Goldman Sachs | Economics Research

1 February 2022 | 10:42PM IST

Asia in Focus

India: A growth focused budget, with higher borrowing

Santanu Sengupta
+91(22)6616-9042 |
santanu.sengupta@gs.com
Goldman Sachs India SPL

Suraj Kumar
+91(22)6616-9047 |
suraj.dhunna@gs.com
Goldman Sachs India SPL

Andrew Tilton
+852-2978-1802 |
andrew.tilton@gs.com
Goldman Sachs (Asia) L.L.C.

Sunil Koul
+65-6654-5042 |
sunil.koul@gs.com
Goldman Sachs (Singapore) Pte

India's government in its annual budget targeted a reduction in the fiscal deficit to 6.4% of GDP (GSe: 6.3%, Consensus: 6.0%) in FY23[1] from a projected 6.9% (GSe: 6.8%, Consensus: 6.8%) in FY22, revised higher from 6.8% budget estimate (BE). The budgeted fiscal consolidation will be primarily driven via a decrease in total expenditure as a percentage of GDP, especially current expenditure, while capital spending was increased from 2.6% of GDP in FY22 to 2.9% in FY23. Overall, the revenue targets look achievable to us.

The thrust of the government's policies lie on infrastructure creation, and reviving the rural economy. To encourage exports, the government proposed to replace the existing law governing special economic zones with a new legislation to enable states to become partners in the hubs.

The net market borrowing in FY23 is budgeted at INR 11.6tn, higher than our already large borrowing expectation. This, along with borrowings by states, means that the combined issuance for the centre and states is likely to remain elevated. With no mention of India's inclusion in global bond indices in the budget speech today, we stick to our base case assumption of an announcement of India's likely inclusion into the GBI-EM Global Diversified Bond Index in Q4 2022, with actual inclusion to begin in early 2023. With elevated supply, and comparatively lower incremental demand from natural buyers, we estimate that the RBI will have to continue to support government bond purchases in FY23, despite domestic liquidity constraints.

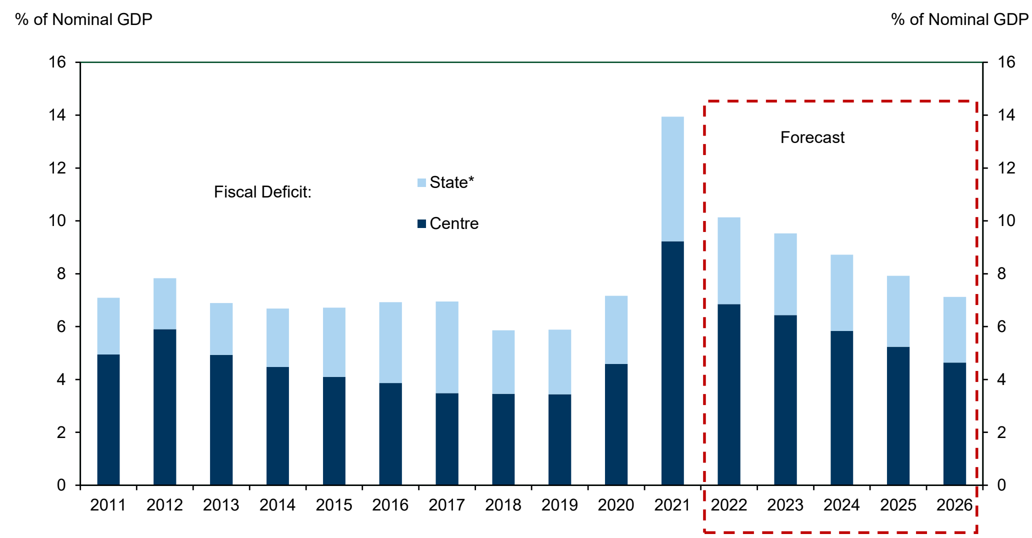
We remain bearish INR longer-dated rates in the medium term due to three key reasons: a) unfavorable supply/demand dynamics in Indian bonds, b) our view on monetary policy normalization in India in 2022, and c) our US economics team's view of five Fed rate hikes by the Fed in 2022.

[1] FY23 is fiscal year 2022-23 which runs from April 2022 to March 2023

Moderate fiscal consolidation in the FY23 budget

Given the backdrop of rising Covid cases due to the omicron wave, the primary issue for the FY23 budget was to strike a balance between boosting rural demand and investing in infrastructure while continuing on the path of fiscal consolidation to maintain macro stability. In the keenly watched Indian Union budget on February 1, the government has budgeted for a central government fiscal deficit of 6.4% of GDP in FY23 (Exhibit 1), down from a projected 6.9% of GDP in FY22 (10bp higher than its budget estimate).

Exhibit 1: Moderate fiscal consolidation planned in FY23

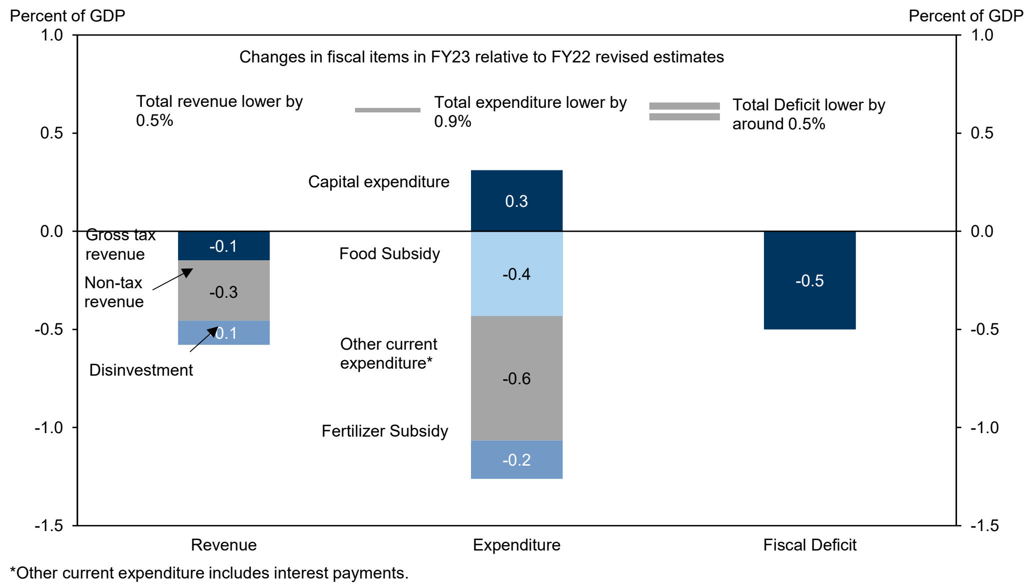


FY2022 runs from April 2021 to March 2022; while FY2023 runs from April 2022 to March 2023
* FY22 and FY23 for States are GSe

Source: Union Budget FY21, CEIC, Goldman Sachs Global Investment Research

The budgeted fiscal consolidation of around 0.5pp of GDP takes place via a decrease in total expenditure of 0.9pp, offsetting a decrease in total revenue of 0.5pp (Exhibit 2).

Exhibit 2: Fiscal deficit consolidation in FY23 driven by lower expenditure



Source: Goldman Sachs Global Investment Research, CEIC

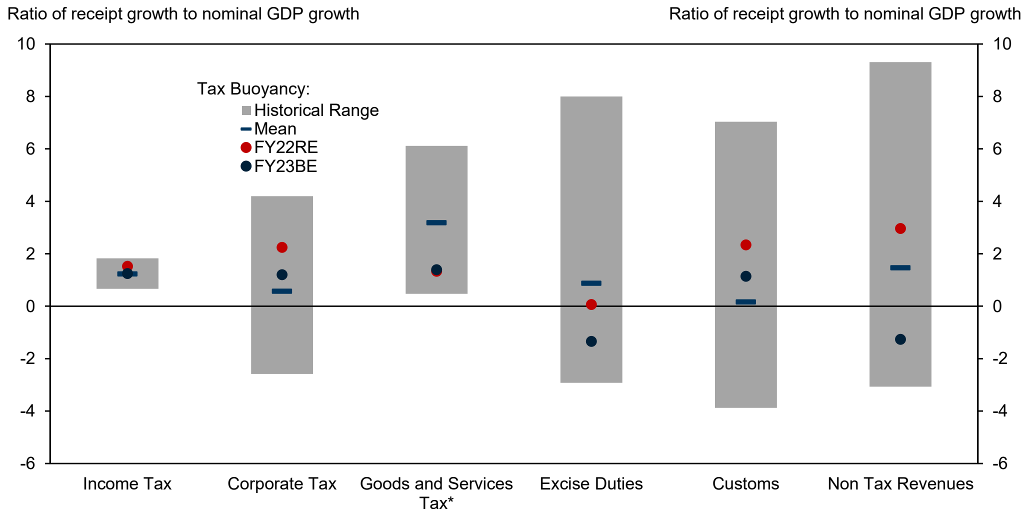
Realistic revenue proposals

Gross tax revenues are budgeted to grow by 9.6% yoy in FY23, below a conservative (in our view) nominal GDP growth forecast of 11.1% yoy, but lower than an estimated 24% yoy increase in FY22, as we had articulated in our pre-budget report (please refer to Question 2 on Page 3). The tax-to-GDP ratio remains flat in FY23 compared to FY22, as relatively lower growth in indirect tax collections, on the back of relatively lower excise tax revenues, is netted off by higher growth in direct tax collections.

Income tax and corporate tax revenue is budgeted to increase by 10bp of GDP in FY23 to 2.7%/2.8% of GDP, respectively. Indirect tax collection is budgeted to fall to 5.2% of GDP in FY23 from 5.5% of GDP in FY22, driven by sharp fall in excise tax revenues to 1.3% of GDP in FY23 from 1.7% of GDP in FY22 while GST collection is budgeted to increase marginally by 10bp to 3.0% of GDP in FY23. Non-tax revenue is projected to moderate to 1% of GDP in FY23 from 1.4% of GDP in FY22, driven by lower dividends from the RBI and financial institutions, and lower telecom receipts (including telecom spectrum). The disinvestment (asset sales) target was revised lower for FY22 (from INR 1.75tn to INR 0.8tn). The government has budgeted a conservative INR 0.65tn in FY23 as asset sales target which likely indicates that big-ticket disinvestments are unlikely to be the focus area to drive receipts in FY23.

Overall, revenue targets look largely credible to us given a potential widening of the tax base due to ongoing formalization of the economy and higher economic growth (Exhibit 3).

Exhibit 3: Modest receipts growth in FY23 compared to historical ranges



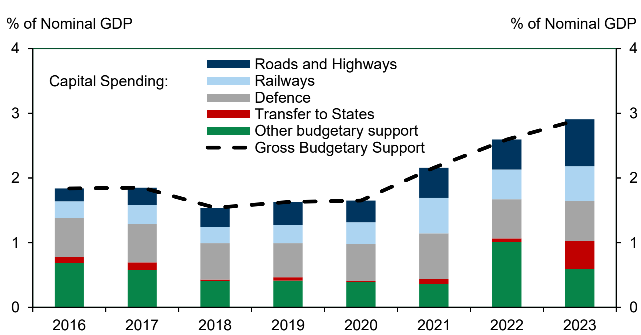
NOTE: Historical range represents the maximum and minimum values of the buoyancy ratio(ratio of tax growth/nominal GDP growth) of each receipt item every fiscal year from FY11 to FY20. The lower point of the bar denotes the minimum value of buoyancy in this period while top end of the bar denotes the maximum value of buoyancy in this period. *Good and Services tax historical range and mean consider data from FY19 to FY21 only due to data limitation.

Source: CEIC

Expenditure mix: Capex in focus

Overall expenditure is budgeted to grow at 4.6% yoy in FY23 below the conservative (in our view) nominal GDP growth assumption of 11.1% yoy, compared to projected growth of 7.4% yoy in FY22. The deceleration in growth is driven by current spending, while capital spending was increased by 25% yoy from 2.6% of GDP in FY22 to 2.9% in FY23. Under capital expenditure, the government particularly focused on roads, railways and defense (Exhibit 4). Additionally, states were allocated almost 0.4pp of GDP for capital spending (Exhibit 4). In recent years we have seen borrowing reliance on extra budgetary resources declining, and majority of capital spending happening through direct budgetary support (Exhibit 5).

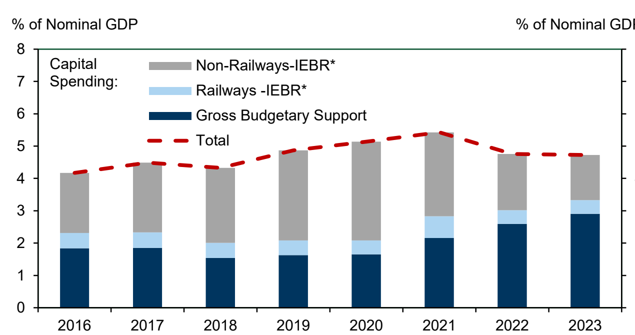
Exhibit 4: Capital expenditure to be in focus in FY23



NOTE: Years are in fiscal years. FY2023 runs from April 2022 to March 2023.

Source: CEIC

Exhibit 5: Extra budgetary support has declined in recent years

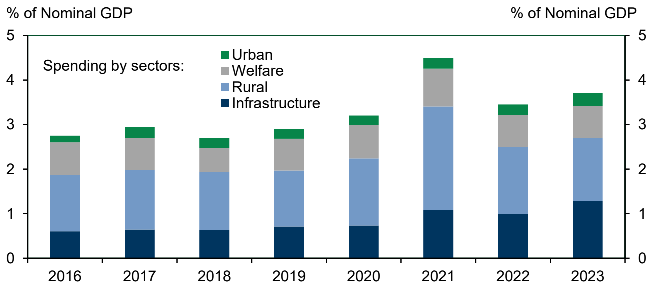


NOTE: Years are in fiscal years. FY2023 runs from April 2022 to March 2023. *IEBR refers to internal extra budgetary resources

Source: CEIC

In terms of spending priorities, the government focused on spending in infrastructure, defense and the social sector (Exhibit 6). The Ministries of Railways, and Roads have been allocated 43% of the overall capex budget, growing 49% yoy. Within current spending mix, subsidies are targeted to be reduced by 0.7pp of GDP in FY23 (Exhibit 7).

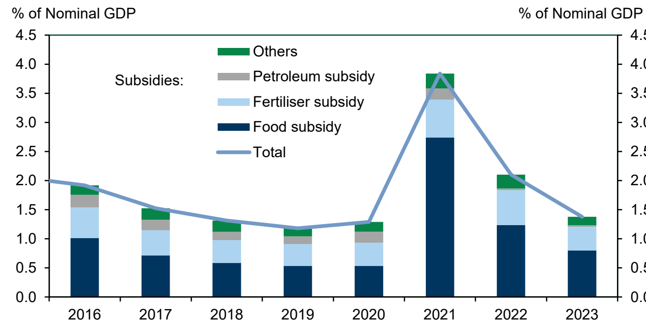
Exhibit 6: Infrastructure to increase in FY23



NOTE: Years are in fiscal years. FY2023 runs from April 2022 to March 2023.
Rural: Ministry of Agriculture, Fertilisers, and Ministry of Rural Development.
Infrastructure: covers Ministry of Railways, Roads, Ports, Shipping and Waterways.
Welfare: Ministry of Health, and Education.

Source: CEIC

Exhibit 7: Subsidies to moderate in FY23



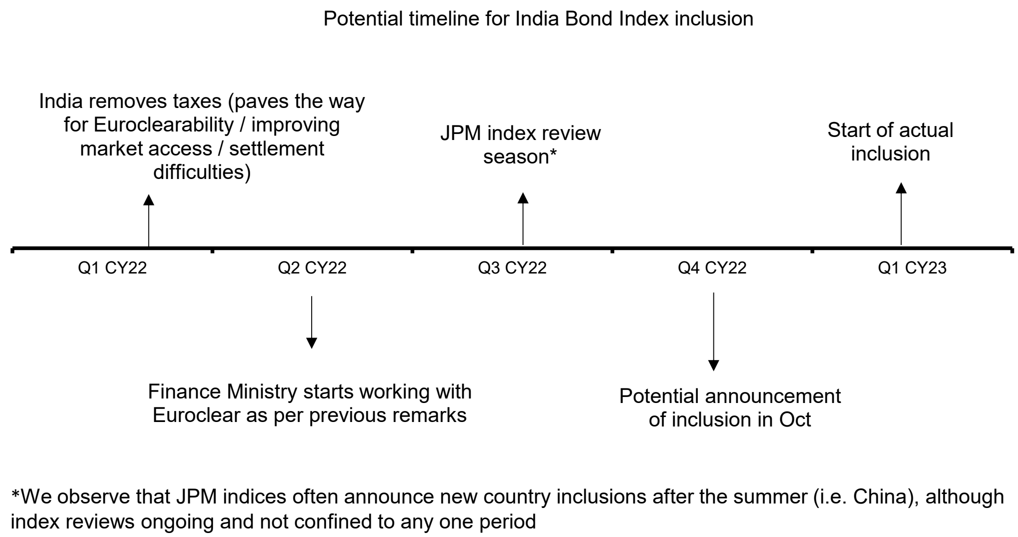
NOTE: Years are in fiscal years. FY2022 runs from April 2021 to March 2022; while FY2023 runs from April 2022 to March 2023

Source: CEIC

Impact on bond markets: Excess supply to put upward pressure on yields

The net market borrowing for FY23 by the central government is budgeted at INR 11.6tn, higher than our already conservative estimate of INR 10.6tn. Along with borrowings by states, the combined issuance for the centre and state is likely to remain elevated in FY23 in our view. On the demand side, we expect banks to buy incrementally fewer bonds in FY23 as credit growth picks up as the economy recovers. We continue to expect insurance companies with strong AUM growth to soak up around INR 4.5tn of the incremental bond supply. With no mention of India's inclusion in global bond indices in the budget speech today, we stick to our base case assumption of a likely announcement in Q4 2022 that India will be included in the GBI-EM Global Diversified Index, while actual inclusion will begin in early 2023 (Exhibit 8). Given this timeline, we think the bulk of the anticipated USD 30bn inflows are more likely in 2023. However, some active fund managers may start accumulating Indian bonds in 2022.

Exhibit 8: Expected timeline of India's bond inclusion in FY23



Source: Goldman Sachs Global Investment Research

With elevated supply (Exhibit 9), and comparatively lower incremental demand from natural buyers, we estimate that the RBI will have to continue to support government bond purchases in FY23. We remain bearish INR longer-dated rates in the medium term due to three key reasons: a) unfavorable supply/demand dynamics in Indian bonds, b) our view on monetary policy normalization in India in 2022, and c) our US economics team's view of five Fed rate hikes by the Fed in 2022.

Exhibit 9: Gross borrowings to remain elevated in FY23

Centre Government Financing			
Amount in INR tn	FY22BE	FY22RE	FY23BE
Fiscal Deficit	15.1	15.9	16.6
Small savings	3.9	5.9	4.3
State Provident Funds	0.2	0.2	0.2
Others	0.5	-0.9	0.4
External Debt	0.0	0.2	0.2
Cash Balance	0.7	1.7	0.0
Net Borrowings	9.7	8.8	11.6
Net Borrowings: T-Bills	0.5	1.0	0.5
Net Borrowings: Bonds	**9.2**	**7.8**	**11.1**
Borrowings: Repayments	4.7	2.7	3.8
Gross Borrowings: Bonds	**13.9**	**10.5**	**15.0**

Source: CEIC

Exhibit 10: Details of the budget

Central Government Fiscal Accounts (% of GDP)					
Key Budget Items	2020	2021	2022-BE	2022-RE	2023-BE
Total Receipts	**8.6**	**8.6**	**8.9**	**9.4**	**8.9**
Revenue Receipts	8.3	8.3	8.1	9.0	8.6
Gross Tax Revenues	9.9	10.3	10.0	10.8	10.7
Direct tax	5.2	4.8	5.0	5.4	5.5
Income Tax	2.4	2.5	2.5	2.6	2.7
Corporate Tax	2.7	2.3	2.5	2.7	2.8
Indirect Tax	4.7	5.5	4.9	5.5	5.2
GST (incl Comp cess)	2.9	2.8	2.8	2.9	3.0
Excise	1.2	2.0	1.5	1.7	1.3
Customs	0.5	0.7	0.6	0.8	0.8
Service Tax	0.0	0.0	0.0	0.0	0.0
Others	0.0	0.0	0.0	0.0	0.0
Less Allocation to states	3.2	3.0	3.0	3.2	3.2
NCCF financing	0.0	0.0	0.0	0.0	0.0
Net Tax Revenue	6.7	7.3	7.0	7.6	7.5
Non Tax Revenues	1.6	1.1	1.1	1.4	1.0
Non-debt capital receipts	0.3	0.3	0.8	0.4	0.3
Disinvestment (incl strategic disinvestment)	0.2	0.2	0.8	0.3	0.3
Recoveries of loans	0.1	0.1	0.1	0.1	0.1
Expenditure	**13.2**	**17.8**	**15.6**	**16.2**	**15.3**
Revenue	11.6	15.6	13.1	13.6	12.4
Interest Payments	3.0	3.4	3.6	3.5	3.6
Subsidies	1.3	3.8	1.7	2.1	1.4
Food	0.5	2.7	1.1	1.2	0.8
Fertilizer	0.4	0.6	0.4	0.6	0.4
Petroleum	0.2	0.2	0.1	0.0	0.0
Interest	0.1	0.2	0.1	0.2	0.1
Capital	1.6	2.2	2.5	2.6	2.9
Fiscal Deficit	**4.6**	**9.2**	**6.8**	**6.9**	**6.4**

Notes:
1.Non-tax revenues include Dividends from the RBI
2. Years are in Fiscal years. Fiscal year 2022 runs from April 2021 to March 2022 while Fiscal year 2023 runs from April 2022 to March 2023
3. Revenue spending is current expenditure after excluding the capital spending from the overall spending.
4. Non-debt capital receipts include disinvestment receipts

Source: Union Budget FY21, Goldman Sachs Global Investment Research

Key Budget Announcements:

Sector	Key Annoucements
Infrastructure	- **PM Gatishakti:** A digital platform to bring together various ministries for coordinated implementation of infrastructure projects. Formulation of master plan for expressways to complete 25,000 km national highways. - **Sovereign green bonds** to fund green infrastructure public sector projects - **Railways:** 100 rail cargo terminals to be developed, and 400 new trains to be manufactured in next 3 years
Urban Development / Housing	- **Housing Scheme:** Allocated INR 480bn to construct 8mn houses in FY23 - **Tap water:** Allocated INR 600bn to extend **coverage** to 38mn households in FY23 - An **urban planning committee** to make recommendations for urban capacity building
Banking and Credit	- MSME credit: **Emergency Credit Line Guarantee Scheme (ECLGS)** extended upto March 2023 with expansion in guarantee cover by INR 500bn to INR 5tn. - 75 digital banking units to be set up in 75 districts to enhance **digital banking and payment systems** - RBI to issue **digital rupee** using blockchain technology
Manufactuing	- Allocated INR 195bn for Production-Linked Incentive for manufacturing of **high-efficiency solar modules** - **New Battery Swapping Policy** to promote charging station coverage in states - Railways to promote local business under 'One state, one product' concept - 68% domestic procurement under defence budget capital spending
Agriculture	- INR 2.4tn direct payment to farmers at minimum support price to procure wheat and paddy.
Export Promotion	- A new legislation to replace the **Special Economic Zones Act** to enhance states participation to promote exports
East of Doing business	- **Amendments to bankruptcy code** to enhance efficiency of resolution process and speed up voluntary winding up of companies
Taxation	- Alternate minimum tax for cooperative socieites cut to 15% - **Tax on transfer of digital assets** at 30% and 1% tax deduction at source on payments to purchase of virtual assets

Source: Goldman Sachs Global Investment Research, FY23 India Union Budget

Disclosure Appendix

Reg AC

We, Santanu Sengupta, Suraj Kumar, Andrew Tilton and Sunil Koul, 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.