

An Empirical Analysis of the Profitability of Indian Oil Refineries

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Abstract

Money is the lifeblood of a business and finance is the nerve center of it. Finance is required to promote or create a business, gain assets, develop products, run market surveys, advertisement, etc. Once the business firm established and the success and survival of a business firm is depends on the profit earned by it. Profit is a return earned by the company on its total assets/capital employed. Every firm aims to dig up maximum profits out of the invested capital pool. This could not be attainable by the firms in all the times. The profit is the yardstick to measure the performance and operating efficiency of a business enterprise. So, the financial manager should continuously evaluate the efficiency of the company in terms of profit. The profitability ratios are calculated to measure the operating efficiency of the company. Besides management of the company, creditors and owners are interested in the profitability of the firm. Creditors want to get interest and repayment of principal regularly. Owners want to get reasonable return on their investment. This is possible only when the company earns enough profits. This paper describes the profitability of the Indian public sector refineries from the year 2002-03 to 2012-13.

Keywords: Profitability, Indian Oil Refinery, Profitability Trend, Return on total assets,

Introduction

The primary objective of the business undertaking is to earn profits. Profit earning is considered essential for the survival of the business. A business needs profits not only for its existence but also for expansion and diversification. The investors want an adequate return on their investments. A business enterprise can discharge its obligations to the various segments of the society only through earning of profits. Profits are, thus, a useful measure of overall efficiency of a business. Finance is lifeblood of every business and Profit is the soul of the business, without profit the business becomes lifeless. Profit has now become a measurement test to measure financial efficiency of the business firm. Generally profit is the net surplus of revenue over the expenditure.

Profit is the ultimate output of a company and it will have no future, if it fails to make sufficient profits. Therefore the financial manager should continuously evaluate the efficiency of the company in terms of profit. The profitability ratios are calculated to measure the operating efficiency of the company. Besides management of the company, creditors and owners are interested in the profitability of the firm. Creditors want to get interest and repayment of principal regularly. Owners want to get reasonable return on their investment. This is possible only when the company earns enough profits.

Review of Literature

Mohammed Rafiqul Islam (2000) studied the profitability of Fertilizer Industry in Bangladesh from 1985-86 to 1994-95. The findings of the study indicated that none of the selected units were consistent and all the units were plagued with declining profits. The study concluded with suggestions for improvement of the profitability of fertilizer industry in Bangladesh. **Debashish Rei and Debashish Sur (2001)** attempted to measure the profitability scenario of Cadbury India Ltd. and analyzed the relationship among various profitability ratios and their joint impact using multiple correlations co-efficient and multiple regression method. The study on the inter-relation between the selected ratios regarding the company's position and performance and profitability of the company revealed both negative and positive association. **Vijayakumar (2002)** in his study on "Determinants of Profitability" - A Firm Level Study of the Sugar Industry in Tamil Nadu", developed various determinants of profitability viz., growth rate of sales, vertical integration and leverage. Apart from these three variables he had selected current ratio, operating expenses to sales ratio and inventory turnover ratio. Econometric models were used to test the various hypotheses relating profitability with other variables. The researcher noted in his conclusion that efficiency in inventory management and current assets are important to improve profitability. **Vijayakumar and Kadirvel (2003)** studied the determinants of profitability of Indian Public Sector manufacturing industries. It was evident from the results that age was the strongest determinant of profitability followed by the variables vertical integration, leverage, size, current ratio, inventory turnover ratio, operating expenses to sales ratio and growth rate. The selected variables had both positive and negative contribution in variation of profit rate. The study concluded that firms should consider all these possible determinants while considering its profitability. **Sudarsana Reddy (2003)** studied the Financial Performance of Paper industry in AP. The main objectives set for the study are to evaluate the financing methods and practices to analyze the investment pattern and utilization of fixed assets, working capital condition, to review the profitability performance and to suggest measures to improve the profitability. The main findings of the study are that A.P. paper industry needs the introduction of additional funds along with restructuring of finances and modernization of technology for better operating performance. **Marcos A. M. Lima and Marcelo Resend (2004)** in their work on profit margins and business cycles in the Brazilian industry: a panel data study investigated the relationship between profit margins and business cycle in the Brazilian industry during the period from 1992 to 1998, taking as reference a dynamic panel data model founded around a conjectural variation framework. The empirical results indicated pro- cyclical behavior of profit margins for the aggregate business cycle but were less clear in the case of sector-specific business cycle variables. **Manor Selvi and Vijayakumar (2007)** in their study entitled "Structure of Profit rates in Indian Automobile Industries – A Comparison", an attempt had been made to examine the trends in rates of profit of selected Indian Automobile Industries over the period 1991-92 to 2003-04. Further an attempt has also been made to capture the industry wise variation in the series of profit rates, which reveals the dispersion of the series for each industry over the study period. Findings of the study showed that the declining trend of profitability was proof of adverse effect of various controls on prices, output, expansion and investment etc., exerted by government on these industries over time. **Dr.A.Vijayakumar and P.Gomathi (2013)** studied the profitability of Indian Oil Refineries from the period 1994 – 95 to 2008-09. From the analysis it was found that the profitability, return on investment and operating efficiency was satisfactory in the majority of the selected refineries over

study period. Majority of the selected refineries experienced a strong tendency in profitability to decline over the study period.

Statement of the Problem

Business is the wealth- creating institution of society. The main goal of a business is making profit and every business operates in order to earn profit. Profit is an important yardstick to measure the efficiency of the business. The greater the profit, the more efficient is the business. The profit of a business may be measured by studying the profitability of investment in it. Profitability is referred to as earning power or operating performance of the investment concerned. It is the test of efficiency, powerful motivating factor and the measure of performance in any business. Hence, an attempt has been made to study the profitability of selected oil refineries in India by using vital profitability ratios. In the financial statement analysis literature, more importance is given to financial ratios for assessing a firm's financial performance and condition. Items of the income statement alone or along with the items of balance sheet also can generate a number of profitability ratios. But, many ratios reveal similar things. The analyst is always at a loss to find out which ratios to use to determine the profitability of a firm. An attempt is made to find out the inter-relationship between and among the profitability ratios, in order to select a few ratios which can possibly give maximum information about the profitability of a firm. The study also intends to empirically examine whether the rates of profit in selected oil refineries in India have a tendency to rise or fall over a long period of ten years from 2003-04 to 2012-13.

Selection of Oil Refinery Industry

Indian refining industry has done exceedingly well in establishing itself as a major player globally. India is emerging as a refinery hub and refining capacity exceeds the demand. The last decade has seen a tremendous growth in the refining sector. Petroleum Refining Industry is a generator of fuel required for energy purposes in all sorts of industry. Hence, this industry can be regarded as the heart of economy. It is a source of energy for domestic, industrial, agricultural and transport services and as feed stock for fertilizer, chemical and other industries. It has also created an impetus for allied sectors such as engineering, procurement, construction firms, project management consultancy firms and other such service providers. The country's refining capacity has increased from a modest 62 Million Metric Tonnes Per Annum (MMTPA) in 1998 to 215.066 MMTPA at present, comprising of 22 refineries - 17 under Public Sector, 3 under private sector and 2 in Joint Venture (JV). The refining capacity is not only sufficient for domestic consumption but leaving a substantial surplus also for export of petroleum products. Since 2001-02, India is a net exporter of petroleum products. During 2012-13, the country has exported 60.5 MMT of Petroleum products worth US Dollars 58.2 billion. As per PLATTS assessment, India is the largest exporter of petroleum products in Asia since August 2009.

The expansion of Indian petroleum retail market is triggered by the growth in automobile sales that has resulted in major foreign investments. The growth is estimated to sustain and the market is likely to expand further by 20 million every year till 2030, placing India at the world map in terms of being the biggest automobile market. This has encouraged the researcher to analyze the Profitability and Productivity Performance of Oil Refinery Industry in India.

Hypotheses

The hypothesis of the present study includes:

- There is no significant difference in the mean percentage of profitability ratios between the companies and years.
- There is no significant differences between the Industries mean profitability ratio and individual company mean profitability ratio.
- There is no significant difference between actual values and trend values of profitability among different years in selected oil refineries in India.

6. Sampling Design

Keeping in view of the scope of the study, the oil refineries operating in India were considered for the study. It was decided to include all the companies working in India under public sector from the year 2003. However, owing to several constraints such as non-availability of financial statements or non-working of the company in a particular year, merger with other companies, not listed in stock exchanges etc., it was decided to restrict the number of sample companies to five public sector refineries in India. The selected companies includes in the present study are: Indian Oil Corporation Ltd(IOCL), Bharat Petroleum Corporation Ltd(BPCL), Hindustan Petroleum Corporation Ltd(HPCL), Mangalore Refinery and Petrochemicals Ltd(MRPL) and Chennai Petroleum Corporation Ltd (CPCL). The period from 2003 - 04 to 2012-13 is selected for the study of selected Indian oil refineries. This 10 year period is chosen in order to have a fairly long, cyclically well balanced period, for which reasonably homogeneous, reliable and up-to-date data would be available.

Source of Data

The study is mainly based on secondary data. The data analyzed and interpreted in this study related to all the selected companies are collected from “Capitaline” and “PROWESS” databases, which are the most reliable on the empowered corporate database of Bombay Stock Exchange and Centre for Monitoring Indian Economy (CMIE) respectively. Besides Capitaline and PROWESS databases, relevant secondary data have also been collected from BSE Stock Exchange Official Directory, CMIE Publications, Annual Survey of Industry, Business Newspapers, Reports on Currency and Finance, Libraries of various research institutions and the Internet. As the study required a variety of data, various websites have been comprehensively searched.

Data Analysis

The financial and statistical analysis approach plays a vital role in the financial environment. To enjoy the benefit of financial and statistical analysis researcher has collected, assembled and correlated the data, classified the data appropriately and condensed them into a related data series, stated the resultant information in a comprehensive form of text, tables and analyzed and interpreted the reported data. It is well known that management is considered with efficient performance, profitability and solvency. For this purpose it has to study certain specific ratios, because investors look upon certain ratios, which are concerned with an organization’s operating and financial performance. For the purpose of this study, the researcher has used ratios namely, operating profit margin, gross profit margin, return on assets, return on net worth, earnings per share, total assets turnover ratio, fixed assets turnover ratio, current assets turnover ratio and inventory turnover ratio. The role of statistical tools is important in analyzing the data and drawing inferences there from. In order to derive the results from the information collected through secondary data, various statistical tools such as mean, standard deviation, variance, compound annual growth rate, regression,

tests of hypotheses both parametric and non-parametric have been accomplished through the MS EXCEL and SPSS software.

Discussion

Analysis of Profitability

Profitability is the primary indicator of the efficiency and effectiveness of a business enterprise in achieving its goal of earning profit. Profitability of a firm can be measured by its profitability ratios. The profitability of the company should be evaluated in terms of its investment in assets and in terms of capital contributed by creditors and owners, as such if a company is unable to earn a satisfactory return on investments, its survival is threatened. The profitability of selected oil refineries in India has been analyzed from the view point of financial management and shareholders. The following profitability ratios has been computed and analyzed for the selected Indian Oil companies during the study period.

Profitability from the View Point of Financial Management

Maximizing wealth is the main goal of financial management. It is directly related with the profitability of the firm. To measure the profitability from the view of financial management the following profitability ratios have been computed and analysed.

1. Operating Profit Margin Ratio

The operating profit margin ratio is a profitability ratio which measures the relationship between sales profit and sales. It indicates the average spread between the cost of goods sold and sales. A high operating profit ratio is the sign of managerial effectiveness. There is no standard norm for operating profit ratio and it may vary from business to business. The operating profit margin ratio for the selected public sector oil refineries during the study period presented in Table 1

	BPCL	CPCL	HPCL	IOCL	MRPL	Average
2004	6.18	7.77	6.30	8.98	10.51	7.95
2005	3.28	7.97	3.62	5.62	10.00	6.10
2006	1.67	4.45	1.49	5.17	4.11	3.38
2007	3.91	4.46	3.17	6.13	5.15	4.56
2008	3.59	6.56	2.41	5.32	6.05	4.79
2009	2.92	-0.30	2.85	3.41	5.47	2.87
2010	3.51	3.72	3.62	6.49	6.08	4.68
2011	3.16	3.49	3.22	4.57	5.11	3.91
2012	2.50	1.01	2.72	3.33	3.43	2.60
2013	3.11	-1.82	2.52	3.64	0.66	1.62
Average	3.07	3.91	2.94	5.26	5.59	4.08
S.D	1.23	2.82	1.31	1.72	2.45	1.68
CV	0.40	0.72	0.45	0.33	0.44	0.41
CAGR	-6.64	NA	-8.75	-8.63	-24.15	-14.69

Table 1: Operating profit margin ratio of selected oil refineries in India(in %)

ANOVA: F.Value (Between the years) – 7.89 (Critical value 2.15); F.Value (Between the companies) – 6.07 (Critical value 2.63). Significant at 0.01 per cent level; Source: Computed

Table 1 shows a fluctuating trend in the operating profit margin ratio of the selected refineries during the study period. On an average the oil refinery industry had the overall operating profit margin ratio of 4.08 per cent with a co-efficient of variation of 0.41. The average operating profit margin ratio varied from company to company, the highest average was in MRPL by 5.26 per cent in IOCL. The performance of MRPL and IOCL was satisfactory because their average operating profit margin ratio was higher than the industry average. The CV shows that CPCL and HPCL have registered higher fluctuation in the operating profit during the study period. Such fluctuation could be attributed to the differences in the growth rates of operating profit margin and sales because of the factors such as high operating expenses, market condition and government policy. CAGR of operating profit ratio witnessed a negative and showed the declining trend during the study period. The rejection of the null hypothesis as per ANOVA would indicate that there is a significant difference in the mean per cent of operating profit margin ratio between the years and companies. Thus, the overall analysis of profitability of the selected oil refineries in India measured through operating profit margin ratio is satisfactory.

2. Return on Capital Employed

Return on capital employed (ROCE) is the ratio of net operating profit of a company to its capital employed. It measures the profitability of a company by expressing its operating profit as a percentage of its capital employed. A higher value of return on capital employed is favorable indicating that the company generates more earnings per rupee of capital employed.

	IOCL	HPCL	BPCL	CPCL	MRPL	Average
2004	29.68	34.72	33.07	17.1	14.38	25.79
2005	16.73	17.16	15.91	26.05	27.06	20.582
2006	15.69	3.54	4.71	19.05	14.34	11.466
2007	17.42	13.46	17.09	22.52	24.07	18.912
2008	16.88	8.76	13.68	36.91	34.3	22.106
2009	11.15	9.19	12.29	-7	31.13	11.352
2010	17.04	9.13	9.84	13.52	25.8	15.066
2011	11.58	9.28	10.17	13.1	24.6	13.746
2012	13.55	7.54	10.21	1.18	14.44	9.384
2013	8.15	6.78	14.77	-15.42	-1.08	2.64
Average	15.79	11.96	14.17	12.70	20.90	15.10
S.D	5.79	8.80	7.55	15.75	10.44	6.87
CV	0.37	0.74	0.53	1.24	0.50	0.45
CAGR	-12.12	-15.07	-7.74	-198.96	-177.016	-20.38

Table 2: Return on capital employed ratio of selected oil refineries in India(in %) ANOVA: F.Value Between the years) – 3.27 (Critical value 2.15); F.Value (Between the companies) – 1.75 (Critical value 2.63). Significant at 0.01 per cent level; Source: Computed

The table 2 reveals that, the return on capital employed ratio of all the selected refineries in India had a fluctuating trend along with its average. First year of the study almost all companies have earned high return towards their capital employed, but in the next year it faced sharp decrease which is nearly half in IOCL, HPCL and BPCL. The CPCL and MRPL recorded increasing trend in the second year of the study. From the year 2009 onwards all the selected refineries had a heavy fluctuating trend in their return on capital employed. However, the CPCL and MRPL had a negative return on capital employed in the last year of the study. The average return on capital employed is above ten percentage in all the selected refineries, in which MRPL and IOCL having high average of 20.90% and 15.79% respectively and they recorded higher than the industry average 15.1%. The standard deviation of CPCL and MRPL shows there was a high fluctuation in the return on capital employed and the CV also ensured it. The ANOVA results would indicate that there is a significant difference in the mean per cent of return on capital employed ratio between the years and there is no significant difference between companies.

Profitability from the view point of shareholders

The primary goal of a corporate enterprise from the viewpoint of its shareholders is to maximize profits and enhance shareholder value. The financial welfare of owners increases when net profit after tax has increased and also when they receive larger share of dividend. In this aspect the following profitability ratios has been calculated and analysed to measure the profitability from the view point of shareholders.

1. Net Profit Margin Ratio

Net Profit Margin ratio establishes a relationship between net profit (after taxes) and sales, and indicates the efficiency of the management in manufacturing, selling, administrative and other activities of the firm. It reveals the remaining profit after all costs of production, administration, and financing have been deducted from sales, and income taxes recognized. Net profit (NP) ratio is a useful tool to measure the overall profitability of the business.

Year	IOCL	HPCL	BPCL	CPCL	MRPL	Average
2004	5.22	3.29	3.17	4.22	3.64	3.91
2005	3.18	1.94	1.51	3.66	4.25	2.91
2006	2.55	0.52	0.34	1.89	1.32	1.32
2007	3.15	1.61	1.68	1.92	1.63	2.00
2008	2.58	1.00	1.30	3.40	3.41	2.34
2009	0.89	0.43	0.51	-1.09	2.79	0.71
2010	3.51	1.12	1.17	2.06	3.08	2.19
2011	2.08	1.07	0.95	1.34	2.69	1.62
2012	0.93	0.48	0.59	0.14	1.59	0.74
2013	1.05	0.42	1.05	-3.76	-1.10	-0.47
Average	2.51422	1.148048	1.121644	1.75399	2.439705	1.774472
S.D	1.360683	0.913238	0.855578	1.698351	1.014911	1.028559
CV	0.541195	0.79547	0.762789	0.968278	0.415997	0.579642
CAGR	-14.80	-18.68	-10.42	-198.961	-188.621	-180.754

Table 3: Net Profit Margin ratio of selected oil refineries in India(in %), ANOVA: F.Value Between the years) – 8.0 (Critical value 2.15); F.Value (Between the companies) – 4.28(Critical value 2.63). Significant at 0.01 per cent level; Source: Computed

The high net profit margin would ensure adequate return to the owners as well as enable a firm to withstand adverse economic situations when selling price is declining and the cost of production is rising. The table 3 shows the Net Profit Margin Ratio of the selected petroleum refineries from the year 2004 to 2013. During the study period the net profit ratio was in a fluctuating trend and almost all of the selected refineries having very low net profit margin ratio in the last 5 years of the study period. The net profit margin ratio of CPCL and MRPL shows negative in the last year of the study. The net profit ratio of all selected petroleum refineries noticeably vary with its average in the study period and the standard deviation ensures the sharp fluctuations in the net profit ratio. The CV value shows that CPCL, HPCL and BPCL have registered higher fluctuations in their gross profit during the study period. Such fluctuation could be attributed to the differences in the growth rates of net profit margin with the factors such as high operating costs, market condition and government policy towards sales taxes. CAGR of net profit ratio witnessed a negative trend in all the selected companies along with industry average. The rejection of the null hypothesis as per ANOVA would indicate that there is a significant difference in the mean per cent of net profit margin ratio between the years and companies.

Return on Shareholder’s funds ratio

Return on Shareholder’s funds ratio expresses the relationship between the net profits (after interest and taxes) and shareholders’ funds. Shareholders’ funds includes equity share capital, preference share capital, free reserves such as share premium, revenue reserves, capital reserves, retained earnings and surplus, less accumulated losses. This ratio is one of the most important ratio used for

measuring the overall efficiency of a firm. As this ratio reveals how well the resources of a firm are being used, higher the ratio, better the results.

Year	BPCL	CPCL	HPCL	IOCL	MRPL	Average
2004	31.98	27.53	26.4	33.38	29.5	31.44
2005	15.78	33.02	15.79	19.95	41.34	30.645
2006	3.77	22.44	4.72	17.78	16.37	17.075
2007	18.66	22.98	17.14	19.35	20.47	19.91
2008	14.4	36.8	12.61	18.34	39.02	28.68
2009	8.41	-12.16	5.4	8.36	28.08	18.22
2010	12.2	18.48	11.68	21.62	21.58	21.6
2011	11.4	14.15	14.21	14.06	19.44	16.75
2012	9.05	1.64	7.1	18.61	13.22	15.915
2013	16.75	-14.01	6.74	8.41	-11.06	-1.325
Average	14.24	15.09	12.18	17.99	21.80	19.89
S.D	7.64	17.78	6.68	7.12	14.78	9.52
CV	0.54	1.18	0.55	0.40	0.68	0.48
CAGR	-6.26	-198.96	-12.76	-12.88	-190.57	-172.66

Table 4: Return on Shareholder’s funds ratio of selected oil refineries in India(in %) ANOVA: F.Value Between the years) – 4.99(Critical value 2.15); F.Value (Between the companies) – 1.82(Critical value 2.63). Significant at 0.01 per cent level; Source: Computed

The table 4 reveals that, the return on net worth ratio of the selected refineries fluctuated throughout the study period. The average return on shareholders’ fund varied from company to company. MRPL having the highest average (21.796) followed by IOCL (17.986), CPCL (15.087), and BPCL (14.24) and HPCL (12.179). All the selected oil refineries except CPCL, HPCL and BPCL have performed well and generated return on the capital more than the average. These companies have accomplished the most desirable objective of the business. This achievement attracted the present shareholders and will attract the prospective shareholders.

The last five years of the study recorded high fluctuation than the first five years of the study. The standard deviation of CPCL and MRPL shows that there was a sharp fluctuation in the RONW than the other refineries with the standard deviation of 17.78 and 14.78. The CPCL recorded negative return on net worth in the year 2009 and 2013 while MRPL recorded negative RONW in the year 2013 even though it was having considerably higher average than the industry average and highest among the selected refineries. All the selected companies registered a negative annual compound growth rate during the study period and it shows that the earning efficiency of the selected refineries towards their net worth is declined from the first year of the study. The ANOVA results describes that there is a significant difference in the mean percentage of return on shareholder’s funds ratio between the years and there is an insignificant difference in between the companies.

Earnings per Share

Earnings per share serve as an indicator of a company's profitability. Earnings per share are a small variation of return on equity capital and it is calculated by dividing the net profit after taxes and preference dividend by the total number of equity shares. The E.P.S calculated for a number of years indicates whether the earning power of the company has increased or not. There is no rule of thumb to interpret earnings per share.

The table 5 displays that the earnings per share of the selected petroleum refineries recorded above the industry average except MRPL. The CPCL have registered heavy fluctuation during the study period and it earned no earnings per share in the year 2009 and 2013. It registered higher standard deviation (21.75) than the other refineries and above the standard deviation of industry average (10.51) followed by IOCL and HPCL registered the standard deviation of 16 and 13.45 respectively. The co efficient of variation of all the

Year	BPCL	CPCL	HPCL	IOCL	MRPL	Average
2004	54.24	26.21	53.36	57.28	2.62	38.742
2005	30.46	38.37	35.59	39.85	4.88	29.83
2006	9.3	30.6	11.55	40.33	2.02	18.76
2007	47.4	35.9	43.47	61.11	2.86	38.148
2008	43.46	72.48	32.97	57.75	7.05	42.742
2009	19.48	0	16.07	23.44	6.6	13.118
2010	40.52	38.49	36.4	40	6.15	32.312
2011	40.81	32.38	43.13	29.19	6.52	30.406
2012	34.69	3.83	25.51	15.49	5.02	16.908
2013	34.79	0	25.24	19.56	0	15.918
Average	35.52	27.83	29.81	36.44	4.37	26.10
S.D	13.25	21.15	13.45	16.00	1.92	10.51
CV	0.37	0.76	0.45	0.44	0.44	0.40
CAGR	-4.34	-100.00	-7.21	-10.19	-100.00	-8.51

Table 5: Earning Per share of selected oil refineries in India(in %) ANOVA: F.Value Between the years) – 4.30(Critical value 2.15); F.Value (Between the companies) – 13.83 (Critical value 2.63). Significant at 0.01 per cent level; Source: Computed

Refineries are above the industry average except BPCL which also near to the CV of industry average. The CAGR of all the selected refineries recorded negative along with the industry average. It can be understood that the earnings per share of the selected refineries becomes weak and not grown in compare with the growth of the sales.

The rejection of the null hypothesis as per ANOVA would indicate that there is a significant difference in the mean per cent of earnings per share between the years and companies.

Analysis of Profitability Trend

Profitability of various industries would hardly diverge in a world of perfection, because, future can easily be predicted. However, real world is far from perfection. A number of dynamic forces (e.g., change in income, technology, population, etc.) operate simultaneously in a real imperfect and uncertain world. Consequently, profitability of different concerns and industries etc., are greatly affected.

The current rate of profit is an indicator and source of and a need for the expansions of a business through re-investment and through attracting and observing new capital in the industry. Hence, investors and lenders are interested in knowing the profitability of a concern and industry over time or at a point of time. The celebrated tendency of rates of profit to fall over long period of time had been theoretically developed by classical economist like Adam Smith, David Ricardo, their critic Karl Marx and also by neoclassical writers like Alfred Marshall. The study therefore intends to empirically examine whether the rate of profit of selected oil refineries in India had a tendency to rise or fall over a period from 1994-95 to 2008-09. The objective is not to test the validity of classical hypothesis, as the economic conditions as assumed by classical writers do not prevail in the country. However, knowledge about whether profitability is raising or falling over the period from 2003-04 to 2012-13 would throw interesting results for formulation of future policies. An attempt has been made in the study to examine the trends in rates of profit of selected oil refineries in India over the period from 2003-04 to 2012-13. In this study ratio of profits to capital employed expressed in percentage term has been used for this purpose. The linear regression model fitted is as follows:

$$P = \alpha + \beta t + e$$

Where P is rate of profit, t is the time and α and β are the parameters (intercept and coefficient respectively) and e is the error term. The results of the application of the above stated model to the profitability of selected oil refineries in India are presented in Table 8

S. No.	Companies	P= α + β t+e		R2	F value
		A	B		
1	Bharat Petroleum Corporation Ltd	2.053	-.150	0.32	3.70 .090**
		4.239	-1.92		
2	Chennai Petroleum Corporation Ltd	4.821	-.626	0.62	12.87 .007*
		4.453	-3.59		
3	Hindustan Petroleum Corporation Ltd	2.366	-.214	0.52	8.55 .019*
		5.204	-2.92		
5	Indian Oil Corporation Ltd	4.389	-.341	0.58	10.86 .011**
		6.838	-3.30		
6	Mangalore Refinery and Petrochemicals Ltd.	4.020	-.307	0.37	4.61 0.064**
		4.529	-2.15		
7	Industry Average	3.533	-.328	0.64	14.37 0.005*
		6.574	-3.79		

Table 6: Results of regression rates of profit on time for selected Oil Refineries in India (2003-04 to 2012-14). Figures in brackets are *t* values;

*-Significant at 0.01 level;

** -Significant at 0.05 level;

Table 6 reveals that the linear model of time trend of profitability has proved to be a “good fit” in the case of all the selected companies during the study period. This is revealed from the value of R^2 , the co-efficient of determination. Among these companies Chennai Petroleum, Hindustan Petroleum Corporation Ltd, and Indian Oil Corporation Ltd experienced a strong tendency in profitability to decline over the study period. The negative values of β the time trend co-efficient, confirms this trend as these are observed to be statistically significant. Negative value of β indicates a negative relationship between profitability and time over the study period. Table 8 further reveals that β assumes different values (negative) for selected companies ranging from -32 Percent for Bharat Petroleum Ltd to -62% for Chennai Petroleum Corporation Ltd. during the study period. This implies that profitability of the companies declined at different rates over this period. The value of co-efficient of determination R^2 varied in the case of companies having strong declining tendency of profit rate over time, from 1 per cent for Indian Oil Corporation Ltd to 42 per cent for Hindustan Petroleum Corporation Ltd. Such variation in the value of R^2 implies profitability variation of different companies in different degrees over time. For the whole industry time explains the variations in profitability to the extent of 64 per cent over the study period. The analysis shows that majority of the selected oil refineries had a strong tendency for profit rate to fall over the study period as the results for R^2 and β are statistically significant.

Conclusion

The profitability measured through operating profit margin ratio is satisfactory but there was a declining trend during the study period in all the selected oil companies and found adequate to cover the fixed charges and dividend reserve during the study period. The operating efficiency of selected oil refineries in India was satisfactory and the management generally succeeded in investing capital funds. The overall performance of IOCL and MRPL was good during the study period. Further, owners’ funds were utilized profitably by all the selected oil refineries in India. It is significant to note that the position regarding earnings per share and dividend payout ratio in all the selected oil refineries during the period under review shows better performance and prospects from the point of view of shareholders. The results showed that all the selected refineries had a strong tendency in profitability to decline over the study period. The falling tendency of profit rate of these companies is the proof of adverse effect of various controls on process, output, expansion, investment and distribution imposed by government on these companies over time. It can be concluded that, the analysis reveals the fluctuations in profitability and helpful to the companies for better performance and prospects the near future.

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