

Retailing - Hardlines

Monthly hardline retail spending snapshot:
goods spending took a vacation in June

Industry Overview

Hardline spending trends turned worse in June

We provide an update on consumer spending in hardline retail categories for June 2023, with weekly details in the charts on pages 2-11 through July 8th. For June we observed a sequential decline from May in most categories. We continue to see stronger YoY spending in pet specialty retail and auto parts (consistently the most resilient sectors), and stronger trends in services (auto maintenance, car wash, and housing-related services) than goods. See the [BofA on USA](#) note for an explanation of the methodology, disclaimers and limitations with aggregated credit and debit BAC card data.

Home improvement ticked back down in June as expected

For the month of June '23 spending at home improvement retailers declined (6.4)%, softening from (0.5)% YoY growth in May '23, per BAC aggregated card data. Spending on housing-related services was also lower YoY in June '23, falling (3.3)% YoY compared to +2.2% YoY in May '23. Per our proprietary [RENO barometer](#), we had expected another brief dip in June, with sequential improvement in YoY spending trends modeled in 2H23. We recently hosted the [2nd annual BofA Housing Symposium](#), which included a Home Improvement Outlook panel that generally supported our view that home improvement demand should hold steady for the full year, but with some bumps in monthly trends.

Pool supplies didn't warm up yet by June

For the month of June '23 spending at pool supplies retailers was (8.1)% lower YoY vs (5.9)% YoY in May '23, per BAC aggregated card data. Our recent pool expert call on 10 July 2023 had some positive implications for pool supplies demand in July as several regions have experienced record-level heat.

Furnishings slightly better than May, but still down YoY

For the month of June '23 spending on furniture was down (11.9)% YoY vs (12.9)% YoY in May '23, per BAC aggregated card data. Home goods declined (18.8)% vs (18.9)% YoY for the prior month.

CE & hobby fluctuating around 2019 levels

For the month of June '23 spending at consumer electronics (CE) & hobby retailers was down (6.9)% YoY, which was a sequential improvement from (9.8)% YoY in May '23, per BAC aggregated card data. CE and home goods are the only categories of hardline retail we track where spending has corrected all the way back to 2019 levels.

Pet specialty: continues to exhibit positive YoY growth

Spending at pet specialty retailers was up +2.7% YoY in June '23 vs +2.2% YoY in May '23, per BAC aggregated card data. The category is consistently one of the strongest in hardlines in terms of spending trends.

Auto parts & services: car wash remains the standout

In June '23 spending at auto parts retailers was up 0.1% YoY vs +0.7% YoY in May, per BAC aggregated card data. Spending on pro auto services grew 0.6% YoY vs. 4.3% YoY in May and spending on car washes grew +9.7% YoY in June vs +11.3% YoY in May.

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 13 to 14.

12578826

Timestamp: 13 July 2023 05:26AM EDT

13 July 2023

Equity
United States
Retailing-HardlinesBofA
Data
Analytics

Elizabeth L. Suzuki
Research Analyst
BofA
+1 646 855 2547
elizabeth.suzuki@bofa.com

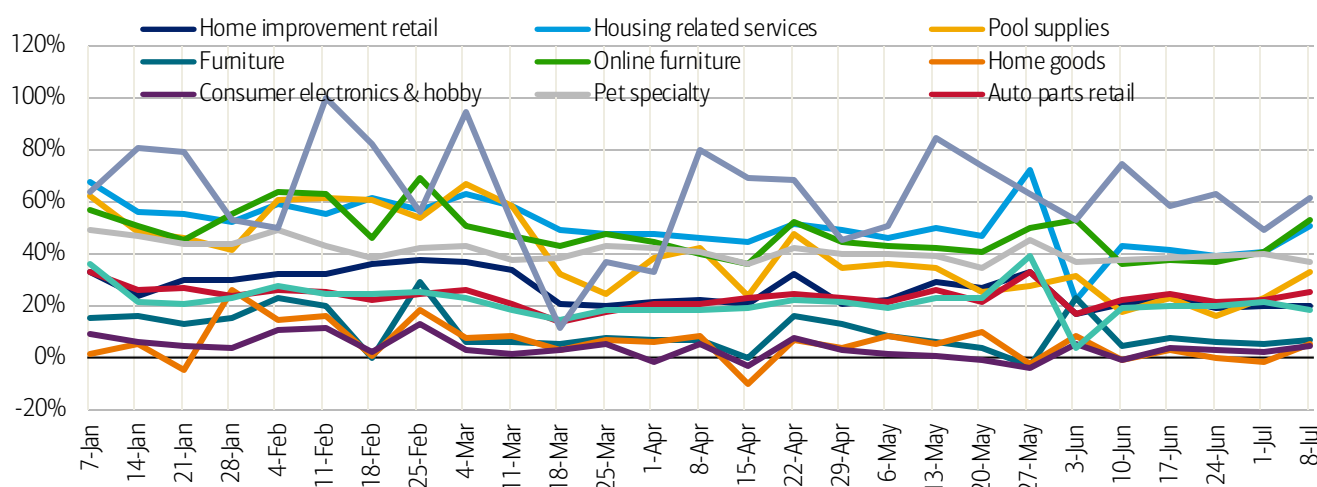
Jason Haas, CFA
Research Analyst
BofA
+1 646 743 0587
jason.haas@bofa.com

Putting spending in context vs 2019

We add charts of 4-year spending growth trends for hardline retail categories on a 7-day moving average of spending levels basis to illustrate the categories that are still running well above 2019 levels of spending (housing-related services, online furniture (card not present), pet specialty retail, pool supplies, and car wash), vs those which are back to a more normalized 4-year growth CAGR (home improvement retail, auto parts retail and auto services), vs which are approaching 2019 levels (furniture, home goods, and consumer electronics).

Exhibit 1: Weekly hardline retail spending – 4-year % change according to BAC aggregated credit and debit card data

Spending on hardline retail categories is generally still holding well above 2019 levels with the exception of furnishings and consumer electronics & hobby

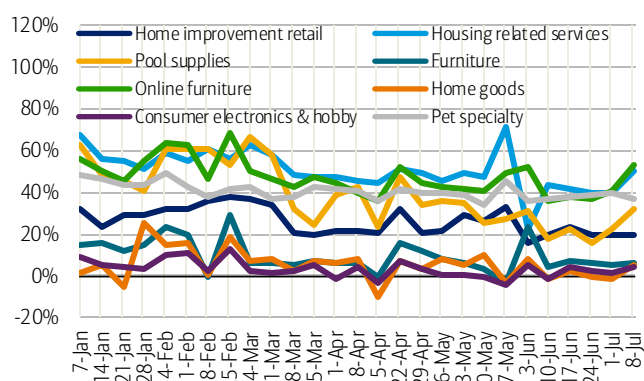


Source: BAC internal data

BofA GLOBAL RESEARCH

Exhibit 2: Weekly spending on home categories – 4-year % change according to BAC aggregated credit and debit card data

Among home categories, housing-related services, online furniture (card not present), and pool supplies remain well above 2019 levels. Home improvement spending has returned to a normalized 4-yr CAGR, and furnishings spending is returning to 2019 levels. Consumer electronics & hobby and home goods are the only categories at '19 levels.

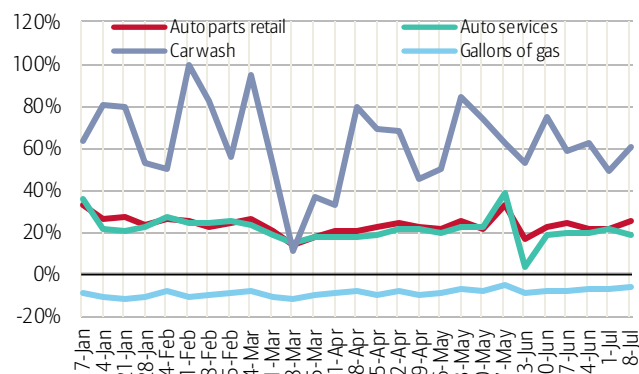


Source: BAC internal data Card not present is largely online but could include purchases made over the phone.

BofA GLOBAL RESEARCH

Exhibit 3: Weekly spending on auto aftermarket categories – 4-year % change according to BAC aggregated credit and debit card data

In auto aftermarket categories, car wash spending remains well above 2019 levels. Auto parts and services are close to a normalized 4-yr CAGR, but drivers are still buying fewer gallons of gas than in 2019.



Source: BAC internal data

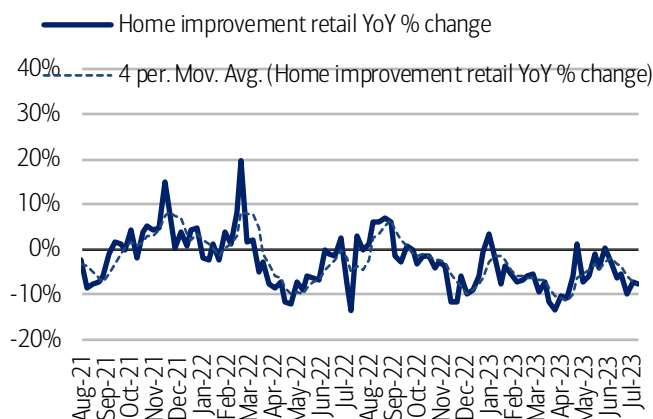
BofA GLOBAL RESEARCH

For all weekly charts, we add 4-week moving averages (4 Per. Mov. Avg in the charts to follow) to smooth out the YoY comparison impact of holiday timing.

Home improvement

Exhibit 4: Weekly home improvement retail spending growth, YoY% change according to BAC aggregated credit and debit card data

For the five weeks ending 7/8, average daily spending at home improvement retailers decreased (7.2)% compared to a (2.7)% YoY decline for the five weeks ending 6/3.

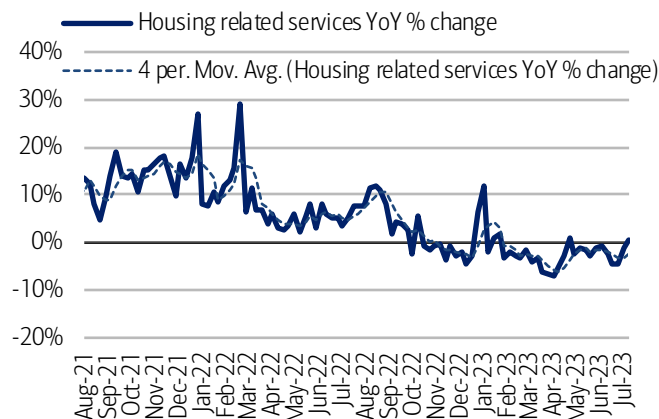


Source: BAC internal data
Dotted lines are 4-week moving averages

BofA GLOBAL RESEARCH

Exhibit 5: Weekly housing-related services spending growth, YoY% change according to BAC aggregated credit and debit card data

For the five weeks ending 7/8, average daily spending on professional housing-related services declined (2.5)% YoY compared to a (1.5)% YoY decline for the five weeks ending 6/3.

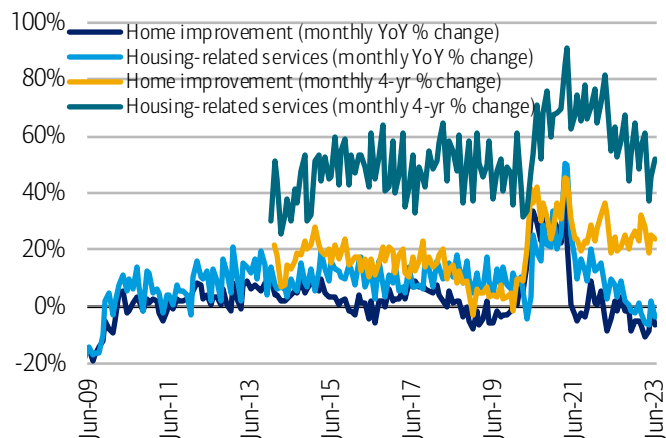


Source: BAC internal data
Dotted lines are 4-week moving averages

BofA GLOBAL RESEARCH

Exhibit 6: Monthly BAC aggregated card data at home improvement retailers and housing related services (YoY and 4-yr change)

In June '23 home improvement retail spending decreased (6.4)% YoY (+24.0% on a 4-yr basis), declining from (0.5)% YoY in May '23 (+25.3% on a 4-yr basis)

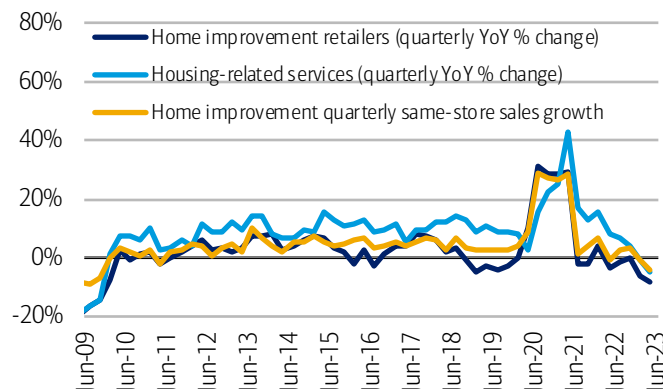


Source: BAC internal data

BofA GLOBAL RESEARCH

Exhibit 7: Reported home improvement quarterly same-store sales growth (average of reported HD and LOW quarterly same-store sales growth) vs. BAC aggregated card data at home improvement retailers and housing related services

Average same-store sales growth for Home Depot and Lowe's has generally tracked in line with home improvement retail and services growth. We expect recovery in 2H23, with 1Q23 as the trough in YoY spending growth.



Source: BAC internal data, Company reports

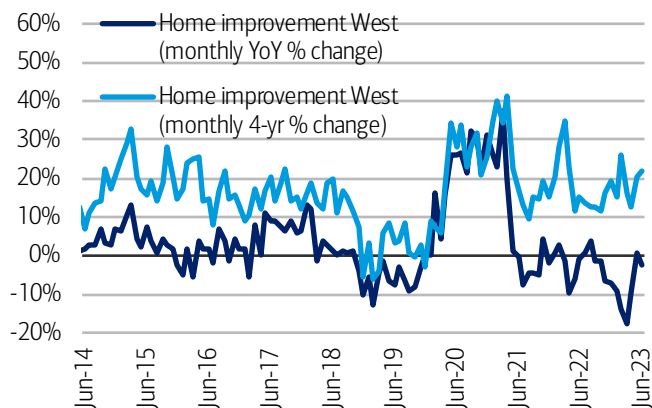
BofA GLOBAL RESEARCH



Regional home improvement trends

Exhibit 8: Monthly BAC aggregated card data at home improvement retailers in the West region (YoY and 4-yr change)

For the month of June '23 spending at home improvement retailers in the West region declined (2.3)% YoY (21.7% 4-yr growth) vs +0.7% YoY in May '23 (+20.4% 4-yr growth).

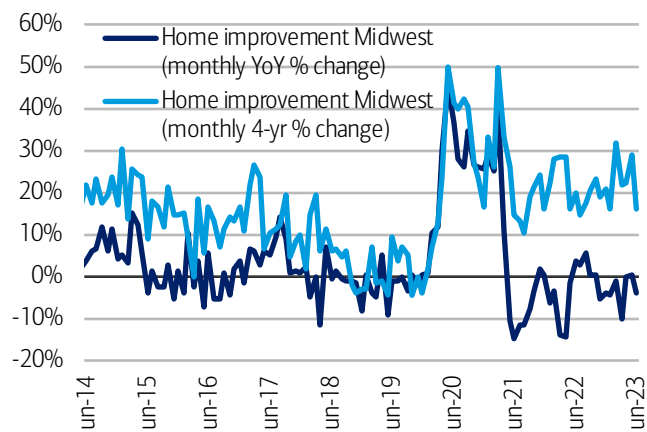


Source: BAC internal data

BofA GLOBAL RESEARCH

Exhibit 9: Monthly BAC aggregated card data at home improvement retailers in the Midwest region (YoY and 4-yr change)

For the month of June '23 spending at home improvement retailers in the Midwest region declined (3.9)% YoY (+16.1% 4-yr growth) vs +0.5% YoY in May '23 (+28.9% 4-yr growth).

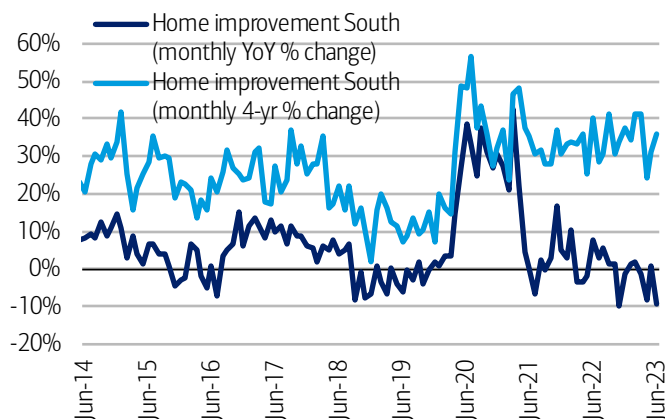


Source: BAC internal data

BofA GLOBAL RESEARCH

Exhibit 10: Monthly BAC aggregated card data at home improvement retailers in the South region (YoY and 4-yr change)

Spending at home improvement retailers in the South region declined (9.1)% YoY in June (+35.9% 4-yr growth) vs +0.9% YoY in May (+31.4% 4-yr growth).

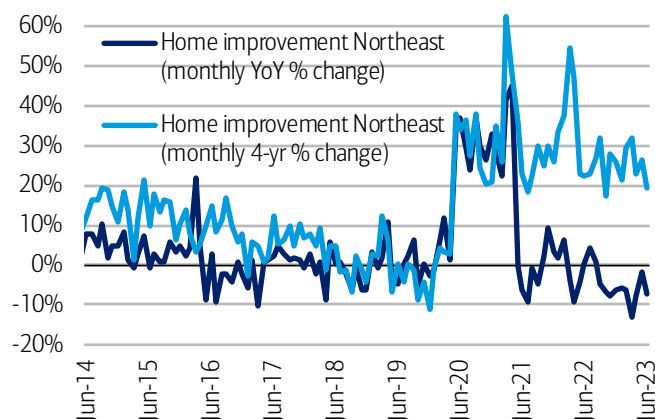


Source: BAC internal data

BofA GLOBAL RESEARCH

Exhibit 11: Monthly BAC aggregated card data at home improvement retailers in the Northeast region (YoY and 4-yr change)

Spending at home improvement retailers in the Northeast region declined (7.3)% YoY in June '23 (+19.2% 4-yr growth) vs (1.5)% YoY in May '23 (+26.5% 4-yr growth).



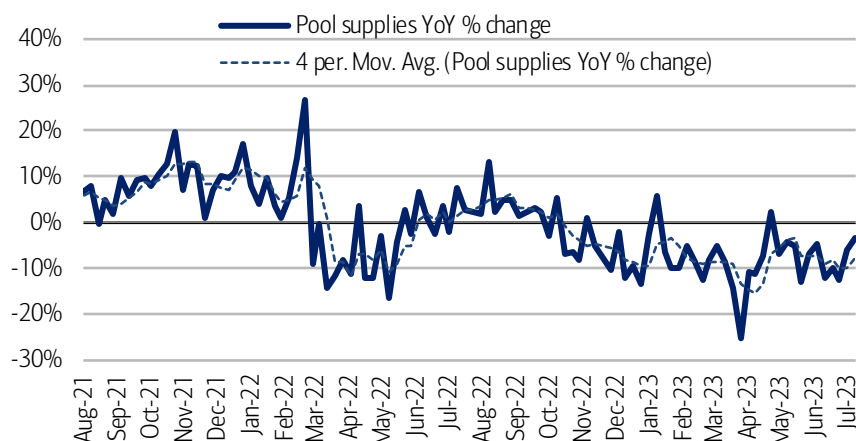
Source: BAC internal data

BofA GLOBAL RESEARCH

Pool supplies retail

Exhibit 12: Weekly pool supplies spending growth, YoY% change according to BAC aggregated credit and debit card data

For the five weeks ending 7/8 average daily spending at pool supplies retailers dropped (8.7)% YoY compared to a (6.6)% YoY decline for the five weeks ending 6/3.

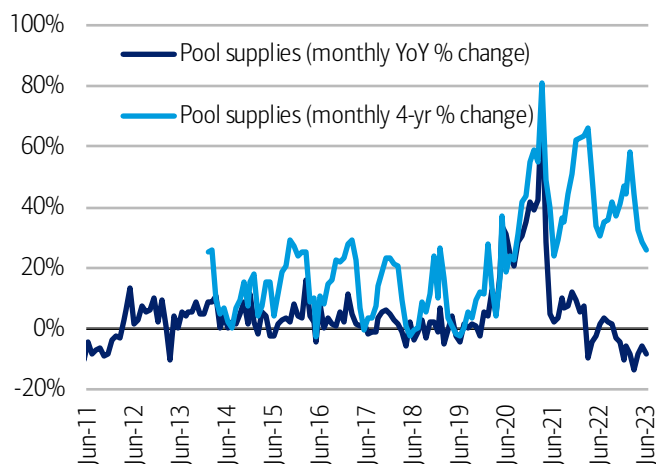


Dotted lines are 4-week moving averages

BofA GLOBAL RESEARCH

Exhibit 13: Monthly BAC aggregated card data at pool supplies retailers (YoY and 4-yr change)

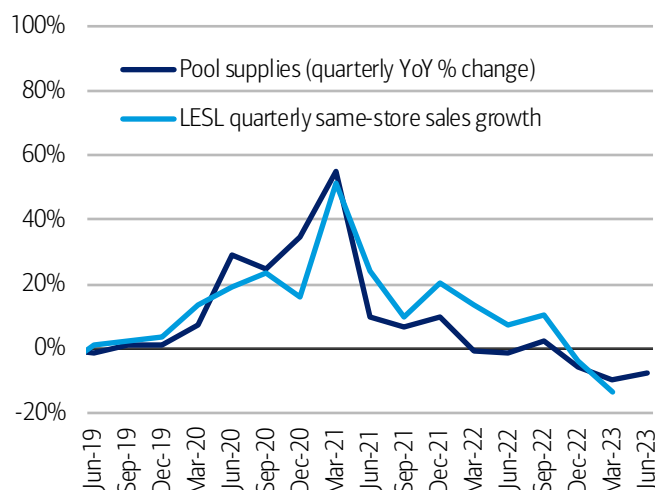
For the month of June '23, pool supplies retail spending fell (8.1)% YoY (+25.9% on a 4-year basis) vs (5.9)% YoY in May (+28.8% on a 4-yr basis)



BofA GLOBAL RESEARCH

Exhibit 14: LESL reported quarterly same-store sales growth vs. Quarterly BAC aggregated card data at pool supplies retailers

Pool supplies spending has contracted and correlated to negative same-store sales growth for retailers in 2Q23 (quarter ending Mar-23). Industry spending data stabilized in the quarter ending Jun-23 per BAC aggregated card data.



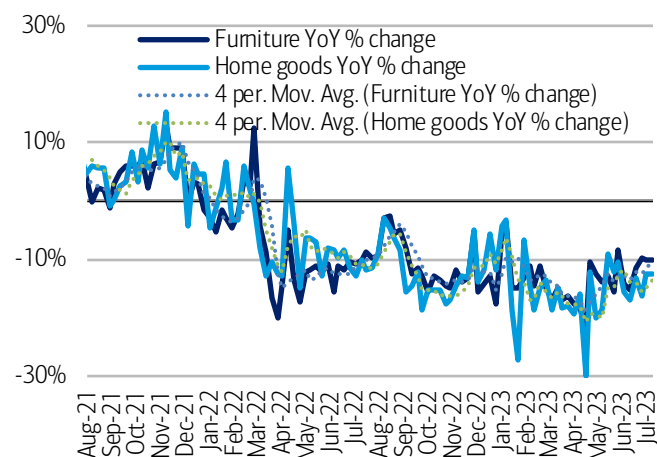
BofA GLOBAL RESEARCH



Home furnishings

Exhibit 15: Weekly furniture and home goods spending growth, YoY% change according to BAC aggregated credit and debit card data

For the five weeks ending 7/8 average daily spending at furniture retailers dropped (11.3)% YoY compared to a (13.0)% YoY decline for the five weeks ending 6/3. Average daily spending on home goods dropped (14.4)% YoY compared to a (13.2)% YoY decline the prior five weeks.

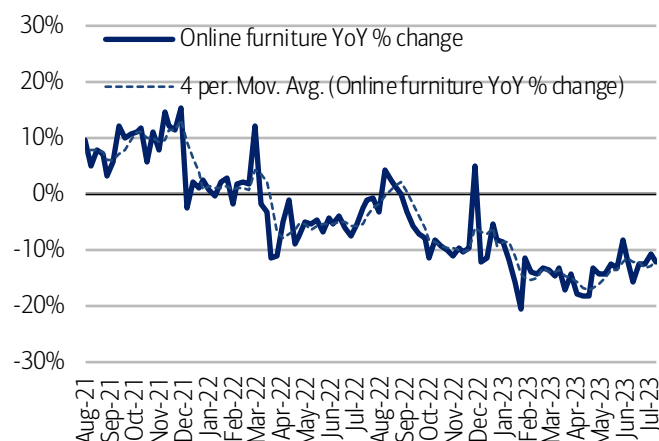


Source: BAC internal data
Dotted lines are 4-week moving averages

BofA GLOBAL RESEARCH

Exhibit 16: Weekly online furniture spending growth (card not present), YoY% change according to BAC aggregated credit and debit card data

For the five weeks ending 7/8 average daily online furniture spending dropped (12.7)% YoY compared to (12.0)% YoY for the five weeks ending 6/3

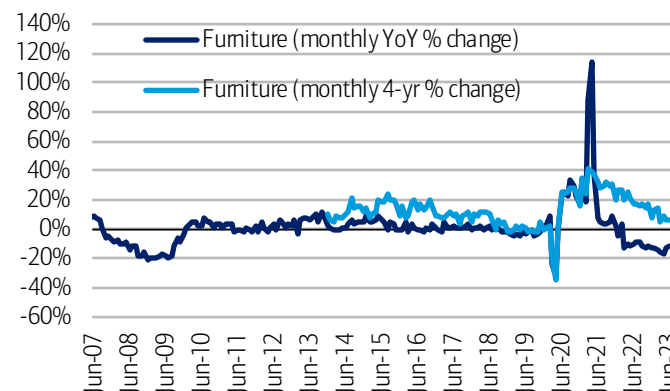


Source: BAC internal data
Dotted lines are 4-week moving averages

BofA GLOBAL RESEARCH

Exhibit 17: Monthly BAC aggregated card data at furniture retailers

Furniture spending dropped (11.9)% YoY in June '23 (+6.3% 4-yr growth) vs (12.9)% YoY in May '23 (+7.0% 4-yr growth).

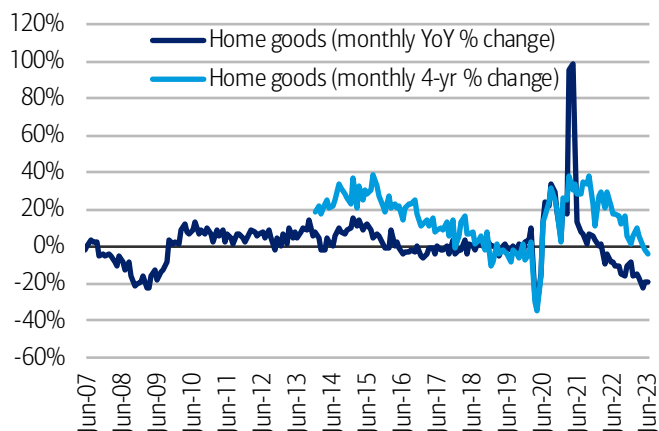


Source: BAC internal data

BofA GLOBAL RESEARCH

Exhibit 18: Monthly BAC aggregated card data at home goods retailers

Home goods spending dropped (18.8)% YoY in June '23 (-3.8% 4-yr growth) vs (18.9)% YoY in May '23 (-2.2% 4-yr growth)

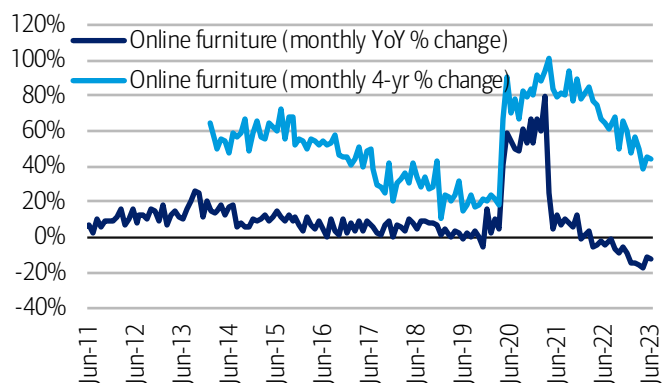


Source: BAC internal data

BofA GLOBAL RESEARCH

Exhibit 19: Monthly BAC aggregated card data at online furniture retailers (card not present)

Online furniture spending dropped (12.8)% YoY in June '23 (+44.7% 4-yr growth) vs (10.6)% YoY in May '23 (45.4% 4-yr growth)

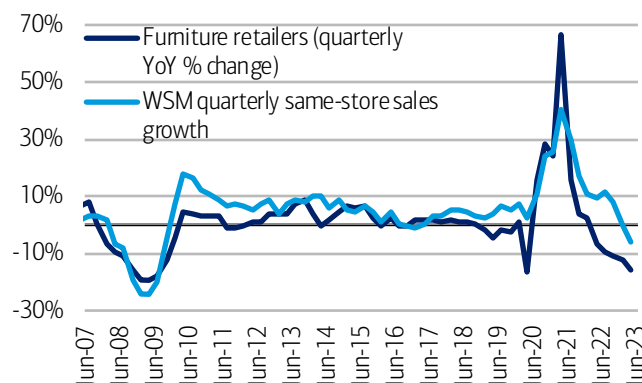


Source: BAC internal data

BofA GLOBAL RESEARCH

Exhibit 20: Reported WSM quarterly same-store sales growth vs. quarterly BAC aggregated card data at furniture retailers

Quarterly YoY growth in spending at furniture retailers has quickly dropped from the peak in 1Q21 into negative territory from 4Q21 onward, while WSM's sales growth held up relatively better than the category average.



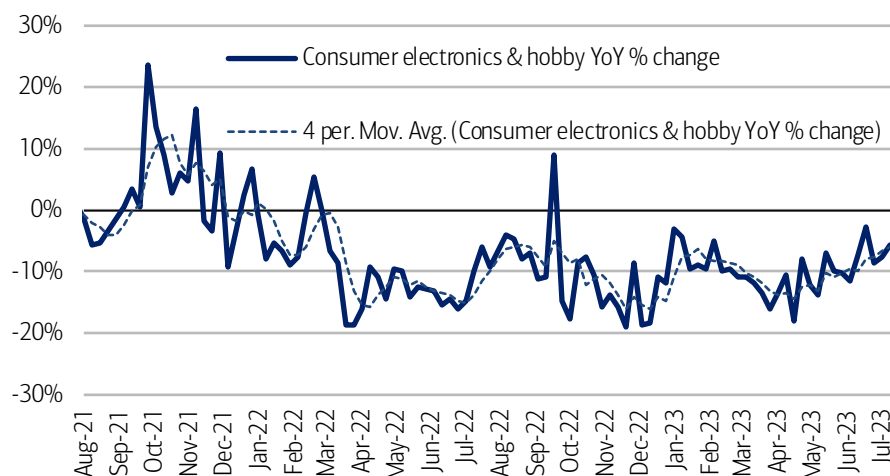
Source: BAC internal data, Company reports

BofA GLOBAL RESEARCH

Consumer electronics & hobby retail

Exhibit 21: Weekly consumer electronics & hobby retail spending growth, YoY change according to BAC aggregated credit and debit card data

For the five weeks ending 7/8, average daily spending at consumer electronics & hobby retailers dropped (6.3)% YoY compared to (10.5)% YoY for the five weeks ending 6/3.



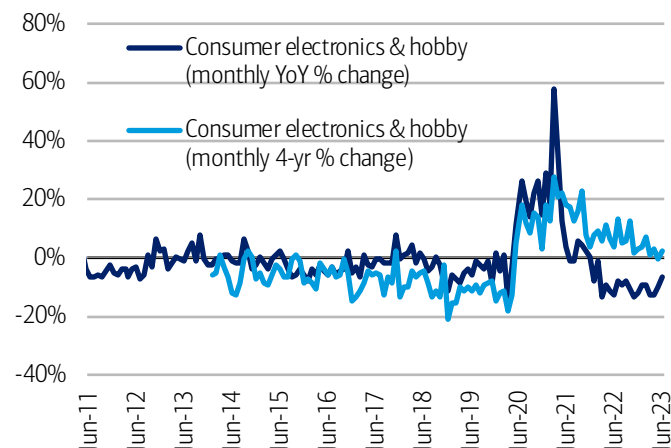
Source: BAC internal data

Dotted lines are 4-week moving averages

BofA GLOBAL RESEARCH

Exhibit 22: Monthly BAC aggregated card data at consumer electronics & hobby retailers

Consumer electronics & hobby spending was down (6.9)% YoY in June '23 (+2.4% 4-yr growth) vs (9.8)% YoY in May '23 (-0.1% on a 4-yr basis)

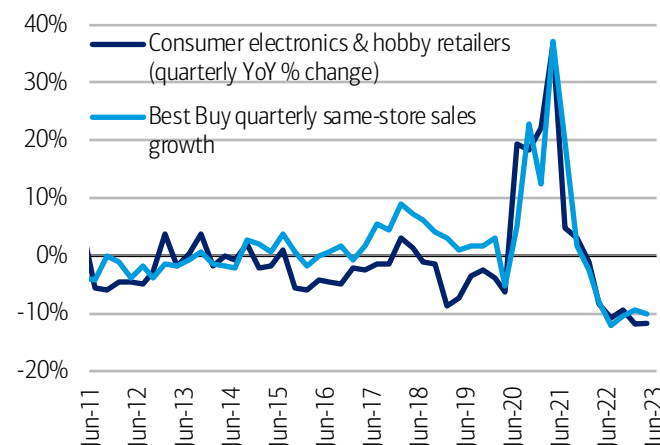


Source: BAC internal data

BofA GLOBAL RESEARCH

Exhibit 23: Reported Best Buy quarterly same-store sales growth vs. quarterly BAC aggregated card data at consumer electronics & hobby retailers

Since the start of the pandemic, quarterly same-store sales growth reported by Best Buy has been consistent with BAC card spending data trends.



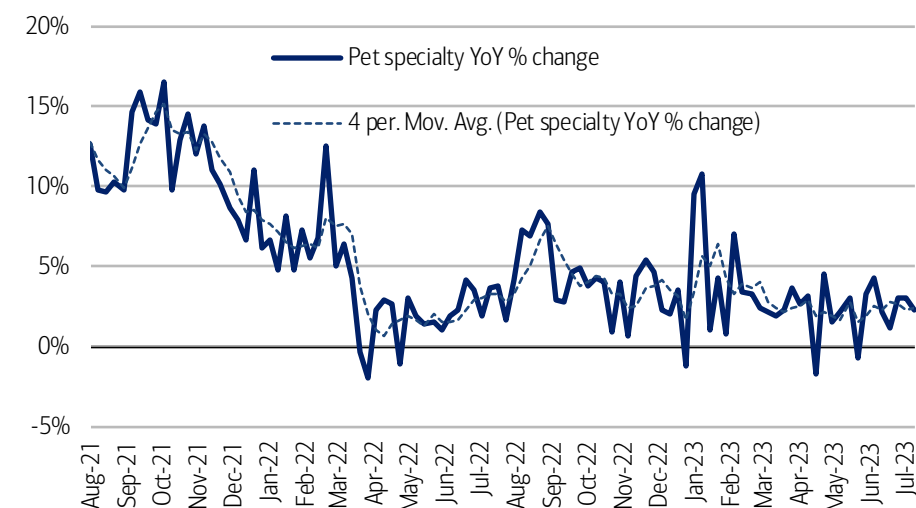
Source: BAC internal data, Company reports

BofA GLOBAL RESEARCH

Pet specialty retail

Exhibit 24: Weekly pet specialty retail spending growth, YoY % change according to BAC aggregated credit and debit card data

For the five weeks ending 7/8, average daily spending at pet specialty retailers grew 2.4% YoY, consistent with +2.4% YoY for the five weeks ending 6/3.



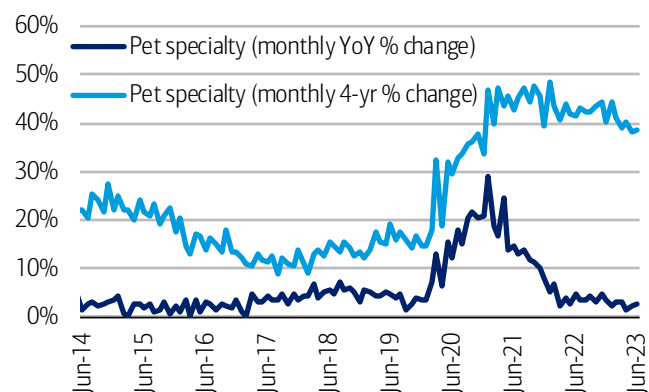
Source: BAC internal data

Dotted lines are 4-week moving averages

BofA GLOBAL RESEARCH

Exhibit 25: Monthly BAC aggregated card spending at pet specialty retailers

Pet specialty retail spending was up 2.7% YoY in June (+38.7% 4-yr growth) vs +2.2% YoY in May '23 (+38.1% 4-yr growth)

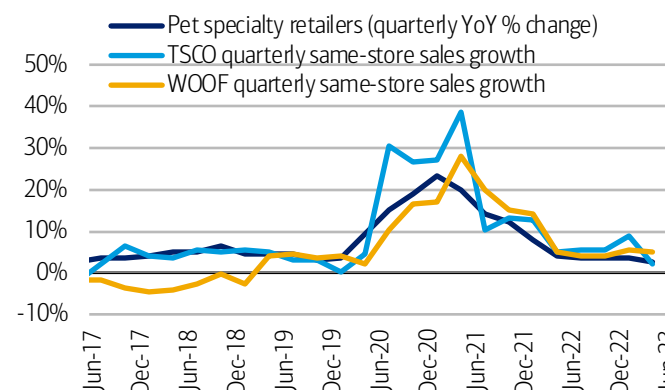


Source: BAC internal data

BofA GLOBAL RESEARCH

Exhibit 26: Reported pet specialty retail quarterly same-store sales growth (average of reported TSCO and WOOF quarterly same-store sales growth) vs. quarterly BAC aggregated card data at furniture retailers

Quarterly comps reported by TSCO and WOOF have been directionally consistent with BAC aggregated card data.



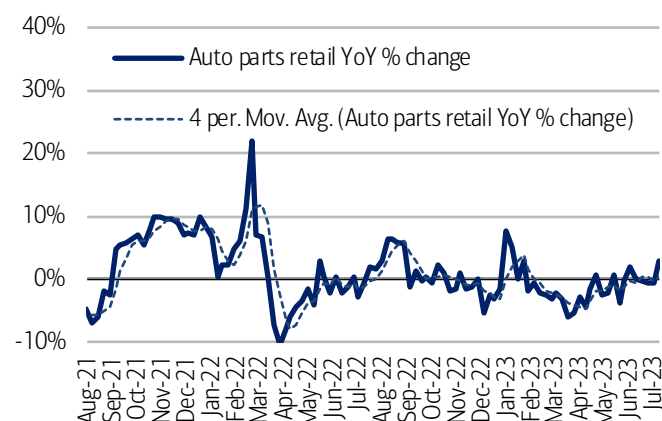
Source: BAC internal data

BofA GLOBAL RESEARCH

Auto parts and service

Exhibit 27: Weekly auto parts retail spending growth, YoY % change according to BAC aggregated credit and debit card data

For the five weeks ending 7/8, average daily spending at auto parts retailers grew 0.2% YoY compared to a (0.7)% YoY decline for the five weeks ending 6/3.



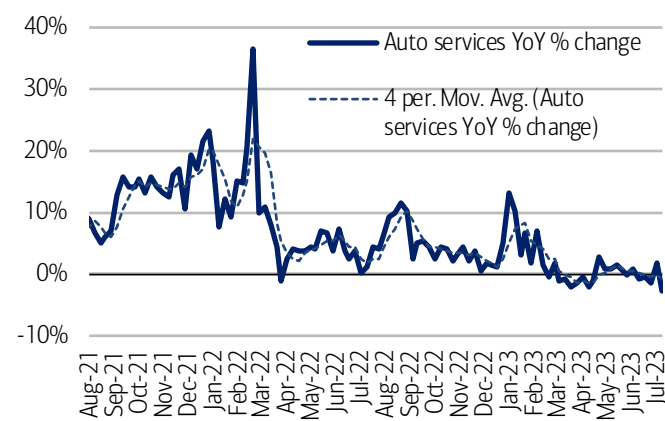
Source: BAC internal data

Dotted lines are 4-week moving averages

BofA GLOBAL RESEARCH

Exhibit 28: Weekly auto services spending growth, YoY % change according to BAC aggregated credit and debit card data

For the five weeks ending 7/8, average daily spending on professional auto services declined 0.7% YoY compared to +0.7% YoY for the five weeks ending 6/3.



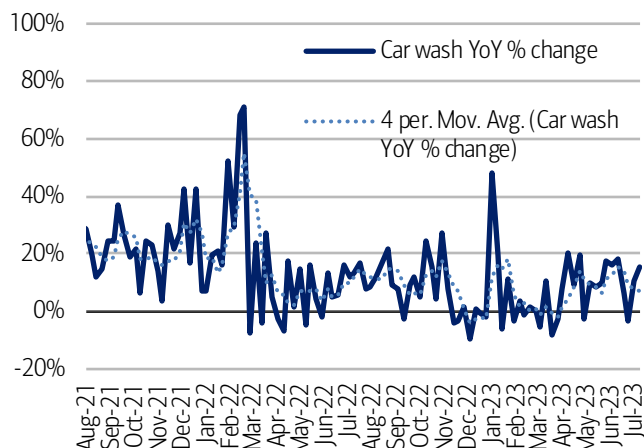
Source: BAC internal data

Dotted lines are 4-week moving averages

BofA GLOBAL RESEARCH

Exhibit 29: Weekly car wash spending growth, YoY% change according to BAC aggregated credit and debit card data

For the five weeks ending 7/8 average daily spending at car washes grew 9.5% YoY compared to 12.2% YoY for the prior five weeks ending 6/3.

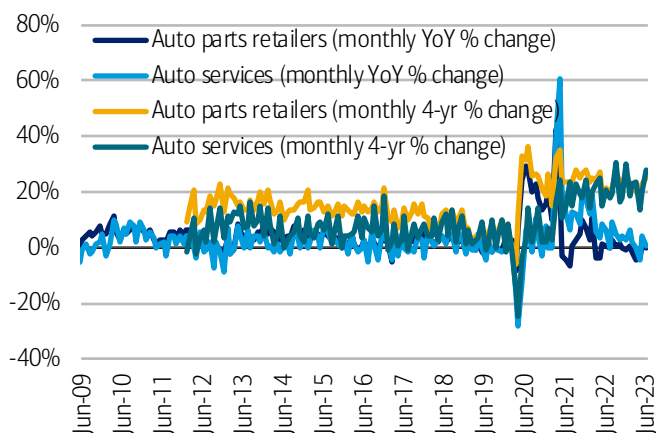


Source: BAC internal data
Dotted lines are 4-week moving averages

BofA GLOBAL RESEARCH

Exhibit 31: Monthly BAC aggregated card data at auto parts retailers and auto services (YoY and 4-year change)

Auto parts retail spending was up 0.1% YoY in June '23 (+24.8% 4-yr growth) vs +0.7% YoY in May '23 (+22.9% 4-yr growth). Auto services spending grew 0.6% YoY in June '23 (27.7% 4-yr growth) vs +4.3% YoY in May '23 (+19.9% 4-yr growth)

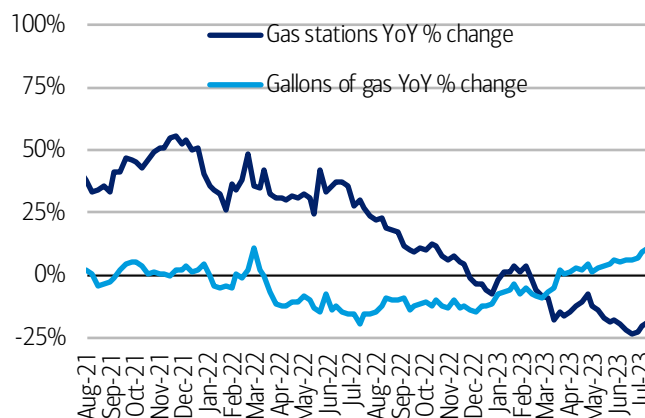


Source: BAC internal data

BofA GLOBAL RESEARCH

Exhibit 30: Weekly gasoline spending growth, YoY % change according to BAC aggregated credit and debit card data

For the five weeks ending 7/8, average daily spending at gas stations fell (21.5)% YoY compared to (17.3)% YoY the prior five weeks. We estimate that 7.8% more gallons of gas were purchased over the five weeks ending 7/8 than a year ago, compared to 4.5% YoY purchased over five weeks ending 6/3.

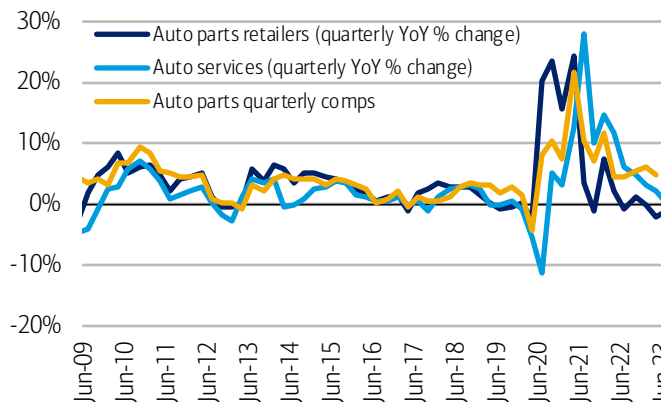


Source: Gas station sales - BAC internal data, Gas prices - Bloomberg, Estimated gallons purchased - BofA Global Research using gas station sales and gas prices to calculate a proxy
Dotted lines are 4-week moving averages

BofA GLOBAL RESEARCH

Exhibit 32: Quarterly auto parts comps (average of reported same-store sales growth for AAP, AZO, GPC, and ORLY) vs. BAC aggregated card data at auto parts retailers and auto services

YoY spending growth in auto services outpaced that of auto parts retail in 2Q21-2Q23.

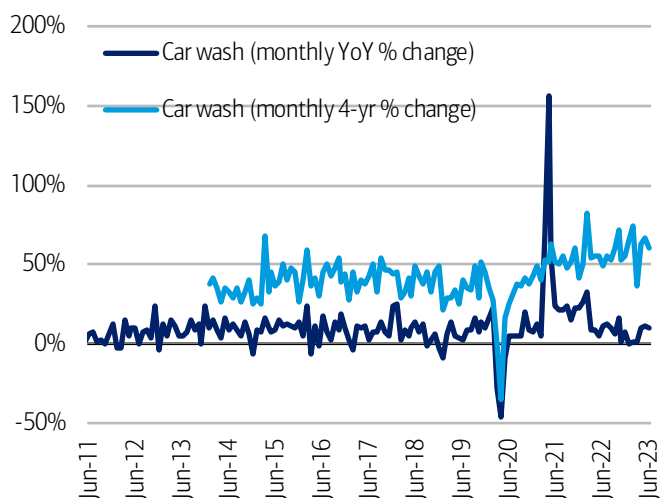


Source: BAC internal data, company reports

BofA GLOBAL RESEARCH

Exhibit 33: Monthly BAC aggregated card data at car washes (YoY and 4-year change)

Car wash spending grew 9.7% YoY in June '23 (+59.8% 4-yr growth) vs +11.3% YoY in May '23 (+66.2% 4-yr growth)

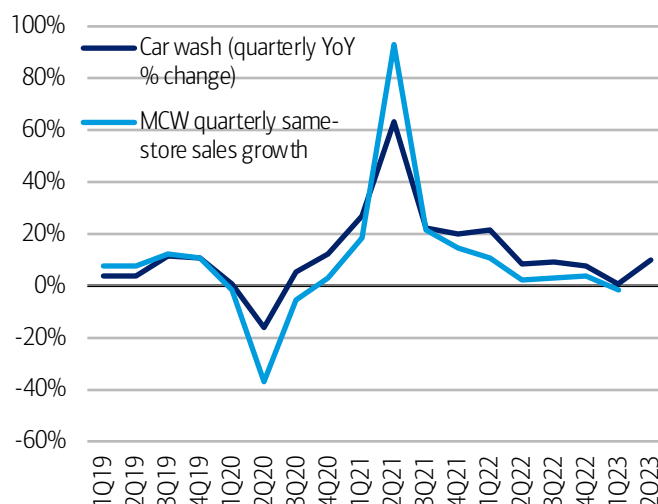


Source: BAC internal data

BofA GLOBAL RESEARCH

Exhibit 34: Quarterly MCW same-store sales growth vs. BAC aggregated card data at car washes

MCW quarterly same-store sales growth has followed the pattern of quarterly spending growth per BAC aggregated card data.



Source: BAC internal data, company reports

BofA GLOBAL RESEARCH

Exhibit 35: Data category and description

Merchants are categorized based on products/services they provide

Data category	Description
Home Improvement	Merchants that sell a wide range of home products and supplies
Housing-related services	Merchants/individual professionals that provide plumbing, flooring, painting, carpentry or other home-related services
Pool supplies	Merchants that serve residential, professional and commercial consumers and provide chemicals, equipment, parts for in/above-ground pools and water testing/pool cleaning services
Furniture	Merchants that sell furnishing items, such as sofas, dressers, tables, chairs
Home goods	Merchants that sell smaller articles of household equipment, such as cooking utensils, tableware and small kitchen appliances
Consumer electronics & hobby	Merchants that sell household appliances and electronic goods
Pet specialty	Merchants that sell pets, pet food, and pet supplies
Auto parts	Merchants that sell automobile parts and wholesale distributors of motor vehicle accessories, tools, equipment, and new parts
Auto service	Merchants that conduct automotive repairs and general servicing
Car wash	Merchants that wash, wax, and polish automobiles, including drive-through, custom hand wash, and do-it-yourself car wash locations
Gas station	Merchants that sell automotive gasoline using typically unattended automated fuel dispensers and the merchants may also have a convenience store
Gallons of gas purchased	BofA proxy for driving activity using gas station spending (see above) adjusted for changes in US average gas prices (per Bloomberg)

Source: BofA Global Research

BofA GLOBAL RESEARCH

Disclaimer and Methodology regarding BAC internal data

Selected Bank of America ("BAC") transaction data are used to inform the macroeconomic views expressed in this report and should be considered in the context of other economic indicators and publicly available information. In certain instances, the data may provide directional and/or predictive value. The data used are not

comprehensive; they are based on aggregated and anonymized selections of BAC data and may reflect a degree of selection bias and limitations on the data available.

Methodology explained

Readers should be aware that although the BAC datasets utilized in our analysis represent a significant number of data points, they nevertheless present a degree of selection bias, including but not limited to income levels and geographies. In addition, the data is limited to debit and credit cards and does not include other payment methods such as cash or checks.

Data regarding merchants who receive payments are identified and classified by the Merchant Categorization Code (MCC) defined by financial services companies. The data are mapped using proprietary methods from the MCCs to the North American Industry Classification System (NAICS), which is also used by the Census Bureau, in order to classify spending data by subsector. Spending data may also be classified by other proprietary methods not using MCCs.

BAC data used in this report include spending from active US households only. Spending from corporate cards are excluded.

Our methodology for calculating the growth rates for daily data: we calculate the %y/y growth rate and the 4-year % change by matching calendar days (Jan 1 2023 is matched to Jan 1 2022, and Jan 1, 2019, respectively). The % change is calculated based on the 7-day moving average of spending levels.

Additional information about the methodology used to aggregate the data is available upon request.

Other disclaimers

Gas station sales data includes two MCCs: Automated Fuel Dispensers and Service Stations. Therefore this data may include other items and services purchased at gas stations in addition to gasoline.

Methodology of estimating gallons of gas purchased: To estimate the YoY % change of daily gallons of gas purchased, we divide indexed daily gas station sales by indexed average US gas prices, and then calculate the YoY % change.

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/BofASEdiscclaimer; 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 Investment Industry Regulatory Organization of Canada; 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 2023 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.