**CORE** 



Siyuan Huang

#### Equity Research | Instant Insights

20 May 2022

Completed: 19-May-22, 22:18 GMT Kannan Venkateshwar +1 212 528 7054 kannan.venkateshwar@barclays.com BCI, US Ross Sandler +1 415 263 4470 ross.sandler@barclays.com BCI, US Released: 20-May-22, 04:10 GMT BCI, US David Joyce +1 212 526 7156 david.joyce@barclays.com Lauren Bonham +1 212 526 3856 lauren.bonham@barclays.com BCI, US

BCI, US

siyuan.huang@barclays.com

## U.S. Cable, Media & Telecom

# Signal in the Noise: Vol. 117

+1 212 528 7952

Theme This Week: Why exclusive theatrical movie releases may not be accretive for Netflix

Weekly Riff: Why exclusive theatrical movie releases may not be accretive for Netflix

**Weekly Monitor:** Wireless price increases; federal broadband spending guidelines released; Netflix interest in live streaming; another new football league

New Event Alert: We are pleased to launch a monthly <u>Signal in the Noise+ speaker series</u> which will bring together thought leaders across telecom and media to share their views on industry trends. We will launch on June 1<sup>st</sup> with a virtual keynote event, <u>Signal in the Noise+: Future of Media</u>. Speakers will include **Kevin Mayer**, who architected and launched Disney+ and is presently Co-CEO and founder of Candle Media, **Patrick Whitesell**, Executive Chairman of Endeavor, **Ravi Ahuja**, Chairman, Global Television Studios and Sony Pictures Entertainment Corporate Development and **Christopher Benyarko**, EVP of Direct to Consumer, NBA. **Please reach out to your sales representative to register for the event.** 

## Weekly Riff: Why theatrical movie releases may not be accretive for Netflix

The Noise: Netflix apparently considering exclusive theatrical windows for some movies

The Signal: With subscriber growth seemingly in a more mature phase, Netflix has to start looking at revenue maximization approaches that go beyond just unit growth. In that context, exclusive theatrical releases can provide an obvious way to add a substantial new revenue stream given the size of the global box office at \$42bn (2019 – pre Covid; ~\$21bn last year)[1], which Netflix does not tap into much at present. Also, this path could allow the company tap into revenue streams in China where it does not have an operation and monetized low priced markets like India better, since box office pricing is actually higher than pay TV pricing.

Exclusive time windows in effect carve up the demand curve for content based on marginal utility ascribed to a piece of content by different audiences, something that Netflix does not do at all today. In case of sports content, this audience tiering can be done by sport or by nature of event (play off vs regular season vs in/out of market etc). In the case of scripted content however, tiering is more difficult to do by content dimension itself which is why studios learned over their 100+ year history to optimize the demand curve based on time. There will always be audiences that are willing to pay a premium for a theatrical experience and/or immediacy of access, while other audiences may be willing to wait a bit longer to watch the same content in return for a lower price. As demonstrated by the legacy studio model, this time based tiering can increase lifetime value of films by 30%+<sup>[2]</sup> over and above box office revenues because of home video and TV licensing revenues, while some titles can see even more LTV upside due to merchandizing/licensing. This is something that Netflix's flat price model doesn't solve for as of today and in theory, a wide release with an exclusive theatrical window can add a new revenue stream without (arguably) cannibalizing its existing revenue base.

While we can see how top-line growth could benefit from this approach, the impact on profitability may not be as clear in our opinion. Studios tend pay 40-50% of box office collections to distributors while Netflix effectively pays nothing for distribution of movies under its present model. Also, in theory, subscriber acquisition cost (SAC) for theatrical releases is significantly higher than Netflix releases as marketing budgets for theatrical movies can be almost as big or even bigger in some instances than production budgets. In fact, we note that in the case of Netflix, marketing as a proportion of revenues has fallen continuously over the last 5 years despite content volumes increasing significantly over this period. While Disney does not break down marketing spend for studios, we note that growth in operating income at studios pre-Covid was slower than growth in theatrical revenues, implying not much operating leverage. Pre-Covid, Disney's studio SG&A to revenue ratio at 28% was much higher than Netflix overall at 18% partly because of the high marketing spend on a small pool of theatrical content at Disney.

In order to understand this trade-off between revenues and margins, we try to calculate the break-even threshold between the economics of a movie release in theaters vs a streaming service like Netflix. This can be done by dividing the lifetime profit generated by a given theatrical title by the LTV of each streaming sub. This would effectively give us the break-even number of subs that a movie needs to

bring into streaming to equate with theatrical economics.

In order to demonstrate the methodology, we use Spider-Man: No Way Home as a case study to understand how a successful release on this scale would impact streaming vs its theatrical performance (Figure 1). Spider-Man: No Way Home did \$805mm at the domestic box office and \$1.9bn globally. This equates to ~\$1.2bn in lifetime studio revenues (across theatrical, home entertainment, and TV licensing)<sup>[3]</sup>.

As seen in the table below, in order to break even with the theatrical economics of Spider-Man: No Way Home based on just lifetime value (defined as ARPU x customer lifetime – COGS – marketing)<sup>[4]</sup>, a streaming service like Netflix would need to add just 5-12% of the households that watched the movie in a theater, assuming Netflix churn of 2-4%. This analysis would seem to imply that even highly successful franchise titles can generate better returns on streaming than on theatrical.

Figure 1:

Spider Man: No Way Home P&L (\$mm)	
Tickets Sold (mm)	227
Average Ticket Price	\$6.36
Global Box Office Receipts	1,898
Splits	4490
Theatrical Rentals	825
Home Entertainment	215
TV Licensing	190
Total Studio Revenue	1,230
Production Costs	200
Video Costs	56
Participations and Residuals	84
Studio Gross Profit	890
Marketing Expense	248
Studio Gross Profit Less Marketing	642

Netflix Monthly ARPU	\$11.70	\$11.70	\$11.70
Assumed Monthly Churn Rate	4.00%	3.00%	2.00%
Assumed Netflix Gross Margin (2024)	359b	35%	35%
Lifetime Subscriber Value (per Household)	\$102.38	\$136.50	\$204.75
(-) SAC	\$27.00	\$27.00	\$27.00
Lifetime Subscriber Value (per Household) Less SAC	\$75.38	\$109.50	\$177.75

642	642	642
\$75.38	\$109.50	\$177.75
8.5	5.9	3.6
73.1	73.1	73.1
11.796	₫ 09e	4.990
0.590	a 390	0.296
	642 \$75.88 8.5 73.1 11.796	642 642 \$75.32 \$109.50 8.5 5.9 73.1 73.1 11.7% 6.0%

Source: Deadline, Company Report, Barclays Research

Based on this framework, streaming would seem to be the obvious distribution choice for revenue and profit maximization compared to theatrical. However, looking at this break-even from the filter of a single release can be highly misleading. One way to contextualize this is to look at Marvel releases in theatres vs on Disney+. The last 28 Marvel movies under Disney have generated  $\sim$ \$25bn<sup>[5]</sup> in revenues whereas Disney+, which includes most of these movies and a number of Marvel and Lucas originals may do  $\sim$ \$5bn in revenues this year based on our estimates. This is because of the fact that Marvel and Lucas fans, once they become subscribers of Disney+, pay a flat price for all content and content volumes have to keep increasing to keep this audience engaged. However, the theatrical model is monetized per view, across multiple windows which enables Disney to monetize the same fan multiple times. Subscriptions can also do generate comparable value of course across the lifetime of a subscriber. If we assume churn of somewhere between 2-3% for Disney+, its ARPU as of the last quarter would suggest life time revenues of roughly \$200-300 for each Disney+ household. Compared to this, a Marvel fan who may have watched every one of the last 28 movies would have generated on average  $\sim$ 170-225 (assuming global box office ticket price of \$6-8). At a household level, although the global number of people per home is  $\sim$ 4.9, this is skewed towards Africa and the Middle East excluding which, the average could be slightly north of  $3x^{[6]}$ . Therefore, lifetime value per family (to make it comparable to streaming) for theatrical releases could be \$500-675, much higher than streaming.

Also, this framework implicitly assumes that the consumption context for a given movie is the same across both streaming and theatrical. One way to think through this is to compare Red Notice, the most successful film release on Netflix as per the company with ~364mm hours viewed by more than 50% of subscribers in the first 28 days<sup>[7]</sup> with Black Panther which was watched roughly the same amount of time during its theatrical release based on total tickets sold and duration of the movie, assuming high completion rate. However, it is not improbable to assume that completion rates for Red Notice were likely much lower than theatrical viewing of Black Panther. This is partly because Red Notice also has to stand out against 5000+ other titles on the service at release, whereas a theatrical release has to compete with a much smaller subset to titles for attention. In addition, 'switching' cost to move to another piece of content in a theatrical environment is much higher than on a streaming service. This is partly why theatres tend to be more effective channels for building franchise and brands compared to say content releases on television. What is missing and almost impossible to determine in this

framework is what proportion of Red Notice viewers on Netflix would have actually spent the time and money to watch the same movie in a theater. Also, would Disney have been able to build Marvel into the same kind of franchise that it is today by purely releasing these movies on streaming and in that context, is a Netflix franchise really comparable to Disney's? Viewed from this perspective, the monetization of Marvel is still an on going process as a result of which the lifetime revenue and profitability per Marvel fan will keep growing overtime in a theatrical window. In contrast however, the value of a Marvel fan on Disney+ may arguably shrink overtime if Disney has to feed the service with much higher volumes and churn and ARPU don't grow at the same pace as content costs.

Given the above considerations, theatrical releases may drive more value than streaming over time and argues for theatrical windows remaining relevant at least over the medium term. While we recognize this opportunity, we believe the transition towards a theatrical model may not be accretive to overall earnings at least for a few years. We note that legacy studios like Warner Bros and Universal tend to margins in the 10-15% on a portfolio basis while Disney pre-Fox used to do margins double of this due to its success rate, lower volume and financing mix of movies. In the case of Netflix, if the company pivots towards exclusive theatrical releases, its marketing budget for movies alone may have exceeded its entire marketing budget for the whole service last year, specially given the volume of films released by Netflix. We also note that margins of ~10-15%, consistent with large studios may be difficult for Netflix given that legacy Hollywood studios generate significant sums from licensing of TV shows and libraries. Also, most legacy studios tend to have co financing deals for movies (with the notable exception of Disney) which tends to help reduce risk, something that Netflix may be less inclined towards given its exclusivity needs. Content costs in a theatrical model are also likely to have a higher variable component due to talent compensation being linked to box office performance rather than the fixed cost model presently used by Netflix.

This is why it is not clear if theatrical exclusivity can actually be accretive for Netflix. We note that last year, Netflix released more movies than the top 5 studios combined. One alternative could be to have a balanced model of a small sub set of titles being released exclusively into a theatrical window but most titles being released directly on the streaming service. However, even this approach would require the theatrical releases to be extremely successful in order to be accretive for overall economics. This is why Netflix may have to be a lot more selective with respect to the movies it does release into an exclusive theatrical window if the company does go down this path. In this scenario, the actual impact of the strategy pivot on revenues and earnings may not be material.

In our opinion, if Netflix does decide to go down this path, it will have to be part of a bigger strategic shift to scale other revenue lines like merchandizing, games or even live events/pop up theme parks in a bigger way. That approach would support higher spend on each title to drive multiple revenue lines over time, similar to Disney's approach today. This is also why flipping to theatrical exclusivity is not a trivial decision and needs to be a more comprehensive strategic decision which will need a very difficult approach to content overall.

## **Weekly Monitor**

**Telecom companies raise price**: Verizon became the latest telecom company to raise price this week, pointing to inflationary cost pressures. TMUS did not explicitly raise price but had modified its plans to add taxes and fees separately to certain plans (which were previously part of plan price) in Q1. AT&T announced price increases of \$6 a month for single lines and up to \$12 per month for families on May 3<sup>rd</sup>. Verizon's price increase applies to almost its entire base of retail and wireless subs and could add \$700-800mm in EBITDA annually. What is not clear is how these prices increases will impact overall industry growth which has been at record levels for the last couple of years, especially given the broader macro backdrop and competitive wireless offerings from cable companies.

**Guidelines on federal broadband spending program released:** The NTIA released guidelines for the \$42.5bn Broadband Equity, Access and Deployment (BEAD) program in a Notice of Funding Opportunity (NOFO) last week (Please see What is the impact of Infrastructure Act on Cable/Telco 13 Dec 2021). The deadline for states to submit letters of intent is July 18th and funding allotted to each state will not be determined until the FCC publishes updated Broadband DATA Maps to determine unserved /underserved locations.

Notably, the guidelines prioritize fiber broadband deployment. In selecting between competing proposals for the same location, the notice states proposals under consideration should be "Priority Broadband Projects," which are defined as those using only end-to-end fiber-optics. The notice further emphasizes fiber capability to scale speeds over time, stating that fiber projects will "ensure that the network built by the project can easily scale speeds over time to meet the evolving connectivity needs of households and businesses and support the deployment of 5G, successor wireless technologies, and other advanced services". Only if the state does not receive a proposal for fiber deployment (within guidance) can it consider other proposals that can deliver "Reliable Broadband Service," which is defined to include fiber, cable, DSL, and fixed wireless. While ultimately the selection of proposals and allocation of funding to operators is up to each state, the states must submit proposals that adhere to guidance to the NTIA in order to determine allotment of funding received.

Figure 2: Telco/Cable broadband overlap by zip code

	As of Q321							
	ZIP codes with listed telco HSD subs	Shared ZIP codes - Altice USA	Shared ZIP codes - Cable One	Shared ZIP codes - Charter	Shared ZIP codes - Compast	Shared ZIP codes - Cox	Shared ZIP codes -	Shared ZIP codes - WOW
AT&T	3005	Alloe USA	Cable One	Crist agr	Comcest	0005 - COX	Wediadorn	***
No. of ZIP codes	11,433	1.018	563	4.885	3.645	718	903	335
% in common	11,455	8.9%		42.6%	31.9%		7.9%	2.9%
Lumen Technologies		0.3%	4.5%	42.0%	31.370	0.3%	1.5%	2.5%
No. of ZIP codes	9.095	557	302	2.758	2,195	524	1,309	56
% in common	3,035	6.1%		30.3%	24.1%		14.496	0.6%
Frontier Communication	ne.	0.196	3.3%	30.3%	24.170	0.090	14.430	0.0%
No. of ZIP codes	6.750	682	318	2.992	1,698	82	1.081	127
% in common	0,750	10.1%		44.3%	25.2%		18.0%	1.9%
Verizon		10.170	4.770	44.3%	20.270	1.270	10.036	1.5%
No. of ZIP codes	5.077	758	0	1.339	2.616	250	28	0
% in common	5,077	14.9%		26.4%	51.5%		0.6%	0.0%
Windstream		14.5%	0.0%	20.4%	01.070	4.5%	0.0%	0.0%
No. of ZIP codes	4.480	382	92	1.282	808	123	812	12
% in common	4,400	8.6%		28.7%	18.1%		18.2%	0.3%
N III GOITHIGH		0.074	2.170	20.770	10.170	20%	10.270	0.570
Averages								
No. of ZIP codes	7.383	679	255	2.647	2.192	339	827	133
% in common	.,	9.2%	3.5%	35.9%	29.8%	4.6%	11,296	1.8%
Total unique ZIP codes	-							
No. of ZIP codes	27,457	2,588	956	9,188	8,542	1,408	2,702	410
% in common		9.4%	3.5%	33.5%	31.1%	5.1%	9.8%	1.5%

Source: SNL Kagan

Streamers and the livestreamed content opportunity, including sports. While the NFLX livestreamed content effort seems to be focused on reality contests and stand-up comedy, this capability would provide the option to enter bigger opportunities such as live sports in the future. In addition, it could allow for new content formats where viewers interact live with content thereby allowing for a gamified viewing experience in some instances. This would also allow for new ways to monetize advertising and make its ad offering a lot more directly comparable to legacy broadcast in some instances. Amazon has already proven out a model for livestreaming sports globally in various pockets, and could continue broadening its scope. In that regard, Endeavor Holdings' CEO, Ari Emanuel, replied at an investor conference, when asked about the potential Amazon interest in UFC rights when the Disney/ESPN+ deal expires after 2025, "I'm smiling." Part of the rationale for our recent upgrade of Endeavor shares in this note (please see Upgrading EDR to OW: A Defensive Growth Media Play, 13 May 2022) is based on the position of strength they are in as a supplier of content, both as an agent for the inputs (actors, athletes, etc.) as well as an owner of leagues (UFC, PBR) and events. Along these lines, we note that the increasingly popular Formula 1 US media rights expire this year, and while that company has operating and sponsorship relationships with Amazon/AWS, as well as having its *Drive to Survive* docuseries relationship with Netflix, there is logic that the livestreaming capability, broad subscriber reach, and desire for high-advertising-CPM-opportunity sports programming could lead to streaming competition vs. DIS for those F1 rights.

Are you ready for some (more) football? Within weeks after next season's SuperBowl, the XFL will finally launch (again), with carriage on Disney's ABC, ESPN and FX networks, and exclusive content across Disney properties including ESPN+. The XFL had been revived in 2018 by WWE Chairman/CEO Vince McMahon (who initially founded it in 2001), but after just five weeks of play in 2020, COVID shut it down. It was acquired out of bankruptcy for \$15mm by Dwayne "The Rock" Johnson, his business partner/ex-wife Dany Garcia, and sports merchant banker/investor RedBird Capital Partners. The XFL season will consist of 40 regular season games, 2 playoffs, and a championship. It will be followed by the second season of Fox's new USFL (who also has a broadcast partner in NBC), which wraps up mid-summer, roughly a month+ before the NFL pre-season. Therefore, these additions of more professional football are attempts to fill out the calendar possibly without diluting the NFL franchise. The driver behind the launch of these two new leagues is the fact that 75% of the top 100 most-watched events on TV in 2021 were NFL games - which drives subscription and advertising revenue, and therefore creates the media rights business model for the IP owners. However, for the media companies, football can still end up being a loss leader, as evidenced by Fox's early exit from Thursday Night Football (Amazon bought those NFL rights), which should be a \$350mm-\$400mm EBITDA tailwind for Fox next season. This means that the core viewership-driven allocation of advertising and subscription/affiliate fee revenue alone may not be enough to make sports rights viable - other monetizable adjacencies may be needed (Amazon Prime or Netflix subscriptions, Apple iPhones, etc.) to attract and retain customers to whatever platform acquires these rights. This, in addition to multiple new distribution avenues due to streaming proliferation, has resulted in demand for niche events which despite past struggles, continue to spring up from time to time.

- [1] Source: https://www.motionpictures.org/wp-content/uploads/2022/03/MPA-2021-THEME-Report-FINAL.pdf
- [2] Based on average home video and TV licensing revenue as a % of total box office for the last 24 Marvel movies
- [3] Source Deadline -link
- [4] please see: A new valuation framework for growth companies, September 23, 2019 for more details on this method
- [5] https://www.businessinsider.com/marvel-movies-ranked-how-much-money-at-global-box-office-2021-11
- $[6]\ https://www.pewresearch.org/fact-tank/2020/03/31/with-billions-confined-to-their-homes-worldwide-which-living-arrangements-are-defined-to-their-homes-worldwide-which-living-are-defined-to-their-homes-worldwide-wh$

most-common/#:~:text=Around%20the%20world%2C%20the%20average,)%20and%20Europe%20(3.1).

[7] https://www.businessinsider.com/most-popular-netflix-movies-based-on-watch-time-2021-12

#### Restricted - External

#### Analyst(s) Certification(s):

We, Kannan Venkateshwar, Ross Sandler and David Joyce, hereby certify (1) that the views expressed in this research report accurately reflect our personal views about any or all of the subject securities or issuers referred to in this research report and (2) no part of our compensation was, is or will be directly or indirectly related to the specific recommendations or views expressed in this research report.

#### **Important Disclosures:**

Barclays Capital Inc. and/or one of its affiliates does and seeks to do business with companies 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.

Barclays Research is produced by the Investment Bank of Barclays Bank PLC and its affiliates (collectively and each individually, "Barclays"). All authors contributing to this research report are Research Analysts unless otherwise indicated. The publication date at the top of the report reflects the local time where the report was produced and may differ from the release date provided in GMT.

#### **Availability of Disclosures:**

Where any companies are the subject of this research report, for current important disclosures regarding those companies please refer to https://publicresearch.barclays.com or alternatively send a written request to: Barclays Research Compliance, 745 Seventh Avenue, 13th Floor, New York, NY 10019 or call +1-212-526-1072.

The analysts responsible for preparing this research report have received compensation based upon various factors including the firm's total revenues, a portion of which is generated by investment banking activities, the profitability and revenues of the Markets business and the potential interest of the firm's investing clients in research with respect to the asset class covered by the analyst.

Analysts regularly conduct site visits to view the material operations of covered companies, but Barclays policy prohibits them from accepting payment or reimbursement by any covered company of their travel expenses for such visits.

Barclays Research Department produces various types of research including, but not limited to, fundamental analysis, equity-linked analysis, quantitative analysis, and trade ideas. Recommendations contained in one type of Barclays Research may differ from those contained in other types of Barclays Research, whether as a result of differing time horizons, methodologies, or otherwise.

In order to access Barclays Statement regarding Research Dissemination Policies and Procedures, please refer to https://publicresearch.barcap.com/S/RD.htm. In order to access Barclays Research Conflict Management Policy Statement, please refer to: https://publicresearch.barcap.com/S/CM.htm.

## Risk Disclosure(s)

Master limited partnerships (MLPs) are pass-through entities structured as publicly listed partnerships. For tax purposes, distributions to MLP unit holders may be treated as a return of principal. Investors should consult their own tax advisors before investing in MLP units.

## **Disclosure(s) regarding Information Sources**

Copyright © (2022) Sustainalytics. Sustainalytics retains ownership and all intellectual property rights in its proprietary information and data that may be included in this report. Any Sustainalytics' information and data included herein may not be copied or redistributed, is intended for informational purposes only, does not constitute investment advice and is not warranted to be complete, timely and accurate. Sustainalytics' information and data is subject to conditions available at https://www.sustainalytics.com/legal-disclaimers/

Bloomberg® is a trademark and service mark of Bloomberg Finance L.P. and its affiliates (collectively "Bloomberg") and the Bloomberg Indices are trademarks of Bloomberg. Bloomberg or Bloomberg's licensors own all proprietary rights in the Bloomberg Indices. Bloomberg does not approve or endorse this material, or guarantee the accuracy or completeness of any information herein, or make any warranty, express or implied, as to the results to be obtained therefrom and, to the maximum extent allowed by law, Bloomberg shall have no liability or responsibility for injury or damages arising in connection therewith.

## Mentioned Stocks (Ticker, Date, Price)

AT&T (T, 19-May-2022, USD 20.21), Overweight/Neutral, A/CD/CE/D/E/J/K/L/M/N

Endeavor Holdings (EDR, 19-May-2022, USD 19.76), Overweight/Neutral, CE/FA/J

Netflix, Inc. (NFLX, 19-May-2022, USD 183.48), Equal Weight/Neutral, CD/CE/J/K/N

T-Mobile US Inc. (TMUS, 19-May-2022, USD 125.88), Overweight/Neutral, A/CD/CE/D/J/K/L/M/N

Verizon Communications Inc. (VZ, 19-May-2022, USD 49.10), Equal Weight/Neutral, A/CD/CE/D/E/J/K/L/M/N

Walt Disney Co. (DIS, 19-May-2022, USD 103.14), Equal Weight/Neutral, CD/CE/J/K/N

Unless otherwise indicated, prices are sourced from Bloomberg and reflect the closing price in the relevant trading market, which may not be the last available closing price at the time of publication.

#### **Disclosure Legend:**

A: Barclays Bank PLC and/or an affiliate has been lead manager or co-lead manager of a publicly disclosed offer of securities of the issuer in the previous 12 months.

**B:** An employee or non-executive director of Barclays PLC is a director of this issuer.

CD: Barclays Bank PLC and/or an affiliate is a market-maker in debt securities issued by this issuer.

CE: Barclays Bank PLC and/or an affiliate is a market-maker in equity securities issued by this issuer.

**CH:** Barclays Bank PLC and/or its group companies makes, or will make, a market in the securities (as defined under paragraph 16.2 (k) of the HK SFC Code of Conduct) in respect of this issuer.

**D:** Barclays Bank PLC and/or an affiliate has received compensation for investment banking services from this issuer in the past 12 months.

**E:** Barclays Bank PLC and/or an affiliate expects to receive or intends to seek compensation for investment banking services from this issuer within the next 3 months.

**FA:** Barclays Bank PLC and/or an affiliate beneficially owns 1% or more of a class of equity securities of this issuer, as calculated in accordance with US regulations.

**FB:** Barclays Bank PLC and/or an affiliate beneficially owns a long position of more than 0.5% of a class of equity securities of this issuer, as calculated in accordance with EU regulations.

FC: Barclays Bank PLC and/or an affiliate beneficially owns a short position of more than 0.5% of a class of equity securities of this issuer, as calculated in accordance with EU regulations.

**FD:** Barclays Bank PLC and/or an affiliate beneficially owns 1% or more of a class of equity securities of this issuer, as calculated in accordance with South Korean regulations.

**FE:** Barclays Bank PLC and/or its group companies has financial interests in relation to this issuer and such interests aggregate to an amount equal to or more than 1% of this issuer's market capitalization, as calculated in accordance with HK regulations.

**GD:** One of the Research Analysts on the fundamental credit coverage team (and/or a member of his or her household) has a long position in the common equity securities of this issuer.

**GE:** One of the Research Analysts on the fundamental equity coverage team (and/or a member of his or her household) has a long position in the common equity securities of this issuer.

H: This issuer beneficially owns more than 5% of any class of common equity securities of Barclays PLC.

I: Barclays Bank PLC and/or an affiliate is party to an agreement with this issuer for the provision of financial services to Barclays Bank PLC and/or an affiliate.

**J:** Barclays Bank PLC and/or an affiliate is a liquidity provider and/or trades regularly in the securities of this issuer and/or in any related derivatives.

**K:** Barclays Bank PLC and/or an affiliate has received non-investment banking related compensation (including compensation for brokerage services, if applicable) from this issuer within the past 12 months.

L: This issuer is, or during the past 12 months has been, an investment banking client of Barclays Bank PLC and/or an affiliate.

M: This issuer is, or during the past 12 months has been, a non-investment banking client (securities related services) of Barclays Bank PLC and/or an affiliate.

N: This issuer is, or during the past 12 months has been, a non-investment banking client (non-securities related services) of Barclays Bank PLC and/or an affiliate.

O: Not in use.

**P:** A partner, director or officer of Barclays Capital Canada Inc. has, during the preceding 12 months, provided services to the subject company for remuneration, other than normal course investment advisory or trade execution services.

**Q:** Barclays Bank PLC and/or an affiliate is a Corporate Broker to this issuer.

R: Barclays Capital Canada Inc. and/or an affiliate has received compensation for investment banking services from this issuer in the past 12 months.

S: This issuer is a Corporate Broker to Barclays PLC.

T: Barclays Bank PLC and/or an affiliate is providing equity advisory services to this issuer.

U: The equity securities of this Canadian issuer include subordinate voting restricted shares.

V: The equity securities of this Canadian issuer include non-voting restricted shares.

## **Guide to the Barclays Fundamental Equity Research Rating System:**

Our coverage analysts use a relative rating system in which they rate stocks as Overweight, Equal Weight or Underweight (see definitions below) relative to other companies covered by the analyst or a team of analysts that are deemed to be in the same industry ("the industry coverage universe"). To see a list of companies that comprise a particular industry coverage universe, please go to https://publicresearch.barclays.com.

In addition to the stock rating, we provide industry views which rate the outlook for the industry coverage universe as Positive, Neutral or Negative (see definitions below). A rating system using terms such as buy, hold and sell is not the equivalent of our rating system. Investors should carefully read the entire research report including the definitions of all ratings and not infer its contents from ratings alone.

#### **Stock Rating**

**Overweight** - The stock is expected to outperform the unweighted expected total return of the industry coverage universe over a 12-month investment horizon.

**Equal Weight** - The stock is expected to perform in line with the unweighted expected total return of the industry coverage universe over a 12-month investment horizon.

**Underweight** - The stock is expected to underperform the unweighted expected total return of the industry coverage universe over a 12-month investment horizon.

**Rating Suspended** - The rating and target price have been suspended temporarily due to market events that made coverage impracticable or to comply with applicable regulations and/or firm policies in certain circumstances including where the Investment Bank of Barclays Bank PLC is acting in an advisory capacity in a merger or strategic transaction involving the company.

#### **Industry View**

**Positive** - industry coverage universe fundamentals/valuations are improving.

Neutral - industry coverage universe fundamentals/valuations are steady, neither improving nor deteriorating.

**Negative** - industry coverage universe fundamentals/valuations are deteriorating.

#### **Distribution of Ratings:**

Barclays Equity Research has 1734 companies under coverage.

52% have been assigned an Overweight rating which, for purposes of mandatory regulatory disclosures, is classified as a Buy rating; 52% of companies with this rating are investment banking clients of the Firm; 70% of the issuers with this rating have received financial services from the Firm.

33% have been assigned an Equal Weight rating which, for purposes of mandatory regulatory disclosures, is classified as a Hold rating; 41% of companies with this rating are investment banking clients of the Firm; 68% of the issuers with this rating have received financial services from the Firm.

13% have been assigned an Underweight rating which, for purposes of mandatory regulatory disclosures, is classified as a Sell rating; 32% of companies with this rating are investment banking clients of the Firm; 64% of the issuers with this rating have received financial services from the Firm.

#### **Guide to the Barclays Research Price Target:**

Each analyst has a single price target on the stocks that they cover. The price target represents that analyst's expectation of where the stock will trade in the next 12 months. Upside/downside scenarios, where provided, represent potential upside/potential downside to each analyst's price target over the same 12-month period.

#### **Top Picks:**

Barclays Equity Research's "Top Picks" represent the single best alpha-generating investment idea within each industry (as defined by the relevant "industry coverage universe"), taken from among the Overweight-rated stocks within that industry. While analysts may highlight other Overweight-rated stocks in their published research in addition to their Top Pick, there can only be one "Top Pick" for each industry. To view the current list of Top Picks, go to the Top Picks page on Barclays Live (https://live.barcap.com/go/keyword /TopPicks).

To see a list of companies that comprise a particular industry coverage universe, please go to https://publicresearch.barclays.com.

#### Types of investment recommendations produced by Barclays Equity Research:

In addition to any ratings assigned under Barclays' formal rating systems, this publication may contain investment recommendations in the form of trade ideas, thematic screens, scorecards or portfolio recommendations that have been produced by analysts within Equity Research. Any such investment recommendations shall remain open until they are subsequently amended, rebalanced or closed in a future research report.

Barclays may also re-distribute equity research reports produced by third-party research providers that contain recommendations that differ from and/or conflict with those published by Barclays' Equity Research Department.

#### Disclosure of other investment recommendations produced by Barclays Equity Research:

Barclays Equity Research may have published other investment recommendations in respect of the same securities/instruments recommended in this research report during the preceding 12 months. To view all investment recommendations published by Barclays Equity Research in the preceding 12 months please refer to https://live.barcap.com/go/research/Recommendations.

## Legal entities involved in producing Barclays Research:

Barclays Bank PLC (Barclays, UK)

Barclays Capital Inc. (BCI, US)

Barclays Bank Ireland PLC, Frankfurt Branch (BBI, Frankfurt)

Barclays Bank Ireland PLC, Paris Branch (BBI, Paris)

Barclays Bank Ireland PLC, Milan Branch (BBI, Milan)

Barclays Securities Japan Limited (BSJL, Japan)

Barclays Bank PLC, Hong Kong Branch (Barclays Bank, Hong Kong)

Barclays Capital Canada Inc. (BCCI, Canada)

Barclays Bank Mexico, S.A. (BBMX, Mexico)

Barclays Capital Casa de Bolsa, S.A. de C.V. (BCCB, Mexico)

Barclays Securities (India) Private Limited (BSIPL, India)

Barclays Bank PLC, India Branch (Barclays Bank, India)

Barclays Bank PLC, Singapore Branch (Barclays Bank, Singapore)

Barclays Bank PLC, DIFC Branch (Barclays Bank, DIFC)

#### **Disclaimer:**

This publication has been produced by Barclays Research Department in the Investment Bank of Barclays Bank PLC and/or one or more of its affiliates (collectively and each individually, "Barclays").

It has been prepared for institutional investors and not for retail investors. It has been distributed by one or more Barclays affiliated legal entities listed below or by an independent and non-affiliated third-party entity (as may be communicated to you by such thirdparty entity in its communications with you). It is provided for information purposes only, and Barclays makes no express or implied warranties, and expressly disclaims all warranties of merchantability or fitness for a particular purpose or use with respect to any data included in this publication. To the extent that this publication states on the front page that it is intended for institutional investors and is not subject to all of the independence and disclosure standards applicable to debt research reports prepared for retail investors under U.S. FINRA Rule 2242, it is an "institutional debt research report" and distribution to retail investors is strictly prohibited. Barclays also distributes such institutional debt research reports to various issuers, media, regulatory and academic organisations for their own internal informational news gathering, regulatory or academic purposes and not for the purpose of making investment decisions regarding any debt securities. Media organisations are prohibited from re-publishing any opinion or recommendation concerning a debt issuer or debt security contained in any Barclays institutional debt research report. Any such recipients that do not want to continue receiving Barclays institutional debt research reports should contact debtresearch@barclays.com. Clients that are subscribed to receive equity research reports, will not receive certain cross asset research reports co-authored by equity and FICC research analysts that are distributed as "institutional debt research reports" unless they have agreed to accept such reports. Eligible clients may get access to such cross asset reports by contacting debtresearch@barclays.com. Barclays will not treat unauthorized recipients of this report as its clients and accepts no liability for use by them of the contents which may not be suitable for their personal use. Prices shown are indicative and Barclays is not offering to buy or sell or soliciting offers to buy or sell any financial

Without limiting any of the foregoing and to the extent permitted by law, in no event shall Barclays, nor any affiliate, nor any of their respective officers, directors, partners, or employees have any liability for (a) any special, punitive, indirect, or consequential damages; or (b) any lost profits, lost revenue, loss of anticipated savings or loss of opportunity or other financial loss, even if notified of the possibility of such damages, arising from any use of this publication or its contents.

Other than disclosures relating to Barclays, the information contained in this publication has been obtained from sources that Barclays Research believes to be reliable, but Barclays does not represent or warrant that it is accurate or complete. Barclays is not responsible for, and makes no warranties whatsoever as to, the information or opinions contained in any written, electronic, audio or video presentations of third parties that are accessible via a direct hyperlink in this publication or via a hyperlink to a third-party web site ('Third-Party Content'). Any such Third-Party Content has not been adopted or endorsed by Barclays, does not represent the views or opinions of Barclays, and is not incorporated by reference into this publication. Third-Party Content is provided for information purposes only and Barclays has not independently verified its accuracy or completeness.

The views in this publication are solely and exclusively those of the authoring analyst(s) and are subject to change, and Barclays Research has no obligation to update its opinions or the information in this publication. Unless otherwise disclosed herein, the analysts who authored this report have not received any compensation from the subject companies in the past 12 months. If this publication contains recommendations, they are general recommendations that were prepared independently of any other interests, including those of Barclays and/or its affiliates, and/or the subject companies. This publication does not contain personal investment recommendations or investment advice or take into account the individual financial circumstances or investment objectives of the clients who receive it. Barclays is not a fiduciary to any recipient of this publication. The securities and other investments discussed herein may not be suitable for all investors and may not be available for purchase in all jurisdictions. The United States imposed sanctions on certain Chinese companies (https://home.treasury.gov/policy-issues/financial-sanctions/sanctions-programs-and-countryinformation/chinese-military-companies-sanctions), which may restrict U.S. persons from purchasing securities issued by those companies. Investors must independently evaluate the merits and risks of the investments discussed herein, including any sanctions restrictions that may apply, consult any independent advisors they believe necessary, and exercise independent judgment with regard to any investment decision. The value of and income from any investment may fluctuate from day to day as a result of changes in relevant economic markets (including changes in market liquidity). The information herein is not intended to predict actual results, which may differ substantially from those reflected. Past performance is not necessarily indicative of future results. The information provided does not constitute a financial benchmark and should not be used as a submission or contribution of input data for the purposes of determining a financial benchmark.

**Third Party Distribution:** Any views expressed in this communication are solely those of Barclays and have not been adopted or endorsed by any third party distributor.

United Kingdom: This document is being distributed (1) only by or with the approval of an authorised person (Barclays Bank PLC) or

(2) to, and is directed at (a) persons in the United Kingdom having professional experience in matters relating to investments and who fall within the definition of "investment professionals" in Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (the "Order"); or (b) high net worth companies, unincorporated associations and partnerships and trustees of high value trusts as described in Article 49(2) of the Order; or (c) other persons to whom it may otherwise lawfully be communicated (all such persons being "Relevant Persons"). Any investment or investment activity to which this communication relates is only available to and will only be engaged in with Relevant Persons. Any other persons who receive this communication should not rely on or act upon it. Barclays Bank PLC is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority and is a member of the London Stock Exchange.

European Economic Area ("EEA"): This material is being distributed to any "Authorised User" located in a Restricted EEA Country by Barclays Bank Ireland PLC. The Restricted EEA Countries are Austria, Bulgaria, Estonia, Finland, Hungary, Iceland, Liechtenstein, Lithuania, Luxembourg, Malta, Portugal, Romania, Slovakia and Slovenia. For any other "Authorised User" located in a country of the European Economic Area, this material is being distributed by Barclays Bank PLC. Barclays Bank Ireland PLC is a bank authorised by the Central Bank of Ireland whose registered office is at 1 Molesworth Street, Dublin 2, Ireland. Barclays Bank PLC is not registered in France with the Autorité des marchés financiers or the Autorité de contrôle prudentiel. Authorised User means each individual associated with the Client who is notified by the Client to Barclays and authorised to use the Research Services. The Restricted EEA Countries will be amended if required.

Americas: The Investment Bank of Barclays Bank PLC undertakes U.S. securities business in the name of its wholly owned subsidiary Barclays Capital Inc., a FINRA and SIPC member. Barclays Capital Inc., a U.S. registered broker/dealer, is distributing this material in the United States and, in connection therewith accepts responsibility for its contents. Any U.S. person wishing to effect a transaction in any security discussed herein should do so only by contacting a representative of Barclays Capital Inc. in the U.S. at 745 Seventh Avenue, New York, New York 10019.

Non-U.S. persons should contact and execute transactions through a Barclays Bank PLC branch or affiliate in their home jurisdiction unless local regulations permit otherwise.

This material is distributed in Canada by Barclays Capital Canada Inc., a registered investment dealer, a Dealer Member of IIROC (www.iiroc.ca), and a Member of the Canadian Investor Protection Fund (CIPF).

This material is distributed in Mexico by Barclays Bank Mexico, S.A. and/or Barclays Capital Casa de Bolsa, S.A. de C.V. This material is distributed in the Cayman Islands and in the Bahamas by Barclays Capital Inc., which it is not licensed or registered to conduct and does not conduct business in, from or within those jurisdictions and has not filed this material with any regulatory body in those jurisdictions.

**Japan:** This material is being distributed to institutional investors in Japan by Barclays Securities Japan Limited. Barclays Securities Japan Limited is a joint-stock company incorporated in Japan with registered office of 6-10-1 Roppongi, Minato-ku, Tokyo 106-6131, Japan. It is a subsidiary of Barclays Bank PLC and a registered financial instruments firm regulated by the Financial Services Agency of Japan. Registered Number: Kanto Zaimukyokucho (kinsho) No. 143.

**Asia Pacific (excluding Japan):** Barclays Bank PLC, Hong Kong Branch is distributing this material in Hong Kong as an authorised institution regulated by the Hong Kong Monetary Authority. Registered Office: 41/F, Cheung Kong Center, 2 Queen's Road Central, Hong Kong.

All Indian securities-related research and other equity research produced by Barclays' Investment Bank are distributed in India by Barclays Securities (India) Private Limited (BSIPL). BSIPL is a company incorporated under the Companies Act, 1956 having CIN U67120MH2006PTC161063. BSIPL is registered and regulated by the Securities and Exchange Board of India (SEBI) as a Research Analyst: INH000001519; Portfolio Manager INP000002585; Stock Broker INZ000269539 (member of NSE and BSE); Depository Participant with the National Securities & Depositories Limited (NSDL): DP ID: IN-DP-NSDL-299-2008; Investment Adviser: INA000000391. BSIPL is also registered as a Mutual Fund Advisor having AMFI ARN No. 53308.The registered office of BSIPL is at 208, Ceejay House, Shivsagar Estate, Dr. A. Besant Road, Worli, Mumbai – 400 018, India. Telephone No: +91 22 67196363. Fax number: +91 22 67196399. Any other reports produced by Barclays' Investment Bank are distributed in India by Barclays Bank PLC, India Branch, an associate of BSIPL in India that is registered with Reserve Bank of India (RBI) as a Banking Company under the provisions of The Banking Regulation Act, 1949 (Regn No BOM43) and registered with SEBI as Merchant Banker (Regn No INM000002129) and also as Banker to the Issue (Regn No INBI00000950). Barclays Investments and Loans (India) Limited, registered with RBI as Non Banking Financial Company (Regn No RBI CoR-07-00258), and Barclays Wealth Trustees (India) Private Limited, registered with Registrar of Companies (CIN U93000MH2008PTC188438), are associates of BSIPL in India that are not authorised to distribute any reports produced by Barclays' Investment Bank.

This material is distributed in Singapore by the Singapore Branch of Barclays Bank PLC, a bank licensed in Singapore by the Monetary Authority of Singapore. For matters in connection with this material, recipients in Singapore may contact the Singapore branch of Barclays Bank PLC, whose registered address is 10 Marina Boulevard, #23-01 Marina Bay Financial Centre Tower 2, Singapore 018983. This material, where distributed to persons in Australia, is produced or provided by Barclays Bank PLC.

This communication is directed at persons who are a "Wholesale Client" as defined by the Australian Corporations Act 2001. Please note that the Australian Securities and Investments Commission (ASIC) has provided certain exemptions to Barclays Bank PLC (BBPLC) under paragraph 911A(2)(I) of the Corporations Act 2001 from the requirement to hold an Australian financial services licence (AFSL) in respect of financial services provided to Australian Wholesale Clients, on the basis that BBPLC is authorised by the Prudential Regulation Authority of the United Kingdom (PRA) and regulated by the Financial Conduct Authority (FCA) of the United Kingdom and the PRA under United Kingdom laws. The United Kingdom has laws which differ from Australian laws. To the extent that this communication involves the provision of financial services by BBPLC to Australian Wholesale Clients, BBPLC relies on the relevant exemption from the requirement to hold an AFSL. Accordingly, BBPLC does not hold an AFSL.

This communication may be distributed to you by either: (i) Barclays Bank PLC directly or (ii) Barrenjoey Markets Pty Limited (ACN 636 976 059, "Barrenjoey"), the holder of Australian Financial Services Licence (AFSL) 521800, a non-affiliated third party distributor, where clearly identified to you by Barrenjoey. Barrenjoey is not an agent of Barclays Bank PLC.

This material, where distributed in New Zealand, is produced or provided by Barclays Bank PLC. Barclays Bank PLC is not registered, filed with or approved by any New Zealand regulatory authority. This material is not provided under or in accordance with the Financial Markets Conduct Act of 2013 ("FMCA"), and is not a disclosure document or "financial advice" under the FMCA. This material is distributed to you by either: (i) Barclays Bank PLC directly or (ii) Barrenjoey Markets Pty Limited ("Barrenjoey"), a non-affiliated third party distributor, where clearly identified to you by Barrenjoey. Barrenjoey is not an agent of Barclays Bank PLC. This material may only be distributed to "wholesale investors" that meet the "investment business", "investment activity", "large", or "government agency" criteria specified in Schedule 1 of the FMCA.

Middle East: Nothing herein should be considered investment advice as defined in the Israeli Regulation of Investment Advisory, Investment Marketing and Portfolio Management Law, 1995 ("Advisory Law"). This document is being made to eligible clients (as defined under the Advisory Law) only. Barclays Israeli branch previously held an investment marketing license with the Israel Securities Authority but it cancelled such license on 30/11/2014 as it solely provides its services to eligible clients pursuant to available exemptions under the Advisory Law, therefore a license with the Israel Securities Authority is not required. Accordingly, Barclays does not maintain an insurance coverage pursuant to the Advisory Law.

This material is distributed in the United Arab Emirates (including the Dubai International Financial Centre) and Qatar by Barclays Bank PLC. Barclays Bank PLC in the Dubai International Financial Centre (Registered No. 0060) is regulated by the Dubai Financial Services Authority (DFSA). Principal place of business in the Dubai International Financial Centre: The Gate Village, Building 4, Level 4, PO Box 506504, Dubai, United Arab Emirates. Barclays Bank PLC-DIFC Branch, may only undertake the financial services activities that fall within the scope of its existing DFSA licence. Related financial products or services are only available to Professional Clients, as defined by the Dubai Financial Services Authority. Barclays Bank PLC in the UAE is regulated by the Central Bank of the UAE and is licensed to conduct business activities as a branch of a commercial bank incorporated outside the UAE in Dubai (Licence No.: 13/1844/2008, Registered Office: Building No. 6, Burj Dubai Business Hub, Sheikh Zayed Road, Dubai City) and Abu Dhabi (Licence No.: 13/952/2008, Registered Office: Al Jazira Towers, Hamdan Street, PO Box 2734, Abu Dhabi). This material does not constitute or form part of any offer to issue or sell, or any solicitation of any offer to subscribe for or purchase, any securities or investment products in the UAE (including the Dubai International Financial Centre) and accordingly should not be construed as such. Furthermore, this information is being made available on the basis that the recipient acknowledges and understands that the entities and securities to which it may relate have not been approved, licensed by or registered with the UAE Central Bank, the Dubai Financial Services Authority or any other relevant licensing authority or governmental agency in the UAE. The content of this report has not been approved by or filed with the UAE Central Bank or Dubai Financial Services Authority. Barclays Bank PLC in the Qatar Financial Centre (Registered No. 00018) is authorised by the Qatar Financial Centre Regulatory Authority (QFCRA). Barclays Bank PLC-QFC Branch may only undertake the regulated activities that fall within the scope of its existing QFCRA licence. Principal place of business in Qatar: Qatar Financial Centre, Office 1002, 10th Floor, QFC Tower, Diplomatic Area, West Bay, PO Box 15891, Doha, Qatar. Related financial products or services are only available to Business Customers as defined by the Qatar Financial Centre Regulatory Authority.

**Russia:** This material is not intended for investors who are not Qualified Investors according to the laws of the Russian Federation as it might contain information about or description of the features of financial instruments not admitted for public offering and/or circulation in the Russian Federation and thus not eligible for non-Qualified Investors. If you are not a Qualified Investor according to the laws of the Russian Federation, please dispose of any copy of this material in your possession.

**IRS Circular 230 Prepared Materials Disclaimer:** Barclays does not provide tax advice and nothing contained herein should be construed to be tax advice. Please be advised that any discussion of U.S. tax matters contained herein (including any attachments) (i) is not intended or written to be used, and cannot be used, by you for the purpose of avoiding U.S. tax-related penalties; and (ii) was written to support the promotion or marketing of the transactions or other matters addressed herein. Accordingly, you should seek advice based on your particular circumstances from an independent tax advisor.

© Copyright Barclays Bank PLC (2022). All rights reserved. No part of this publication may be reproduced or redistributed in any manner without the prior written permission of Barclays. Barclays Bank PLC is registered in England No. 1026167. Registered office 1 Churchill Place, London, E14 5HP. Additional information regarding this publication will be furnished upon request.