

# A Case Study of Efficiency Analysis on Power Grid Corporation of India Ltd

Dr. Surbhi Gupta<sup>1</sup>, Mohit Gupta<sup>2</sup>

<sup>1</sup>Amity University, Sector 125, Noida

<sup>2</sup>Power Grid Corporation of India Limited

**Abstract:** Power Grid Corporation of India Limited (PGCIL), is an Indian state-owned electric utilities company headquartered in Gurgaon, India. Power Grid wheels about 50% of the total power generated in India on its transmission network. Power Grid has a pan-India presence with around 95,329 km circuit of transmission network and 156 EHVAC & HVDC sub-stations with a total transformation capacity of 138,673 MVA. Power Grid has consistently maintained the transmission system availability over 99.00% which is at par with the International Utilities. The power sector in India is growing rapidly and the role of PGCIL is significant in this sector. The sound financial health of the company would thus aid in achieving higher growth of the power sector. It is always important to know the financial management practices prevalent in the company. Thus, the present study would help us to know the financial management at PGCIL. Ten year data, i.e., from 2002-12 would be taken for the study. This study would focus on efficiency analysis. The primary objectives of study are to study the financial health of PGCIL company and to study the impact of recession in 2007-08 on the financial performance of PGCIL.

**Keywords:** Paired differences, Std. Error, Std. deviation, 95% Confidence Interval of the difference, degree of freedom, two tailed test, t-test.

## 1. Rationale

PGCIL is playing a strategic role in Indian Power Sector development by establishing and maintaining the power transmission infrastructure which carries around 50% of total power generated in the country. PGCIL has been instrumental in providing an efficient, reliable and smooth grid operation and management in the country

The rationale behind the study is to examine the following major parameters:-

- Enough funding is available at the right time to meet the needs of the business. In the short term, funding may be needed to invest in equipment and stocks, pay employees and fund sales made on credit. In the medium and long term, funding may be required for significant additions to the productive capacity of the business or to make acquisitions.
- Whether the business is meeting its objectives? Are assets being used efficiently? Are the businesses assets secure? Does management act in the best interest of shareholders and in accordance with business rules?
- How the financing alternatives are being considered. For example, it is possible to raise finance from selling new shares, borrowing from banks or taking credit from suppliers. Also, whether profits earned by the business are being retained rather than distributed to shareholders via dividends

## 2. Literature Review

Financial Management means the efficient and effective management of money (funds) in such a manner as to accomplish the objectives of the organization. Financial management is an integral part of overall management. It is concerned with the duties of the financial managers in the business firm. The term financial management has been

defined by Solomon, "It is concerned with the efficient use of an important economic resource namely, capital funds". Howard and Upton define financial management "as an application of general managerial principles to the area of financial decision-making. Weston and Brigham define financial management "is an area of financial decision-making, harmonizing individual motives and enterprise goals". Joshep and Massie define financial management "is the operational activity of a business that is responsible for obtaining and effectively utilizing the funds necessary for efficient operations. Thus, Financial Management is mainly concerned with the effective funds management in the business.

Financial management provides a conceptual and analytical framework for financial decisions making. The finance function covers both acquisitions of funds as well as their allocations. Thus, apart from the issues involved in acquiring external funds, the main concern of financial management is the efficient and wise allocation of funds to various uses. Thus, financial management can be broken down into three major decisions as functions of finance:

- 1)The investment decision,
- 2)The financing decision, and
- 3)The dividend policy decision.

**Baker et.al., (2005)** cites that investment decisions involve determining the type and amount of assets that the firm wants to hold. That is, investing concerns allocating or using funds. The financial manager makes investment decisions about all types of assets – items on the left-hand side of the balance sheet. These decisions often involve buying, holding, reducing, replacing, selling and managing assets. The process of planning and managing a firm's long term investments is called capital budgeting

**Sheeba (2011)** defines the financing decisions. Business activities require funds that are procured from the financial

markets from various sources like shareholders, debt-holders, financial institutions and banks. Funds, like the other inputs of the organization, have to be procured at a cost. Funds should be procured at a nominal cost and they should be effectively utilized to yield maximum value. The finance manager is expected to design the best financial mix i.e., chose those sources of finance where the cost of capital is minimal. The different sources of funds form the basis of an organization's capital structure.

**Bhat (2009)** states that dividend policy refers to the formation of a policy by the company regarding the payment of dividend from profits to ordinary shareholders year to year. It determines the ratio between dividend and retained earnings. The two important dimensions of dividend policy are, what should be the dividend payout ratio? How stable should the dividends be over time? The policy relating to dividend payout ratio and earnings retention varies not only from industry to industry but also among companies within a given industry and within a given company from time to time.

### 3. Introduction

**Efficiency Analysis:** Efficiency ratios are typically used to analyze how well a company uses its assets and liabilities internally. The greater is the rate of turnover/conversion; the more efficient is the utilization of that asset. This chapter is divided into three sections. Section I discusses about the inventory turnover ratio for PGCIL over a period of ten years, 2002-2012. Section II presents current assets turnover ratio, working capital turnover ratio, fixed assets turnover ratio and total assets turnover ratio of PGCIL over the ten year period. Concluding observations are contained in the Section III. It is to be seen whether subprime crisis and subsequent recession in 2007-08 had any impact on the efficiency of PGCIL. Therefore, the data is segregated into two phases, namely 2002-03 to 2007-08 (pre-recession Phase-I) and 2008-09 to 2011-12 (post-recession Phase-II).

#### Section I

### 4. Inventory Turnover Ratio

A ratio showing how many times a company's inventory is sold and replaced over a period. The days in the period can then be divided by the inventory turnover formula to calculate the days it takes to sell the inventory on hand or "inventory turnover days".

The objective of this section is to examine the inventory turnover ratios of PGCIL over the ten year period; i.e. from 2002-12. A low turnover rate may point to overstocking, obsolescence, or deficiencies in the product line or marketing effort. However, in some instances a low rate may be appropriate, such as where higher inventory levels occur in anticipation of rapidly rising prices or expected market shortages. Conversely, a high turnover rate may indicate

inadequate inventory levels, which may lead to a loss in business as the inventory is too low. This often can result in stock shortages. The following bases have been used to arrive at the inventory turnover ratio:-

Inventory turnover ratio = Cost of goods sold / Average finished goods inventory ... (1)

**Table 1.** Inventory Turnover Ratio of PGCIL, 2002-12

Year	Inventory turnover ratio
2002-03	13.09
2003-04	13.43
2004-05	15.43
2005-06	19.34
2006-07	21.45
2007-08	17.24
2008-09	19.68
2009-10	20.67
2010-11	21.99
2011-12	22.79
Mean (2002-03 to 2007-08)	16.66
Mean (2008-09 to 2011-12)	21.28
Mean (2002-03 to 2011-12)	18.51
Median (2002-03 to 2007-08)	16.34
Median (2008-09 to 2011-12)	21.33
Median (2002-03 to 2011-12)	19.51

From Table1, it can be observed that the inventory turnover ratio averages 18.51 for past ten years for PGCIL, implying that inventory holding period averages 20 days.

#### Section-II

### 5. Other Current Assets Related Turnover Ratios

The objective of this section is to examine efficiency ratios of PGCIL over the ten year period; i.e. from 2002-12. The rule is higher are these ratios, better it is for the firm as it manages its sales and production operations with lower amount of investment in current assets and working capital. The efficiency ratios are indicative of efficiency with which various resources of a firm are utilized by its management. Evidently, such ratios are useful from the perspective of management. The following bases have been used to arrive at the efficiency ratios:-

Current assets turnover ratio CATR = cost of goods sold / Average current assets ... (2)

- Working capital turnover ratio, WCTR = cost of goods sold / Average working capita ... (3)
- Long term assets turnover ratio, FATR = cost of goods sold / Average fixed assets ... (4)
- Total assets turnover ratio, TATR = cost of goods sold / Average total assets ... (5)

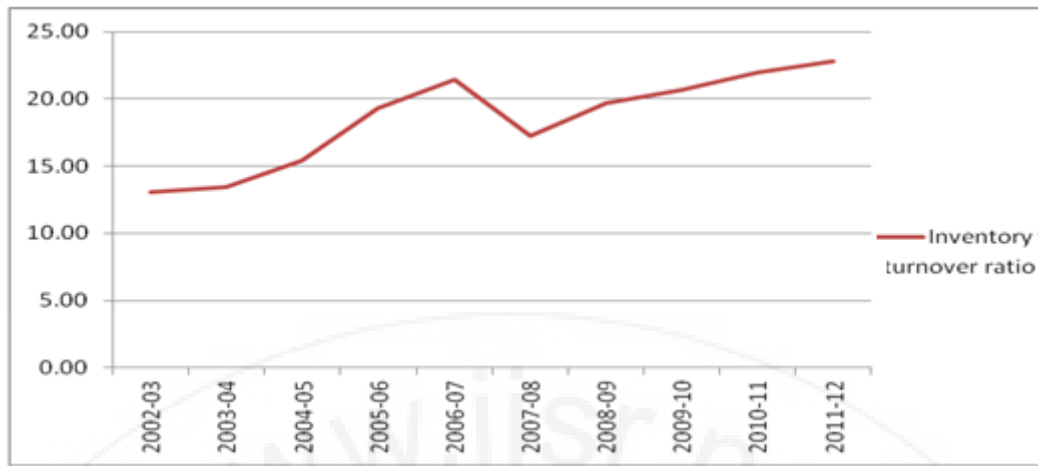


Figure 1: Inventory Turnover Ratio of PGCIL, 2002-12

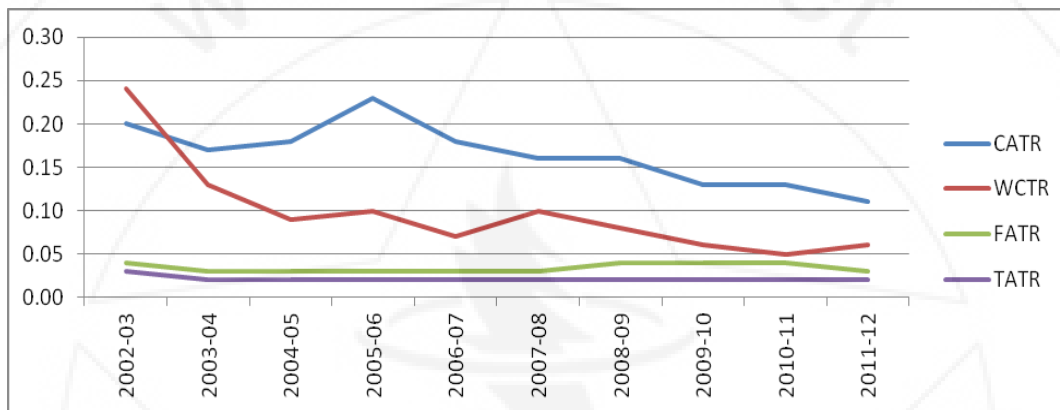


Figure 2: Current Assets Turnover Ratio, Working Capital Turnover Ratio, Fixed Asset Turnover Ratio and Total Asset Turnover

**Ratio of PGCIL, 2002-12**

From Table 2 and Figure 2, it can be observed that the current assets and working capital turnover ratios have declined over the years. This shows that the firm is not able to manage its sales and production operations with lower amount of investment in current assets and working capital. The fixed assets turnover ratio averages 0.03 over ten year period which is substantially low. The total asset turnover ratio is 0.02, which is a serious concern for the organization. It may be understood that, PGCIL has expanded and is expanding its network very rapidly and vigorously and hence the TATR is understandably low. The recession in 2007-08 had no impact on the efficiency ratios of PGCIL as can be seen from Table 2

**Table 2: Current Assets Turnover Ratio, Working Capital Turnover Ratio, Fixed Asset Turnover Ratio and Total Asset Turnover Ratio of Pgcil, 2002-12**

Year	CATR	WCTR	FATR	TATR
2002-03	0.20	0.24	0.04	0.03
2003-04	0.17	0.13	0.03	0.02
2004-05	0.18	0.09	0.03	0.02
2005-06	0.23	0.10	0.03	0.02
2006-07	0.18	0.07	0.03	0.02
2007-08	0.16	0.10	0.03	0.02
2008-09	0.16	0.08	0.04	0.02
2009-10	0.13	0.06	0.04	0.02
2010-11	0.13	0.05	0.04	0.02
2011-12	0.11	0.06	0.03	0.02
Mean (2002-03 to 2007-08)	0.19	0.12	0.03	0.02
Mean (2008-09 to 2011-12)	0.13	0.06	0.04	0.02
Mean (2002-03 to 2011-12)	0.17	0.10	0.03	0.02
Median (2002-03 to 2007-08)	0.18	0.10	0.03	0.02
Median (2008-09 to 2011-12)	0.13	0.06	0.04	0.02
Median (2002-03 to 2011-12)	0.17	0.09	0.03	0.02

## Paired Sample Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Pre-Recession – Post-Recession	.02687	.03550	.01775	-.02961	.08336	1.514	3	.227

## Section-III

## 6. Concluding Observations

This chapter analyzed the liquidity ratios of PGCIL over the period of ten years, 2002-12. It can be observed from the analysis that the current ratio and the acid test ratios of PGCIL are at alarming level. This situation warrants immediate remedial action for infusing positive sentiments to the short term lenders / creditors. The higher the turnover ratios, the better it is. This can be understood from the fact that companies with low profit margins tend to have high asset turnover, while those with high profit margins have low asset turnover. Recession during 2007-08, had no effect on PGCIL liquidity, as can be seen from the analysis.

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