

Internet/e-Commerce

BofA Internet Advertising Indicator rebounds in Dec; 4Q relatively stable vs 3Q

Industry Overview

BofA Internet Advertising Indicator improves to 0.13

The BofA Internet Advertising Indicator is a proprietary macro tool (using macro, consumer, and corporate factors) designed to identify inflection points and momentum in digital advertising revenue growth. In 4Q'23, the indicator had a minor m/m decline in Nov'23 to 0.09 (as Middle East conflict likely affected data & sentiment) but rebounded somewhat in Dec'23 to 0.13. Overall, the 3 months in 4Q averaged 0.13, slightly below the 3-month average for 3Q at 0.15. We would expect continued recovery in January.

Marco and consumer positive & corporate negative in Dec.

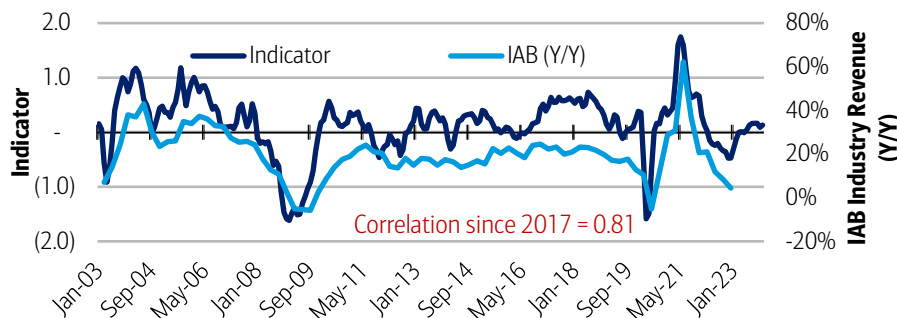
For macro, Fed's Weekly Economic Index reading increased 0.16pts m/m to 1.91 (positive), PMI increased 1pts m/m (positive) and avg. cash balance declined 0.2pts m/m to 4.5% (positive). For corporate, number of US Business Formation Applications slightly declined m/m to 457K (down 6k m/m), slightly negative. For consumer, BAC aggregated credit and debit card data, total indexed retail card spending per household was up 12% m/m (positive) and number of jobless claims declined 1% m/m to 1,834K (positive), overall net positive.

Stable y/y growth for the industry based on Dec IAI

Dec IAI reading suggests stable y/y growth for the basket, below potential acceleration suggested by our ad channel checks. In 4Q'23, we est. Google Properties y/y growth will accelerate 1pt to 13% y/y given easier comps, continued ad market recovery and potential AI tailwinds (increasing Performance Max adoption). We estimate Meta's ad revenue will decelerate 2pts q/q in 4Q, and we see modest upside based on the indicator and our channel checks. For Pinterest, we project 2pts of acceleration in y/y growth in 4Q & we currently estimate stable y/y growth for Snap in 4Q which has upside potential.

Exhibit 1: BofA Internet Advertising Indicator vs. IAB industry revenue growth (y/y)

The BofA Internet Advertising Indicator improved to 0.13 in December.



Source: Interactive Advertising Bureau, BofA Predictive Analytics, BofA Global Research

The BofA Internet Advertising Indicator is intended to be an indicative metric only and may not be used for reference purposes or as a measure of performance for any financial instrument or contract, or otherwise relied upon by third parties for any other purpose, without the prior written consent of BofA Global Research. This indicator was not created to act as a benchmark.

BofA GLOBAL RESEARCH

18 January 2024

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IAI: BofA Internet Advertising Indicator

IAB: Interactive Advertising Bureau

BAC: Bank of America

AI: Artificial Intelligence

ML: Machine Learning

FMS: Fund manager survey

PMI: Purchasing Managers' Index

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 9 to 14. Analyst Certification on page 8. Price Objective Basis/Risk on page 7.

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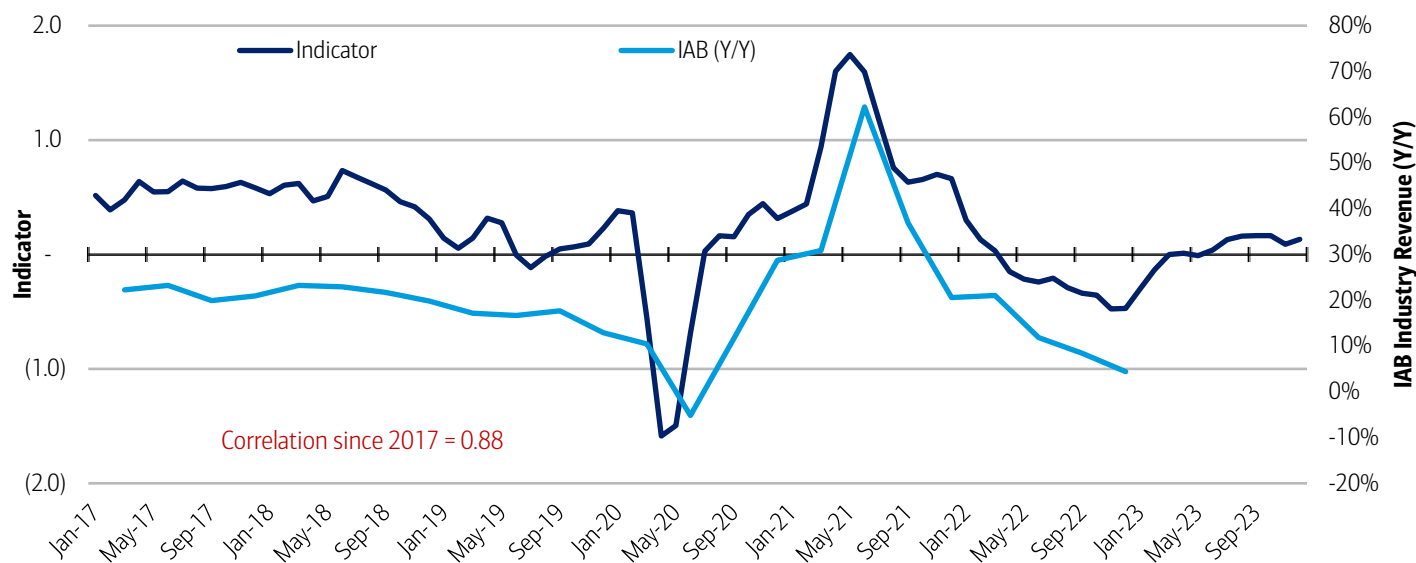
BofA's Internet Advertising Indicator

December improved after a decline in November

The BofA Internet Advertising Indicator (IAI) is a 2-month rolling average of six, equally weighted inputs that we found to have a high correlation with Internet advertising revenues in aggregate (0.81 correlation with Interactive Advertising Bureau revenues since 2003 and 0.88 since 2017). The IAI bottomed in Nov'22 and had significant improvement in 1H'23. In 4Q'23, the indicator saw a minor m/m decline in Nov'23 (as Middle East conflict affected data and sentiment) but suggests recovering ad demand in Dec'23 as indicator increased to 0.13 (vs 0.09 in Nov and 0.16 in Oct). The rebound in December was driven by improvement in the consumer and macro category offset by a slightly decline in corporate.

Exhibit 2: BofA Internet Advertising Indicator vs. IAB industry revenue growth (y/y), from 1Q'17

In Dec, the indicator improved to 0.13 driven by improvement in the consumer and macro category offset by a slightly decline in corporate.



Source: Interactive Advertising Bureau, BofA Predictive Analytics, BofA Global Research

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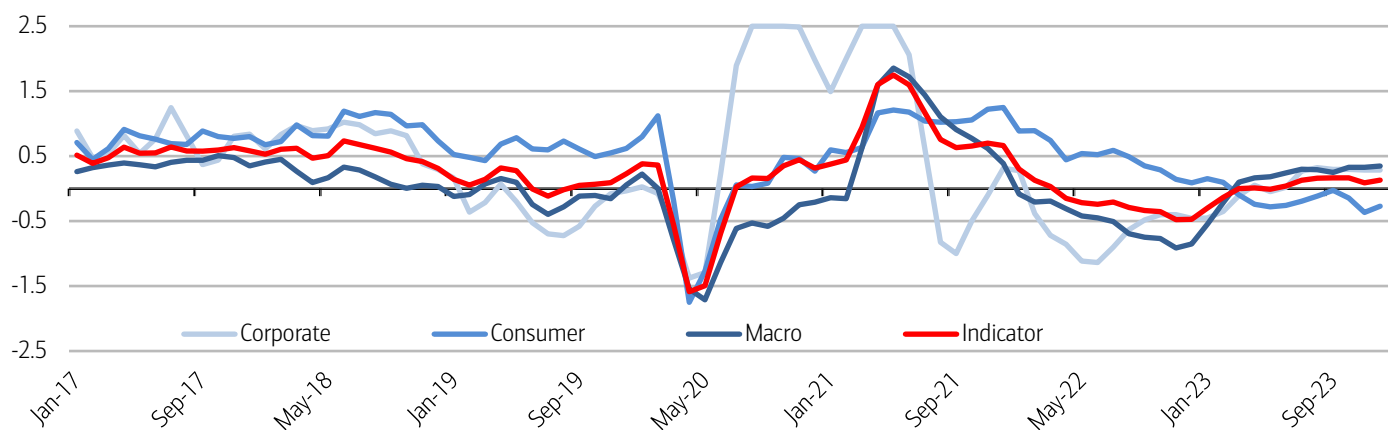
Consumer & macro improved while corporate declined

In Dec, the Internet Advertising Indicator increased to 0.13 (vs 0.09 in Nov) driven by improvement in the consumer & macro category offset by a slightly decline in corporate.

- Macro (3 factors):** In Dec, Fed's Weekly Economic Index reading increased 0.16pts m/m to 1.91 vs 1.75 in Nov (positive), PMI increased 1pts to 51.6 from 50.6 (positive), and avg. cash decreased to 0.2pts to 4.5% from 4.7% in Nov (positive). Overall, the impact from macro factors was **net positive**.
- Consumer (2 factors):** According to BAC card data, total indexed retail card spending per household increased 12% m/m in December (positive) and number of jobless claims declined 1% m/m (down 22K m/m) to 1,834K (positive). Overall, the impact from consumer factors was **net positive**.
- Corporate (1 factor):** In December, the number of US Business Formation Applications declined 6K m/m to 457K. Overall, the impact from corporate factor was **net negative**.

Exhibit 3: Indicator values, by category

In December, macro and consumer factors improved, while corporate declined.



Source: Bloomberg, BofA Predictive Analytics, BofA Global Research

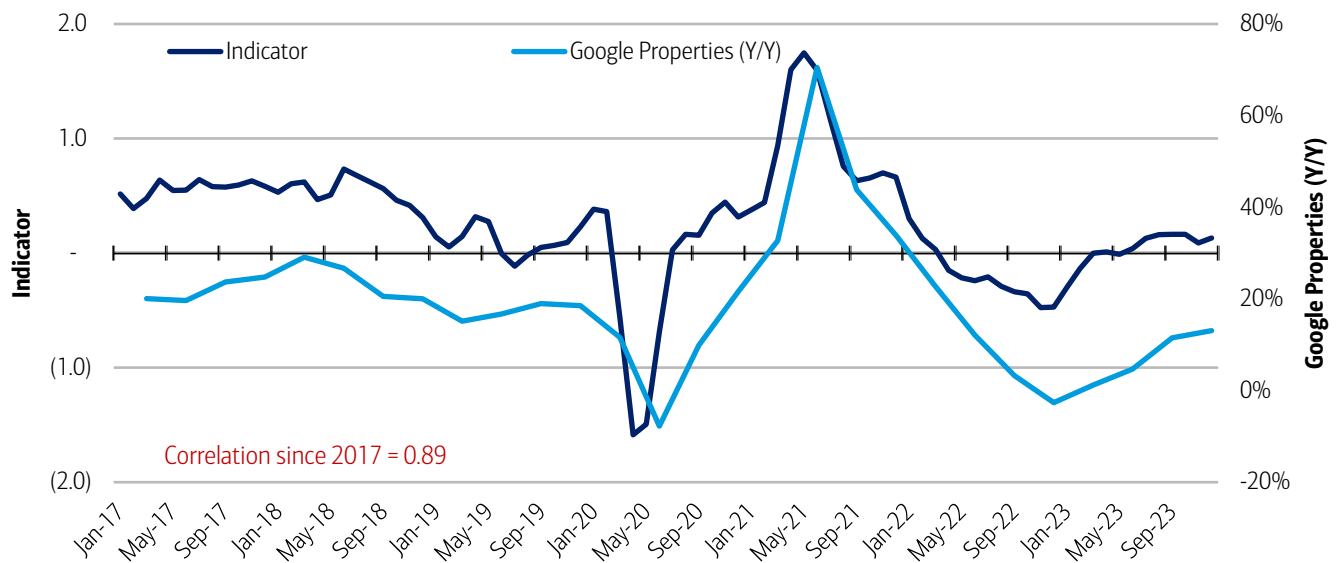
BofA GLOBAL RESEARCH

Google Properties (Search & YouTube)

According to our analysis, the BofA Internet Advertising Indicator has a 0.89 correlation since 2017 with global Google Properties Revenues, which includes Search and YouTube. Using data prior to 2017 had a lower 0.48 correlation, reflecting outsized growth of search, acquisitions, and bigger impact of Google's own product changes. December IAI data suggests stable growth for the sector. In 4Q'23, we project Google Properties growth to accelerate 1pts vs 3Q to 13% y/y driven by easier comps, continued ad market recovery and potential AI tailwinds (increasing Performance Max adoption). For 4Q'23, we project y/y search growth to accelerate 2pts vs 3Q to 13% y/y and YouTube growth rate to be stable at 12% y/y.

Exhibit 4: Internet Advertising Indicator vs. Google Properties revenue growth (y/y)

We project 4Q'23 Google properties revenue growth to accelerate 1pts to 13% y/y.



Source: Company reports, BofA Predictive Analytics, BofA Global Research

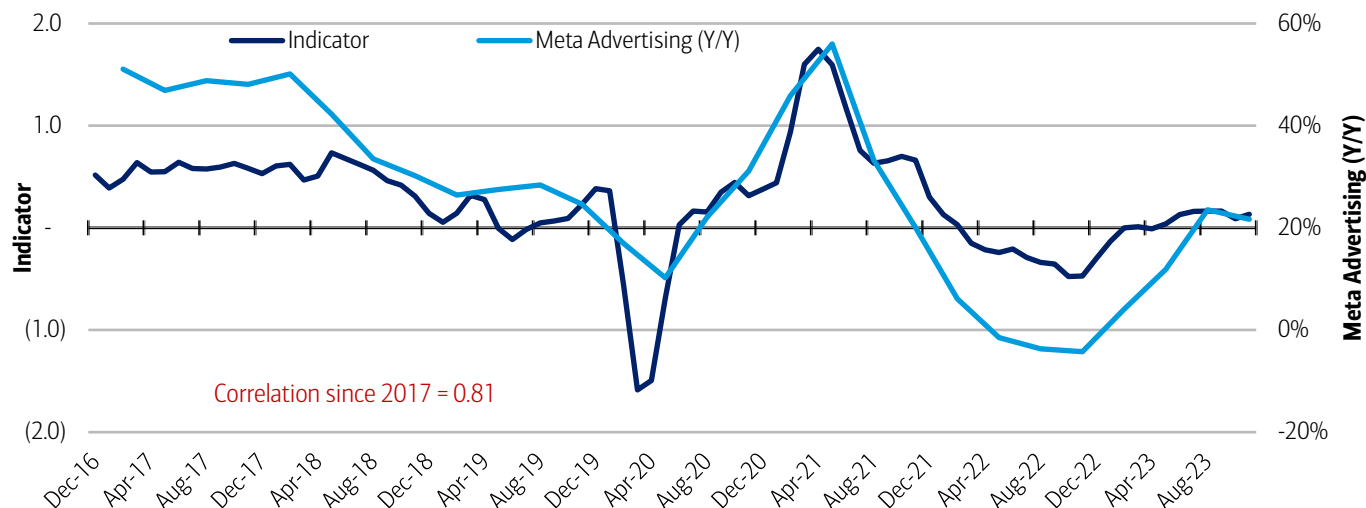
BofA GLOBAL RESEARCH

Meta Advertising

The IAI has 0.81 correlation to Meta Advertising revenue since 2017. Using data prior to 2017 had a lower 0.29 correlation (since 2011) with rapid mobile advertiser adoption on Facebook likely skewing early correlations. We project Meta's ad revenue growth to decelerate 2pts q/q in 4Q and we see upside potential to estimates based on IAI and our channel checks.

Exhibit 5: BofA's Internet Advertising Indicator vs. Meta advertising revenue growth (y/y)

We project 4Q Meta advertising revenue to grow 22% y/y (2pts deceleration vs 3Q'23).



Source: Company reports, BofA Predictive Analytics, BofA Global Research

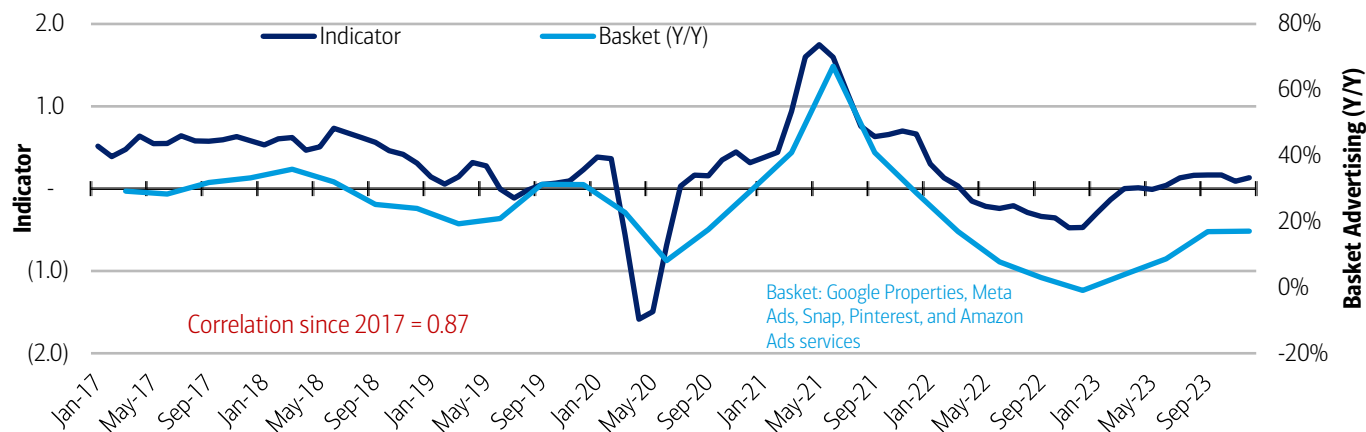
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Basket of Online Media (Revenue weighted)

The IAI has a correlation of 0.87 since 2017 with global ad revenue from a basket of Online media companies under coverage (**Google Properties, Meta Advertising, Snap, Pinterest, and Amazon advertising services**). We estimate US ad revenue from these companies represent approx. 85% of the total US Online advertising market. December IAI reading suggests stable q/q growth for the basket. For 4Q'23, we project 2pts acceleration for Pinterest, and stable y/y growth for Snap, which we think has upside potential.

Exhibit 6: BofA's Internet Advertising Indicator vs Basket of major advertisers' revenue growth (y/y)

Dec IAI reading suggests stable q/q growth for the basket, in line with our estimates.



Source: Company reports, BofA Predictive Analytics, BofA Global Research

We measure respective segment revenues from time of earliest disclosure; Google Properties (1Q'03), Meta Ads (1Q'10), Snap (1Q'15), Pinterest (1Q'17), and Amazon advertising (3Q'19).

BofA GLOBAL RESEARCH

Components of the Indicator Advertising Indicator

We worked with our Predictive Analytics team to analyze over 50 data series to create a proprietary indicator for the digital advertising revenue growth of major US Online media. We tested each variable with different lag periods to determine the best fit and identified six variables that are not only intuitive drivers of advertising activity, but also have high correlation with industry revenue growth reported by IAB over the past 20 years. The selected variables are published weekly or monthly and can be broadly classified into three categories: **US consumer health and activity** (BAC total retail card spend per household, US Continuing Jobless Claims), **US corporate sentiment** (US Business Applications), and **US/global economic outlook** (Global Services PMI, Weekly Economic Index, and FMS average cash balance as % of AUM).

The BofA Internet Advertising Indicator is constructed by taking an equal-weighted average of the 2-month moving average z-scores of the six input variables. Our back-test analysis indicates that these six variables in aggregate have a strong correlation with IAB revenue growth, and we believe the IAI readings can be an effective proxy to gauge concurrent industry growth. As a best practice, we believe the IAI should be viewed in context of several quarters, and general directionality, rather than focusing solely on monthly readings that can fluctuate.

Exhibit 7: Components of the BofA Digital Advertising Indicator

The Digital Advertising Indicator is comprised of six components

Component	Source	Measure of:	Inclusion date
BAC Total Retail Card Spend per Household (y/y %)	BAC Internal Data	US retail spend	Jan-06
US Continuing Jobless Claims*	US Dept. of Labor, Bloomberg	US labor market health	Jan-03
US Business Applications	US Census Bureau, Bloomberg	US corporate sentiment	Jul-05
New York Fed Weekly Economic Index (WEI)	FRB New York, Bloomberg	US real economic activity	Jul-08
Global Services Purchasing Managers' Index	S&P Global, Bloomberg	Global business services outlook	Jan-03
BofA Global FMS average cash balance (% of AUM)*	BofA Global Research	Global investor risk appetite	Jan-03

Source: BofA Global Research

*Inversely correlated with IAB industry revenue growth

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US consumer health and activity

BAC aggregated credit and debit card retail spend is based on aggregated and anonymized transaction data that is used to track US Retail Sales. 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 are limited to debit and credit cards and does not include other payment methods such as cash or checks. BAC data used in this report include spending from active US households (HHs) only. Spending from corporate cards is excluded. For more information on the methodology, disclaimers and limitations regarding BAC US aggregated credit and debit card data please see latest [BofA on USA](#).

US Continuing Jobless Claims tracks the total number of US residents who have filed jobless claims with the appropriate government labor office in a given week, typically to receive unemployment benefits. It reflects a good approximation of the current number of insured unemployed workers filing for unemployment insurance benefits, thereby providing confirming evidence of the direction of the U.S. economy.

US corporate sentiment

US Business Formation Applications (BFS) provide high frequency information on new business applications and formations in the US. BFS data cover Employer Identification Number (EIN) applications made in the US, including those associated with



starting a new employer business. Business Application contains 4 filtered series of EIN applications, viz. Business Applications (BA), High-Propensity Business Applications (HBA), Business Applications with Planned Wages (WBA), and Business Applications from Corporations (CBA), measuring selected groupings based on a variety of factors.

The BofA Internet Advertising Indicator takes an additional 2-month moving average from BFS, which, according to our back-test, increases Indicator correlation with IAB revenue growth and smooths volatility.

US/global economic outlook

New York Fed Weekly Economic Index (WEI) is an index of ten indicators of real economic activity, scaled to align with the four-quarter GDP growth rate. It represents the common component of series covering consumer behavior, the labor market, and production.

Global Services Purchasing Managers' Index (PMI) is a survey-based diffusion index covering financial services, consumer services, and all other business services, providing a timely insight into business conditions. It is widely used to anticipate changing economic trends in official data such as GDP, or sometimes as an alternative gauge of economic performance and business conditions to official data. It is calculated by weighting together individual country indices using national services GDP weights (annual value added) for over 40 countries, accounting for 89% of global gross domestic product (GDP).

BofA Global Fund Manager Survey (FMS) average cash balance gauges investor risk appetite by capturing the average cash holdings of the participants in the survey. Higher cash balances reflect low risk appetite, and by extension, lower propensity to spend, and vice-versa. See latest [Global Fund Manager Survey](#).

Disclaimers, Risks, and Limitations

Risks and limitations of the Internet Advertising Indicator

The composition of our indicator is subject to review and may change in the future. We may monitor the continued relevance, availability, and timing of each variable and evaluate the inclusion of additional data series and reserve the right to modify the Indicator, though do not intend to make frequent changes. Equal weighting of variables could overlook potential disproportionate impact from certain variables. Changes in these inputs may significantly impact the Indicator.

The Indicator may inform our ratings and views on the Internet advertising industry, though should not be solely relied on for investment decisions. It is not intended to be indicative of actual or future performance.

Limitations and disclosures of the revenue Basket

Our Basket of industry revenues is comprised of a sum of ad revenue from five companies under coverage, including Google Properties, Meta Advertising, Snap, Pinterest, and Amazon advertising segment. We estimate the combined ad revenues currently represent approximately 85% of the Online ad market in the United States.

The Basket is a sum of the advertising revenues from BofA Global Research's internal models for each company, an incorporates segment revenue starting when disclosures are available, up to 2003. Data used in the Indicator is available from Google Properties starting 1Q'03, Meta Advertising in 1Q'10, Snap in 1Q'15, Pinterest in 1Q'17, and Amazon advertising in 3Q'19. As such, the Basket may not be an accurate representation of aggregate revenues from all companies since 2003, or before a respective company began reporting segment revenues.

BAC credit and debit card data disclaimer and methodology

Bank of America ("BAC") transaction data is used to inform 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.

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. BAC data used in this report include spending from active US households (HHs) only. Spending from corporate cards is excluded.

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

Exhibit 8: Stocks mentioned

Prices and ratings for stocks mentioned in the report

BofA Ticker	Bloomberg ticker	Company name	Price	Rating
GOOGL	GOOGL US	Alphabet A	US\$ 141.47	B-1-9
GOOG	GOOG US	Alphabet C	US\$ 142.89	B-1-9
AMZN	AMZN US	Amazon.com	US\$ 151.71	B-1-9
META	META US	Meta Platforms	US\$ 368.37	C-1-9
PINS	PINS US	Pinterest	US\$ 36.41	C-1-9

Source: BofA Global Research

BofA GLOBAL RESEARCH

Price objective basis & risk

Alphabet (GOOGL / GOOG)

Our price objective of \$166/\$166 is based on 20x 2024E core Google GAAP EPS plus cash. Alphabet has traded at an average multiple of 22x GAAP P/E over the last ten years and we think our multiple is reasonable vs. history given expectations for slower, but still 10%+ revenue growth in future years.

Risks for the stock include: 1) Still volatile macro and geopolitical backdrop may impact ad spend in 4Q, 2) LLM integration in search may take longer than expected or negatively impact search revenues, 3) concerns related new regulatory framework in the European Digital Markets Act (DMA), 4) adverse judge ruling on the ongoing DOJ search distribution trial, 5) potential for increasing Capex and lower FCF given AI focus.

Amazon.com (AMZN)

Our PO of \$185 is based on our SOTP analysis that values the 1P retail business at 1.0x 2025E Revenue (including subscription/Prime membership fees), 3P retail business at 2.5x 2025E Revenue, AWS at 7.5x 2025 Sales, and the advertising business at 4.0x 2025 Sales. For 2025E, our 7.5x AWS multiple is relatively below our SaaS comps at 8.4x, our 1.0x GMV multiple is a discount to our retail comps at 1.1x, and our 4.0x advertising multiple is a discount to our digital advertising comps at 5.3x. We think some conglomerate discount is warranted given current elevated regulatory/antitrust risk, but long-term we believe that in-line multiples are possible given growth rates in-excess of peers. Our PO of \$185 for Amazon implies 2.8x P/Sales, a multiple in the upper half of Amazon's historical range of 1.0-3.5x.

Downside risks to our price objective are increasing competition from offline and local



retailers, elevated P/E multiple, AWS investments and/or price cuts and regulatory pressure on the 3P marketplace. The stock has been subject to heavy volatility in the past, based on margin trends, and this volatility could increase due to economic uncertainty.

Meta Platforms Inc (META)

Our \$405 price objective is based on 19x 2024E GAAP EPS, plus net cash. On a total company basis, including Metaverse investments, our valuation is largely in line with S&P 500 (over the past five years Meta has had a 2pt average premium to S&P). We think accelerating revenue growth and conservative expense management can lead to 3-year EPS growth above the S&P 500.

Revenue drivers are a recovery in Online advertising markets, an acceleration in Reels or messaging monetization, and AI/ML benefits driving better content engagement and incremental ad spend.

Downside risks are decline in user activity from competition, privacy or data issues impact revenue generation, potential for Street to assign a negative value for Metaverse (e.g., Reality Labs) given massive investments, and new regulations that impact monetization

Pinterest (PINS)

Our \$42 price objective is based on 6.0x 2024E EV/Revenue, within Pinterest's historical EV/Revenue valuation range and below its 8x 10-year average. Our valuation reflects a premium to peer group multiples given early stage of monetization and 30%+ margin opportunity.

Risks to our PO are: 1) US user growth below peers, 2) seemingly high ad loads, could limit 3rd party partner benefits, 3) heavy competition for both general usage and shopping activity, 4) high cost of AI infrastructure, and 5) multiple compression given high SBC expense.

Analyst Certification

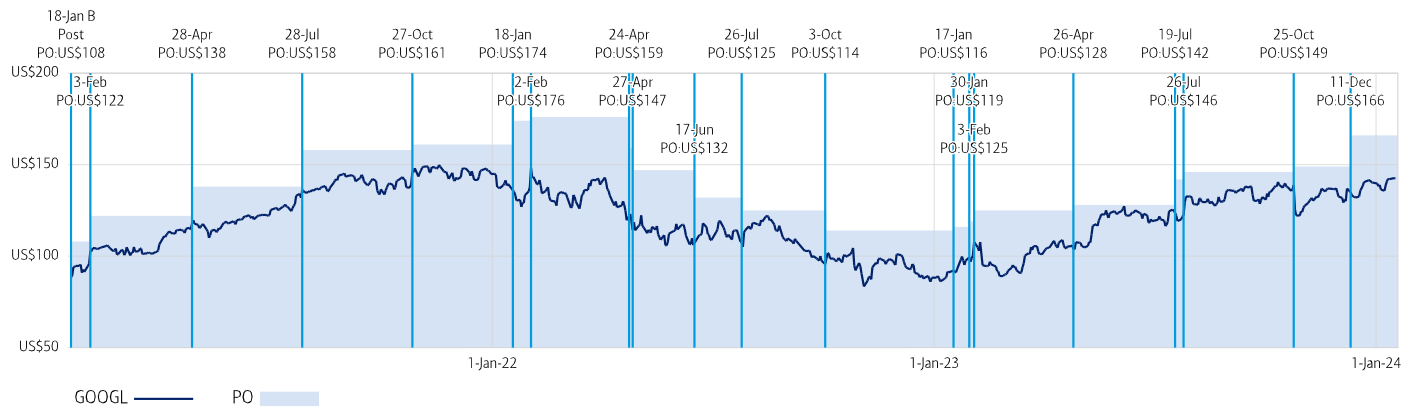
I, Justin Post, hereby certify that the views expressed in this research report accurately reflect my personal views about the subject securities and issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

US - Internet Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
BUY				
	Alphabet	GOOGL	GOOGL US	Justin Post
	Alphabet	GOOG	GOOG US	Justin Post
	Amazon.com	AMZN	AMZN US	Justin Post
	AppLovin	APP	APP US	Omar Dessouky, CFA
	DoorDash	DASH	DASH US	Michael McGovern
	DoubleVerify Holdings, Inc.	DV	DV US	Omar Dessouky, CFA
	Electronic Arts	EA	EA US	Omar Dessouky, CFA
	Expedia	EXPE	EXPE US	Justin Post
	Integral Ad Science Holding Corp.	IAS	IAS US	Omar Dessouky, CFA
	LegalZoom	LZ	LZ US	Michael McGovern
	Match Group	MTCH	MTCH US	Curtis Nagle, CFA
	Meta Platforms Inc	META	META US	Justin Post
	Pinterest	PINS	PINS US	Justin Post
	RH	RH	RH US	Curtis Nagle, CFA
	Roblox Corp. Class A	RBLX	RBLX US	Omar Dessouky, CFA
	Squarespace, Inc.	SQSP	SQSP US	Michael McGovern
	Uber	UBER	UBER US	Justin Post
	Udemy Inc	UDMY	UDMY US	Curtis Nagle, CFA
	Vivid Seats	SEAT	SEAT US	Curtis Nagle, CFA
	Wayfair	W	W US	Curtis Nagle, CFA
	Wix.com	WIX	WIX US	Michael McGovern
NEUTRAL				
	ACV Auctions	ACVA	ACVA US	Curtis Nagle, CFA
	Airbnb	ABNB	ABNB US	Justin Post
	Beyond Inc	BYON	BYON US	Curtis Nagle, CFA
	Booking Holdings Inc	BKNG	BKNG US	Justin Post
	Bumble	BMBL	BMBL US	Curtis Nagle, CFA
	Digital Turbine, Inc	APPS	APPS US	Omar Dessouky, CFA
	Duolingo	DUOL	DUOL US	Curtis Nagle, CFA
	eBay	EBAY	EBAY US	Justin Post
	Etsy, Inc.	ETSY	ETSY US	Curtis Nagle, CFA
	Instacart	CART	CART US	Justin Post
	Magnite, Inc.	MGNI	MGNI US	Omar Dessouky, CFA
	Playtika	PLTK	PLTK US	Omar Dessouky, CFA
	Snap	SNAP	SNAP US	Justin Post
	Take-Two Interactive	TTWO	TTWO US	Omar Dessouky, CFA
	Zillow	ZG	ZG US	Curtis Nagle, CFA
	Zillow	Z	Z US	Curtis Nagle, CFA
UNDERPERFORM				
	Chewy Inc	CHWY	CHWY US	Curtis Nagle, CFA
	Lyft, Inc.	LYFT	LYFT US	Michael McGovern
	Opendoor Technologies	OPEN	OPEN US	Curtis Nagle, CFA
	Peloton	PTON	PTON US	Curtis Nagle, CFA
	Redfin Corp	RDFN	RDFN US	Curtis Nagle, CFA
	Shutterstock	SSTK	SSTK US	Curtis Nagle, CFA

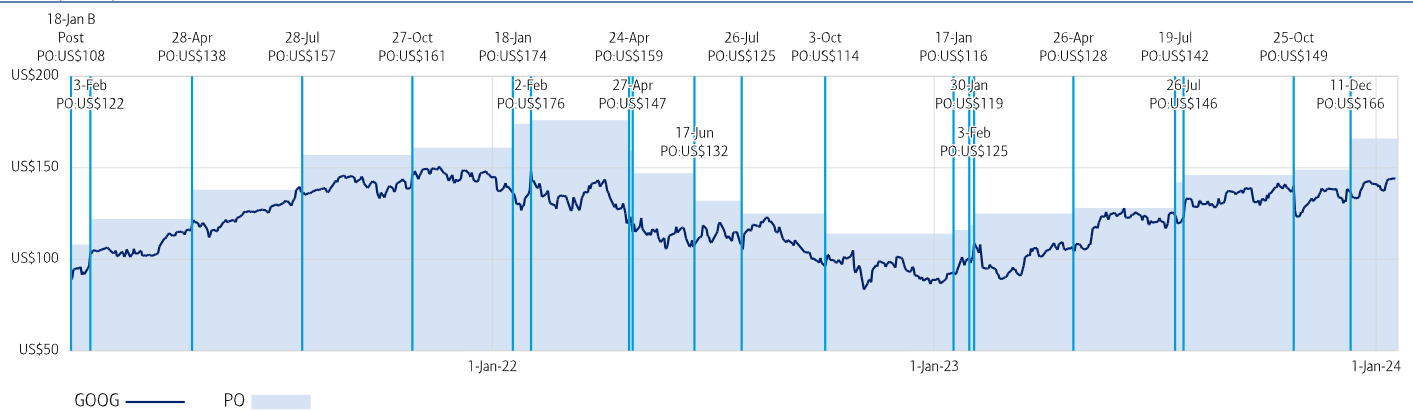
Disclosures

Important Disclosures

Alphabet A (GOOGL) Price Chart

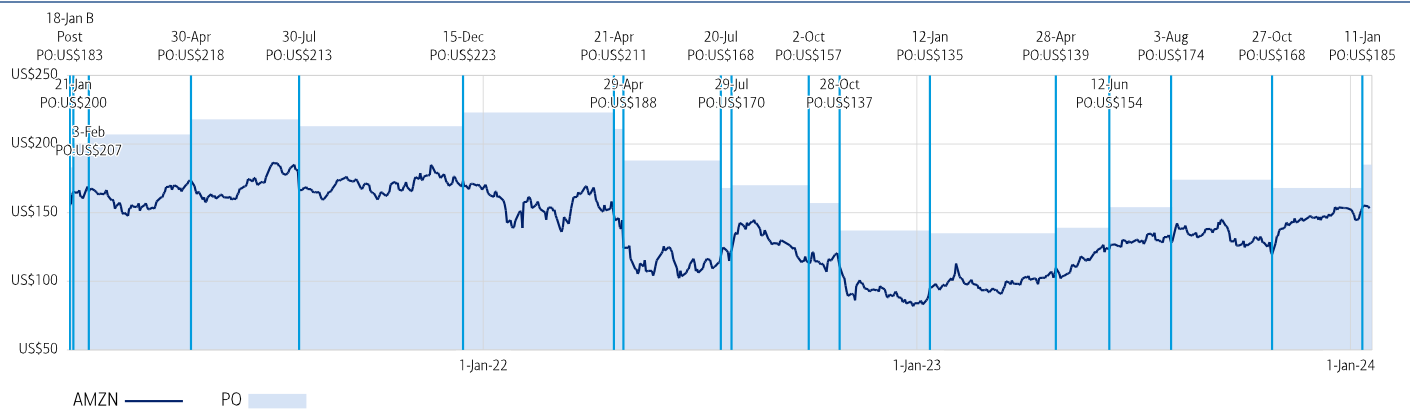
B: Buy, N: Neutral, U: Underperform, PO: Price Objective, NA: No longer valid, NR: No Rating

The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

Alphabet C (GOOG) Price Chart

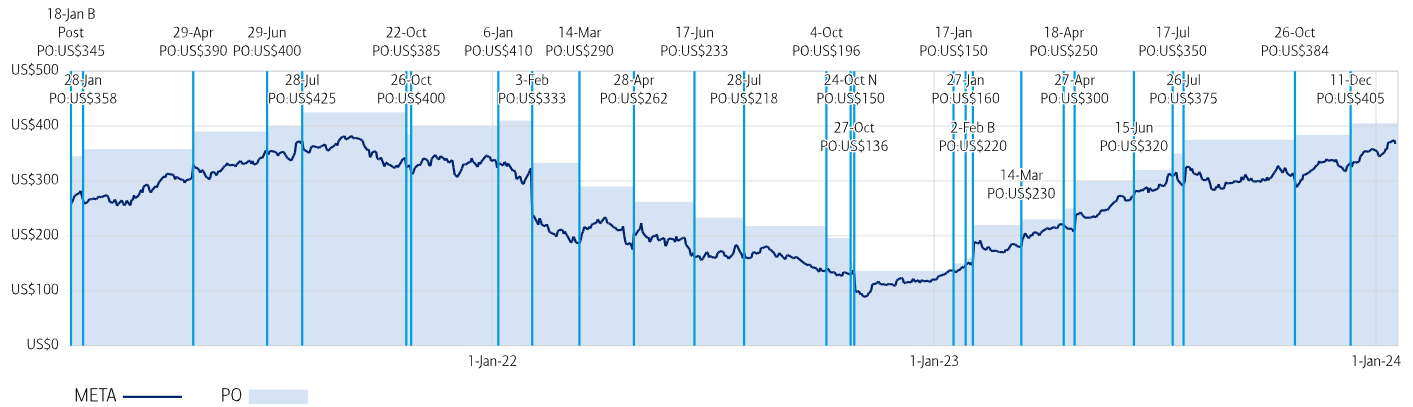
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Amazon.com (AMZN) Price Chart

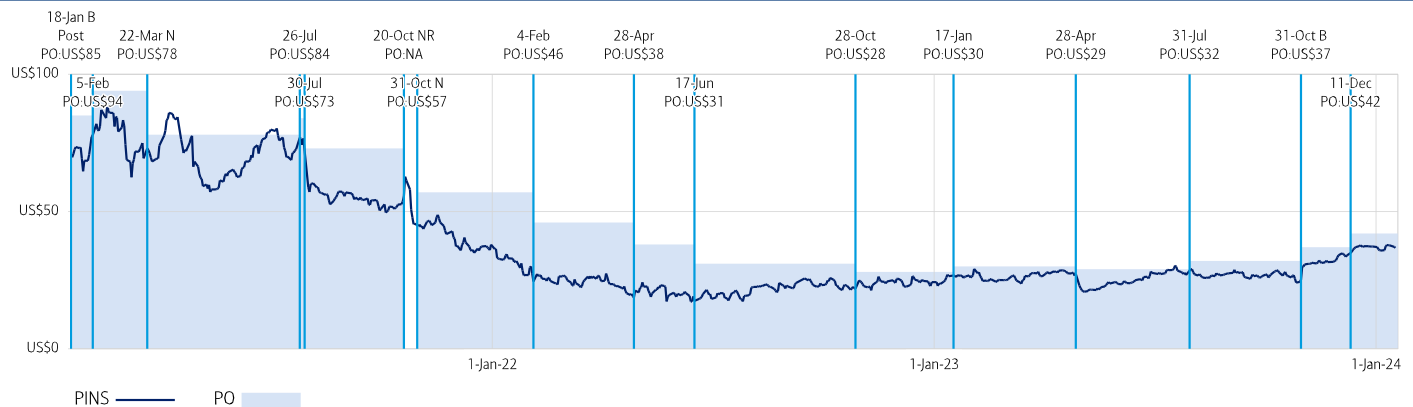
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Meta Platforms (META) Price Chart

B: Buy, N: Neutral, U: Underperform, PO: Price Objective, NA: No longer valid, NR: No Rating

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Pinterest (PINS) Price Chart

B: Buy, N: Neutral, U: Underperform, PO: Price Objective, NA: No longer valid, NR: No Rating

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Equity Investment Rating Distribution: Media & Entertainment Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships ^{R1}	Count	Percent
Buy	35	53.85%	Buy	15	42.86%
Hold	15	23.08%	Hold	8	53.33%
Sell	15	23.08%	Sell	7	46.67%

Equity Investment Rating Distribution: Technology Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships ^{R1}	Count	Percent
Buy	215	53.09%	Buy	111	51.63%
Hold	97	23.95%	Hold	45	46.39%
Sell	93	22.96%	Sell	24	25.81%

Equity Investment Rating Distribution: Global Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships ^{R1}	Count	Percent
Buy	1895	53.62%	Buy	1083	57.15%
Hold	832	23.54%	Hold	454	54.57%
Sell	807	22.84%	Sell	383	47.46%

^{R1} Issuers that were investment banking clients of BofA Securities or one of its affiliates within the past 12 months. For purposes of this Investment Rating Distribution, the coverage universe includes only stocks. A stock rated Neutral is included as a Hold, and a stock rated Underperform is included as a Sell.

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Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster ^{R2}
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

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