

# Industrials/Multi-Industry

## 4Q channel checks: more positive on 4Q than expected

Industry Overview

### Takeaways from Distributor Summit

On 1/4 we hosted a Virtual Distributor Summit with a number of industrial distributors for channel checks into the 4Q earnings. Overall, Q4 trends seemed better than expected. On HVAC, the resi volumes may remain weak with higher than expected regulatory-driven price increases helping; one distributor called the peak for light commercial. For electrical equipment distributor channel checks were solid. Overall, discrete automation trends improved into the year-end, consistent with our short cycle survey, reshoring was driving the strength, but that smaller projects were slowing.

### Electrical: 4Q consistent with high expectations

Electrical demand remains robust, with particular strength in data centers and grid. Pricing was consistent with 3Q, up mid-single digits y/y. Supply chain remains constrained in engineered products, particularly medium-voltage switchgear. Key bottlenecks are labor availability and manufacturer's own capacity. Electrical distributors were broadly constructive on 2024. While some distributors highlighted excess inventory (e.g. 15-20% higher), many are not planning to destock given demand levels and continued supply chain constraints.

### Automation: process>discrete; discrete inflection in 2H24

Distributors were constructive on process end markets and process automation. Oil & gas downstream demand seems to be particularly robust. Carbon capture and liquefied natural gas (LNG) projects are still to come. Discrete automation had slowed in 3Q/4Q, but per distributors trends seem to have improved into YE23. There is still excess inventory of programmable logic controllers (PLCs) and drives at both end users and in the channel. One distributor noted expected discrete automation decline through 1H24 and pick up at the end of 3Q or 4Q – consistent with corporate messaging within our coverage.

### HVAC: focus on refrigerant transition and consumer health

One of the debates we heard during the Distributor Summit was the cost of the new refrigerant units. One distributor noted that the new units could be 30% more expensive. Another distributor agreed 30% was possible, albeit over a period of ~24 months – arguing that the product simply would not be competitive with the legacy product still in the channel. Another distributor, was more skeptical, noting that pricing for the product will vary widely by OEM. We heard that transition would need to be managed with the potential for stranded inventory and the potential for units using the old refrigerant to potentially be discounted ahead of the transition. For resi, we also heard that volumes may remain weak for as long as the next 2 years. Financing remains necessary, particularly in the face of higher unit costs, but more customers were getting rejected for financing with some tapping into home equity. HVAC leasing was brought up as a possible alternative. Light commercial is potentially hitting its peak in 1H24. Applied outlook appears to be strong.

08 January 2024

Equity  
Americas  
Industrials/Multi-Industry

**Andrew Obin**  
Research Analyst  
BofAS  
+1 646 855 1817  
[andrew.obin@bofa.com](mailto:andrew.obin@bofa.com)

**David Ridley-Lane, CFA**  
Research Analyst  
BofAS  
+1 646 855 2907  
[david.ridleylane@bofa.com](mailto:david.ridleylane@bofa.com)

**Sabrina Abrams**  
Research Analyst  
BofAS  
+1 646 556 3520  
[sabrina.abrams@bofa.com](mailto:sabrina.abrams@bofa.com)

**Devin Leonard**  
Research Analyst  
BofAS  
+1 646 855 3698  
[devin.leonard@bofa.com](mailto:devin.leonard@bofa.com)

HVAC: heating, ventilation, and air conditioning

OEM: original equipment manufacturer

HSD: high single digit

LDD: low double digit

**BofA Securities does and seeks to do business with issuers 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. Refer to important disclosures on page 7 to 8.**

12642233

Timestamp: 08 January 2024 05:00AM EST

## Adams Corp: Takeaways from a fluid power/automation distributor

We hosted a call with J. Doug Adams, President, Adams Corp. Adams Corp is a privately held distributor of fluid power, robotics, vision, and automation. The company is based in Florida and mostly active in Florida, Alabama, and the Caribbean with ~55 employees.

**Key points:** Demand trends improved into YE23, particularly on discrete automation. There is still excess inventory in the channel. Adams expects y/y orders to be flat next year, with volumes down 5%. The company anticipates 5-7% revenue growth in 2024. OEs are starting to offer incentives to move inventory, in line with pre-pandemic behavior.

### Discrete demand improves into YE23, but channel inventory remains elevated

Adams saw an improvement in discrete automation demand in 4Q. Wage inflation and labor availability continue to drive automation demand. He expects ~5% price increases in 2024. Adams himself is still destocking largely in discrete automation, and would like his inventory to be 5-10% lower vs. current levels. He expects large projects in 2024 to help with “flushing” excess inventory.

### Fluid power improving, but overstocked

Fluid power demand was better at YE23 than in October. Adams stated, “Orders are picking up, inventory has been down.” As lead times have come down particularly in “stock” fluid power products, OEs have started to offer distributors incentives to accept inventory. This was common pre-COVID, but not during the period of supply chain constraints. The incentives include free or lower-cost freight charges and larger discount multipliers to purchase in bulk. Adams stated that “The majority of our suppliers....were not interested in taking a lower margin than previous during this period. Now it’s coming back.”

### End market trends: A&D, power generation leading the way

By end market, Aerospace & Defense remains particularly strong. Power generation is also a source of strength. While consumer packaged goods (CPG) slowed in 3Q23/4Q23, Adams is seeing demand ramp, albeit with some caution on consumer spending. Medical devices is also seeing solid growth.

## Billy Wresch, Gumersell Cashdan, Inc.

We hosted a call with Billy Wresch, Vice President at Gumersell Cashdan. Gumersell Cashdan is a New York based manufacturers’ representative. Brands include American Conduit, Atkore, Galvan Industries, Encore Wire, and Picoma Industries.

### 2024 outlook: modest growth

Wresch expects modest growth in 2024. He noted that distributors “destocked too hard” in 2023 and, at a minimum, this would be less of a drag in 2024. Gumersell Cashdan focuses on conduit, wire, and strut. Pricing for these electrical products is more tied to commodity costs (e.g., copper, steel, aluminum, PVC), which fell in 2023. Wresch sees pricing as a neutral-to-positive factor for 2024. He sees greater price inflation for complex/customized electrical equipment.

### Strong demand for infrastructure & data centers

Wresch is seeing additional request for proposals for new infrastructure projects. Our research shows that spending from the Infrastructure Investment and Jobs Act (IIJA) and Inflation Reduction Act (IRA) will increase in 2024. Wresch sees “at least three more years of growth” for infrastructure across mass transit, road/bridge, and water & wastewater projects. Wresch sees data center activity in the New York metro market remaining strong, even with notable price increases by OEMs. Our research shows that artificial intelligence (AI) will increase electrical content in both new build and retrofit AI data centers.

**Switchgear, labor are constraints to faster growth**

The availability of medium-voltage switchgear is a bottleneck on many projects. Wresch noted that electrical equipment manufacturers are adding capacity, but lead times have remained stubbornly high. However, long lead times for switchgear have not driven project cancellations or hurt orders. Wresch noted that manufacturers cannot ramp up capacity quickly due to high turnover levels and difficulty in attracting skilled labor. On Eaton's 3Q23 earnings call, CEO Arnold said it has added capacity for circuit breakers, but transformer capacity is not coming online for another 12-18 months.

**Residential HVAC Part I: Indio Cooling and Heating Supply**

We hosted a call with Tim Man, President and Owner at Indio Cooling and Heating Supply, based in California. The company is about ~85% residential. Brands include Carrier, Oxbox, and Innovent.

**Refrigerant transition going to be bumpy**

With the refrigerant transition moving to the new A2L units, the new products are not expected until late 1Q/ early 2Q. However, Man believes that some distributors may not want to order the new product until its contractors are trained on the new product. In terms of pricing of the new A2L units Man thinks the new units could be 30% more expensive. In terms of pricing on the actual refrigerants the costs are also rising. Pricing for the actual refrigerant (R-410A) went from \$89 for a cylinder pre-Covid to \$229 in December to \$289 in January.

**Potential for discounting and destocking**

For units with the old refrigerant, Man thinks that the product may be discounted closer to the actual refrigerant transition. At the end of the summer selling season, if it is colder than anticipated there is the potential for prices to drop trying to get product out the door to ensure no stranded inventory. However, Man noted it will be harder for legacy brands to not have stranded inventory when products can be purchased from foreign OEMs like Midea or Gree for cheaper.

**Health of the consumer and positive volumes questionable**

With the rising costs of HVAC units, Man thinks consumer will shift to cheaper brands rather than legacy brands. Man also noted seeing more consumers utilizing financing. On volumes, Man does not expect volumes to be positive for a couple years as contractors need to be trained on the new equipment and people are not going to want to buy the new units because of the cost.

**The Reynolds Company: Takeaways from an automation/electrical distributor**

We hosted a call with David Dozier, President of the Reynolds Company, a Dallas-based automation and electrical distributor. The company is about 40% automation and 60% industrial. Rockwell Automation (ROK) is the largest brand carried, with Eaton (ETN), ABB, and Siemens also represented on electrical equipment. The company has a large exposure to oil & gas given its presence in Texas. Key points: 4Q trended better than expected. Electrical demand visibility is quite strong, but remains supply constrained. Discrete is currently softer in certain areas, but others (e.g. large projects) are better.

**Lots of visibility in electrical strength**

4Q trended better than expectations. After 27% growth in 2022 and 37% growth in 2023, the company anticipates 2-3% growth in 2024. The growth rates in 2022/2023 include material market share gains, which Dozier does not anticipate to continue at that rate. Dozier expects pricing to stabilize next year. Dozier expects data center growth to continue for the next 7-12 years at a HSD/LDD pace, based on project timing.

### **Supply chain likely constrained for the medium-term**

Dozier stated that the big constraint this year was switchboards and panel boards. Dozier is concerned that demand will continue to outstrip supply even as manufacturers add capacity simply based on the extent of demand.

### **Softening in discrete as distributors work through PLC inventory**

Dozier has stated a softening in discrete/PLC demand over the last 2-3 months. End users are working down inventory. After 2 years of pre-buy, lead times have come down and ordering patterns have “flattened out.” Dozier has worked through most of his inflated PLC (programmable logic controller) backlog leftover from 2022; notably, he is not intending to destock. While orders in discrete have slowed down, the company has a strong backlog of project business to execute on in 2024. Rockwell shipments were strong in 4Q. Dozier stated that the oil & gas end market has been “incredibly robust.” Process automation continues to be strong. The company expects order activity to pick up in 1Q/2Q.

### **Applied HVAC Distributor: Masters Building Solutions**

We hosted a call with Mike Pawelski, President and CEO of Masters Building Solutions, to discuss trends and outlook for the applied HVAC market. Masters is a major applied HVAC distributor based in Wisconsin. Primary brands represented include Daikin, AAON, and McQuay.

### **Outlook on 2024 and the state of 4Q**

On the call, Pawelski noted that 4Q was much better than anticipated (down 1% y/y). For Masters current bid activity looks good. In terms of end markets, K-12 remains good, hospitals are finally adding capacity, volume of office building projects was disappointing, and data centers the focus is on getting capacity to meet demand. Due to previous referendums, there are more K-12 schools being designed in 2024. The bidding activity in the spring for K-12 is anticipated to be robust. For multi-family residential, 2023 was weak because of capacity constraints, but is expected to return to growth in 2024.

### **Demand for data centers and megaprojects remains robust**

Data center demand continues to be seen but is limited by the availability of products. Drivers for data center demand were highlighted as the increased focus on AI and the volume of cell phone traffic continuing to improve. Pawelski noted JCI/York recently landed a data center order with Microsoft south of Milwaukee. On megaprojects, Pawelski believes that Trane and York (JCI) are the best positioned for winning megaprojects with Daikin being a distant third then followed by Carrier. Pawelski highlighted two megaprojects in Texas that were 180,000-ton orders where Trane won one project and York won the other.

### **Pricing dependent on end market**

Pawelski noted that pricing is dependent on where the capacity is. For K-12 pricing is competitive vs a year ago when supply was constrained. For data centers, pricing is nowhere near competitive as it could be because capacity is still constrained.

### **Residential HVAC Part II: Plumbers Supply Company**

We hosted a call with Cameron Lantz, Director of HVAC Operations at Plumbers Supply Co. This distributor is based out of Kentucky, with primary footprint in the Midwest. The company is 60% resi, 40% commercial, with most of its commercial business in applied. Primary brands represented include Johnson Controls (York) and Fujitsu.

### **Pricing pressure and residential destock with refrigerant transition**

When the Environmental Protection Agency (EPA) put out the original refrigerant transition rules there was a race to the bottom on pricing from national distributors, but since the sell through was announced there has been a pull back on pricing. In terms of resi destocking, Lantz thinks destocking is done for now, but could be seen again as the

industry transitions to the new refrigerant units. With the transition, Lantz has noted that Carrier has done the best of the OEMs in the resi market and was well positioned for the A2L transition.

### **Light commercial strength to fade**

On light commercial, Lantz thinks that the growth period is over and that the industry will ride the top of the bell curve for at least another month and by the end of 2Q see a downward trend on light commercial. Lantz noted that light commercial quoting is tailing off. Backlog for light commercial remains elevated.

### **More reliance on financing for HVAC**

On consumer financing, Lantz noted that while financing has become more necessary for purchasing HVAC some consumers are not getting approved for financing. Lantz is hearing about people tapping into home equity in order to afford units. In addition to financing, Lantz is hearing the potential of consumers opting to lease HVAC rather than purchasing the units.

### **Checking in with a chip broker: Select Technology**

Erik Drown is currently the Global Sourcing Director at Select Technology, an independent stocking distributor of electronic components. He has been in the electronics industry for past 18 years. He also serves as Select Technology's chief consultant to OEMs/contract manufacturers (CMs) and the financial sector.

### **Chip shortages still “40 out of 100”**

If COVID-related shortages were a 100, Drown sees current semiconductor shortages at ~40. The rebalancing of consumer buying patterns towards services versus electronic products has enabled other manufacturers, including industrial firms, to gain more of the existing chip production. However, shortages for certain chips and components are still prevalent. Drown cited multi-level ceramic capacitors, MOSFET (power management) capacitors, and certain analog chips as examples. Certain semi manufacturers continue to miss delivery deadlines. Buffer stock at many semi manufacturers has not been rebuilt.

### **Chip pricing rising as capacity takes time to ramp**

While Drown has seen “spot” secondary market prices move down, semiconductor pricing in normal distribution channels continues to move higher. This is supported by lead times for some semi suppliers remaining elevated (e.g., Broadcom lead times of 50 weeks for certain chips). Drown sees US semiconductor fabs needing several years to ramp to normal production levels. He expects US-made chips to come at premium price points when this capacity does come on line.

### **2024 outlook – supplies likely tighten**

Drown sees semi manufacturers adding capacity at higher-price/higher-margin products. However, industrial manufacturers typically are buying “trailing edge” chips (e.g., >28 nanometers). Given the low levels of inventory for trailing edge chips, increases in demand can drive a disproportionate impact.

### **Border States: Takeaways from an electrical/automation distributor**

We hosted a call with Jason Stein, Executive Vice President, Sales & Marketing at Border States. The company's key end markets are industrial, construction (residential, commercial, and institutional), and utility. The key brands distributed include Eaton, Schneider, Rockwell, and Hubbell, among others. **Key points:** 4Q23 demand trended above expectations. Discrete automation will likely return to growth at the end of 3Q/4Q.

**Discrete automation likely to inflect in 2H24**

Stein stated that the industry chatter is that discrete automation will decline through much of 2024 and pick up at the end of 3Q or in 4Q. He expects his business to continue outperforming the market given a larger exposure to packaging and Food & Beverage industries which have done better, driven by reshoring. While his business has not experienced a major downturn, interest rates are impacting small project demand.

**Working to reduce inventories where lead times have normalized**

Stein aims to reduce his own inventory levels by 15% on average. This includes 15-20% on more commoditized products where the lead times have already normalized. In other categories (e.g., highly engineered switchgear), he expects to increase his inventory levels.

**Electrical: demand still strong, expect similar pricing in 4Q23**

We heard feedback from Stein that he saw y/y pricing rise in 4Q23 at a similar rate to mid-single digits in 3Q23. We note forecasts for peer pricing show a sequential moderation in 4Q23. Stein is seeing pricing flatten. In 2024, he expects a range from no price increase to mid-single digit price increases.

**Rush Enterprises: Takeaways from a trucking distributor**

We hosted a call with Rusty Rush, CEO of Rush Enterprises (ticker: RUSHA). In our view, Rush has gotten incrementally more positive on the economy over the past year. Rush stated on the conference call that he thinks the economy is going to “hang in” in 2024. He specified that there has been a freight recession for 16-18 months already.

**Parts & Service: 60% of Rush gross profit dollars**

Parts & Services represent 60% of Rush gross profit dollars. While the parts & service market is likely flat in 2024, Rush plans to grow low to mid-single digits y/y. While smaller accounts are more profitable, the diversification towards national accounts has helped the business to grow in more difficult market conditions. Rush stated that a real deterioration in demand never occurred in Parts & Services.

**Inflation moderating already, 2-4% inflation in 2024**

Rush has seen inflation moderate already in 2H23. He expects it to continue slightly in 2024. Rush stated that he believes inflation next year will moderate in the 2-4% range. This is based on commodity prices coming down and flowing through.

**Class 8 production 2H loaded**

Rush expects 2024 Class 8 production to be 2H loaded. He thinks it is likely to pick up in 2Q and 3Q ahead of the new EPA regulations. OEs have not cut production rates given they still have 60-90 day lead times, per Rush. He noted that he expects 8-10% of his California business to take a hit from the new EPA laws.

# Disclosures

## Important Disclosures

BofA Global Research personnel (including the analyst(s) responsible for this report) receive compensation based upon, among other factors, the overall profitability of Bank of America Corporation, including profits derived from investment banking. The analyst(s) responsible for this report may also receive compensation based upon, among other factors, the overall profitability of the Bank's sales and trading businesses relating to the class of securities or financial instruments for which such analyst is responsible.

## Other Important Disclosures

From time to time research analysts conduct site visits of covered issuers. BofA Global Research policies prohibit research analysts from accepting payment or reimbursement for travel expenses from the issuer for such visits.

Prices are indicative and for information purposes only. Except as otherwise stated in the report, for any recommendation in relation to an equity security, the price referenced is the publicly traded price of the security as of close of business on the day prior to the date of the report or, if the report is published during intraday trading, the price referenced is indicative of the traded price as of the date and time of the report and in relation to a debt security (including equity preferred and CDS), prices are indicative as of the date and time of the report and are from various sources including BofA Securities trading desks.

The date and time of completion of the production of any recommendation in this report shall be the date and time of dissemination of this report as recorded in the report timestamp.

Recipients who are not institutional investors or market professionals should seek the advice of their independent financial advisor before considering information in this report in connection with any investment decision, or for a necessary explanation of its contents.

Officers of BofA or one or more of its affiliates (other than research analysts) may have a financial interest in securities of the issuer(s) or in related investments.

Refer to [BofA Global Research policies relating to conflicts of interest](#).

**"BofA Securities" includes BofA Securities, Inc. ("BofAS") and its affiliates. Investors should contact their BofA Securities representative or Merrill Global Wealth Management financial advisor if they have questions concerning this report or concerning the appropriateness of any investment idea described herein for such investor. "BofA Securities" is a global brand for BofA Global Research.**

### Information relating to Non-US affiliates of BofA Securities and Distribution of Affiliate Research Reports:

BofAS and/or Merrill Lynch, Pierce, Fenner & Smith Incorporated ("MLPF&S") may in the future distribute, information of the following non-US affiliates in the US (short name: legal name, regulator): Merrill Lynch (South Africa): Merrill Lynch South Africa (Pty) Ltd., regulated by The Financial Service Board; MLI (UK): Merrill Lynch International, regulated by the Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA); BofASE (France): BofA Securities Europe SA is authorized by the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers (AMF). BofA Securities Europe SA ("BofASE") with registered address at 51, rue La Boétie, 75008 Paris is registered under no 842 602 690 RCS Paris. In accordance with the provisions of French Code Monétaire et Financier (Monetary and Financial Code), BofASE is an établissement de crédit et d'investissement (credit and investment institution) that is authorised and supervised by the European Central Bank and the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers. BofASE's share capital can be found at [www.bofam.com/BofASEdisclaimer](http://www.bofam.com/BofASEdisclaimer); BofA Europe (Milan): Bank of America Europe Designated Activity Company, Milan Branch, regulated by the Bank of Italy, the European Central Bank (ECB) and the Central Bank of Ireland (CBI); BofA Europe (Frankfurt): Bank of America Europe Designated Activity Company, Frankfurt Branch regulated by BaFin, the ECB and the CBI; BofA Europe (Madrid): Bank of America Europe Designated Activity Company, Sucursal en España, regulated by the Bank of Spain, the ECB and the CBI; Merrill Lynch (Australia): Merrill Lynch Equities (Australia) Limited, regulated by the Australian Securities and Investments Commission; Merrill Lynch (Hong Kong): Merrill Lynch (Asia Pacific) Limited, regulated by the Hong Kong Securities and Futures Commission (HKSF); Merrill Lynch (Singapore): Merrill Lynch (Singapore) Pte Ltd, regulated by the Monetary Authority of Singapore (MAS); Merrill Lynch (Canada): Merrill Lynch Canada Inc, regulated by the Canadian Investment Regulatory Organization; Merrill Lynch (Mexico): Merrill Lynch Mexico, SA de CV, Casa de Bolsa, regulated by the Comisión Nacional Bancaria y de Valores; Merrill Lynch (Argentina): Merrill Lynch Argentina SA, regulated by Comisión Nacional de Valores; BofAS Japan: BofA Securities Japan Co., Ltd., regulated by the Financial Services Agency; Merrill Lynch (Seoul): Merrill Lynch International, LLC Seoul Branch, regulated by the Financial Supervisory Service; Merrill Lynch (Taiwan): Merrill Lynch Securities (Taiwan) Ltd., regulated by the Securities and Futures Bureau; BofAS India: BofA Securities India Limited, regulated by the Securities and Exchange Board of India (SEBI); Merrill Lynch (Israel): Merrill Lynch Israel Limited, regulated by Israel Securities Authority; Merrill Lynch (DIFC): Merrill Lynch International (DIFC Branch), regulated by the Dubai Financial Services Authority (DFSA); Merrill Lynch (Brazil): Merrill Lynch S.A. Corretora de Títulos e Valores Mobiliários, regulated by Comissão de Valores Mobiliários; Merrill Lynch KSA Company: Merrill Lynch Kingdom of Saudi Arabia Company, regulated by the Capital Market Authority.

This information: has been approved for publication and is distributed in the United Kingdom (UK) to professional clients and eligible counterparties (as each is defined in the rules of the FCA and the PRA) by MLI (UK), which is authorized by the PRA and regulated by the FCA and the PRA - details about the extent of our regulation by the FCA and PRA are available from us on request; has been approved for publication and is distributed in the European Economic Area (EEA) by BofASE (France), which is authorized by the ACPR and regulated by the ACPR and the AMF; has been considered and distributed in Japan by BofAS Japan, a registered securities dealer under the Financial Instruments and Exchange Act in Japan, or its permitted affiliates; is issued and distributed in Hong Kong by Merrill Lynch (Hong Kong) which is regulated by HKSF; is issued and distributed in Taiwan by Merrill Lynch (Taiwan); is issued and distributed in India by BofAS India; and is issued and distributed in Singapore to institutional investors and/or accredited investors (each as defined under the Financial Advisers Regulations) by Merrill Lynch (Singapore) (Company Registration No 198602883D). Merrill Lynch (Singapore) is regulated by MAS. Merrill Lynch Equities (Australia) Limited (ABN 65 006 276 795), AFS License 235132 (MLEA) distributes this information in Australia only to 'Wholesale' clients as defined by s.761G of the Corporations Act 2001. With the exception of Bank of America N.A., Australia Branch, neither MLEA nor any of its affiliates involved in preparing this information is an Authorised Deposit-Taking Institution under the Banking Act 1959 nor regulated by the Australian Prudential Regulation Authority. No approval is required for publication or distribution of this information in Brazil and its local distribution is by Merrill Lynch (Brazil) in accordance with applicable regulations. Merrill Lynch (DIFC) is authorized and regulated by the DFSA. Information prepared and issued by Merrill Lynch (DIFC) is done so in accordance with the requirements of the DFSA conduct of business rules. BofA Europe (Frankfurt) distributes this information in Germany and is regulated by BaFin, the ECB and the CBI. BofA Securities entities, including BofA Europe and BofASE (France), may outsource/delegate the marketing and/or provision of certain research services or aspects of research services to other branches or members of the BofA Securities group. You may be contacted by a different BofA Securities entity acting for and on behalf of your service provider where permitted by applicable law. This does not change your service provider. Please refer to the [Electronic Communications Disclaimers](#) for further information.

This information has been prepared and issued by BofAS and/or one or more of its non-US affiliates. The author(s) of this information 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. BofAS and/or MLPF&S is the distributor of this information in the US and accepts full responsibility for information distributed to BofAS and/or MLPF&S clients in the US by its non-US affiliates. Any US person receiving this information and wishing to effect any transaction in any security discussed herein should do so through BofAS and/or MLPF&S and not such foreign affiliates. Hong Kong recipients of this information should contact Merrill Lynch (Asia Pacific) Limited in respect of any matters relating to dealing in securities or provision of specific advice on securities or any other matters arising from, or in connection with, this information. Singapore recipients of this information should contact Merrill Lynch (Singapore) Pte Ltd in respect of any matters arising from, or in connection with, this information. For clients that are not accredited investors, expert investors or institutional investors Merrill Lynch (Singapore) Pte Ltd accepts full responsibility for the contents of this information distributed to such clients in Singapore.

### General Investment Related Disclosures:

Taiwan Readers: Neither the information nor any opinion expressed herein constitutes an offer or a solicitation of an offer to transact in any securities or other financial instrument. No part of this report may be used or reproduced or quoted in any manner whatsoever in Taiwan by the press or any other person without the express written consent of BofA Securities. This document provides general information only, and has been prepared for, and is intended for general distribution to, BofA Securities clients. Neither the information nor any opinion expressed constitutes an offer or an invitation to make an offer, to buy or sell any securities or other financial instrument or any derivative related to such securities or instruments (e.g., options, futures, warrants, and contracts for differences). This document is not intended to provide personal investment advice and it does not take into account the specific investment objectives,

financial situation and the particular needs of, and is not directed to, any specific person(s). This document and its content do not constitute, and should not be considered to constitute, investment advice for purposes of ERISA, the US tax code, the Investment Advisers Act or otherwise. Investors should seek financial advice regarding the appropriateness of investing in financial instruments and implementing investment strategies discussed or recommended in this document and should understand that statements regarding future prospects may not be realized. Any decision to purchase or subscribe for securities in any offering must be based solely on existing public information on such security or the information in the prospectus or other offering document issued in connection with such offering, and not on this document.

Securities and other financial instruments referred to herein, or recommended, offered or sold by BofA Securities, are not insured by the Federal Deposit Insurance Corporation and are not deposits or other obligations of any insured depository institution (including, Bank of America, N.A.). Investments in general and, derivatives, in particular, involve numerous risks, including, among others, market risk, counterparty default risk and liquidity risk. No security, financial instrument or derivative is suitable for all investors. Digital assets are extremely speculative, volatile and are largely unregulated. In some cases, securities and other financial instruments may be difficult to value or sell and reliable information about the value or risks related to the security or financial instrument may be difficult to obtain. Investors should note that income from such securities and other financial instruments, if any, may fluctuate and that price or value of such securities and instruments may rise or fall and, in some cases, investors may lose their entire principal investment. Past performance is not necessarily a guide to future performance. Levels and basis for taxation may change.

This report may contain a short-term trading idea or recommendation, which highlights a specific near-term catalyst or event impacting the issuer or the market that is anticipated to have a short-term price impact on the equity securities of the issuer. Short-term trading ideas and recommendations are different from and do not affect a stock's fundamental equity rating, which reflects both a longer term total return expectation and attractiveness for investment relative to other stocks within its Coverage Cluster. Short-term trading ideas and recommendations may be more or less positive than a stock's fundamental equity rating.

BofA Securities is aware that the implementation of the ideas expressed in this report may depend upon an investor's ability to "short" securities or other financial instruments and that such action may be limited by regulations prohibiting or restricting "shortselling" in many jurisdictions. Investors are urged to seek advice regarding the applicability of such regulations prior to executing any short idea contained in this report.

Foreign currency rates of exchange may adversely affect the value, price or income of any security or financial instrument mentioned herein. Investors in such securities and instruments, including ADRs, effectively assume currency risk.

BofAS or one of its affiliates is a regular issuer of traded financial instruments linked to securities that may have been recommended in this report. BofAS or one of its affiliates may, at any time, hold a trading position (long or short) in the securities and financial instruments discussed in this report.

BofA Securities, through business units other than BofA Global Research, may have issued and may in the future issue trading ideas or recommendations that are inconsistent with, and reach different conclusions from, the information presented herein. Such ideas or recommendations may reflect different time frames, assumptions, views and analytical methods of the persons who prepared them, and BofA Securities is under no obligation to ensure that such other trading ideas or recommendations are brought to the attention of any recipient of this information.

In the event that the recipient received this information pursuant to a contract between the recipient and BofAS for the provision of research services for a separate fee, and in connection therewith BofAS may be deemed to be acting as an investment adviser, such status relates, if at all, solely to the person with whom BofAS has contracted directly and does not extend beyond the delivery of this report (unless otherwise agreed specifically in writing by BofAS). If such recipient uses the services of BofAS in connection with the sale or purchase of a security referred to herein, BofAS may act as principal for its own account or as agent for another person. BofAS is and continues to act solely as a broker-dealer in connection with the execution of any transactions, including transactions in any securities referred to herein.

#### Copyright and General Information:

Copyright 2024 Bank of America Corporation. All rights reserved. iQdatabase® is a registered service mark of Bank of America Corporation. This information is prepared for the use of BofA Securities clients and may not be redistributed, retransmitted or disclosed, in whole or in part, or in any form or manner, without the express written consent of BofA Securities. BofA Global Research information is distributed simultaneously to internal and client websites and other portals by BofA Securities and is not publicly-available material. Any unauthorized use or disclosure is prohibited. Receipt and review of this information constitutes your agreement not to redistribute, retransmit, or disclose to others the contents, opinions, conclusion, or information contained herein (including any investment recommendations, estimates or price targets) without first obtaining express permission from an authorized officer of BofA Securities.

Materials prepared by BofA Global Research personnel are based on public information. Facts and views presented in this material have not been reviewed by, and may not reflect information known to, professionals in other business areas of BofA Securities, including investment banking personnel. BofA Securities has established information barriers between BofA Global Research and certain business groups. As a result, BofA Securities does not disclose certain client relationships with, or compensation received from, such issuers. To the extent this material discusses any legal proceeding or issues, it has not been prepared as nor is it intended to express any legal conclusion, opinion or advice. Investors should consult their own legal advisers as to issues of law relating to the subject matter of this material. BofA Global Research personnel's knowledge of legal proceedings in which any BofA Securities entity and/or its directors, officers and employees may be plaintiffs, defendants, co-defendants or co-plaintiffs with or involving issuers mentioned in this material is based on public information. Facts and views presented in this material that relate to any such proceedings have not been reviewed by, discussed with, and may not reflect information known to, professionals in other business areas of BofA Securities in connection with the legal proceedings or matters relevant to such proceedings.

This information has been prepared independently of any issuer of securities mentioned herein and not in connection with any proposed offering of securities or as agent of any issuer of any securities. None of BofAS or any of its affiliates or their research analysts has any authority whatsoever to make any representation or warranty on behalf of the issuer(s). BofA Global Research policy prohibits research personnel from disclosing a recommendation, investment rating, or investment thesis for review by an issuer prior to the publication of a research report containing such rating, recommendation or investment thesis.

Any information relating to the tax status of financial instruments discussed herein is not intended to provide tax advice or to be used by anyone to provide tax advice. Investors are urged to seek tax advice based on their particular circumstances from an independent tax professional.

The information herein (other than disclosure information relating to BofA Securities and its affiliates) was obtained from various sources and we do not guarantee its accuracy. This information may contain links to third-party websites. BofA Securities is not responsible for the content of any third-party website or any linked content contained in a third-party website. Content contained on such third-party websites is not part of this information and is not incorporated by reference. The inclusion of a link does not imply any endorsement by or any affiliation with BofA Securities. Access to any third-party website is at your own risk, and you should always review the terms and privacy policies at third-party websites before submitting any personal information to them. BofA Securities is not responsible for such terms and privacy policies and expressly disclaims any liability for them.

All opinions, projections and estimates constitute the judgment of the author as of the date of publication and are subject to change without notice. Prices also are subject to change without notice. BofA Securities is under no obligation to update this information and BofA Securities ability to publish information on the subject issuer(s) in the future is subject to applicable quiet periods. You should therefore assume that BofA Securities will not update any fact, circumstance or opinion contained herein.

Certain outstanding reports or investment opinions relating to securities, financial instruments and/or issuers may no longer be current. Always refer to the most recent research report relating to an issuer prior to making an investment decision.

In some cases, an issuer may be classified as Restricted or may be Under Review or Extended Review. In each case, investors should consider any investment opinion relating to such issuer (or its security and/or financial instruments) to be suspended or withdrawn and should not rely on the analyses and investment opinion(s) pertaining to such issuer (or its securities and/or financial instruments) nor should the analyses or opinion(s) be considered a solicitation of any kind. Sales persons and financial advisors affiliated with BofAS or any of its affiliates may not solicit purchases of securities or financial instruments that are Restricted or Under Review and may only solicit securities under Extended Review in accordance with firm policies.

Neither BofA Securities nor any officer or employee of BofA Securities accepts any liability whatsoever for any direct, indirect or consequential damages or losses arising from any use of this information.