Goldman Sachs | Economics Research

10 January 2022 | 7:16AM EST

Note: The following is a redacted version of the original report published Jan. 10, 2022 [17 pgs].

US Economics Analyst

10 Questions on the Political and Policy Outlook for 2022 (Phillips)

- After negotiations on the Build Back Better (BBB) Act stalled late last year, the outlook for fiscal legislation is particularly unclear. While we think the Senate is very unlikely to pass a comprehensive bill similar to the House-passed BBB, a scaled down reconciliation bill combining energy/climate and perhaps a much smaller set of benefit expansions (universal pre-k and expanded health insurance subsidies) is still possible. However, at this point the odds of even a scaled down package look slightly less than even.
- We expect Congress to pass legislation boosting spending in other areas. The most likely is research funding and manufacturing incentives the Senate passed last year as part of its economic competitiveness legislation. A modest COVID-relief package also looks likely, though the amount of funding would likely be small.
- However, none of these measures—even a scaled-down reconciliation bill—look likely to alter the pullback in fiscal support over the coming year. Without the extension of the expanded child tax credit, the fiscal effect of whatever else Congress might do would likely be limited to a few tenths a percent of GDP in 2022, at most.
- The apparent demise of BBB implies that tax increases are also less likely. While any reconciliation bill would likely include some corporate tax increases, the probability of those tax increases has faded along with the broader legislation. Medicare drug pricing reforms probably face slightly longer odds than corporate tax increases, in our view.
- Before mid-year, the policy debate is likely to be overwhelmed by the upcoming midterm election. At this stage Democrats look likely to lose their majority in the House, in light of historical trends, their thin margin going into the election, and recent polling and economic data. The Senate looks like a closer call, however.

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

Alec Phillips
+1(202)637-3746 | alec.phillips@gs.com
Goldman Sachs & Co. LLC

David Mericle
+1(212)357-2619 | david.mericle@gs.com
Goldman Sachs & Co. LLC

Spencer Hill, CFA
+1(212)357-7621 | spencer.hill@gs.com
Goldman Sachs & Co. LLC

Joseph Briggs
+1(212)902-2163 | joseph.briggs@gs.com
Goldman Sachs & Co. LLC

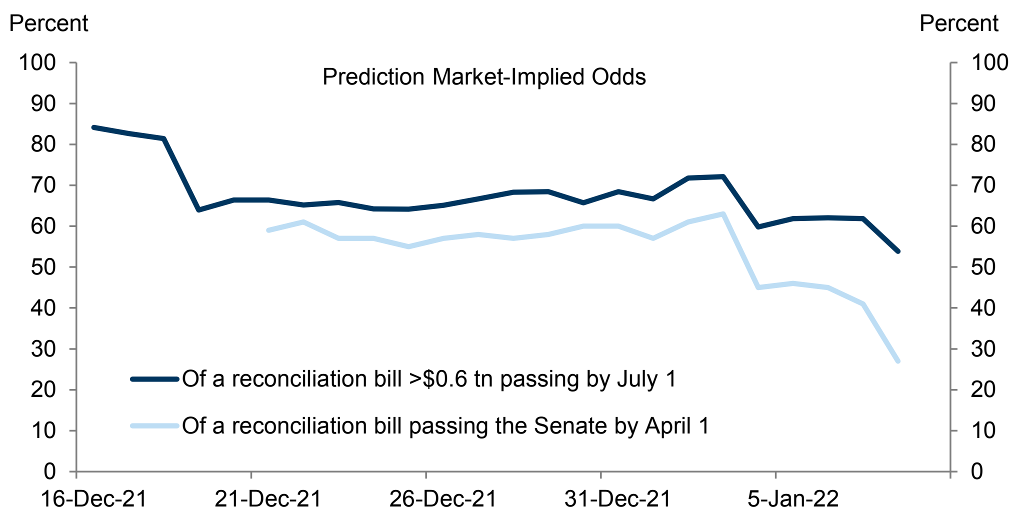
Ronnie Walker
+1(917)343-4543 | ronnie.walker@gs.com
Goldman Sachs & Co. LLC

10 Questions on the Political and Policy Outlook for 2022

1. Will Congress pass any reconciliation package this year?

The odds look slightly less than even. As shown in Exhibit 1, prediction markets now imply only a 30% chance that a reconciliation bill will pass the Senate by April 1, but slightly more than a 50% chance that a reconciliation bill with more than $600bn in spending becomes law by July 1. This might still overstate the odds of a reconciliation bill becoming law this year. While it would not be surprising to see a deal come together that looks very different from the House-passed BBB, enough obstacles remain that we would lean slightly against even that, or any, reconciliation bill becoming law this year.

Exhibit 1: Prediction markets have become less optimistic on a reconciliation bill passing



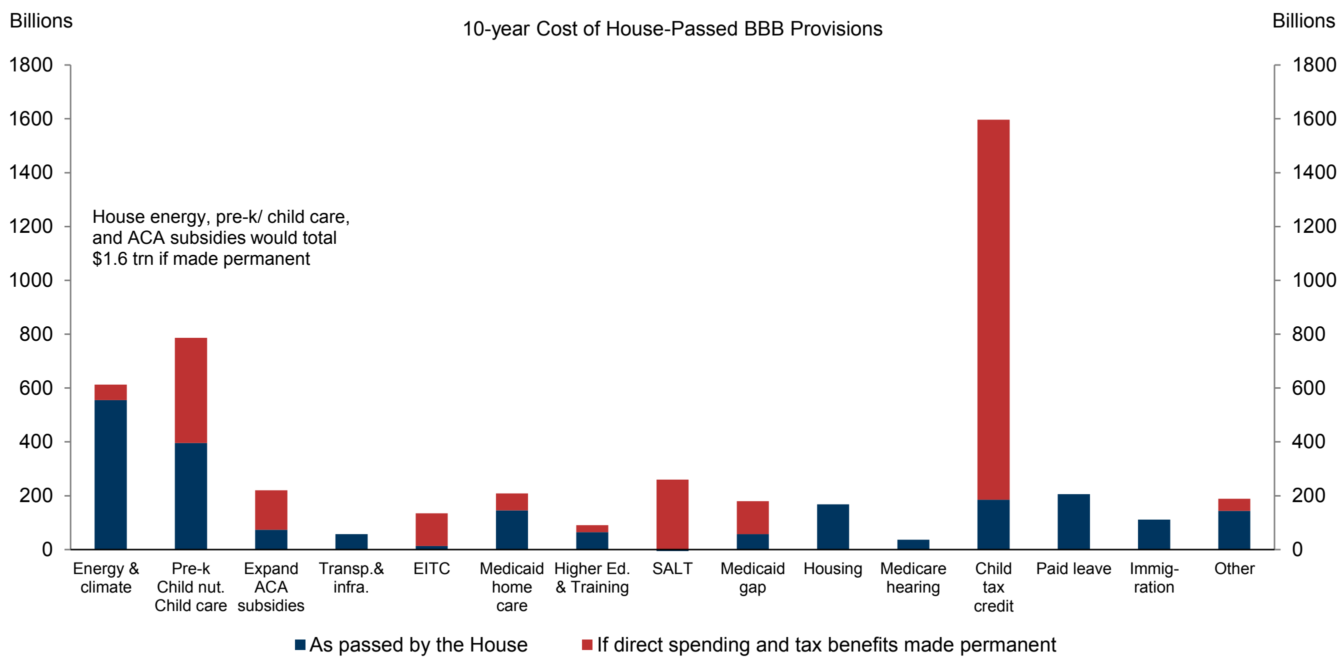
Source: PredictIt, Goldman Sachs Global Investment Research

The greatest obstacle is likely to be the large share of the House bill that would need to be dropped in order to pass the Senate. Sen. Manchin's public comments imply that new spending policies in the bill would probably need to be permanent (or last most of the 10 years covered by congressional budget projections).

Exhibit 2 shows the cost of each group of the BBB provisions, as passed in the House and then if those temporary policies were extended for 10 years. New benefits, tax credits, and other spending in the House-passed version total $2.2 trillion during the 2022-2031 period, but this headline figure was achieved by setting several key provisions to expire after a few years (or after only one year, in the case of the child tax credit expansion). If all tax and direct spending provisions lasted for the full period, the 10-year total would be more like $4.8 trillion.

To keep total spending under the $1.75 trillion top-line the White House announced in October, or the $1.5 trillion top-line that Sen. Manchin had indicated last summer, as much as two-thirds of the spending in the House BBB (measured by their annual cost while in effect) would need to be dropped.

Exhibit 2: A permanent child tax credit would substantially increase the bill's 10-year cost



Source: Congressional Budget Office, Goldman Sachs Global Investment Research

The strongest argument in favor of passage is that House and Senate Democrats seem to agree on how to pay for the proposal, which is usually the hardest part of any deal. Democrats seem to have reached a general consensus on $1.9 trillion in tax increases and Medicare drug pricing reforms to pay for the package. With the bill stalled, it is hard to know how solid the support in the Senate really is for all of the policies the House used to pay for its version, but it seems likely that the 50 Senate Democrats could agree on at least $1 trillion of tax increases and Medicare cuts if a deal was reached. And congressional Democrats would seem to have an incentive to do something with this potential new revenue, rather than leave it all on the table going into the midterm election.

However, there are non-budgetary obstacles as well. Sen. Manchin has said he opposes extending the full expansion of the CTC Congress enacted last year, and media reports suggest that Manchin's most recent proposal to the White House in December omitted it. But getting essentially every Democrat in both chambers of Congress to agree to omitting it will be difficult. The same goes for the partial reinstatement of the state and local tax (SALT) deduction, as even a more modest expansion than what passed the House looks challenging in the Senate for distributional reasons, but getting a bill through the House that omits the SALT deduction could be nearly as tough.

Democratic leaders can make multiple attempts at a fiscal deal. Although negotiations appear stalled, with little else on the agenda this spring there is still a fair chance that they will restart at some point. The most likely combination would seem to be a somewhat scaled back version of the energy and climate-oriented policies in the House bill, potentially paired with universal pre-kindergarten, and expanded ACA-related health insurance subsidies. Such a package could come in around the $1.5 trillion/10 years that Sen. Manchin had said he could support in mid-2021, or even less if the benefit programs are narrowly targeted through means testing.

That said, more time debating the bill could mean more problems. The next CPI report, on January 12, is likely to show another headline inflation figure approaching 7%, and a noticeable improvement in the year-on-year rate could take until Q2 (for the political debate, headline CPI is likely to be more important than other inflation measures, we believe). A monthly reminder in the headlines that inflation remains elevated is unlikely to help build support for a compromise fiscal package.

2. Will Congress pass any legislation this year to increase spending?

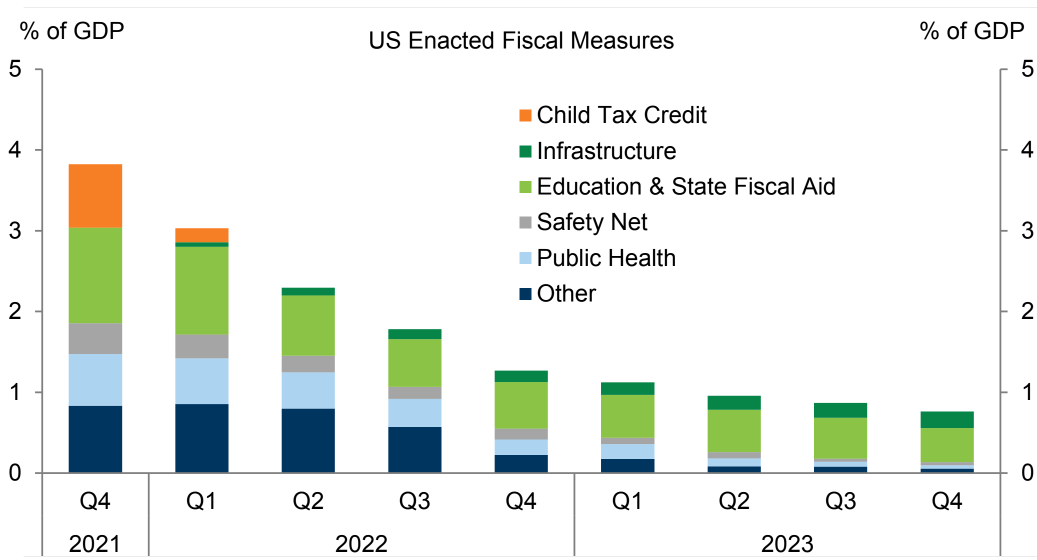
It seems likely that some spending package will pass, even if BBB does not. With multiple proposals likely to be considered at least one seems likely to pass. We see at least four potential opportunities Congress might take to approve additional fiscal support:

- **A scaled-down reconciliation package:** As noted above, the odds seem to lean against a scaled-back BBB at the moment, but there is still a fair chance that some kind of deal could emerge.
- **Competitiveness legislation:** The Senate passed the United States Innovation and Competition Act (USICA) with a bipartisan vote in June 2021 but the legislation remains stalled amid a disagreement between the House and Senate over federal research funding and subsidies for investment in domestic semiconductor manufacturing capacity among other issues. While we think the $250bn in funding—including around $50bn each for semiconductors and federal research—will shrink before a final bill passes, it looks very likely that legislation along these lines will pass by around mid-year.
- **Another COVID-relief package:** Another COVID-relief spending bill appears to have slightly better than even odds, but this would probably be modest—a $68bn figure has been floated—unless the outlook for the Omicron variant worsens considerably. Small business aid (particularly restaurants) and some targeted public health funding. Government spending authority expires Feb. 18, and if any additional funds are in the offing that would be the most obvious opportunity.
- **Regular congressional spending bills:** By Feb. 18, Congress needs to pass one of three things to avoid a government shutdown: a short-term "continuing resolution" (CR) to extend current spending levels for a few weeks, a full-year CR that would leave last year's base spending levels (not including COVID-relief funding, etc.) in place through Sep. 30, or an "omnibus" appropriations package that funds new programs and incrementally raises overall spending compared. An omnibus package looks more likely than not, in our view.

3. Will any of that legislation boost spending in 2022?

Probably, but only very modestly. The House-passed BBB bill would have boosted spending (including tax credits) by roughly $200bn (0.9% of GDP) in FY2022, with the child tax credit extension accounting for the majority of this. By contrast, a package consisting of the House's provisions on child care, pre-k, ACA subsidies and green energy would total around $30bn in FY2022 (0.1% of GDP), because the new programs take a while to phase in. The competitiveness legislation would also likely increase spending by less than 0.1% of GDP in 2022. New COVID-relief funding might be spent more quickly but any package Congress approves on this front is likely to be small. Together, these are unlikely to substantially change the fading fiscal effects of the 2020 and 2021 COVID-relief legislation. The upshot is that without an extension of the expanded child tax credit or partial reinstatement of SALT deductibility, any legislation that Congress passes this year will have limited fiscal effects in 2022.

Exhibit 3: Even if Congress passes fiscal legislation it won't change the fiscal retrenchment underway



Source: Congressional Budget Office, Treasury, Goldman Sachs Global Investment Research

4. What will happen to the expanded Child Tax Credit?

A full extension of the expanded child tax credit (CTC) looks very unlikely, and a return to the pre-2021 policy looks most likely, though a much more modest expansion is still possible. The most important unknown for the effect of fiscal policy in 2022 is the fate of the child tax credit. The American Rescue Plan (ARP) made three important changes: it increased the credit amount from $2000 to $3000 per child ($3600 for children under 6), it made the credit fully refundable, and it made 50% of the total credit amount payable in advance monthly payments.

As discussed above, Sen. Manchin has expressed concerns about the incentive effects of a fully refundable credit, and extension of that policy looks unlikely at this point. If the credit were only partially refundable, as it was before the 2021 expansion, making monthly advance payments would be difficult unless lawmakers are willing to risk imposing surprise tax liabilities on some taxpayers when they file tax returns after the end of the year. This leaves for potential compromise an increase in the maximum credit, payable after year end and only partly refundable, likely with lower income limits than the $200k single/$400k married in effect for 2021.

However, while such a compromise might be possible on policy grounds—some Republicans might support it, in isolation—it looks unlikely for budgetary reasons. Making the fully expanded child tax credit permanent would cost $1.6 trillion over 10 years, and while a partially refundable and more targeted credit would cost substantially less, it would still likely cost several hundred billion over ten years, if not over $1 trillion. It is unlikely that there will be sufficient room in a potential reconciliation compromise for such a large amount if the spending total is limited to $1.5 trillion over 10 years. Some argue that a child tax credit expansion could be enacted outside of the reconciliation process but, while it is true that there is some Republican support for a larger child credit, it seems unlikely that there would be bipartisan agreement on raising taxes to finance the cost.

5. Will Congress pass tax increases in 2022?

It is still possible, but the odds seem to be less than even. As discussed earlier, Democrats appear to have agreed on a substantial package of tax increases that, along with some Medicare drug spending reductions, could finance new benefit spending or other priorities (Exhibit 4). While we think there is adequate support for the majority of these—and potentially nearly all of them—tax changes will only become law if there is an agreement on where to spend the money.

Exhibit 4: If a fiscal deal comes together, Democrats have a wide range of options to pay for it

Budgetary savings in House-passed Build Back Better Act	$bn/10 yrs
Stock buyback tax	-124
Other domestic corporate provisions	-87
Other cross-border corporate tax provisions	-102
Minimum tax on global book earnings	-319
Subtotal, corporate taxes	**-818**
Surtax on high incomes	-228
Apply net investment income tax to S Corps	-252
Extend noncorporate excess business loss limitations	-160
Increase IRS enforcement funding***	-127
Retirement account changes	-10
Other tax measures	-12
Subtotal, personal tax	**-789**
Delay Medicare Part D rebate rule	-143
Medicare drug pricing reforms	-154
Superfund fees	-13
Methane fees	-8
Subtotal, non-tax savings	**-317**
Total savings ($bn/10 yrs)	***-1913***

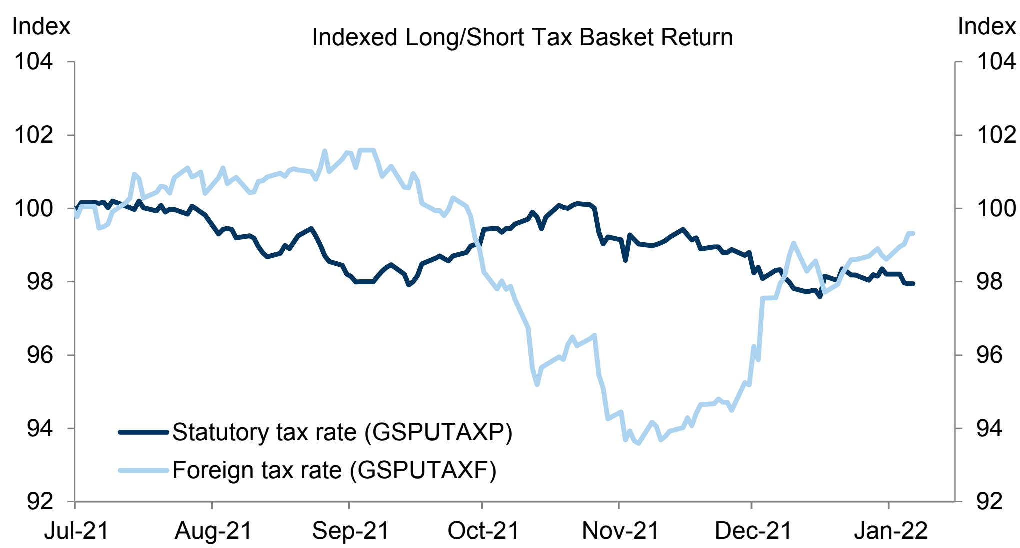
Source: Joint Committee on Taxation, Congressional Budget Office, Goldman Sachs Global Investment Research

If an agreement is found, it seems likely to take one of two forms. Support is greatest for the roughly $500bn in energy and climate provisions in BBB—Sen. Manchin has said specifically he believes these would be the easiest place to find agreement—so one possibility would be an energy- and climate-focused package financed by a subset of the House-proposed personal and corporate tax provisions. A second scenario would be a slightly broader bill that also includes policies like universal pre-k and expanded ACA subsidies, with most of the House-passed tax provisions used to offset them.

While we think the odds lean slightly against enactment of these tax proposals, it is a close call. As Exhibit 5 shows, the equity market also appears to reflect a lower probability of corporate tax increases, with our portfolio strategy team's foreign tax rate basket regaining more than half of the decline experienced after the White House and congressional Democrats offered a framework that included a global corporate minimum tax.

Cross-border corporate changes, changes to S Corp taxation, and excess loss limitations might be most likely to make it into any eventual package. By contrast, the minimum tax on book earnings and surtax on high incomes seem like the most likely to be scaled back or omitted. Regardless of which form any eventual bill might take, we would expect that most if not all the tax provisions would take effect starting 2023, rather than 2022, to avoid retroactivity issues.

Exhibit 5: The equity market is reflecting a low probability of corporate tax changes



Source: Goldman Sachs Global Investment Research

6. Will Medicare drug pricing be cut?

This seems less likely than tax increases, at this point. Like the tax provisions, there is still a chance that the Medicare cuts will pass as part of a resurrected reconciliation package. However, we would expect congressional Democrats to use drug pricing reforms to offset only new health spending, not other aspects of the prior BBB package. As noted above, there is one scenario in which a reconciliation bill passes that omits health and child-focused provisions, in which case we would be somewhat skeptical that it would include drug pricing reforms.

7. Will Democrats meaningfully weaken (or eliminate) the filibuster in the Senate?

It looks very unlikely, and if it does happen, it probably will not meaningfully change the legislative outlook. Senate Majority Leader Schumer (D-N.Y.) has indicated that he plans to bring voting rights legislation to a vote in the Senate by Jan. 17. Like most legislation, the minority party can block the bill if at least 41 senators object to moving forward, and this seems likely on the voting rights bill. If so, there is a good chance that Senate Majority Leader Schumer will call for a change to Senate filibuster rules, as he has said. In theory, meaningful rules changes could lead to major changes to the legislative outlook, as it could allow any legislation, rather than just fiscal "reconciliation" legislation, to pass with only a simple majority in the Senate. There are two reasons why this looks unlikely to affect any major legislation, however.

First, at the moment it looks unlikely that Democrats will have sufficient support to unilaterally change the rules. While it is technically possible for the majority party alone to make the change—oddly, even the standard that 60 votes are needed to overcome a filibuster can be changed with a simple majority—Sens. Manchin and Sinema have indicated they do not support a unilateral change over unified Republican opposition.

Second, if Democrats find sufficient support for filibuster reforms, those reforms would probably be very modest. Among the items under discussion have been ending the need for 60 votes to start debate (i.e., the "motion to proceed") but retaining the higher threshold for the underlying legislation, carving out legislation on certain subjects like election-related issues, lowering the threshold to 60% of those present (rather than 60% of all 100 senators), or requiring at least one of the senators who object to ending debate on a bill to be on the Senate floor representing that position (the "talking filibuster"). None of these would substantially reduce the need for most legislation to receive bipartisan support in the Senate, however.

8. Will there be legislative moment on the "big tech" antitrust agenda?

Probably, but only modest changes to law look likely. The House Judiciary Committee passed six bills in 2021 that intend to increase antitrust oversight of and restrictions on the tech/internet sector (Exhibit 6). While legislation on most issues is unlikely to see action this year ahead of the midterm election, tech-focused bills might be an exception as there is bipartisan support—though also bipartisan opposition—for policy changes in this area, and there could be political appeal in taking action on consumer protection in an inflationary environment, particularly on firms that have fared well through the pandemic.

However, it looks likely that only the bills that would make modest changes might pass. Specifically, increasing merger filing fees and thus enforcement resources appears the most likely, as it was in the Senate's version of the economic competitiveness legislation and, in any case, has fairly broad support. Legislation that provides procedural protections in federal court for antitrust actions brought by state attorneys general also has substantial support and could pass.

It looks less likely that any of the other bills from the House Judiciary Committee will become law this year, in our view. These would aim to prevent self-preferencing (e.g., platforms favoring their services or products over competitors or requiring services for access), requiring structural separation of businesses, ensuring data portability to enable service-switching, and raising the competitiveness bar for approving M&A transactions.

While each of these has some bipartisan support, they also face opposition among members of both parties and look unlikely to overcome that opposition this year.

Exhibit 6: Most House antitrust proposals face long odds this year

House Bills	Theme	Focus	Committee Vote
Merger Filing Fee Modernization Act	Market	Fees & FTC/DOJ budgets	29-12
State Antitrust Enforcement Venue Act	Market	State venue	34-7
Augmenting Compatibility & Competition by Enabling Service Switching Act	Market	Data portability	25-19
Platform Competition and Opportunity Act	Market	Mergers & acquisitions	24-17
American Choice and Innovation Online Act	Platform	Self-preferencing	24-20
Ending Platform Monopolies Act	Platform	Structural separation	21-20

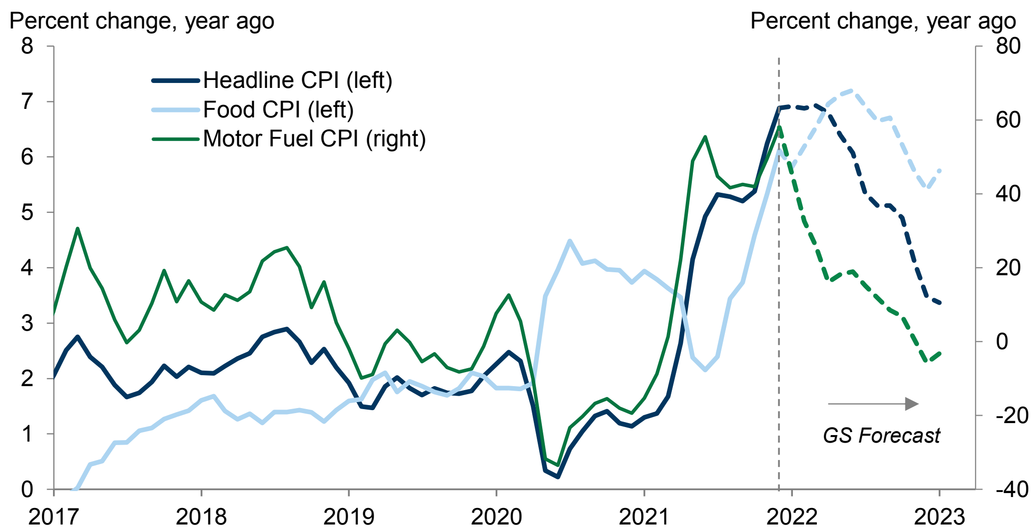
Source: House Judiciary Committee, Goldman Sachs Global Investment Research

9. Will Congress or the Administration try to directly influence inflation?

Clearly, but it seems unlikely to have a meaningful effect. Inflation has become a dominant political issue, but one that is largely out of the Administration's control. Gasoline price inflation has long been a politically sensitive issue, and food price inflation is also likely to gain outsized political attention as both are purchased frequently and might be more noticeable to the average consumer. For this reason, it is not surprising that the Administration would seek to address these issues in particular. To do this, the Biden Administration is pulling antitrust and other regulatory levers, so far primarily targeting the meat, energy, and shipping industries:

- **In December 2021, to address meat prices,** the White House instructed the Agriculture Department to investigate large meatpacking and processing companies, citing industry concentration as a concern. The administration launched a portal for producers to report unfair trade practices by meatpackers and allocated $1-billion from the American Rescue Plan to assist independent processors.
- In November 2021, to address gas prices, the White House asked the Federal Trade Commission (FTC) to investigate integrated oil companies regarding gasoline prices, citing "potentially illegal conduct" and mentioning the "two largest oil and gas companies" (ExxonMobil and Chevron). The FTC investigation is ongoing.
- **In July 2021, to address shipping costs,** the White House requested that the Federal Maritime Commission (FMC) investigate price increases by large shipping companies. The executive order also addressed market consolidation and called on the DOJ, FTC, FMC and other agencies to enforce existing antitrust laws.

Exhibit 7: Inflation looks likely to continue to be a political focus



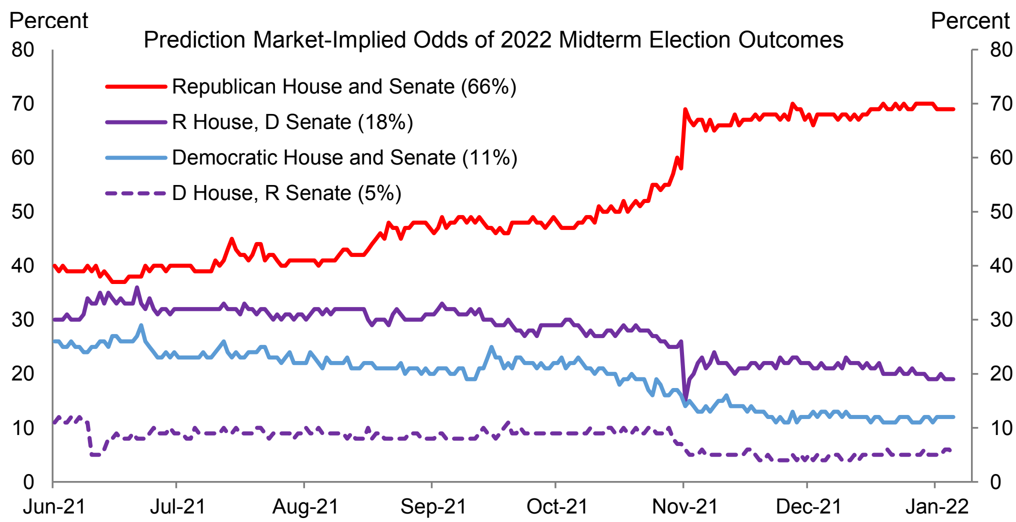
Source: Department of Labor, Goldman Sachs Global Investment Research

Meaningful tariff reductions are also within the Administration's power but look unlikely. The other obvious move the White House could make to address inflation would be roll back the broad tariffs on imports from China that the Trump Administration imposed. However, this looks unlikely for two reasons. First the effect would be small. Rolling back all the tariffs might lower core inflation by 0.1-0.2pp yoy, which would not meaningfully change the effect that inflation is having on the political landscape. Second, while many businesses seek a rollback, there is not much political pressure to do so. Instead, the political effect of taking a more conciliatory stance toward China could be negative for the Administration, at least in the short term. While the US Trade Representative looks likely to provide some incremental tariff exceptions for certain import categories, major changes look unlikely this year.

10. Will Democrats maintain control of Congress after the November midterm elections?

It looks very unlikely in light of the already-thin margin in the House. Prediction markets currently imply only an 11% probability that Democrats will maintain their majorities in both chambers after the midterm election (Exhibit 8).

Exhibit 8: Prediction markets imply a Republican Congress in 2023

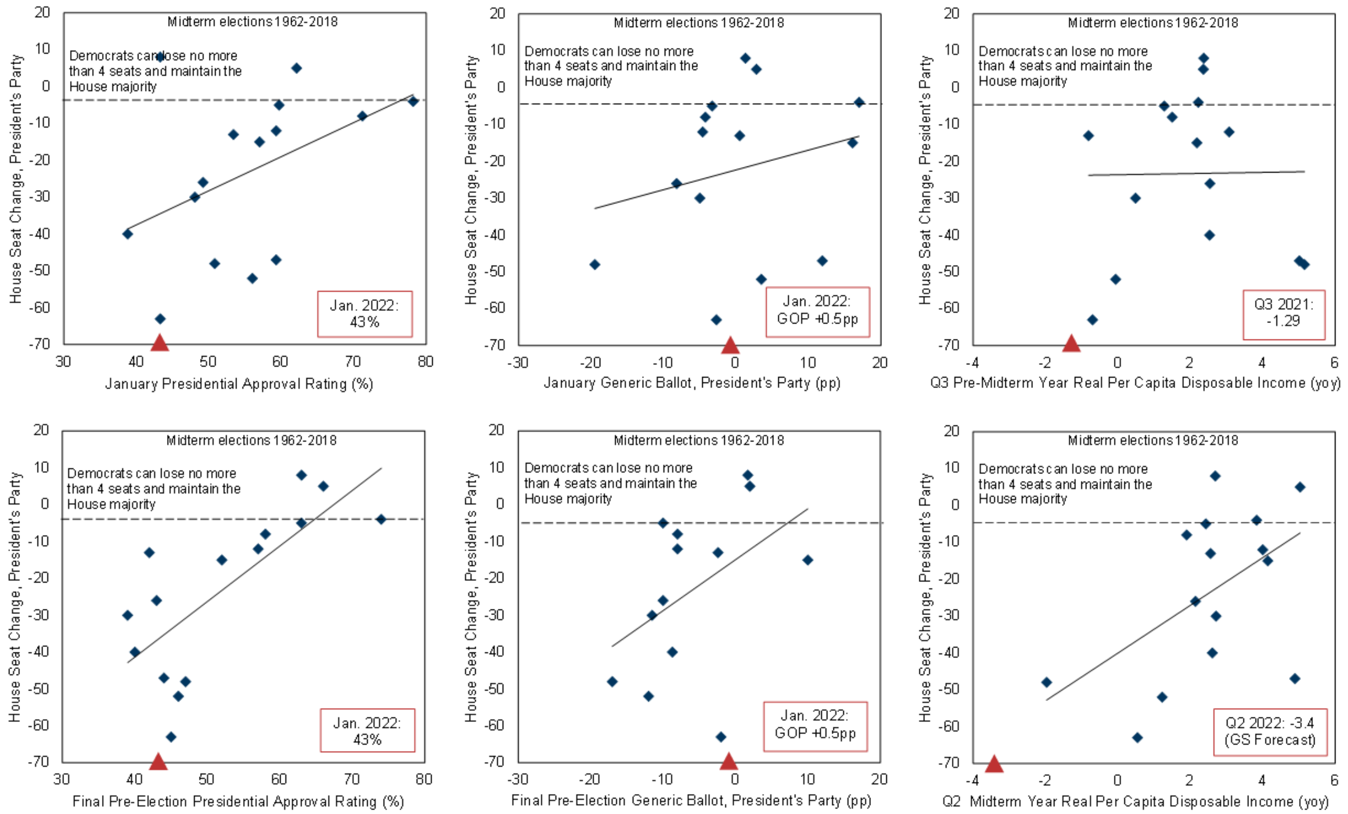


Source: PredictIt

This is explained mainly by expectations for the House, where Democrats can afford to lose only four seats before losing the majority. In the last 15 midterm elections since 1962, the president's party has lost more than this all but 3 times (1962, 1998, and 2002). However, in those years the political and economic environment was much different than it is today.

Exhibit 9 shows the change in seats held by the president's party plotted against presidential approval, the "generic ballot" poll, and growth in per capita real disposable income, as those indicators looked in January of the midterm year and as they stood on election day (for income we use the most recent available value and for election day we use the Q2 yoy value, as we have shown in the past that the Q2 value has the strongest relationship with midterm election results).

Exhibit 9: The president's party usually loses House seats, and polling does not suggest this year will be different



Source: Pollingreport.com, Gallup, Pew Research, FiveThirtyEight, Clerk of the House, Department of Commerce, Goldman Sachs Global Investment Research

The Senate outcome is a closer call, as both parties have several seats in states that were competitive in the 2020 presidential election. While Republicans appear to have the political wind at their backs, they—unlike Democrats—also have open races due to retirements in North Carolina, Ohio, and Pennsylvania.

Alec Phillips

Disclosure Appendix

Reg AC

We, Jan Hatzius, Alec Phillips, David Mericle, Spencer Hill, CFA, Joseph Briggs and Ronnie Walker, hereby certify that all of the views expressed in this report accurately reflect our 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 Sachs 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

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 Società 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.