# Dish TV (DSTV.BO)

## Buy: Sharp Turnaround Underway; CEO Meeting Takeaways

- Company Update

- **DTH drives the digital wave in India** — Dish's subscriber growth remains strong-after ~1.1m sub additions in 3QFY11; 4Q trends remain positive as the gross subs base increased by ~0.6-0.7m QTD to 10m+ subs. It maintains leadership in incremental market share at ~28% (a tad better than earlier expectations of 25%). We expect FY12 growth to remain strong driven by rising DTH acceptance; buoyed by a large sports calendar. Dish TV remains one of our preferred picks.
- **No near-term risks to programming costs** — The attractive fixed rate agreements with most broadcasters keep content costs under control. There is only one big contract (out of 5) up for renegotiation in 2/3QFY12. Mgmt doesn't expect a sharp increase. In our current estimates, we forecast content costs to rise by ~23% CAGR over FY11-13E. We estimate content costs as % of sales to move from ~38% now to ~34% in FY12, before a slight increase to ~35-36% in FY13.
- **EBITDA margin expansion continues** — Lower content costs & scale benefits will drive margin expansion – we estimate ~1180bps increase in EBITDA margins over FY11-13E to ~28%. Mgmt intends to ramp up High Definition (HD) subs – expects ~10% of the new adds in FY12 from HD (implying ~300k HD subs by end FY12). Higher HD mix bodes well for ARPUs (HD ARPUs are ~Rs330-340 v/s. Dish's current blended ARPU of ~Rs142). We note that in case ARPUs increase is above our ~4-5% yoy growth assumption, EBITDA margins could exceed 30%. Mgmt noted that the issues around contingent liabilities have been sorted.
- **IFRS/Indian AS: Limited impact on profitability** — As and when introduced, "reported" margins could be impacted as mgmt would need to follow the matching principle while recognizing rental revenues & CPE[1] write off. That said, the P&L impact may not be very pronounced given that rentals contribute ~14-16% of revenues (subscription revenues contribute >80% of revenues). Mgmt noted that the Indian AS is relatively more flexible than IFRS. The changes will be cash flow neutral. In fact, switching to IFRS/Ind AS could be beneficial to Dish TV, to some extent, as it could then be able to recognize deferred taxes.

| Buy/Medium Risk | 1M |
|---|---|
| Price (08 Mar 11) | Rs59.70 |
| Target price | Rs72.00 |
| Expected share price return | 20.6% |
| Expected dividend yield | 0.0% |
| **Expected total return** | **20.6%** |
| Market Cap | Rs63,499M |
| | US$1,411M |

**Price Performance (RIC: DSTV.BO, BB: DITV IN)**


**Figure 1. Dish TV (Consolidated) – Financial Summary**

| Year to | Net Profit (Rs Mn) | EPS (Rs) | EPS Growth (%) | EBITDA (Rs Mn) | EBITDA Growth (%) | EV/EBITDA (x) | Net Sales (Rs Mn) | Net Sales Growth (%) | ROE (%) |
|---|---|---|---|---|---|---|---|---|---|
| FY2009 | (4,807) | (7.0) | -27.7% | (1,788) | -16.0% | nm | 7,381 | 78.8% | nm |
| FY2010 | (2,622) | (2.5) | -64.7% | 1,024 | nm | 68.4 | 10,850 | 47.0% | nm |
| FY2011E | (1,888) | (1.8) | -28.0% | 2,355 | 130.1% | 28.7 | 14,206 | 30.9% | -66.8% |
| FY2012E | (47) | (0.0) | -97.5% | 5,283 | 124.3% | 12.9 | 19,486 | 37.2% | -2.5% |
| FY2013E | 1,154 | 1.1 | nm | 6,604 | 25.0% | 10.0 | 23,295 | 19.5% | 51.2% |

Source: Company Reports and CIRA Estimates

**Surendra Goyal, CFA**
+91-22-6631-9870
surendra.goyal@citi.com

**Aditya Mathur**
+91-22-6631-9841
aditya.mathur@citi.com

[1] CPE stands for Consumer Premise Equipment (i.e. set top box, dish, etc)

See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.

| Fiscal year end 31-Mar | 2009 | 2010 | 2011E | 2012E | 2013E |
|---|---|---|---|---|---|
| **Valuation Ratios** | | | | | |
| P/E adjusted (x) | -8.5 | nm | nm | nm | 54.9 |
| EV/EBITDA adjusted (x) | nm | 68.4 | 28.7 | 12.9 | 10.0 |
| P/BV (x) | -6.3 | 16.8 | 33.7 | 34.6 | 23.7 |
| Dividend yield (%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 |
| **Per Share Data (Rs)** | | | | | |
| EPS adjusted | -6.99 | -2.47 | -1.78 | -0.04 | 1.09 |
| EPS reported | -6.99 | -2.47 | -1.78 | -0.04 | 1.09 |
| BVPS | -9.42 | 3.55 | 1.77 | 1.73 | 2.52 |
| DPS | 0.00 | 0.00 | 0.00 | 0.00 | 0.25 |
| **Profit & Loss (RsM)** | | | | | |
| Net sales | 7,381 | 10,850 | 14,206 | 19,486 | 23,295 |
| Operating expenses | -11,458 | -13,054 | -15,644 | -19,029 | -21,716 |
| **EBIT** | **-4,077** | **-2,204** | **-1,437** | **457** | **1,579** |
| Net interest expense | -737 | -490 | -595 | -612 | -387 |
| Non-operating/exceptionals | 13 | 65 | 145 | 110 | 165 |
| **Pre-tax profit** | **-4,801** | **-2,628** | **-1,888** | **-45** | **1,358** |
| Tax | -6 | 6 | 0 | -2 | -204 |
| Extraord./Min.Int./Pref.div. | 0 | 0 | 0 | 0 | 0 |
| **Reported net income** | **-4,807** | **-2,622** | **-1,888** | **-47** | **1,154** |
| Adjusted earnings | -4,807 | -2,622 | -1,888 | -47 | 1,154 |
| Adjusted EBITDA | -1,788 | 1,024 | 2,355 | 5,283 | 6,604 |
| **Growth Rates (%)** | | | | | |
| Sales | 78.8 | 47.0 | 30.9 | 37.2 | 19.5 |
| EBIT adjusted | -10.2 | 45.9 | 34.8 | 131.8 | 245.9 |
| EBITDA adjusted | 16.0 | 157.2 | 130.1 | 124.3 | 25.0 |
| EPS adjusted | 27.7 | 64.7 | 28.0 | 97.5 | nm |
| **Cash Flow (RsM)** | | | | | |
| **Operating cash flow** | **-2,761** | **45** | **3,907** | **8,124** | **7,735** |
| Depreciation/amortization | 2,289 | 3,227 | 3,793 | 4,827 | 5,024 |
| Net working capital | -241 | -555 | 2,002 | 3,345 | 1,556 |
| **Investing cash flow** | **-6,034** | **-6,031** | **-7,419** | **-5,717** | **-5,333** |
| Capital expenditure | -6,034 | -4,469 | -7,419 | -5,717 | -5,333 |
| Acquisitions/disposals | 0 | 0 | 0 | 0 | 0 |
| **Financing cash flow** | **9,090** | **10,731** | **-678** | **-500** | **-311** |
| Borrowings | 6,047 | -2,134 | -678 | -500 | 0 |
| Dividends paid | 0 | 0 | 0 | 0 | -311 |
| **Change in cash** | **294** | **4,745** | **-4,189** | **1,907** | **2,091** |
| **Balance Sheet (RsM)** | | | | | |
| **Total assets** | **21,414** | **29,051** | **30,449** | **36,319** | **39,976** |
| Cash & cash equivalent | 805 | 5,550 | 1,361 | 3,268 | 5,359 |
| Accounts receivable | 526 | 359 | 470 | 645 | 771 |
| Net fixed assets | 13,345 | 14,587 | 18,213 | 19,104 | 19,413 |
| **Total liabilities** | **27,889** | **25,282** | **28,569** | **34,486** | **37,299** |
| Accounts payable | 0 | 0 | 0 | 0 | 0 |
| Total Debt | 11,492 | 9,358 | 8,680 | 8,180 | 8,180 |
| **Shareholders' funds** | **-6,475** | **3,768** | **1,881** | **1,833** | **2,677** |
| **Profitability/Solvency Ratios (%)** | | | | | |
| EBITDA margin adjusted | -24.2 | 9.4 | 16.6 | 27.1 | 28.3 |
| ROE adjusted | na | na | -66.8 | -2.5 | 51.2 |
| ROIC adjusted | -183.5 | -43.0 | -21.1 | 7.1 | 30.2 |
| Net debt to equity | na | 101.0 | 389.2 | 267.9 | 105.4 |
| Total debt to capital | 229.0 | 71.3 | 82.2 | 81.7 | 75.3 |

For further data queries on Citi's full coverage universe please contact CIRA Data Services Asia Pacific at CIRADataServicesAsiaPacific@citi.com or +852-2501-2791

Powered by: dataCentral

# Management Meeting Notes

We met Mr. Venkateish, CEO and Mr. Dalmia, CFO of Dish TV. Below are some key points from the discussion:

**1) DTH moving far ahead of digital cable**

- Aggressive branding, changing consumer preference, geographic dispersion, distribution and marketing initiatives and better execution have resulted in DTH gaining a clear lead over digital cable. DTH players are cumulatively spending in excess of Rs6bn per year in brand building.
- Cable continues to be limited by geography and capital constraints. The LCOs prove to be a hurdle and in most cases are fighting a turf battle. Despite cable having its advantages (cost/powerful two-way pipe), it will take time to fix things and by that time, size of the DTH will become very large.
- Dish TV management expects the industry to maintain good growth rates – expects 12-14m subs per annum over the next 2-3 years. DTH penetration could go up to 50-70% of the market.

**2) Dish TV maintains leadership in the incremental market share**

- Dish TV has been maintaining its leadership position even in terms of incremental market share in the past few months with ~27-28% share. Incremental market share of other players includes Bharti Airtel at ~25-26%; Videocon with ~19-20%, Tata Sky with ~10%, and the remaining with RCOM and Sun Direct networks. Dish TV's current gross market share is ~31%.
- Tata Sky continues to be metro/high ARPU focused. Airtel's positioning is similar to Dish TV and has reached ~5.3m subs by January. Videocon is doing well, leveraging on its good distribution network. Sun Direct remains a regional play - strong in the South (Tamil Nadu + Kerela). RCOM does not seem to be making much of an impact as of now.

**3) HD Ramp Up - ARPUs Move Up, but so Does Capex**

Dish TV's High Definition (HD) service offers around 30 channels now – and mgmt expects to ramp this up further. Mgmt expects ~10% of new additions in FY12 from HD - implying ~300k HD subs by the end of FY12.

HD subscribers have higher ARPUs of Rs330-340 per sub – which bodes well for overall blended ARPUs and thus profitability. HD Subscriber acquisition costs (SAC) is also higher at ~Rs.2800-2900 - customer pays Rs2390 for a HD connection v/s ~Rs1000 for a regular one. The HD CPE costs are ~US$75, higher than regular CPE ~US$25-30.

**4) Management focus on profitability**

In light of the high industry growth, one would need to manage the aggressive growth and other important profitability metrics (ARPUs/margins).

Over the medium term, the pricing power is moving from analog cable to the DTH players - which should be a positive.

Management is confident of managing content costs well – which is the key driver of EBITDA growth. It has attractive fixed rate agreements with five relatively large groups of broadcasters, out of which only one is coming up for renegotiation in FY12 (in 2/3Q). Management is confident that content costs should not increase meaningfully in the next two years.

EBITDA margin could eventually be higher than 30%, as bargaining power on content moves in favor of DTH operators. Most broadcasters have ad-driven models and it thus becomes important to be present on a DTH operator's base pack - they can't afford to move from base packs of the large DTH operators to a-la-carte as it could disrupt their viewership share and hence ad revenues.

Dish TV is likely to be PAT & FCF positive in some quarter over the course of FY12.

### 5) IFRS / Indian AS Adoption

There have been some market concerns on the impact of the introduction of IFRS to Dish TV's financial statements. Mgmt noted that there is a separate standard for first-time adopters, which provides some flexibility. Also, Indian AS is more flexible than IFRS.

The key issues (differences vs. today) on Ind AS are: (1) ESOP accounting; 2) Deferred tax treatment; 3) Revenue recognition; and 4) Asset accounting. Dish TV expects that gain in deferred tax will largely offset the impact of others.

As and when introduced, "reported" margins could be impacted as mgmt would need to follow the matching principle while recognizing rental revenues & CPE write off. As per the current practice, CPE rentals are recognized over 3 years and CPE is amortized over 5 years. That said, the P&L impact may not be very pronounced given that rentals contribute ~14-15% of revenues (subscription revenues contribute >80% of revenues).

We note that any of these changes will have no impact on the company's overall cash flows – and doesn't change business value as such.

### 6) Other Noteworthy Points on the Financials

- **Churn** – Currently, the difference between gross and net subs is ~1.7m subs. Mgmt is writing off those subscribers that have been inactive for more than 500 days. In FY10, the charge was ~Rs80m (for 350k subs) and there was a rent reversal of similar magnitude. In FY11E, the charge is expected to be ~Rs120-130m with some rental revenue reversal as well. It is unlikely that mgmt will charge off the entire difference as they avail CENVAT credit when acquiring subscribers.

- **Contingent liabilities** –The Protostar liability has been settled at minimal cost. The other liability has also been settled for a relatively small amount – details of both are likely to be share along with the 4QFY11 results.

- **Loans and advances** – Loans and advances from group companies of ~Rs1.4bn are likely to be recovered over 2HFY11. After this, ~Rs2.4bn will remain – mgmt mentioned that they are getting ~12-12.5% on this amount, which is same as the cost of debt (can't be lower as per regulations).

### 7) No near-term fund raising

The company has no immediate-term plans to raise money. Mgmt had just taken an enabling resolution earlier.

# Dish TV

## Valuation

Dish TV operates in an industry at a nascent stage with high growth rates (on a small base), so we do not use equity multiples approach as our primary valuation methodology, given that current financials would not truly reflect the value of the business. We thus think a DCF would be best suited, giving a target price of Rs72 per share (WACC = 11.8% and g = 4.5%). The stock will trade at 16x FY12E EV/EBITDA at our target price, which we think is justified given (a) high growth in the business, (b) We expect margins to hit ~27% in FY12E, and, (c) Positive FCF 2HFY12E onwards as the business achieves critical size.

## Risks

We rate Dish TV shares Medium Risk rating as suggested by quantitative risk-rating system that tracks 260-day historical share price volatility. Key downside risks are that could prevent the stock from achieving our target price include: 1) Irrational competition may negatively impact ARPUs and churn; 2) Dish TV imports most of its consumer premise equipments (dollar denominated), and thus, currency fluctuations could significantly impact profitability; 3) The DTH industry is highly regulated and adverse changes in government policies may impact business prospects; and 4) Investments in subsidiaries and group companies could be an overhang.

# Appendix A-1

## Analyst Certification

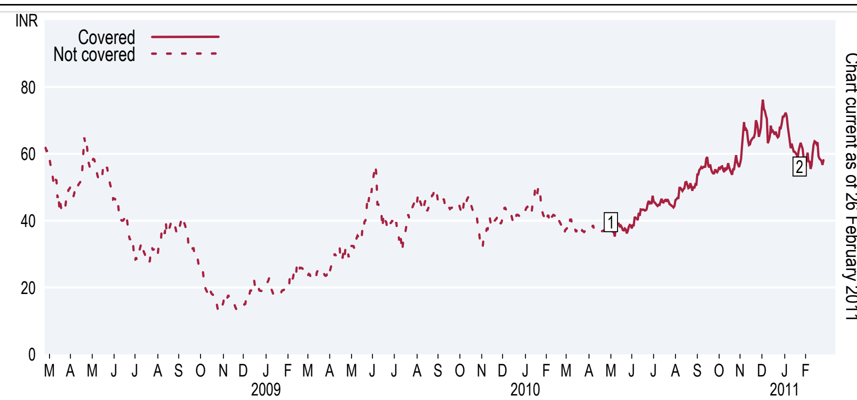
**The research analyst(s) primarily responsible for the preparation and content of this research report are named in bold text in the author block at the front of the product except for those sections where an analyst's name appears in bold alongside content which is attributable to that analyst. Each of these analyst(s) certify, with respect to the section(s) of the report for which they are responsible, that the views expressed therein accurately reflect their personal views about each issuer and security referenced and were prepared in an independent manner, including with respect to Citigroup Global Markets Inc and its affiliates. No part of the research analyst's compensation was, is, or will be, directly or indirectly, related to the specific recommendation(s) or view(s) expressed by that research analyst in this report.**

## IMPORTANT DISCLOSURES

### Dish TV (DSTV.BO)

**Ratings and Target Price History**
**Fundamental Research**

Analyst: Surendra Goyal, CFA
Covered since May 1 2010




| | Date | Rating | Target Price | Closing Price |
|---|---|---|---|---|
| 1 | 1-May-10 | *1M | *48.00 | 35.90 |

| | Date | Rating | Target Price | Closing Price |
|---|---|---|---|---|
| 2 | 23-Jan-11 | 1M | *72.00 | 60.95 |

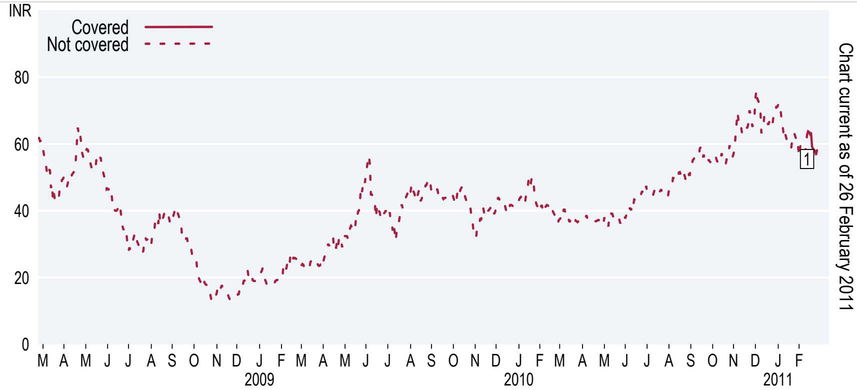
* Indicates change

Rating/target price changes above reflect Eastern Standard Time

## Dish TV (DSTV.BO)

**Ratings and Target Price History**
**Best Ideas Research**
**Relative Call (3 Month)**

Analyst: Surendra Goyal, CFA
Covered since May 1 2010




| | Date | Rating | Target Price | Closing Price |
|---|---|---|---|---|
| 1 | 11-Feb-11 | *ADD MP | - | 62.70 |

* Indicates change

Rating/target price changes above reflect Eastern Standard Time

Analysts' compensation is determined based upon activities and services intended to benefit the investor clients of Citigroup Global Markets Inc. and its affiliates ("the Firm"). Like all Firm employees, analysts receive compensation that is impacted by overall firm profitability which includes investment banking revenues.

For important disclosures (including copies of historical disclosures) regarding the companies that are the subject of this Citi Investment Research & Analysis product ("the Product"), please contact Citi Investment Research & Analysis, 388 Greenwich Street, 28th Floor, New York, NY, 10013, Attention: Legal/Compliance. In addition, the same important disclosures, with the exception of the Valuation and Risk assessments and historical disclosures, are contained on the Firm's disclosure website at www.citigroupgeo.com. Valuation and Risk assessments can be found in the text of the most recent research note/report regarding the subject company. Historical disclosures (for up to the past three years) will be provided upon request.

**Citi Investment Research & Analysis Ratings Distribution**

| | *12 Month Rating* | | | *Relative Rating* | | |
|---|---|---|---|---|---|---|
| ***Data current as of 31 Dec 2010*** | **Buy** | **Hold** | **Sell** | **Buy** | **Hold** | **Sell** |
| Citi Investment Research & Analysis Global Fundamental Coverage | 52% | 37% | 11% | 0% | 100% | 0% |
| *% of companies in each rating category that are investment banking clients* | 45% | 44% | 40% | 0% | 44% | 0% |

**Guide to Citi Investment Research & Analysis (CIRA) Fundamental Research Investment Ratings:**
CIRA's stock recommendations include a risk rating and an investment rating.
**Risk ratings**, which take into account both price volatility and fundamental criteria, are: Low (L), Medium (M), High (H), and Speculative (S).
**Investment ratings** are a function of CIRA's expectation of total return (forecast price appreciation and dividend yield within the next 12 months) and risk rating.
Analysts may place covered stocks “Under Review” in response to exceptional circumstances (e.g. lack of information critical to the analyst's thesis) affecting the company and/or trading in the company's securities (e.g. trading suspension). Stocks placed “Under Review” will be monitored daily by management. As soon as practically possible, the analyst will publish a note re-establishing a rating and investment thesis.
To satisfy regulatory requirements, we correspond Under Review to Hold in our ratings distribution table for our 12-month fundamental rating system. However, we reiterate that we do not consider Under Review to be a recommendation.
**Relative three-month ratings:** CIRA may also assign a three-month relative call (or rating) to a stock to highlight expected out-performance (most preferred) or under-performance (least preferred) versus the analyst's coverage universe over a 3 month period. The relative call may highlight a specific near-term catalyst or event impacting the company or the market that is anticipated to have a short-term price impact on the equity securities of the company. Absent any specific catalyst the analyst(s) will indicate the most and least preferred stocks in his coverage universe, explaining the basis for this short-term view. This three-month view may be different from and does not affect a stock's fundamental equity rating, which reflects a longer-term total absolute return expectation. For purposes of NASD/NYSE ratings-distribution-disclosure rules, most preferred calls correspond to a buy recommendation and least preferred calls correspond to a sell recommendation. Any stock not assigned to a most preferred or least preferred call is considered non-relative-rated (NRR). For purposes of NASD/NYSE ratings-distribution-disclosure rules we correspond NRR to Hold in our ratings distribution table for our 3-month relative rating system. However, we reiterate that we do not consider NRR to be a recommendation.

For securities in emerging markets (Asia Pacific, Emerging Europe/Middle East/Africa, and Latin America), investment ratings are:Buy (1) (expected total return of 15% or more for Low-Risk stocks, 20% or more for Medium-Risk stocks, 30% or more for High-Risk stocks, and 40% or more for Speculative stocks); Hold (2) (5%-15% for Low-Risk stocks, 10%-20% for Medium-Risk stocks, 15%-30% for High-Risk stocks, and 20%-40% for Speculative stocks); and Sell (3) (5% or less for Low-Risk stocks, 10% or less for Medium-Risk stocks, 15% or less for High-Risk stocks, and 20% or less for Speculative stocks).

Investment ratings are determined by the ranges described above at the time of initiation of coverage, a change in investment and/or risk rating, or a change in target price (subject to limited management discretion). At other times, the expected total returns may fall outside of these ranges because of market price movements and/or other short-term volatility or trading patterns. Such interim deviations from specified ranges will be permitted but will become subject to review by Research Management. Your decision to buy or sell a security should be based upon your personal investment objectives and should be made only after evaluating the stock's expected performance and risk.

**NON-US RESEARCH ANALYST DISCLOSURES**
Non-US research analysts who have prepared this report (i.e., all research analysts listed below other than those identified as employed by Citigroup Global Markets Inc.) are not registered/qualified as research analysts with FINRA. Such research analysts may not be associated persons of the member organization and therefore may not be subject to the NYSE Rule 472 and NASD Rule 2711 restrictions on communications with a subject company, public appearances and trading securities held by a research analyst account. The legal entities employing the authors of this report are listed below:

| | |
|---|---|
| Citigroup Global Markets India Private Limited | Surendra Goyal, CFA; Aditya Mathur |

## OTHER DISCLOSURES

The subject company's share price set out on the front page of this Product is quoted as at 08 March 2011 01:10 PM on the issuer's primary market.

This Product has been modified by the author following a discussion with one or more of the named issuers/issuers of the named securities.

For securities recommended in the Product in which the Firm is not a market maker, the Firm is a liquidity provider in the issuers' financial instruments and may act as principal in connection with such transactions. The Firm is a regular issuer of traded financial instruments linked to securities that may have been recommended in the Product. The Firm regularly trades in the securities of the issuer(s) discussed in the Product. The Firm may engage in securities transactions in a manner inconsistent with the Product and, with respect to securities covered by the Product, will buy or sell from customers on a principal basis.

Securities recommended, offered, or sold by the Firm: (i) are not insured by the Federal Deposit Insurance Corporation; (ii) are not deposits or other obligations of any insured depository institution (including Citibank); and (iii) are subject to investment risks, including the possible loss of the principal amount invested. Although information has been obtained from and is based upon sources that the Firm believes to be reliable, we do not guarantee its accuracy and it may be incomplete and condensed. Note, however, that the Firm has taken all reasonable steps to determine the accuracy and completeness of the disclosures made in the Important Disclosures section of the Product. The Firm's research department has received assistance from the subject company(ies) referred to in this Product including, but not limited to, discussions with management of the subject company(ies). Firm policy prohibits research analysts from sending draft research to subject companies. However, it should be presumed that the author of the Product has had discussions with the subject company to ensure factual accuracy prior to publication. All opinions, projections and estimates constitute the judgment of the author as of the date of the Product and these, plus any other information contained in the Product, are subject to change without notice. Prices and availability of financial instruments also are subject to change without notice. Notwithstanding other departments within the Firm advising the companies discussed in this Product, information obtained in such role is not used in the preparation of the Product. Although Citi Investment Research & Analysis (CIRA) does not set a predetermined frequency for publication, if the Product is a fundamental research report, it is the intention of CIRA to provide research coverage of the/those issuer(s) mentioned therein, including in response to news affecting this issuer, subject to applicable quiet periods and capacity constraints. The Product is for informational purposes only and is not intended as an offer or solicitation for the purchase or sale of a security. Any decision to purchase securities mentioned in the Product must take into account existing public information on such security or any registered prospectus.

Investing in non-U.S. securities, including ADRs, may entail certain risks. The securities of non-U.S. issuers may not be registered with, nor be subject to the reporting requirements of the U.S. Securities and Exchange Commission. There may be limited information available on foreign securities. Foreign companies are generally not subject to uniform audit and reporting standards, practices and requirements comparable to those in the U.S. Securities of some foreign companies may be less liquid and their prices more volatile than securities of comparable U.S. companies. In addition, exchange rate movements may have an adverse effect on the value of an investment in a foreign stock and its corresponding dividend payment for U.S. investors. Net dividends to ADR investors are estimated, using withholding tax rates conventions, deemed accurate, but investors are urged to consult their tax advisor for exact dividend computations. Investors who have received the Product from the Firm may be prohibited in certain states or other jurisdictions from purchasing securities mentioned in the Product from the Firm. Please ask your Financial Consultant for additional details. Citigroup Global Markets Inc. takes responsibility for the Product in the United States. Any orders by US investors resulting from the information contained in the Product may be placed only through Citigroup Global Markets Inc.

**Important Disclosures for Morgan Stanley Smith Barney LLC Customers:** Morgan Stanley & Co. Incorporated (Morgan Stanley) research reports may be available about the companies that are the subject of this Citi Investment Research & Analysis (CIRA) research report. Ask your Financial Advisor or use smithbarney.com to view any available Morgan Stanley research reports in addition to CIRA research reports.
Important disclosure regarding the relationship between the companies that are the subject of this CIRA research report and Morgan Stanley Smith Barney LLC and its affiliates are available at the Morgan Stanley Smith Barney disclosure website at www.morganstanleysmithbarney.com/researchdisclosures.
The required disclosures provided by Morgan Stanley and Citigroup Global Markets, Inc. on Morgan Stanley and CIRA research relate in part to the separate businesses of Citigroup Global Markets, Inc. and Morgan Stanley that now form Morgan Stanley Smith Barney LLC, rather than to Morgan Stanley Smith Barney LLC in its entirety. For Morgan Stanley and Citigroup Global Markets, Inc. specific disclosures, you may refer to www.morganstanley.com/researchdisclosures and https://www.citigroupgeo.com/geopublic/Disclosures/index_a.html.
This CIRA research report has been reviewed and approved on behalf of Morgan Stanley Smith Barney LLC. This review and approval was conducted by the same person who reviewed this research report on behalf of CIRA. This could create a conflict of interest.

The Citigroup legal entity that takes responsibility for the production of the Product is the legal entity which the first named author is employed by. The Product is made available in Australia through Citigroup Global Markets Australia Pty Ltd. (ABN 64 003 114 832 and AFSL No. 240992), participant of the ASX Group and regulated by the Australian Securities & Investments Commission. Citigroup Centre, 2 Park Street, Sydney, NSW 2000. The Product is made available in Australia to Private Banking wholesale clients through Citigroup Pty Limited (ABN 88 004 325 080 and AFSL 238098). Citigroup Pty Limited provides all financial product advice to Australian Private Banking wholesale clients through bankers and relationship managers. If there is any doubt about the suitability of investments held in Citigroup Private Bank accounts, investors should contact the Citigroup Private Bank in Australia. Citigroup companies may compensate affiliates and their representatives for providing products and services to clients. The Product is made available in Brazil by Citigroup Global Markets Brasil - CCTVM SA, which is regulated by CVM - Comissão de Valores Mobiliários, BACEN - Brazilian Central Bank, APIMEC - Associação dos Analistas e Profissionais de Investimento do Mercado de Capitais and ANBID - Associação Nacional dos Bancos de Investimento. Av. Paulista, 1111 - 11º andar - CEP. 01311920 - São Paulo - SP. If the Product is being made available in certain provinces of Canada by Citigroup Global Markets (Canada) Inc. ("CGM Canada"), CGM Canada has approved the Product. Citigroup Place, 123 Front Street West, Suite 1100, Toronto, Ontario M5J 2M3. This product is available in Chile through Banchile Corredores de Bolsa S.A., an indirect subsidiary of Citigroup Inc., which is regulated by the Superintendencia de Valores y Seguros. Agustinas 975, piso 2, Santiago, Chile. The Product is made available in France by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. 1-5 Rue Paul Cézanne, 8ème, Paris, France. If the Product is made available in Hong Kong by, or on behalf of, Citigroup Global Markets Asia Ltd., it is attributable to Citigroup Global Markets Asia Ltd., Citibank Tower, Citibank Plaza, 3 Garden Road, Hong Kong. Citigroup Global Markets Asia Ltd. is regulated by Hong Kong Securities and Futures Commission. If the Product is made available in Hong Kong by The Citigroup Private Bank to its clients, it is attributable to Citibank N.A., Citibank Tower, Citibank Plaza, 3 Garden Road, Hong Kong. The Citigroup Private Bank and Citibank N.A. is regulated by the Hong Kong Monetary Authority. The Product is made available in India by Citigroup Global Markets India Private Limited, which is regulated by Securities and Exchange Board of India. Bakhtawar, Nariman Point, Mumbai 400-021. The Product is made available in Indonesia through PT Citigroup Securities Indonesia. 5/F, Citibank Tower, Bapindo Plaza, Jl. Jend. Sudirman Kav. 54-55, Jakarta 12190. Neither this Product nor any copy hereof may be distributed in Indonesia or to any Indonesian citizens wherever they are domiciled or to Indonesian residents except in compliance with applicable capital market laws and regulations. This Product is not an offer of securities in Indonesia. The securities referred to in this Product have not been registered with the Capital Market and Financial Institutions Supervisory Agency (BAPEPAM-LK) pursuant to relevant capital market laws and regulations, and may not be offered or sold within the territory of the Republic of Indonesia or to Indonesian citizens through a public offering or in circumstances which constitute an offer within the meaning of the Indonesian capital market laws and regulations. The Product is made available in Israel through Citibank NA,

regulated by the Bank of Israel and the Israeli Securities Authority. Citibank, N.A, Platinum Building, 21 Ha'arba'ah St, Tel Aviv, Israel. The Product is made available in Italy by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. Foro Buonaparte 16, Milan, 20121, Italy. The Product is made available in Japan by Citigroup Global Markets Japan Inc. ("CGMJ"), which is regulated by Financial Services Agency, Securities and Exchange Surveillance Commission, Japan Securities Dealers Association, Tokyo Stock Exchange and Osaka Securities Exchange. Shin-Marunouchi Building, 1-5-1 Marunouchi, Chiyoda-ku, Tokyo 100-6520 Japan. If the Product was distributed by Nikko Cordial Securities Inc. it is being so distributed under license. In the event that an error is found in an CGMJ research report, a revised version will be posted on the Firm's Global Equities Online (GEO) website. If you have questions regarding GEO, please call (81 3) 6270-3019 for help. The Product is made available in Korea by Citigroup Global Markets Korea Securities Ltd., which is regulated by the Financial Services Commission, the Financial Supervisory Service and the Korea Financial Investment Association (KOFIA). Citibank Building, 39 Da-dong, Jung-gu, Seoul 110-180, Korea. KOFIA makes available registration information of research analysts on its website. Please visit the following website if you wish to find KOFIA registration information on research analysts of Citigroup Global Markets Korea Securities Ltd.
http://dis.kofia.or.kr/fs/dis2/fundMgr/DISFundMgrAnalystPop.jsp?companyCd2=A03030&pageDiv=02. The Product is made available in Malaysia by Citigroup Global Markets Malaysia Sdn Bhd, which is regulated by Malaysia Securities Commission. Menara Citibank, 165 Jalan Ampang, Kuala Lumpur, 50450. The Product is made available in Mexico by Acciones y Valores Banamex, S.A. De C. V., Casa de Bolsa, Integrante del Grupo Financiero Banamex ("Accival") which is a wholly owned subsidiary of Citigroup Inc. and is regulated by Comision Nacional Bancaria y de Valores. Reforma 398, Col. Juarez, 06600 Mexico, D.F. In New Zealand the Product is made available through Citigroup Global Markets New Zealand Ltd. (Company Number 604457), a Participant of the New Zealand Exchange Limited and regulated by the New Zealand Securities Commission. Level 19, Mobile on the Park, 157 Lambton Quay, Wellington. The Product is made available in Pakistan by Citibank N.A. Pakistan branch, which is regulated by the State Bank of Pakistan and Securities Exchange Commission, Pakistan. AWT Plaza, 1.1. Chundrigar Road, P.O. Box 4889, Karachi-74200. The Product is made available in the Philippines through Citicorp Financial Services and Insurance Brokerage Philippines, Inc., which is regulated by the Philippines Securities and Exchange Commission. 20th Floor Citibank Square Bldg. The Product is made available in Poland by Dom Maklerski Banku Handlowego SA an indirect subsidiary of Citigroup Inc., which is regulated by Komisja Nadzoru Finansowego. Dom Maklerski Banku Handlowego S.A. ul.Senatorska 16, 00-923 Warszawa. The Product is made available in the Russian Federation through ZAO Citibank, which is licensed to carry out banking activities in the Russian Federation in accordance with the general banking license issued by the Central Bank of the Russian Federation and brokerage activities in accordance with the license issued by the Federal Service for Financial Markets. Neither the Product nor any information contained in the Product shall be considered as advertising the securities mentioned in this report within the territory of the Russian Federation or outside the Russian Federation. The Product does not constitute an appraisal within the meaning of the Federal Law of the Russian Federation of 29 July 1998 No. 135-FZ (as amended) On Appraisal Activities in the Russian Federation. 8-10 Gasheka Street, 125047 Moscow. The Product is made available in Singapore through Citigroup Global Markets Singapore Pte. Ltd., a Capital Markets Services Licence holder, and regulated by Monetary Authority of Singapore. 1 Temasek Avenue, #39-02 Millenia Tower, Singapore 039192. The Product is made available by The Citigroup Private Bank in Singapore through Citibank, N.A., Singapore branch, a licensed bank in Singapore that is regulated by Monetary Authority of Singapore. This report is distributed in Singapore by Citibank Singapore Ltd ("CSL") to selected Citigold/Citigold Private Clients. CSL provides no independent research or analysis of the substance or in preparation of this report. Please contact your Citigold//Citigold Private Client Relationship Manager in CSL if you have any queries on or any matters arising from or in connection with this report. Citigroup Global Markets (Pty) Ltd. is incorporated in the Republic of South Africa (company registration number 2000/025866/07) and its registered office is at 145 West Street, Sandton, 2196, Saxonwold. Citigroup Global Markets (Pty) Ltd. is regulated by JSE Securities Exchange South Africa, South African Reserve Bank and the Financial Services Board. The investments and services contained herein are not available to private customers in South Africa. The Product is made available in Spain by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. 29 Jose Ortega Y Gassef, 4th Floor, Madrid, 28006, Spain. The Product is made available in Taiwan through Citigroup Global Markets Taiwan Securities Company Ltd., which is regulated by Securities & Futures Bureau. No portion of the report may be reproduced or quoted in Taiwan by the press or any other person. 14 and 15F, No. 1, Songzhi Road, Taipei 110, Taiwan. If the Product is related to non-Taiwan listed securities, neither the Product nor any information contained in the Product shall be considered as advertising the securities or making recommendation of the securities. The Product is made available in Thailand through Citicorp Securities (Thailand) Ltd., which is regulated by the Securities and Exchange Commission of Thailand. 18/F, 22/F and 29/F, 82 North Sathorn Road, Silom, Bangrak, Bangkok 10500, Thailand. The Product is made available in Turkey through Citibank AS which is regulated by Capital Markets Board. Tekfen Tower, Eski Buyukdere Caddesi # 209 Kat 2B, 23294 Levent, Istanbul, Turkey. In the U.A.E, these materials (the "Materials") are communicated by Citigroup Global Markets Limited, DIFC branch ("CGML"), an entity registered in the Dubai International Financial Center ("DIFC") and licensed and regulated by the Dubai Financial Services Authority ("DFSA" to Professional Clients and Market Counterparties only and should not be relied upon or distributed to Retail Clients. A distribution of the different CIRA ratings distribution, in percentage terms for Investments in each sector covered is made available on request. Financial products and/or services to which the Materials relate will only be made available to Professional Clients and Market Counterparties. The Product is made available in United Kingdom by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. This material may relate to investments or services of a person outside of the UK or to other matters which are not regulated by the FSA and further details as to where this may be the case are available upon request in respect of this material. Citigroup Centre, Canada Square, Canary Wharf, London, E14 5LB. The Product is made available in United States by Citigroup Global Markets Inc, which is a member of FINRA and registered with the US Securities and Exchange Commission. 388 Greenwich Street, New York, NY 10013. Unless specified to the contrary, within EU Member States, the Product is made available by Citigroup Global Markets Limited, which is regulated by Financial Services Authority.

Pursuant to Comissão de Valores Mobiliários Rule 483, Citi is required to disclose whether a Citi related company or business has a commercial relationship with the subject company. Considering that Citi operates multiple businesses in more than 100 countries around the world, it is likely that Citi has a commercial relationship with the subject company.

Many European regulators require that a firm must establish, implement and make available a policy for managing conflicts of interest arising as a result of publication or distribution of investment research. The policy applicable to CIRA's Products can be found at www.citigroupgeo.com.

Compensation of equity research analysts is determined by equity research management and Citigroup's senior management and is not linked to specific transactions or recommendations.

The Product may have been distributed simultaneously, in multiple formats, to the Firm's worldwide institutional and retail customers. The Product is not to be construed as providing investment services in any jurisdiction where the provision of such services would not be permitted.

Subject to the nature and contents of the Product, the investments described therein are subject to fluctuations in price and/or value and investors may get back less than originally invested. Certain high-volatility investments can be subject to sudden and large falls in value that could equal or exceed the amount invested. Certain investments contained in the Product may have tax implications for private customers whereby levels and basis of taxation may be subject to change. If in doubt, investors should seek advice from a tax adviser. The Product does not purport to identify the nature of the specific market or other risks associated with a particular transaction. Advice in the Product is general and should not be construed as personal advice given it has been prepared without taking account of the objectives, financial situation or needs of any particular investor. Accordingly, investors should, before acting on the advice, consider the appropriateness of the advice, having regard to their objectives, financial situation and needs. Prior to acquiring any financial product, it is the client's responsibility to obtain the relevant offer document for the product and consider it before making a decision as to whether to purchase the product.

CIRA concurrently disseminates its research via proprietary and non-proprietary electronic distribution platforms. Periodically, individual analysts may also opt to circulate research to one or more clients by email. Such email distribution is discretionary and is done only after the research has been disseminated via the aforementioned distribution channels.



ADDITIONAL INFORMATION IS AVAILABLE UPON REQUEST