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DUPONT ANALYSIS OF POWER GRID CORPORATION OF INDIA LTD.'S FINANCIAL PERFORMANCE

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ABSTRACT

PGCIL (Power Grid Corporation of India Ltd.) is a “Maharatna” (Maharashtra) Central Public Sector Enterprise. PGCIL is the country's major electricity transmission utility. The company's business sectors include telecommunications, consulting, and transmission. The purpose of this study is to examine PGCIL's financial performance from 2011 to 2020 using the DuPont system of financial analysis, which is based on the examination of return on equity. The net profit margin, total asset turnover, and equity multiplier are the three components of the return on equity concept. The mean, compounded annual growth rate, coefficient of variation, and correlation of ROE with Net Profit Margin, Asset Turnover ratio, and Equity Multiplier are calculated to analyse the performance. PGCIL's financial performance has been shown to be consistent, with reduced fluctuation in return on equity. From 2011-12 to 2020-21, net profit margin has been steadily declining, while total asset turnover and equity multiplier have remained constant, indicating that PGCIL has an advantage over operating efficiency with optimum leverage PGCIL is relying on debt to finance its assets.

Key words: DuPont, Return on Equity, Net Profit Margin, Asset Turnover Ratio

Introduction

Power is a vital component of infrastructure, essential for a country's economic development and welfare. The presence and growth of adequate infrastructure are critical for India's economy to continue to expand. India's power market is one of the world's most diverse. Power generation options include coal, lignite, natural gas, oil, hydro, and nuclear power, as well as feasible non-conventional options including wind, solar, and agricultural and domestic waste. The country's electricity demand has risen steadily and expects to continue to grow in the coming years.

In India, the power sector is undergoing a significant transformation that has changed the industry's outlook. India's electricity demand is still being driven by sustained economic growth. The Indian government's goal of achieving "Power for All" has accelerated expansion in the region. Around the same time, both the demand and supply sides are becoming more competitive (fuel, logistics, finances, and workforce).

Literature Review

Dr. Pravin Mahamuni & Dr. Anand Jumle (2016): This research paper aimed to use DuPont to calculate and compare the profitability performance of Indian automobile companies, specifically Tata Motors Mahindra & Mahindra Ltd. In this paper, the researcher employs DuPont analysis, which divides a company's return on equity (ROE) into three components: profit margin (profit/sales), total asset turnover (sales/assets), and equity multiplier (assets/equity). The DuPont study concluded that Mahindra & Mahindra Ltd. has a better profitability score than its competitors Tata Motors Ltd. It measures ROE and ROI for the top two Indian car companies (Tata Motors Ltd and Mahindra & Mahindra Ltd.).

Brigham & Houston (2001): The updated model was a useful tool for demonstrating the interconnectedness of a company's income statement and balance sheet and developing simple techniques for increasing the company's ROE. The Du Pont identity is an excellent way to get a fast snapshot of a company's overall results in three main ratio research areas.

Nissim & Pennman (2001): To minimize the impact of financial leverage and other variables outside the control of those managers, suggest using a modified version of the standard DuPont model. Using operating income to revenue and asset turnover based on operating assets restricts management's performance measurement to the variables over which it has the most leverage. In the financial analysis literature, the updated DuPont model has gained a lot of grips. Pratt & Hirst (2008), Palepu & Healy (2008), and Soliman (2008), for example (2008). Soliman (2004) also discovered that industry-specific DuPont multiplicative components have more valuable valuation than economy-wide components, implying that industry-specific ratios are more accurate.

Dr. Ahmed Arif Almazari (2012): This study aims to assess the financial performance of a Jordanian Arab commercial bank from 2000 to 2009 using the DuPont method of financial analysis, which is focused on the analysis of the return on equity and return on investment models. The net profit margin, total asset turnover, and equity multiplier are the three components of the return on equity model. The financial output of Arab Bank was discovered to be relatively stable, with little fluctuations in return on equity. From 2001 to 2009, the net profit margin and total asset turnover have remained relatively stable. The equity multiplier also shows nearly stable measures from 2001 to 2005, with ratios declining from 2006 to 2009, indicating that the Arab bank has had less financial leverage in recent years, implying that it relies less on debt to fund its assets.

T. Vanniarajan and C. Samuel Joseph (2007): An Application of DuPont Control Map in Analyzing the Financial Performance of Banks is the title of his report. India's financial sector liberalization has exposed Indian banks to a new economic climate marked by increased competition and new regulatory requirements. In India, Indian and international banks seek growth opportunities by launching new products for various consumer segments, many of which were not previously considered customers. Banks have seen new shareholders in the last ten years. Every bank can compare its output to that of others. The India Bank Association suggests that the performance of banks be evaluated on three dimensions: systemic, operational, and efficiency factors.

Hawawini and Viallet (1999): DuPont's model received yet another change. As a result of this change, five different ratios were formed, which were then added together to create ROE. They agree that the financial statements companies prepare for their annual reports (which are most relevant to creditors and tax collectors) are not usually helpful to managers making operating and financial decisions to assess operational managers effectively.

POWER GRID CORPORATION OF INDIA LTD. (POWERGRID)

PGCIL is a maharatna public sector undertaking and power transmission company responsible for designing, implementing, operating, and maintaining interstate transmission systems and national and regional load dispatch centers. Transmission and consulting are two of the firm's segments. Extra high voltage/high voltage (EHV/HV) networks and grid management are included in the transmission section. It also owns EHV AC and HVDC substations. Planning, design, engineering, load dispatch, procurement management, operation and maintenance, finance, and project management are among the services provided by the consultant section. Its transmission network has a total transformation capacity of 3,67,097 MVA and includes 1,53,635 circuit kilometers and 243 EHVAC and HVDC substations. POWERGRID has a capacity of 75,050 megawatts (MW) for interregional transmission.

Du Pont Model

"**F. Donaldson Brown** developed the DuPont analysis or DuPont Formula, or DuPont model, when he was assigned to clean up the finances at General Motors, and it has been an important model for financial analysis ever since. According to CFO Magazine, the DuPont method of financial analysis was founded in 1919 by a finance executive at E.I. du Pont de Nemours and Co. in Wilmington, Delaware. The DuPont Corporation, which first used this formula in the 1920s, gave it the name. The DuPont approach became a commonly used financial research technique due to the beauty of ROA being influenced by a profitability and productivity metric. The focus in financial analysis moved from return on assets (ROA) to return on equity (ROE) in the 1970s, and the DuPont formula was changed to incorporate the total assets to equity ratio."(*Chapter 7: The DuPont Model | Translating Strategy into Shareholder Value: A Company-Wide Approach to Value Creation*, n.d.)

Statement of the Problem

Return on equity is a metric used by many equity investors to determine if a business provides a reasonable return on its shareholders' investment. However, instead of looking at ROE, DuPont analysis can get a deeper understanding of return on equity.

Objectives of the study

The current research uses a quantitative approach to evaluate the efficiency of PGCIL. The study's specific goals are as follows:

1. The Dupont model is to be used to investigate the financial results of PGCIL.
2. To calculate the return on investment (ROI) and investigate the relationship between different performance metrics that are PGCIL determinants.

Research Methodology

The aim of this study is to evaluate PGCIL's performance in this area using ratio analysis. Ratio analysis is a technique for assessing the financial success of a business. NP Margin, Asset Turnover, Equity Multiplier, and Return on Equity were all calculated using secondary data. Further testing of these ratios is done using averages (Mean), compound annual growth (CAGR), coefficient of variance (CV), and correlation.

Period of the Study

This study covers ten years from the financial year 2011-12 to 2019-20.

Return on Equity (ROE)

One of the most useful performance metrics for assessing PGCIL's productivity is the return on equity (ROE). Return on equity compares a company's earnings to the overall equity on the balance sheet. One of the most often recognized success metrics of a company's viability and potential growth is the return on investment (ROI). As a result, the study would be focused on first interpreting ROE and then deconstructing ROE by studying each component of the model.

Return on Equity = (Net Profit Margin)*(Total Assets Turnover)*(Equity Multiplier)

ROE= PAT / Shareholders Equity

Net Profit Margin

The net profit margin displays how much profit can be made from a single rupee of assets. The company's net profit margin is determined by the level of competition it faces. A smaller profit margin exists in a dynamic market, while a company with a high-profit margin has a premium product or service. The net profit margin differs from one business to the next. As a result, comparing the ROEs and other financial ratios of different companies in the same sector is crucial. Each company in that sector will face similar challenges.

Formula -: The net profit margin is a profitability measure expressed as a percentage of after-tax net income.

Net profit Margin = Net profit / Total Income or Profit After Tax / Total Income

Asset Turnover Ratio

The second aspect in a DUPONT study is the Net Profit Margin Ratio, which measures a company's ability to manage costs. This ratio shows a company's productivity in converting its assets into revenue by measuring how much it turns its assets into sales.

Formula : The formula for calculating asset turnover is

Asset Turnover = Total Income / Total Assets

In a nutshell, the asset usage ratio determines how much income a corporation earns for every rupee of assets it holds.

Equity Multiplier

The equity multiplier is the final step in the three-step DuPont Model. In calculating a company's financial leverage, the equity multiplier, commonly known as the leverage ratio, is a technique of analysing a company's capacity to use debt to finance its assets.

Formula -: By dividing total assets by common stockholders' equity, the equity multiplier is computed.

Equity Multiplier = Total Asset / Stock Holder Equity

A high equity multiplier indicates greater financial leverage, implying that the firm is reliant on debt to fund its assets.

Results of DUPONT Analysis of PGCIL

The next Table 1 simply shows the findings of PGCIL's ROE, or Return on Shareholder's Equity, for the years 2011-12 to 2020-21, which were computed using secondary data gathered and compiled from all annual reports of all financial parameters required for the calculations.

Table 1: Summary of DUPONT Analysis of PGCIL for the period FY 2011-12 to 2020-21

Year	**Net Profit Margin**	**Asset Turnover**	**Equity Multiplier**	**ROE**	**Growth Rate %**
	(A)	(B)	(C)	D = A*B*C	
	%	(Times)	%		
2011-12	28.82	11.94	3.63	12.48	
2012-13	42.47	11.76	3.99	19.94	37.4%
2013-14	41.89	12.11	4.29	21.78	8.4%
2014-15	39.65	11.41	4.08	18.45	-18.0%
2015-16	35.35	11.34	4.18	16.77	-10.0%
2016-17	35.31	11.78	4.08	16.96	1.1%
2017-18	28.35	13.43	3.92	14.94	-13.5%
2018-19	26.47	13.51	4.14	14.80	-0.9%
2019-20	27.77	14.42	4.19	16.76	11.7%
2020-21	28.20	15.07	3.97	16.85	0.5%
Mean	**33.43**	**12.68**	**4.05**	**16.97**	**1.9**
CAGR %	-0.22%	2.35%	0.90%	3.05%	
SD	6.27	1.33	0.19	2.65	
CV	5.33	9.54	21.76	6.40	

Source: Calculated and compiled from the data collected from all the annual reports

Interpretation

Table 1 shows that the ROE of PGCIL improved from 12.48 percent in 2011-12 to 16.85 percent in 2021-21, with a CAGR of 3.05 percent throughout the decade. The decade's average ROE was 16.97 percent, with the lowest of 12.48 percent in 2011-12 and the best of 21.78 percent in 2013-14. When the equity multiplier was at its lowest point of 3.63, ROE was at its lowest point. The average equity multiplier during the decade was 4.05, with the highest value of 4.29 in 2013-14. The equity multiplier has a CAGR of 0.90 percent, indicating that leverage, or reliance on borrowing, has increased somewhat during the decade.

The asset turnover ratio, which began at 11.94 times, progressively grew to 15.07 times by the end of the study period, reaching a maximum of 2020-21 times. When the asset turnover was the highest and the leverage was the lowest, this was the case. From 2011-12 to 2013-14, the Net Profit Margin grew, then decreased, and then remained stable from 2017-18 to 2020-21. The precision value is less dispersed from the mean for the period, with the mean being 33.43 percent and the CV of Net Profit Margin being 5.33. The Asset Turnover Ratio is usually directly tied to the net profit margin; as the net profit margin rises and then stabilises, the asset multiplier does as well. However, Net Profit Margin and Asset Multiplier increase at first and then stabilise, whereas Equity Multiplier does not change over time. PGCIL's financial performance has remained consistent over time, with a generally stable ROE.

Correlation Analysis of the Determinants of ROE of PGCIL

The correlation study of ROE with its three factors is shown in the table below. Table 2 further shows that whereas NP margin and Equity Multiplier are favourably connected with ROE, asset turnover is negatively correlated. Also, the biggest correlation is between Net Profit Margin and ROE, which is 83 percent, indicating that profit margin is the most important contributing factor for PGCIL's performance, which is very favourable.

Table 2: Correlation Analysis of the Determinants of ROE of PGCIL

		NPM	Asset_Turnover	Equity_Multiplier
ROE	Pearson Correlation	.831**	-.244	.665*
	Sig. (2-tailed)	.003	.498	.036
	N	10	10	10

When the P-value for the correlation of ROE and NPM is less than 0.05, it indicates that there is a positive and strong correlation between Return on Equity and Net Profit Margin; however, when the P-value for the correlation of ROE and Asset Turnover is greater than 0.05, it indicates that there is no significant correlation between ROE and Asset multiplier, indicating a negative correlation and correlation between ROE and Equity.

Chart 1: PGCIL's DUPONT Analysis Trend of Financial Component Showcase

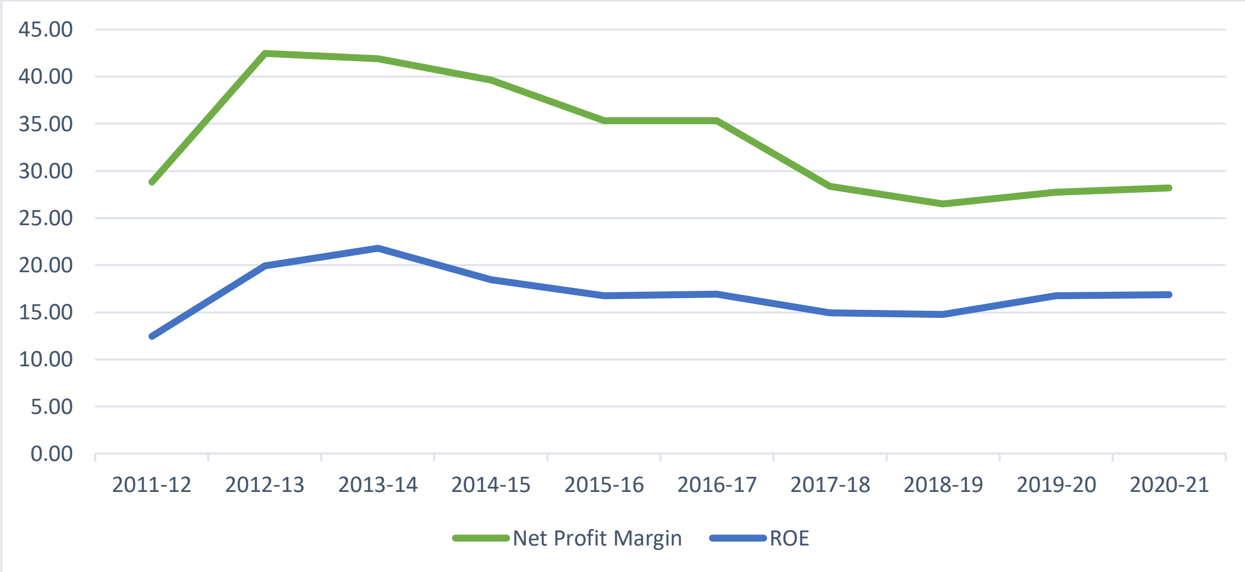


Chart 2: PGCIL's DUPONT Analysis Trend of Financial Component Showcase

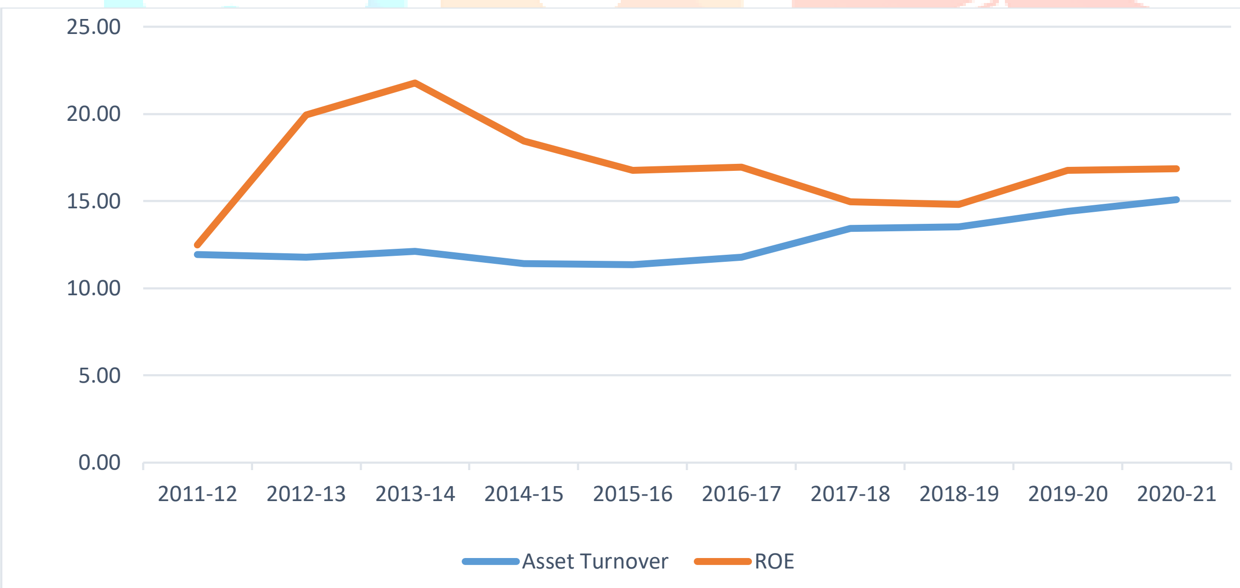


Chart 3: PGCIL's DUPONT Analysis Trend of Financial Component Showcase

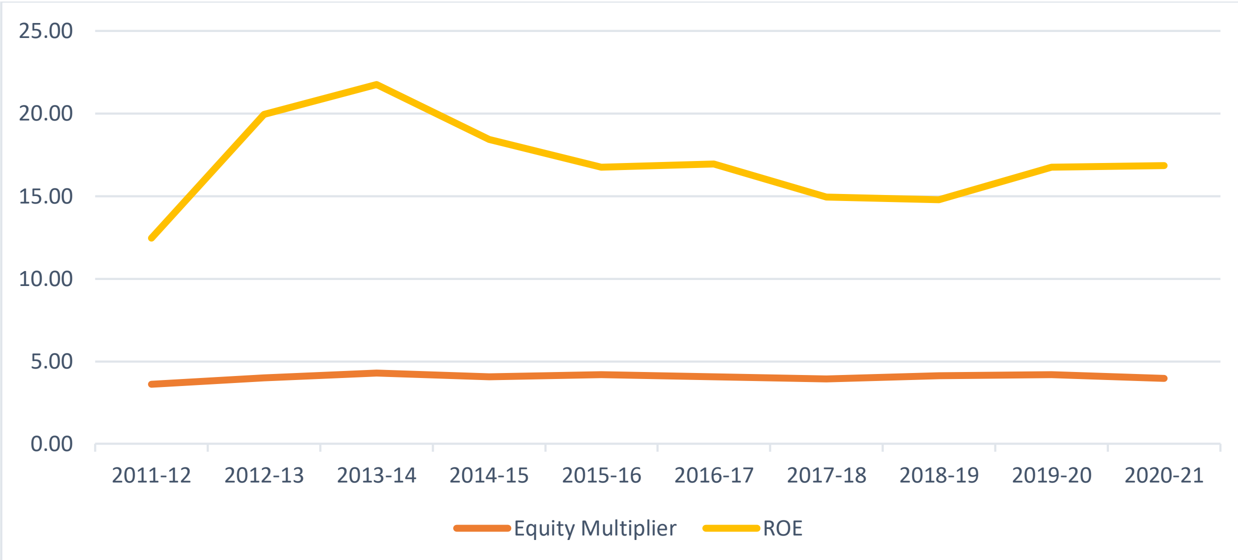
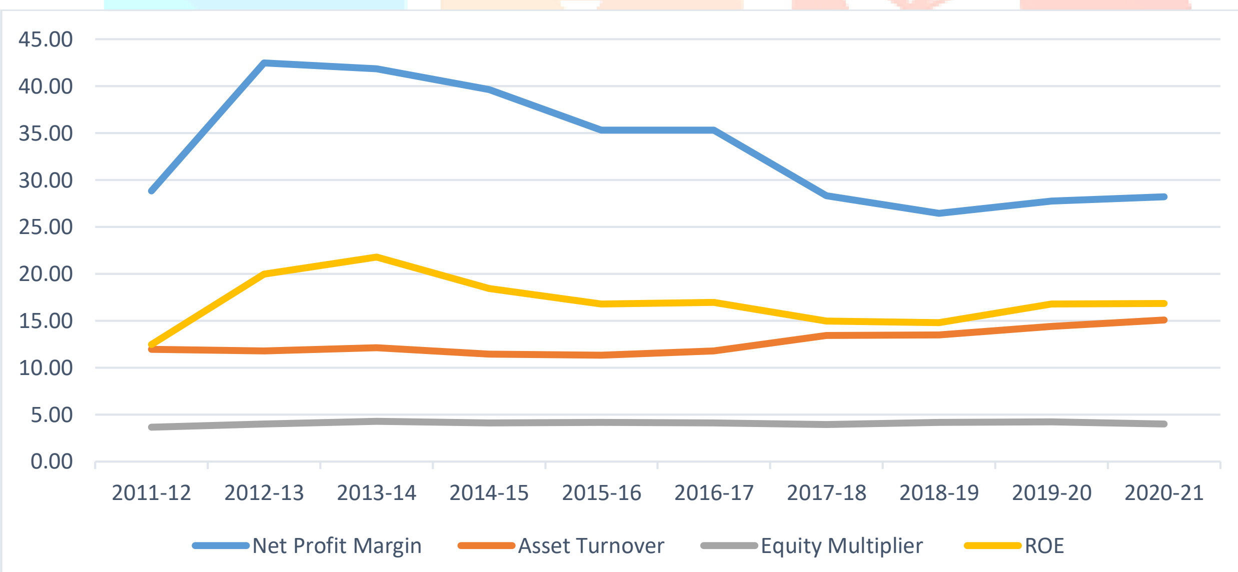


Chart 4: PGCIL's DUPONT Analysis Trend of Financial Component Showcase



Conclusion

Power Grid Corporation Limited is a High Margin High Volume and with optimum leverage business. It was found that the financial performance of PGCIL is relatively steady and reflects less volatility in the return on equity. The Net profit Margin displayed relative stability for the period 2011-12 to 2020-21. It can be concluded that PGCIL observed with strategy of High Margin with an optimum leverage. With above interpretation Net profit margin are in line with ROE which indicate better operational efficiency. PGCIL's financials fundamental also indicate robust health.

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