



## Financial Performance Analysis of Selected Public Sector Enterprises

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| Peer Review Information                                                                                                                                                                                                                     | Abstract                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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| <i>Submission: 30 March 2015</i><br><i>Revision: 15 Jan 2015</i><br><i>Acceptance: 30 Jan 2015</i><br><br><b>Keywords</b><br><br><i>Public sector enterprises,<br/>Financial performance,<br/>Ratio analysis, Profitability,<br/>CPSEs.</i> | Public sector enterprises (PSEs) occupy an important position in infrastructure, energy, manufacturing and strategic industries, making their financial sustainability relevant to both public policy and corporate management. This methodology paper develops a structured framework for analysing the financial performance of selected Indian Central Public Sector Enterprises (CPSEs). The proposed study uses audited secondary data from annual reports and Public Enterprises Survey publications and evaluates five years of performance through profitability, liquidity, solvency, efficiency and growth indicators. Ratio analysis is combined with trend analysis, descriptive statistics, coefficient of variation and comparative ranking. Financial-ratio research demonstrates that accounting ratios provide useful signals about profitability, liquidity and financial health. Research on state ownership further shows that profitability, leverage and operating efficiency are important dimensions for evaluating public enterprises. Indian evidence indicates that ownership structure, partial privatization, disinvestment and performance contracts can materially affect the outcomes of state-owned enterprises. The methodology proposes a purposive sample of large non-financial CPSEs such as ONGC, NTPC, BHEL, SAIL and GAIL for FY2010-11 to FY2014-15. Because raw company data were not supplied with the request, the Results section presents an illustrative interpretation framework rather than fabricated company figures. The study offers a replicable approach for comparing financial strength, identifying weak dimensions and supporting evidence-based evaluation of public sector performance. |

### Introduction

Public sector enterprises were established to support industrialization, infrastructure development, employment, regional balance and strategic control over key sectors. Although these objectives extend beyond profit maximization, persistent financial weakness can constrain investment capacity, increase dependence on government support and reduce the ability of an enterprise to fulfil its developmental role. Financial performance analysis is therefore necessary not to reduce PSEs to purely commercial entities, but to determine whether

the resources entrusted to them are being managed sustainably and efficiently.

Financial statements provide a standardized basis for evaluating this performance. Ratios convert accounting numbers into comparable measures of profitability, liquidity, leverage and operating efficiency. Beaver (1966) and Altman (1968) established the analytical importance of financial ratios for assessing corporate health, while Barnes (1987) emphasized both their usefulness and the need for careful interpretation. In the context of public ownership, comparative studies have examined

whether state enterprises differ systematically from private or partially privatized firms in profitability and efficiency (Boardman & Vining, 1989; DeWenter & Malatesta, 2001).

In India, the reform period introduced disinvestment, stock-market monitoring and Memoranda of Understanding (MoUs) as mechanisms intended to improve accountability. Majumdar (1998) identified efficiency differences among state-owned, mixed and private enterprises, Gupta (2005) found positive performance effects from partial privatization in Indian state-owned firms, and Jain et al. (2011) reported improved financial performance among PSEs operating under MoUs. These findings justify a multi-dimensional financial analysis rather than reliance on a single profit measure.

### Literature Review

The financial-ratio literature provides the methodological foundation for corporate performance assessment. Beaver (1966) demonstrated that selected ratios can distinguish financially weak firms from healthier firms, and Altman (1968) showed that combining multiple accounting ratios improves the assessment of financial distress. Ohlson (1980) extended this tradition through probabilistic modelling and emphasized the role of size, financial structure, performance and liquidity. Barnes (1987) reviewed the broader use of ratios and cautioned that comparisons should account for scale, sector and distributional properties. These studies support the use of a ratio dashboard rather than one isolated metric.

A second literature concerns ownership and enterprise performance. Boardman and Vining (1989) compared private, mixed and state-owned enterprises and found systematic performance differences in competitive environments. Megginson, Nash, and van Randenborgh (1994) documented increases in profitability, sales, investment and operating efficiency after privatization in an international sample. Boubakri and Cosset (1998) reported

similar improvements in developing countries, while D'Souza and Megginson (1999) found post-privatization increases in profitability and operating efficiency and reductions in leverage. DeWenter and Malatesta (2001) showed that government-owned firms tended to be less profitable, more leveraged and more labor intensive than privately owned firms, although performance changes around privatization were not uniformly attributable to ownership transfer.

Studies focusing on state-enterprise reform also show that institutional and ownership effects are complex. Megginson and Netter (2001), in a broad survey, concluded that privatization generally improves efficiency and financial health, but outcomes depend on markets and governance arrangements. Sun and Tong (2003) found that Chinese share-issue privatization improved earnings ability, real sales and labor productivity but did not consistently improve profit returns or leverage. Such evidence suggests that financial performance should be decomposed into several dimensions because one indicator can improve while another deteriorates.

Indian research is particularly relevant to the present study. Majumdar (1998) found that central and state government-owned enterprises were less efficient than mixed and private-sector enterprises over the period studied. Chhibber and Majumdar (1999) used return on sales and return on assets to connect ownership control with profitability in Indian industry. Gupta (2005) found that partial privatization of Indian state-owned enterprises improved profitability, productivity and investment even without transfer of managerial control. Ghosh (2008) found that fully government-owned enterprises were less profitable than partially privatized enterprises and that performance changes could begin before divestment. Jain et al. (2011) assessed CPSE performance using profitability, efficiency, liquidity and solvency ratios and found stronger outcomes among enterprises operating under MoUs.

**Table 1.** Selected Literature Relevant to PSE Financial Performance (References up to 2015)

| Study                        | Context / Method                           | Key relevance                                                               |
|------------------------------|--------------------------------------------|-----------------------------------------------------------------------------|
| Beaver (1966); Altman (1968) | Financial ratios and financial health      | Establish ratios as meaningful indicators of solvency and performance.      |
| Boardman & Vining (1989)     | Private, mixed and state-owned enterprises | Ownership form can be associated with performance differences.              |
| Megginson et al. (1994)      | 61 privatized firms, international         | Profitability, sales and operating efficiency improved after privatization. |
| Majumdar (1998)              | Indian state, mixed and private sectors    | Reported comparative efficiency differences across ownership categories.    |

|                    |                                   |                                                                            |
|--------------------|-----------------------------------|----------------------------------------------------------------------------|
| Gupta (2005)       | Indian state-owned enterprises    | Partial privatization improved profitability, productivity and investment. |
| Ghosh (2008)       | Indian federal public enterprises | Used profitability, leverage and employment measures around divestment.    |
| Jain et al. (2011) | Indian CPSEs and MoU system       | Assessed 15 profitability, efficiency, liquidity and solvency ratios.      |

Existing studies frequently evaluate ownership reform, privatization or efficiency at an aggregate level. A company-level methodology that compares selected CPSEs across several financial dimensions over a common period remains useful for managerial diagnosis. The proposed study therefore integrates ratio analysis, trend analysis and cross-enterprise comparison to identify both financial strength and instability.

The proposed study has the following objectives:

to evaluate the profitability, liquidity, solvency and operating efficiency of selected public sector enterprises;

to examine the direction and consistency of financial performance over a five-year period;

to compare the selected enterprises using common financial indicators and a standardized performance score;

to identify the financial dimensions that contribute most strongly to relative performance; and

to derive policy and managerial implications for sustainable public-enterprise performance.

The study addresses three central questions: (i) Do the selected CPSEs exhibit stable improvement or deterioration in core financial ratios? (ii) Which enterprise performs most consistently across profitability, liquidity, solvency and efficiency dimensions? (iii) Are differences driven mainly by operating efficiency, capital structure or profitability?

## Methodology

### 1. Research Design and Sample

The study adopts a descriptive and analytical research design based entirely on secondary financial data. A balanced five-year panel is proposed for FY2010-11 to FY2014-15. To maintain comparability, the sample should be limited to non-financial Central Public Sector Enterprises with continuous audited reporting and substantial commercial operations. A purposive sample of ONGC, NTPC, BHEL, SAIL and GAIL is suitable because these enterprises represent energy, power, engineering, steel and gas while remaining large, established CPSEs. The final researcher may substitute enterprises if the same selection criteria are preserved.

### 2. Sources of Data

Data should be collected from audited annual reports of the selected enterprises, the Government of India's Public Enterprises Survey and, where required, stock-exchange filings. The study uses consolidated or standalone statements consistently across the full period; mixing the two within an enterprise should be avoided. Extracted variables include revenue from operations, profit after tax, total assets, shareholders' equity, current assets, current liabilities, inventory, total debt, finance cost, earnings before interest and tax, cost of goods/services, and average capital employed.

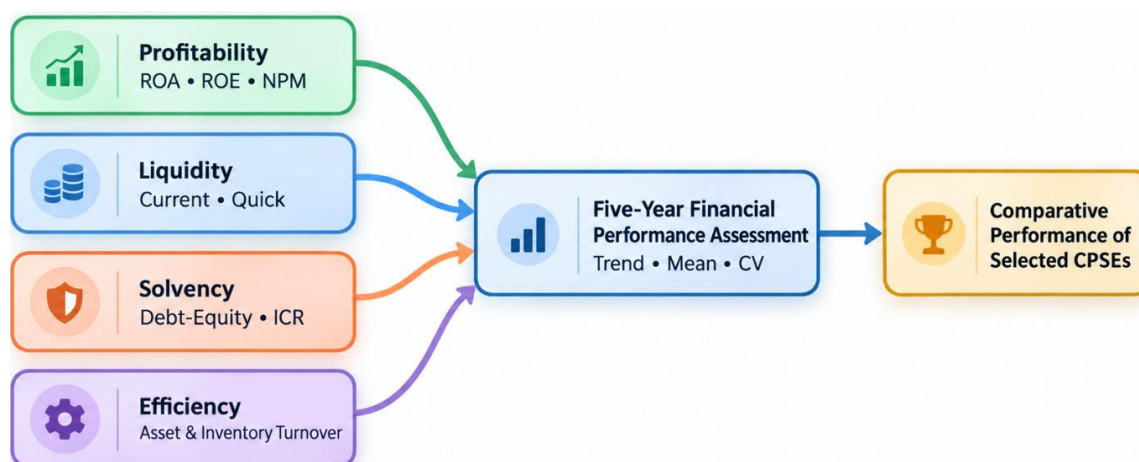


**Figure 1.** Financial Performance Analysis Framework for Selected Public Sector Enterprises

### 3. Variables and Financial Ratios

Financial performance is treated as a multidimensional outcome. Profitability measures the ability to generate earnings from sales, assets and owners' funds. Liquidity measures the capacity to meet short-term

obligations. Solvency evaluates long-term financial risk and debt-servicing capacity. Efficiency ratios indicate how effectively assets and working resources generate revenue. Growth measures indicate whether the enterprise is expanding its revenue and earnings base.

**Table 2.** Proposed Financial Performance Indicators

| Dimension     | Indicator               | Formula / interpretation                                                    |
|---------------|-------------------------|-----------------------------------------------------------------------------|
| Profitability | Net Profit Margin (NPM) | Profit after tax / Revenue $\times$ 100; higher is generally better.        |
| Profitability | Return on Assets (ROA)  | Profit after tax / Average total assets $\times$ 100.                       |
| Profitability | Return on Equity (ROE)  | Profit after tax / Average shareholders' equity $\times$ 100.               |
| Liquidity     | Current Ratio           | Current assets / Current liabilities; indicates short-term coverage.        |
| Liquidity     | Quick Ratio             | (Current assets – inventory) / Current liabilities.                         |
| Solvency      | Debt–Equity Ratio       | Total debt / shareholders' equity; lower leverage reduces financial risk.   |
| Solvency      | Interest Coverage Ratio | EBIT / finance cost; higher values indicate stronger debt-service capacity. |
| Efficiency    | Total Asset Turnover    | Revenue / average total assets; measures asset utilization.                 |
| Efficiency    | Inventory Turnover      | Cost of operations / average inventory, where relevant.                     |
| Growth        | Revenue / PAT Growth    | Annual percentage change; indicates direction and momentum.                 |

#### Step-by-Step Analytical Procedure

Step 1 - Collect audited annual-report figures for each selected CPSE and each of the five financial years.

Step 2 - Standardize accounting definitions, units (for example, ₹ crore) and treatment of exceptional items.

Step 3 - Calculate all profitability, liquidity, solvency, efficiency and growth ratios using the same formulas.

Step 4 - Compute five-year mean, minimum, maximum, standard deviation and coefficient of variation (CV) for every ratio.

Step 5 - Conduct trend analysis by calculating year-on-year changes and, where useful, compound annual growth rates.

Step 6 - Compare enterprises on each ratio. For indicators where higher values are desirable, assign higher standardized scores to larger values; reverse the scoring for leverage measures.

Step 7 - Construct dimension scores for profitability, liquidity, solvency and efficiency, followed by an overall financial-performance index using equal weights unless theory justifies alternative weights.

Step 8 - Interpret findings in the context of sector characteristics and public-enterprise objectives rather than treating a single ratio as conclusive.

#### 4. Statistical Techniques

Descriptive statistics are the principal analytical tools because the study is designed to compare financial statements across firms and time. Mean values indicate average performance, while standard deviation and coefficient of variation show consistency. A lower CV is preferred where stability is desirable. Trend slopes can indicate whether performance is improving or weakening. If the researcher has a sufficiently long panel, one-way ANOVA or the non-parametric Kruskal-Wallis test may be used to test whether median or mean ratios differ across enterprises. Correlation analysis can also examine whether profitability is associated with leverage or asset efficiency. However, statistical significance should supplement rather than replace financial interpretation.

#### 5. Reliability, Validity and Comparability

Reliability is strengthened by using audited statements, applying the same formulas across years and independently rechecking extracted values. Construct validity is supported by established ratio-analysis literature (Beaver, 1966; Altman, 1968; Barnes, 1987) and by public-enterprise studies using profitability, leverage and efficiency measures (DeWenter & Malatesta, 2001; Jain et al., 2011). Comparability

requires caution because accounting policies, industry capital intensity and administered prices can differ across CPSEs. The analysis should therefore present both absolute ratio rankings and within-enterprise trends.

### 6. Proposed Comparative Score

For a compact comparison, each ratio can be converted into a standardized score. A simple min-max transformation can scale desirable ratios from 0 to 100. For undesirable ratios such as excessive debt-equity, the direction is reversed. The average of standardized ratios produces dimension scores, and the average of dimension scores produces an overall index. This index is only a summary device; the underlying ratios must remain visible to prevent economically important trade-offs from being hidden.

### Results

No annual-report dataset was supplied with the request; consequently, this section does not present invented company-level numbers. It instead shows the pattern of results that the proposed empirical analysis is expected to generate and the form in which they should be interpreted. Based on earlier public-enterprise research, substantial differences are likely across profitability, leverage and operating efficiency rather than uniform superiority of one firm on every measure.

The profitability analysis should first compare NPM, ROA and ROE. An enterprise with a high net

margin but low asset turnover may still record moderate ROA, which is especially relevant for capital-intensive PSEs. Conversely, an enterprise can report a lower margin but generate acceptable returns through stronger asset utilization. This distinction is consistent with the broader finding that operating efficiency and profitability should be evaluated jointly rather than treated as interchangeable outcomes (Megginson et al., 1994; Boubakri & Cosset, 1998).

Liquidity results should be interpreted conservatively. Extremely high current ratios can reflect idle working capital, whereas low ratios may indicate short-term financing pressure. Solvency analysis should focus on debt-equity and interest coverage together: leverage is not necessarily undesirable for infrastructure enterprises if earnings comfortably cover finance costs. DeWenter and Malatesta (2001) demonstrate why leverage is an important ownership-performance dimension, while Sun and Tong (2003) show that privatization-related improvements in operating indicators do not automatically produce lower leverage.

Efficiency ratios are expected to be particularly informative for cross-enterprise comparison. Asset turnover, inventory turnover and revenue growth reveal whether large asset bases are being translated into output. Indian evidence suggests that organizational reforms, monitoring and partial privatization can affect profitability and productivity, but effects can begin before the formal ownership change and may vary by dimension (Gupta, 2005; Ghosh, 2008).

**Table 3.** Illustrative Result-Interpretation Matrix

| Financial dimension | Evidence to report                    | Interpretation rule                                                                         |
|---------------------|---------------------------------------|---------------------------------------------------------------------------------------------|
| Profitability       | 5-year NPM, ROA, ROE; mean and trend  | Higher and rising values indicate stronger earnings performance, subject to sector context. |
| Liquidity           | Current and quick ratios; variability | Adequate and stable coverage is preferred; very high liquidity can signal idle resources.   |
| Solvency            | Debt-equity and interest coverage     | Lower leverage plus stronger coverage generally indicates lower financial risk.             |
| Efficiency          | Asset and inventory turnover          | Higher turnover indicates stronger utilization, but capital intensity must be considered.   |
| Growth              | Revenue and PAT growth                | Persistent positive growth is stronger evidence than a one-year increase.                   |
| Overall index       | Standardized dimension scores         | Use for ranking only after reviewing the underlying ratio profile.                          |

### Discussion

The proposed methodology recognizes that PSE financial performance reflects commercial, policy and sector-specific influences. A petroleum producer, power utility, engineering

manufacturer and steel company have different capital cycles, regulatory structures and demand conditions. Therefore, comparing raw margins without sector interpretation can be misleading. The more useful question is whether each

enterprise is improving its own financial efficiency and how its risk-return profile compares with other large public enterprises over the same macroeconomic period.

The literature also suggests that ownership and governance reforms can alter performance without producing identical outcomes across all measures. Boardman and Vining (1989) and Majumdar (1998) provide evidence of ownership-related efficiency differences, while Megginson and Netter (2001) summarize broad evidence that privatization often strengthens efficiency and financial health. Yet Sun and Tong (2003) show that some profitability and leverage measures can fail to improve even when earnings ability and productivity rise. For Indian CPSEs, Gupta (2005), Ghosh (2008) and Jain et al. (2011) indicate that market monitoring, divestment and performance agreements deserve consideration when interpreting financial changes.

Accordingly, the expected contribution of the study is diagnostic rather than ideological. The analysis can identify whether weaker outcomes arise from low margins, poor asset utilization, excessive leverage, weak liquidity management or unstable growth. Such decomposition is more useful for management and policy than a single label of 'good' or 'poor' performance.

## Conclusion

This methodology paper provides a step-by-step framework for analysing the financial performance of selected public sector enterprises. It combines audited secondary data, a five-year balanced panel, financial ratios, trend measures, variability statistics and a transparent comparative scoring method. The central strength of the approach is its multidimensionality: profitability, liquidity, solvency, efficiency and growth are assessed together, reducing the risk of drawing conclusions from a single accounting measure. The methodology is appropriate for large non-financial CPSEs such as ONGC, NTPC, BHEL, SAIL and GAIL and can be replicated with another carefully selected group. Results should be interpreted in relation to sector characteristics, capital intensity and public-policy obligations. Future extensions can add economic value added, market-based measures, data-envelopment analysis or panel regression if a longer dataset is available. Where actual annual-report data are entered, the same framework can produce a complete empirical ranking and identify statistically and financially meaningful performance differences.

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