



## IMPACT OF EPS ON MARKET PRICE

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### **Abstract**

*Financial Statement Analysis is usually related to how well a company can use its Assets, Share Holder Fund as well as provide information about the sustainability or persistence of earnings and P/E ratio. Value investing approach emphasizes on Fundamental Analysis, a rational analysis of securities based on the financial performance of a Company. Significant weight of value investing is thus related to the analysis of company's through the use of various financial ratios. P/E ratio shows the relationship between the Market Price per share and the Earnings per share. Investors buy future earnings which means about their expectation relating to the future P/E and so they pay less for current earnings. Since the Market price as well as Earnings is transitory hence the investor remains uncertain about whether earnings are sustainable. This paper focuses on financial statement information to indicate the probability of earnings being sustainable and their impact on Market Price of Equity Shares.*

**Keywords:** *Indian FMCG Sector, Britannia Industries, Godrej Consumers, ITC Ltd Marico, Earnings Per Share, Dividend per Share, Gross Profit Margin, Operating Profit Margin, Net Profit Margin, Return on Equity, Return on Capital Employed, Return on Investment, Dividend Per Share, Price Earnings (P/E) Ratio, Price Earnings Growth Ratio(PEGR)*

### **Introduction**

Efficient Market Hypothesis (EMH) predicts that the market responds immediately to new information, and at all times the share price of a stock is representative of all information available regarding that stock (**Bodie, Kane, & Marcus, 2005**).

Despite this, for decades investors have pursued strategies whereby they can take advantage of stocks which are incorrectly priced due to not having responded immediately to information that is available. The reason for this is that many investors who achieve abnormal returns (returns greater than those of the market) do so by exploiting various anomalies to the EMH (**Hirschey & Nofsinger, 2010**). This can only be done for a limited period as these anomalies tend to be removed from the market once information regarding them has been published (**Schwert, 2003**).

**Price-Earnings Ratio (P/E Ratio)** is a measure of the price paid for a share relative to the income or profit earned by the firm per share. P/E focuses on the relationship between the stock price and the company's earnings. PEG or price-earnings to growth ratio is a valuation ratio used along with the P/E ratio, in stock analysis. It calculates the price of a stock in relation to the earnings per share, and the projected growth of the company.

**PEG ratio > 1** implies that the stock is overvalued. It means that company's future earnings are not going to grow much and the stock may undergo a correction in price.

**PEG ratio = 1** implies that the stock is fairly valued given the expected growth rate.

**PEG ratio < 1** means the stock is undervalued as the markets are currently underestimating growth.

**Negative PEG ratio:** This happens when the current earnings are negative, or the future earnings are going to decline.

India is one of the largest economies in the world in terms of purchasing power and consumer spending. Fast-Moving Consumer Goods (FMCG) sector is the fourth largest sector an important contributor to India's GDP. The FMCG industry represents nearly 2.5% of India's GDP. FMCG products include includes food & dairy products, packaged food products, household products, drinks etc. The Compounded Annual Growth Rate of FMCG sector has been 9.2% between 2011 and 2016 and is expected to reach \$103.7 billion by 2020. Increase in purchasing power, rising influence of the social media well established distribution network, strong presence MNCs', availability of imported Raw Materials and cheaper Labour are the key factors behind growth of the FMCG Sector. The sector is highly fragmented, driven by volume and characterized by low margins as well as stiff competition between organized and unorganized players.

### **India's Leading FMCG Companies**

#### **Britannia Industries Limited**

Britannia is one of the leading FMCG Company, delivering products through 3.5 million retail outlets. The primary business segment of Britannia are (i) Bakery products – Biscuit, Bread, Cake and Rusk (ii) Dairy products – Milk, Butter, Cheese, Ghee, Dahi, Milk-based ready to drink beverages and Dairy Whitener.



### **Godrej Consumer Products Limited**

Godrej Consumer is a leading FMCG Company engaged in the manufacture of personal and household care products. It operates in three categories – Home Care, Personal Wash and Hair Care. Godrej Consumer has a strong and emerging presence in International markets.

### **ITC Ltd**

ITC Ltd is one of India's foremost private sector companies. ITC has over 31,000 employees at more than 60 locations across India and has a strong presence in FMCG (Cigarettes, food, retail, personal care, education and stationary), Hotels, Paperboards & Specialty Papers, Packaging, Agri-Business, and Information Technology.

### **Marico Limited**

Marico is one of India's leading consumer products & services companies in the beauty and wellness space. Marico has a strong presence in both Indian and International market. Marico's portfolio includes brands like Parachute, Parachute Advanced, Saffola, Hair & Care, Nihar, Livon, Setwet, Zatak, Mediker and Revive.

### **Hindustan Unilever Limited**

Incorporated in 1933, Hindustan Unilever Limited has a diversified presence in the FMCG sector with more than 35 brands spanning 20 distinct categories including soaps and detergents, shampoos, skin care, toothpastes, and packaged foods. Over the years, HUL has grown substantially by acquiring landmark brands and has managed to maintain its dominant market position in various categories. HUL's portfolio includes leading household brands including Lux, Lifebuoy, Surf Excel, Rin, Wheel, Fair & Lovely, Pond's, Vaseline, and Lakme.

## **II. Objective of the Study**

1. To analysis the profitability position and the impact of Earnings per Share on Price Earnings ratio of **Britania Industries, Godrej Consumers, ITC Ltd, Marico and Hindustan Unilever.**
2. To highlight the financial performance and returns using **Earnings Per Share, Return on Equity, Return on Capital Employed, Return on Investment, Price Earnings (P/E) Ratio and P/E growth.**

### **Review of Literature**

The researcher and economists have recognized that the measurement of profitability and Earnings have an impact on a Firms market price. A large number of studies have been conducted in the field of operation and financial performance of FMCG Companies. A brief review of some of these studies has been presented.

**Benjamin Graham & David Dodd (1934)** presented in the "Securities Analysis" that the value of a stock is multiple of its current earnings; it depends on both macro (confidence on the stock) and micro factors (the property and history of the company). They considered that P/E ratios reflect the information on previous performance and the future growth of the companies. The average earnings must be accounted when valuing stock price, 16 times of the average earnings is the top price investors can afford.

**Penman (1996)** gave a detailed discussion about the theoretical essence of P/E ratio and the relation between current and future return on equity (ROE). The study concludes that P/E ratio is a united decision of current and future ROE; it has a negative relation between current ROE and positive relation between anticipative net assets.

**Donna, Dudney etc. (2004)** mainly focus on the impact of the consumer's confidence and taxation on the P/E ratio. The results confirm their expectation of the obvious effect. Moreover, they also proved the dividend payout ratio, asset-liability ratio, curve slope of financial revenues; short-term interest rate and expected growth rate are distinct variables. They used two methods to measure the growth rate: the historical and forecasting growth trend based on the Livingston Surbey forecasts, and obtained similar results.

**Estrada** selected stocks in the US stock markets during 1975-2002 using PE, PEG, and PERG ratios. He concluded that strategies based on PERG ratio, with adjusting PE ratio by both growth and risk, outperformed those based on PE and PEG. The conclusion is made based on the higher risk adjusted returns obtained from using PERG.

**Sareewiwatthana** evaluated portfolio performances using five ratios—price to earnings per share, price to book value, return on equity, return on assets, and dividend yield. The results show that all tested portfolios outperformed the market; while that of low PE stocks yield the highest return, He also found that using single ratio, invested portfolio outperforms those of using two, three, and four ratios and screening tools.



**Beaver's (1966)** contended that standard financial ratios can predict the financial performance of firms; many subsequent studies have attempted to demonstrate the predictive value of various techniques for estimating actual business performance.

### III. Scope of Study

The study shows the financial position of leading FMCG Companies in India. Risk Return analysis helps the investors to maximize their returns and reduce the risks. The main objective of investors is to maximize their expected return due to reducing its related risks. The shareholders invest with the aim of making money from the earnings in form of dividends or capital gains from Share Price appreciation. Therefore the impact of Earnings on Companies Market price plays a significant role to analyse the performance. A properly conducted analysis provides invaluable evidence concerning the earnings potential of a company and the effectiveness of management.

### Period of Study

The study covers a period of 6 years from 2011 to 2016.

### Methodology

#### Sources of Data

The study is based on secondary data. Information required for the study has been collected from the Annual Reports of Britannia Industries, Godrej Consumers, ITC Ltd, Marico and Hindustan Unilever and different books, journal, magazines, and data collected from various websites.

### Tools Applied

In this study various tools: Financial Tools – Ratio Analysis and Statistical Tools (i.e.) Mean, T-test and ANOVA (Single Factor) have been used for data analysis.

**Mean:** Sum of variable/N

**Correlation Coefficient (r):** It measures the strength and direction of a linear relationship between two variables on a scatter plot. The value of r is always between +1 and -1.

**R<sup>2</sup>:** It shows how close the data are to the fitted regression line

### Hypothesis

**ANOVA** is statistical hypothesis in which the sampling distribution of test statistic when null hypotheses is true. Null hypotheses have been set and adopted for the analysis of data. The null hypotheses are represented by  $H_0$ . It is a negative statement which avoids personal bias of investigator during data collection as well as the time of drawing conclusion.

**t-Test (Two-Sample Assuming Unequal Variances):** t-test assesses whether the means of two groups are statistically different from each other.

If t Stat value lies between - t Critical two tail and + t Critical two test we don't reject Null Hypothesis.

### IV. Limitation of the Study

1. The study is related to a period of 6 years.
2. As the data are only secondary i.e. they are collected from the published annual reports.
3. Profitability, Structural, Liquidity and Valuation ratios have been taken for the study.

### Profitability

The primary objective of every business is to earn profit. Profit earning is considered essential not only for the survival of but also required for its expansion and diversification. One of the most frequently used tools of financial ratio analysis is profitability ratios which are used to determine the company's bottom line and its return to its investors. Profitability ratios are typically based on net earnings, but variations will occasionally use cash flow or operating earnings. Profitability is a measure of efficiency and control. Profitability is the main base for liquidity as well as solvency. Creditor's, Banks and financial institutions are interested in profitability ratios since they indicate liquidity or capacity of the business to meet interest obligation and regular and improved profit to enhance the long term solvency position of the business.

**Margin Ratio:** It shows the relationship between Profit and Net Sales.

**Operating Margin Ratio:** It reflects the Operating efficiency of a firm.

Operating Margin Ratio = PBITDA / Net Sales

**Exhibit – 1: Operating Profit Margin (%)**

Year	Britania Industries	Godrej Consumers	ITC Ltd	Marico	HUL
2011	4.73	17.73	36.83	13.10	15.92
2012	5.24	17.58	38.18	11.92	16.46
2013	6.05	15.31	38.48	13.39	19.79
2014	7.96	15.22	40.08	15.77	18.99
2015	10.04	16.50	40.22	14.99	20.83
2016	13.87	18.11	42.50	17.32	19.00
Mean	7.98	16.74	39.38	14.41	18.50
SD	3.48	1.26	1.99	1.98	1.92
COV	0.44	0.08	0.05	0.14	0.10

**Exhibit-1** depicts that ITC Ltd has the highest Mean Value while Britania Industries has lowest Mean Value in comparison to other FMCG Companies. Standard deviation of Britania Industries is 3.48, the highest while Coefficient of Variation of Britania Industries is maximum and ITC Ltd the minimum.

**Net Margin Ratio:** It shows the relationship between Net profit and sales. ie, Profit left for equity share holders as a percentage of Net sales.

**Exhibit – 2: Net Profit Margin (%)**

Year	Britania Industries	Godrej Consumers	ITC Ltd	Marico	HUL
2011	2.92	13.23	22.52	7.59	11.52
2012	3.66	11.29	23.90	8.04	11.95
2013	4.23	10.97	24.29	7.91	14.22
2014	5.79	10.70	25.42	10.38	13.53
2015	7.39	11.84	25.14	10.03	13.69
2016	10.10	13.11	25.37	12.03	12.33
Mean	5.68	11.86	24.44	9.33	12.87
SD	2.69	1.09	1.12	1.76	1.08
COV	0.47	0.09	0.05	0.19	0.08

**Exhibit-2** depicts that ITC Ltd has the highest Mean Value while Britania Industries has lowest Mean Value in comparison to other FMCG Companies. Standard deviation of Britania Industries is 2.69, the highest while Coefficient of Variation of Britania Industries is maximum and ITC Ltd the minimum.

**Rate of Return Ratios:** It reflects the relationship between profit earned and the total investments of a firm. The important Rate of Return ratios are as follows.

- Return on Equity
- Return on Capital Employed
- Return on Investments

**Return on Equity (ROE):** It measures the profitability of Share holders' fund.

ROE = Profit after Tax / Net Worth

**Exhibit – 3: Return on Equity - ROE (%)**

Year	Britania Industries	Godrej Consumers	ITC Ltd	Marico	HUL
2011	44.1	34.8	30.4	30.3	85.0
2012	54.3	23.0	32.2	31.0	83.4
2013	54.1	20.3	32.9	23.2	103.1
2014	58.9	19.8	32.6	29.0	119.5
2015	56.4	21.4	30.4	36.0	104.3
2016	55.9	23.4	29.2	36.9	82.4
Mean	54.0	23.8	31.3	31.1	96.3
CAGR (%)	5%	-8%	-1%	4%	-1%

**Exhibit-3** depicts that HUL has the highest mean in terms of Return on Equity followed by Britannia Industries, ITC Ltd, Marico and Godrej Consumers. The Compounded Annual Growth Rate (CAGR %) of Britannia Industries and Marico are positive while that of other FMCG Companies are Negative.

**Return on Capital Employed (ROCE):** It shows the relationship between Operating Profits and Capital Employed.

**Exhibit – 4: Return on Capital Employed - ROCE (%)**

Year	Britania Industries	Godrej Consumers	ITC Ltd	Marico	HUL
2011	13.9	22.1	45.1	19.3	93.4
2012	19.1	14.2	47.2	19.6	99.6
2013	25.8	14.5	48.1	17.1	121.8
2014	40.0	14.7	47.7	21.3	141.6
2015	43.9	15.9	45.3	27.7	140.6
2016	46.0	16.7	45.5	31.4	108.1
Mean	31.5	16.4	46.5	22.7	117.5
CAGR (%)	27%	-5%	0.16%	10%	3%

**Exhibit-4** depicts that HUL has the highest mean in terms of Return on Capital Employed followed by ITC Ltd, Britannia Industries, Marico and Godrej Consumers. The Compounded Annual Growth Rate (CAGR %) of Britannia Industries is maximum. Only Godrej Consumers reported a negative growth of 5% between 2011 and 2016.

**Exhibit – 5: Return on Investments – ROI (%)**

Year	Britania Industries	Godrej Consumers	ITC Ltd	Marico	HUL
2011	14.2	12.9	28.4	13.9	63.3
2012	19.7	11.5	30.1	16.3	59.5
2013	27.6	11.8	30.6	12.6	93.6
2014	41.6	12.8	30.7	23.4	81.2
2015	41.2	13.7	28.6	25.3	83.1
2016	44.1	14.6	27.3	29.6	72.7
Mean	31.4	12.9	29.3	20.2	75.6
CAGR (%)	25.5%	2.6%	-0.8%	16.3%	2.8%

**Exhibit-5** depicts that HUL has the highest mean in terms of Return on Investments followed by Britannia Industries, ITC Ltd, Marico and Godrej Consumers. The Compounded Annual Growth Rate (CAGR %) of Britannia Industries is maximum. Only ITC Ltd reported a negative growth of 0.8% between 2011 and 2016.

**Valuation Ratios:** It indicates how the equity stock of a firm is assessed in the capital market. The important valuation ratios are as follows.

- Earnings Per Share (EPS)
- Dividend Per Share (DPS)
- Price Earnings (P/E) Ratio
- Market Value to Book Value Ratio

**Earnings per Share (EPS):** It shows the relationship between Profit After Tax and no of Equity Shares outstanding.

**Exhibit – 6: Earnings per Share (EPS)**

Year	Britania Industries	Godrej Consumers	ITC Ltd	Marico	HUL
2011	11.2	14.4	6.5	1.9	10.5
2012	16.7	15.6	8.0	2.6	11.9
2013	21.7	19.1	9.6	2.8	14.7
2014	33.0	21.9	11.1	3.8	16.4
2015	47.9	26.7	12.0	4.4	16.9
2016	70.1	33.2	12.3	5.6	19.0
Mean	33.4	21.8	9.9	3.5	14.9
CAGR (%)	44%	18%	14%	24%	13%

**Exhibit-6** depicts that Britannia Industries has the highest Mean Value while, Marico Ltd has lowest Mean Value in comparison to other Companies. The Compounded Annual Growth Rate (CAGR %) of Britannia Industries is maximum followed by Marico, Godrej Consumers, ITC Ltd and HUL.

#### Hypothesis

$H_0: \mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5$  (There is no significant relationship between Earnings per share of the above Companies)

$H_1: \mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4 \neq \mu_5$  (There is significant relationship between Earnings per share of the above Companies)

#### Exhibit – 7: Earnings per Share (EPS): ANOVA ANOVA: Single Factor

Groups	Count	Sum	Average	Variance
Britannia Industries	6	200.6	33.4333	493.183
Godrej Consumers	6	130.9	21.8167	50.8937
ITC Ltd	6	59.37	9.895	5.48315
Marico	6	21.1	3.51667	1.83367
HUL	6	89.4	14.9	10.292

#### ANOVA: Variation

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	3177.193587	4	794.298	7.07067	0.000595299	2.75871
Within Groups	2808.42575	25	112.337			
<b>Total</b>	5985.619337	29				

Above analysis shows that the F value (7.07067) is more than the table value (2.75871) therefore null hypothesis is rejected. Therefore it is concluded that there is significant relationship between Earnings per share of the above FMCG Companies.

**Dividend per Share (DPS):** It shows the relationship between Dividend Declared and no of Equity Shares outstanding.

#### Exhibit – 8: Dividend per Share (DPS)

Year	Britannia Industries	Godrej Consumers	ITC Ltd	Marico	HUL
2011	6.5	5.0	5.0	0.3	6.8
2012	8.5	1.7	4.5	0.3	7.5
2013	8.5	5.0	4.5	0.3	18.5
2014	12.0	5.3	5.3	2.0	13.0
2015	16.0	7.1	6.1	1.2	15.0
2016	20.0	9.7	6.9	3.4	16.0
<b>Mean</b>	11.9	5.6	5.4	1.3	12.8
<b>CAGR (%)</b>	25%	14%	7%	63%	19%

**Exhibit-8** depicts that HUL has the highest Mean Value while, Marico has lowest Mean Value in comparison to other Companies. The Compounded Annual Growth Rate (CAGR %) of Marico is maximum followed by Britannia Industries, HUL, Godrej Consumers and ITC Ltd.

**Price Earnings (P/E) Ratio:** It shows the relationship between the Market Price per share and the Earnings per share.

#### Exhibit – 9: Price Earnings (P/E) Ratio

Year	Britannia Industries	Godrej Consumers	ITC Ltd	Marico	HUL
2011	26.4	18.5	23.2	28.3	24.5
2012	28.6	20.1	25.4	29.5	26.5
2013	23.0	28.1	27.7	33.9	27.6
2014	22.4	37.6	29.6	29.3	32.4
2015	26.7	36.9	29.9	42.9	38.1
2016	40.5	37.0	25.5	60.2	45.5
<b>Mean</b>	27.93	29.70	26.88	37.35	32.43
<b>CAGR (%)</b>	9%	14.9%	1.91%	16.3%	13.2%

**Exhibit-9** depicts that Marico has the highest Mean Value while ITC Ltd, has lowest Mean Value in comparison to other Companies. The Compounded Annual Growth Rate (CAGR %) of Marico is maximum followed by Godrej Consumers, HUL, Britannia Industries and ITC Ltd.

### Hypothesis

$H_0: \mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5$  (There is no significant relationship between Price Earnings Ratio of the above Companies)

$H_1: \mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4 \neq \mu_5$  (There is significant relationship between Price Earnings Ratio of the above Companies)

### Exhibit – 10: Price Earnings (P/E) Ratio: ANOVA

#### ANOVA: Single Factor

Groups	Count	Sum	Average	Variance
Britania Industries	6	167.6	27.9333	43.4387
Godrej Consumers	6	178.2	29.7	77.54
ITC Ltd	6	161.3	26.8833	6.96567
Marico	6	224.1	37.35	154.631
HUL	6	194.6	32.4333	64.8707

#### ANOVA: Variation

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	421.922	4	105.481	1.51794	0.227283314	2.75871
Within Groups	1737.23	25	69.4892			
<b>Total</b>	<b>2159.152</b>	<b>29</b>				

Above analysis shows that the F value (1.51794) is less than the table value (2.75871) therefore null hypothesis is accepted. Therefore it is concluded that there is no significant relationship between Price Earnings Ratio of the above FMCG Companies

**Descriptive Analysis:** This research is based on Easton and Harris (1991) formal valuation model, which has been used by the majority of researchers who contacted similar studies (Biddle, Bowen and Wallace, 1997; Chen and Dodd, 1997 and 2001). This links stock returns to earnings levels and earnings changes. Relative information content is assessed by comparing  $R^2$  for each performance measure, EPS, ROCE, ROE, ROI and P/E.

### Exhibit – 11: Britannia Industries

Year	P/E	EPS	ROCE	ROE	ROI
2011	26.4	11.2	13.9	44.1	14.2
2012	28.6	16.7	19.1	54.3	19.7
2013	23.0	21.7	25.8	54.1	27.6
2014	22.4	33.0	40.0	58.9	41.6
2015	26.7	47.9	43.9	56.4	41.2
2016	40.5	70.1	46.0	55.9	44.1
<b>RSQ = r<sup>2</sup></b>		<b>0.51689</b>	<b>0.13729</b>	<b>0.00264</b>	<b>0.09294</b>

The Exhibit depicts a positive Co-relation between EPS, ROCE, ROE, ROI and P/E respectively. The correlation between P/E and EPS is 0.51689 while that with ROCE, ROE and ROI are 0.13729, 0.00264 and 0.09294 respectively.

**T-Test** is used to test the null hypothesis that the variances of two populations are not equal.

If t Stat value lies between - t Critical two tail and + t Critical two test we don't reject Null Hypothesis

### Exhibit – 12: T-Test: Two-Sample Assuming Unequal Variances: Britannia Industries

	EPS	ROCE	ROE	ROI	P/E
Mean	33.43333	31.45	53.95	31.40766	27.93333
Variance	493.1827	186.451	26.295	162.3002	43.43867
Observations	6	6	6	6	6
Hypothesized Mean Difference	0	0	0	0	

df	6	7	9	7	
<b>t Stat</b>	<b>0.58157</b>	<b>0.56813</b>	<b>7.63143</b>	<b>0.59332</b>	
P(T<=t) one-tail	0.291014	0.29385	1.61E-05	0.285816	
t Critical one-tail	1.94318	1.894579	1.833113	1.894579	
P(T<=t) two-tail	0.582029	0.5877	3.22E-05	0.571632	
<b>t Critical two-tail</b>	<b>2.44691</b>	<b>2.36462</b>	<b>2.26216</b>	<b>2.36462</b>	

#### EPS & P/E

$H_0: \mu_1^2 = \mu_2^2$  (There is significant relationship between EPS & P/E, Variance are not Equal)

$H_1: \mu_1^2 \neq \mu_2^2$  (There is significant no relationship between EPS & P/E, Variance is Equal)

Here the t Stat value lies between -2.44691 & +2.44691. Therefore, we reject the null hypothesis stating that the variances are equal.

#### ROCE & P/E

$H_0: \mu_1^2 = \mu_2^2$  (There is significant relationship between ROCE & P/E, Variance are not Equal)

$H_1: \mu_1^2 \neq \mu_2^2$  (There is significant no relationship between ROCE & P/E, Variance is Equal)

Here the t Stat value lies between -2.36462 & +2.36462. Therefore, we reject the null hypothesis stating that the variances are equal.

#### ROE & P/E

$H_0: \mu_1^2 = \mu_2^2$  (There is significant relationship between ROE & P/E, Variance are not Equal)

$H_1: \mu_1^2 \neq \mu_2^2$  (There is significant no relationship between ROE & P/E, Variance is Equal)

Here the t Stat value doesn't lie between -2.26216 & +2.26216. Therefore, we accept the null hypothesis stating that the variances are unequal.

#### ROI & P/E

$H_0: \mu_1^2 = \mu_2^2$  (There is significant relationship between ROI & P/E, Variance are not Equal)

$H_1: \mu_1^2 \neq \mu_2^2$  (There is significant no relationship between ROI & P/E, Variance is Equal)

Here the t Stat value lies between -2.36462 & +2.36462. Therefore, we reject the null hypothesis stating that the variances are equal.

**Exhibit – 13: Co-relation: EPS, ROCE, ROE, ROI & P/E: Godrej Consumers**

Year	P/E	EPS	ROCE	ROE	ROI
2011	18.5	14.4	22.1	34.8	12.9
2012	20.1	15.6	14.2	23.0	11.5
2013	28.1	19.1	14.5	20.3	11.8
2014	37.6	21.9	14.7	19.8	12.8
2015	36.9	26.7	15.9	21.4	13.7
2016	37.0	33.2	16.7	23.4	14.6
<b>RSQ = r<sup>2</sup></b>		<b>0.71724</b>	<b>0.17363</b>	<b>0.43295</b>	<b>0.40578</b>

The Exhibit depicts a positive Co-relation between EPS, ROCE, ROE, ROI and P/E respectively. The correlation between P/E and EPS is 0.71724 while that with ROCE, ROE and ROI are 0.17363, 0.43295 and 0.40578 respectively.

**Exhibit – 14: T-Test: Two-Sample Assuming Unequal Variances: Godrej Consumers**

	EPS	ROCE	ROE	ROI	P/E
Mean	21.81667	16.35	23.78333	12.89105	29.7
Variance	50.89367	8.831	31.16167	1.354505	77.54
Observations	6	6	6	6	6
Hypothesized Mean Difference	0	0	0	0	
df	10	6	8	5	
<b>t Stat</b>	<b>-1.7039</b>	<b>-3.5186</b>	<b>-1.3901</b>	<b>-4.6355</b>	
P(T<=t) one-tail	0.059609	0.00627	0.100982	0.002828	
t Critical one-tail	1.812461	1.94318	1.859548	2.015048	
P(T<=t) two-tail	0.119219	0.012539	0.201964	0.005656	
<b>t Critical two-tail</b>	<b>2.22814</b>	<b>2.44691</b>	<b>2.306</b>	<b>2.57058</b>	



### EPS & P/E

$H_0: \mu_1^2 = \mu_2^2$  (There is significant relationship between EPS & P/E, Variance are not Equal)

$H_1: \mu_1^2 \neq \mu_2^2$  (There is significant no relationship between EPS & P/E, Variance is Equal)

Here the t Stat value lies between -2.22814 & +2.22814. Therefore, we reject the null hypothesis stating that the variances are equal.

### ROCE & P/E

$H_0: \mu_1^2 = \mu_2^2$  (There is significant relationship between ROCE & P/E, Variance are not Equal)

$H_1: \mu_1^2 \neq \mu_2^2$  (There is significant no relationship between ROCE & P/E, Variance is Equal)

Here the t Stat value doesn't lie between -2.44691 & +2.44691. Therefore, we accept the null hypothesis stating that the variances are unequal.

### ROE & P/E

$H_0: \mu_1^2 = \mu_2^2$  (There is significant relationship between ROE & P/E, Variance are not Equal)

$H_1: \mu_1^2 \neq \mu_2^2$  (There is significant no relationship between ROE & P/E, Variance is Equal)

Here the t Stat value lies between -2.306 & +2.306. Therefore, we reject the null hypothesis stating that the variances are equal.

### ROI & P/E

$H_0: \mu_1^2 = \mu_2^2$  (There is significant relationship between ROI & P/E, Variance are not Equal)

$H_1: \mu_1^2 \neq \mu_2^2$  (There is significant no relationship between ROI & P/E, Variance is Equal)

Here the t Stat value doesn't lie between -2.57058 & +2.57058. Therefore, we accept the null hypothesis stating that the variances are unequal.

**Exhibit – 15: Co-relation: EPS, ROCE, ROE, ROI & P/E: ITC Ltd**

Year	P/E	EPS	ROCE	ROE	ROI
2011	23.2	6.5	45.1	30.4	28.4
2012	25.4	8.0	47.2	32.2	30.1
2013	27.7	9.6	48.1	32.9	30.6
2014	29.6	11.1	47.7	32.6	30.7
2015	29.9	12.0	45.3	30.4	28.6
2016	25.5	12.3	45.5	29.2	27.3
<b>RSQ = r<sup>2</sup></b>		<b>0.48598</b>	<b>0.14362</b>	<b>0.13658</b>	<b>0.16875</b>

The Exhibit depicts a positive Co-relation between EPS, ROCE, ROE, ROI and P/E respectively. The correlation between P/E and EPS is 0.48598 while that with ROCE, ROE and ROI are 0.14362, 0.13658 and 0.16875 respectively.

**Exhibit – 16: T-Test: Two-Sample Assuming Unequal Variances: ITC Ltd**

	EPS	ROCE	ROE	ROI	P/E
Mean	9.895	46.47869	31.28678	29.27437	26.88333
Variance	5.48315	1.740427	2.185074	1.960637	6.965667
Observations	6	6	6	6	6
Hypothesized Mean Difference	0	0	0	0	0
df	10	7	8	8	
<b>t Stat</b>	<b>-11.794</b>	<b>16.2674</b>	<b>3.56566</b>	<b>1.96032</b>	
P(T<=t) one-tail	1.72E-07	4.04E-07	0.00367	0.042808	
t Critical one-tail	1.812461	1.894579	1.859548	1.859548	
P(T<=t) two-tail	3.44E-07	8.08E-07	0.00734	0.085616	
<b>t Critical two-tail</b>	<b>2.22814</b>	<b>2.36462</b>	<b>2.306</b>	<b>2.306</b>	

### EPS & P/E

$H_0: \mu_1^2 = \mu_2^2$  (There is significant relationship between EPS & P/E, Variance are not Equal)

$H_1: \mu_1^2 \neq \mu_2^2$  (There is significant no relationship between EPS & P/E, Variance is Equal)

Here the t Stat value doesn't lie between -2.22814 & +2.22814. Therefore, we accept the null hypothesis stating that the variances are unequal.

#### ROCE & P/E

$H_0: \mu_1^2 = \mu_2^2$  (There is significant relationship between ROCE & P/E, Variance are not Equal)

$H_1: \mu_1^2 \neq \mu_2^2$  (There is significant no relationship between ROCE & P/E, Variance is Equal)

Here the t Stat value doesn't lie between -2.36462 & +2.36462. Therefore, we accept the null hypothesis stating that the variances are unequal.

#### ROE & P/E

$H_0: \mu_1^2 = \mu_2^2$  (There is significant relationship between ROE & P/E, Variance are not Equal)

$H_1: \mu_1^2 \neq \mu_2^2$  (There is significant no relationship between ROE & P/E, Variance is Equal)

Here the t Stat value doesn't lie between -2.306 & +2.306. Therefore, we accept the null hypothesis stating that the variances are unequal.

#### ROI & P/E

$H_0: \mu_1^2 = \mu_2^2$  (There is significant relationship between ROI & P/E, Variance are not Equal)

$H_1: \mu_1^2 \neq \mu_2^2$  (There is significant no relationship between ROI & P/E, Variance is Equal)

Here the t Stat value lies between -2.306 & +2.306. Therefore, we reject the null hypothesis stating that the variances are equal.

**Exhibit – 17: Co-relation: EPS, ROCE, ROE, ROI & P/E: Marico**

Year	P/E	EPS	ROCE	ROE	ROI
2011	28.3	1.9	19.3	30.3	13.9
2012	29.5	2.6	19.6	31.0	16.3
2013	33.9	2.8	17.1	23.2	12.6
2014	29.3	3.8	21.3	29.0	23.4
2015	42.9	4.4	27.7	36.0	25.3
2016	60.2	5.6	31.4	36.9	29.6
<b>RSQ = r<sup>2</sup></b>		<b>0.78351</b>	<b>0.81263</b>	<b>0.46423</b>	<b>0.59776</b>

The Exhibit depicts a positive Co-relation between EPS, ROCE, ROE, ROI and P/E respectively. The correlation between P/E and EPS is 0.78351 while that with ROCE, ROE and ROI are 0.81263, 0.46423 and 0.59776 respectively.

**Exhibit – 18: T-Test: Two-Sample Assuming Unequal Variances: Marico**

	EPS	ROCE	ROE	ROI	P/E
Mean	3.516667	22.73333	31.06667	20.17941	37.35
Variance	1.833667	31.03467	25.02267	47.56683	154.631
Observations	6	6	6	6	6
Hypothesized Mean Difference	0	0	0	0	
df	5	7	7	8	
<b>t Stat</b>	<b>-6.6254</b>	<b>-2.6276</b>	<b>-1.1483</b>	<b>-2.9578</b>	
P(T<=t) one-tail	0.00059	0.017016	0.144288	0.009103	
t Critical one-tail	2.015048	1.894579	1.894579	1.859548	
P(T<=t) two-tail	0.001179	0.034031	0.288575	0.018207	
<b>t Critical two-tail</b>	<b>2.57058</b>	<b>2.36462</b>	<b>2.36462</b>	<b>2.306</b>	

#### EPS & P/E

$H_0: \mu_1^2 = \mu_2^2$  (There is significant relationship between EPS & P/E, Variance are not Equal)

$H_1: \mu_1^2 \neq \mu_2^2$  (There is significant no relationship between EPS & P/E, Variance is Equal)

Here the t Stat value doesn't lie between -2.57058 & +2.57058. Therefore, we accept the null hypothesis stating that the variances are unequal.

### ROCE & P/E

$H_0: \mu_1^2 = \mu_2^2$  (There is significant relationship between ROCE & P/E, Variance are not Equal)

$H_1: \mu_1^2 \neq \mu_2^2$  (There is significant no relationship between ROCE & P/E, Variance is Equal)

Here the t Stat value doesn't lie between -2.36462 & +2.36462. Therefore, we accept the null hypothesis stating that the variances are unequal.

### ROE & P/E

$H_0: \mu_1^2 = \mu_2^2$  (There is significant relationship between ROE & P/E, Variance are not Equal)

$H_1: \mu_1^2 \neq \mu_2^2$  (There is significant no relationship between ROE & P/E, Variance is Equal)

Here the t Stat value lies between -2.36462 & +2.36462. Therefore, we reject the null hypothesis stating that the variances are equal.

### ROI & P/E

$H_0: \mu_1^2 = \mu_2^2$  (There is significant relationship between ROI & P/E, Variance are not Equal)

$H_1: \mu_1^2 \neq \mu_2^2$  (There is significant no relationship between ROI & P/E, Variance is Equal)

Here the t Stat value doesn't lies between -2.306 & +2.306. Therefore, we accept the null hypothesis stating that the variances are unequal.

**Exhibit – 19: Co-relation: EPS, ROCE, ROE, ROI & P/E: HUL**

Year	P/E	EPS	ROCE	ROE	ROI
2011	24.5	10.5	93.4	85.0	63.3
2012	26.5	11.9	99.6	83.4	59.5
2013	27.6	14.7	121.8	103.1	93.6
2014	32.4	16.4	141.6	119.5	81.2
2015	38.1	16.9	140.6	104.3	83.1
2016	45.5	19.0	108.1	82.4	72.7
<b>RSQ = r2</b>		<b>0.84172</b>	<b>0.11691</b>	<b>0.00004</b>	<b>0.04557</b>

The Exhibit depicts a positive Co-relation between EPS, ROCE, ROE, ROI and P/E respectively. The correlation between P/E and EPS is **0.84172** while that with ROCE, ROE and ROI are 0.11691, 0.00004 and 0.04557 respectively.

**Exhibit – 20: T-Test: Two-Sample Assuming Unequal Variances: HUL**

	EPS	ROCE	ROE	ROI	P/E
Mean	14.9	117.5233	96.28333	75.5687	32.43333
Variance	10.292	424.1121	227.1577	165.7352	64.87067
Observations	6	6	6	6	6
Hypothesized Mean Difference	0	0	0	0	
df	7	6	8	8	
<b>t Stat</b>	<b>-4.9538</b>	<b>9.42556</b>	<b>9.15217</b>	<b>6.95783</b>	
P(T<=t) one-tail	0.000825	4.05E-05	8.19E-06	5.87E-05	
t Critical one-tail	1.894579	1.94318	1.859548	1.859548	
P(T<=t) two-tail	0.001649	8.11E-05	1.64E-05	0.000117	
<b>t Critical two-tail</b>	<b>2.36462</b>	<b>2.44691</b>	<b>2.306</b>	<b>2.306</b>	

### EPS & P/E

$H_0: \mu_1^2 = \mu_2^2$  (There is significant relationship between EPS & P/E, Variance are not Equal)

$H_1: \mu_1^2 \neq \mu_2^2$  (There is significant no relationship between EPS & P/E, Variance is Equal)

Here the t Stat value doesn't lie between -2.36462 & +2.36462. Therefore, we accept the null hypothesis stating that the variances are unequal.

### ROCE & P/E

$H_0: \mu_1^2 = \mu_2^2$  (There is significant relationship between ROCE & P/E, Variance are not Equal)

$H_1: \mu_1^2 \neq \mu_2^2$  (There is significant no relationship between ROCE & P/E, Variance is Equal)

Here the t Stat value doesn't lie between -2.44691 & +2.44691. Therefore, we accept the null hypothesis stating that the variances are unequal.

### ROE & P/E

$H_0: \mu_1^2 = \mu_2^2$  (There is significant relationship between ROE & P/E, Variance are not Equal)

$H_1: \mu_1^2 \neq \mu_2^2$  (There is significant no relationship between ROE & P/E, Variance is Equal)

Here the t Stat value doesn't lie between -2.306 & +2.306. Therefore, we accept the null hypothesis stating that the variances are unequal.

### ROI & P/E

$H_0: \mu_1^2 = \mu_2^2$  (There is significant relationship between ROI & P/E, Variance are not Equal)

$H_1: \mu_1^2 \neq \mu_2^2$  (There is significant no relationship between ROI & P/E, Variance is Equal)

Here the t Stat value doesn't lie between -2.306 & +2.306. Therefore, we accept the null hypothesis stating that the variances are unequal.

### Price-Earnings Ratio

Price-Earnings Ratio is based on the relationship between Market Price per Share and company's Earnings per Share. It indicates the price investors are willing to pay per rupee of earnings. It compares the share price of a company to the earnings it generates per share and hence it plays a significant role behind investor's decision of buying a particular share. P/E ratio is a metric that allows investors to determine how valuable a stock is, more so than market price alone. A low P/E Ratio reflects that the Stock have a Market Price lower than their Fair Value when compared with Earnings per Share.

Stock selection based on low PE ratio has been questioned regarding the growth opportunities which have lead to the development of Price/Earnings to Growth (PEGR) concept which is a combination of both value investing and growth investing approach. In PEGR the stock price as compared to profit, along with the growth rate of profit is taken into consideration.

**Exhibit – 21: Britannia Industries – PEGR**

Year	P/E	EPS	EPS -Growth	PEGR
2011	26.4	11.2		
2012	28.6	16.7	49.11	0.58
2013	23.0	21.7	29.94	0.77
2014	22.4	33.0	52.07	0.43
2015	26.7	47.9	45.15	0.59
2016	40.5	70.1	46.35	0.87
<b>Mean</b>	<b>27.9</b>	<b>33.4</b>	<b>44.5</b>	<b>0.6</b>
<b>CAGR (%)</b>	<b>7%</b>	<b>33%</b>	<b>-1%</b>	<b>11%</b>

The Exhibit depicts the Mean and CAGR in P/E, EPS, EPS- Growth and PEGR. PEGR is based on the relation between P/E and EPS- Growth. The Growth in PEGR is 11%.

**Exhibit – 22: Godrej Consumers – PEGR**

Year	P/E	EPS	EPS -Growth	PEGR
2011	18.5	14.4		
2012	20.1	15.6	8.33	2.41
2013	28.1	19.1	22.44	1.25
2014	37.6	21.9	14.66	2.56
2015	36.9	26.7	21.92	1.68
2016	37.0	33.2	24.34	1.52
<b>Mean</b>	<b>29.7</b>	<b>21.8</b>	<b>18.3</b>	<b>1.9</b>
<b>CAGR (%)</b>	<b>13%</b>	<b>16%</b>	<b>31%</b>	<b>-11%</b>

The Exhibit depicts the Mean and CAGR in P/E, EPS, EPS- Growth and PEGR. PEGR is based on the relation between P/E and EPS- Growth. The Growth in PEGR is -11%.

**Exhibit – 23: ITC Ltd – PEGR**

Year	P/E	EPS	EPS -Growth	PEGR
2011	23.2	6.5		
2012	25.4	8.0	23.41	1.08
2013	27.7	9.6	20.10	1.38
2014	29.6	11.1	16.00	1.85
2015	29.9	12.0	8.21	3.64
2016	25.5	12.3	2.58	9.87
<b>Mean</b>	26.9	9.9	14.1	3.6
<b>CAGR (%)</b>	<b>0%</b>	<b>9%</b>	<b>-42%</b>	<b>74%</b>

The Exhibit depicts the Mean and CAGR in P/E, EPS, EPS- Growth and PEGR. PEGR is based on the relation between P/E and EPS- Growth. The Growth in PEGR is 74%.

**Exhibit – 24: Marico- PEGR**

Year	P/E	EPS	EPS -Growth	PEGR
2011	28.3	1.9		
2012	29.5	2.6	36.84	0.80
2013	33.9	2.8	7.69	4.41
2014	29.3	3.8	35.71	0.82
2015	42.9	4.4	15.79	2.72
2016	60.2	5.6	27.27	2.21
<b>Mean</b>	37.4	3.5	24.7	2.2
<b>CAGR (%)</b>	<b>15%</b>	<b>17%</b>	<b>-7%</b>	<b>29%</b>

The Exhibit depicts the Mean and CAGR in P/E, EPS, EPS- Growth and PEGR. PEGR is based on the relation between P/E and EPS- Growth. The Growth in PEGR is 29%.

**Exhibit – 25: HUL- PEGR**

Year	P/E	EPS	EPS -Growth	PEG
2011	24.5	10.5		
2012	26.5	11.9	13.33	1.99
2013	27.6	14.7	23.53	1.17
2014	32.4	16.4	11.56	2.80
2015	38.1	16.9	3.05	12.50
2016	45.5	19.0	12.43	3.66
<b>Mean</b>	32.4	14.9	12.8	4.4
<b>CAGR (%)</b>	<b>11%</b>	<b>10%</b>	<b>-2%</b>	<b>17%</b>

The Exhibit depicts the Mean and CAGR in P/E, EPS, EPS- Growth and PEGR. PEGR is based on the relation between P/E and EPS- Growth. The Growth in PEGR is 17%.

**Exhibit – 26: Composite PEGR**

Year	Britania Industries	Godrej Consumers	ITC Ltd	Marico	HUL
2012	0.58	2.41	1.08	0.80	1.99
2013	0.77	1.25	1.38	4.41	1.17
2014	0.43	2.56	1.85	0.82	2.80
2015	0.59	1.68	3.64	2.72	12.50
2016	0.87	1.52	9.87	2.21	3.66
<b>Mean</b>	0.6	1.9	3.6	2.19	4.4
<b>CAGR (%)</b>	<b>11%</b>	<b>-11%</b>	<b>74%</b>	<b>29%</b>	<b>17%</b>

The Exhibit depicts the Composite PEGR mean as well as the Compounded Annual Growth rate of the above 5 FMCG Firms. ITC is in the top position with a Compounded PEGR growth of 74% followed by Marico, HUL and Britania Industries

with 29%, 17% and 11% respectively. Godrej Consumers is in the lowest position with a mean of 1.9 and Compounded PEGR growth of -11 %.

### Composite PEGR: Hypothesis

$H_0: \mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5$  (There is no significant relationship between the Composite PEGR of the above FMCG Firms)

$H_1: \mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4 \neq \mu_5$  (There is significant relationship between the Composite PEGR of the above FMCG Firms)

### Exhibit – 27: Composite PEGR: ANOVA

#### ANOVA: Single Factor

Groups	Count	Sum	Average	Variance
Britania Industries	5	3.24595	0.649190585	0.0301
Godrej Consumers	5	9.43272	1.886544588	0.32849
ITC Ltd	5	17.8274	3.565476622	13.4119
Marico	5	10.9524	2.190489524	2.24976
HUL	5	22.1206	4.424122745	21.2222

#### ANOVA: Variation

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	43.629	4	10.90724067	1.46436	0.25025	2.86608
Within Groups	148.97	20	7.448487587			
Total	192.599	24				

Above analysis shows that the F value (1.46436) is less than F Critical value of 2.86608, therefore null hypothesis is accepted. Therefore it is concluded that there is no significant relationship between the Composite PEGR of the above FMCG Firms.

### Conclusion

In its simple form, there is no basis for believing that a firm is undervalued just because it has a PE ratio less than expected growth. PEG ratio is used to determine a stock's value while taking the company's earnings growth into account, and is considered to provide a more complete picture than the P/E ratio. The lower the PEG ratio, the more the stock may be undervalued given its earnings performance. The degree to which a PEG ratio value indicates an over or underpriced stock varies between industry and companies.

The current study on five leading FMCG companies conducted to examine the Profitability, Liquidity and sustainability of Leading FMCG Companies during the period 2011 to 2016 (six years) by using Ratios reveals that:

- In terms of **Margin Ratios: Gross Profit, Operating Profit and Net Profit** ITC is in the top position
- In terms of **Rate of Return Ratios: Return on Equity, Return on Capital Employed, Return on Investments** HUL is in the top position
- In terms of **Liquidity: Marico** is in the top position (**Current Ratio**), while **ITC** is in the top position (**Liquid/Acid Test Ratio**)
- Structural Ratios include both Leverage and Coverage Ratios, In terms of **Leverage** Britania is in the top position for both **Debt Equity and Debt-Asset Ratios**. In terms of **Interest Coverage** ITC is in the top position
- Under Valuation Ratios: **Britania** is in the top position in terms of **Earnings per Share** while **HUL** in **Dividend per Share** and **Marico** in **Price Earnings Ratio**.
- Composite Performance shows that **ITC Ltd** is in better position in comparison to other FMCG Firms.
- The composite PEGR shows that the CAGR of **ITC Ltd** is maximum followed by Marico, HUL, Britania Industries. Only Godrej Consumers has a negative CAGR.
- The study depicted that though ranking of ratios are different, but there is no statistically significant difference between the financial ratios.

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