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The Impact of Leverage on Earnings Per Share: A Study of Selected Petroleum Companies in India

Ahmed Mahdi Abdulkareem[1], **Priyanka Dineshgiri Meghanathi**[1]

[1] *Department of Commerce and Business Administration, Saurashtra University, India*
**Corresponding Author: Ahmed Mahdi Abdukareem*

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Abstract

The main purpose of this article is to study the impact of leverage on earning per share of selected petroleum companies in India. The article also aims to examine the correlation between three types of leverage with earning per share and to know more about the leverage and petroleum industry in India. The most appropriate Parametric and Non parametric tests are employed and the analysis of data is presented through different graphs and tables. This article comes across to draw a comparison between the degree of combined leverage and earnings per share of selected petroleum companies during the study period.

Introduction

The Oil and Gas industry for any underdeveloped, developing and developed country is very critical and important. The various important functions of this industry are exploration, extraction, refining, transporting and obviously marketing of various petroleum products (Bridge, 2008). Fuel oil and gasoline (petrol) are the most important products of this industry for the production of various pharmaceutical products, fertilizers and chemical products etc. Petroleum is also used as a raw material (Akhondi et al., 2010).

The industry is usually divided into three major components: Upstream, Midstream, Downstream. Midstream operation is usually included in the downstream category. Upstream includes that have engaged on exploration and extraction of crude oil and gas (Bridge & Wood, 2010; Wright, 2017). On the other hand, downstream includes the mainly engaged in refining and marketing of petroleum products. Petroleum is vital to many industries, and is of importance to the maintenance of industrial civilization in its current configuration, and thus is a critical concern for many nations. Oil account for a large percentage of the world's energy consumption, regionally from 32% for Europe and Asia, 40% for North America, 41% for Africa, 44% for South and 53% for the middle-east. The production, distribution, refining and retaining of petroleum taken as a whole represents the world's largest industry in terms of dollar value. In 1997-98, the New Exploration Licensing Policy (NELP) was envisaged to fill the ever-increasing gap between India's gas demand and supply (Nerlekar & Patel, 2016; Nath, 2018). India's economic growth is closely related to energy demand as predicted by Murthy (1997) from 1990 to 2020. Therefore, the need for oil and gas is projected to grow more, thereby making the sector quite conductive for investment (Pandey & Narayani, 2018). India

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is the third largest consumer of oil and petroleum products in the world after US and China during 2015 and also second largest refinery in Asia after China (Wu, 2014). India is the fourth largest energy consumer in the world. Today, it attracts both domestic and foreign investment, as attached by the presence of Reliance Industries Ltd (RIL) and Cairn India.

Methods

The methods used for analysing the data are three types of degree leverage. The sample of the study only includes five units selected from top five companies, according to market capitalisation, which are as it follows; (1) Reliance industries Ltd., (2) Oil and natural gas Corporation Ltd., (3) Indian oil corporation Ltd., (4) Bharat petroleum corporation Ltd., (5) Gas Authority of India Ltd.

Simple random sampling was used to select the sample from the top five companies which are functioning in the stock market based on the current situation. The study is mainly based on secondary data obtained from the annual reports of these selected petroleum companies and other information has been collected from websites, books, journals, magazines, newspaper etc. The collected data is duly edited, classified, tabulated according to the needs of the objectives and hypothesis. Mathematical and statistical tools and techniques like Ratio, Trends, Simple & multiple correlations have been used. The most appropriate Parametric & Non-parametric tests have been used by the researcher. The data has been presented through different graphs and tables. Data has been converted into relative measure such as ratios, percentages, indices rather than the absolute data. Hypotheses have been tested by the researchers at 5% level of significance, by employing t - test, ANOVA technique, chi-square (X2) test, Karl Pearson's simple correlation, multiple correlations, multiple regressions etc. according to the need of the study (Porter, 2006).

Results and Discussion

For the analysis of data, financial leverage and earnings per share were used. Researchers have calculated 1- Degree of financial leverage 2-Earnings per share and analyzed through ANOVA test. The analysis is divided in to two parts; (1) Analysis of leverage and Earning per share, (2) Analysis of impact of leverage on Earning per share

Degree of Operating Leverage

Operating leverage refers to the use of fixed operating costs such as depreciation, insurance of assets, repairs and maintenance, property taxes etc. in the operations of a firm. But it does not include interest on debt capital. The operating cost of a firm is classified into three types: Fixed cost, variable cost and semi-variable or semi-fixed cost. Fixed cost is a contractual cost and is a function of time. So it does not change with the change in sales and is paid regardless of the sales volume.

Formula:

$$\text{operating leverage} = \frac{\text{contribution}}{\text{operating profit(EBIT)}}$$

$$\text{Degree of Operating leverage} = \frac{\text{Percentage change in PBIT/EBIT}}{\text{Percentage change in sales}}$$

Table 1. Degree Of Operating Leverage

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Year	Reliance	ONGC	IOCL	BPCL	GAIL
2014-15	1.54	2.85	4.10	3.08	2.02
2015-16	1.62	2.88	2.75	2.29	2.04
2016-17	1.32	2.69	1.86	1.63	1.62
2017-18	1.31	2.59	2.12	2.27	1.47
2018-19	1.32	2.40	2.40	2.42	1.39
Mean	1.42	2.68	2.65	2.34	1.71
Maximum	1.62	2.88	4.10	3.08	2.04
Minimum	1.31	2.40	1.86	1.63	1.39

(Source: -Compute from annual report of selected Petroleum companies)

The above table indicate degree of operating leverage of Petroleum Industries. Average operating leverage of Reliance industries Ltd is 1.42, for ONGC is 2.68, for IOCL is 2.65, for BPCL is 2.34 and for GAIL is 1.71 respectively. As per the above highest average of ONGC and lowest average of Reliance industries Ltd in India among the study period.

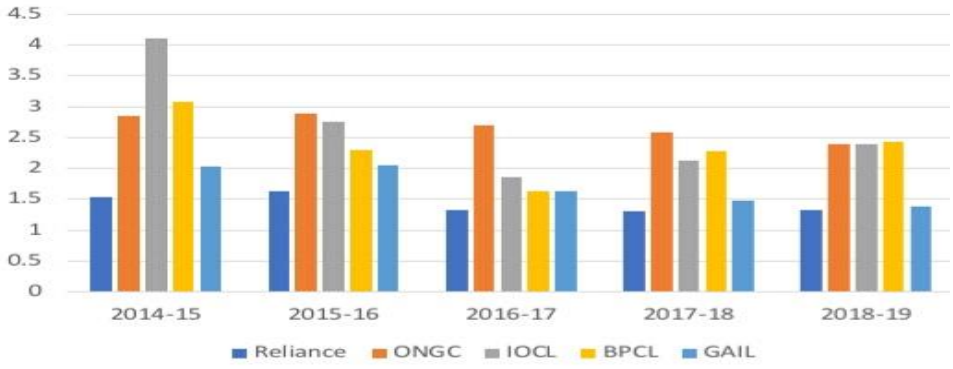

Chart 1 Maximum and Minimum Degree of Operating Leverage

As the above chart indicates the maximum and minimum degree of operating leverage of all selected unit are presented. Maximum operating leverage of Reliance industries Ltd in 2015-16 is 1.62 and minimum in 2017-18 which is 1.31. Maximum operating leverage of Indian oil corporation Ltd (IOCL) in 2014-15 is 4.10 which are very high in comparison to all selected units. In case of Oil and Natural Gas Corporation (ONGC) is maximum operating leverage in all the year comparison to all selected units. Means the above analysis shows the growth of the ONGC is high because their operating leverage is high its shows the change of the ONGC is

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high on the basis of operating leverage. Operating leverage is relationship between contribution and earnings before interest and tax.

Hypothesis Testing

Ho:-There is no significant difference between Degree of Operating Leverage of selected Petroleum companies in India during the study period.

H1:- There is a significant difference between Degree of Operating Leverage of select Petroleum companies in India during the study period.

Table 2. Result 1

Groups	Count	Sum	Average	Variance
Reliance	5	7.11	1.422	0.02162
ONGC	5	13.41	2.682	0.03887
IOCL	5	13.23	2.646	0.76998
BPCL	5	11.69	2.338	0.26637
GAIL	5	8.54	1.708	0.09327

Table 3. Anova 1

Source of variation	SS	d.f.	MS	F	F crit.
BetweenGroups	6.4465544	4	1.611636	6.770954	2.866081
WithinGroups	4.76044	20	0.238022		
Total	11.20698	24			

The above ANOVA table is indicate that the calculate value of ANOVA test is 6.770954 and the critical value (table value) of ANOVA is 2.866081 at the 5% level of significance. The F-calculated value is more than the table value, So that Null hypothesis is rejected and alternative hypothesis is accepted. Therefore it concluded that there is a significant difference between degree of operating leverage among the selected petroleum companies in India during the study period.

Degree of financial leverage

Financial leverage is primarily concerned with the financial activities which involve rising of funds from the sources for which a firm has to bear fixed charges such as interest expenses, loan fees etc. These sources include long-term debt (i.e., debentures, bonds etc.) and preference share capital. These two facts lead to the magnification of the rate of return on equity share

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capital and hence earningsper share. Thus, the effect of changes in operating profits or EBIT on the earnings per share is shown by the financial leverage

Formula:

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}}$$

$$\text{Degree of Financial Leverage} = \frac{\%\ \text{change in EPS}}{\%\ \text{change in EBIT}}$$

Table 4. Degree of Financial Leverage

Year	Reliance	ONGC	IOCL	BPCL	GAIL
2014-15	1.08	1.00	1.43	1.08	1.08
2015-16	1.07	1.06	1.18	1.05	1.20
2016-17	1.07	1.05	1.13	1.04	1.09
2017-18	1.10	1.05	1.11	1.07	1.04
2018-19	1.21	1.06	1.17	1.13	1.02
Mean	1.11	1.04	1.20	1.07	1.09
Maximum	1.21	1.06	1.43	1.13	1.20
Minimum	1.07	1.00	1.11	1.04	1.02

(Source: Compute from annual report of selected petroleum Companies)

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Above table indicate the degree of financial leverage of all selected Petroleum Companies in India. The average financial leverage for Reliance industries is 1.11, for ONGC is 1.04, for IOCL is 1.20, for BPCL is 1.13 and for GAIL is 1.09. Maximum mean of financial leverage in the company Indian Oil Corporation Ltd (IOCL) and minimum mean of financial leverage in the company oil and Natural gas corporation Ltd (ONGC) in India during the study period.

The above table chart indicate the maximum and minimum degree of financial leverage of all

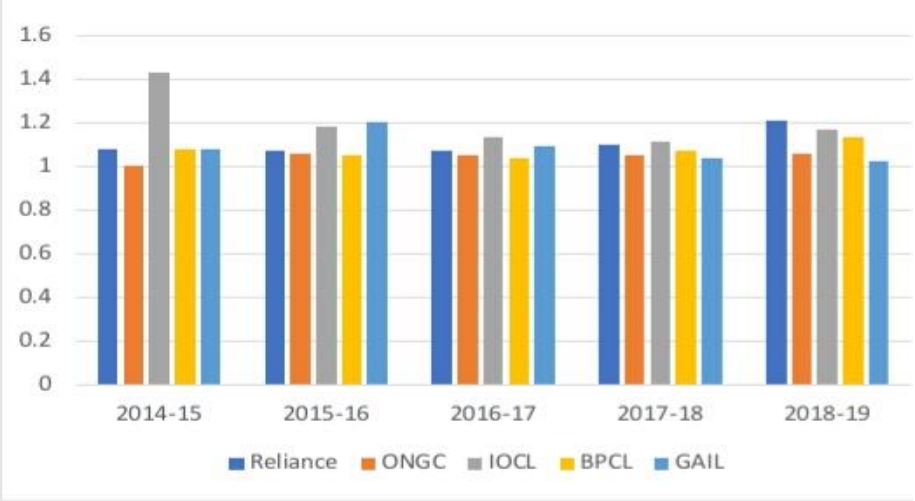

Chart 2. Maximum and Minimum Degree of financial leverage

selected units. Maximum financial leverage of reliance industries Ltd is 1.21 in the year of 2018-19 and minimum 1.07 in the year 2015-16 and 2016-17. Financial leverage indicates the relationship between EBIT and EBT. When EBIT increase at that time financial leverage is also increase and other companies data is shows in the above table chart.

Hypothesis Testing

Ho: There is no significant difference between degree of financial Leverage of selected Petroleum companies in India during the study period.

H1: There is a significant difference between degree of financial Leverage of Selected petroleum companies in india during the study period.

Table 5. Result 2

Groups	Count	Sum	Average	Variance
Reliance	5	5.53	1.106	0.00353
ONGC	5	5.22	1.044	0.00063
IOCL	5	6.02	1.204	0.01678
BPCL	5	5.37	1.074	0.00123
GAIL	5	5.4	1.086	0.00488

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Table 6. Anova 2

Source of variation	SS	d.f.	MS	F	F crit
BetweenGroup	0.074104	4	0.018526	3.424399	2.866081
Within Group	0.1082	20	0.00541		
Total	0.182304	24			

The above ANOVA table is indicate that the calculate value of ANOVA test is 3.424399 and the critical value (table value) of ANOVA is 2.866081 at the 5% level of significance. The F-calculated value is more than the table value, so that Null hypothesis is rejected and alternative hypothesis is accepted. Therefore it concluded that there is a significant difference between degrees of financial leverage among the selected petroleum companies in India during the study period.

Degree of Combined Leverage

Operating leverage shows the operating risk and is measured by the percentage change in EBIT due to percentage change in sales. The financial leverage shows the financial risk and is measured by the percentage change in EPS due to percentage change in EBIT.

Both operating and financial leverages are closely concerned with ascertaining the firm's ability to cover fixed costs or fixed rate of interest obligation, if we combine them, the result is total leverage and the risk associated with combined leverage is known as total risk. It measures the effect of a percentage change in sales on percentage change in EPS. The percentage change in EPS to a given percentage change in sales is defined as Degree of Combined Leverage (DCL). DCL expresses combined leverage in quantitative terms. The higher the proportion of fixed operating cost and financial charges, higher is the degree of combined leverage. Like other two leverages the value of combined leverage must be greater than 1DCL can be computed in the following manner.

Formula:

$$\mathbf{DCL} = \mathbf{DOL} \times \mathbf{DFL} = \frac{\mathbf{\%\ change\ in\ EBIT}}{\mathbf{\%\ chane\ in\ sales}} \times \frac{\mathbf{\%\ change\ in\ EPS}}{\mathbf{\%\ change\ in\ EBIT}}$$

$$\mathbf{DCL} = \frac{\mathbf{\%change\ in\ EBIT}}{\mathbf{\%change\ in\ sales}} \times \frac{\mathbf{\%change\ in\ EPS}}{\mathbf{\%change\ in\ EBIT}} = \frac{\mathbf{\%change\ in\ EPS}}{\mathbf{\%change\ in\ sales}}$$

Table 7. Degree of Combined Leverage

Year	Reliance	ONGC	IOCL	BPCL	GAIL
2014-15	1.66	2.85	5.86	3.33	2.18

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2015-16	1.73	3.05	3.25	2.40	2.45
2016-17	1.41	2.82	2.10	1.70	1.77
2017-18	1.44	2.72	2.35	2.43	1.53
2018-19	1.60	2.54	2.81	2.73	1.42
Mean	1.60	2.80	3.27	2.52	1.87
Maximum	1.73	3.05	5.86	3.30	2.45
Minimum	1.41	2.54	2.10	1.7	1.42

(Source: - Compute from annual report of selected Petroleum companies)

Above table indicate the degree of combined leverage of all selected units, Average combined leverage of Reliance industries ltd is 1.60, for ONGC is 2.80, for IOCL is 3.27, for BPCL is 2.52 and for GAIL is 1.87. Here the highest average of combined leverage is 3.27 of IOCL and minimum average of combined leverage is 1.87 of GAIL. Here, IOCL average of combined leverage is maximum because in the year 2014-15 growth is high so that IOCL average is high among the study period.

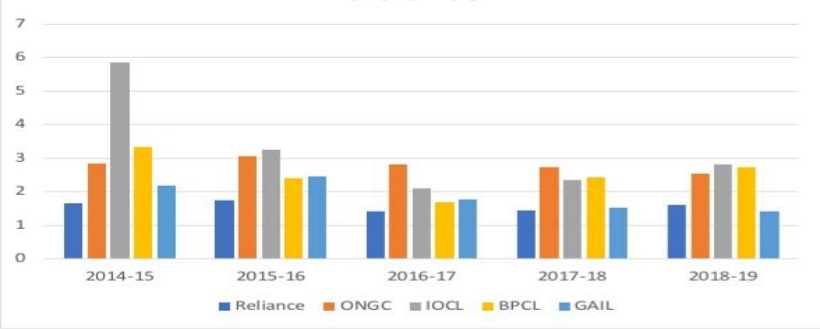

Chart 3. Maximum and Minimum Degree of Combined Leverage

Above chart indicate that the degree of combined leverage of all selected units. Maximum leverage of Reliance is 1.73 in the year 2015-16 and minimum is 1.41 in the year 2016-17. The maximum degree of combined leverage of Indian oil corporation Ltd (IOCL) is 5.86 in the year 2014-15 is very high in comparison to other selected unit. It shows the growth in combined leverage among the study period.

Hypothesis:

Ho: -There is no significant difference between Degree of Combined Leverage of selected Petroleum companies in India during the study period.

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H1:- There is a significant difference between Degree of Combined Leverage of selected Petroleum companies in India during the study period.

Table 8. Result 3

Groups	Count	Sum	Average	Variance
Reliance	5	7.84	1.568	0.01927
ONGC	5	13.98	2.796	0.03483
IOCL	5	16.37	3.274	2.28383
BPCL	5	12.59	2.518	0.34877
GAIL	5	9.35	1.87	0.19015

Table 9. Anova 3

Source of variation	SS	d.f.	MS	F	F crit
Between Group	9.538024	4	2.384506	4.1443	2.866081
Within Group	11.5074	20	0.57537		
Total	21.04542	24			

The above ANOVA table is indicate that the calculate value of ANOVA test is 4.1443 and the critical value (table value) of ANOVA is 2.866081 at the 5% level of significance. The F-calculated value is more than the table value, so that Null hypothesis is rejected and alternative hypothesis is accepted. Therefore it concluded that there is a significant difference between degrees of combined leverage among the selected petroleum companies in India during the study period.

Earnings Per Share

Earnings per share (EPS), also called net income per share, is a market prospect ratio that measure the amount of net income earned per share of stock outstanding. In other words, this is the amount of money each share of stock would receive if all of the profits were distributed to the outstanding shares at the end of the year.

Earnings per share are also a calculation that shows how profitable a company is on a shareholder basis. So a larger company's profits per share can be compared to smaller company's profits per share. Obviously, this calculation is heavily influenced on how many shares are outstanding. Thus, a larger company will have to split its earning amongst many more shares of stock compared to a smaller company.

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Table 10. Earnings Per Share

Year	Reliance	ONGC	IOCL	BPCL	GAIL
2014-15	70.25	21.00	22.00	70.32	23.96
2015-16	84.66	12.58	23.72	102.78	18.12
2016-17	96.90	13.95	20.16	40.87	15.53
2017-18	53.08	15.54	22.52	40.55	20.48
2018-19	55.48	20.86	17.89	36.26	26.72
Mean	72.07	16.79	21.26	58.16	20.96
Maximum	96.90	21.00	23.72	102.78	26.72
Minimum	53.08	12.58	17.89	36.26	15.53

(Source: Compute from annual report of selected petroleum Companies)

The above table shows the Earning per share of selected petroleum companies. Average earning per share of Reliance industries Ltd is 72.07, for ONGC is 16.79, for IOCL is 21.26, for BPCL is 58.16 and for GAIL is 20.96. As per the above table high average earning per share is 72.07 of Reliance industries Ltd which is very high comparison to other selected units and low average earning per share is 16.79 of Oil and Natural Gas Corporation (ONGC) during the study period.

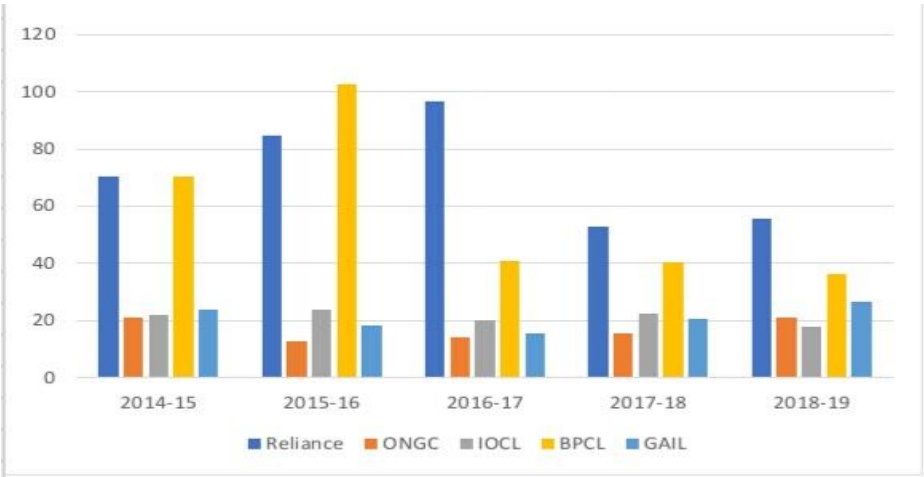

Chart 4. Maximum and Minimum EPS of all selected Companies

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The above chart indicates the maximum and minimum earning per share of selected petroleum companies. The maximum EPS of Reliance industries Ltd is 96.90 in the year 2016-17 and minimum EPS is 53.08 in the year 2017-18. As per the above the maximum EPS of BPCL is 102.78 in the year 2015-16 which is very high in comparison to other selected units which shows good position of company but average EPS of BPCL is 58.16 which is less compare to Reliance industries Ltd because BPCL not maintain this EPS in all the years. Maximum EPS of ONGC is 21 and minimum EPS is 12.58 which is very less comparison to other selected units during the study period.

Hypothesis Testing:

Ho: -There is no significant difference between Earning per share of selected Petroleum companies in India during the study period.

H1:- There is a significant difference between Earning per share of selected Petroleum companies in India during the study period.

Table 11. Result 4

Groups	Count	Sum	Average	Variance
Reliance	5	360.37	72.074	353.5494
Ongc	5	83.93	16.784	15.41028
Iocl	5	106.29	21.258	5.18842
Bpcl	5	284.78	56.956	879.757
Gail	5	104.81	20.962	19.98962

Table 12. Anova 4

Source of Variation	Ss	D.F.	Ms	F	F Crit
Between Group	12701.09	4	3175.272	12.46285	2.866081
Within Group	5095.579	20	254.7789		
Total	17796.67	24			

The above ANOVA table is indicate that the calculate value of ANOVA test is 12.46285 and the critical value (table value) of ANOVA is 2.866081 at 5% level of significance. The F-calculated value is more than the table value, so that Null hypothesis is rejected and alternative hypothesis is accepted. Therefore it concluded that there is a significant difference between Earning per share of selected petroleum companies in India during the study period.

Conclusion

Performance of the all companies is different to each other because performance of Indian oil Corporation Ltd is high and other companies' performance is low. On the basis of ANOVAs test, correlation based and regression based performance are measured. It is concluded that the trend of Indian oil corporation Ltd is very flexible in case of degree of operating leverage. The

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trend of GAIL is high in 2015-16 but after then continuous decreasing during the study period. The degree of operating leverage indicates the relationship between contribution and EBIT in all the companies' variable cost is very flexible so contribution is also flexible. This also affects the degree of operating leverage of selected petroleum companies. The trend of degree of financial leverage is very sensitive in Reliance industries Ltd because. The performance increases at high degree of performance. In case of financial leverage performance, all the companies are similar because no wider change in interest through interest expenses is at a fixed level. Combined leverage is the combination of both operating and financial leverage. Combined leverage is very high in 2014-15 of the company ONGC, and the earnings per share are in between 12.58 to 102.78 in all the companies. There is a relationship between leverage and earnings per share. In all the companies' null hypothesis is accepted so we can say that there is no significant impact of leverage on earning per share.

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