Food Retailers

Nielsen: Grocery sales off to a strong start in January, NYE shift may have helped

Industry Overview

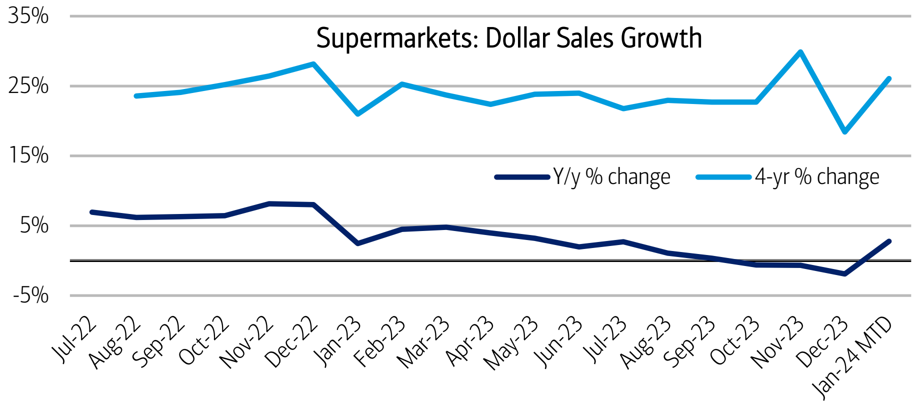
23 January 2024

Equity
United States
Food Retailers

1H January Supermarket sales accelerate +470bp vs. Dec.

Exhibit 1: Conventional Supermarkets monthly dollar sales growth (1 & 4-yr % change)

Supermarket sales were +2.8% y/y in the first 2 weeks of Jan., up +470bp vs. Dec. on easing volume declines. This may partially reflect benefits from New Year's Eve falling in the first week of Jan. this year vs. last week of Dec. last year. 4-yr trends (moving past holiday timing-related volatility in Nov. & Dec.) were strong in 1H Jan. at +26.1% (above the ~low-20s% range seen in prior months)



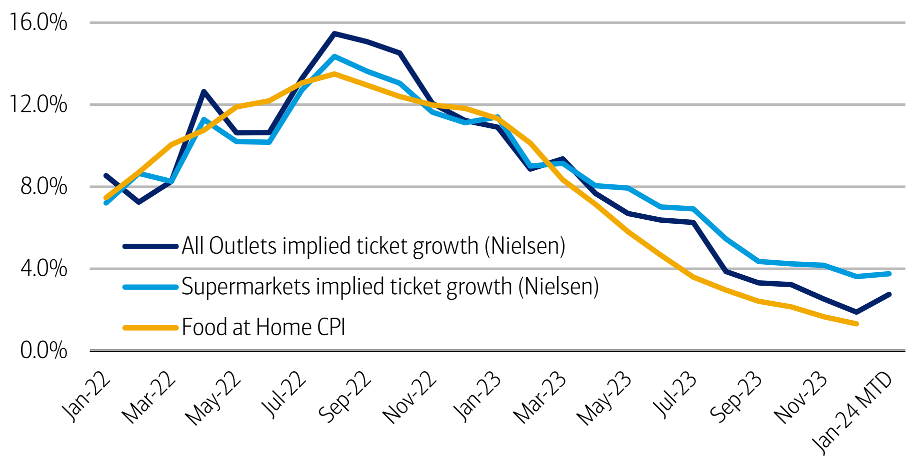
Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

Implied ticket growth still inflationary; Supermarkets +4%

Exhibit 2: Nielsen implied ticket growth by channel vs. Food at Home CPI

Implied ticket growth (which has been trending above Food at Home CPI) still inflationary at +3.8% y/y for Supermarkets & +2.8% for AOC., with non-food & non-perishables higher vs. perishables



Source: Nielsen, Bureau of Labor Statistics, BofA Global Research

BofA GLOBAL RESEARCH

See inside for more on our key highlights

Robert F. Ohmes, CFA
Research Analyst
BofAS
+1 646 855 0078
robert.ohmes@bofa.com

Kendall Toscano
Research Analyst
BofAS
+1 646 855 1704
kendall.toscano@bofa.com

Key terms:

AOC = All Outlets combined (incl. supermarkets, drug, mass, club, dollar stores & military)

MTD = month-to-date

1H = first-half

NYE = New Years Eve

Stocks mentioned in this report

KR = Kroger

ACI = Albertsons

GO = Grocery Outlet

WMT = Walmart

COST = Costco

BJ = BJ's Wholesale

Key Highlights

- **Supermarket sales off to a strong start in January:** Total store y/y sales growth in 1H January was +2.8% y/y for Supermarkets (positive y/y for the first time since Sep.) & +3.2% y/y for the AOC channel (positive for first time since Nov.). This was a +470bp acceleration vs. Dec. for Supermarkets & +370bp for the AOC channel. We note that first week of Jan. y/y trends may have benefitted from the inclusion of New Year's Eve (which fell in the last week of Dec. last year) – though trends were still relatively strong in the second week of Jan. – see Exhibit 18. AOC outperformance (+50bp) cont'd to reflect stronger volume trends vs. Supermarkets – with AOC volume inflecting positively in 1H Jan. for the first time in ~2 years – partially offset by lower ticket inflation. Volume continues to track negatively for Supermarkets (despite improving meaningfully vs. Dec.) both y/y & on a 4-year basis.

- **Ticket inflation tracking +3-4%:** with Supermarkets +3.8% y/y & AOC +2.8% in 1H Jan. (+10bp & +90bp vs. Dec., respectively) compared to highs of 14-15% in Aug. 2022. Inflation continues to track higher in non-perishables vs. perishables (Exhibit 14). We see slowing same-stores sales for grocers as food inflation continues to ease (see our latest CPI/PPI update). We think shoppers will continue to favor value & variety (incl. in price points & private label) as consumers are still adjusting to grocery prices that are up 25%+ vs. pre-pandemic.

Exhibit 3: Total Store Sales Trends by Channel – Y/y % Change

Y/y sales growth in 1H Jan. accelerated meaningfully vs. December & inflected positively in both channels driven largely by improving volume trends (with AOC volume inflecting positively for the first time in ~2-yrs)

All Outlets Combined

	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-MTD
Dollar Sales	3.9%	2.6%	1.5%	0.7%	0.6%	-0.5%	3.2%
Volume	-2.4%	-1.3%	-1.8%	-2.6%	-1.9%	-2.3%	0.5%
Implied Ticket	6.3%	3.9%	3.3%	3.2%	2.5%	1.9%	2.8%

Conventional Supermarkets

	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-MTD
Dollar Sales	2.7%	1.1%	0.3%	-0.6%	-0.7%	-1.9%	2.8%
Volume	-4.2%	-4.4%	-4.0%	-4.9%	-4.8%	-5.5%	-1.0%
Implied Ticket	6.9%	5.5%	4.4%	4.2%	4.2%	3.6%	3.8%

Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 4: Total Store Sales Trends by Channel – 4-Year % Change

4-year sales growth for AOC continues outperforming Supermarkets helped by less negative volume trends. Note: Dec. 4-year trends reflect Thanksgiving on 11/23 in 2023 vs. 11/28 (in first week of Dec.) in 2019

All Outlets Combined

	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-MTD
Dollar Sales	26.6%	28.0%	27.7%	28.1%	32.4%	23.5%	29.3%
Volume	-5.0%	-5.8%	-5.2%	-4.6%	-3.2%	-4.4%	-4.5%
Implied Ticket	31.6%	33.7%	32.9%	32.8%	35.6%	27.9%	33.8%

Conventional Supermarkets

	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-MTD
Dollar Sales	21.8%	22.9%	22.7%	22.7%	29.9%	18.4%	26.1%
Volume	-11.5%	-11.8%	-11.1%	-11.4%	-7.5%	-12.4%	-9.3%
Implied Ticket	33.3%	34.8%	33.8%	34.1%	37.4%	30.9%	35.3%

Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

- **Supermarket promos still below pre-COVID levels:** Promos in January were +6.1% y/y for Supermarkets & +5.0% y/y for AOC. This marks the 17th straight month of higher y/y promos in contrast to negative trends we had seen in early 2022 likely reflecting cost pressure/availability challenges (after higher/normalizing y/y promos in 2021). While promos remain below pre-COVID levels (with 4-year promos tracking -6.2% for Supermarkets & -6.1% for AOC in 1H January), we see potential for promotional activity to increase further as food inflation continues to wane.

Exhibit 5: All Outlets Combined Total Store Promo Trends

AOC promos up y/y for 17th straight month, but still below pre-COVID

	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24 MTD
Promo % sales	27.9%	28.1%	28.3%	27.8%	30.5%	29.4%	28.2%
y/y % chg.	4.5%	8.3%	5.3%	3.0%	3.6%	4.8%	5.0%
4-yr % chg.	-6.5%	-6.2%	-6.5%	-3.2%	-0.2%	-6.7%	-6.1%

Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 6: Conventional Supermarkets Total Store Promo Trends

Supermarket promos up y/y for 17th month, but still below pre-COVID

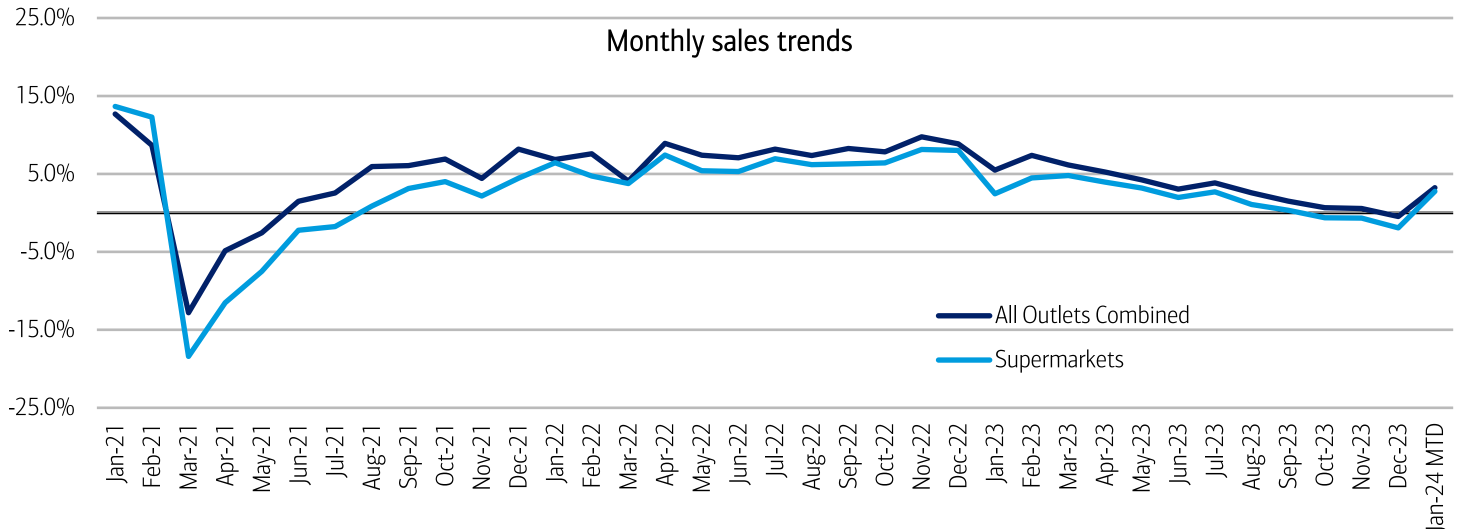
	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24 MTD
Promo % sales	33.8%	32.9%	32.8%	32.9%	35.3%	34.3%	32.5%
y/y % chg.	9.3%	8.5%	6.2%	5.2%	4.7%	6.8%	6.1%
4-yr % chg.	-4.6%	-5.9%	-6.2%	-5.4%	-1.4%	-5.9%	-6.2%

Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

Nielsen: Conventional Supermarkets vs. All Outlets: Monthly Trends

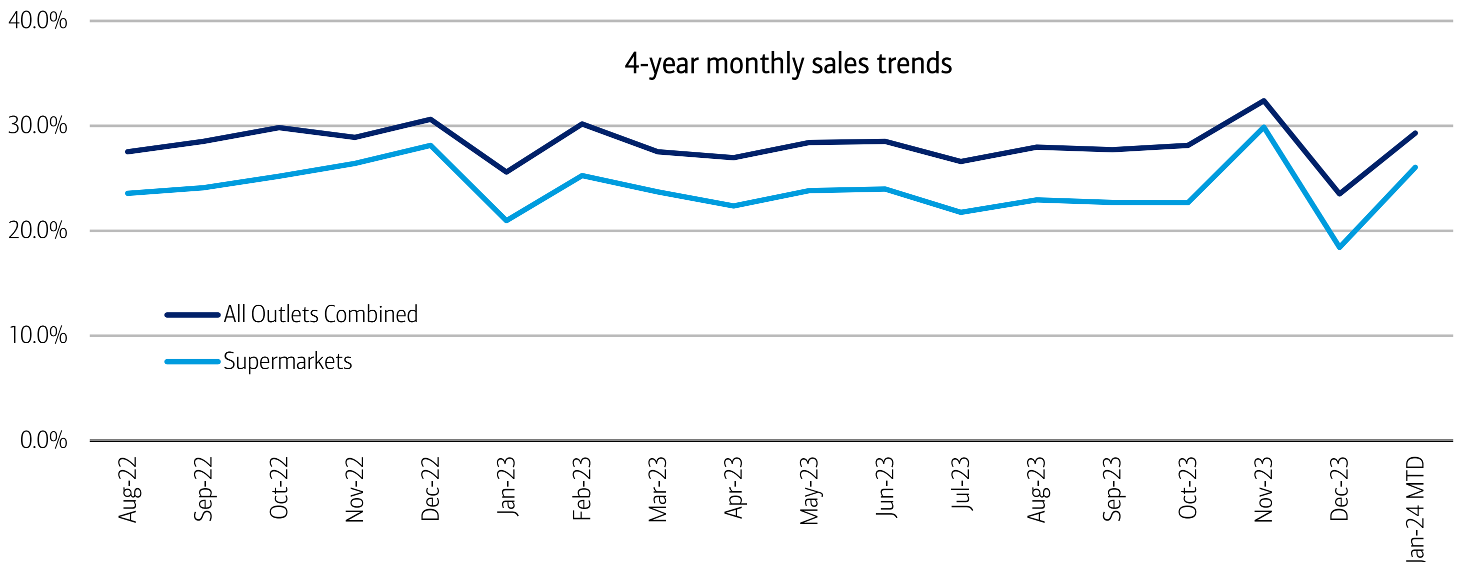
Exhibit 7: Conventional Supermarkets vs. All Outlets Combined (incl. drug & mass) total store monthly $ sales y/y % change
Grocery sales in January accelerated +470bp vs. December for Conventional Supermarkets (to +2.8% y/y) & +370bp for the AOC channel (to +3.2% y/y)



Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 8: Conventional supermarket vs. All Outlets (incl. mass and drug) total store monthly 4-year % sales growth
Moving past volatility related to holiday timing in November & December, 4-year sales growth was strong at +26.1% for Conventional Supermarkets & +29.3% for All Outlets Combined

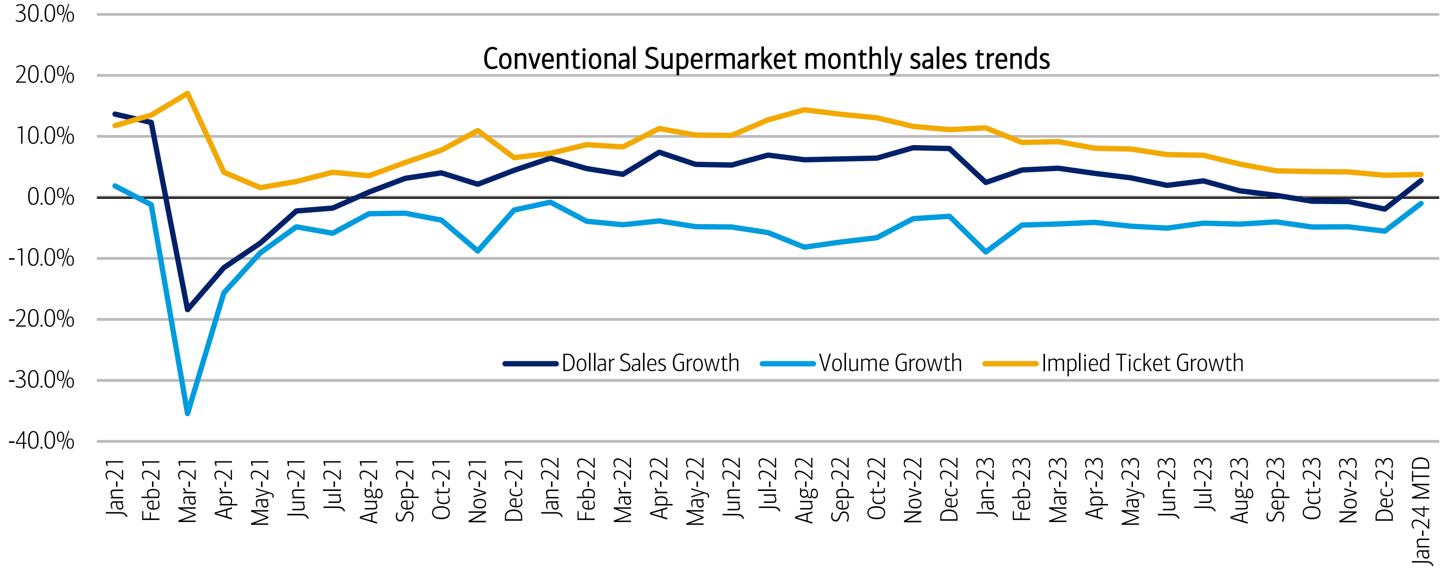


Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 9: Conventional supermarkets total store sales monthly y/y % change

Supermarket sales were +2.8% y/y in 1H January, up +470bp vs. December largely on easing volume declines while implied ticket growth accelerated +10bp

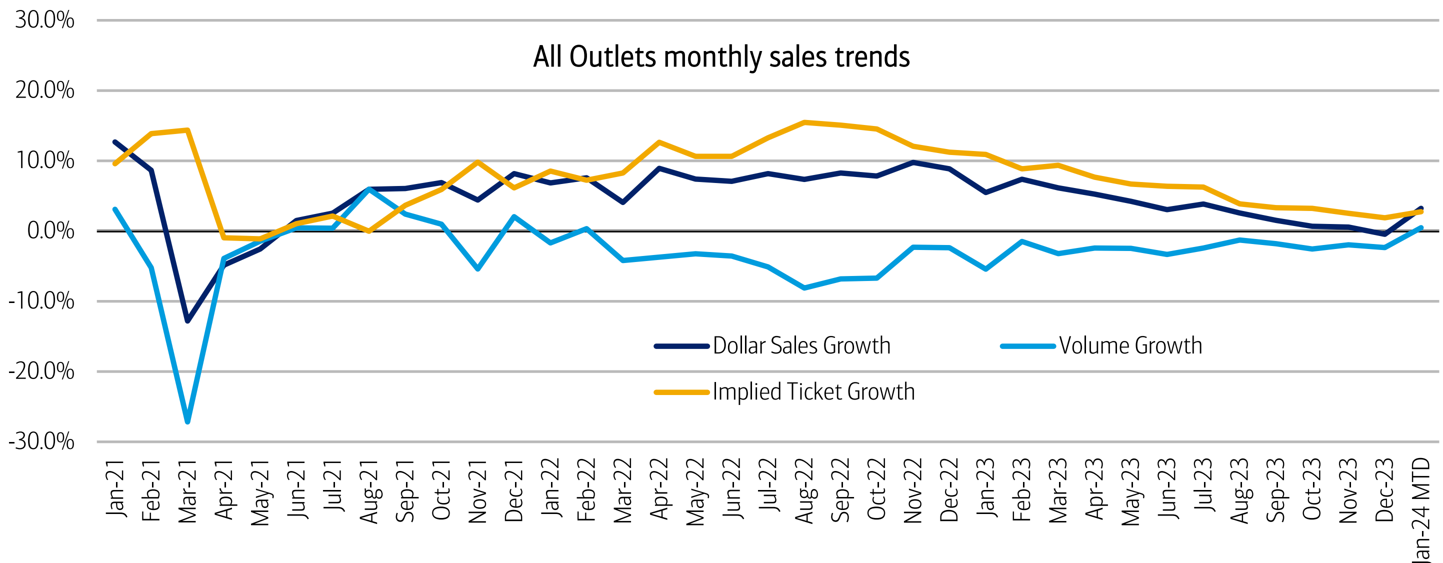


Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 10: All Outlets Combined (incl. drug & mass) total store sales monthly y/y % change

AOC sales were +3.2% y/y in 1H January, up +370bp vs. December largely on improving volume trends (which inflected positively for the first time in ~2 years) while ticket growth also accelerated (+90bp)



Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

Conventional Supermarkets vs. All Outlets: Category momentum

Exhibit 11: All Outlets Combined Y/y Sales Trends by Category
AOC sales growth accelerated across categories in 1H Jan. Sales growth remains strongest for non-perishables helped by higher ticket growth

	Oct-23	Nov-23	Dec-23	Jan-24 MTD
Perishables				
Dollar Sales Growth	-0.6%	-0.5%	-1.7%	2.0%
Volume Growth	-0.9%	-0.2%	-1.2%	3.4%
Implied Ticket Growth	0.3%	-0.3%	-0.5%	-1.4%
Non-Perishables				
Dollar Sales Growth	1.3%	1.5%	0.1%	4.5%
Volume Growth	-1.9%	-1.9%	-3.1%	0.3%
Implied Ticket Growth	3.2%	3.4%	3.2%	4.2%
Non-Food				
Dollar Sales Growth	1.0%	0.3%	0.0%	2.7%
Volume Growth	-2.8%	-2.1%	-2.3%	0.3%
Implied Ticket Growth	3.8%	2.4%	2.3%	2.5%

Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

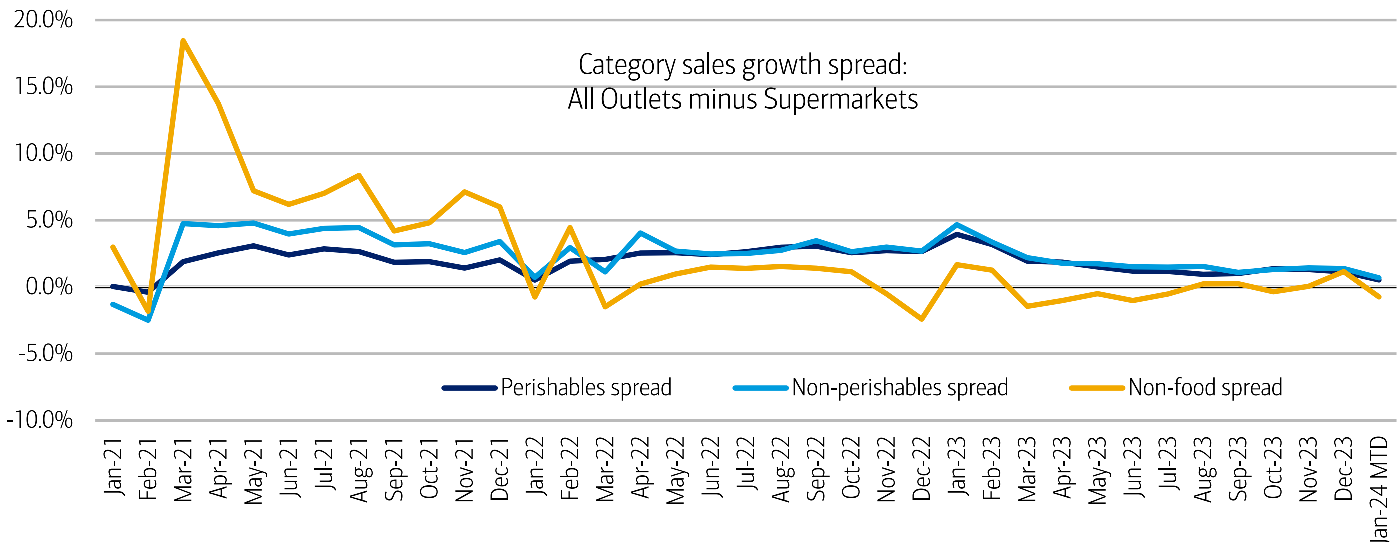
Exhibit 12: Supermarkets Y/y Sales Trends by Category
Supermarket sales growth accelerated across categories in 1H Jan. Sales growth was stronger for non-perishables & non-food vs. perishables

	Oct-23	Nov-23	Dec-23	Jan-24 MTD
Perishables				
Dollar Sales Growth	-2.0%	-1.8%	-2.9%	1.4%
Volume Growth	-3.4%	-2.9%	-3.7%	1.3%
Implied Ticket Growth	1.5%	1.1%	0.9%	0.1%
Non-Perishables				
Dollar Sales Growth	0.0%	0.1%	-1.3%	3.8%
Volume Growth	-3.1%	-3.2%	-4.1%	0.4%
Implied Ticket Growth	3.1%	3.3%	2.8%	3.4%
Non-Food				
Dollar Sales Growth	1.4%	0.2%	-1.1%	3.5%
Volume Growth	-5.9%	-6.0%	-6.5%	-2.0%
Implied Ticket Growth	7.3%	6.2%	5.4%	5.5%

Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 13: All Outlets Combined minus Conventional Supermarkets dollar sales monthly y/y % change by category
AOC sales continued outperforming Supermarkets in perishables & non-perishables in 1H January, while Supermarkets outperformed in non-food

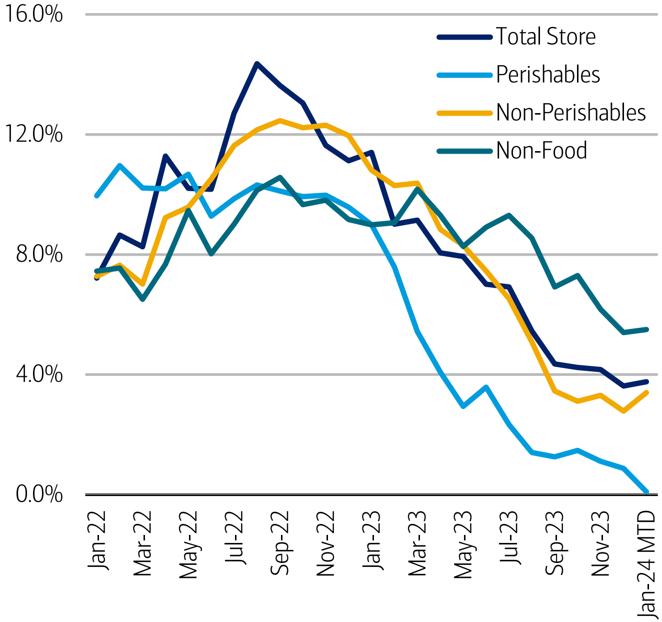


Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 14: Conventional Supermarkets Implied Ticket Growth by Category

Implied ticket growth for Supermarkets (+3.8% in 1H January) tracking highest in non-food, lowest in perishables

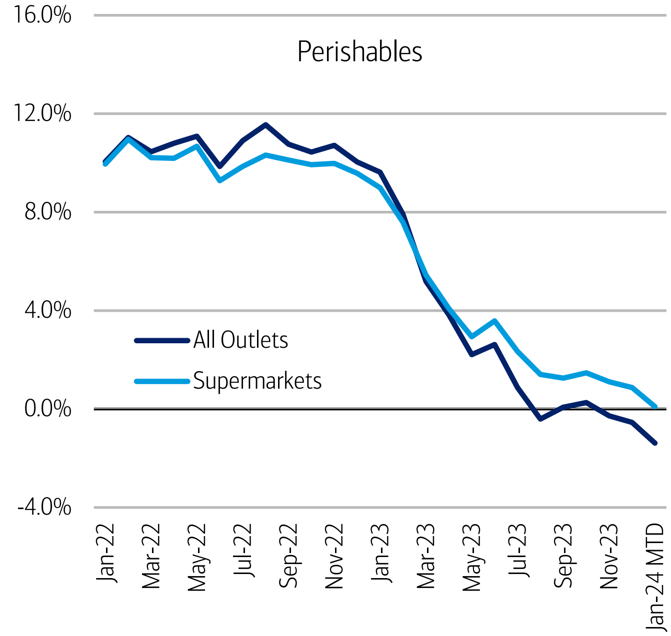


Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 15: Perishables Implied Ticket Growth by Channel

Perishables implied ticket growth tracking higher for Supermarkets vs. All Outlets

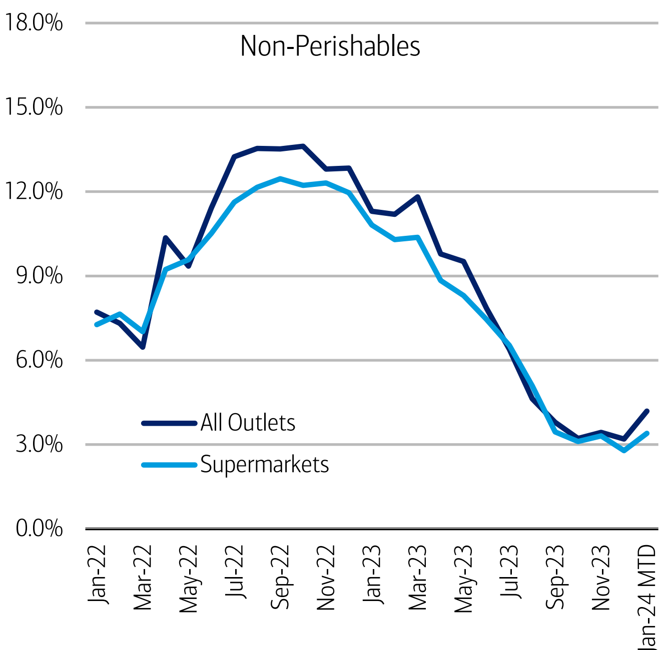


Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 16: Non-Perishables Implied Ticket Growth by Channel

Non-perishables implied ticket growth tracking higher for All Outlets vs. Supermarkets

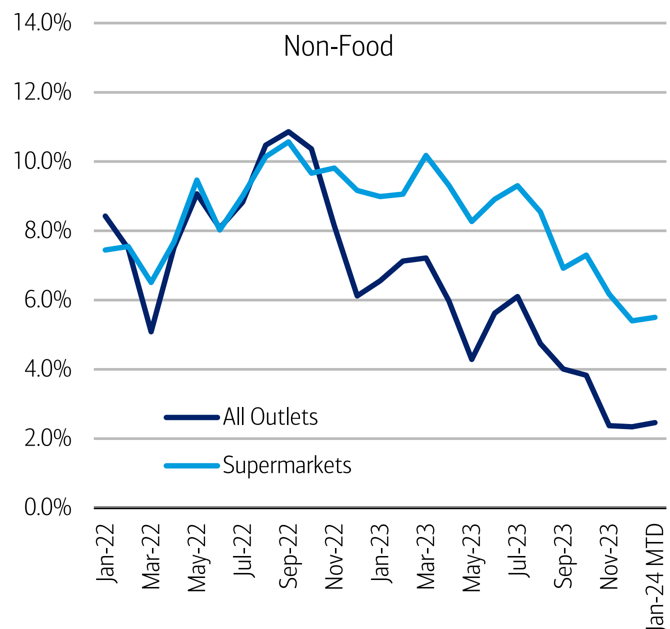


Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 17: Non-Food Implied Ticket Growth by Channel

Non-food implied ticket growth tracking significantly higher for Supermarkets vs. All Outlets

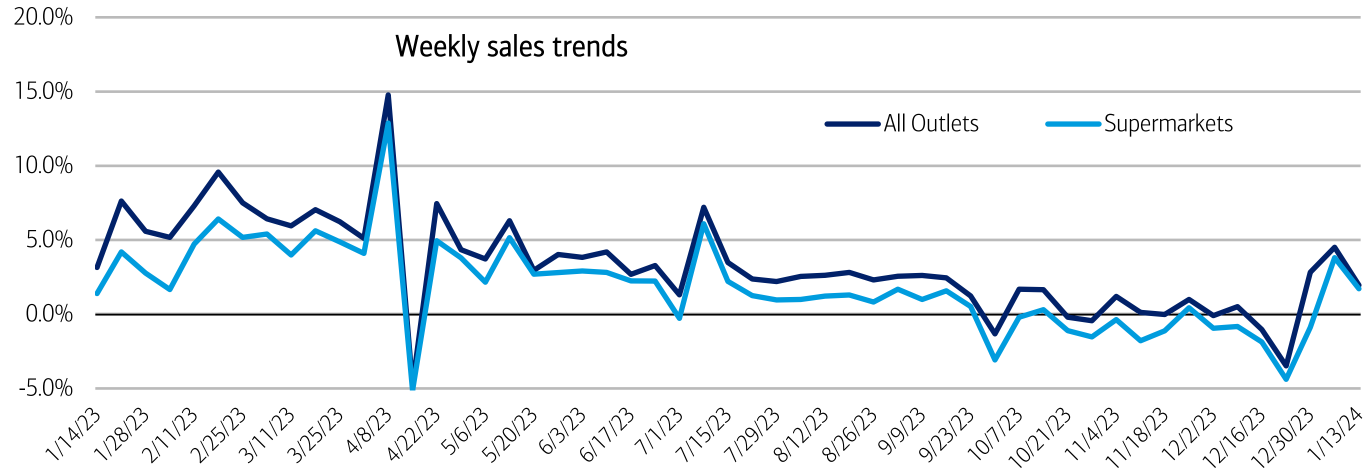


Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

Conventional Supermarkets vs. All Outlets: Weekly Trends

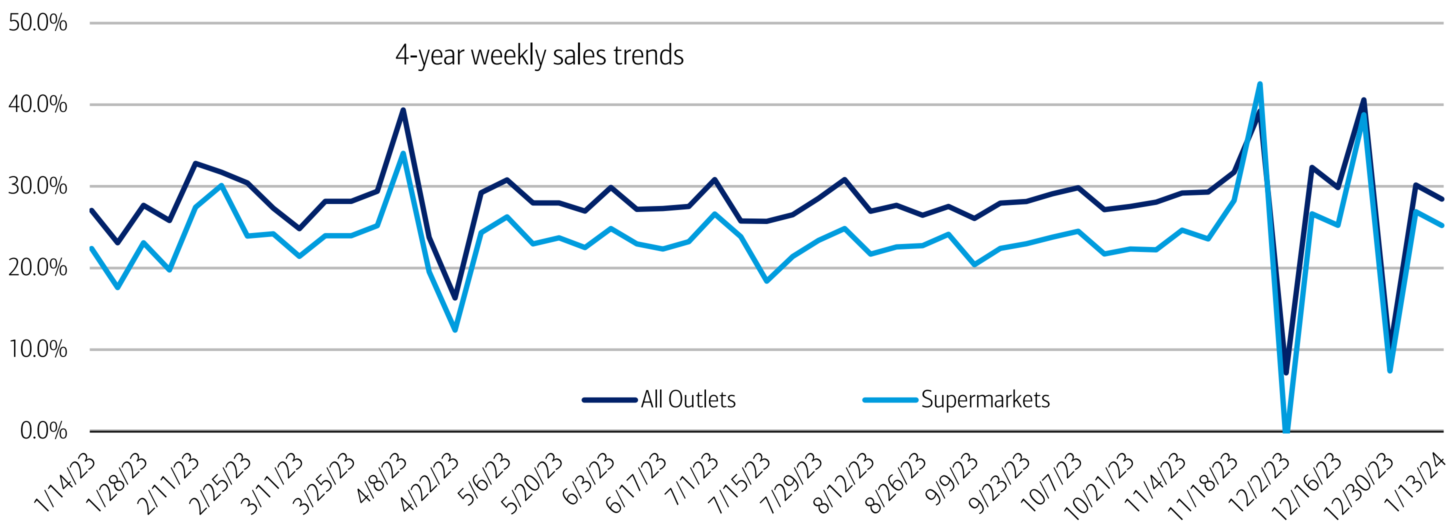
Exhibit 18: Conventional supermarket vs. All Outlets (incl. mass and drug) total store weekly y/y % sales growth
Sales growth for both Supermarkets and the AOC channel were positive y/y in the first 2 weeks of January. We note that the first week of January may have benefitted from the inclusion of New Year's Eve (which was included in the last week of December last year)



Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 19: Conventional supermarket vs. All Outlets (incl. mass and drug) total store weekly 4-year % sales growth
Moving past volatility related to holiday timing in November & December, 4-year sales growth was strong for both channels in the first 2 weeks of January

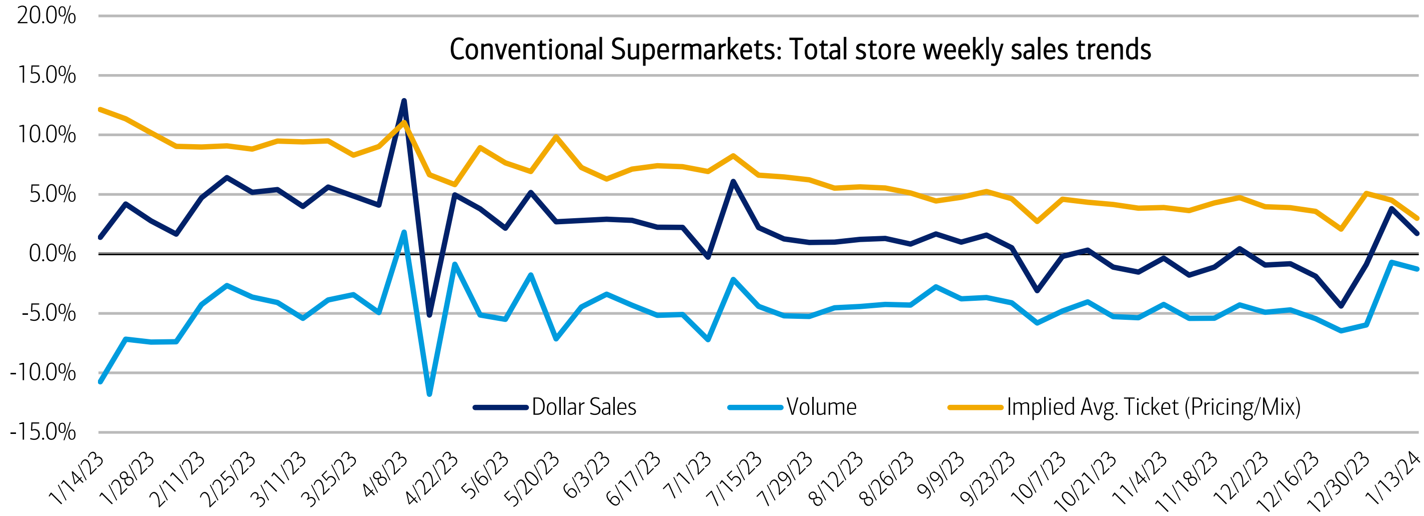


Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 20: Conventional Supermarket total store sales weekly y/y % change

Supermarket sales trends continue to reflect higher y/y ticket growth while volume remains negative

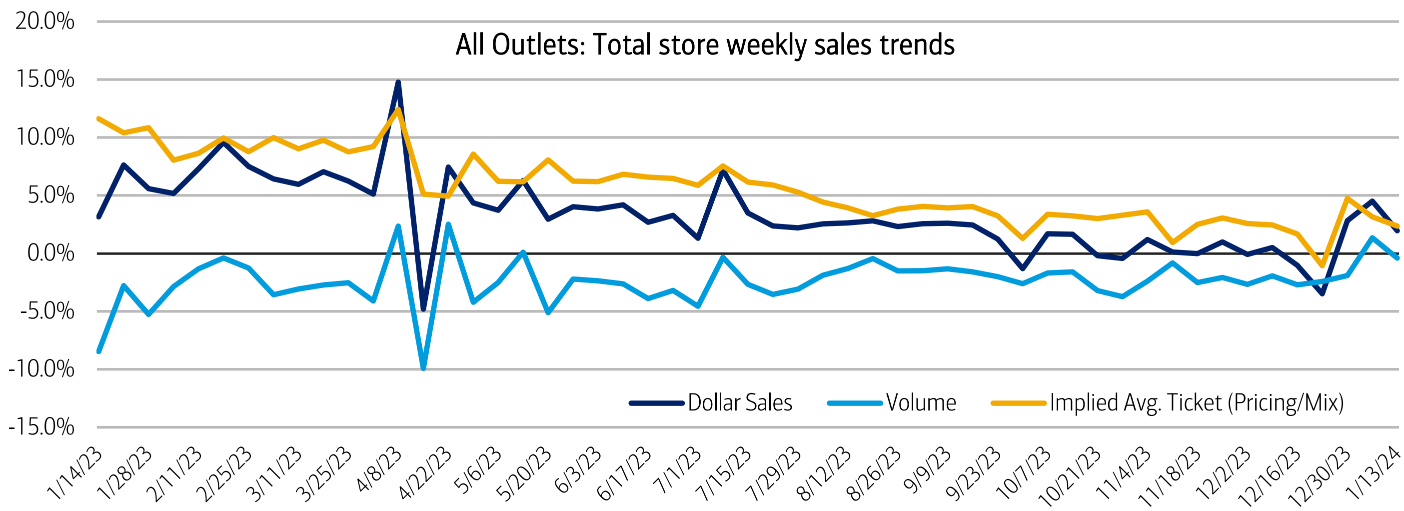


Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 21: All Outlets Combined (incl. drug & mass) total store sales weekly y/y % change

AOC sales trends continue to reflect higher y/y ticket growth (excl. 4th in week of December). Negative volume trends saw a positive inflection in the first week of January that moderated to slightly down/flattish (-0.4%) in the second week of Jan.



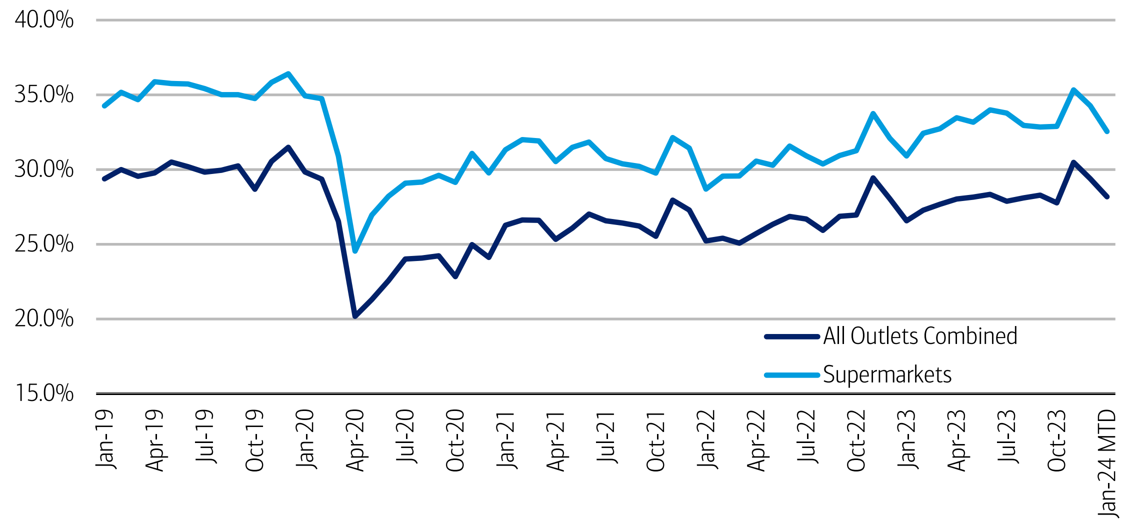
Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

Promotional Trends

Promotions were +6.1% y/y for Supermarkets & +5.0% y/y for AOC in January. For both channels, this marks the 17th straight month of higher y/y promos in contrast to negative trends we observed in the first ~half of 2022 likely reflecting cost pressure/availability challenges (after higher/normalizing y/y promos in 2021). However, promotions remain below pre-COVID levels in both channels (with promos on a 4-year basis tracking -6.2% for Supermarkets & -6.1% for AOC in the first half of January).

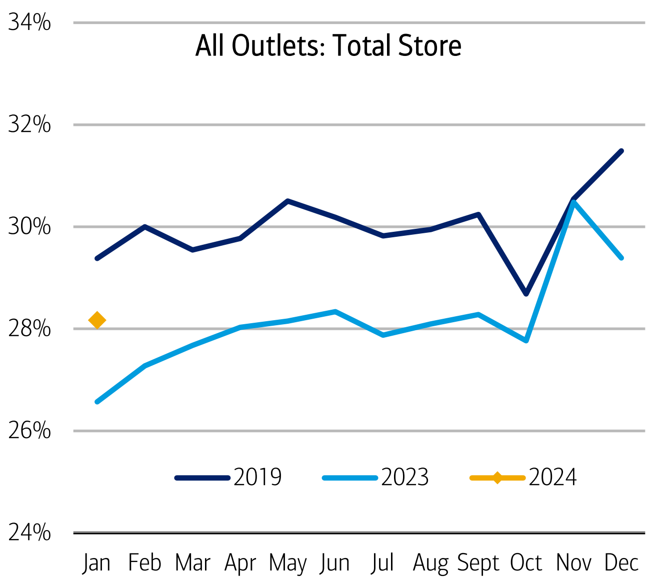
Exhibit 22: Supermarkets vs. All Outlets (incl. drug & mass) total store monthly % of sales on promotion
Excluding volatility related to holiday timing in November & December, promotions still tracking below avg. levels of ~35% for supermarkets & ~30% for AOC in a normalized (pre-pandemic) environment



Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

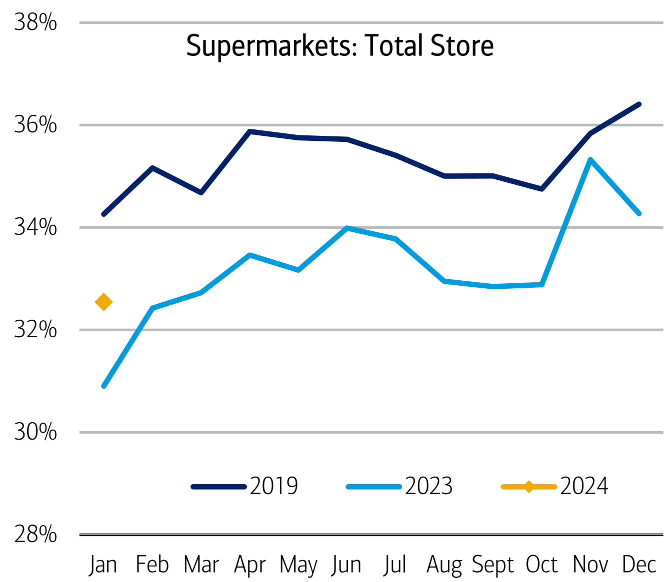
Exhibit 23: AOC total store monthly % of sales on promotion
AOC promos up vs. last year, but down vs. 2019



Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

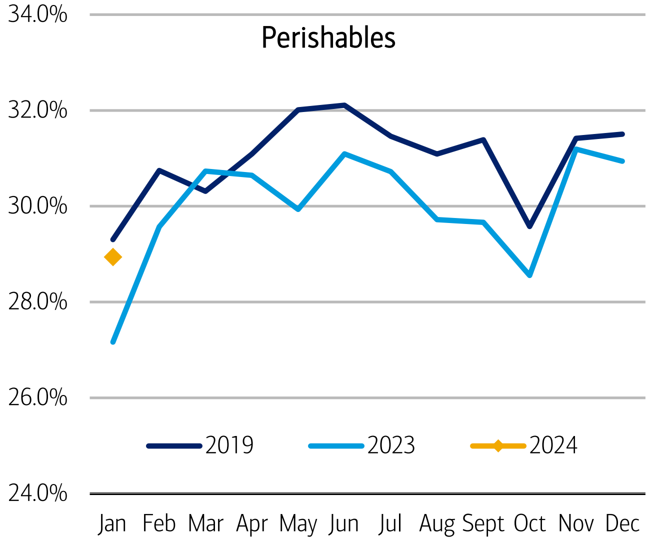
Exhibit 24: Supermarkets total store monthly % of sales on promo
Supermarket promos up vs. last year, but below 2019



Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

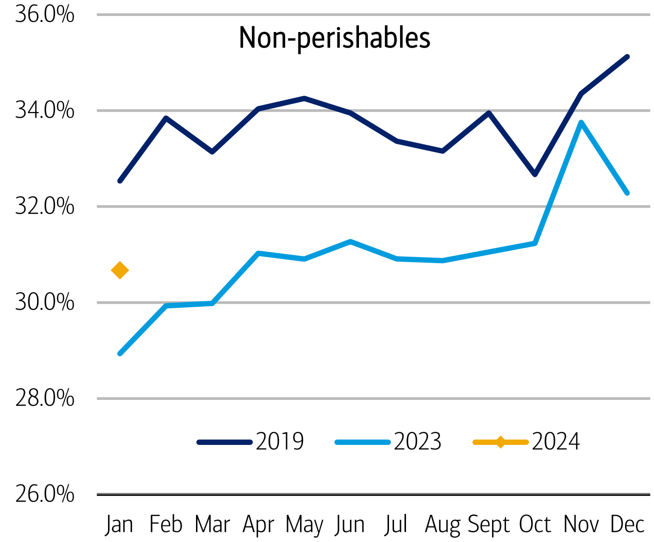
Exhibit 25: AOC perishables monthly % of sales on promotion
Perishable promos up vs. last year, slightly down vs. 2019



Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

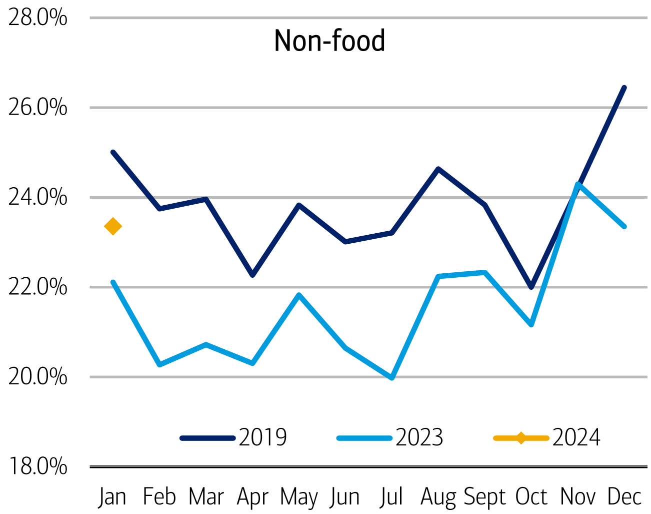
Exhibit 26: AOC non-perishables monthly % of sales on promotion
Non-perishable promos up vs. last year, but below 2019



Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

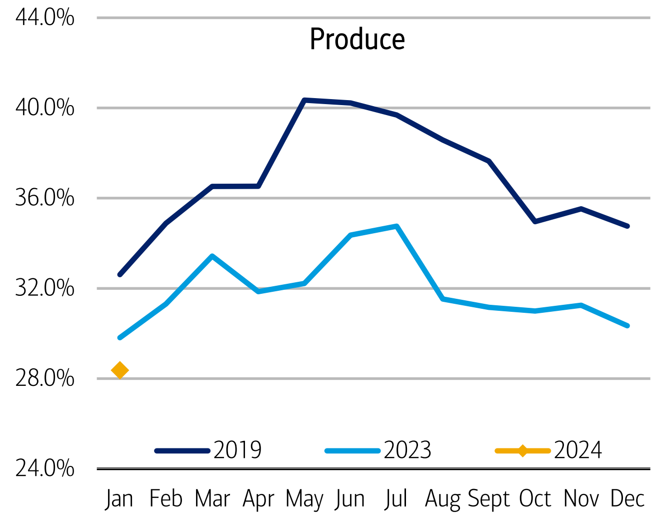
Exhibit 27: AOC non-food monthly % of sales on promotion
Non-food promos up vs. last year, down vs. 2019



Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

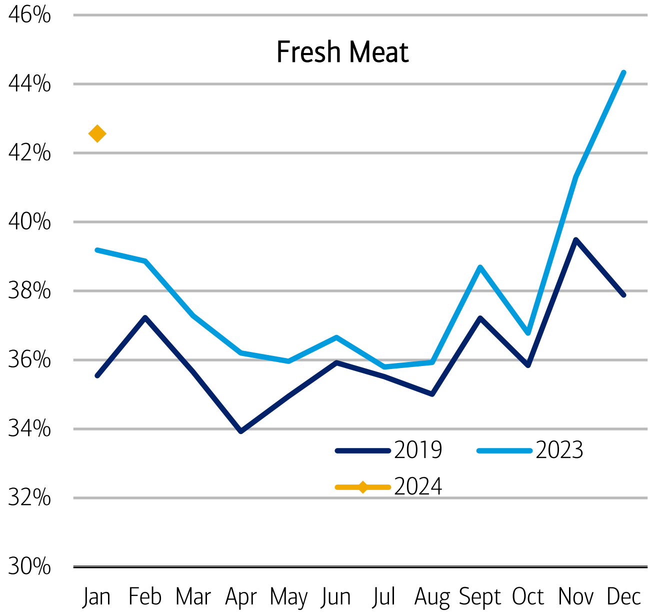
Exhibit 28: AOC produce monthly % of sales on promotion
Produce promos down vs. levels last year & in 2019



Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

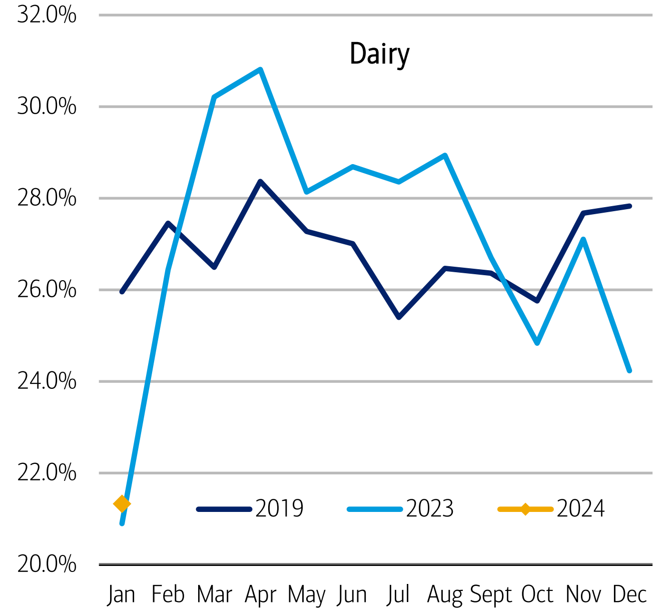
Exhibit 29: AOC fresh meat monthly % of sales on promotion
Meat promos well above levels last year & in 2019



Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 30: AOC dairy monthly % of sales on promotion
Dairy promos slightly up vs. last year, well below 2019



Source: Nielsen, BofA Global Research

BofA GLOBAL RESEARCH

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 BofAS 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.bofaml.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 (HKSFC); 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 HKSFC; 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:

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 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.