

March 26, 2024 04:01 AM GMT

From the Global Director of Research | North America

Charts That Caught My Eye

A guiding principle at Morgan Stanley Research is to enhance your investment process by delivering unique insights that separate the signal from the noise. An intuitively designed and well-crafted chart can often accomplish this with exceptional clarity.

With that mission in mind, these charts in our recently published research stood out to me.

1. **Powering GenAI:** We believe the market under-appreciates the mismatch between AI's rapid growth in power demand growth and the slow growth in power supply.
2. **Europe Equity Strategy:** Our analysis of corporate mentions of thematic drivers supports our bullish view.
3. **Europe Equity Strategy / Valuation:** European corporates' cash return to shareholders is trending at a multi-year high.
4. **US and Asia Economics:** Trade data suggest that onshoring of US manufacturing limited to date, but sources of US imports have become more diversified.
5. **US Large Cap Banks:** We are bullish on the ongoing capital markets rebound, and we see money center banks as a way to play that dynamic.
6. **US Equity Strategy:** We raise our Energy sector allocation to overweight based on inflecting relative earnings revisions, strong breadth, and compelling valuation.
7. **US Rates Strategy:** Treasury yields followed inflation higher, but have not followed inflation lower - but we expect that to change as the market squares the growth / inflation dilemma.
8. **Copper / Anglo American:** We believe the near-term backdrop favors copper-exposed miners; Anglo's high-quality copper division could help drive a re-rating for the diversified miner.

Please reach out to me with feedback on these or any other key investment debates. Thank you for your partnership.

Katy Huberty

Global Director of Research

MORGAN STANLEY & CO. LLC

Katy L. Huberty, CFA

Global Director of Research

Kathryn.Huberty@morganstanley.com

+1 212 761-6249

Morgan Stanley Research

Analyst

erteam@morganstanley.com

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

For analyst certification and other important disclosures, refer to the Disclosure Section, located at the end of this report.

Powering GenAI

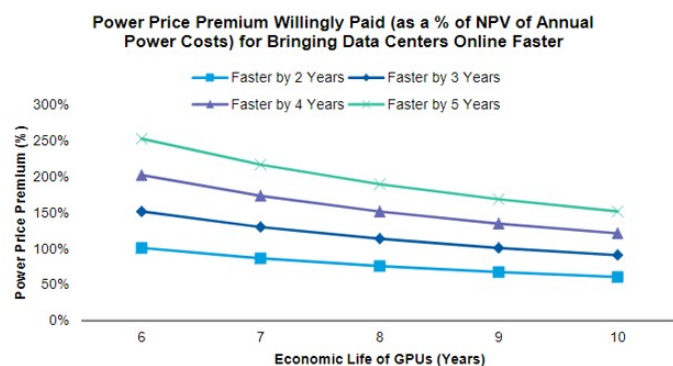
The Tortoise and the Hare: Market Under-appreciates the Mismatch Between AI Power Demand Growth and Supply Growth

Our Sustainability Research Strategists, in collaboration with a broad range of sector analysts globally, undertook a comprehensive analysis of the economics of new data centers (DCs). They conclude that the market is under-appreciating 3 dynamics: (1) The rapid drop in the cost of GenAI compute power — their proprietary cost model shows that DCs' capital cost per teraFLOPS drop by ~50% when moving from NVIDIA's Hopper GPU to its new Blackwell GPU; (2) A significant mismatch between the hyper-rapid growth in GenAI power needs (notwithstanding continued efficiency improvements) and the slow growth in power grid infrastructure; and (3) The resulting very large magnitude of the time value for power solutions providers that can reduce the delay in powering new and expanded data centers. Our teams recommend investing in companies that are well positioned to serve the rapidly growing power needs of the GenAI enablers — they highlight 13 Overweight-rated stocks: AES, Bloom Energy, Constellation Energy, ENGIE, Fortum, Iberdrola, NextEra Energy, Orsted, PSEG, RWE, SembCorp, Tenaga, and Vistra

See [Powering GenAI: The Tortoise and the Hare \(24 Mar 2024\)](#)

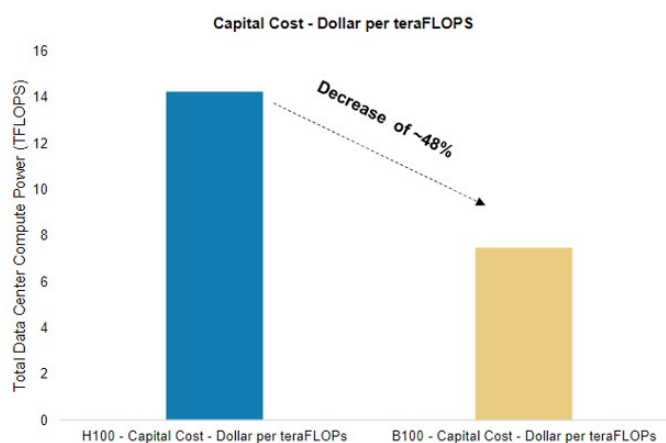
Share prices: AES (AES.N, \$16), Bloom Energy (BE.N, \$10), Constellation Energy (CEG.O, \$178), ENGIE (ENGIE.PA, EUR16), Fortum (FORTUM.HE, EUR12), Iberdrola (IBE.MC, EUR11), NextEra Energy (NEE.N, \$62), Orsted (ORSTED.CO, DKK377), PSEG (PEG.N, \$65), RWE (RWE.G.DE, EUR31), SembCorp (SCIL.SI, S\$5), Tenaga (TENA.KL, MYR12), Vistra (VST.N, \$69)

Exhibit 1: Power price premium willingly paid (as a % of NPV of annual power costs) for bringing data centers online faster



Source: Morgan Stanley Research. Note: Based on assumptions of B100 chips used, 8 GPUs per Server, 70% Server Utilization Rate, Power Cost (Incl T&D) at \$100/MWh

Exhibit 2: In our Data Center economics model using Hopper GPUs, the data center capital cost/teraFLOPs is ~\$14, while for our Blackwell Data Center model, that ratio is ~\$7



Source: Company data, Morgan Stanley Research. Note: Based on assumptions of B100/H100 used, 8 GPUs per Server, 70% Server Utilization Rate, Power Cost (Incl T&D) at \$100/MWh. TeraFLOPs is calculated based on SXM, FP8 Tensor Core.

Europe Equity Strategy

Analysis of Thematic Drivers Supports Our Structurally Bullish View

Our Europe Equity Strategy team used AlphaSense's LLM technology to parse 300,000+ earnings and conference transcripts over 20 years to identify which themes are rising or shifting in the conversation in Europe's C-suites. Their work shows that thematic waves of AI diffusion, capital returns, margin discipline, "green shoots", and M&A are on the rise in the region. AI is the clear leader, with 32% of European companies discussing it this quarter, moving up in a straight line and almost catching up with the US trend. Meanwhile, they saw a decline in management mentions of "economic uncertainty", "energy costs", and "inflation". They believe the results support their bullish view that the rally in the region's equities is transforming from a catch-up trade to a more material fundamental shift

See [Thematic Drivers on the Rise \(19 Mar 2024\)](#)

Exhibit 3: How thematic drivers are trending in European earnings season - QoQ change (y-axis) vs proportion of mentions (x-axis) - skew to positive mentions on the rise

What European companies talked about in 4Q23 earnings season (vs 3Q23)



Note: * % Difference between L12M and Sept-23 L12M; universe is stocks with >\$500m market cap; searches are inclusive of synonyms. Source: AlphaSense, Morgan Stanley Research

Exhibit 4: Our thematic findings support that the recent breakout of EU equities to new all-time highs has moved beyond catch-up trade to fundamental shift



Source: MSCI, Datastream, Morgan Stanley Research

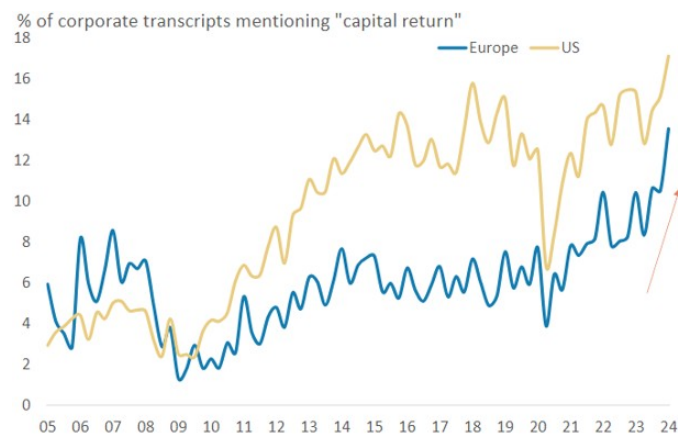
Europe Equity Strategy / Valuation

European Corporates' Cash Return to Shareholders Is Trending at a Multi-Year High

European corporates' discussions of "cash return" has translated into strong actual shareholder remuneration, according to work by our Global Valuation, Accounting, and Tax (GVAT) Strategists. The team publishes quarterly analyses of corporates' sources of cash, and perhaps more importantly, how they have deployed that cash. They found that, commensurate with management mentions of "capital return", Europe's corporates' actual total shareholder return (dividends + buybacks) edged higher in 4Q to approach a multi-year high. The region's corporates returned ~40% of the cash they generated to shareholders, in line with the trend over the past few quarters.

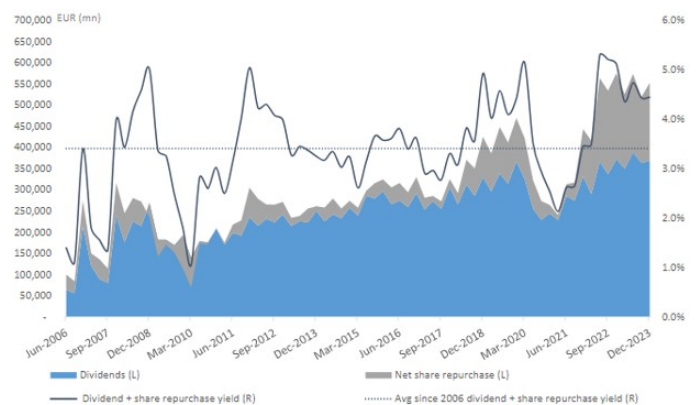
See [European Shareholder Return Trending at Multi-Year High \(20 Mar 2024\)](#)

Exhibit 5: Capital return mentions in Europe are breaking out to 20Y highs and catching up with the rise in the US



Source: Note: Quarterly number of transcripts reduces over long-term history e.g. 2009 sample size at half of current levels; all metrics are a proportion of relevant sample size at the time; searches are inclusive of synonyms; universe is stocks with >\$500m market cap. Source: AlphaSense, Morgan Stanley Research; For more details, see: [European Equity Strategy: Thematic Drivers on the Rise \(19 Mar 2024\)](#)

Exhibit 6: MSCI Europe Total Shareholder Return



Source: FactSet, Morgan Stanley Research

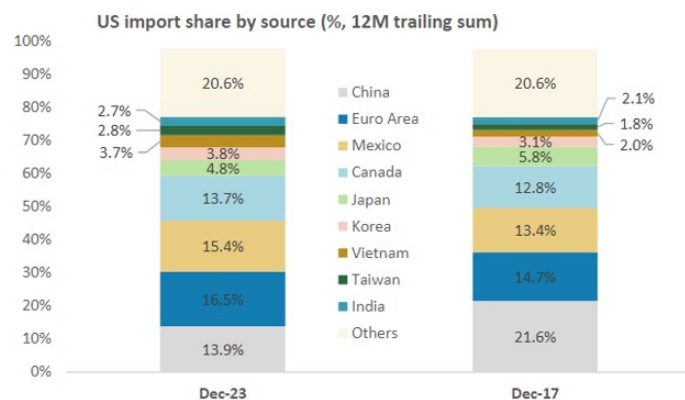
US and Asia Economics

Onshoring of US Manufacturing Limited to Date, but Sources of US Imports Have Become More Diversified

The trade policy debate typically becomes prominent during a US election cycle, and data from our Asia Economics team can help offer context for this debate. Our team argues that if trade policy was intended to bring manufacturing back onshore into the US, headline metrics suggest limited traction so far. They note that the US trade deficit has widened even further since 2017 and the US's share of global imports has remained around 13%, suggesting that there has been very limited onshoring to date. However, they see some initial signs of greater diversification: the US is now importing much less from China than in 2017 and has diversified its import sources. China's import share in the US has dropped from 21.6% in December 2017 to 13.9% in December 2023. Over the same time period, the Euro Area has gained the most market share in US imports, after Mexico, and alongside Vietnam, India, and Canada.

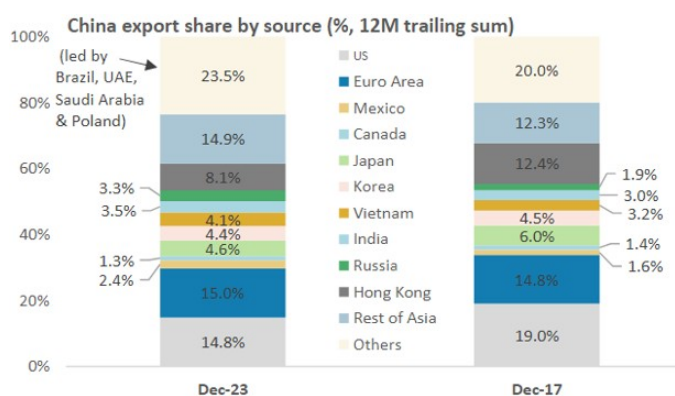
See [The Viewpoint: Trade Tensions, Supply Chain Diversification, and China \(19 Mar 2024\)](#)

Exhibit 7: The US has imported less from China and more from the likes of the Euro Area, Mexico, Canada, and Vietnam



Source: aver, Morgan Stanley Research

Exhibit 8: China has exported less to the US, but more to the Euro Area, Vietnam, Mexico, and the rest of Asia



Source: Haver, Morgan Stanley Research

US Large-Cap Banks

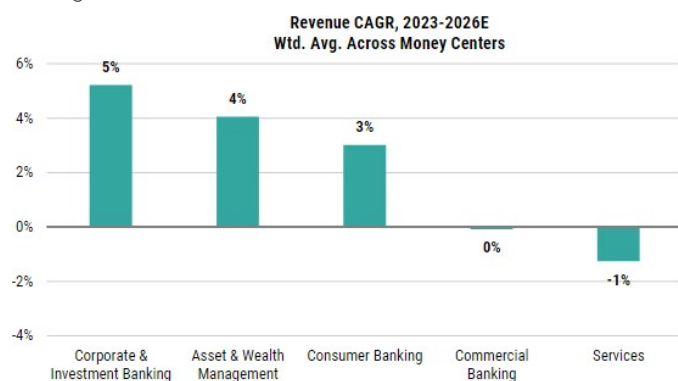
We Are Bullish on the Ongoing Capital Markets Rebound, and We See Money Center Banks as a Way to Play It

Our US Financials sector analysts are bullish on a rebound in capital markets activity, with M&A, Equity Capital Markets, and Debt Capital Markets as a percent of US nominal GDP all running near 3-decade lows. Our team believes that the money center banks — Bank of America, Citi, Goldman Sachs, and JPMorgan, all of which they rate Overweight — are a way to play this view. They expect these banks to see the fastest revenue growth rate in their Corporate & Investment Banking segments, followed by Asset & Wealth Management, and capital markets drive a weighted average 57% of these bank's total revenues, on their estimates. Turning to valuation, Corporate & Investment Banking represents the single largest component of our analysts' sum of the parts (SOTP) valuation of each of the four capital markets banks they cover.

See [Capital Markets Rebound to Drive Up Money Center SOTP Valuations \(20 Mar 2024\)](#)

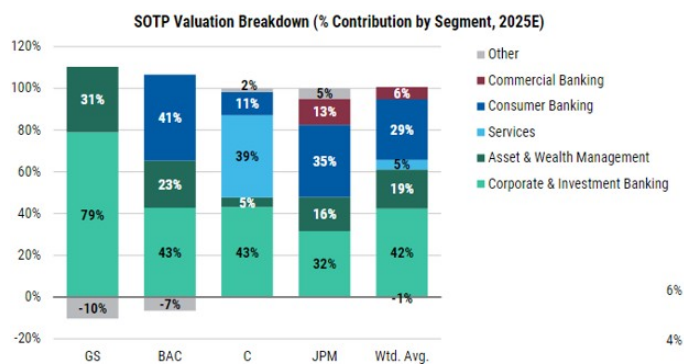
Share prices: Bank of America, (BAC, \$37), Citigroup (C, \$61), Goldman Sachs (GS, \$407), JPMorgan (JPM, \$197)

Exhibit 9: We expect the fastest growth rate in Corporate & Investment Banking revenues, followed by Asset & Wealth Management revenues



Source: Company data, Morgan Stanley Research estimates

Exhibit 10: Capital markets rebound drives wtd. avg. 61% of money center valuations (green) through Corporate & Investment Banking, where revenues are driven by capital markets activity, and Asset & Wealth Management, where revenues are driven by capital markets valuation levels



Source: Company data, FactSet, Morgan Stanley Research estimates

US Equity Strategy

Raise Energy Sector Allocation to Overweight: Inflecting Relative Earnings Revisions, Strong Breadth, Compelling Valuation

Our US Equity Strategists have raised their recommended allocation to the Energy sector to overweight. The sector's relative performance versus the S&P 500 has lagged the price of crude YTD. Add in inflecting relative earnings revisions, strong breadth, and compelling valuation (8th percentile of historical EV/EBITDA levels), and our team thinks there could be a catch-up in Energy equities. Further, they continue to believe we are in a late-cycle market environment, which has historically been supportive of Energy outperformance. Finally, proprietary Morgan Stanley data suggest hedge fund net exposure to the sector is low vs. history

See [Weekly Warm-up: Great Expectations Suggest More Rotations \(25 Mar 2024\)](#)

Exhibit 11: Energy Sector's Relative Performance Versus the S&P 500 Has Lagged the Price of Crude

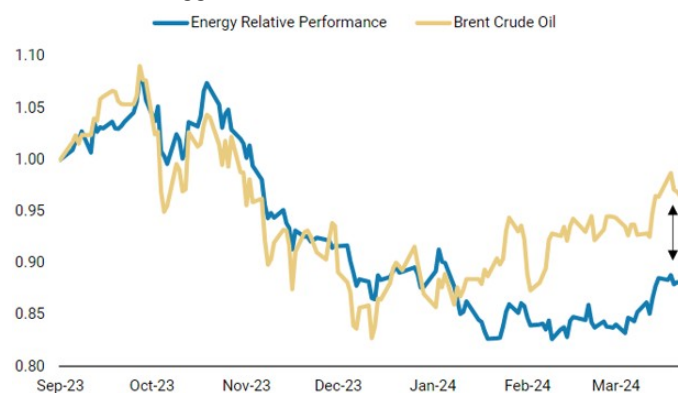


Exhibit 12: Energy Is Historically A Late Cycle Outperformer

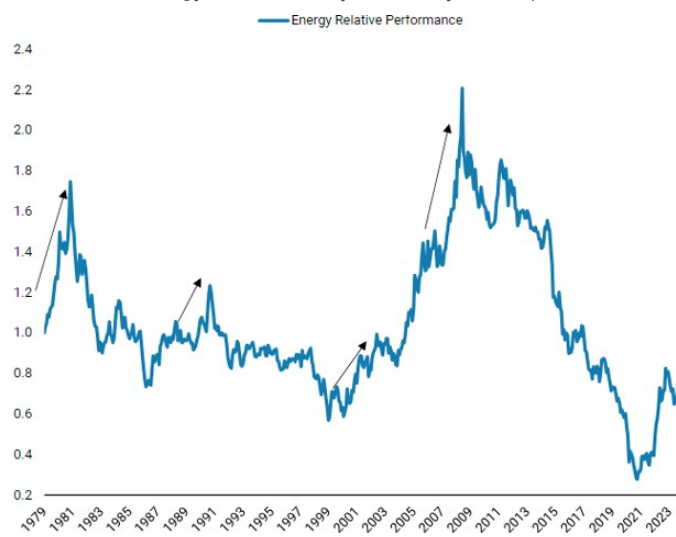
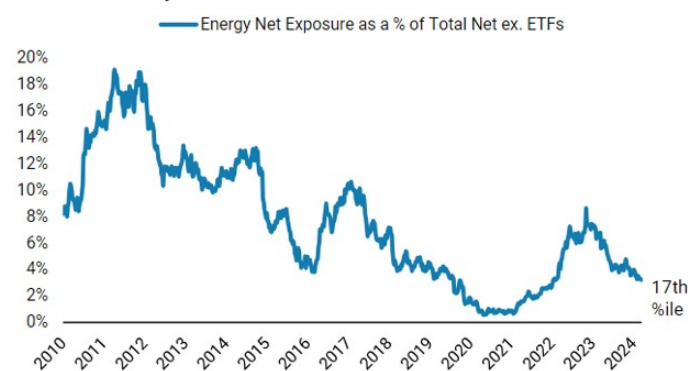


Exhibit 13: Hedge Fund Net Exposure to the Energy Sector Is Low Vs. History



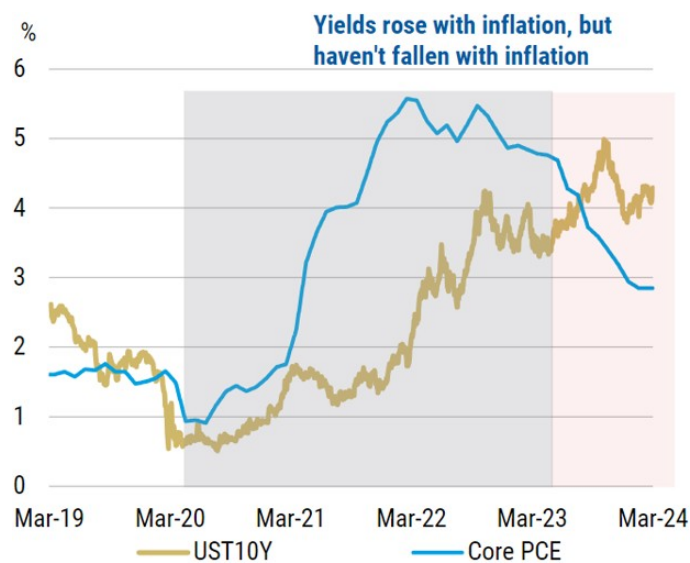
US Rates Strategy

Treasury Yields Followed Inflation Higher, but Have Not Followed Inflation Lower; We Expect That to Change

Our US Interest Rate Strategists note that despite the decline in core PCE inflation that gained traction in 2023, 10-year yields have stayed stubbornly above 4%. Why? They point to the common narrative that the Fed could not be expected to cut amid strong economic growth and tight labor markets. But our Rates team views this as misguided, as our US Economists believe a strong rise in labor supply, in part due to high immigration, helps explain last year's strength in output and employment, and also adds a lagged disinflationary effect. Our Rates team sees room for Treasury yields to move lower as markets come to this view. Their analysis suggests that if Treasury rates had followed its previous relationship with inflation surprises, 10-year yields would be around 3.60% today.

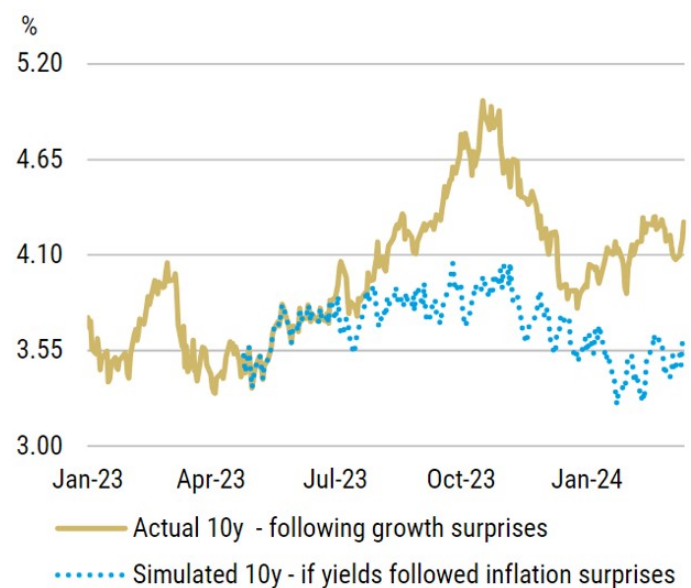
See [Supply-Side Curveball \(15 Mar 2024\)](#)

Exhibit 14: 10-year yields versus core PCE in the last five years



Source: Bloomberg, Morgan Stanley Research

Exhibit 15: 10y yields – actual versus simulated based on following inflation surprises



Source: Bloomberg, Morgan Stanley Research

Copper / Anglo American

The Copper Party

Our Europe Metals & Mining team notes that the disparity in total shareholder returns (TSR) between pure-play copper miners and the broader S&P Global Mining index has reached a post-2017 high. While they argue that the near-term backdrop favors copper-exposed miners, they see value in shares of high-quality, cash-generative, diversified mining companies. They believe Anglo American (AALL, 1,931p, Overweight), a diversified minor, could also see a valuation re-rating driven by its high-quality copper business should the company make progress on its portfolio review.

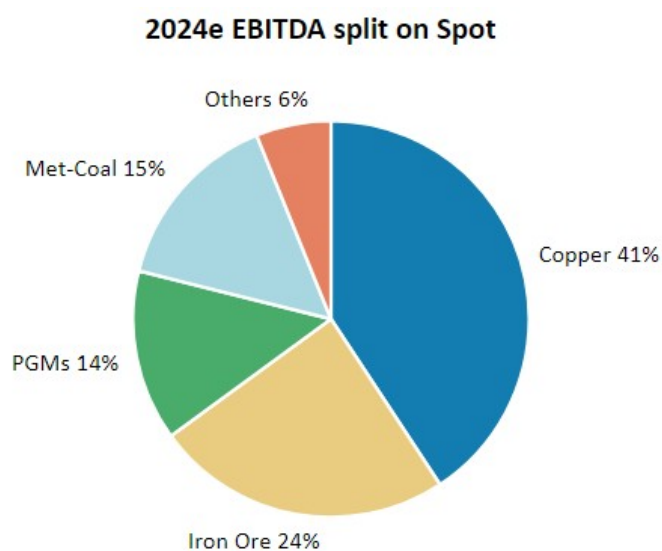
See [The Copper Party \(21 Mar 2024\)](#) and [Anglo American Plc: The Copper Within \(20 Mar 2024\)](#)

Exhibit 16: The 2018-to-date outperformance of copper equities vs general mining reached an extreme



Source: Bloomberg, Morgan Stanley Research

Exhibit 17: Anglo American's copper business would constitute ~41% of consolidated 2024e EBITDA based on spot Cu prices



Source: Morgan Stanley Research estimates (e)

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/conflict/policies. A Portuguese version of the policy can be found at www.morganstanley.com.br

Important Regulatory Disclosures on Subject Companies

The equity research analysts or strategists principally responsible for the preparation of Morgan Stanley Research have received compensation based upon various factors, including quality of research, investor client feedback, stock picking, competitive factors, firm revenues and overall investment banking revenues. Equity Research analysts' or strategists' compensation is not linked to investment banking or capital markets transactions performed by Morgan Stanley or the profitability or revenues of particular trading desks.

Morgan Stanley and its affiliates do business that relates to companies/instruments covered in Morgan Stanley Research, including market making, providing liquidity, fund management, commercial banking, extension of credit, investment services and investment banking. Morgan Stanley sells to and buys from customers the securities/instruments of companies covered in Morgan Stanley Research on a principal basis. Morgan Stanley may have a position in the debt of the Company or instruments discussed in this report. Morgan Stanley trades or may trade as principal in the debt securities (or in related derivatives) that are the subject of the debt research report.

Certain disclosures listed above are also for compliance with applicable regulations in non-US jurisdictions.

STOCK RATINGS

Morgan Stanley uses a relative rating system using terms such as Overweight, Equal-weight, Not-Rated or Underweight (see definitions below). Morgan Stanley does not assign ratings of Buy, Hold or Sell to the stocks we cover. Overweight, Equal-weight, Not-Rated and Underweight are not the equivalent of buy, hold and sell. Investors should carefully read the definitions of all ratings used in Morgan Stanley Research. In addition, since Morgan Stanley Research contains more complete information concerning the analyst's views, investors should carefully read Morgan Stanley Research, in its entirety, and not infer the contents from the rating alone. In any case, ratings (or research) should not be used or relied upon as investment advice. An investor's decision to buy or sell a stock should depend on individual circumstances (such as the investor's existing holdings) and other considerations.

Global Stock Ratings Distribution

(as of February 29, 2024)

The Stock Ratings described below apply to Morgan Stanley's Fundamental Equity Research and do not apply to Debt Research produced by the Firm.

For disclosure purposes only (in accordance with FINRA requirements), we include the category headings of Buy, Hold, and Sell alongside our ratings of Overweight, Equal-weight, Not-Rated and Underweight. Morgan Stanley does not assign ratings of Buy, Hold or Sell to the stocks we cover. Overweight, Equal-weight, Not-Rated and Underweight are not the equivalent of buy, hold, and sell but represent recommended relative weightings (see definitions below). To satisfy regulatory requirements, we correspond Overweight, our most positive stock rating, with a buy recommendation; we correspond Equal-weight and Not-Rated to hold and Underweight to sell recommendations, respectively.

Stock Rating Category	Coverage Universe		Investment Banking Clients (IBC)			Other Material Investment Services Clients (MISC)	
	Count	% of Total	Count	% of Total IBC	% of Rating Category	Count	% of Total Other MISC
Overweight/Buy	1425	38%	296	43%	21%	626	40%
Equal-weight/Hold	1704	45%	321	46%	19%	718	45%
Not-Rated/Hold	3	0%	0	0%	0%	1	0%
Underweight/Sell	634	17%	76	11%	12%	239	15%
Total	3,766		693			1584	

Data include common stock and ADRs currently assigned ratings. Investment Banking Clients are companies from whom Morgan Stanley received investment banking compensation in the last 12 months. Due to rounding off of decimals, the percentages provided in the "% of total" column may not add up to exactly 100 percent.

Analyst Stock Ratings

Overweight (O). The stock's total return is expected to exceed the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Equal-weight (E). The stock's total return is expected to be in line with the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Not-Rated (NR). Currently the analyst does not have adequate conviction about the stock's total return relative to the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Underweight (U). The stock's total return is expected to be below the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next

12-18 months.

Unless otherwise specified, the time frame for price targets included in Morgan Stanley Research is 12 to 18 months.

Analyst Industry Views

Attractive (A): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be attractive vs. the relevant broad market benchmark, as indicated below.

In-Line (I): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be in line with the relevant broad market benchmark, as indicated below.

Cautious (C): The analyst views the performance of his or her industry coverage universe over the next 12-18 months with caution vs. the relevant broad market benchmark, as indicated below.

Benchmarks for each region are as follows: North America - S&P 500; Latin America - relevant MSCI country index or MSCI Latin America Index; Europe - MSCI Europe; Japan - TOPIX; Asia - relevant MSCI country index or MSCI sub-regional index or MSCI AC Asia Pacific ex Japan Index.

Important Disclosures for Morgan Stanley Smith Barney LLC & E*TRADE Securities LLC Customers

Important disclosures regarding the relationship between the companies that are the subject of Morgan Stanley Research and Morgan Stanley Smith Barney LLC or Morgan Stanley or any of their affiliates, are available on the Morgan Stanley Wealth Management disclosure website at www.morganstanley.com/online/researchdisclosures. For Morgan Stanley specific disclosures, you may refer to www.morganstanley.com/researchdisclosures.

Each Morgan Stanley research report is reviewed and approved on behalf of Morgan Stanley Smith Barney LLC and E*TRADE Securities LLC. This review and approval is conducted by the same person who reviews the research report on behalf of Morgan Stanley. This could create a conflict of interest.

Other Important Disclosures

Morgan Stanley Research policy is to update research reports as and when the Research Analyst and Research Management deem appropriate, based on developments with the issuer, the sector, or the market that may have a material impact on the research views or opinions stated therein. In addition, certain Research publications are intended to be updated on a regular periodic basis (weekly/monthly/quarterly/annual) and will ordinarily be updated with that frequency, unless the Research Analyst and Research Management determine that a different publication schedule is appropriate based on current conditions.

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 produces an equity research product called a "Tactical Idea." Views contained in a "Tactical Idea" on a particular stock may be contrary to the recommendations or views expressed in research on the same stock. This may be the result of differing time horizons, methodologies, market events, or other factors. For all research available on a particular stock, please contact your sales representative or go to Matrix at <http://www.morganstanley.com/matrix>.

Morgan Stanley Research is provided to our clients through our proprietary research portal on Matrix and also distributed electronically by Morgan Stanley to clients. Certain, but not all, Morgan Stanley Research products are also made available to clients through third-party vendors or redistributed to clients through alternate electronic means as a convenience. For access to all available Morgan Stanley Research, please contact your sales representative or go to Matrix at <http://www.morganstanley.com/matrix>.

Any access and/or use of Morgan Stanley Research is subject to Morgan Stanley's Terms of Use (<http://www.morganstanley.com/terms.html>). By accessing and/or using Morgan Stanley Research, you are indicating that you have read and agree to be bound by our Terms of Use (<http://www.morganstanley.com/terms.html>). In addition you consent to Morgan Stanley processing your personal data and using cookies in accordance with our Privacy Policy and our Global Cookies Policy (http://www.morganstanley.com/privacy_pledge.html), including for the purposes of setting your preferences and to collect readership data so that we can deliver better and more personalized service and products to you. To find out more information about how Morgan Stanley processes personal data, how we use cookies and how to reject cookies see our Privacy Policy and our Global Cookies Policy (http://www.morganstanley.com/privacy_pledge.html).

If you do not agree to our Terms of Use and/or if you do not wish to provide your consent to Morgan Stanley processing your personal data or using cookies please do not access our research. 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 or 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.

The "Important Regulatory Disclosures on Subject Companies" section in Morgan Stanley Research lists all companies mentioned where Morgan Stanley owns 1% or more of a class of common equity securities of the companies. For all other companies mentioned in Morgan Stanley Research, Morgan Stanley may have an investment of less than 1% in securities/instruments or derivatives of securities/instruments of companies and may trade them in ways different from those discussed in Morgan Stanley Research. Employees of Morgan Stanley not involved in the preparation of Morgan Stanley Research may have investments in securities/instruments or derivatives of securities/instruments of companies mentioned and may trade them in ways different from those discussed in Morgan Stanley Research. Derivatives may be issued by Morgan Stanley or associated persons.

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 Research personnel may participate in company events such as site visits and are generally prohibited from accepting payment by the company of associated expenses unless pre-approved by authorized members of Research management.

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 Comisión 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" and "retail 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 Registration No. INH000001105); Stock Broker (SEBI Stock Broker Registration No. INZ000244438), Merchant Banker (SEBI Registration No. INM000011203), and depository participant with National Securities Depository Limited (SEBI Registration No. IN-DP-NSDL-567-2021) having registered office at 18th Floor, Tower 2, One World Center, Plot- 841, Jupiter Textile Mill Compound, Senapati Bapat Marg, Lower Parel, Mumbai 400013, India Telephone no. +91-22-61181000; Compliance Officer Details: Mr. Tejarshi Hardas, Tel. No.: +91-22-61181000 or Email: tejarshi.hardas@morganstanley.com; Grievance officer details: Mr. Tejarshi Hardas, Tel. No.: +91-22-61181000 or Email: msic-compliance@morganstanley.com; in Canada by Morgan Stanley Canada Limited; in Germany and the European Economic Area where required by Morgan Stanley Europe S.E., authorised and regulated by Bundesanstalt fuer Finanzdienstleistungsaufsicht (BaFin) under the reference number 149169; in the US 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 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.

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 issuers and/or fixed income products recommended or discussed in certain fixed income research reports may not be continuously followed. Accordingly, investors should regard those fixed income research reports as providing stand-alone analysis and should not expect continuing analysis or additional reports relating to such issuers and/or individual fixed income products. Morgan Stanley may hold, from time to time, material financial and commercial interests regarding the company subject to the Research report.

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.