Analysing Financial Performance of Indian Energy Companies- *A study of the Return on Average Capital Employed (ROACE) and Correlation*

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ABSTRACT

India is one of the largest energy consumer in the world. India s consumption of coal, crude oil, natural gas and other renewable comprises nearly 4.7% of the global energy consumption. Having said so, the Indian energy sector consuming all these sources is a highly government regulated sector which covering almost all the aspects of the functioning of its various segments. With passage of time and liberalization, the government has allowed non- government entities (private players) to operate in this sector. The energy sector is a capital intensive sector with long gestation periods. With the Indian energy sector being open for investment by private and foreign entities, it becomes imperative to examine the financial performance of the entities involved in this sector.The objective of the paper is: (i) to analyse the financial performance of these companies over a period of ten years from 2003-04 to 2013-13 and; (ii) find whether there exists a correlation between average capital employed, earnings before interest & tax (EBIT) and returns. The paper considers 11 energy companies for the analysis of their financial performance. The data for these companies has been taken from the annual reports of the respective companies. To analyse financial performance Return On Average Capital Employed (ROACE). ROACE is a fair measure to understand the financial performance, since it takes into account an average of total assets for two years, while measuring the return against EBIT. To analyse correlation, Pearson's coefficient of correlation is employed. It is found that in oil & natural gas sector overall, the ROACE is on a downward side despite of an increase in the total asset value and EBIT. For the downstream companies engaged in the refining and retailing of crude oil products even with the increase in the total assets and EBIT, this has not translated to an increasing ROACE for these companies. For the oil exploration & production companies (upstream), ROACE is on also on a reducing trend. However, the returns do not show an increasing trend from the beginning of the study period to its end despite of an increase in EBIT and capital employed in absolute value. In the electricity sector, it is seen that for one of the private player operating, ROACE has steadily but marginally increased during the ten-year period of time alongwith the government owned transmission company.There is an overall downward trend when ROACE is concerned in the energy sector as a whole. For both the oil & natural gas and electricity segment, there has been an increase in the total assets of the companies engaged alongwith their earnings. However, this increase is not reflected while the returns are taken into account.

Keywords: Correlation, Return on Average Capital Employed

1. Introduction:

India is one of the largest energy consumer in the world. India's consumption of coal, crude oil, natural gas and other renewables comprises nearly 4.7% of the global energy consumption. According to BP Statistical review of world energy (2015), India and China over the past few years have been driving the energy demand globally with most countries experiencing a slowdown in their demands for conventional sources of energy and looking forward to the extensive usage of clean energy. The increase in energy demand can be said to be a result of two basic factors- rising population and increasing income per capita. With these two factors working together on the rising side, the energy demand by India and China have maintained the rise in the energy use globally.

India's oil and gas sector is one of the eight core industries in India and has important forward linkages with rest of the economy. The sector also accounts for about 40% of India's total primary consumption, making it a major contributor of the consumption basket second only to coal. The country's oil and gas sector is increasingly making its presence felt in the international arena. At present, India is the fourth largest crude oil consumer in the world, after US, China and Japan (BP Statistical Review,2015).Despite experiencing a slowdown in GDP growth rates, India's energy demand continues to rise. Meanwhile, it is interesting to note that while India's domestic energy resource base is substantial, production levels are low and erratic, compelling it to rely on ever increasing oil imports. The oil sector in recent years has been characterized by the rising consumption of oil products, fluctuating crude production and low reserve accretion (Energy Information Administration (EIA), 2014).

In India, natural gas constitutes around 10% of the current energy basket compared to the global average of 24% and hence presents a vast potential for growth. The demand for natural gas in India is expected to grow at a CAGR of 10% over the next five years and could soon be a significant player in the global gas market. Domestic gas production is paving the way since the natural gas segment while production has gone up from 26.4 billion cubic meters (BCM) in 2000-01 to 52.22 BCM in 2010-11; consumption has gone up from 26.4 BCM in 2001-02 to 61.90 BCM in 2009-10 (EIA, 2014).

The World Bank states that in 2010 the average per capita electricity consumption in India was about 644 kWh whereas the global average was 4196.89 kWh. Keeping this goal in view, the energy reforms and policy changes in the recent years have opened up a lot of avenues for private sector investment in the various segments of the energy sector. To attract foreign investments in infrastructure, including energy, foreign direct investment (FDI) norms have been relaxed over the years. Government of India has not only allowed 100% FDI in the energy sector but also amended previous norms and practices to provide a climate facilitating for investments. The reforms of the last twenty years have yielded positive results. The overall growth of the country has attracted investments into the electrical equipment's industry too alongside the other segments not only from the domestic and existing players but also from international participants too.

India's power sector has had a remarkable growth in past few decades. There has been a significant push towards opening the electricity sector to competition and to redesign the electricity markets to achieve more efficient outcomes. Consequently, the sector has moved from a mostly vertically integrated structure with the state electricity boards (SEB) owning the generation, transmission &distribution (T&D) businesses to a more unbundled corporate structure. As compared to 23 integrated utilities, i.e., SEBs that existed before the electricity reforms began in the 1990s, there are now more than 80 utilities or companies with varied ownership structures and mandates, viz., central government's power generation and transmission companies; state governments' generation, T&D utilities; city specific private utilities; captive power units of companies; and independent power

producers (IPPs). Distribution of power is mostly controlled by state distribution companies (discoms) though there are also a few private companies in the business in a few states and cities. External investment in India's electricity sector has also had a strong growth. Despite global economic slowdown, India has had only marginal variation in FDI inflows, and the inflows to power sector increased from US$ 157 million in 2006-07 to US$ 1.44 billion in 2009-10. As demand growth and power supply shortages keep on increasing, there is a scope for even more investment in the sector. Empirical analyses have confirmed that demand for electricity is closely linked to changes in GDP and this relationship is remarkably stable and broadly linear.

Having said so, the Indian energy sector consuming all the conventional primary sources of energy is a highly government regulated sector. The regulations and policies governing the energy sector have been done keeping in mind the socio- economic nature of the government which also aims at providing affordable energy to all of its citizens. To meet the objective of assuredenergy supply at affordable prices for the country, the government had established companies- Public Sector Units (PSUs) which function in these segments. With the passage of time and liberalization, the government has allowed non- government entities (private players) to operate in this sector. The energy sector is a capital intensive sector with long gestation periods. With the Indian energy sector being open for investment by private and foreign entities, it becomes imperative to examine the financial performance of the entities involved in this sector.

The paper is organised into the following parts- (ii) Literature review; (iii) Methodology; (iv) Analysis (v) Results and Conclusion.

2. Literature Review

There are numerous ways to study the performance of a company. It can be done to understand the financial effectiveness or operational efficiency of a company, or between various companies operating within an industry too. The performance of a company can be checked both by internal and external agencies for different purposes. Looking from an external agencies' perspective, most of the performance checks done are to understand the financial capabilities of a company, be it in garnering external funding, the company's ability to re-pay its debt back, creation of wealth for its investors and future prospects of generating revenue or utilisation of funds raised and employed by the company. To measure for all these various purposes, financial ratios are widely employed to understand the viability of company. Financial ratio analysis highlights the relationship between two or more variables or figures taken from the financial statements at a point in time. For the current study, the paper employs the usage of Return on Average Capital Employed (ROACE) as a measure to understand the financial performance of the energy companies.

The usage of return on capital employed (ROCE) has been debated and discussed over the years and there have been different points of view which have emerged. **Kwong et. al (1995)**, had compared the value added ratios- Added Value on Inputs Employed (AVNIE) and Added Value on Net Output (AVNO) with the traditional ROCE ratio. According to them, even with the newer value added ratios, the results given by the traditional ROCE is similar to that of AVNO and AVNIE when these ratios were applied on the British non-financial registered companies on the London International Stock Exchange between 1986-1991. The authors have opined that ROCE is widely used by the external investors and the internal management of the company as a summary indicator of the success of business. Also, most of the data needed to arrive at the ROCE for a company is found in the financial statements of the company. On the statistical side, the authors stated that, to validate the findings, it becomes necessary to express the

results in the form of a ratio, which also acts a controlling factor, when two or more firms are considered together irrespective of the size of the firms.

Bernstein Research (1999), discussed the declining returns on capital in the US food industry by studying the ROCE of 12 companies from 1988 to 1997. Their findings show that during the period 1988 to 1997, less shareholders' wealth was created which was due to the slowing down of sales across the companies thus reducing the returns. The slowing down in sales of the companies was attributed to the fact that products which were sold on promotional basis was on rise as compared to the products which were not on promotion. The pricing of the products had also become inflationary or deflationary, thus affecting the returns on capital in the longer run.

Rutherford (2002), explains the usage of ROCE in the British public sector companies as a performance indicator, not only because that it measures the profit before taxes and interest against the capital employed but also because ROCE can be used to measure the efficiency of business within its own self and also across various businesses. His study of the public sector using ROCE as a performance indicator employs the rationale that, public sector companies are hardly subjected to the real market competition, so the return on capital employed for these companies will reflect not only the efficiency with which the capital has been utilised, but also other factors such as to what extent market imperfections have been utilised deliberately or otherwise.

Bernstein Research (2004), states that there exists a strong correlation between long term ROACE and stock valuations. Their study on the integrated oil companies shows that, the correlation between ROACE and stock valuation holds true for a period of five to fifteen years depending in the histories of companies.

Enyi (2005), had tried explaining the drawbacks of usage of ROCE as a measure of performance of the companies. He had studied 16 companies listed on the Nigerian Stock Exchange for the period ending 2003. The findings suggest that there remains to be an inconsistency when ROCE of the listed companies were studied for the period and he concluded that EROCE (enhanced return on capital employed) is a better measure to understand the performance of the companies.

Tripathy et. al. (2012), in a more recent study on the Indian pharmaceutical industry studied the relation between financial performance, research and development and patenting. To understand the financial performance, they used ROCE as a measure alongside with changes in the patenting regime from 2001-02 to 2008-09 for 183 companies operating in the Indian pharmaceutical industry. The findings of the paper show that a higher number of patents for company and more research and development in new products does not always translate into a higher ROCE for the company.

Hall (2013), suggests that ROCE is better summarised metric of a company's performance since it is described in a ratio form of net profit to total net assets. According to him, ROCE, highlights productivity of all the resources of a firm which are at its disposal irrespective of their funding sources. He describes net profit as earnings before interest and tax (EBIT). His rationale to take earnings before tax, is determined by the fact that tax rates change over time, and this would distort the post-tax comparisons. The denominator total net assets, consists of net fixed assets and net current assets.

Jivaster & Martinsson (2013), had studied the various performance ratios aimed at finding which are most relevant performance ratios which best highlight the performance of companies. They studied 33 large-cap Swedish companies listed on the Stockholm OMX from 2003 to 2011. Their study involved usage of panel data along with both linear and non- parametric tests. The performance measures considered for the study was return on equity (ROE), return on asset (ROA), return on capital employed

(ROCE), return on sales (ROS), economic value added (EVA) and shareholder value added (SVA). Their findings show that EVA, ROA & ROCE are more appropriate measures to judge the performance of a company as compared to the other performance ratios. Though SVA did exhibit a positive correlation with the shareholders' wealth statistically, however, it was not as predictive and explanatory ratio as ROCE, ROA & EVA.

Singh & Yadav (2013), had done a similar study in a similar context and studied the ROCE of 30 companies listed on the Sensex for the financial year ending 31st March 2012. The companies were studied were from various sectors of different industries. Their findings suggest that companies engaged in the consumer goods, information technology (IT) and automotive had a higher ROCE as compared to the companies engaged in the other industries. Also they found that there existed a very low correlation between the earnings before profit and tax (EBIT) and ROCE for the companies, and also there is a low correlation between ROCE and capital employed.

Azhagaiah & Silambarasam (2014), in their study of the Indian cement industry, tried to understand the impact of the size of the firm on the corporate leverage for 29 companies listed in the Bombay Stock Exchange (BSE). They studied the cement companies from 2003 to 2012 and the firms were selected on the basis of multi-stage non- random sampling. They found that return on Debt, return on Equity and return on Capital Employed (ROCE) have a significant impact on the operating leverage of the firms irrespective of the size of the firm.

The above review of literature highlights a few of viewpoints taken by academicians and their findings when ROCE as a measure of performance is considered. In case of Enyi (2005) and Singh & Yadav(2013), they have cautioned against the use of ROCE as a measure of performance due to their findings, which is spread across over a period of a year. They also opine that since ROCE uses the book value of assets from the financial statements, ROCE becomes a static measure. However, the other studies and research have studied ROCE over a period of years and have found it to be an appropriate measure to gauge a company's performance (Rutherford 2002), Azhagaiah & Silambarasam (2014) Bernstein Research (1999 & 2004) etc.

3. Methodology

The aim of the current paper is to focus on the financial performance of the companies engaged in the Indian energy sector over a period of ten-years from 2003-04 to 2012-13 by studying the Return on Average Capital Employed (ROACE). Another aim of the paper is to understand whether there exists any relation between EBIT & ROACE and Capital Employed & ROACE. The paper considers 11 energy companies (Table I) for the analysis of their financial performance. The data for these companies has been taken from the annual reports of the companies. It is mandatory in India that the top management- Board of Directors has to audit this report and CFO has to vouch for its factual correctness. This is required as per Companies Act 2013 (erstwhile Companies Act, 1956).

Table I: Companies and the ownership pattern

Company Name	Sub-Sector	Ownership
Oil & Natural Gas Corporation (ONGC)	Oil & Natural Gas (Upstream)	State owned
Oil India Limited (Oil India)	Oil & Natural Gas (Upstream)	State owned
Bharat Petroleum Corporation Limited (BPCL)	Oil & Natural Gas (Downstream)	State owned
Hindustan Petroleum Corporation Limited (HPCL)	Oil & Natural Gas (Downstream)	State owned
Indian Oil Corporation Limited (IOCL)	Oil & Natural Gas (Downstream)	State owned
GAIL Limited (GAIL)	Natural Gas processing & distribution	State owned
NTPC Limited (NTPC)	Power generation (thermal)	State owned
NHPC Limited (NHPC)	Power generation (hydel)	State owned
Calcutta Electric Supply Corporation (CESC)	Power generation & distribution	Private
TATA Power	Power generation & distribution	Private
Power Grid Corporation of India Limited (POWERGRID)	Power transmission	State owned

The financial performance of the companies is measured by ROACE. For calculating ROACE, Earnings before Interest and Tax (EBIT) is divided by Average Capital Employed, where:

EBIT= Profit before Tax (PBT) + Interest/ Finance Cost

Capital Employed = Total Assets- Current Liabilities.

Return on Average Capital Employed (ROACE) is a fair measure to understand the financial performance, since it takes into account an average of total assets for two years, which is net of current liabilities while measuring the return against Earnings before Interest & Tax (EBIT) for the current year. The average capital employed, normalises fluctuations in the invested capital during two consecutive years.Also the assets of any company is financed by both internal and external sources of funds, i.e., equity and debt funding. The companies engaged in the different segments of the energy sector are capital intensive companies. Their investments in the fixed assets, work in progress etc., for the company forms a significant part of their financial statements as compared to companies in the other sectors. The gestation period is also another factor which plays a significant role when the assets are created and the returns start flowing. For such capital intensive companies ROACE is a better measure as compared to the other performance measures. Also previous work by Bernstein research (1999), shows that ROCE is an effective tool to understand the performance of companies engaged in the energy sector over a period of years.

4. Analysis

The following section covers the analysis of the return on average capital employed (ROACE) for the energy companies taken for the current study in detail and interprets the findings.

Table II: Return on Average Capital Employed (in %)

Year	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Oil & Natural Gas Companies										
ONGC	27.49	32.81	32.34	30.28	29.07	24.97	23.23	23.27	27.06	19.94
Oil India Ltd	31.66	30.24	42.51	32.52	31.51	35.26	31.05	26.41	27.52	26.38
BPCL	30.21	14.53	4.35	15.69	12.91	10.11	9.56	10.01	13.91	27.11
HPCL	29.85	15.04	3.08	12.47	7.53	8.73	8.68	8.56	9.71	11.38
IOCL	26.39	15.01	14.35	18.82	15.58	9.39	16.09	10.98	9.59	13.37
GAIL	29.07	26.50	27.08	21.78	26.55	26.10	25.15	24.84	20.95	19.36
Power Companies										
CESC	8.85	9.78	7.95	8.12	7.98	7.77	7.87	9.14	9.35	9.77
NHPC	5.13	5.24	4.83	5.40	6.53	5.60	8.14	8.29	8.90	7.62
NTPC	19.23	14.04	12.48	15.45	15.53	12.93	12.91	13.22	11.88	14.12
POWERGRID	8.31	7.69	8.56	9.03	8.76	11.31	8.38	9.33	9.05	9.33
TATA Power	14.66	12.86	11.19	8.63	10.68	11.48	10.96	8.96	11.05	10.62

Source:calculation of ROACE are author's own; the figures and numbers for the calculation are taken from each companies' annual report (2003-04 to 2012-13)

For Indian Oil, the largest refining and marketing company for crude oil and natural gas the ROACE stood at 13.37% (2012-13) while it was 26.39% (2003-04). Similarly, for BPCL the returns were 27.11% (2012-13) while it was 30.21% (2003-04); HPCL too has followed a similar trend with returns being at 11.38% (2012-13) as compared to 29.85% (2003-04). For GAIL, despite holding a premier position in the segment of natural gas processing and distribution, the returns have stood at 19.36% (2012-13) while it was 29.07% (2003-04). It was also seen that for the downstream companies, borrowed funds and its interest cost has increased manifolds in absolute numbers. Despite of the refining companies, eligible for under-recoveries, an option not available to the private players in this segment, the returns do not reflect the investments made year after year. For the oil exploration & production companies (upstream), the ROACE is on also on reducing trend. The upstream segment is dominated by two government companies- ONGC & OIL India, making the structure oligarchical in nature. For ONGC, the

returns have diminished to 19.94% (2012-13) as against 27.49% (2003-04); the returns for OIL India also follow a similar pattern with 26.38% (2012-13) while it stood at 31.66% (2003-04). A look at the financial statements of these companies' point that interest cost on the borrowings for these companies have become near zero during the period of study, highlighting reduced debt exposure over the years.

In the electricity sector, it is seen that for CESC, the ROACE has steadily but marginally increased to 9.77% (2012-13) from 8.85% (2003-04). For POWERGRID, the returns have remained steady during 2003-2013 at 9.33% (2012-13). For NTPC, its ROACE has fallen to 14.12% (2012-13) from 19.23% (2003-04). NHPC during the same period saw a rise in its returns to 7.62% (2012-13) from 5.13% (2003-04); while TATA Power on the other hand, registered a lowered ROACE at 10.62% (2012-13) from 14.66% (2003-04). For most of these companies, the interest cost has risen significantly during 2012-13, highlighting that borrowed funds for the companies have become costlier. For most of these companies the borrowings constitute about 30-40% of the total funds employed each financial year, for POWERGRID, the borrowings comprise about 70% of the total funds employed each year.

With the borrowed funds becoming costlier, the returns generated by these companies per unit of investment made has been diminishing over the years. The Electricity Act 2003, which was brought into place to usher in transformation in the electricity sector needs to be enforced in totality. While differential tariffs have been in place for a long time, a parity needs to be brought in, to ensure a steady return on each unit of electricity being generated. The T& D segment needs to be brought in a closer and compact way to minimize losses for the companies. In the oil & gas sector, with the dismantling of Administered Pricing Mechanism (APM) and the fall crude oil prices globally, the downstream companies are expected to perform better in the coming years. For the upstream companies, operational efficiency needs to be enhanced along with increasing acquisition of energy sources globally is needed to ensure future investments and maintaining a favourable returns on the investments made already.

Table III: Correlation between EBIT, Capital Employed & ROACE

Company	ROACE to EBIT	ROACE to Capital Employed
Oil & Natural Gas Companies		
ONGC	-0.44186	-0.78209
OIL India Limited	-0.49	-0.65
BPCL	0.505705	-0.48483
HPCL	0.335164	-0.54205
IOCL	0.172009	-0.65989
GAIL	-0.66502	-0.81814

Power Companies		
CESC	0.474195	0.185882
NHPC	0.960218	0.910734
NTPC	-0.23553	-0.54484
POWERGRID	0.48444	0.352677
TATA Power	-0.16524	-0.4271

To determine the correlation between ROACE, EBIT and capital employed, Pearson's coefficient of correlation was employed (Table III). It was found that for the upstream oil and natural gas companies, ONGC & OIL India, both EBIT and capital employed are negatively correlated to ROACE, translating to the fact that despite of an increase in capital employed the ROACE for both these companies have gone down during the period of study. The same holds true for GAIL. For the downstream companies, BPCL, IOCL & HPCL, a similar trend has emerged where EBIT and ROACE exhibit a positive correlation while capital employed and ROACE are exhibiting a negative correlation. This translates to the fact that, an increase in EBIT will increase the ROACE, however, a falling capital employed doesn't translate to an increasing ROACE.

In the power companies, the correlation exhibits different trend from that of the oil and gas companies. It is seen that for CESC, POWERGRID and NHPC, both correlations are positive. For NHPC, the correlations are significantly positive. An increasing EBIT and an increasing capital employed are positively linked to the increasing ROACE during the period of study. For CESC and POWERGRID, the level of significance of correlation is lower than that of NHPC, however, the correlations are positive. It is seen that for these three power companies, the ROACE has improved over the period of study, thus explaining the positive correlation. For NTPC & TATA Power, the correlations are negative, suggesting that even with an increase in the capital employed over the years, ROACE has decreased. Also during the same period EBIT has increased for both these companies along with increase in capital employed, thus pulling down the ROACE over the years.

5. Results& Conclusion

In the oil & natural gas sector, the ROACE is on a downward side despite of an increase in the total asset value and earnings before interest and tax. For the downstream companies engaged in the refining and retailing of crude oil products the interest component on borrowed funds has increased by more ten times in absolute numbers, however even with the increase in the total assets and earnings before interest & tax, this has not translated to an increasing return of average capital employed for these companies. For the oil exploration & production companies (upstream), the return on average capital employed is on also on reducing trend. The interest cost on the borrowings for these companies has reduced over a period of time and the earnings before interest & tax along with total assets have increased. However, the returns do not show an increasing return from the beginning of the study period to its end. In the electricity sector, it is seen that for CESC, the return on their average capital employed has steadily but marginally increased during the ten-year period of time alongwith POWERGRID. For NTPC despite of an increase in its total assets, earnings before interest & tax has shown a downward trend when the returns are concerned.

There is an overall downward trend when the returns on the average capital employed are concerned in the energy sector. For both the oil & natural gas and electricity segment, there has been an increase in the total assets of the companies engaged alongwith their earnings. However, this increase is not reflected while the returns are taken into account.

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