**FOUNDATION** 

October 12, 2023 11:03 AM GMT

Global Economics | North America

# Global Trade Monitor: Persistent Softness

We expect global trade to remain soft for the rest of 2023 as DM aggregate demand slows, while global supply chains continue to ease. Lower than expected growth in China is likely to have global spillovers, which we examine in detail.

- We expect global growth to be only 2.9%Y in 2023 and 2.8%Y in 2024, down from 3.5%Y in 2022.
- In Jul-23, the most recent data available, global goods exports declined 2.5%YoY in volume terms, and 5.6% in value terms, the latter a bigger decline because of easing inflationary pressures.
- Global services exports declined in July for the first time in over a year, as the recovery in travel softened. After being a key driver of services exports since 2021, transportation exports contracted for two consecutive quarters.
- Steep voluntary production cuts by Saudi Arabia and Russia caused oil prices
  to increase by 20 USD/ BBL to 95 USD/ BBL over the past quarter. These
  cuts are likely to last at least until the end of the year.
- A weaker Chinese recovery is likely to have implications for exports from the rest of the world, with Asia and Latin America being the most exposed regions.
- The Morgan Stanley Supply Chain Index (MSSCI) continued to decline in August, while Global demand PMIs improved slowly. Our index incorporating demand factors (MSSCISD) ticked downwards again, and is now at prepandemic levels.

MORGAN STANLEY & CO. LLC

### Cristina Arbelaez

Global Economis

Cristina.Arbelaez@morganstanley.com +1 212 761-2045

MORGAN STANLEY INDIA COMPANY PRIVATE LIMITED

#### Mayank Phadke

Economist

Mayank.Phadke@morganstanley.com

+91 22 6514-3452

MORGAN STANLEY & CO. LLC

### Seth B Carpenter

Chief Global Economist

Seth.Carpenter@morganstanley.com +1 212 761-0370

MORGAN STANLEY & CO INTERNATIONAL PLC (DIFC BRANCH)

#### Rajeev Sibal

Senior Global Economist

Rajeev.Sibal@morganstanley.com

+971 4 709-7201

### **Recent Global Macro Research**

Global Economics: Our Global View After the Summer (10 Sep 2023)

Global Economic Briefing: Global Inflation and Central Bank Monthly Monitor (3 Oct 2023) Friday Finish – US Economics: Repaying the Road (6 Oct 2023)

European Economics Weekly: A Hold All the Way to Summer (6 Oct 2023)

China Trendspotting: Travel Remains Strong, Industrials Improve Slightly (6 Oct 2023)

Asia Macro Charts: Trendspotting: How are We Tracking? (3 Oct 2023)

CEEMEA Economics Weekly: Hearing Good Things? (6 Oct 2023)

Week Ahead in Latin America: All About Inflation Data (6 Oct 2023)

# Weaker global trade expected going forward

The global economy is expected to step down to 2.9% in 2023 from 3.4%Y in 2022. Overall, EM are expected to expand 4.1%, outperforming DM, which are expected to grow 1.4%. Asian economies (4.8%Y) continue to drive EM growth.

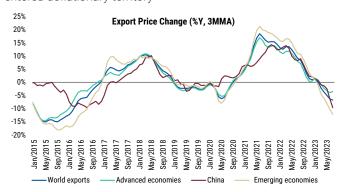
**Exhibit 1:** Growth in global exports has been slowing, and contracted sharply in value terms...



Source: Haver, Morgan Stanley Research

In Jul-23, the most recent data available, global goods exports declined 2.5%YoY in volume terms, and 5.6% in value terms (Exhibit 1), reflecting easing inflationary pressures (Exhibit 2). 3MMA Global export prices have been in deflationary territory from March to July, leading to a larger contraction in value

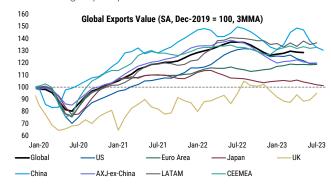
**Exhibit 2:** ...as inflationary pressures eased and export prices entered deflationary territory



Source: CPB, Haver, Morgan Stanley Research

### Exhibit 3:

Global Export values remained weak amidst subdued demand and receding import prices

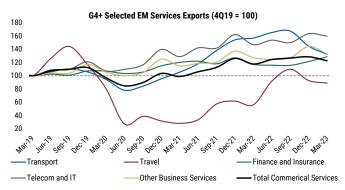


Source: Haver, Morgan Stanley Research

terms. Chinese exports in value terms have declined sharply, in line with the sharp drop in export prices, while AxJ-ex-China exports remained flat (Exhibit 3).

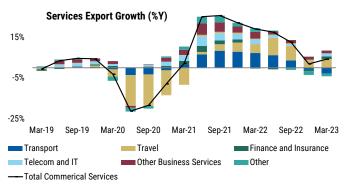
Services Exports declined 4.6%QoQ following a year of gradual growth (Exhibit 4). With the exception of financial and insurance services, all major categories of services exports declined from 4Q22 to 1Q23 (latest data available). After a strong recovery from 1Q22 to 3Q22, travel services returned to pre-Covid levels in nominal terms, but have declined for two successive quarters since. Transportation followed a similar trajectory, expanding from 2Q-20 to 3Q-22, but has contracted sharply since then. This sequential decline is likely to manifest in a substantial drag on YoY Services Exports growth in coming quarters owing to a large base effect (Exhibit 5). After staying flat for several quarters exports of Finance and Insurance services increased by 9.7%YoY in 1Q-23.

**Exhibit 4:** Services exports declined for the first time in a year...



Source: WTO, Morgan Stanley Research

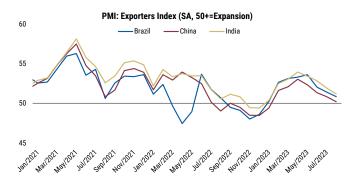
**Exhibit 5:** ...as growth contributions from Travel and Transportation moderated



Source: WTO, Morgan Stanley Research

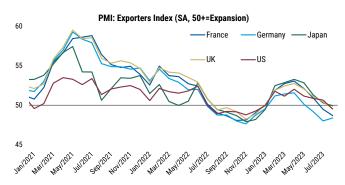
A glance at the PMI: Exporters Index suggests a clear divergence between DM and EM-The three key EM, China, India and Brazil, all have PMIs in expansionary territory (Exhibit 6); while the US, UK, Japan, and the key Euro Area economies- Germany, France, Italy and Spain are all in contractionary territory (Exhibit 7). Global Demand PMIs for New Orders and Purchases have also below been 50 since mid-2022.

**Exhibit 6:** PMI: Exporter's Index is over 50 for key EM with Indian PMIs higher than the rest...



Source: S&P Global, Haver, Morgan Stanley Research

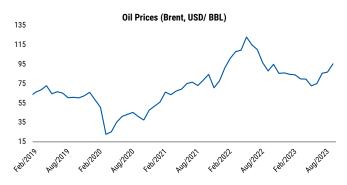
**Exhibit 7:** ...while DM PMIs are below 50, with German PMIs lagging behind the other DM



Source: S&P Global, Haver, Morgan Stanley Research

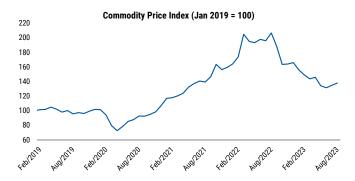
Oil prices have increased by 20 USD/BBL to 95 USD/BBL since July (Exhibit 8), boosted by voluntary cuts from Saudi Arabia and Russia, which are expected to last at least until year end. With these cuts, higher prices appear to be well-supported with robust demand growth and falling observable inventories. Prices are expected to remain in the mid-\$90s as long as OPEC production cuts continue, and prices to be meaningfully higher would require outright demand destruction to balance the market. The Commodity Price index (Exhibit 9) tends to closely follow oil prices, and has started to tick up as well.

**Exhibit 8:** Oil prices have risen sharply following cuts from Saudi Arabia and Russia...



Source: Bloomberg, Morgan Stanley Research

**Exhibit 9:** ...and the Commodity Price Index is starting to tick up as well



Source: Bloomberg, Morgan Stanley Research

In the **US**, trade added 4bp (%Q, SAAR) to growth in 2Q23, a large step down from the +58bp contribution in 1Q23. Trade volumes were down, with goods exports down 16%, and goods imports down 8%.

In the **Euro Area** exports have considerably weakened (0.2%Y in 2Q23), in sync with weak global trade, and contribution to a particularly weak outlook in the manufacturing sector. Going forward, our Euro Area team sees expects a progressive pick-up from 0.4%Y in 2023 to 1.7%Y in 2024, still well below their average of 4%Y over 2011-19.

**China**'s August trade data improved and slightly beat expectations. Owing to stronger commodities, imports rebounded sequentially for the first time in five months, likely suggesting upcoming stabilization in infrastructure investment. Exports also came in steady MoM, as softer exports to DM were offset by resilient regional supply chain trade (Exhibit 11).

Imports of iron ore, coal, crude oil and copper rose MoM in both price and quantity (Exhibit 12), possibly reflecting robust mobility and stabilization in infrastructure investment, although imports of mechanical and electrical products continued to edge lower. Seasonally adjusted dollar exports came in flat at 0%M after consecutive contraction in Apr-Jul, and a low base pushed YoY higher to -8.8% from -14.5% in July. Shipments to western DM (dominated by finished goods) moderated further, while exports to regional economies (where supply chain trade in intermediate goods is more common) improved. Full year growth of Chinese exports may reach ~-5%, and stands at -5.5% YTD.

In the **UK**, goods exports, adjusted for the trade in erratics, are deeply subdued relative to pre-2020 levels- as of 2Q23, they are 6.2% down on 1Q20. However, trade openness has evolved largely as expected on the back of strong services exports, especially those of travel and other business services. Compared to 2019, in 2022 exports of travel and other business services were 12% and 32% higher, respectively.

In **Japan**, net exports grew by 7.1% (SAAR), with exports growing 3%Y and imports shrinking by 1.7%Y, which contributed to an above-consensus 2Q23 growth print. August real trade estimates suggested a sharp MoM drop of 6% in exports, with exports to Asia (-9%MoM) and EU (-12%MoM) registering large contractions despite a weaker yen. Real Imports declined by 3.2%MoM, and are on track for a third consecutive quarter of QoQ

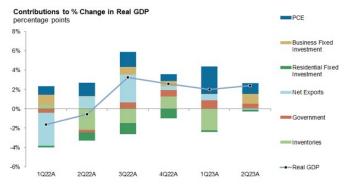
decline.

In **India**, the trade balance widened to its highest since Nov-22, as both exports (-6.9%YoY) and imports (-5.2%YoY) contracted on a YoY basis, even as exports rose 8%MoM on an SA basis. A slight growth in exports of electronics, textiles and ceramics exports partially offset sharp declines in oil exports, while oil imports devlines 23.7%YoY. Services exports declined 0.4%%YoY driven by base effect, but on a sequential basis, services trade balance rose marginally.

**Korean** exports improved more than expected for the second consecutive month (-4.4% YoY vs -8.4% in Aug), and semiconductor exports recorded their highest monthly exports value in 12 months. Strong demand from the US and Europe continued to support nontech goods demand across autos and general machinery while demand from ASEAN and China improves gradually.

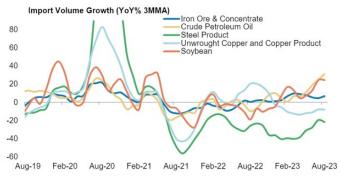
Strong domestic demand in **Mexico** saw imports grow 2.2% QoQ in 2Q23, while exports contracted by 3.1% QoQ, likely due to early signs of a slowdown in the US. In **Brazil**, exports grew 2.9% QoQ, and resilient exports contributed to a materially above consensus GDP print.

**Exhibit 10:** In the US, Net Exports were a drag on growth



Source: Bureau of Economic Analysis, Morgan Stanley Research

**Exhibit 12:** Chinese imports of iron ore, crude oil and copper rose, possibly indicating robust mobility and infrastructure investment



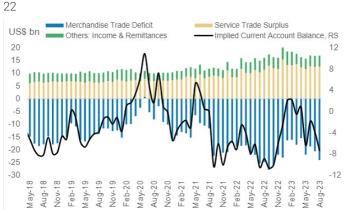
Source: General Administration of Customs, Morgan Stanley Research

**Exhibit 11:** Chinese exports to Asian economies are faring better than exports to DM...



Source: China Customs, CEIC, Morgan Stanley Research

**Exhibit 13:** India's trade deficit widened to its highest since Nov-



Source: CEIC, Haver Analytics, Morgan Stanley Research

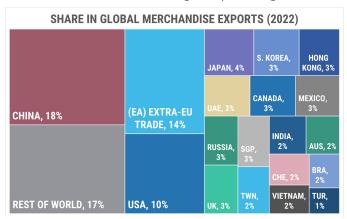
# Revisiting Trade Spillovers from China

Our China team has written extensively about the 3D challenges that China faces- debt, demographics and deflation, which coupled with geopolitical tension have slowed China's potential growth.

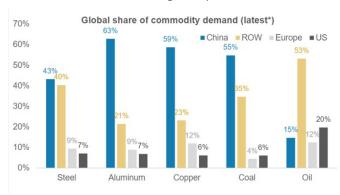
China is currently the world's largest goods exporter (Exhibit 14) and the third-largest goods importer. It accounts for between 43% and 63% of global demand for the key commodities of steel, aluminium, copper and coal, and 15% of global oil demand- the second-largest importer (Exhibit 15). As such, China's weaker recovery has repercussions for global trade, commodity prices and inflation.

Further, if China were to slip into a debt-deflation loop, it could act as disinflationary force for the rest of the world via trade, commodity prices, and currency movements. China's exports of manufactured goods, especially if accompanied by a significant currency depreciation, would spread disinflation globally.

**Exhibit 14:** China is the world's largest exporter of goods...



**Exhibit 15:** ..and one of the largest importers of commodities



Source: World Bureau of Metal Statistics, BP Statistical Review of World Energy, Morgan Stanley Research: Note: \*2023 data as of 2023

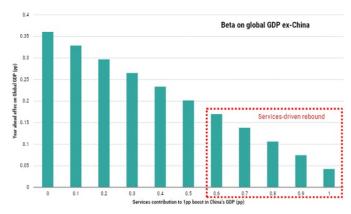
Source: WTO, Morgan Stanley Research

In our work at a global level one year ago, we argued that even if China were to rebound, the 'growth impulse' for the global economy would be lower because the next Chinese cycle is likely to be consumer led and not investment led (Exhibit 16). In contrast, the slump in China has spread to the manufacturing sector, implying more of a spillover than the first quarter surge.

Over the past two decades, China has also moved up the value chain towards products like electronics and machinery, and away from agricultural products and textiles. As China shifts away from raw materials and towards higher value added products and services, the nature of Chinese spillovers are likely to be different across regions, depending on the nature of their value chains relative to China.

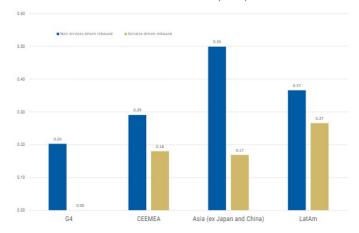
In our previous analysis, we observed that Asia and LatAm had the highest sensitivity to China (Exhibit 17), but the sensitivity in Latin America was less dependent on the type of recovery in China. We examine these spillovers in detail for Asia, LatAm and Euro Area in subsequent sections.

**Exhibit 16:** Beta on global ex-China GDP could be lower in case of a consumer-led recovery



Source: Morgan Stanley Research, Bloomberg, Haver

**Exhibit 17:** Effect of a Non-Services rebound (Blue) is higher than that of a Services-driven rebound (Gold)

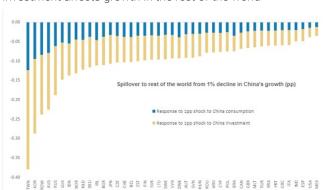


Source: Morgan Stanley Research, Bloomberg, Haver

## Trade Spillovers to Asia

Given its geographical proximity and stronger trade linkages developed over the past two decades, Asia bears the highest exposure to a Chinese slowdown, even more so when it comes to a investment or manufacturing led slowdown. Our China team estimates that

**Exhibit 18:** How a 1ppt decline in China's consumption and investment affects growth in the rest of the world

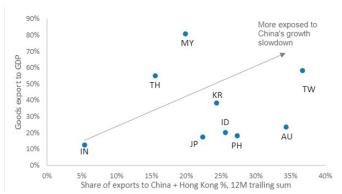


Source: World input-output table; Note: For more details on World input-output table analysis methodology, kindly refer to: Global Economics: Global Supply Chain Impact: Who's Most Exposed?

each 1ppt decline in China's growth rate would reduce growth in other Asian economies by 15bps. However, the nature of the slowdown carries a great deal of importance. If the slowdown were to be driven more by investment and manufacturing, the beta would be 10bps, which is 80% higher than if the slowdown were to be driven by weaker consumption (Exhibit 18).

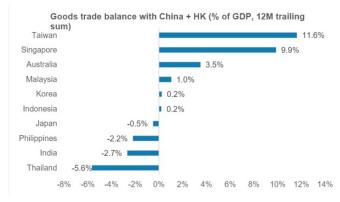
The linkages of Asian economies to China are not restricted to just trade- weaker Chinese growth can also be transmitted through commodity and non-commodity goods prices, MNC operations and broader financial conditions.

**Exhibit 19:** India has lower exposure to a slowdown in China from a trade perspective, while Korea and Taiwan have higher exposure...



Source: Haver, Morgan Stanley Research

**Exhibit 20:** ...since Taiwan, Singapore and Australia run sizeable trade surpluses with China while India runs a large trade deficit



Source: Haver, Morgan Stanley Research

Except for India and the Philippines, China is the number one trade partner for all Asian economies under our coverage. **Korea, Singapore, and Taiwan** are the most exposed to a Chinese slowdown, given these are trade-oriented economies that run large trade surpluses with China (Exhibit 19, Exhibit 20).

As such, a slowdown in China affects demand for these commodities, and net exporters like **Australia** (iron ore, coal and gas), **Indonesia** (coal, palm oil, nickel) and **Malaysia** (palm oil, gas) are likely to face downside risks. In particular, demand construction related materials exported by Australia (long steel, iron ore and cement) could face more downward pressures. However, given most countries in Asia are net importers of commodities, weaker Chinese demand is likely to result in better terms of trade and contribute to disinflation.

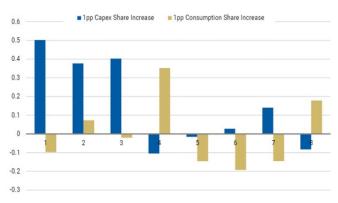
**India** is least exposed to China through the trade channel, given its trade deficit with China, low share of exports to China and structural uptrend. It is also a significant commodity importer, and can benefit from weaker commodity prices.

## Spillovers to Latin America

Within LatAm, the natural resource-led economies of Brazil and Chile have the highest export dependence on China, while the manufacturing driven economy of Mexico is oriented more towards the US, as is Colombia.

While the beta of LatAm to Chinese growth is consistent across investment-led versus consumer-led cycles relative to other regions (Exhibit 21), the timing of the spillover of Chinese growth is only explicit when it is an investment-led cycle. A 1pp increase in the share of investment spending in China leads to a 50bp increase in LatAm exports to China, an

**Exhibit 21:** Sensitivity to 1pp change in Chinese share of GDP growth for Latin American exports to China



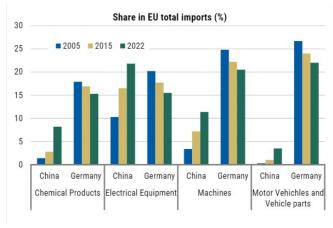
Source: Haver Analytics, IMF Direction of Trade, Morgan Stanley Research; Note: The above results are based on a structural VAR model. Quarterly data for 2010-19 were used for the following variables: total level of exports from Brazil, Chile, Mexico and Colombia to China in US dollars, the shares of gross capital formation and final consumption expenditures in the real GDP growth of China and HP-detrended series of China's real GDP. The AlC/Schwarz criterion was used to determine the number of lags in the VAR, and the Cholesky decomposition was used to generate impulse response functions. This is similar to the strategy used in IMF (2004), where the link between Mexican exports and different economies was examined.

effect that persists for three quarters.

A large share of Brazil's exports of iron ore, crude petroleum and soybeans, and Chile's exports of copper (refined and ore) are directed to China. Unsurprisingly, this has led to Brazil and Chile having above-average sensitivity to Chinese growth. Following 1pp of investment-led growth in China, Brazil's exports show a persistent rise in exports to China of around 25bp, lasting across three quarters, while Chile's exports seem to rise by 70bp quickly before fading.

## Spillovers to Euro Area

**Exhibit 22:** While not conventionally a close trade partner of the Euro Area, China's market share has been markedly increasing across a number of key sectors with time



Source: IW, Morgan Stanley Research

The effect of weaker Chinese growth on the Euro Area is likely to be limited when compared to Asia and Latin America. Although China's weight as a destination for European goods has increased steadily over the past few years to 1.5% of EA GDP, it remains well below that of the US, at 3% of EA GDP. Consequently, it would take a very large shock to Chinese demand for the direct trade channel to affect the macroeconomic outlook in Europe. Recent scenario analysis by the ECB concludes that if GDP in China falls 140pp below current expectations in 2024, it would reduce growth in Europe by 20bp and inflation by 10bp. On the other hand, China's integration in European supply chains is much higher, especially in sectors like electrical equipment, where it accounts for 24% of EU imports, or motor vehicles, where it has an increasingly large share.

# MSSCI: Another Improvement

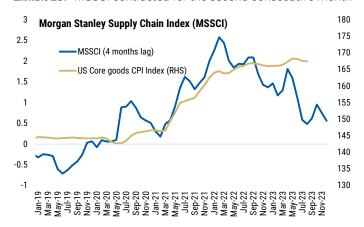
The Morgan Stanley Supply Chain Index (MSSCI) continued to decline in August. Global demand PMIs also improved slowly, while our index incorporating demand factors (MSSCISD) ticked downwards again, marking its 16th consecutive month of declines

**Another Improvement:** The Morgan Stanley Supply Chain Index (MSSCI) contracted by 0.19pts in August, similar to the decline of 0.20pts in the prior month. Containership rates continued to decline sharply m-o-m in August, like they did in July. While containership rates have shrunk to a quarter of what they were one year ago, they remain 60-140% above pre-Covid levels. Shipping rates ticked up after declining for two straight months, while import air freight costs from Asia declined 18% m-o-m. Global backlogs PMIs ticked up slightly, while global delivery times PMIs declined by 1pt, led by a 3pt contraction in Euro Area Manufacturing Suppliers' Delivery Time PMI. The index remains below pre-Covid levels, reflecting still-elevated containership and air freight rates.

"MSSCI supply and demand" (MSSCISD) returning to pre-Covid levels. The "MSSCI supply and demand" (MSSCISD) continued its gradual downward trajectory, with an improvement in global demand. Global Manufacturing New Orders and Manufacturing Quantity of Purchases PMIs increased by 0.41 and 0.46 to 46.5 and 45.6, respectively. This was driven by a recovery in Chinese PMIs, and partially offset by a sharp contraction in UK PMIs. US and Korean new order and purchases PMIs also declined. The "MSSCI supply and demand" is now at -0.28, which is comparable to pre-Covid levels, such as the 2019 average of -0.24.

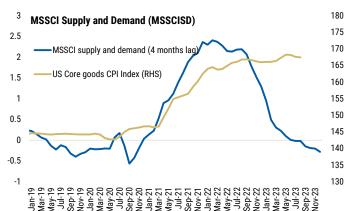
**MSSCI is on Bloomberg**. Our index is on Bloomberg. Type "MSSCI Index <GO>" or "MSSCISD Index <GO>" on your terminal to get our latest prints.

Exhibit 23: MSSCI contracted for the second consecutive month



Source: Morgan Stanley Research, Haver Analytics, Clarkson Research

Exhibit 24: MSSCISD continued its gradual decline



Source: Morgan Stanley Research, Haver Analytics, Clarkson Research

Important note regarding economic sanctions. This research references country/ies which are generally the subject of comprehensive or selective sanctions programs administered or enforced by the U.S. Department of the Treasury's Office of Foreign Assets Control ("OFAC"), the European Union and/or by other countries and multi-national bodies. Any references in this report to entities, debt or equity instruments, projects or persons that may be covered by such sanctions are strictly informational, and should not be read as recommending or advising as to any investment activities in relation to such entities, instruments or projects. Users of this report are solely responsible for ensuring that their investment activities in relation to any sanctioned country/ies are carried out in compliance with applicable sanctions.

# **Disclosure Section**

The information and opinions in Morgan Stanley Research were prepared by Morgan Stanley & Co. LLC, and/or Morgan Stanley C.T.V.M. S.A., and/or Morgan Stanley Mexico, Casa de Bolsa, S.A. de C.V., and/or Morgan Stanley Canada Limited. As used in this disclosure section, "Morgan Stanley" includes Morgan Stanley & Co. LLC, Morgan Stanley C.T.V.M. S.A., Morgan Stanley Mexico, Casa de Bolsa, S.A. de C.V., Morgan Stanley Canada Limited and their affiliates as necessary.

For important disclosures, stock price charts and equity rating histories regarding companies that are the subject of this report, please see the Morgan Stanley Research Disclosure Website at www.morganstanley.com/researchdisclosures, or contact your investment representative or Morgan Stanley Research at 1585 Broadway, (Attention: Research Management), New York, NY, 10036 USA.

For valuation methodology and risks associated with any recommendation, rating or price target referenced in this research report, please contact the Client Support Team as follows: US/Canada +1 800 303-2495; Hong Kong +852 2848-5999; Latin America +1 718 754-5444 (U.S.); London +44 (0)20-7425-8169; Singapore +65 6834-6860; Sydney +61 (0)2-9770-1505; Tokyo +81 (0)3-6836-9000. Alternatively you may contact your investment representative or Morgan Stanley Research at 1585 Broadway, (Attention: Research Management), New York, NY 10036 USA.

### **Global Research Conflict Management Policy**

Morgan Stanley Research has been published in accordance with our conflict management policy, which is available at www.morganstanley.com/institutional/research/conflictpolicies. A Portuguese version of the policy can be found at www.morganstanley.com.br

### **Important Disclosures**

Morgan Stanley is not acting as a municipal advisor and the opinions or views contained herein are not intended to be, and do not constitute, advice within the meaning of Section 975 of the Dodd-Frank Wall Street Reform and Consumer Protection Act.

Morgan Stanley Research does not provide individually tailored investment advice. Morgan Stanley Research has been prepared without regard to the circumstances and objectives of those who receive it. Morgan Stanley recommends that investors independently evaluate particular investments and strategies, and encourages investors to seek the advice of a financial adviser. The appropriateness of an investment or strategy will depend on an investor's circumstances and objectives. The securities, instruments, or strategies discussed in Morgan Stanley Research may not be suitable for all investors, and certain investors may not be eligible to purchase or participate in some or all of them. Morgan Stanley Research is not an offer to buy or sell on the solicitation of an offer to buy or sell any security/instrument or to participate in any particular trading strategy. The value of and income from your investments may vary because of changes in interest rates, foreign exchange rates, default rates, prepayment rates, securities/instruments prices, market indexes, operational or financial conditions of companies or other factors. There may be time limitations on the exercise of options or other rights in securities/instruments transactions. Past performance is not necessarily a guide to future performance. Estimates of future performance are based on assumptions that may not be realized. If provided, and unless otherwise stated, the closing price on the cover page is that of the primary exchange for the subject company's securities/instruments.

The fixed income research analysts, strategists or economists principally responsible for the preparation of Morgan Stanley Research have received compensation based upon various factors, including quality, accuracy and value of research, firm profitability or revenues (which include fixed income trading and capital markets profitability or revenues), client feedback and competitive factors. Fixed Income Research analysts', strategists' or economists' compensation is not linked to investment banking or capital markets transactions performed by Morgan Stanley or the profitability or revenues of particular trading desks.

With the exception of information regarding Morgan Stanley, Morgan Stanley Research is based on public information. Morgan Stanley makes every effort to use reliable, comprehensive information, but we make no representation that it is accurate or complete. We have no obligation to tell you when opinions or information in Morgan Stanley Research change apart from when we intend to discontinue equity research coverage of a subject company. Facts and views presented in Morgan Stanley Research have not been reviewed by, and may not reflect information known to, professionals in other Morgan Stanley business areas, including investment banking personnel.

Morgan Stanley may make investment decisions that are inconsistent with the recommendations or views in this report.

To our readers based in Taiwan or trading in Taiwan securities/instruments: Information on securities/instruments that trade in Taiwan is distributed by Morgan Stanley Taiwan Limited ("MSTL"). Such information is for your reference only. The reader should independently evaluate the investment risks and is solely responsible for their investment decisions. Morgan Stanley Research may not be distributed to the public media or quoted or used by the public media without the express written consent of Morgan Stanley. Any non-customer reader within the scope of Article 7-1 of the Taiwan Stock Exchange Recommendation Regulations accessing and/or receiving Morgan Stanley Research is not permitted to provide Morgan Stanley Research to any third party (including but not limited to related parties, affiliated companies and any other third parties) or engage in any activities regarding Morgan Stanley Research which may create or give the appearance of creating a conflict of interest. Information on securities/instruments that do not trade in Taiwan is for informational purposes only and is not to be construed as a recommendation or a solicitation to trade in such securities/instruments. MSTL may not execute transactions for clients in these securities/instruments.

Morgan Stanley is not incorporated under PRC law and the research in relation to this report is conducted outside the PRC. Morgan Stanley Research does not constitute an offer to sell or the solicitation of an offer to buy any securities in the PRC. PRC investors shall have the relevant qualifications to invest in such securities and shall be responsible for obtaining all relevant approvals, licenses, verifications and/or registrations from the relevant governmental authorities themselves. Neither this report nor any part of it is intended as, or shall constitute, provision of any consultancy or advisory service of securities investment as defined under PRC law. Such information is provided for your reference only.

Morgan Stanley Research is disseminated in Brazil by Morgan Stanley C.T.V.M. S.A. located at Av. Brigadeiro Faria Lima, 3600, 6th floor, São Paulo - SP, Brazil; and is regulated by the Comissão de Valores Mobiliários; in Mexico by Morgan Stanley México, Casa de Bolsa, S.A. de C.V which is regulated by Comision Nacional Bancaria y de Valores. Paseo de los Tamarindos 90, Torre 1, Col. Bosques de las Lomas Floor 29, 05120 Mexico City; in Japan by Morgan Stanley MUFG Securities Co., Ltd. and, for Commodities related research reports only, Morgan Stanley Capital Group Japan Co., Ltd; in Hong Kong by Morgan Stanley Asia Limited (which accepts responsibility for its contents) and by Morgan Stanley Bank Asia Limited; in Singapore by Morgan Stanley Asia (Singapore) Pte. (Registration number 199206298Z) and/or Morgan Stanley Asia (Singapore) Securities Pte Ltd (Registration number 200008434H), regulated by the Monetary Authority of Singapore (which accepts legal responsibility for its contents and should be contacted with respect to any matters arising from, or in connection with, Morgan Stanley Research) and by Morgan Stanley Bank Asia Limited, Singapore Branch (Registration number T14FC0118)); in Australia to "wholesale clients" within the meaning of the Australian Corporations Act by Morgan Stanley Australia Limited A.B.N. 67 003 734 576, holder of Australian financial services license No. 233742, which accepts responsibility for its contents; in Australia to "wholesale clients" within the meaning of the Australian Corporations Act by Morgan Stanley Wealth Management Australia Pty Ltd (A.B.N. 19 009 145 555, holder of Australian financial services license No. 240813, which accepts responsibility for its contents; in Korea by Morgan Stanley & Co International plc, Seoul Branch; in India by Morgan Stanley India Company Private Limited having Corporate Identification No (CIN) U22990MH1998PTC115305, regulated by the Securities and Exchange Board of India ("SEBI") and holder of licenses as a Research Analyst (SEBI Registra

Morgan Stanley | RESEARCH

Anil. Shenoy@morganstanley.com; Grievance officer details: Mr. Anil Shenoy, Tel. No.: +91-22-61181000 or Email: msic-compliance@morganstanley.com; in Vietnam this report is issued by Morgan Stanley Singapore Holdings; in Canada by Morgan Stanley Canada Limited; in Germany and the European Economic Area where required by Morgan Stanley Europe S.E., regulated by Bundesanstalt fuer Finanzdienstleistungsaufsicht (BaFin) under the reference number 149169; in the United States by Morgan Stanley & Co. LLC, which accepts responsibility for its contents. Morgan Stanley & Co. International plc, authorized by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority, disseminates in the UK research that it has prepared, and research which has been prepared by any of its affiliates, only to persons who (i) are investment professionals falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (as amended, the "Order"); (ii) are persons who are high net worth entities falling within Article 49(2)(a) to (d) of the Order; or (iii) are persons to whom an invitation or inducement to engage in investment activity (within the meaning of section 21 of the Financial Services and Markets Act 2000, as amended) may otherwise lawfully be communicated or caused to be communicated. RMB Morgan Stanley Proprietary Limited is a member of the JSE Limited and A2X (Pty) Ltd. RMB Morgan Stanley Proprietary Limited is a joint venture owned equally by Morgan Stanley International Holdings Inc. and RMB Investment Advisory (Proprietary) Limited, which is wholly owned by FirstRand Limited. The information in Morgan Stanley Research is being disseminated by Morgan Stanley Saudi Arabia, regulated by the Capital Market Authority in the Kingdom of Saudi Arabia, and is directed at Sophisticated investors only.

The trademarks and service marks contained in Morgan Stanley Research are the property of their respective owners. Third-party data providers make no warranties or representations relating to the accuracy, completeness, or timeliness of the data they provide and shall not have liability for any damages relating to such data. The Global Industry Classification Standard (GICS) was developed by and is the exclusive property of MSCI and S&P.

Morgan Stanley Research, or any portion thereof may not be reprinted, sold or redistributed without the written consent of Morgan Stanley.

Indicators and trackers referenced in Morgan Stanley Research may not be used as, or treated as, a benchmark under Regulation EU 2016/1011, or any other similar framework.

The information in Morgan Stanley Research is being communicated by Morgan Stanley & Co. International plc (DIFC Branch), regulated by the Dubai Financial Services Authority (the DFSA), and is directed at Professional Clients only, as defined by the DFSA. The financial products or financial services to which this research relates will only be made available to a customer who we are satisfied meets the regulatory criteria to be a Professional Client. A distribution of the different MS Research ratings or recommendations, in percentage terms for Investments in each sector covered, is available upon request from your sales representative.

The information in Morgan Stanley Research is being communicated by Morgan Stanley & Co. International plc (QFC Branch), regulated by the Qatar Financial Centre Regulatory Authority (the QFCRA), and is directed at business customers and market counterparties only and is not intended for Retail Customers as defined by the QFCRA.

As required by the Capital Markets Board of Turkey, investment information, comments and recommendations stated here, are not within the scope of investment advisory activity. Investment advisory service is provided exclusively to persons based on their risk and income preferences by the authorized firms. Comments and recommendations stated here are general in nature. These opinions may not fit to your financial status, risk and return preferences. For this reason, to make an investment decision by relying solely to this information stated here may not bring about outcomes that fit your expectations.

Registration granted by SEBI and certification from the National Institute of Securities Markets (NISM) in no way guarantee performance of the intermediary or provide any assurance of returns to investors. Investment in securities market are subject to market risks. Read all the related documents carefully before investing.

© 2023 Morgan Stanley