



Investment Sciences

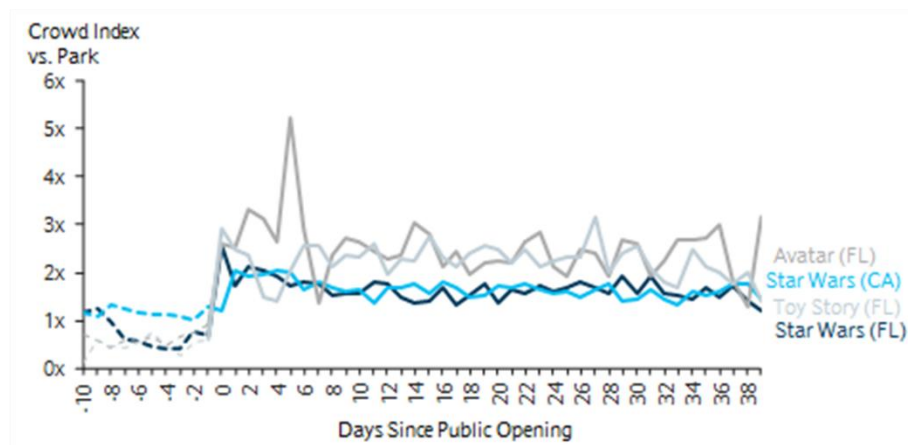
Star Wars Galaxy's Edge Meets Resistance

Early press reports¹ on Disneyland's Star Wars Galaxy's Edge attraction (Star Wars) suggested the launch went poorly: This was followed by Disney reporting net traffic declines y/y in its fiscal Q3 2019 (see the note from our fundamental analyst, Kannan Venkateshwar: *DIS: Messy quarter*, 8/6/2019). Although Star Wars is too small a part of the parks to reasonably be blamed for overall traffic decline, the timing has raised attention on whether the new attractions have drawn disappointing traffic. **Using geolocation data, we look at relative traffic and crowdedness for the Star Wars versus other recent attraction launches (Figure 1):** Our data suggest that Star Wars has drawn sparser crowds compared to either the Pandora: The World of Avatar or Toy Story Land.

The comparison is imperfect because the largest ride in the new area – Rise of the Resistance – has yet to open in either Florida (expected early December 2019) or California (expected January 2020). If the ride attracts traffic similar to Guardians of the Galaxy (in California), it will probably still be less of a crowd draw than other recent additions; but, if it instead draws an additional Pandora: The World of Avatar's worth of traffic, it would be the most successful of the recent launches. As a result, we believe that a fuller assessment needs to wait for those rides to come online.

FIGURE 1

We Observe Star Wars Attractions Having Initial Crowd Densities That Have Been Somewhat Lower Than Avatar or Toy Story in Florida



Note: Opening dates are May 27, 2017, for Avatar FL, June 30, 2018, for Toy Story FL, June 23, 2019, for Star Wars CA (the date of the public opening for all park guests), and August 29, 2019, for Star Wars FL.

Source: Complementics, Barclays Research

¹ "Is Star Wars: Galaxy's Edge Already a Flop?" *Theme Park Tourist*, July 27, 2019

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.

This research report has been prepared in whole or in part by equity research analysts based outside the US who are not registered/qualified as research analysts with FINRA.

PLEASE SEE ANALYST CERTIFICATION(S) AND IMPORTANT DISCLOSURES BEGINNING ON PAGE 6.

Investment Sciences

Ryan Preclaw

+1 212 412 2249

ryan.preclaw@barclays.com

BCI, US

Vincenzo Pota

+44 (0)20 3134 2097

vincenzo.pota@barclays.com

Barclays, UK

Star Wars Galaxy's Edge; Slow Opening, Little Improvement

Disney opened its Star Wars Galaxy's Edge attraction in Disneyland (Star Wars CA) for previews in May 2019, and general access in June. The Florida version (Star Wars FL) opened in the Disney World resort complex (Disney Hollywood Studios park) in August. Early press reports suggested that the opening was disappointing², and the company followed up by missing on sales and earnings, while reporting traffic declines at domestic theme parks (see Kannan Venkateshwar's note: *DIS: Messy quarter*, 8/6/2019). Although even a high profile launch like this one is much too small to be able to account for an overall traffic miss, the timing has certainly added attention to questions about how well Star Wars is performing at Disney's parks.

News Reports Suggested Small Absolute Crowd Sizes

The stakes are high in Florida. Despite nearly every prediction, crowds were light after Galaxy's Edge opened at Disneyland on May 31. It was a disturbance in the Force that few saw coming.

"We couldn't have been more wrong in our crowds prediction for Disneyland," said Tom Bricker of the Disney Tourist Blog. "We were shocked by just how quiet the parks were. In fact, Disneyland was busier the days leading up to the debut than it has been in the weeks after."

"Disney Star Wars land opening: What we learned from California," Tampa Bay Times, 8/3/2019

Barclays Investment Sciences and Data Science teams have begun using geolocation data, and evaluating these kind of attractions is a clear use case, since there are clear comparisons both within the same park and across other parks in similar locations. Geolocation data uses location pings from individual cell phones to estimate traffic in places of interest; see our October 16, 2019 report *Data Science Methods: Making Geolocation Data Work* for details.

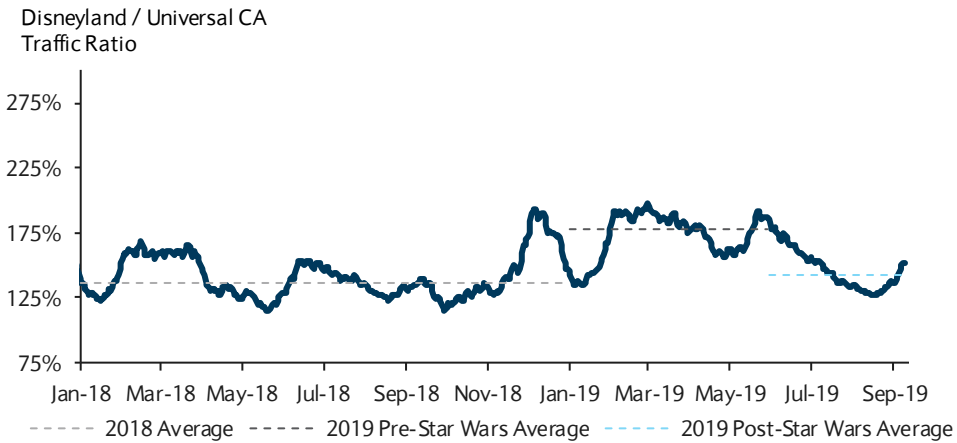
For cases like a single attraction within a larger group, it's tough to disambiguate the absolute effects of an attraction opening from other factors we know varied around the launch. For example, things we know could have influenced total demand include weather, price changes (Disney raised prices this year), restrictions on season pass holders that were in place during some periods of the initial launch in California, promotions and new attractions at competitors, expected crowds, and more. Additionally, we believe our confidence intervals for absolute traffic growth estimates are wider than the low-single digit swings that are likely to separate success and failure in this case.

For those reasons, we think it is best to use estimates of relative traffic between places at the same time to assess the success of the new attraction.

We see at least one datapoint that supports the narrative of thin crowds at launch. Looking at the ratio of traffic at Disneyland to Universal Studios California, we see that Disney did experience a relative drop-off after the Star Wars exhibition opened (Figure 2). This doesn't provide an absolute insight (both parks could have seen total traffic rise or fall), but certainly suggests underperformance relative to the benchmark of Universal.

² "Is Star Wars: Galaxy's Edge Already a Flop?" *Theme Park Tourist*, July 27, 2019

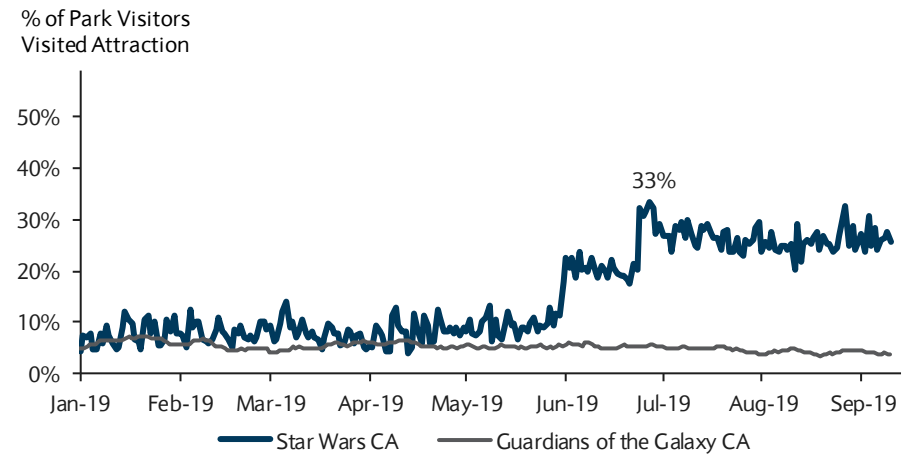
FIGURE 2
Traffic We Identified at Disneyland Rose Relative to Universal Studios CA in the Early Part of 2019, but Fell in the Period After Star Wars Opened



Source: Complementics, Barclays Research

On the other hand, we can see that many of the people who go to Disneyland have visited Star Wars – in our data, about a third of Disneyland visitors went to Star Wars since it was opened to all park guests in the second half of June (Figure 3). By way of a benchmark, we observe fewer than 10% of park visitors in the Guardians of the Galaxy attraction, which was the most recent major opening in Disneyland prior to Star Wars.

FIGURE 3
Since Late June, About 1/3 of the Visitors We Observed in Disneyland in a Given Day Visited Star Wars

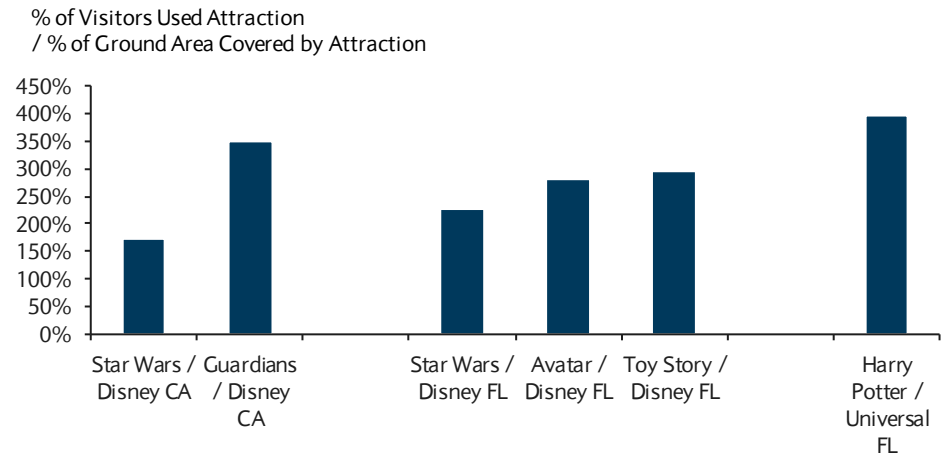


Source: Complementics, Barclays Research

Likely a better comparison here is to explore how much of a relative draw each feature has been, normalized for the area it covers. This is basically a summary of “hot spots” of which attractions draw the most traffic to the park. The overall score for each park is exactly 1, so the hot spot summary lets us know how much each attraction is beating (or lagging) the replacement level attraction within the park. What we see in Figure 4 is that although the Star Wars attractions are better than the overall average of the parks, used by a reasonable number of park attendees, they are underperforming the other recent attractions. They are also underperforming the drawing power of Harry Potter to Universal Florida.

FIGURE 4

In Terms of Attracting Visitors, Star Wars Is Outperforming the Parks Overall, but Underperforming Recently Launched Disney Attractions (and Harry Potter)



Note: Traffic observed from September 7, 2019 to October 7, 2019. Source: Complementics, Barclays Research

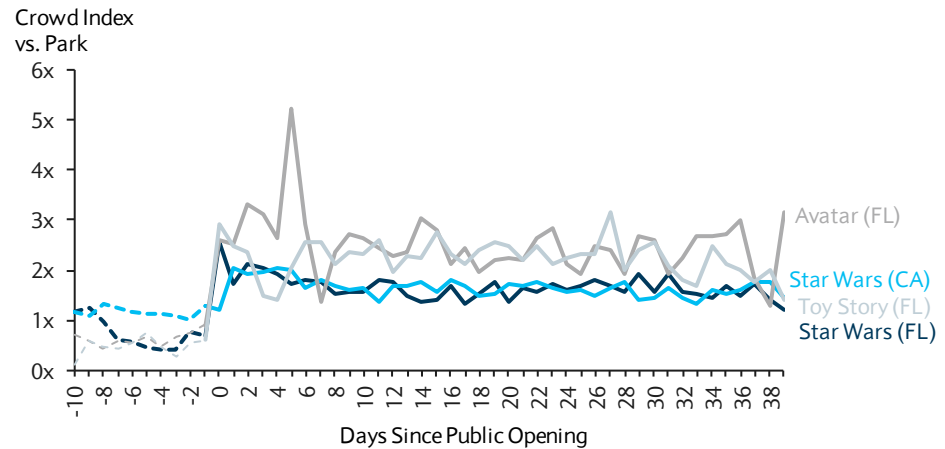
We can also use adjusted measures to evaluate how much of a crowd each area is drawing. To do so, we think the following is the best approach:

- Focus on immersive experiences. The ones for which we have that data are the two Galaxy's Edge attractions (in California and Florida), Pandora: The World of Avatar in Florida, and Toy Story Land in Florida.
- Use a way to evaluate relative traffic that accounts for footprint of the attraction. In order to keep the comparison most relevant, we think the best way to look at it is crowd density for the attraction, relative to crowd density for the park as a whole – **a measure we'll call Crowd Index**.
- To best capture the initial performance period, we look at the crowd density index around the public openings for the different attractions.

Figure 5 shows that both Star Wars attractions attracted crowds about 2x denser than average for respective parks. But by comparison, both Avatar and Toy Story opened to densities closer to 3x their reference levels.

FIGURE 5

We Observe Star Wars Attractions Having Lower Initial Crowd Densities Than Avatar or Toy Story in Florida



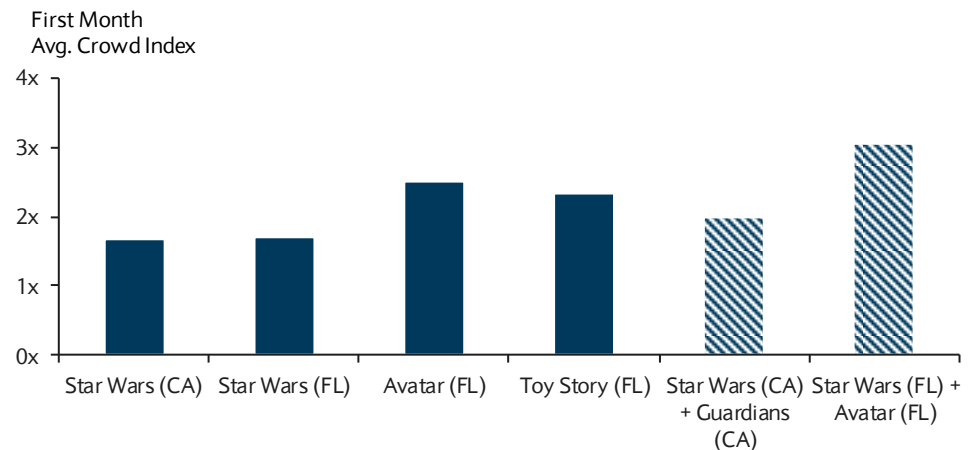
Note: Opening dates are May 27, 2017, for Avatar FL, June 30, 2018, for Toy Story FL, June 23, 2019, for Star Wars CA (the date of the public opening for all park guests), and August 29, 2019, for Star Wars FL.

Source: Complementics, Barclays Research

That said, this comparison may be unfairly penalizing Galaxy's Edge for the fact that the attraction area opened prior to the completion of all the planned rides. A Rise of the Resistance ride is expected to be a major traffic draw in both Florida (where it is expected to open in early December), and in California (where it is expected to open in January 2020). Given that difference, it may be Star Wars is performing well given its limited line-up. We are able to establish some benchmarks for the additional traffic to frame how much it would have to draw to reverse the underwhelming narrative.

FIGURE 6

If Incremental Traffic to Rise of the Resistance Is Large Enough, There Is Room for the Galaxy's Edge Attraction to Outperform Other Recent Launches



Note: Crowd Index for first 30 days after opening. Source: Complementics, Barclays Research

As Figure 6 shows, adding a Guardians of the Galaxy's worth of additional traffic likely still leaves Galaxy's Edge lagging the other major attractions in traffic index. However, if the incremental crowd drawn by Rise of the Resistance is closer to the total for Pandora: The World of Avatar, that should bring Galaxy's Edge ahead of the other recent launches.

ANALYST(S) CERTIFICATION(S):

I, Ryan Preclaw, hereby certify (1) that the views expressed in this research report accurately reflect my personal views about any or all of the subject securities or issuers referred to in this research report and (2) no part of my compensation was, is or will be directly or indirectly related to the specific recommendations or views expressed in this research report.

IMPORTANT DISCLOSURES

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.

Research analysts employed outside the US by affiliates of Barclays Capital Inc. are not registered/qualified as research analysts with FINRA. Such non-US research analysts may not be associated persons of Barclays Capital Inc., which is a FINRA member, and therefore may not be subject to FINRA Rule 2241 restrictions on communications with a subject company, public appearances and trading securities held by a research analyst's account.

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>.

Materially Mentioned Stocks (Ticker, Date, Price)

Walt Disney Co. (DIS, 04-Nov-2019, USD 132.92), Overweight/Neutral, CD/CE/I/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 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.

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.

GD: One of the analysts on the fundamental credit coverage team (or a member of his or her household) has a financial interest in the debt or equity securities of this issuer.

GE: One of the analysts on the fundamental equity coverage team (or a member of his or her household) has a financial interest in the debt or 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

IMPORTANT DISCLOSURES CONTINUED

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.

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.

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").

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.

Below is the list of companies that constitute the "industry coverage universe":

U.S. Media

CBS Corp. (CBS)	Discovery Inc (DISCA)	FOX Corp. (FOXA)
Netflix, Inc. (NFLX)	The New York Times (NYT)	Viacom Inc. (VIAB)
Walt Disney Co. (DIS)		

Distribution of Ratings:

Barclays Equity Research has 1568 companies under coverage.

44% have been assigned an Overweight rating which, for purposes of mandatory regulatory disclosures, is classified as a Buy rating; 55% of companies with this rating are investment banking clients of the Firm; 76% of the issuers with this rating have received financial services from the

IMPORTANT DISCLOSURES CONTINUED

Firm.

39% have been assigned an Equal Weight rating which, for purposes of mandatory regulatory disclosures, is classified as a Hold rating; 49% of companies with this rating are investment banking clients of the Firm; 69% of the issuers with this rating have received financial services from the Firm.

15% have been assigned an Underweight rating which, for purposes of mandatory regulatory disclosures, is classified as a Sell rating; 33% of companies with this rating are investment banking clients of the Firm; 66% 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. Barclays Equity Research publishes "Top Picks" reports every quarter and analysts may also publish intra-quarter changes to their Top Picks, as necessary. 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.

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 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)

IMPORTANT DISCLOSURES CONTINUED

Walt Disney Co. (DIS / DIS)

USD 132.92 (04-Nov-2019)

Stock Rating

OVERWEIGHT

Industry View

NEUTRAL

Rating and Price Target Chart - USD (as of 04-Nov-2019)

Currency=USD



Publication Date	Closing Price	Rating	Adjusted Price Target
01-May-2019	136.38		150.00
19-Oct-2018	118.90	Overweight	130.00
23-Jan-2018	110.41		105.00
13-Oct-2017	97.38		94.00
11-Aug-2017	101.99		98.00
10-Feb-2017	109.26		102.00
19-Jan-2017	107.28		99.00
11-Nov-2016	97.68	Equal Weight	

On 05-Nov-2016, prior to any intra-day change that may have been published, the rating for this security was Underweight, and the adjusted price target was 89.00.

Source: Bloomberg, Barclays Research

Historical stock prices and price targets may have been adjusted for stock splits and dividends.

Source: IDC, Barclays Research

[Link to Barclays Live for interactive charting](#)

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

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

J: Barclays Bank PLC and/or an affiliate is a liquidity provider and/or trades regularly in the securities by Walt Disney Co. 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 Walt Disney Co. within the past 12 months.

N: Walt Disney Co. 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.

Valuation Methodology: Our price target is based on a sum-of-the-parts methodology based on FY2021 Pro Forma EBITDA multiples (7.3x Avg 2020-21 Broadcasting, 8.8x Cable Networks, 11.6x PECP 11x, Studio Entertainment and 4x Corporate. We also use 2.8x FY2024 DTC revenues multiple. This is also equivalent to ~15x '21 Core Disney P/E and 2.9x FY2024 DTC revenues.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Risks to investment in DIS include: (1) execution risk on multiple initiatives; (2) potential fatigue with the supply of tentpoles over the coming years; (3) potential changes in the pricing model for sports; (4) subscriber loss trends continue impacting accounting model; and (5) increased competition for sports rights and consequently step function changes in cost.

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 only and not for retail investors. It has been distributed by one or more Barclays affiliated legal entities listed below. It is provided to our clients 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. 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 instrument.

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. The securities and other investments discussed herein may not be suitable for all investors. Barclays is not a fiduciary to any recipient of this publication. Investors must independently evaluate the merits and risks of the investments discussed herein, 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.

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 in the EEA by Barclays Bank PLC. Barclays Bank PLC is not registered in France with the Autorité des marchés financiers or the Autorité de contrôle prudentiel.

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.

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 Zaimukyokuchō (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/Trading and Clearing Member: National Stock Exchange of India Limited (NSE) Capital Market INB231292732, NSE Futures & Options INF231292732, NSE Currency derivatives INE231450334, Bombay Stock Exchange Limited (BSE) Capital Market INB011292738, BSE Futures & Options INF011292738; Depository Participant (DP) with the National Securities & Depositories Limited (NSDL): DP ID: IN-DP-NSDL-299-2008; Investment Adviser: INA000000391. The registered office of BSIPL is at 208, Ceejay House, Shivsagar Estate, Dr. A. Besant Road, Worli, Mumbai – 400 018, India. Telephone No: +91 2267196000. Fax number: +91 22 67196100. 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 is distributed to persons in Australia by Barclays Bank PLC. None of Barclays Bank PLC, nor any other Barclays group entity, holds an Australian financial services licence and instead relies on an exemption from the requirement to hold such a licence. This material is intended to only be distributed to "wholesale clients" as defined by the Australian Corporations Act 2001.

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). 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 (2019). 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.

