into United Kingdom domestic law and regulation following the United Kingdom's departure from the European Union and the European Economic Area) with regard to regulatory technical standards for the technical arrangements for objective presentation of investment recommendations or other information recommending or suggesting an investment strategy and for disclosure of particular interests or indications of conflicts of interest is available at https://www.gs.com/disclosures/europeanpolicy.html which states the European Policy for Managing Conflicts of Interest in Connection with Investment Research.

Japan: Goldman Sachs Japan Co., Ltd. is a Financial Instrument Dealer registered with the Kanto Financial Bureau under registration number Kinsho

Goldman Sachs Global Views

69, and a member of Japan Securities Dealers Association, Financial Futures Association of Japan and Type II Financial Instruments Firms Association. Sales and purchase of equities are subject to commission pre-determined with clients plus consumption tax. See company-specific disclosures as to any applicable disclosures required by Japanese stock exchanges, the Japanese Securities Dealers Association or the Japanese Securities Finance Company.

Global product; distributing entities

The Global Investment Research Division of Goldman Sachs produces and distributes research products for clients of Goldman Sachs on a global basis. Analysts based in Goldman Sachs offices around the world produce research on industries and companies, and research on macroeconomics, currencies, commodities and portfolio strategy. This research is disseminated in Australia by Goldman Sachs Australia Pty Ltd (ABN 21 006 797 897); in Brazil by Goldman Sachs do Brasil Corretora de Títulos e Valores Mobiliários S.A.; Public Communication Channel Goldman Sachs Brazil: 0800 727 5764 and / or contatogoldmanbrasil@gs.com. Available Weekdays (except holidays), from 9am to 6pm. Canal de Comunicação com o Público Goldman Sachs Brasil: 0800 727 5764 e/ou contatogoldmanbrasil@gs.com. Horário de funcionamento: segunda-feira à sexta-feira (exceto feriados), das 9h às 18h; in Canada by either Goldman Sachs Canada Inc. or Goldman Sachs & Co. LLC; in Hong Kong by Goldman Sachs (Asia) L.L.C.; in India by Goldman Sachs (India) Securities Private Ltd.; in Japan by Goldman Sachs Japan Co., Ltd.; in the Republic of Korea by Goldman Sachs (Asia) L.L.C., Seoul Branch; in New Zealand by Goldman Sachs New Zealand Limited; in Russia by OOO Goldman Sachs; in Singapore by Goldman Sachs (Singapore) Pte. (Company Number: 198602165W); and in the United States of America by Goldman Sachs & Co. LLC. Goldman Sachs International has approved this research in connection with its distribution in the United Kingdom.

Effective from the date of the United Kingdom's departure from the European Union and the European Economic Area ("Brexit Day") the following information with respect to distributing entities will apply:

Goldman Sachs International ("GSI"), authorised by the Prudential Regulation Authority ("PRA") and regulated by the Financial Conduct Authority ("FCA") and the PRA, has approved this research in connection with its distribution in the United Kingdom.

European Economic Area: GSI, authorised by the PRA and regulated by the FCA and the PRA, disseminates research in the following jurisdictions within the European Economic Area: the Grand Duchy of Luxembourg, Italy, the Kingdom of Belgium, the Kingdom of Denmark, the Kingdom of Norway, the Republic of Finland, Portugal, the Republic of Cyprus and the Republic of Ireland; GS -Succursale de Paris (Paris branch) which, from Brexit Day, will be authorised by the French Autorité de contrôle prudentiel et de resolution ("ACPR") and regulated by the Autorité de contrôle prudentiel et de resolution and the Autorité des marches financiers ("AMF") disseminates research in France; GSI - Sucursal en España (Madrid branch) authorized in Spain by the Comisión Nacional del Mercado de Valores disseminates research in the Kingdom of Spain; GSI - Sweden Bankfilial (Stockholm branch) is authorized by the SFSA as a "third country branch" in accordance with Chapter 4, Section 4 of the Swedish Securities and Market Act (Sw. lag (2007:528) om värdepappersmarknaden) disseminates research in the Kingdom of Sweden; Goldman Sachs Bank Europe SE ("GSBE") is a credit institution incorporated in Germany and, within the Single Supervisory Mechanism, subject to direct prudential supervision by the European Central Bank and in other respects supervised by German Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht, BaFin) and Deutsche Bundesbank and disseminates research in the Federal Republic of Germany and those jurisdictions within the European Economic Area where GSI is not authorised to disseminate research and additionally, GSBE, Copenhagen Branch filial af GSBE, Tyskland, supervised by the Danish Financial Authority disseminates research in the Kingdom of Denmark; GSBE - Sucursal en España (Madrid branch) subject (to a limited extent) to local supervision by the Bank of Spain disseminates research in the Kingdom of Spain; GSBE - Succursale Italia (Milan branch) to the relevant applicable extent, subject to local supervision by the Bank of Italy (Banca d'Italia) and the Italian Companies and Exchange Commission (Commissione Nazionale per le Sociétà e la Borsa "Consob") disseminates research in Italy; GSBE - Succursale de Paris (Paris branch), supervised by the AMF and by the ACPR disseminates research in France; and GSBE - Sweden Bankfilial (Stockholm branch), to a limited extent, subject to local supervision by the Swedish Financial Supervisory Authority (Finansinpektionen) disseminates research in the Kingdom of Sweden.

General disclosures

This research is for our clients only. Other than disclosures relating to Goldman Sachs, this research is based on current public information that we consider reliable, but we do not represent it is accurate or complete, and it should not be relied on as such. The information, opinions, estimates and forecasts contained herein are as of the date hereof and are subject to change without prior notification. We seek to update our research as appropriate, but various regulations may prevent us from doing so. Other than certain industry reports published on a periodic basis, the large majority of reports are published at irregular intervals as appropriate in the analyst's judgment.

Goldman Sachs conducts a global full-service, integrated investment banking, investment management, and brokerage business. We have investment banking and other business relationships with a substantial percentage of the companies covered by our Global Investment Research Division. Goldman Sachs & Co. LLC, the United States broker dealer, is a member of SIPC (https://www.sipc.org).

Our salespeople, traders, and other professionals may provide oral or written market commentary or trading strategies to our clients and principal trading desks that reflect opinions that are contrary to the opinions expressed in this research. Our asset management area, principal trading desks and investing businesses may make investment decisions that are inconsistent with the recommendations or views expressed in this research.

We and our affiliates, officers, directors, and employees, will from time to time have long or short positions in, act as principal in, and buy or sell, the securities or derivatives, if any, referred to in this research, unless otherwise prohibited by regulation or Goldman Sachs policy.

The views attributed to third party presenters at Goldman Sachs arranged conferences, including individuals from other parts of Goldman Sachs, do not necessarily reflect those of Global Investment Research and are not an official view of Goldman Sachs.

Any third party referenced herein, including any salespeople, traders and other professionals or members of their household, may have positions in the products mentioned that are inconsistent with the views expressed by analysts named in this report.

This research is focused on investment themes across markets, industries and sectors. It does not attempt to distinguish between the prospects or performance of, or provide analysis of, individual companies within any industry or sector we describe.

Any trading recommendation in this research relating to an equity or credit security or securities within an industry or sector is reflective of the investment theme being discussed and is not a recommendation of any such security in isolation.

This research is not an offer to sell or the solicitation of an offer to buy any security in any jurisdiction where such an offer or solicitation would be illegal. It does not constitute a personal recommendation or take into account the particular investment objectives, financial situations, or needs of individual clients. Clients should consider whether any advice or recommendation in this research is suitable for their particular circumstances and, if appropriate, seek professional advice, including tax advice. The price and value of investments referred to in this research and the income from them may fluctuate. Past performance is not a guide to future performance, future returns are not guaranteed, and a loss of original capital may occur. Fluctuations in exchange rates could have adverse effects on the value or price of, or income derived from, certain investments.

Certain transactions, including those involving futures, options, and other derivatives, give rise to substantial risk and are not suitable for all investors. Investors should review current options and futures disclosure documents which are available from Goldman Sachs sales representatives or at https://www.theocc.com/about/publications/character-risks.jsp and

https://www.fiadocumentation.org/fia/regulatory-disclosures_1/fia-uniform-futures-and-options-on-futures-risk-disclosures-booklet-pdf-version-2018.

Transaction costs may be significant in option strategies calling for multiple purchase and sales of options such as spreads. Supporting documentation will be supplied upon request.

Differing Levels of Service provided by Global Investment Research: The level and types of services provided to you by the Global Investment Research division of GS may vary as compared to that provided to internal and other external clients of GS, depending on various factors including your individual preferences as to the frequency and manner of receiving communication, your risk profile and investment focus and perspective (e.g., marketwide, sector specific, long term, short term), the size and scope of your overall client relationship with GS, and legal and regulatory constraints. As an example, certain clients may request to receive notifications when research on specific securities is published, and certain clients may request that specific data underlying analysts' fundamental analysis available on our internal client websites be delivered to them electronically through data feeds or otherwise. No change to an analyst's fundamental research views (e.g., ratings, price targets, or material changes to earnings estimates for equity securities), will be communicated to any client prior to inclusion of such information in a research report broadly disseminated through electronic publication to our internal client websites or through other means, as necessary, to all clients who are entitled to receive such reports.

All research reports are disseminated and available to all clients simultaneously through electronic publication to our internal client websites. Not all research content is redistributed to our clients or available to third-party aggregators, nor is Goldman Sachs responsible for the redistribution of our research by third party aggregators. For research, models or other data related to one or more securities, markets or asset classes (including related services) that may be available to you, please contact your GS representative or go to https://research.gs.com.

Disclosure information is also available at https://www.gs.com/research/hedge.html or from Research Compliance, 200 West Street, New York, NY 10282.

© 2021 Goldman Sachs.

No part of this material may be (i) copied, photocopied or duplicated in any form by any means or (ii) redistributed without the prior written consent of The Goldman Sachs Group, Inc.