

Integral Ad Science Holding Corp.

Likely duopolist in the emerging digital ad verification market; Initiate Buy

Initiating Coverage: BUY | PO: 19.00 USD | Price: 14.35 USD

An emerging media quality standard for digital quality

Think of IAS as the S&P of digital advertising. In the same way ratings agencies grade corporate debt, IAS analyzes the quality of online media -- measuring the rate of unviewable, fraudulent, and brand-objectionable content bought during a digital campaign, thereby helping brands understand the true effectiveness of their ad budgets, and by extension, the reliability of their numerous intermediaries. We think that all stakeholders are motivated to adopt a standard for media quality, eventually integrating it into all areas of practice, helping to preserve the fair exchange of value across the value chain. Thus, we initiate IAS at Buy with a PO of \$19, implying 33% upside.

Long runway for 15%+ growth due to ramping adoption

We estimate that advertisers using at least one of IAS's solutions likely deployed ~\$30bn of ad budgets in 2022, ~10% of combined global Social, Display, Video and CTV spend. Even powerful walled gardens such as Meta, Google, TikTok, Netflix, and LinkedIn have acquiesced to advertiser demands for independent verification, presenting IAS the opportunity to ride the coattails of digital media innovation for many years to come. IAS's complementary, high-ASP optimization solutions are integrated into all of the industry's largest DSPs including AMZN, GOOGL, TTD, Yahoo, ADBE, and MSFT's Xandr.

Duopoly, or winner-take-most market structure to emerge

We think the digital ad verification market will coalesce around one or two independent vendors, similar to how Moody's and S&P dominate the bond ratings market. Global advertisers need only one or two trusted, comprehensive methodologies that are easy to learn and apply. We think IAS is well positioned to win, with DoubleVerify ("DV") as the other likely duopolist. We expect IAS's core measurement business to remain of similar size to DV's, which could give its optimization biz a chance to catch up down the line.

Valuation: Discount to DV driven by Optimization biz

Our PO of \$19 is based on an EV/CY24 EBITDA ratio of 18x, consistent with the weighted avg valuation of 15 adtech stocks. Although IAS competes in the same markets as DV (PO \$47 on 37x EV/CY24 EBITDA), we view the IAS discount as justified because growth in its Optimization segment has recently moderated well below DV's. We assume IAS Optimization biz will retain 30% market share by 2028 as compared to DV's 70%.

Estimates (Dec) (US\$)	2021A	2022A	2023E	2024E	2025E
EPS	0.04	0.38	0.56	0.75	0.95
GAAP EPS	(0.37)	0.10	0.06	0.25	0.39
EPS Change (YoY)	NM	850.0%	47.4%	33.9%	26.7%
Consensus EPS (Bloomberg)			0.18	0.37	0.49
DPS	0	0	0	0	0
Valuation (Dec)					
P/E	358.8x	37.8x	25.6x	19.1x	15.1x
GAAP P/E	NM	143.5x	239.2x	57.4x	36.8x
EV / EBITDA*	22.9x	18.7x	14.9x	12.7x	10.8x
Free Cash Flow Yield*	2.8%	3.1%	4.6%	6.3%	7.4%

* For full definitions of *IQmethod*SM measures, see page 24.

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Stock Data

Price	14.35 USD
Price Objective	19.00 USD
Date Established	11-Jan-2024
Investment Opinion	C-1-9
52-Week Range	8.71 USD - 20.88 USD
Mkt Val (mn) / Shares Out (mn)	2265 USD / 157.9
Free Float	58.4%
Average Daily Value (mn)	18.47 USD
BofA Ticker / Exchange	IAS / NAS
Bloomberg / Reuters	IAS US / IAS.OQ
ROE (2023E)	10.5%
Net Dbt to Eqty (Dec-2022A)	16.9%

Acronyms:

CTV: Connected TV

CAGR: Compound Annual Growth Rate

TAM: Total Addressable Market

CPM: Cost per Mile

ASP: Average Selling Price

DV: DoubleVerify

IAS: Integral Ad Science

ABS: Authentic Brand Suitability

CTV: Connected TV

MRC: Media Rating Council

iQprofileSM Integral Ad Science Holding Corp.

iQmethodSM – Bus Performance*

(US\$ Millions)	2021A	2022A	2023E	2024E	2025E
Return on Capital Employed	2.5%	5.0%	8.0%	9.1%	10.7%
Return on Equity	0.9%	7.5%	10.5%	12.5%	13.8%
Operating Margin	8.0%	14.7%	20.9%	24.4%	26.4%
Free Cash Flow	63	70	104	142	169

iQmethodSM – Quality of Earnings*

(US\$ Millions)	2021A	2022A	2023E	2024E	2025E
Cash Realization Ratio	11.2x	1.2x	1.2x	1.2x	1.1x
Asset Replacement Ratio	0x	0x	0x	0.1x	0.1x
Tax Rate	6.3%	NM	NM	21.0%	21.0%
Net Debt-to-Equity Ratio	22.1%	16.9%	6.1%	-5.2%	-16.1%
Interest Cover	1.3x	6.6x	8.4x	NM	NA

Income Statement Data (Dec)

(US\$ Millions)	2021A	2022A	2023E	2024E	2025E
Sales	324	408	472	546	632
% Change	34.4%	26.2%	15.5%	15.7%	15.8%
Gross Profit	269	333	374	433	502
% Change	34.4%	23.8%	12.3%	15.7%	16.0%
EBITDA	103	127	158	187	219
% Change	83.2%	22.5%	24.9%	18.1%	17.3%
Net Interest & Other Income	(23)	(9)	(12)	(1)	3
Net Income (Adjusted)	6	59	90	121	153
% Change	NM	945.2%	51.3%	34.9%	26.3%

Free Cash Flow Data (Dec)

(US\$ Millions)	2021A	2022A	2023E	2024E	2025E
Net Income from Cont. Operations (GAAP)	(52)	15	9	40	63
Depreciation & Amortization	62	50	54	53	52
Change in Working Capital	(10)	(31)	(16)	(25)	(28)
Deferred Taxation Charge	(10)	(9)	(23)	(5)	(5)
Other Adjustments, Net	74	46	82	81	90
Capital Expenditure	(1)	(2)	(3)	(3)	(3)
Free Cash Flow	63	70	104	142	169
% Change	88.1%	12.5%	48.3%	35.7%	19.0%
Share / Issue Repurchase	NA	NA	NA	NA	NA
Cost of Dividends Paid	0	0	0	0	0
Change in Debt	(359)	(37)	(135)	(80)	(100)

Balance Sheet Data (Dec)

(US\$ Millions)	2021A	2022A	2023E	2024E	2025E
Cash & Equivalents	73	87	118	187	284
Trade Receivables	53	68	89	102	120
Other Current Assets	44	66	57	70	84
Property, Plant & Equipment	260	220	182	142	103
Other Non-Current Assets	700	728	749	771	792
Total Assets	1,130	1,169	1,195	1,272	1,383
Short-Term Debt	NA	NA	NA	NA	NA
Other Current Liabilities	56	68	70	72	76
Long-Term Debt	243	223	174	134	94
Other Non-Current Liabilities	63	69	43	37	32
Total Liabilities	362	360	287	242	201
Total Equity	767	808	908	1,029	1,182
Total Equity & Liabilities	1,130	1,169	1,195	1,272	1,383

* For full definitions of iQmethodSM measures, see page 24.

Company Sector

PC Software

Company Description

IAS is a leading digital media quality company with a mission to be the global benchmark for trust and transparency in digital advertising. Its cloud-based platform offers ad measurement & optimization solutions to ad buyers and publishers on digital ads delivered across all devices, channels, and formats. IAS generates revenue by charging a CPM based on the volume of purchased ads measured.

Investment Rationale

IAS is well positioned to operate as a duopolist (second only to DV) in an underpenetrated (BofA est. 10%), fast growing addressable market. We see multiple tailwinds to support double-digit revenue CAGR in the next 5 years: 1) deeper penetration of ad verification solutions within \$300bn of global digital ad spend, 2) fast growing adoption from Social Media platforms, and 3) opportunity to improve monetization from upselling to the existing customer base.

Stock Data

Average Daily Volume 1,287,070

Quarterly Earnings Estimates

	2022	2023
Q1	0.06A	0.09A
Q2	0.08A	0.30A
Q3	0.10A	0A
Q4	0.15A	0.17E

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Executive summary

Digital ads: one can't manage what one can't measure

One may be surprised to learn that most digital marketers know little about whether their advertisements appear next to suitable content, whether they are viewable on a webpage, or even whether they were viewed by a real consumer. The inability to measure the quality of ad impressions bought on the internet distorts campaign KPIs (click-through rate, impressions delivered, etc.), thereby preventing the marketer from optimizing her campaigns for maximum ROI. Each year, 10s of billions of advertising dollars are wasted on poor quality or fraudulent advertisements.

Exhibit 1: Ads next to unsuitable content

Two thirds of consumers would stop using a brand that advertises next to false, objectionable or inflammatory content

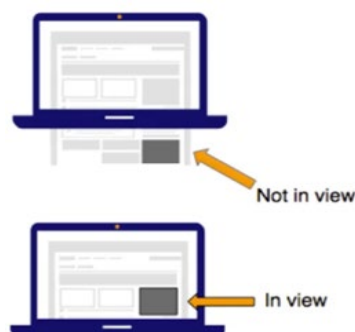


Source: Digiday, Harris Poll

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Exhibit 2: Ad placement off screen

~40% of Video Ads are never seen (2021)

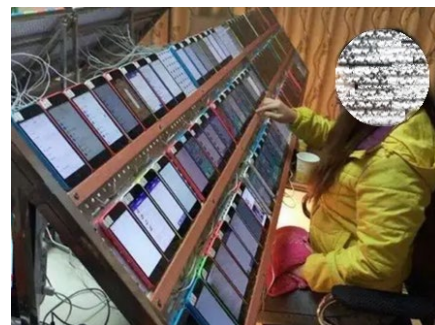


Source: Company reports, 2021, BofA Global Research

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Exhibit 3: A real life click farm

~\$84bn of ~\$380bn of annual digital ad spend is lost to ad fraud



Source: core77 news, Juniper Research

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Integral Ad Science: the S&P of digital advertising

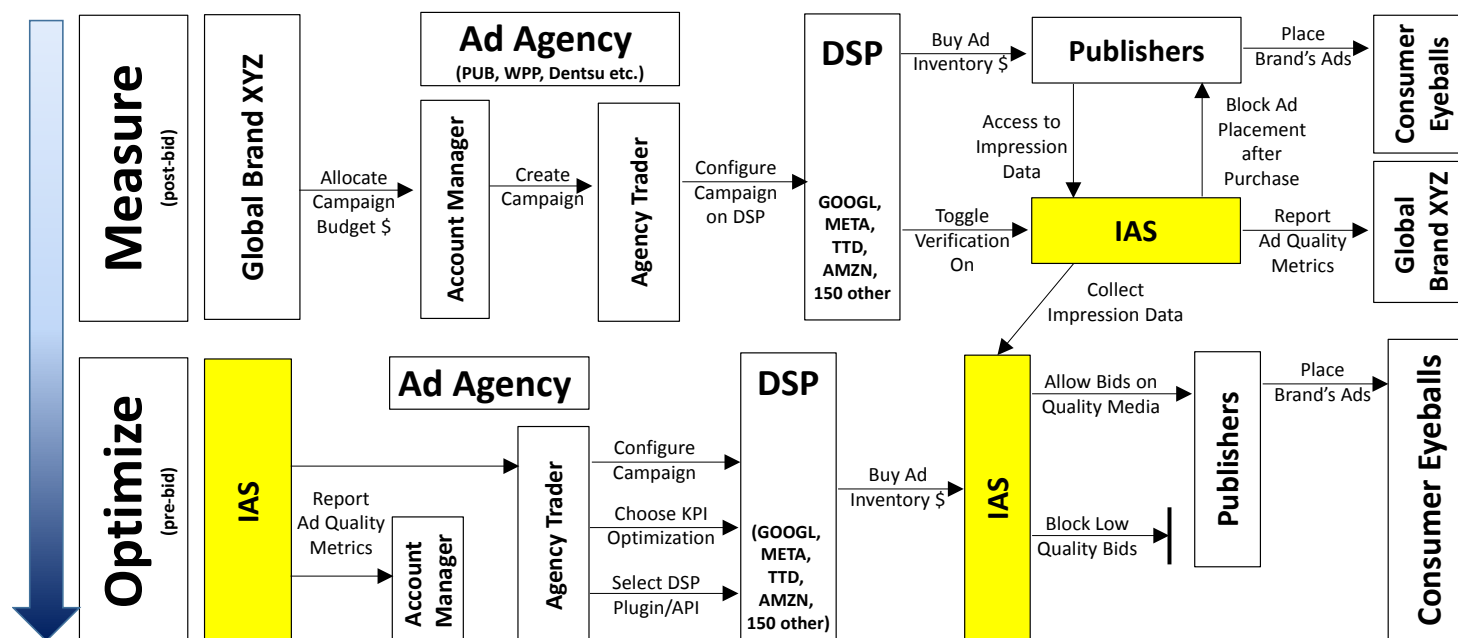
Integral Ad Science ("IAS"), through its software platform and metrics, helps preserve the fair value exchange between buyers and sellers of digital media. In this respect, it plays a role analogous to that of Moody's and S&P in the financial markets; in the same way that banks and bond funds refer to credit ratings (e.g. Aaa, Baa1, Caa1) as shorthand for the quality of the debt they buy, digital marketers refer to IAS's metrics as the common yardstick by which to compare the quality of the media they buy.

IAS's two primary business segments address the two iterative stages of the digital ad campaign process: (1) measurement of results and (2) optimization of subsequent spend based on insights learned from measurements. Giving global brands tools to both evaluate and improve the effectiveness of their media spend.

- Measurement segment:** IAS Quality Impression is a single metric that has become table stakes in verification market: IAS has retained 100% of its top 100 customers in the last six years. Quality Impression tells global brands whether an impression that has already been bought (aka "post-bid") is (1) fully viewed, (2) by a human, (3) in a brand suitable environment, (4) within the intended geography. The metric was developed based on a proprietary methodology, which judging by its widespread adoption has been validated.
- Optimization segment:** IAS's four products enable DSPs (Google, The Trade Desk, Amazon, etc., 140 in all) to avoid bidding (aka "pre-bid") on media that is predicted to be inadequate to the specific campaign, thereby preventing the waste of ad budget. Marketers can greatly reduce the time required to iterate between measurement and campaign optimization by selecting the IAS's integration from within their DSPs.

Exhibit 4: Integral Ad Science's position in the adtech stack and ad campaign workflow

IAS's measurement products block ads that have already been purchased by the advertiser's DSP and report media quality directly brands; IAS's Optimization products prevent the purchase of poor quality media from happening in the first place; Activation leverages data collected by IAS's measurement technologies



Source: BofA Global Research

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Winner-take-most or duopoly market structure to emerge

It is still early days in the digital ad verification market, and we eventually expect the market to coalesce around at most two vendors, similar to the credit ratings market with Moody's and S&P dominating. We think IAS is well positioned to emerge as a leader along with DoubleVerify. We do not believe the market will support more than two vendors because global brands need:

- **Independence:** DSPs & ad agencies are not trusted to "grade their own homework." DV & IAS should become the most trustworthy arbiters of the quality of ad campaign spend because they do not, themselves, execute the campaigns.
- **Trusted methodologies:** We think global brands have limited use or capacity for numerous vendors, each with its own proprietary methodology. Digital marketers, C-suites, and Boards of global brands must learn and agree with each methodology underlying the metrics they implement across their global marketing organizations.
- **Pervasiveness:** New entrants will have difficulty establishing a presence *everywhere* global brands wants to advertise (e.g. Social, Open Web, Mobile, CTV, etc.) Walled gardens (e.g. META, GOOGL) may not want to share data with numerous vendors.
- **Campaign Performance Improvement:** We think global brands are less likely to use third party vendors to optimize campaigns that use DV or IAS metrics. Both have the opportunity to innovate or acquire analytics companies with the benefit of a continuous conversation with global brands around their performance goals.

BofA: IAS 5Y Revenue CAGR ~15% > end market growth

We estimate that advertisers using IAS's measurement services \$30bn on digital ads in 2022, implying 10% penetration of total Social, CTV, and Video/Display ad spend (~\$300bn).

We expect a 18% 5y CAGR for IAS's Measurement segment. BofA expects Social Media revenue growth to remain strong, as IAS management have called out (1) the launch of brand safety and suitability on Meta in early 2024 and (2) a high growth [Short Form Video market](#) (30% CAGR through '28 per BofA). We model open web Display/Video and CTV markets to grow low-teens Y/Y through 2028, in line with industry ad spend forecasts. Numerous industry tailwinds such as Made-For-Advertising content, 3P cookie deprecation, and generative AI will pose challenges to digital marketers for many years, offering IAS many opportunities to commercialize new solutions to emerging problems

We model a 14% 5y CAGR for Optimization segment revenues. Activation products directly enhance campaign ROI, allowing IAS to claim a share of the value created by any number of innovations it could commercialize in the future. Our growth forecast implies as 70%/30% market share split between DoubleVerify/IAS in 2028. IAS Optimization revenues have lagged those of DoubleVerify's by about a year, and its 2023E Y/Y growth rate will likely be about half its primary competitor.

Exhibit 5: IAS Revenue Growth Forecast, 2y & 5y, BofA

We expect Measurement segment revenues to outgrow combined digital ad spend in Display, Video, Social, and CTV; Optimization will be driven by the value of performance improving innovations

	'21-'23E CAGR	BofA '23-'25 CAGR	BofA '23-'28 CAGR	2023E Mix %
Consolidated	21%	16%	15%	100%
Measurement	13%	23%	18%	40%
of which Social Media	26%	29%	22%	19%
of which Open Web	4%	16%	14%	21%
Optimization	28%	12%	14%	47%
of which Other products	12%	7%	10%	24%
of which Context Control	55%	17%	17%	23%
Publisher revenue	22%	7%	6%	13%

Source: BofA Global Research

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Our high growth forecast is underpinned by IAS's low market penetration (~10%) and high adoption rate. We estimate that advertisers using IAS spent \$30bn-\$40bn on digital ads in 2022, which is about 10% of total Social, CTV, and Video/Display ad spend (~\$300bn). IAS has consistently reported that retention is 100%.

Valuation – 18x CY24 EBITDA, below AdTech average

Our PO of \$19 is based on an EV/CY24 EBITDA ratio of 18x, consistent with the weighted average valuation of adtech stocks. Although IAS competes in the same markets as DV (PO \$47 on 37x EV/CY24 EBITDA), we value IAS at a significant discount to DV because it's Optimization segment lags DV's highly lucrative Activation segment.

Exhibit 6: Comparable Company Analysis - Global AdTech & Self Attributing Networks

Our comparator set includes AdTech companies and Self Attributing Networks

Company	Ticker	1/5/24 Price	EV/Sales				Sales CAGR CY23-CY25	EV/EBITDA				EBITDA CAGR CY23-CY25	EBITDA Margin			
			2022A	2023E	2024E	2025E		2022A	2023E	2024E	2025E		2022A	2023E	2024E	2025E
AppLovin Corp.	APP US	\$38.11	6.1x	5.3x	4.5x	4.0x	15%	16.2x	11.8x	9.4x	8.3x	19%	38%	45%	48%	49%
Trade Desk	TTD US	\$67.64	21.9x	18.0x	14.9x	12.4x	21%	51.9x	45.5x	38.0x	30.9x	21%	42%	40%	39%	40%
Integral Ad Sciences	IAS US	\$14.17	6.2x	5.4x	4.6x	4.0x	15%	20.0x	16.0x	13.6x	11.5x	18%	31%	34%	34%	35%
DoubleVerify	DV US	\$34.25	13.1x	10.4x	8.4x	6.9x	23%	41.9x	32.8x	27.0x	21.6x	23%	31%	32%	31%	32%
Magnite	MGNI US	\$8.90	2.8x	2.8x	2.6x	2.4x	9%	9.0x	9.7x	8.7x	7.3x	15%	31%	29%	30%	32%
PubMatic	PUBM US	\$14.86	2.7x	2.6x	2.4x	2.1x	10%	7.0x	9.3x	8.1x	6.5x	20%	38%	28%	29%	33%
Criteo	CRTO US	\$24.16	1.3x	1.2x	1.2x	1.1x	6%	4.6x	4.4x	4.2x	3.7x	10%	29%	27%	28%	30%
Unity Software, Inc.	U US	\$37.78	12.3x	8.1x	7.2x	6.1x	15%	NA	45.4x	27.5x	20.5x	49%	(4%)	18%	26%	30%
Digital Turbine, Inc.	APPS US	\$6.28	1.5x	1.7x	1.6x	1.3x	13%	6.1x	9.2x	7.8x	5.8x	26%	25%	19%	20%	23%
Zeta Global	ZETA US	\$8.13	3.1x	2.5x	2.1x	1.8x	17%	19.9x	14.5x	11.5x	9.1x	26%	16%	17%	19%	20%
Live Ramp	RAMP US	\$34.49	3.8x	3.3x	3.1x	2.9x	7%	41.8x	30.5x	19.3x	14.1x	47%	9%	11%	16%	20%
Viant	DSP US	\$6.82	1.3x	1.2x	1.0x	0.9x	13%	NA	9.6x	7.8x	6.0x	27%	(3%)	12%	13%	15%
Adtheorant	ADTH US	\$1.85	0.4x	0.4x	0.4x	0.4x	11%	3.3x	3.8x	3.3x	2.8x	18%	13%	11%	12%	13%
Taboola	TBLA US	\$4.31	1.1x	1.0x	0.8x	0.6x	28%	9.4x	18.5x	7.3x	5.4x	84%	11%	5%	11%	11%
Roku	ROKU US	\$89.29	3.6x	3.3x	3.0x	2.6x	12%	NA	NA	104.6x	42.0x	NA	(3%)	(1%)	3%	6%
Index			6.6x	5.7x	4.9x	4.3x	15%	34.4x	25.8x	19.5x	15.7x	28%	19%	22%	25%	27%

Source: Visible Alpha, Factset, Bloomberg

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High growth amidst unpenetrated market

The rate of growth of the digital advertising market (ex-Search) from 2020 to 2023 was ~14% CAGR according to Magna Global, giving us a floor for IAS's Measurement segment growth rate going forward. We expect Measurement segment revenue to outgrow digital advertising in the medium term, but eventually we expect Y/Y growth to converge to that of its end market (low teens) once the market has fully adopted IAS's products. Optimization grew a robust 55% CAGR from '21-'23E because IAS ramped its premium brand suitability product, Context Control in 2021, but we assume growth will moderate somewhat (still a healthy 17% CAGR) based on management commentary from the 3Q23 results call and competitive analysis.

Exhibit 7: BofA Revenue Estimates by Segment, 2023E-2028E

We expect Measurement revenues Y/Y growth to asymptote to the growth of the digital ad market; Optimization could have a long runway depending on IAS's ability to improve performance for clients

	2021	2022	2023E	2024E	2025E	2026E	2027E	2028E
Combined	324	408	472	546	632	704	818	934
Measurement	146	155	187	224	281	332	384	431
of which Social Media	55	66	88	107	148	181	212	237
of which Open Web	91	89	99	117	133	151	172	194
Optimization	134	191	221	256	279	297	355	420
of which Other products	89	105	113	124	130	142	159	178
of which Context Control	45	86	109	132	149	155	196	242
Publisher revenue	43	63	63	66	72	75	79	83

BofA Global Research

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IAS touches only ~10% of Ad Global Spend TAM

We estimate that IAS's Measurement solutions touched ~\$30bn of digital ad spend in 2022, within a combined TAM (Social + Display/Video + CTV) of \$300bn. Even within Global Brands segment of the market, where product market fit is strongest, we think adoption of Measurement solutions still has a long way to run. Moreover, Optimization solutions, are less penetrated, and early in the adoption cycle. IAS management has called out a large opportunity among mid-tier advertisers, which they define as agencies and brands outside the top 100. DoubleVerify, whose Measurement business is of similar size to IAS's likely also touches 10% ad spend, suggesting that along with other vendors, total market penetration is below 30%.

We estimate a TAM of \$20bn for Measurement (aka verification) and Optimization combined. Assuming that Activation fees top out at ~\$0.30 CPM, or 5% of average Display/Video CPM of \$6, we could envision a TAM of \$20bn, or 5% of projected 2025 digital ad spend of ~\$400bn. Full penetration of this TAM will require the introduction of products suitable for mid-tier and local advertisers and agencies, as well as an expansion of solutions across channels & geographies (Facebook, TikTok, YouTube, etc.).

Measurement on Social: Brand Safety a huge value prop

IAS is one of few verification vendors with accredited verification metrics for Meta & Google. This access was compelled by the advertisers, not just IAS, because of the inherent conflict of interest in rating the quality of their own media.

We model ~30% Y/Y Measurement revenue growth within Social channels because:

- In 2024, advertisers will, for the first time be able to measure brand safety on Facebook and Instagram Feeds and Reels. Given the amount of polarizing and extreme content on Facebook properties, especially in an election year, we think brand safety and suitability will be the most compelling value proposition to brands to date: according to a study commissioned by competitor DoubleVerify, nearly two-thirds of consumers expressed that they would stop using a brand or product that advertises next to false, objectionable or inflammatory content.

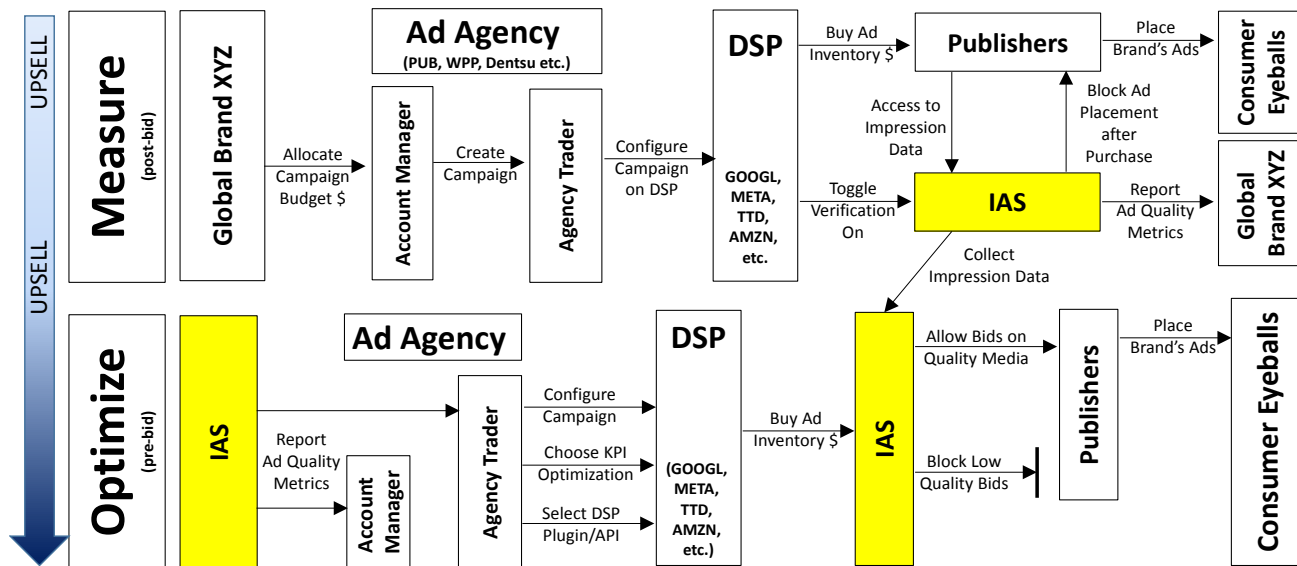
- As the leading internet companies of the world innovate to find new ways to engage users to stimulate their ad-driven business models, IAS will likely be called in at some point to verify each new form of content. For example, BofA expects [Short Form Video](#) ad spending to grow 30% compounded through 2028.

Optimization: attach rate low, ASP up to 6x higher

IAS charges customers a separate, fixed fee (aka “CPM”) for (1) each impression its software measures post-bid, and (2) each impression it influences pre-bid. Advertisers and agencies usually enter the sales funnel through IAS’s low-fee measurement products. After advertisers learn about the quality level of the media they buy, many naturally want to improve the performance of their campaigns by purchasing its Optimization products. Customers “toggle on” specific Optimization solutions within their DSP, with each solution having its own per-impression fee, usually disclosed on an a-la-carte menu. CPMs for Optimization solutions, which get attached to each impression, can be up to 6x higher than the basic fee for Measurement (see Exhibit 9).

Exhibit 8: IAS’s position in the adtech stack and ad campaign workflow

IAS’s measurement products block ads that have already been purchased by the advertiser’s DSP and report media quality directly brands; IAS’s Optimization products prevent the purchase of poor quality media from happening in the first place; Optimization leverages data collected by IAS’s measurement technologies

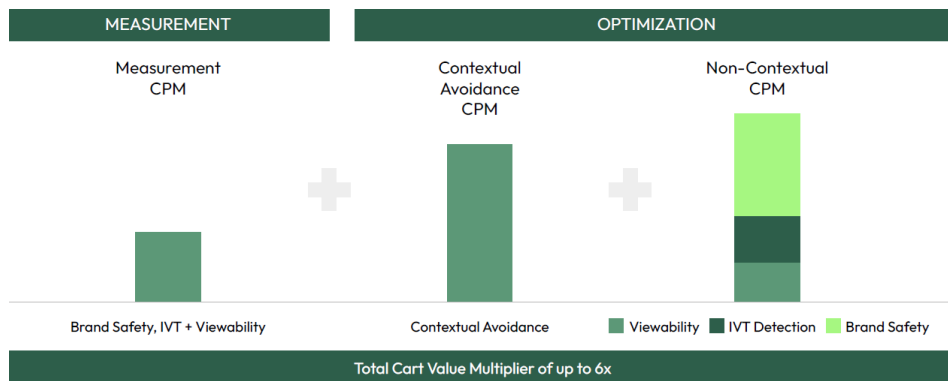


Source: BofA Global Research

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Exhibit 9: IAS’s core products and relative fixed CPMs

CPMs for Optimization products can increase CPM by up to 6x



Source: Company Reports

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Optimization – Context Control: buying ads in the suitable context

Context Control is a premium product (ASP likely 6x core measurement) that helps automate workflows, across channels and DSPs, for Agency Traders looking to ensure that ads will be shown next to suitable content. Context Control mainly helps avoid unsuitable content, but can also help target the most effective audience by treating content as a proxy for the audience (i.e. “contextual targeting”). Although it is possible to manually configure some DSPs to avoid most unsuitable content, in practice, Agency Traders prefer to use their time evaluating results and refining KPIs to drive higher ROAS. From within the advertiser’s DSP, Context Control automatically blocks bids on media sources predicted to be unsuitable, thereby preventing wasted ad spend.

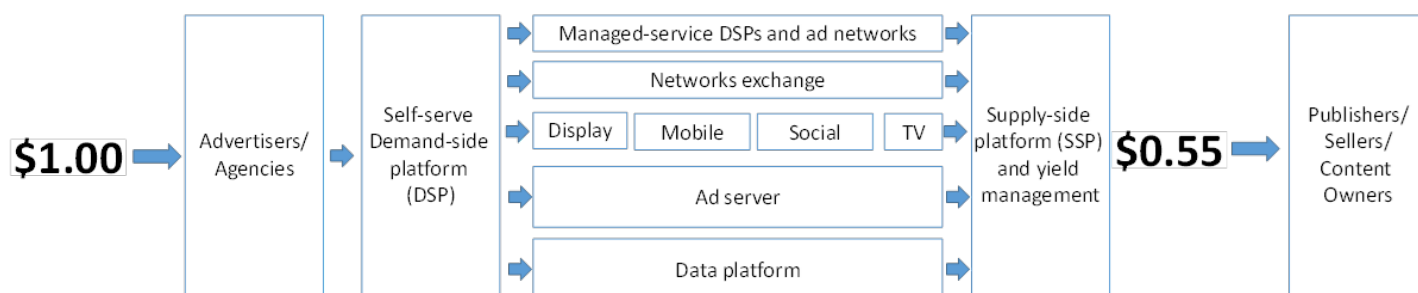
Helping hold digital advertising intermediaries accountable

Brands have limited control over execution (and waste)

In both the open web and walled gardens, advertisers rely on a chain of intermediaries to execute the purchase of media through which it will reach the intended consumer. It is frequently unclear whether using a certain DSP, paying a certain agency, or buying a certain 3P data source would result in more effective influence of the desired audience. Ad agencies and in-house marketing teams iterate to optimize as a campaign unfolds, but this too has a cost. The result is all too often wasted ad spend; some estimate that on average, only \$0.55 of every \$1.00 spent by advertisers ultimately reaches publishers, including low-quality impressions (see Exhibit 14).

Exhibit 10: Digital Advertising Intermediaries and Spend Efficiency

Numerous intermediaries, in aggregate, consume about \$0.45 of every ad dollar spent by brands on the open web



Source: BofA Global Research, The Trade Desk

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Measurement: finding metrics that everyone can agree on

Any number of actors within the value chain of digital advertising could be a source of sub-optimality. Although measurement products are not a silver bullet for diagnosing sources of waste, they give intermediaries working with one another a common yardstick around which to evaluate performance. We believe all actors in the ecosystem have an incentive to learn and adopt verification methodologies such as IAS's (see Exhibit 10). Moreover, we believe **digital marketing professionals** working across the industry are incentivized to learn and adopt IAS's methodologies because they are a portable skill set and often cited as a job requirement.

Brands: A common, trusted methodology can help C-suite executives and Boards evaluate the effectiveness of their often spread-out marketing organizations and partners. Multi-billion dollar advertising budgets are faced with the daunting task of finding platforms with enough reach to influence their already large consumer bases. As eyeballs move from Linear media to digital, more of their ad budgets will have to become exposed to the risks of the digital ecosystem.

Agencies: To maintain relevance with Brands, we think the agency business model will become more outcomes-driven, begging the question: how will outcomes be measured? Agencies commonly charge on an hourly rate per FTE or project basis, meaning that they get paid more by the brand for expending more resources. Agencies seldom have an incentive to criticize their own performance to their clients. Nonetheless, agencies are frequently the only sources of talent to execute large complex campaigns for Brands.

Demand Side Platforms (DSP): DSPs' revenues are usually a percentage of total spend executed through their platforms, giving them little incentive to go out of their way to minimize low-quality spend. DSPs seldom have an incentive to criticize their own performance, given the numerous alternatives in the market.

Exhibit 11: Matrix of dependences between digital advertising intermediaries

All actors in the digital advertising ecosystem are incentivized to learn and adopt IAS's software & methodologies

	Brands	Agencies	Demand Side Platforms	Publishers
Brands	<ul style="list-style-type: none"> • Report marketing organization performance to C-suite & Board • Evaluate in-house brand managers, regional marketing offices • Compare in-house performance to that of Agencies • Avoid fixed costs of having to build proprietary quality infrastructure 	<ul style="list-style-type: none"> • Compare performance b/w Agencies • Agency using budget efficiently from an FTE perspective? • Reduce conflicts of interest around reporting of campaign performance • Maintain relevance as experts • IAS Contract pricing is well known 	<ul style="list-style-type: none"> • How well does the DSP avoid bad traffic? • Is DSP's own reporting accurate? • Is expensive 3P data worth it? • Can you customize KPIs for my business? • Demonstrate transparency 	<ul style="list-style-type: none"> • Standard to compare media quality by platform/publisher • Publishers can focus on growing content & audiences rather than policing advertising
Agencies		<ul style="list-style-type: none"> • Train/recruit staff to know a widely used methodology • Compare performance between numerous Holdco subsidiaries • Avoid fixed costs of having to build proprietary quality infrastructure 	<ul style="list-style-type: none"> • Compare DSP quality • Is DSP's own reporting accurate? • Is expensive 3P data worth it? • Can you customize KPIs for my specific campaign? • Free resources from tedious configuration work 	<ul style="list-style-type: none"> • Evaluate major publishers and platforms with direct agency relationships
Demand Side Platforms			<ul style="list-style-type: none"> • Train/recruit staff to know a widely used methodology • Innovate DSP to avoid bad traffic 	<ul style="list-style-type: none"> • Have common quality standards publishers can try to adhere to

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Rigorous methodologies, but easy to consume

For the digital advertising professionals to integrate Integral Ad Sciences products into their management processes & conversations, they must be credible and understandable. IAS has trademarked several proprietary KPIs:

IAS Quality Impression™ (Measurement) delivers performance measurements across fraud, brand safety, viewability and geography into a single, unique metric. The viewability and invalid traffic filtration aspects of Quality Impression are accredited by the Media Rating Council. Quality impression are supported by multimedia classification technology called Total Media Quality.

Exhibit 12: IAS Quality Impression sub components and methodology

To achieve Quality Impressions, a digital ad must be served to a real person rather than a bot, viewable on-screen, and presented in a brand-safe and suitable environment, all within the desired campaign geography

Sub-metric	Definition
Viewability	Per the Media Ratings Council (MRC) standards, a display ad impression is considered viewable if at least 50% of pixels are on screen for at least one second after the ad has rendered. A video ad impression is viewable if the ad is playing while at least 50% of the pixels are on screen for at least two continuous seconds.
Time-in-View	Time-in-view is the average duration that a viewable impression remains in view. Impressions that are not viewable according to the Media Ratings Council (MRC) standard are not included in this calculation.
Ad Fraud	Any impressions resulting from a deliberate activity that prevents the proper delivery of ads to real people, at the right time, in the right place — resulting in financial or opportunity loss by the advertiser and/or publisher in a particular transaction.
Ad Completion	Represents the share of viewable video ad impressions that remained in view through each quartile of the advertisement play time.
Brand Risk	Impressions on pages that are flagged for posing various levels of harm to brand image and/or reputation through association, based on eight core content categories: Adult, Alcohol, Gambling, Hate Speech, Illegal Downloads, Illegal Drugs, Offensive Language, and Violence.
Non-optimized Fraud	Non-optimized fraud benchmarks represent campaigns that did not incorporate a form of fraud mitigation strategy. These benchmarks reflect a global average
Optimized Fraud	Optimized fraud benchmarks represent campaigns that were executed with a fraud mitigation strategy.

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IAS Quality Attention™ (Measurement) uses a variety of signals obtained as part of IAS's core products, including viewability, ad density, and user interaction, and weighs them into a single attention score and three sub-scores for visibility, situation, and interaction for decisive outcomes. These three key media signals can predict if an impression is likely to lead to attention and advertising outcomes. IAS research found a 198% average lift in the conversion rate when comparing high attention impressions with low attention impressions, demonstrating that optimizing for attention drives conversion lift.

One-stop shop appeals to the largest advertisers

We believe that advertisers with the largest budgets (and their agencies) will look to minimize complexity by using one, or perhaps two independent vendors at most. To emerge as a winner, we believe a vendor must: (1) have sufficiently broad suite of measurement tools, (2) cover all channels (i.e. Social, Web, CTV, etc.) that global brands use to reach consumers, (3) offer high-touch customer service.

Accredited measurement tools: IAS appears to have the broadest suite of accredited measurement tools, 41 in all, across geographies, platforms, and channels (see Exhibits 13, 14, 15). Accreditations lubricate the sales process because they signify that a vendor meets a gold standard for media measurement. Very often during RFPs vendors are asked how many accreditations they have and what accreditations they are working towards. Moreover, a consolidated metric like IAS Quality Impression, which is based on multiple metrics limits the need to buy multiple point solutions from other vendors. Some measurement tools may be available for client without explicit MRC accreditation.

Channel Coverage: While every brand and vertical has its favorite channel, the sheer size of a global brand's marketing budget usually means that it ends up on almost every channel available. Moreover, demographic trends, as well as media innovation, favor a shift towards digital channels at the expense of linear.

Privileged Walled Gardens access: IAS is one of only three independent vendors with accredited access to two of the largest media sources in the world: Google & Meta properties (see Exhibit 13). Google & Meta worked to integrate these vendors at the behest of advertisers, demonstrating their importance to the market. First party solutions provided by both companies are also accredited, but subject to conflicts of interest because neither company is incentivized to deliver bad news to advertisers.

Exhibit 13: MRC accreditations, Walled Gardens, by service

Only three accredited independent vendors measure quality within Facebook & Google mobile apps, mobile web (desktop omitted, but present)

			Facebook					Google	
			Video		Display		Invalid Traffic	Video	
		Total	Rendered Ad Impressions	Viewable Ad Impressions & Viewability	Rendered Ad Impression	Viewable Ad Impressions and Viewability	detection/ filtering	Rendered Ad Impressions	Viewable Ad Impressions & Viewability
Mobile Apps	DV	6							
	OracleMoat	6							
	IAS	4							
	Meta	3							
	Google	2							
Mobile Web	DV	6							
	OracleMoat	4							
	IAS	4							
	Meta	2							
	Google	2							

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Mobile Web & Mobile In-App advertising: IAS (and DoubleVerify) offer the highest number of accredited metrics to advertisers looking to measure the quality of Display and Video ads on Mobile Web, Mobile In-App, and Desktop platforms (see Exhibits 14, 15). Although eight other independent vendors appear to offer accredited Rendered Ad Impression and Viewable Ad Impression metrics, IAS offers additional accredited services such as Invalid Traffic Detection and Tracked Ads signifying that it has a lead in the product development process.

Exhibit 14: MRC accreditations, Mobile In-App, Open Web, by service

DoubleVerify and IAS lead the field in completeness of offerings to verify open web media quality

		Video						Display				Invalid Traffic		Other
	Total	Rendered Ad Impressions	Viewable Ad Impressions & Viewability	Clicks	Tracked Ads	Authentic Attention Metrics	Rendered Ad Impressions	Viewable Ad Impressions & Viewability	Clicks	Tracked Ads	Detection/ filtering	Pre-bid detection	Ad Verification (Property Level)	
GoogleDV360	7													
DV	7													
IAS	7													
Flashtalking	7													
Pixalate	6													
GoogleCM360	6													
Adloox	6													
HUMAN	6													
OracleMoat	5													
ProtectedMedia	5													
Adform	4													
GoogleAdManager	4													
GoogleAds	4													
Innovid	4													
Snap	4													
Epsilon	2													
FreeWheel	2													
Pinterest	2													
ExtremeReach	1													
Hulu	1													

Source: Media Rating Council, BofA Global Research

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Exhibit 15: MRC accreditations, Mobile Web, Open Web

IAS and DoubleVerify lead the field in completeness of offerings to verify open web media quality

		Video					Display					Invalid Traffic		Other		
	Total	Rendered Ad Impressions	Viewable Ad Impressions & Viewability	Tracked Ads	Clicks	Authentic Attention Metrics	Rendered Ad Impression	Viewable Ad Impressions and Viewability	Clicks	Tracked Ads	detection/ filtering	Pre-bid detection	Ad Verification (Property Level)	Brand Safety Processes (content level)	Correlated Outcomes Online offline	
IAS	5															
DV	4															
GoogleCM360	4															
GoogleDV360	4															
Adloox	4															
Flashtalking	4															
Pixalate	4															
HUMAN	4															
OracleMoat	4															
ProtectedMedia	3															
Adform	2															
Innovid	2															
Epsilon	2															
FreeWheel	1															
LinkedIn^	2															
Pinterest	2															
ExtremeReach	1															
GumGum	1															
Hulu	1															
Microsoft	1															

Source: Media Rating Council, BofA Global Research

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CTV advertising: IAS (and DV) appear slightly behind HUMAN and Pixilate in the number of accreditations they have received. We remind readers that accreditation is constantly in the works with firms like these and that a fulsome portfolio of accreditation offerings across channels can help win RFPs without necessarily having all accreditations.

Exhibit 16: MRC accreditations, CTV, by service

CTV is an emerging platform, with fewer vendors accredited and fewer metrics available

		Video			Display		Invalid Traffic			
	Total	Rendered Ad Impressions	Tracked Ads	Viewable Ad Impressions & Viewability	Rendered Ad Impression	Tracked Ads	detection/ filtering	Pre-bid IVT detection	Ad Verification (Property Level)	Brand Safety Processes (content level)
HUMAN	6									
Pixilate	5									
DV	4									
IAS	3									
Adform	2									
FreeWheel	2									
GoogleAds	2									
GoogleDV360	2									
GoogleYouTubeReserve	2									
Hulu	2									
OracleMoat	2									
ProtectedMedia	2									
FlashTalking	2									
ExtremeReach	1									
Innovid	1									
GumGum	1									

Media Rating Council, BofA Global Research

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Valuation: Discount to DV driven by slow growth expectations for Optimization

Our PO of \$19 is based on a EV/CY24 EBITDA ratio of 18x, the weighted average valuation of 15 adtech stocks. IAS's 2y revenue CAGR is 15% (consensus) which is in line with the aggregate of adtech comparables. Although it is early days in the verification market, and IAS could emerge as the category leader in verification, at present it is difficult to argue so, and thus we assign a slightly below average EV/EBITDA multiple as compared to the adtech universe (20x).

Exhibit 17: Comparable Company Analysis - Global AdTech

Our comparator set includes AdTech companies and Self Attributing Networks

Company	Ticker	Price	EV/Sales				Sales CAGR CY23-CY25	EV/EBITDA				EBITDA CAGR CY23-CY25	EBITDA Margin			
			2022A	2023E	2024E	2025E		2022A	2023E	2024E	2025E		2022A	2023E	2024E	2025E
Advertising Technology																
AppLovin Corp.	APP US	\$38.11	6.1x	5.3x	4.5x	4.0x	15%	16.2x	11.8x	9.4x	8.3x	19%	38%	45%	48%	49%
Trade Desk	TTD US	\$67.64	21.9x	18.0x	14.9x	12.4x	21%	51.9x	45.5x	38.0x	30.9x	21%	42%	40%	39%	40%
Integral Ad Sciences	IAS US	\$14.17	6.2x	5.4x	4.6x	4.0x	15%	20.0x	16.0x	13.6x	11.5x	18%	31%	34%	34%	35%
DoubleVerify	DV US	\$34.25	13.1x	10.4x	8.4x	6.9x	23%	41.9x	32.8x	27.0x	21.6x	23%	31%	32%	31%	32%
Magnite	MGNI US	\$8.90	2.8x	2.8x	2.6x	2.4x	9%	9.0x	9.7x	8.7x	7.3x	15%	31%	29%	30%	32%
PubMatic	PUBM US	\$14.86	2.7x	2.6x	2.4x	2.1x	10%	7.0x	9.3x	8.1x	6.5x	20%	38%	28%	29%	33%
Criteo	CRTO US	\$24.16	1.3x	1.2x	1.2x	1.1x	6%	4.6x	4.4x	4.2x	3.7x	10%	29%	27%	28%	30%
Unity Software, Inc.	U US	\$37.78	12.3x	8.1x	7.2x	6.1x	15%	NA	45.4x	27.5x	20.5x	49%	(4%)	18%	26%	30%
Digital Turbine, Inc.	APPS US	\$6.28	1.5x	1.7x	1.6x	1.3x	13%	6.1x	9.2x	7.8x	5.8x	26%	25%	19%	20%	23%
Zeta Global	ZETA US	\$8.13	3.1x	2.5x	2.1x	1.8x	17%	19.9x	14.5x	11.5x	9.1x	26%	16%	17%	19%	20%
Live Ramp	RAMP US	\$34.49	3.8x	3.3x	3.1x	2.9x	7%	41.8x	30.5x	19.3x	14.1x	47%	9%	11%	16%	20%
Viant	DSP US	\$6.82	1.3x	1.2x	1.0x	0.9x	13%	NA	9.6x	7.8x	6.0x	27%	(3%)	12%	13%	15%
Adtheorant	ADTH US	\$1.85	0.4x	0.4x	0.4x	0.4x	11%	3.3x	3.8x	3.3x	2.8x	18%	13%	11%	12%	13%
Taboola	TBLA US	\$4.31	1.1x	1.0x	0.8x	0.6x	28%	9.4x	18.5x	7.3x	5.4x	84%	11%	5%	11%	11%
Roku	ROKU US	\$89.29	3.6x	3.3x	3.0x	2.6x	12%	NA	NA	104.6x	42.0x	NA	(3%)	(1%)	3%	6%
Index			6.6x	5.7x	4.9x	4.3x	15%	34.4x	25.8x	19.5x	15.7x	28%	19%	22%	25%	27%

Source: Visible Alpha, Factset, Bloomberg

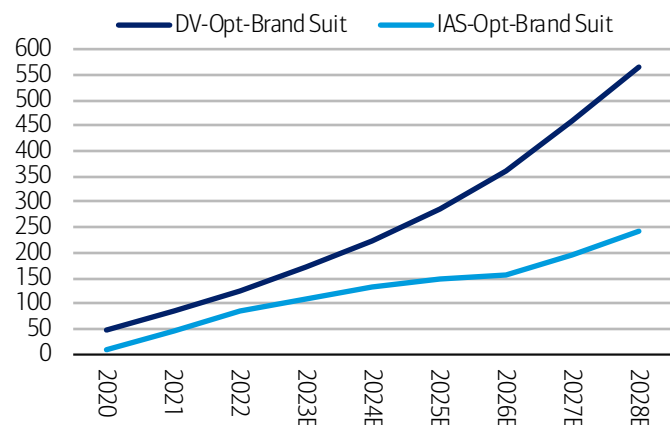
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BofA Valuation assumes 30% market share of Optimization market longer term, ~50% of Measurement

Although it's early days in the verification market, we assume for now that IAS's Optimization business will continue to lag that of DoubleVerifies as it did in 2023 and 2022. We assume this divergence will drive a 6 percentage point annual growth through 2028, and result in a 30% market share as compared to DoubleVerify's 70%. Exhibits 18 and 19 illustrate compare our projections of DV's and IAS's Optimization products.

Exhibit 18: DV & IAS ABS vs. Context Control Revenues (\$mn)

DV's ABS and IAS's Context Control products are comparable in nature. DV's ABS has been about a year ahead of IAS's product, and we assume 70/30 market share longer term

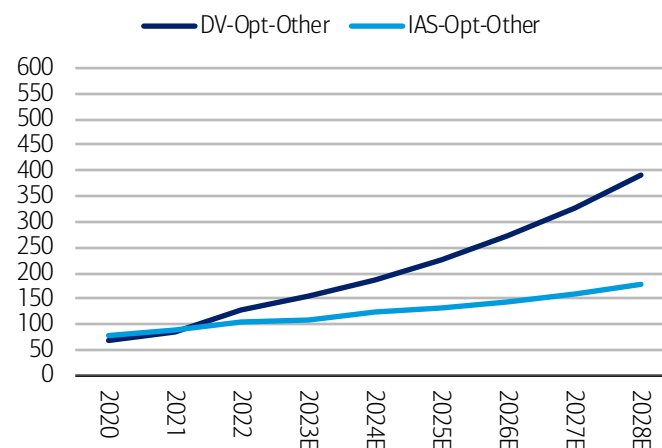


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Exhibit 19: DV & IAS Other Optimization Revenues (\$mn)

DV's Other Optimization products have outgrown IAS's in recent years, and we assume a 70/30 market share longer term



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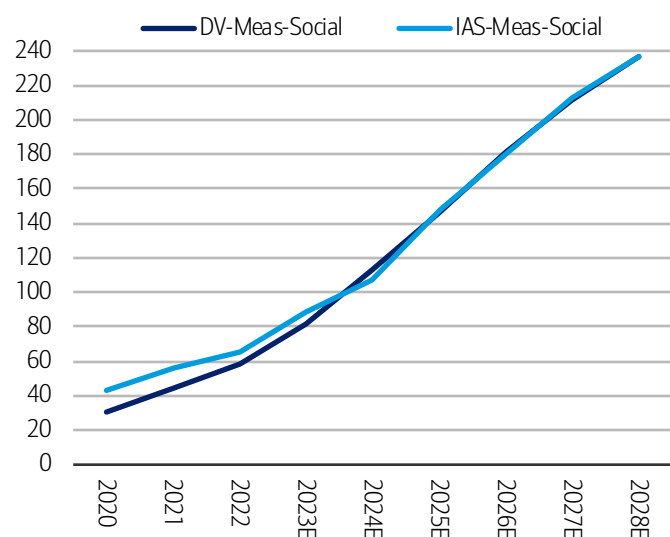
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Measurement segment likely to keep pace

Given that IAS's Measurement business is roughly the same size as DoubleVerify's, and IAS has many of the same accreditations and a stronger foothold internationally to offset a weaker market position in the US, we assume DV and IAS measurement revenues will track each other closely over the coming years.

Exhibit 20: DV & IAS Measurement Revenues - Social Platforms

Historically IAS Measurement from Social Platforms was slightly larger than DV's, and we expect it to keep pace with DV going forward

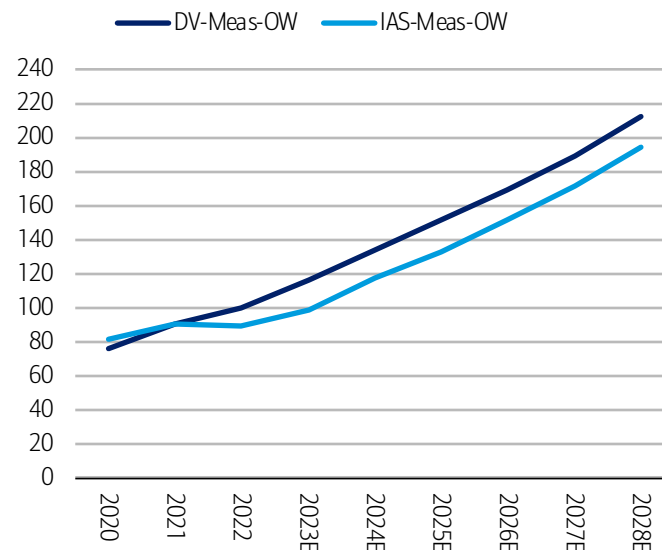


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Exhibit 21: DV & IAS Measurement Segment Revenues - Open Web

Historically IAS Measurement from Open Web lagged DV's slightly, but we assume they keep pace going forward



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BofA Financial Estimates vs Street

Exhibit 22: BofA vs Street Forecasts, FY22 to FY28

We forecast 5-year revenue CAGR of 15%, as penetration deepens in a ~\$300bn digital ad market

	2022	23Q1	23Q2	23Q3E	23Q4E	2023E	2024E	2025E	2026E	2027E	2028E
Total Revenue											
B of A (Init)	408	106	114	120	132	472	546	632	704	818	934
STREET					132	472	547	628	708	783	863
Delta vs. STREET					0.1%	0.0%	-0.2%	0.7%	-0.7%	4.4%	8.2%
GUIDE						462	-	-	-	-	-
ACTUAL											
Total Revenue YoY Growth %											
B of A (Init)	26.2%	18.9%	13.3%	18.7%	12.1%	15.5%	15.7%	15.8%	11.3%	16.2%	14.2%
STREET					12.0%	15.5%	15.9%	14.8%	12.8%	10.5%	10.3%
Delta vs. STREET					0.1%	0.0%	-0.3%	1.0%	-1.5%	5.7%	3.9%
GUIDE						13%					
Optimization revenue (fka Programmatic)											
B of A (Init)	191	51	53	57	61	221	256	279	297	355	420
STREET					61	222	257	292	338	392	436
Delta vs. STREET					-1.5%	-0.4%	-0.4%	-4.4%	-12.1%	-9.5%	-3.7%
Optimization revenue (fka Programmatic) Y/Y Growth											
B of A (Init)	41.8%	25.8%	10.3%	21.1%	9.9%	16.1%	15.5%	9.2%	6.4%	19.5%	18.3%
STREET					11.5%	16.6%	15.4%	13.8%	15.7%	16.0%	11.3%
Delta vs. STREET					-1.7%	-0.5%	0.0%	-4.6%	-9.3%	3.5%	7.1%
Measurement revenue (fka Advertiser Direct)											
B of A (Init)	155	41	45	48	54	187	224	281	332	384	431
STREET					52	186	223	263	293	308	341
Delta vs. STREET					2.8%	0.8%	0.7%	6.9%	13.1%	24.6%	26.5%
Measurement revenue (fka Advertiser Direct) Y/Y Growth											
B of A (Init)	5.9%	17.6%	22.6%	22.8%	20.0%	20.8%	19.8%	25.3%	18.0%	15.7%	12.3%
STREET					16.7%	19.8%	20.0%	18.0%	11.6%	5.0%	10.6%
Delta vs. STREET					3.3%	1.0%	-0.1%	7.3%	6.4%	10.7%	1.7%
Publisher revenue (fka Supply side)											
B of A (Init)	63	14	16	16	18	63	66	72	75	79	83
STREET					17	62	66	72	75	79	83
Delta vs. STREET					0.4%	2.7%	-0.4%	0.4%	0.0%	-0.6%	-0.4%
Publisher revenue (fka Supply side) Y/Y Growth											
B of A (Init)	46.7%	2.2%	0.9%	1.2%	-0.8%	0.8%	4.3%	9.1%	4.2%	5.3%	5.1%
STREET					-1.2%	-1.9%	7.5%	8.2%	4.6%	6.0%	4.8%
Delta vs. STREET					0.4%	2.6%	-3.2%	0.9%	-0.4%	-0.6%	0.2%
Operating Income - NON-GAAP											
B of A (Init)	60	21	22	23	32	99	133	167	198	246	293
STREET					34	104	131	166	239	293	353
Operating Margin - NON-GAAP											
B of A (Init)	14.7%	19.7%	19.6%	19.2%	24.6%	20.9%	24.4%	26.4%	28.2%	30.1%	31.3%
STREET					26.2%	22.0%	24.0%	26.4%	33.7%	37.5%	40.9%
Adj. EBITDA											
B of A (Init)	127	34	37	41	46	158	187	219	246	289	333
STREET					46	158	186	221	260	290	324
Delta vs. STREET					-0.3%	-0.1%	0.4%	-0.7%	-5.1%	0.0%	2.8%
GUIDE						151	-	-	-	-	-

Exhibit 22: BofA vs Street Forecasts, FY22 to FY28
We forecast 5-year revenue CAGR of 15%, as penetration deepens in a ~\$300bn digital ad market

	2022	23Q1	23Q2	23Q3E	23Q4E	2023E	2024E	2025E	2026E	2027E	2028E
Adj. EBITDA Margin %											
B of A (Init)	31.0%	32.1%	32.9%	33.7%	35.0%	33.5%	34.2%	34.7%	35.0%	35.4%	35.6%
STREET					35.1%	33.6%	34.0%	35.2%	36.6%	37.0%	37.5%
Delta vs. STREET					-0.1%	0.0%	0.2%	-0.5%	-1.6%	-1.6%	-1.9%
GUIDE						32.7%					

Source: Company Reports, BofA Global Research estimates

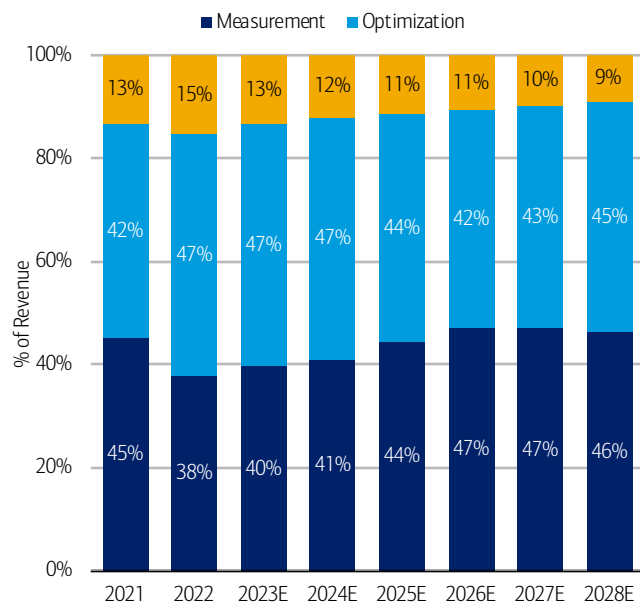
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Appendix

Exhibit 23: Revenue Mix by Segment Forecast, 2021 - 2028E

We expect slight mix shift into Measurement in the next few years driven by hypergrowth in revenues from Social Media platforms

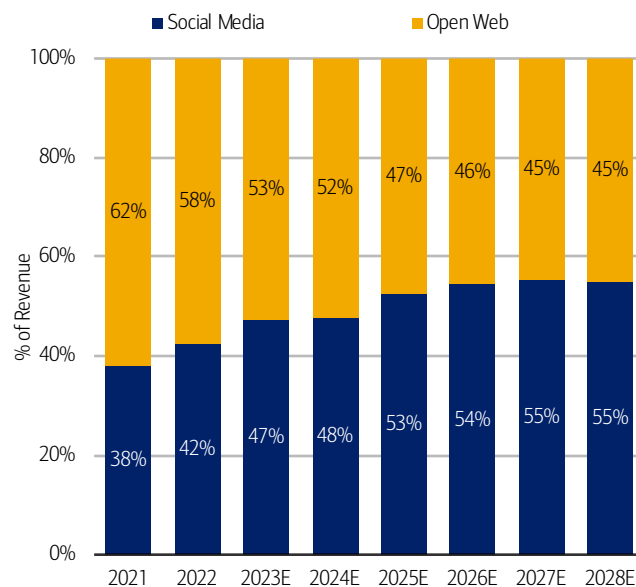


Source: Company Reports, BofA Global Research

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Exhibit 24: Measurement Revenue Mix Forecast by Industry Sub-Vertical, 2021 - 2028E

We expect a consistent ramp-up in product adoption among Social Media platforms to drive growth in Measurement revenues

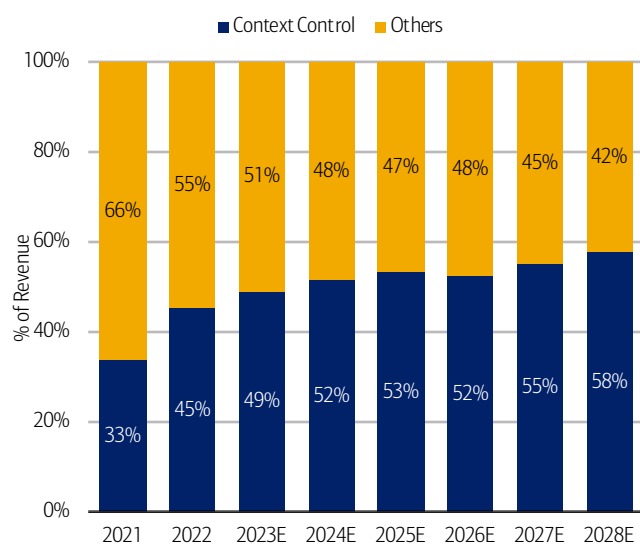


Source: Company Reports, BofA Global Research

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Exhibit 25: Optimization Revenue Mix Forecast by Product, 2021 - 2028E

We expect continued mix shift into Context Control within the Optimization segment as product adoption grows

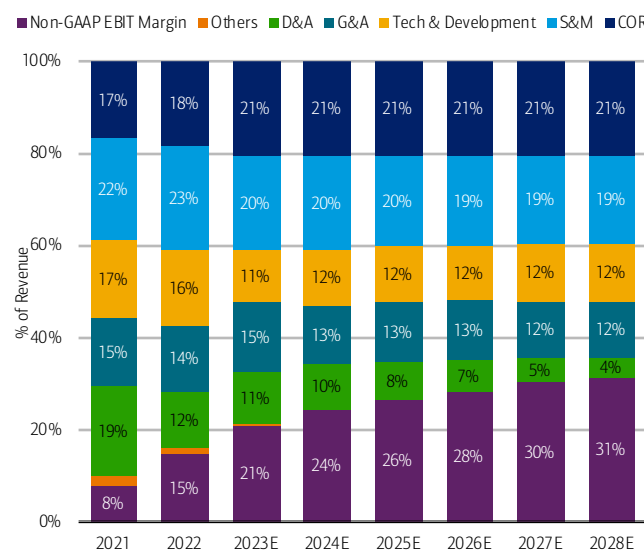


Source: Company Reports, BofA Global Research

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Exhibit 26: Operating Margin & Cost Structure Forecasts, 2021 - 2028E

We expect EBIT margin to steadily improve as topline grows, due to leverage in the cost model



Source: Company Reports, BofA Global Research

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Management Team

Lisa Utzschneider, Chief Executive Officer

Lisa Utzschneider is the Chief Executive Officer of Integral Ad Science and a member of the company's board of directors. Ms. Utzschneider joined IAS as CEO in January 2019, bringing more than 20 years of digital advertising expertise and tech-industry leadership experience to the role. Prior to joining IAS, Ms. Utzschneider was Chief Revenue Officer at Yahoo where she oversaw the company's global sales organization and provided solutions for advertisers worldwide. Ms. Utzschneider served as CRO until the acquisition of Yahoo by Verizon in June 2017. Previously, Ms. Utzschneider was Amazon's Vice President of Global Advertising Sales, where she developed the company's global advertising business through product, marketing, sales, and operations strategies, driving consistent revenue growth. Prior to Amazon, Ms. Utzschneider spent 10 years at Microsoft culminating in her role as General Manager of the national sales and service teams where she focused on driving revenue for the company's top online advertising accounts. She also developed the U.S. advertising go-to-market strategy. Ms. Utzschneider holds a Bachelor's degree from Bates College and a Master's degree in public administration from New York University.

Tania Secor, Chief Financial Officer

Tania Secor joined IAS as CFO in 2022 bringing 25 years of financial leadership, including 15 years in CFO and strategic finance roles with public and private companies. Most recently, she served as Global CFO of R/GA and Reprise, Interpublic Group's digital innovation and digital media agencies, respectively. Previously, Ms. Secor held CFO and other senior finance positions at high-growth technology, data, and professional services companies including Medidata Solutions, Dataminr, Gerson Lehrman Group, Bloomberg Digital Media, and McGraw-Hill. Ms. Secor also has a background in capital markets, having spent nearly a decade in investment banking at JPMorgan and investing at Weiss, Peck & Greer Private Equity Group. Ms. Secor is a highly accomplished finance leader with a proven track record of driving revenue and profitability at scale. Ms. Secor holds an MBA from Columbia Business School and a B.A. from Columbia College.

Price objective basis & risk

Integral Ad Science Holding Corp. (IAS)

Our \$19 PO is based on 18x FY24 EBITDA, consistent with the weighted average valuation of AdTech stocks. Our target multiple of 18x represents a discount to DV, IAS' main competitor, justified by slower forecasted growth.

Downside risks to our PO include: 1) significant worsening of macroeconomic conditions that lead to a decline in ad transaction volume, 2) inability to retain market share under the competitive pressure from DV, 3) slower than expected adoption of new Optimization products.

Analyst Certification

I, Omar Dessouky, CFA, 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				
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	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



US - Internet Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
	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

IQmethodSM Measures Definitions**Business Performance**

Return On Capital Employed

Return On Equity
Operating Margin
Earnings Growth
Free Cash Flow

Quality of Earnings

Cash Realization Ratio
Asset Replacement Ratio
Tax Rate
Net Debt-To-Equity Ratio
Interest Cover

Valuation Toolkit

Price / Earnings Ratio
Price / Book Value
Dividend Yield
Free Cash Flow Yield
Enterprise Value / Sales

EV / EBITDA

Numerator

NOPAT = (EBIT + Interest Income) × (1 – Tax Rate) + Goodwill Amortization

Net Income
Operating Profit
Expected 5 Year CAGR From Latest Actual
Cash Flow From Operations – Total Capex

Numerator

Cash Flow From Operations
Capex
Tax Charge
Net Debt = Total Debt – Cash & Equivalents
EBIT

Numerator

Current Share Price
Current Share Price
Annualised Declared Cash Dividend
Cash Flow From Operations – Total Capex
EV = Current Share Price × Current Shares + Minority Equity + Net Debt +
Other LT Liabilities
Enterprise Value

Denominator

Total Assets – Current Liabilities + ST Debt + Accumulated Goodwill
Amortization
Shareholders' Equity
Sales
N/A
N/A

Denominator

Net Income
Depreciation
Pre-Tax Income
Total Equity
Interest Expense

Denominator

Diluted Earnings Per Share (Basis As Specified)
Shareholders' Equity / Current Basic Shares
Current Share Price
Market Cap = Current Share Price × Current Basic Shares
Sales

Basic EBIT + Depreciation + Amortization

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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%

^{R2} Ratings dispersions may vary from time to time where BofA Global Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

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