

# **Monthly Tyre Watch: July 2023**

Weakness in consumer RT continues; second-half rebound expected

Overall, RT volumes surprised to the downside in the first half of 2023 - primarily in Europe (with HV RT down 2% y/y YTD as well). Overall high pricing, normalisation of channel inventories and tough comps on dealer pre-buys has led to continued weakness in sell-in data. De-stocking has continued for longer and it seems like dealers are waiting for price cuts. Tyremakers continue to expect a rebound in sell-in volumes in the second half (with slight growth in the HV segment and a mid single-digit decline in standard tyres). On the other hand, China replacement data showed signs of recovery coming out of pandemic-related lockdowns. Trends in vehicle miles driven in key markets were robust (up 2% y/y YTD and back to pre-pandemic levels) and should support overall volume levels going into 2024. In terms of raw material prices, our JPM raw material index is now tracking ~20% lower y/y since September (on average), mainly due to lower natural rubber, oil, and synthetic rubber prices. The index is now only +5% when compared to 2018 levels. Tyre companies now don't expect any more raw material headwinds in the second half of the year and might also start seeing some benefits from Q4. **Pricing** continues to be resilient, up 8-10% y/y in EU/NA in June 2023 and still flat sequentially since the beginning of the year. However, we have started to see a few tyremakers offering consumer rebates in NA. In terms of important recent announcements, Bridgestone introduced its first RT tyre for premium electric vehicles. Hankook is on-track to double its NA PC/LT capacity to 11mn units. Monthly Data Points - page 2 onwards.

#### **European Autos & Auto Parts**

## Jose M Asumendi AC

(44-20) 7742-5315 jose.m.asumendi@jpmorgan.com **Bloomberg** JPMA ASUMENDI <GO> J.P. Morgan Securities plc

#### Akshat Kacker, CFA

(44-20) 7134-6775 akshat.kacker@jpmorgan.com J.P. Morgan Securities plc

#### Pranay Khatwani

(91-22) 6157 5891 pranay.khatwani@jpmchase.com J.P. Morgan India Private Limited



See page 8 for analyst certification and important disclosures, including non-US analyst disclosures.

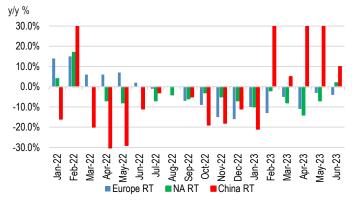
J.P. Morgan does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision.



# Monthly Data Point Tracker

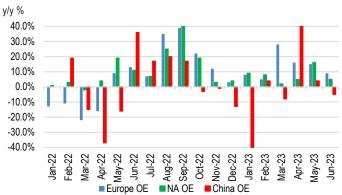
- Michelin monthly tyre data. For the overall PC replacement market (RT), we have seen a sharp slowdown in demand across NA and Europe since the 2H of 2022. Overall high pricing, normalisation of channel inventories and tough comps on dealer pre-buys has led to continued weakness in sell-in data. De-stocking has continued for longer and it seems like dealers are waiting for price cuts. China replacement data showed signs of recovery coming out of pandemic-related lockdowns. YTD 2023, PC RT market is down 6% in Europe (vs. Conti's FY expectation of -5% to -2%), down 6% in NA (vs. Conti's FY expectation of -3% to -1%) and up 16% in China. In terms of trend growth and expectations for 2024, we still see room for growth in Europe PC RT tyre market. On the other hand, the NA RT market recovered strongly since 2021.
- Pirelli tyre market watch: The high value market (>18" tyre segment) has continued to outperform the standard segment (<17") in both Europe and NA LV replacement. However, in Nov'22 European HV RT turned negative for the first time. YTD, the >18" segment has declined by 2% in Europe (outperformed Standard by ~10% points) and has grown by 1% in North America (outperformed Standard by 13% points). Pirelli expects the HV market to grow at 2% in 2023, with a rebound in sell-in volumes in the second half (vs. +3% earlier).

Figure 1: PC Replacement tyres - retail sales trend



Source: Company reports and J.P. Morgan

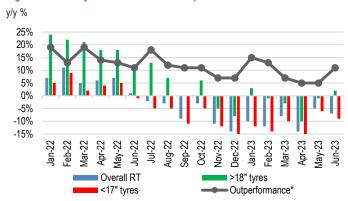
Figure 2: PC OE tyres - retail sales trend



Source: Company reports and J.P. Morgan.

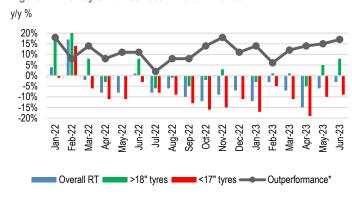


Figure 3: Pirelli tyre market watch: Europe



Source: Company reports and J.P. Morgan. \*Outperformance of high-value tyres over standard tyres

Figure 4: Pirelli tyre market watch: North America

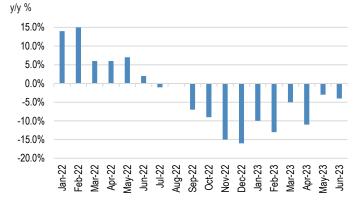


Source: Company reports and J.P. Morgan. \*Outperformance of high-value tyres over standard tyres

# **Europe Tyre Shipments**

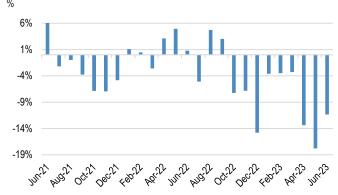
In Replacement, tyre market sell-in is down 6% YTD in 2023 as various markets saw channel inventory normalisation, a slower onset of the winter season and a strong pricing environment. We also have an unfavourable comparison basis as sales volumes were driven by purchases made (last year) in anticipation of the price increases announced in a highly inflationary environment.

Figure 5: Europe Light Vehicle Replacement Tyre Shipments



Source: J.P. Morgan.

Figure 6: France - Manufacture of rubber tyres and tubes



Source: J.P. Morgan.



Table 1: Monthly Traffic performance - Toll Roads

% ch. in Km Travelled

	France		Italy		Spain		Brazil		Chile		Mexico	
	y/y	vs. '19	y/y	vs. '19	y/y ·	vs. '19	y/y	vs. '19	y/y	vs. '19	y/y	vs. '19
Jan-22	16.3%	-2.9%	43.1%	-11.8%	52.6%	-10.4%	1.1%	-3.4%	40.3%	11.4%	14.9%	11.5%
Feb-22	22.9%	0.2%	19.0%	-1.7%	51.9%	-1.5%	2.1%	5.8%	23.3%	9.5%	15.9%	11.2%
Mar-22	27.0%	-2.2%	39.0%	-3.7%	24.5%	-11.2%	18.9%	3.6%	30.0%	11.1%	9.5%	13.2%
Apr-22	62.7%	-4.7%	42.2%	-2.4%	64.3%	-2.8%	18.7%	8.0%	65.8%	10.9%	13.8%	11.1%
May-22	21.6%	9.0%	13.2%	3.4%	13.7%	-2.3%	5.0%	6.9%	28.4%	13.1%	7.6%	11.2%
Jun-22	9.9%	-4.1%	6.0%	0.5%	3.6%	-3.8%	4.6%	3.6%	20.1%	8.9%	5.1%	10.3%
Jul-22	508.0%	4.3%	0.3%	-1.2%	0.1%	-1.9%	7.3%	6.9%	-1.6%	5.3%	3.4%	6.2%
Aug-22	3.6%	2.2%	-1.7%	0.0%	-4.1%	-3.0%	3.6%	5.8%	-3.1%	6.7%	10.7%	10.0%
Sep-22	-0.7%	1.8%	-0.5%	1.1%	-1.5%	-2.6%	2.0%	6.1%	-4.7%	10.0%	7.8%	12.1%
Oct-22	-6.2%	-4.2%	-1.4%	-0.7%	-8.9%	-8.0%	0.3%	1.4%	-5.7%	20.1%	3.6%	12.4%
Nov-22	-1.7%	1.7%	0.0%	1.4%	-5.1%	-7.2%	-1.7%	-1.1%	-6.7%	17.8%	2.1%	10.4%
Dec-22	0.9%	-3.3%	2.3%	1.2%	-0.9%	-7.2%	-4.3%	-2.4%	-8.8%	5.3%	0.8%	12.6%
Jan-23	7.3%	4.2%	14.3%	0.8%	4.9%	-6.0%	8.5%	4.6%	-3.3%	6.2%	7.8%	20.1%
Feb-23	1.8%	2.0%	3.2%	1.5%	-3.2%	-4.6%	4.2%	10.3%	-1.5%	7.0%	4.6%	16.3%
Mar-23	1.5%	-0.6%	5.0%	1.1%	7.2%	-4.8%	3.1%	6.7%	-1.8%	7.8%	3.2%	16.7%
Apr-23	3.2%	-1.7%	5.2%	2.6%	0.6%	-2.3%	1.9%	10.0%	-5.0%	4.4%	0.6%	11.7%
May-23	4.8%	14.2%	1.4%	4.9%	-0.5%	-2.8%	4.5%	11.6%	-3.5%	8.6%	3.5%	15.0%
Jun-23	4.1%	-0.1%	1.3%	1.8%	0.6%	-3.2%	5.7%	9.3%	-3.7%	4.4%	4.6%	15.3%
2022	10.7%	-0.1%	10.1%	-1.2%	9.8%	-5.0%	4.3%	3.2%	11.1%	10.7%	7.5%	11.0%
2023 YTD	3.8%	2.9%	4.7%	2.1%	1.5%	-3.8%	4.7%	8.6%	-3.1%	6.4%	4.0%	15.8%

Source: J.P. Morgan.

## **US Tyre Shipments**

The latest tyre industry dynamics are confirming the trend seen in prior months - an overall slowdown in RT volumes driven by a sharp recovery post the pandemic and high tyre prices. PC RT sell-in volumes are down 6% YTD in 2023. Vehicle miles driven is now tracking +2% y/y in May. Overall, miles driven in NA are up 2% y/y YTD, but down 1% vs 2019 levels. Gasoline demand is up 2% y/y YTD and down 3% vs 2019 levels. We continue to look out for a structural impact on miles driven as inflation and energy costs hit the consumer in the near term and a larger share of people work from home and shop online in the longer term.

Figure 7: US Light Vehicle Replacement Tyre Shipments

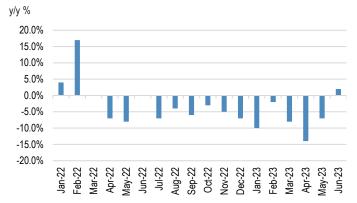
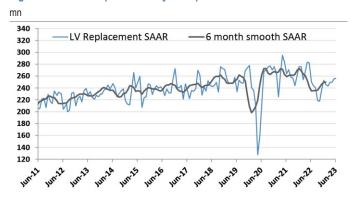


Figure 8: U.S. LV Replacement Tyre Shipment SAAR

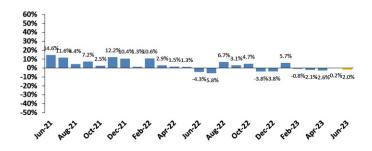


Source: Rubber Manufacturers Association (RMA) and J.P. Morgan estimates

Source: RMA



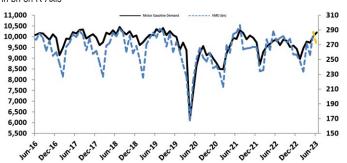
Figure 9: U.S. Vehicle Miles Driven Trends (non-seasonally adjusted) % Change Y/Y



Source: U.S. Department of Transportation – Federal Highway Administration and J.P. Morgan estimates. Note: Bars in orange indicate J.P. Morgan estimates.

# Figure 10: U.S. Gasoline Demand and U.S. Vehicle Miles Driven (VMD) Trends

Gasoline Demand in 000s barrels per week on L-Axis and Vehicle Miles Driven (VMD) in bn on R-Axis

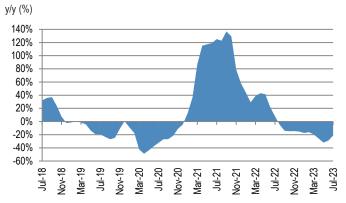


Source: U.S. Department of Energy, Energy Information Administration, U.S. Department of Transportation – Federal Highway Administration, Bloomberg Finance L.P., and J.P. Morgan estimates. Note: Vehilcle Miles Driven data lags by two months. Orange line represents J.P. Morgan estimates based on historical correlation between y/y changes in VMD and gasoline demand.

## **Raw Material Price Index**

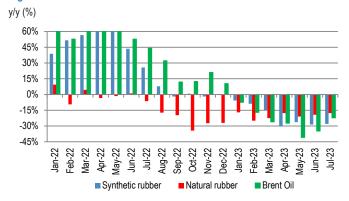
After 19 months of y/y raw material price increases (Jan'21 - Jul'22), our JPM raw material index has stabilised at current levels in the last nine months. The JPM tyre raw materials spot index is now +5% compared to the levels seen in 2018. Tyre companies now don't expect any more raw material headwinds in the second half of the year and might also start seeing some benefits from Q4.

Figure 11: J.P. Morgan Tyre Raw Material Index



Source: J.P. Morgan estimates.

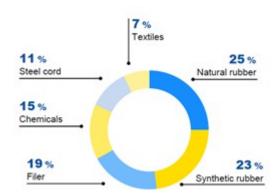
Figure 12: Raw Material tracker



Source: J.P. Morgan.



Figure 13: Michelin: Raw material purchases

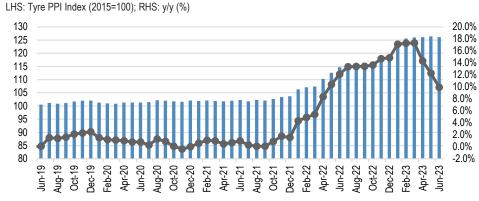


Source: Company reports.

# **Tyre Prices and Recent Updates**

**In Europe**, tyre PPI remain at high levels (flat sequentially since Feb 2023) - but were up 10% y/y in June 2023. Pricing remains strong, even with easing raw material costs - as tyre manufacturers cope with inflation in energy costs, personnel expenses and road freight. **In the US**, tyre PPI continues to inch higher - up 8% y/y in Jun'23 and flat sequentially. However, we are now seeing tyre makers starting to offer consumer rebates in the market.

Figure 14: Europe Tyre PPI

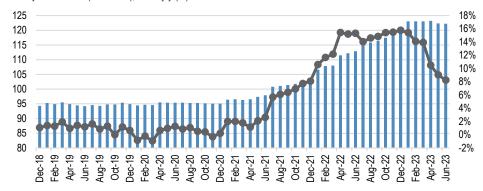


Source: J.P. Morgan.



Figure 15: US Tyre PPI





Source: U.S. Bureau of Labor Statistics.

#### Tyre price change announcements (North America)

ı	Effective	Date				End Markets			S				
ı	From	Announced	Company	Region	Change	Pass	占	MT	Comm	Ag	OTR	Ind	M
	1-Jan-23	1-Dec-22	Michelin	North America	Up to 9%	x†	x†			x†			x†
- 1	1-Jan-23	2-Dec-22	Bridgestone	North America	_	x†	x†						
- 1	15-Jan-23	2-Dec-22	Pirelli	North America	Up to 10%	x†	x†						
-	1-Oct-22	26-Aug-22	Continental	North America	_	x†	x†						

Source: J.P. Morgan.

### **Noteworthy Announcements in the Tyre Sector**

- May'23: Hankook and Continental extended their consumer tyre rebate through 30th June, offering up to \$110 in savings on purchases of at least four eligible tyres.
- May'23: Bridgestone unveiled its first replacement tyre made for premium electric vehicles: the Turanza EV grand touring tyre. The tyre comes with a 50,000-mile limited warranty.
- May'23: Hankook is on-track to expand its NA PC/LT tyre capacity to 11mn units.
   Last summer, Hankook announced it would invest \$1.6bn to expand consumer tyre production at the plant and enable commercial truck and bus tyre production there.
- March'23: The new Lamborghini Revuelto will roll on tailor-made Bridgestone Potenza high performance tyres.
- **Dec'22: Hankook** Hankook is bringing its first tyres specifically made for electric vehicles to the US. Combined, the iON evo AS and iON evo AS SUV is available in 26 sizes, for wheels ranging from 18 inches to 22 inches in diameter.
- Dec'22: Bridgestone Bridgestone has developed "bespoke tyres" for the BMW iX.



Analyst Certification: The Research Analyst(s) denoted by an "AC" on the cover of this report certifies (or, where multiple Research Analysts are primarily responsible for this report, the Research Analyst denoted by an "AC" on the cover or within the document individually certifies, with respect to each security or issuer that the Research Analyst covers in this research) that: (1) all of the views expressed in this report accurately reflect the Research Analyst's personal views about any and all of the subject securities or issuers; and (2) no part of any of the Research Analyst's compensation was, is, or will be directly or indirectly related to the specific recommendations or views expressed by the Research Analyst(s) in this report. For all Korea-based Research Analysts listed on the front cover, if applicable, they also certify, as per KOFIA requirements, that the Research Analyst's analysis was made in good faith and that the views reflect the Research Analyst's own opinion, without undue influence or intervention.

All authors named within this report are Research Analysts who produce independent research unless otherwise specified. In Europe, Sector Specialists (Sales and Trading) may be shown on this report as contacts but are not authors of the report or part of the Research Department.

### **Important Disclosures**

Company-Specific Disclosures: Important disclosures, including price charts and credit opinion history tables, are available for compendium reports and all J.P. Morgan-covered companies, and certain non-covered companies, by visiting https://www.jpmm.com/research/disclosures, calling 1-800-477-0406, or e-mailing research.disclosure.inquiries@jpmorgan.com with your request.

### Explanation of Equity Research Ratings, Designations and Analyst(s) Coverage Universe:

J.P. Morgan uses the following rating system: Overweight [Over the next six to twelve months, we expect this stock will outperform the average total return of the stocks in the analyst's (or the analyst's team's) coverage universe.] Neutral [Over the next six to twelve months, we expect this stock will perform in line with the average total return of the stocks in the analyst's (or the analyst's team's) coverage universe.] Underweight [Over the next six to twelve months, we expect this stock will underperform the average total return of the stocks in the analyst's (or the analyst's team's) coverage universe.] Not Rated (NR): J.P. Morgan has removed the rating and, if applicable, the price target, for this stock because of either a lack of a sufficient fundamental basis or for legal, regulatory or policy reasons. The previous rating and, if applicable, the price target, no longer should be relied upon. An NR designation is not a recommendation or a rating. In our Asia (ex-Australia and ex-India) and U.K. small- and mid-cap equity research, each stock's expected total return is compared to the expected total return of a benchmark country market index, not to those analysts' coverage universe. If it does not appear in the Important Disclosures section of this report, the certifying analyst's coverage universe can be found on J.P. Morgan's research website, https://www.jpmorganmarkets.com.

Coverage Universe: Asumendi, Jose M: Aston Martin Lagonda (AML.L), BMW (BMWG.DE), Continental AG (CONG.DE), Daimler Truck Holding AG (DTG0n.DE), Dowlais Group (DWL.L), Ebusco (EBUS.AS), EuroGroup Laminations (EGLA.MI), FREYR (FREY), Forvia (FRVIA.PA), Gestamp (GEST.MC), Iveco Group NV (IVG.MI), Mercedes-Benz Group AG (MBGn.DE), Michelin (MICP.PA), Novem (NVM.DE), Pirelli (PIRC.MI), Plastic Omnium (PLOF.PA), Porsche AG (P911 p.DE), QuantumScape (QS), Renault (RENA.PA), Schaeffler AG (SHA p.DE), Stellantis (STLAM.MI), Traton SE (8TRA.DE), Valeo SA (VLOF.PA), Varta (VAR1.DE), Vitesco (VTSCn.DE), Volkswagen Prefs. (VOWG p.DE), Volvo (VOLVb.ST), Volvo Car AB (VOLCARb.ST)

#### J.P. Morgan Equity Research Ratings Distribution, as of July 08, 2023

	Overweight (buy)	Neutral (hold)	Underweight (sell)
J.P. Morgan Global Equity Research Coverage*	47%	39%	14%
IB clients**	48%	45%	34%
JPMS Equity Research Coverage*	45%	42%	12%
IB clients**	67%	64%	53%

<sup>\*</sup>Please note that the percentages may not add to 100% because of rounding.

investment banking services within the previous 12 months.

For purposes of FINRA ratings distribution rules only, our Overweight rating falls into a buy rating category; our Neutral rating falls into a hold rating category; and our Underweight rating falls into a sell rating category. Please note that stocks with an NR designation are not included in the table above. This information is current as of the end of the most recent calendar quarter.

Equity Valuation and Risks: For valuation methodology and risks associated with covered companies or price targets for covered companies, please see the most recent company-specific research report at <a href="http://www.jpmorganmarkets.com">http://www.jpmorganmarkets.com</a>, contact the primary analyst or your J.P. Morgan representative, or email research.disclosure.inquiries@jpmorgan.com. For material information about the proprietary models used, please see the Summary of Financials in company-specific research reports and the Company Tearsheets, which are available to download on the company pages of our client website, <a href="http://www.jpmorganmarkets.com">http://www.jpmorganmarkets.com</a>. This report also sets out within it the material underlying assumptions used.

A history of J.P. Morgan investment recommendations disseminated during the preceding 12 months can be accessed on the Research & Commentary page of <a href="http://www.jpmorganmarkets.com">http://www.jpmorganmarkets.com</a> where you can also search by analyst name, sector or financial instrument.

Analysts' Compensation: The research analysts responsible for the preparation of this report receive compensation based upon various factors,

<sup>\*\*</sup>Percentage of subject companies within each of the "buy," "hold" and "sell" categories for which J.P. Morgan has provided



including the quality and accuracy of research, client feedback, competitive factors, and overall firm revenues.

**Registration of non-US Analysts:** Unless otherwise noted, the non-US analysts listed on the front of this report are employees of non-US affiliates of J.P. Morgan Securities LLC, may not be registered as research analysts under FINRA rules, may not be associated persons of J.P. Morgan Securities LLC, and may not be subject to FINRA Rule 2241 or 2242 restrictions on communications with covered companies, public appearances, and trading securities held by a research analyst account.

### **Other Disclosures**

J.P. Morgan is a marketing name for investment banking businesses of JPMorgan Chase & Co. and its subsidiaries and affiliates worldwide.

**UK MIFID FICC research unbundling exemption:** UK clients should refer to <u>UK MIFID Research Unbundling exemption</u> for details of JPMorgan's implementation of the FICC research exemption and guidance on relevant FICC research categorisation.

All research material made available to clients are simultaneously available on our client website, J.P. Morgan Markets, unless specifically permitted by relevant laws. Not all research content is redistributed, e-mailed or made available to third-party aggregators. For all research material available on a particular stock, please contact your sales representative.

Any long form nomenclature for references to China; Hong Kong; Taiwan; and Macau within this research material are Mainland China; Hong Kong SAR (China); Taiwan (China); and Macau SAR (China).

J.P. Morgan Research may, from time to time, write on issuers or securities targeted by economic or financial sanctions imposed or administered by the governmental authorities of the U.S., EU, UK or other relevant jurisdictions (Sanctioned Securities). Nothing in this report is intended to be read or construed as encouraging, facilitating, promoting or otherwise approving investment or dealing in such Sanctioned Securities. Clients should be aware of their own legal and compliance obligations when making investment decisions.

Any digital or crypto assets discussed in this research report are subject to a rapidly changing regulatory landscape. For relevant regulatory advisories on crypto assets, including bitcoin and ether, please see <a href="https://www.jpmorgan.com/disclosures/cryptoasset-disclosure">https://www.jpmorgan.com/disclosures/cryptoasset-disclosure</a>.

The author(s) of this research report may not be licensed to carry on regulated activities in your jurisdiction and, if not licensed, do not hold themselves out as being able to do so.

**Exchange-Traded Funds (ETFs):** J.P. Morgan Securities LLC ("JPMS") acts as authorized participant for substantially all U.S.-listed ETFs. To the extent that any ETFs are mentioned in this report, JPMS may earn commissions and transaction-based compensation in connection with the distribution of those ETF shares and may earn fees for performing other trade-related services, such as securities lending to short sellers of the ETF shares. JPMS may also perform services for the ETFs themselves, including acting as a broker or dealer to the ETFs. In addition, affiliates of JPMS may perform services for the ETFs, including trust, custodial, administration, lending, index calculation and/or maintenance and other services.

Options and Futures related research: If the information contained herein regards options- or futures-related research, such information is available only to persons who have received the proper options or futures risk disclosure documents. Please contact your J.P. Morgan Representative or visit <a href="https://www.theocc.com/components/docs/riskstoc.pdf">https://www.theocc.com/components/docs/riskstoc.pdf</a> for a copy of the Option Clearing Corporation's Characteristics and Risks of Standardized Options or <a href="https://www.finra.org/sites/default/files/Security\_Futures\_Risk\_Disclosure\_Statement\_2018.pdf">https://www.finra.org/sites/default/files/Security\_Futures\_Risk\_Disclosure\_Statement\_2018.pdf</a> for a copy of the Security Futures Risk Disclosure Statement.

Changes to Interbank Offered Rates (IBORs) and other benchmark rates: Certain interest rate benchmarks are, or may in the future become, subject to ongoing international, national and other regulatory guidance, reform and proposals for reform. For more information, please consult: https://www.jpmorgan.com/global/disclosures/interbank offered rates

**Private Bank Clients:** Where you are receiving research as a client of the private banking businesses offered by JPMorgan Chase & Co. and its subsidiaries ("J.P. Morgan Private Bank"), research is provided to you by J.P. Morgan Private Bank and not by any other division of J.P. Morgan, including, but not limited to, the J.P. Morgan Corporate and Investment Bank and its Global Research division.

Legal entity responsible for the production and distribution of research: The legal entity identified below the name of the Reg AC Research Analyst who authored this material is the legal entity responsible for the production of this research. Where multiple Reg AC Research Analysts authored this material with different legal entities identified below their names, these legal entities are jointly responsible for the production of this research. Research Analysts from various J.P. Morgan affiliates may have contributed to the production of this material but may not be licensed to carry out regulated activities in your jurisdiction (and do not hold themselves out as being able to do so). Unless otherwise stated below, this material has been distributed by the legal entity responsible for production. If you have any queries, please contact the relevant Research Analyst in your jurisdiction or the entity in your jurisdiction that has distributed this research material.

#### Legal Entities Disclosures and Country-/Region-Specific Disclosures:

Argentina: JPMorgan Chase Bank N.A Sucursal Buenos Aires is regulated by Banco Central de la República Argentina ("BCRA"- Central Bank of Argentina) and Comisión Nacional de Valores ("CNV"- Argentinian Securities Commission" - ALYC y AN Integral N°51). Australia: J.P. Morgan Securities Australia Limited ("JPMSAL") (ABN 61 003 245 234/AFS Licence No: 238066) is regulated by the Australian Securities and Investments Commission and is a Market, Clearing and Settlement Participant of ASX Limited and CHI-X. This material is



issued and distributed in Australia by or on behalf of JPMSAL only to "wholesale clients" (as defined in section 761G of the Corporations Act 2001). A list of all financial products covered can be found by visiting https://www.jpmm.com/research/disclosures. J.P. Morgan seeks to cover companies of relevance to the domestic and international investor base across all Global Industry Classification Standard (GICS) sectors, as well as across a range of market capitalisation sizes. If applicable, in the course of conducting public side due diligence on the subject company(ies), the Research Analyst team may at times perform such diligence through corporate engagements such as site visits, discussions with company representatives, management presentations, etc. Research issued by JPMSAL has been prepared in accordance with J.P. Morgan Australia's Research Independence Policy which can be found at the following link: J.P. Morgan Australia - Research Independence Policy. Brazil: Banco J.P. Morgan S.A. is regulated by the Comissao de Valores Mobiliarios (CVM) and by the Central Bank of Brazil. Ombudsman J.P. Morgan: 0800-7700847 / ouvidoria.jp.morgan@jpmorgan.com. Canada: J.P. Morgan Securities Canada Inc. is a registered investment dealer, regulated by the Canadian Investment Regulatory Organization and the Ontario Securities Commission and is the participating member on Canadian exchanges. This material is distributed in Canada by or on behalf of J.P.Morgan Securities Canada Inc. Chile: Inversiones J.P. Morgan Limitada is an unregulated entity incorporated in Chile. China: J.P. Morgan Securities (China) Company Limited has been approved by CSRC to conduct the securities investment consultancy business. Dubai International Financial Centre (DIFC): JPMorgan Chase Bank, N.A., Dubai Branch is regulated by the Dubai Financial Services Authority (DFSA) and its registered address is Dubai International Financial Centre - The Gate, West Wing, Level 3 and 9 PO Box 506551, Dubai, UAE. This material has been distributed by JP Morgan Chase Bank, N.A., Dubai Branch to persons regarded as professional clients or market counterparties as defined under the DFSA rules. European Economic Area (EEA): Unless specified to the contrary, research is distributed in the EEA by J.P. Morgan SE ("JPM SE"), which is subject to prudential supervision by the European Central Bank ("ECB") in cooperation with BaFin and Deutsche Bundesbank in Germany. JPM SE is a company headquartered in Frankfurt with registered address at TaunusTurm, Taunustor 1, Frankfurt am Main, 60310, Germany. The material has been distributed in the EEA to persons regarded as professional investors (or equivalent) pursuant to Art. 4 para. 1 no. 10 and Annex II of MiFID II and its respective implementation in their home jurisdictions ("EEA professional investors"). This material must not be acted on or relied on by persons who are not EEA professional investors. Any investment or investment activity to which this material relates is only available to EEA relevant persons and will be engaged in only with EEA relevant persons. Hong Kong: J.P. Morgan Securities (Asia Pacific) Limited (CE number AAJ321) is regulated by the Hong Kong Monetary Authority and the Securities and Futures Commission in Hong Kong, and J.P. Morgan Broking (Hong Kong) Limited (CE number AAB027) is regulated by the Securities and Futures Commission in Hong Kong. JP Morgan Chase Bank, N.A., Hong Kong Branch (CE Number AAL996) is regulated by the Hong Kong Monetary Authority and the Securities and Futures Commission, is organized under the laws of the United States with limited liability. Where the distribution of this material is a regulated activity in Hong Kong, the material is distributed in Hong Kong by or through J.P. Morgan Securities (Asia Pacific) Limited and/or J.P. Morgan Broking (Hong Kong) Limited. India: J.P. Morgan India Private Limited (Corporate Identity Number - U67120MH1992FTC068724), having its registered office at J.P. Morgan Tower, Off. C.S.T. Road, Kalina, Santacruz - East, Mumbai – 400098, is registered with the Securities and Exchange Board of India (SEBI) as a 'Research Analyst' having registration number INH000001873. J.P. Morgan India Private Limited is also registered with SEBI as a member of the National Stock Exchange of India Limited and the Bombay Stock Exchange Limited (SEBI Registration Number-INZ000239730) and as a Merchant Banker (SEBI Registration Number - MB/INM000002970). Telephone: 91-22-6157 3000, Facsimile: 91-22-6157 3990 and Website: http://www.jpmipl.com. JPMorgan Chase Bank, N.A. - Mumbai Branch is licensed by the Reserve Bank of India (RBI) (Licence No. 53/ Licence No. BY.4/94; SEBI - IN/CUS/014/ CDSL : IN-DP-CDSL-444-2008/ IN-DP-NSDL-285-2008/ INBI00000984/ INE231311239) as a Scheduled Commercial Bank in India, which is its primary license allowing it to carry on Banking business in India and other activities, which a Bank branch in India are permitted to undertake. For non-local research material, this material is not distributed in India by J.P. Morgan India Private Limited. Compliance Officer: Spurthi Gadamsetty; spurthi.gadamsetty@jpmchase.com; +912261573225. Grievance Officer: Ramprasadh K, jpmipl.research.feedback@jpmorgan.com; +912261573000.

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

Indonesia: PT J.P. Morgan Sekuritas Indonesia is a member of the Indonesia Stock Exchange and is registered and supervised by the Otoritas Jasa Keuangan (OJK). Korea: J.P. Morgan Securities (Far East) Limited, Seoul Branch, is a member of the Korea Exchange (KRX). JPMorgan Chase Bank, N.A., Seoul Branch, is licensed as a branch office of foreign bank (JPMorgan Chase Bank, N.A.) in Korea. Both entities are regulated by the Financial Services Commission (FSC) and the Financial Supervisory Service (FSS). For non-macro research material, the material is distributed in Korea by or through J.P. Morgan Securities (Far East) Limited, Seoul Branch, Japan: JPMorgan Securities Japan Co., Ltd. and JPMorgan Chase Bank, N.A., Tokyo Branch are regulated by the Financial Services Agency in Japan. Malaysia: This material is issued and distributed in Malaysia by JPMorgan Securities (Malaysia) Sdn Bhd (18146-X), which is a Participating Organization of Bursa Malaysia Berhad and holds a Capital Markets Services License issued by the Securities Commission in Malaysia. Mexico: J.P. Morgan Casa de Bolsa, S.A. de C.V. and J.P. Morgan Grupo Financiero are members of the Mexican Stock Exchange and are authorized to act as a broker dealer by the National Banking and Securities Exchange Commission. New Zealand: This material is issued and distributed by JPMSAL in New Zealand only to "wholesale clients" (as defined in the Financial Markets Conduct Act 2013). JPMSAL is registered as a Financial Service Provider under the Financial Service providers (Registration and Dispute Resolution) Act of 2008. Pakistan: J. P. Morgan Pakistan Broking (Pvt.) Ltd is a member of the Karachi Stock Exchange and regulated by the Securities and Exchange Commission of Pakistan. Philippines: J.P. Morgan Securities Philippines Inc. is a Trading Participant of the Philippine Stock Exchange and a member of the Securities Clearing Corporation of the Philippines and the Securities Investor Protection Fund. It is regulated by the Securities and Exchange Commission. Russia: CB J.P. Morgan Bank International LLC is regulated by the Central Bank of Russia. Singapore: This material is issued and distributed in Singapore by or through J.P. Morgan Securities Singapore Private Limited (JPMSS) [MCI (P) 030/08/2023 and Co. Reg. No.: 199405335R], which is a member of the Singapore Exchange Securities Trading Limited, and/or JPMorgan Chase Bank, N.A., Singapore branch (JPMCB Singapore), both of which are regulated by the Monetary Authority of Singapore. This material is issued and distributed in Singapore only to accredited investors,



expert investors and institutional investors, as defined in Section 4A of the Securities and Futures Act, Cap. 289 (SFA). This material is not intended to be issued or distributed to any retail investors or any other investors that do not fall into the classes of "accredited investors," "expert investors" or "institutional investors," as defined under Section 4A of the SFA. Recipients of this material in Singapore are to contact JPMSS or JPMCB Singapore in respect of any matters arising from, or in connection with, the material. As at the date of this material, JPMSS is a designated market maker for certain structured warrants listed on the Singapore Exchange where the underlying securities may be the securities discussed in this material. Arising from its role as a designated market maker for such structured warrants, JPMSS may conduct hedging activities in respect of such underlying securities and hold or have an interest in such underlying securities as a result. The updated list of structured warrants for which JPMSS acts as designated market maker may be found on the website of the Singapore Exchange Limited: http://www.sgx.com. South Africa: J.P. Morgan Equities South Africa Proprietary Limited and JPMorgan Chase Bank, N.A., Johannesburg Branch are members of the Johannesburg Securities Exchange and are regulated by the Financial Services Board. Taiwan: J.P. Morgan Securities (Taiwan) Limited is a participant of the Taiwan Stock Exchange (company-type) and regulated by the Taiwan Securities and Futures Bureau. Material relating to equity securities is issued and distributed in Taiwan by J.P. Morgan Securities (Taiwan) Limited, subject to the license scope and the applicable laws and the regulations in Taiwan. According to Paragraph 2, Article 7-1 of Operational Regulations Governing Securities Firms Recommending Trades in Securities to Customers (as amended or supplemented) and/or other applicable laws or regulations, please note that the recipient of this material is not permitted to engage in any activities in connection with the material that may give rise to conflicts of interests, unless otherwise disclosed in the "Important Disclosures" in this material. Thailand: This material is issued and distributed in Thailand by JPMorgan Securities (Thailand) Ltd., which is a member of the Stock Exchange of Thailand and is regulated by the Ministry of Finance and the Securities and Exchange Commission, and its registered address is 3rd Floor, 20 North Sathorn Road, Silom, Bangrak, Bangkok 10500. UK: Unless specified to the contrary, research is distributed in the UK by J.P. Morgan Securities plc ("JPMS plc") which is a member of the London Stock Exchange and is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. JPMS plc is registered in England & Wales No. 2711006, Registered Office 25 Bank Street, London, E14 5JP. This material is directed in the UK only to: (a) persons having professional experience in matters relating to investments falling within article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) (Order) 2005 ("the FPO"); (b) persons outlined in article 49 of the FPO (high net worth companies, unincorporated associations or partnerships, the trustees of high value trusts, etc.); or (c) any persons to whom this communication may otherwise lawfully be made; all such persons being referred to as "UK relevant persons". This material must not be acted on or relied on by persons who are not UK relevant persons. Any investment or investment activity to which this material relates is only available to UK relevant persons and will be engaged in only with UK relevant persons. Research issued by JPMS plc has been prepared in accordance with JPMS plc's policy for prevention and avoidance of conflicts of interest related to the production of Research which can be found at the following link: J.P. Morgan EMEA - Research Independence Policy. U.S.: J.P. Morgan Securities LLC ("JPMS") is a member of the NYSE, FINRA, SIPC, and the NFA. JPMorgan Chase Bank, N.A. is a member of the FDIC. Material published by non-U.S. affiliates is distributed in the U.S. by JPMS who accepts responsibility for its content.

General: Additional information is available upon request. The information in this material has been obtained from sources believed to be reliable. While all reasonable care has been taken to ensure that the facts stated in this material are accurate and that the forecasts, opinions and expectations contained herein are fair and reasonable, JPMorgan Chase & Co. or its affiliates and/or subsidiaries (collectively J.P. Morgan) make no representations or warranties whatsoever to the completeness or accuracy of the material provided, except with respect to any disclosures relative to J.P. Morgan and the Research Analyst's involvement with the issuer that is the subject of the material. Accordingly, no reliance should be placed on the accuracy, fairness or completeness of the information contained in this material. There may be certain discrepancies with data and/or limited content in this material as a result of calculations, adjustments, translations to different languages, and/or local regulatory restrictions, as applicable. These discrepancies should not impact the overall investment analysis, views and/or recommendations of the subject company(ies) that may be discussed in the material. J.P. Morgan accepts no liability whatsoever for any loss arising from any use of this material or its contents, and neither J.P. Morgan nor any of its respective directors, officers or employees, shall be in any way responsible for the contents hereof, apart from the liabilities and responsibilities that may be imposed on them by the relevant regulatory authority in the jurisdiction in question, or the regulatory regime thereunder. Opinions, forecasts or projections contained in this material represent J.P. Morgan's current opinions or judgment as of the date of the material only and are therefore subject to change without notice. Periodic updates may be provided on companies/industries based on company-specific developments or announcements, market conditions or any other publicly available information. There can be no assurance that future results or events will be consistent with any such opinions, forecasts or projections, which represent only one possible outcome. Furthermore, such opinions, forecasts or projections are subject to certain risks, uncertainties and assumptions that have not been verified, and future actual results or events could differ materially. The value of, or income from, any investments referred to in this material may fluctuate and/or be affected by changes in exchange rates. All pricing is indicative as of the close of market for the securities discussed, unless otherwise stated. Past performance is not indicative of future results. Accordingly, investors may receive back less than originally invested. This material is not intended as an offer or solicitation for the purchase or sale of any financial instrument. The opinions and recommendations herein do not take into account individual client circumstances, objectives, or needs and are not intended as recommendations of particular securities, financial instruments or strategies to particular clients. This material may include views on structured securities, options, futures and other derivatives. These are complex instruments, may involve a high degree of risk and may be appropriate investments only for sophisticated investors who are capable of understanding and assuming the risks involved. The recipients of this material must make their own independent decisions regarding any securities or financial instruments mentioned herein and should seek advice from such independent financial, legal, tax or other adviser as they deem necessary. J.P. Morgan may trade as a principal on the basis of the Research Analysts' views and research, and it may also engage in transactions for its own account or for its clients' accounts in a manner inconsistent with the views taken in this material, and J.P. Morgan is under no obligation to ensure that such other communication is brought to the attention of any recipient of this material. Others within J.P. Morgan, including Strategists, Sales staff and other Research Analysts, may take views that are inconsistent with those taken in this material. Employees of J.P. Morgan not involved in the preparation of this material may have

Jose M Asumendi <sup>AC</sup> (44-20) 7742-5315 jose.m.asumendi@jpmorgan.com

Europe Equity Research 14 August 2023



investments in the securities (or derivatives of such securities) mentioned in this material and may trade them in ways different from those discussed in this material. This material is not an advertisement for or marketing of any issuer, its products or services, or its securities in any jurisdiction.

Confidentiality and Security Notice: This transmission may contain information that is privileged, confidential, legally privileged, and/or exempt from disclosure under applicable law. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution, or use of the information contained herein (including any reliance thereon) is STRICTLY PROHIBITED. Although this transmission and any attachments are believed to be free of any virus or other defect that might affect any computer system into which it is received and opened, it is the responsibility of the recipient to ensure that it is virus free and no responsibility is accepted by JPMorgan Chase & Co., its subsidiaries and affiliates, as applicable, for any loss or damage arising in any way from its use. If you received this transmission in error, please immediately contact the sender and destroy the material in its entirety, whether in electronic or hard copy format. This message is subject to electronic monitoring: <a href="https://www.jpmorgan.com/disclosures/email">https://www.jpmorgan.com/disclosures/email</a>

MSCI: Certain information herein ("Information") is reproduced by permission of MSCI Inc., its affiliates and information providers ("MSCI") ©2023. No reproduction or dissemination of the Information is permitted without an appropriate license. MSCI MAKES NO EXPRESS OR IMPLIED WARRANTIES (INCLUDING MERCHANTABILITY OR FITNESS) AS TO THE INFORMATION AND DISCLAIMS ALL LIABILITY TO THE EXTENT PERMITTED BY LAW. No Information constitutes investment advice, except for any applicable Information from MSCI ESG Research. Subject also to <a href="mailto:msci.com/disclaimer">msci.com/disclaimer</a>

"Other Disclosures" last revised August 05, 2023.

Copyright 2023 JPMorgan Chase & Co. All rights reserved. This material or any portion hereof may not be reprinted, sold or redistributed without the written consent of J.P. Morgan.

Completed 11 Aug 2023 05:13 PM BST

Disseminated 14 Aug 2023 12:15 AM BST