Equities

29 September 2011 | 12 pages

Educomp Solutions (EDSO.BO)

Upgrade to Hold: Valuations Now Pricing in Lot of the Risk

- Company Update
- Rating Change
- Target Price Change
- Estimate Change

- **From ~50+x 1-year forward to ~6x** — Educomp's stock has derated sharply over the years given: (a) Deteriorating balance sheet/return ratios; (b) Concerns in investors minds on change in SmartClass accounting/recognition; (c) Growth slowing on a bigger base. Valuations now look attractive on P/E (~7x FY12E) and reasonable at ~6x FY12E EV/EBITDA; however, the balance sheet is stretched and capex is still high. Given the leadership position and sharp fall in valuations, we upgrade to Hold/High Risk.
- **Leadership position across most segments —** Educomp commands a leadership position (in a highly fragmented market) in most of the segments it operates in. SmartClass continues to be a leader with significant share despite a lot of emerging competition while Educomp has ramped up K-12 business very well. Also, the business should be able to demonstrate some pricing power going forward.
- **Cashflow - when will it improve?** — Fast growth and a capex-intensive business implied cashflow issues. Changes in accounting/recognition have not helped. The K-12 business, a good annuity business, is a long gestation one. While its leadership position and good margins are a comfort, Educomp needs to demonstrate success of its asset-light strategy and manage capex/debt in a tough funding environment.
- **What will make us more constructive?** — (a) Educomp has significant cash-flow requirements (FCCB up for redemption in July 2012) – ability to monetize some of the assets at good valuations will be a positive; (b) Managing capex better – management talks of incremental expansion on asset-light strategy and capex of only ~Rs. 3-3.5bn in the next nine months – any visibility of that will be a positive.
- **Lower estimates/target price; Upgrade to Hold/High risk** — Educomp has underperformed the market by ~70% over the past two years on the back of concerns mentioned above. We trim our estimates further by ~1-18%, factoring in recent results and lower margins/higher interest costs. Our new target price is Rs. 278, implying ~6x Sept'12E EPS (implying ~6.5x FY12E EV/EBITDA) – upgrade to Hold/High risk.

Hold/High Risk	**2H**
from Sell/Medium Risk	
Price (28 Sep 11)	Rs228.00
Target price	Rs278.00
from Rs540.00	
Expected share price return	21.9%
Expected dividend yield	0.4%
Expected total return	**22.4%**
Market Cap	Rs21,890M
	US$446M

Price Performance
(RIC: EDSO.BO, BB: EDSL IN)

Statistical Abstract

Year to 31 Mar	Net Profit (RsM)	Diluted EPS (Rs)	EPS growth (%)	P/E (x)	P/B (x)	ROE (%)	Yield (%)
2010A	2,759	27.88	85.7	8.2	1.3	26.7	1.2
2011A	3,367	32.66	17.1	7.0	1.0	17.6	0.5
2012E	3,400	33.42	2.3	6.8	0.9	14.5	0.4
2013E	3,679	36.16	8.2	6.3	0.8	13.7	0.4
2014E	4,572	44.94	24.3	5.1	0.7	14.8	0.4

Source: Powered by dataCentral

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

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

Fiscal year end 31-Mar	2010	2011	2012E	2013E	2014E
Valuation Ratios					
P/E adjusted (x)	8.2	7.0	6.8	6.3	5.1
EV/EBITDA adjusted (x)	5.7	5.4	5.1	4.1	3.6
P/BV (x)	1.3	1.0	0.9	0.8	0.7
Dividend yield (%)	1.2	0.5	0.4	0.4	0.4
Per Share Data (Rs)					
EPS adjusted	27.88	32.66	33.42	36.16	44.94
EPS reported	27.88	32.66	33.42	36.16	44.94
BVPS	173.43	228.00	261.26	298.42	344.90
DPS	2.75	1.10	1.00	1.00	1.00
Profit & Loss (RsM)					
Net sales	10,395	13,509	17,170	22,023	26,715
Operating expenses	-6,690	-8,925	-11,563	-14,608	-17,829
EBIT	**3,704**	**4,584**	**5,607**	**7,415**	**8,886**
Net interest expense	-539	-962	-1,561	-2,604	-2,824
Non-operating/exceptionals	1,255	461	474	500	500
Pre-tax profit	**4,421**	**4,083**	**4,520**	**5,311**	**6,562**
Tax	-1,584	-678	-1,184	-1,824	-2,096
Extraord./Min.Int./Pref.div.	-78	-39	64	193	106
Reported net income	**2,759**	**3,367**	**3,400**	**3,679**	**4,572**
Adjusted earnings	2,759	3,367	3,400	3,679	4,572
Adjusted EBITDA	4,847	5,425	6,660	8,688	10,481
Growth Rates (%)					
Sales	63.2	30.0	27.1	28.3	21.3
EBIT adjusted	66.1	23.7	22.3	32.2	19.8
EBITDA adjusted	59.2	11.9	22.8	30.4	20.6
EPS adjusted	85.7	17.1	2.3	8.2	24.3
Cash Flow (RsM)					
Operating cash flow	**851**	**2,260**	**4,678**	**5,427**	**7,101**
Depreciation/amortization	1,142	841	1,053	1,273	1,594
Net working capital	-1,965	-2,609	-799	-1,436	-1,283
Investing cash flow	**-7,028**	**-11,904**	**-6,366**	**-8,221**	**-8,491**
Capital expenditure	-3,672	-7,972	-5,279	-6,117	-6,166
Acquisitions/disposals	0	0	0	0	0
Financing cash flow	**12,210**	**6,285**	**2,888**	**1,888**	**1,888**
Borrowings	1,583	3,895	3,000	2,000	2,000
Dividends paid	-213	-123	-112	-112	-112
Change in cash	**6,034**	**-3,359**	**1,200**	**-906**	**498**
Balance Sheet (RsM)					
Total assets	**32,857**	**42,582**	**50,106**	**57,129**	**64,997**
Cash & cash equivalent	7,887	4,489	5,752	5,038	5,643
Accounts receivable	5,530	6,255	7,292	9,051	10,613
Net fixed assets	10,656	17,787	22,013	26,858	31,430
Total liabilities	**14,463**	**18,432**	**22,669**	**26,125**	**29,532**
Accounts payable	0	0	0	0	0
Total Debt	10,478	14,373	17,373	19,373	21,373
Shareholders' funds	**18,393**	**24,150**	**27,438**	**31,004**	**35,464**
Profitability/Solvency Ratios (%)					
EBITDA margin adjusted	46.6	40.2	38.8	39.4	39.2
ROE adjusted	26.7	17.6	14.5	13.7	14.8
ROIC adjusted	13.1	14.6	12.5	13.6	14.4
Net debt to equity	14.1	40.9	42.4	46.2	44.4
Total debt to capital	36.3	37.3	38.8	38.5	37.6

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

What catalysts would make us more constructive?

FCCB redemption in July 2012 and high debt

Educomp has significant cash-flow requirements (FCCB up for redemption in July 2012) in a high interest rate/tough funding environment. Cash could come in through:

- Equity dilution – while this will help funding concerns, it will lead to meaningful dilution if it happens at current prices
- Debt – addresses cashflow issues only for time being – no change to debt-equity
- Stake sell in one of the segments – getting in a private equity/strategic partner in any of the key businesses at a good valuation can be a catalyst.

However, given the tight market, the structure of the deal will be a key focus.

Managing capex/cash flows better is something to watch out for in the 2Q results. While management has been talking of asset-light strategy for K12 for some time, the capex has continued to remain very high - ~Rs. 2bn+ in 1QFY12. This has remained a concern for investors and this, coupled with high DSO's (190+ days in Q1), is a challenge. Management, in our recent interactions, has suggested that capex in the remaining nine months of FY12 is likely to be ~Rs. 3-3.5b – 2Q capex remains a key variable to monitor.

And what are the risks?

The key risks in our view are:

- High capex (and negative cashflow) in the coming quarters to continue – this will likely increase investor concerns.
- Balance sheet needs to improve – concerns will likely increase as we move closer to next year – the FCCB redemption is due in July 2012.
- Asset-light model in K12 proves difficult to ramp up – Educomp management wants to incrementally expand the K12 business in the asset-light model. Lack of visibility of the same could be a concern.

Which businesses could see some divestment?

Good portfolio of businesses – most leaders in their area – divestment at good valuations could be a big catalyst

Educomp has created a good portfolio of businesses, and part (or maybe all) of some businesses could be divested given the funding requirements. We believe a lot of the segments like High school, vocational. K-12, pre-school, IIT training etc. could be attractive for a PE/strategic investor. However, the valuations and structure of any deal remains another focus area.

- K-12 business - attractive business in the longer term given the annuity nature of business – however, gestation periods are long. The receivables today are due to the three-year moratorium before the payment for land starts (land is owned by EISML). Educomp management indicated that schools which are already more than three-years old have 35% ROCE - attractive by any standards.

- Pre-school is an attractive businesses given the demographic profile. Tree House, which listed recently, has a market Cap of ~Rs. 5.7bn (despite a lower number of schools). Eurokids had ~Rs. 445m of revenues in FY11. At the end of FY11, Educomp had 220 pre-schools under Roots to Wings and 579 preschools operational under Eurokids.

Estimate change table

Trim estimates by ~1-18% due to lower margins and higher interest costs

We trim our FY12 and FY13 EPS estimates by ~1-18% primarily due to lower margins and higher interest costs. Our topline estimate for FY12 at Rs. 17.2bn is in line with management's expectation of Rs. 17.6bn while our net profit estimate at ~Rs. 3.4bn is below Rs. 4bn guidance. However, the guidance included Rs. 600-750m in revenue and profits from a proposed stake sale of strategic investments, which are not factored in our estimates.

Figure 1. Estimate change table

FYE 31 Mar	Net Profit (RsM)	EPS (Rs)	% chg	DPS (Rs)
2012E	3,400	33.42	-0.9	1.00
Prev	3,549	33.73		1.20
2013E	3,679	36.16	-18.1	1.00
Prev	4,643	44.13		1.30
2014E	4,572	44.94	na	1.00
Prev	na	na		na

Source: Company Reports and CIRA Estimates

Valuations

Are investors no longer pricing growth?

No longer priced for big growth

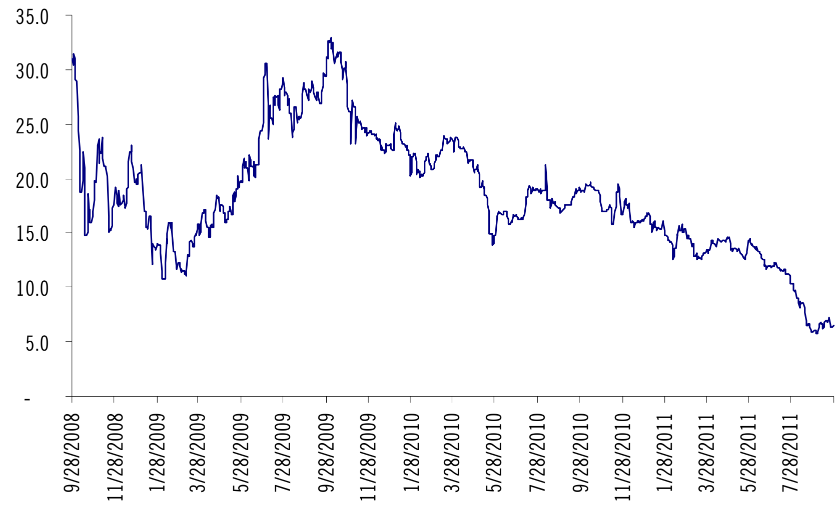
If Educomp stops growing in FY13E, it should generate ~Rs. 6bn+ of EBITDA (assuming flat revenues and ~200bps margin decline yoy). If working capital remains stable and capex is minimal (given no growth), it implies valuations of ~6x EV/EBITDA, which is not pricing in lot of growth, as has been the case in the past.

Sharp derating has happened

From 50x + 1-year forward to ~8x 1-year forward

The 1-year forward P/E multiple has derated sharply from 50x a few years back to a current ~8x 1-year forward multiple. Over the last three years, the stock has traded between 6x -33x 1-year forward earnings.

Figure 2. 1-year forward P/E over last 3 years



Source: dataCentral, Company, CIRA

We now value the stock at 8x Sept'12E EPS

While the business can trade at ~10-12x 1-yr forward EPS eventually, we currently value at ~8x Sept'12E given the risks

With a PAT CAGR of ~5% expected over FY11-FY13E with ROE of ~18% (FY11), the growth and return ratios have fallen off very sharply. *Just to put this in perspective, the PAT CAGR over FY07-FY09 was ~123% with FY09 ROE of 38%.*

We believe Educomp could potentially trade at 10-15x 1-year forward earnings given that it is a good long-term business and Educomp is the only liquid way to play the Indian education story.

However, there are lot of risks associated at this point, including (a) balance sheet/cash flow challenges – with the FCCB due mid of 2012; (b) Contingent liabilities on books of Rs. 6.65 b (corporate guarantee given to bank for secured loan to third party) – although risks are low given management's indication that schools have paid on time in the past; (c) Asset-light model on K12 needs to be proven and capex needs to come down over next couple of quarters to give investors comfort. While the asset-light model is proven, achieving most of incremental expansion in the asset-light model still needs to be demonstrated.

Given the above, we value the stock currently at 8x Sept'12E EPS, which is reasonable in our view, given the risks in the business.

Quants View – Contrarian

Paul Chanin
+65-6432-1153
paul.chanin@citi.com

Data as of: 23-Sep-11

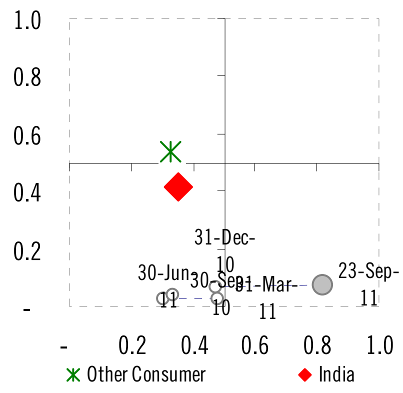
Radar Screen Quadrant Definitions

Glamor *Poor relative value but superior relative momentum*	**Attractive** *Superior relative value and superior relative momentum*
Unattractive *Poor relative value and poor relative momentum*	**Contrarian** *Superior relative value but poor relative momentum*

Educomp Solutions currently lies in the Extreme corner of the Contrarian quadrant of our Value-Momentum map with relatively weak momentum but strong value scores. The stock has moved from the Unattractive quadrant to the Contrarian quadrant in the past three months indicating improving valuations though momentum remains weak - possibly as a result of improving earnings revisions. Compared to its peers in the Other Consumer sector, Educomp Solutions fares better on the valuation metric but worse on the momentum metric. Similarly, compared to its peers in its home market of India, Educomp Solutions fares better on the valuation metric but worse on the momentum metric.

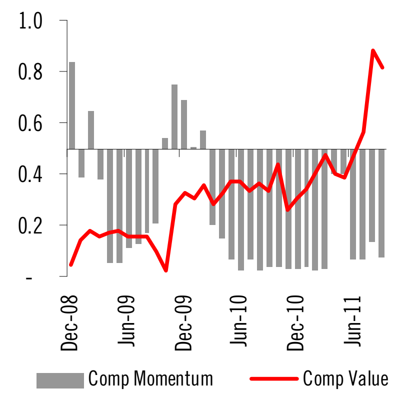
From a macro perspective, Educomp Solutions has a high Beta to the region so is likely to rise (or fall) faster than the region. It is also likely to benefit from falling Commodity (ex-oil) prices, falling EM yields, and a weaker US dollar.

Figure 3. Radar Quadrant Chart History



Source: CIRA

Figure 4. Radar Valuation and Momentum Scores



Source: CIRA

Figure 5. Radar Model Inputs

IBES EPS (Actual and Estimates)

FY(-2)	15.36	Implied Trend Growth (%)	22.53
FY(-1)	27.32	Trailing PE (x)	6.10
FY0	32.86	Implied Cost of Debt (%)	6.69
FY1	35.62	Standardised MCap	(0.26)
FY2	46.80		

Note: Standardised MCap calculated as a Z score – (mkt cap - mean)/std dev – capped at 3

Source: Citi Investment Research and Analysis, Worldscope, I/B/E/S

Figure 6. Stock Performance Sensitivity to Key Macro Factors

Region	1.48	Commodity ex Oil	(0.49)
Local Market	1.23	Rising Oil Prices	0.06
Sector	(0.18)	Rising Asian IR's	0.13
Growth Outperforms Value	0.64	Rising EM Yields	(0.49)
Small Caps Outperform Large Caps	(0.14)	Weaker US$ (vs Asia)	3.02
Widening US Credit Spreads	(0.23)	Weaker ¥ (vs US$)	0.06

Source: Citi Investment Research and Analysis

Educomp Solutions

Company description

Educomp is one of India's largest listed educational service providers focused on the K-12 space (both IT and IT-enabled education). Based in New Delhi, the company operates across various metros and mini metros for private schools and partners various state governments for IT education. It has three primary business segments: (1) SmartClass is an online learning aid targeted towards private educational institutes; (2) ICT is targeted towards government-aided schools for IT infrastructure and training; and (3) K-12 schools, pre-schools and high schools. Apart from these key segments, the company is also into other initiatives like (1) vocational training; (2) online tutoring; and (3) Professional Development instructor-led training targeted at school teachers.

Investment strategy

We rate Educomp shares Neutral/ High Risk (2H) given balance sheet challenges, despite valuations becoming reasonable following meaningful correction in the last few months. We forecast a top-line CAGR of ~28% and ~5% EPS CAGR over FY11-13E – topline growth is strong but higher interest costs are impacting profit growth. The company's ability to raise funds and success of the asset-light model in K-12 are the two positive catalysts to watch out for.

Valuation

We value Educomp shares at Rs278 based on 8x Sep'12E EPS. Due to a change in the business model of SmartClass and the balance sheet challenges, we think that the historical PEs (~6-33x in the last three years) are no longer relevant in valuing Educomp and use the 8x Sep'12 estimates. While we believe Educomp has potential to trade at higher multiples, in the near term investors are likely to be concerned about the balance sheet, contingent liabilities and success of the asset-light model in the K12 segment.

Risks

We rate Educomp shares High Risk, higher than the medium suggested by our quantitative risk-rating system, which tracks historical share price volatility, as we believe investors are likely to be worried about balance sheet challenges in a high interest rate environment. Key downside risks are (1) Continuation of high capex and negative free cash in the coming quarters; (2) Inability to raise funds; and (3) Inability to demonstrate success of asset light model in K12 business. Key upside risks include: (1) stake sale in one of the businesses at a good price and (2) improving cash flows in the coming quarters.

Appendix A-1

Analyst Certification

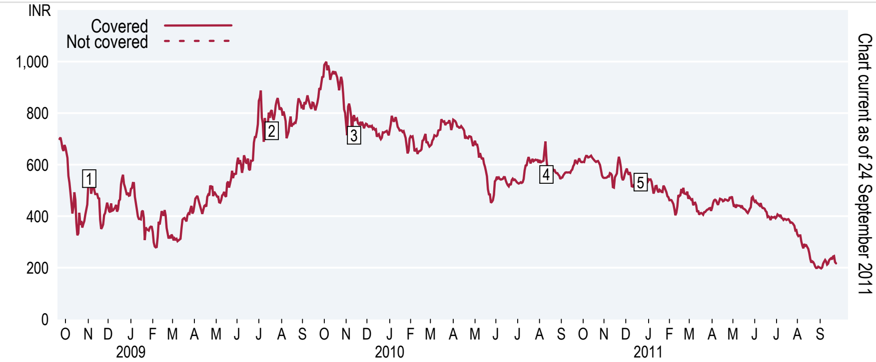
The research analyst(s) primarily responsible for the preparation and content of this research report are named in bold text in the author block at the front of the product except for those sections where an analyst's name appears in bold alongside content which is attributable to that analyst. Each 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

Educomp Solutions (EDSO.BO)

Ratings and Target Price History
Fundamental Research

Analyst: Surendra Goyal, CFA



	Date	Rating	Target Price	Closing Price
1	4-Nov-08	3H	*482.00	522.12
2	19-Jul-09	*3M	*750.00	806.61
3	12-Nov-09	3M	*710.00	792.10
4	11-Aug-10	3M	*565.00	622.40
5	22-Dec-10	3M	*540.00	516.90

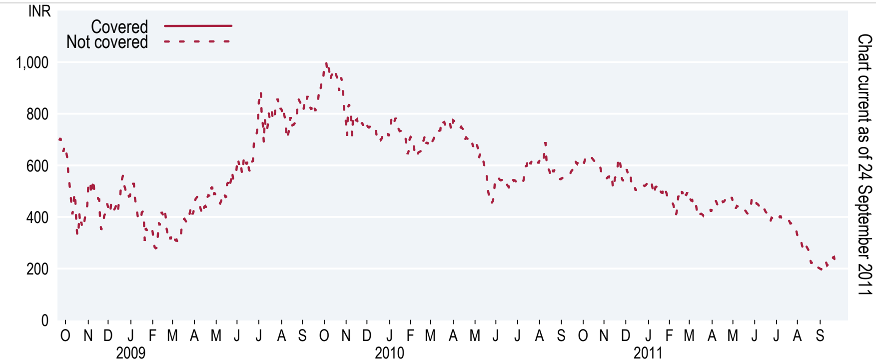
* Indicates change

Rating/target price changes above reflect Eastern Standard Time

Educomp Solutions (EDSO.BO)

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

Analyst: Surendra Goyal, CFA



* Indicates change

Rating/target price changes above reflect Eastern Standard Time

Citigroup Global Markets Inc. or an affiliate received compensation for products and services other than investment banking services from Educomp Solutions in the past 12 months.

Citigroup Global Markets Inc. currently has, or had within the past 12 months, the following as clients, and the services provided were non-investment-banking, securities-related: Educomp Solutions.

Citigroup Global Markets Inc. currently has, or had within the past 12 months, the following as clients, and the services provided were non-investment-banking, non-securities-related: Educomp Solutions.

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 [E6WYB6412478]. 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 30 Jun 2011	**Buy**	**Hold**	**Sell**	**Buy**	**Hold**	**Sell**
Citi Investment Research & Analysis Global Fundamental Coverage	54%	36%	11%	10%	81%	10%
% of companies in each rating category that are investment banking clients	45%	41%	42%	50%	42%	44%

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 geographic and industry sector 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 the universe of stocks under consideration, 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

OTHER DISCLOSURES

The subject company's share price set out on the front page of this Product is quoted as at 28 September 2011 04:00 PM on the issuer's primary market.

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. LLC (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.
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. The Product is distributed in **Germany** by Citigroup Global Markets Deutschland AG ("CGMD"), which is regulated by Bundesanstalt fuer Finanzdienstleistungsaufsicht (BaFin). CGMD, Reuterweg 16, 60323 Frankfurt am Main. Research which relates to "securities" (as defined in the Securities and Futures Ordinance (Cap. 571 of the Laws of Hong Kong)) is issued in **Hong Kong** by, or on behalf of, Citigroup Global Markets Asia Limited which takes full responsibility for its content. Citigroup Global Markets Asia Ltd. is regulated by Hong Kong Securities and Futures Commission. If the Research is made available through Citibank, N.A., Hong Kong Branch, for its clients in Citi Private Bank, it is made available by Citibank N.A., Citibank Tower, Citibank Plaza, 3 Garden Road, Hong Kong. Citibank N.A. is regulated by the Hong Kong Monetary Authority. Please contact your Private Banker in Citibank N.A., Hong Kong, Branch if you have any queries on or any matters arising from or in connection with this document. 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 SMBC Nikko 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 to 'wholesale clients' only as defined by s5C(1) of the Financial Advisers Act 2008 ('FAA') through Citigroup Global Markets Australia Pty Ltd (ABN 64 003 114 832 and AFSL No. 240992), an overseas financial adviser as defined by the FAA, 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 **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. (“CGMSPL”), a capital markets services license holder, and regulated by Monetary Authority of Singapore. Please contact CGMSPL at 1 Temasek Avenue, #39-02 Millenia Tower, Singapore 039192, in respect of any matters arising from, or in connection with, the analysis of this document. This report is intended for recipients who are accredited, expert and institutional investors as defined under the Securities and Futures Act (Cap. 289). 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. Please contact your Private Banker in Citibank N.A., Singapore Branch if you have any queries on or any matters arising from or in connection with this document. This report is intended for recipients who are accredited, expert and institutional investors as defined under the Securities and Futures Act (Cap. 289). 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. This report is intended for recipients who are accredited investors as defined under the Securities and Futures Act (Cap. 289). 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 the **Republic of China** through Citigroup Global Markets Taiwan Securities Company Ltd. ("CGMTS"), 14 and 15F, No. 1, Songzhi Road, Taipei 110, Taiwan and/or through Citibank Securities (Taiwan) Company Limited ("CSTL"), 14 and 15F, No. 1, Songzhi Road, Taipei 110, Taiwan, subject to the respective license scope of each entity and the applicable laws and regulations in the Republic of China. CGMTS and CSTL are both regulated by the Securities and Futures Bureau of the Financial Supervisory Commission of Taiwan, the Republic of China. No portion of the Product may be reproduced or quoted in the Republic of China by the press or any third parties [without the written authorization of CGMTS and CSTL]. If the Product covers securities which are not allowed to be offered or traded in the Republic of China, neither the Product nor any information contained in the Product shall be considered as advertising the securities or making recommendation of the securities in the Republic of China. The Product is for informational purposes only and is not intended as an offer or solicitation for the purchase or sale of a security or financial products. Any decision to purchase securities or financial products mentioned in the Product must take into account existing public information on such security or the financial products or any registered prospectus. 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.

With the exception of our product that is made available only to Qualified Institutional Buyers (QIBs), CIRA concurrently disseminates its research via proprietary and non-proprietary electronic distribution platforms. Periodically, individual CIRA analysts may also opt to circulate research posted on such platforms 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. CIRA simultaneously distributes product that is limited to QIBs only through email distribution.

The level and types of services provided by CIRA analysts to clients may vary depending on various factors such as the client’s individual preferences as to the frequency and manner of receiving communications from analysts, the client’s risk profile and investment focus and perspective (e.g. market-wide, sector specific, long term, short-term etc.), the size and scope of the overall client relationship with Citi and legal and regulatory constraints.