

P.K. Jain · Seema Gupta
Surendra S. Yadav

Public Sector Enterprises in India

The Impact of Disinvestment and Self
Obligation on Financial Performance

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and Self Obligation on Financial
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*Dedicated to
Professor Max Peyrard
Emeritus Professor and Chair
Jean Monnet ad personam
University of Paris 1 Sorbonne
School of Management*

Preface

*Practice without theory is blind.
Theory without practice is sterile.*
(Marx, *Contribution to the Critique of Hegel's Philosophy of Law, Jan. 1844, MECW, Vol. 3, P. 182*)

The public sector in India has played a dominant role in shaping the path of the country's economic development. Visionary leaders of independent India drew up a road map for the development of public sector as an instrument for self-reliant economic growth. The public sector has provided the much required thrust and has been instrumental in setting up a strong and diversified industrial base in the country. As a result of the initiatives taken during the five-year plans, the role of central public sector enterprises (PSEs) in terms of contribution to the Indian economy has been phenomenal. The number of PSEs as on 31 March 2009 was 246, with a total capital of nearly Rs. 5.3 lakh crores. The number rose to 260 on 31 March 2012 with a total capital of 13.43 lakh crores as against modest number of five PSEs having a total investment of Rs. 29 crores on the eve of the First Five-Year Plan (1 April 1951).

With the onset of economic reforms in 1991, the Government of India initiated a systemic shift to a more open economy with greater reliance on market forces and a larger role of the private sector including foreign investment. Accordingly, the PSEs were exposed to competition with domestic private sector companies as well as large multinational corporations. In order to compete in the new environment, the PSEs undertook significant initiatives for improving technology and scaling up capacities to operate at par with the private counterparts in the liberalized economy. Keeping pace with the global changes over a period of time, the PSEs in India also have adopted the policies like disinvestment, self-obligations (MoU), restructuring, etc. Thus, the continued focused efforts towards achieving excellence have helped several of the PSEs to become self-reliant, and they are playing a critical role in building the Indian economy.

It was, therefore, considered worthwhile to carry out a comprehensive study which assesses the performance of PSEs as well as the impact of MoU and

disinvestment on the financial performance. Further, the liberalization of Indian economy had effects of global upheavals on Indian enterprises; the most recent event being the global recession in 2008. The study also attempts to analyze whether there was any impact of this recession on Indian PSEs.

This research monograph covers 209 non-financial central public sector enterprises (PSEs) in India. A time span of 20 years (1991–1992 to 2010–2011) has been considered; this period has been divided into four different sub-phases (1991–1992 to 1995–1996, 1996–1997 to 1999–2000, 2000–2001 to 2007–2008, and 2008–2009 to 2010–2011). From the statistical point of view, the “first” phase, “second” phase, “third” phase, and “fourth” phase have been considered as four independent samples. The performance of the MoU PSEs, subsequent to the recommendations of the National Council of Applied Economic Research (NCAER), which have been implemented from the year 2004 to 2005, has also been evaluated. For this purpose, the third phase period (2000–2001 to 2007–2008) has been sub-divided into two phases: 2000–2001 to 2003–2004 is referred as pre-NCAER recommendation phase two, and 2004–2005 to 2007–2008 corresponds to post-NCAER recommendation phase two. The subsequent period (i.e., 2008–2009 to 2010–2011) is of particular importance, due to the recession (caused by American financial crisis) that had impacted the world economy during the second half of 2008. Hence, to assess the impact of recession on the performance of these PSEs, fourth phase (2008–2009 to 2010–2011) is marked as post-recession phase.

In this research, primarily 18 ratios related to profitability, efficiency, liquidity, leverage, and productivity of capital have been used for assessing financial performance, pertaining to the sample public sector enterprises (PSEs), disinvested PSEs, and MoU PSEs. Another set of classification (1) in terms of manufacturing PSEs and service PSEs and (2) profit-making and loss-making PSEs has also been followed for the purpose of analysis. Apart from secondary data, the inferences have been drawn from the questionnaire survey based on the 30 responses from PSEs.

The sample virtually covers the universe of the central PSEs in India. Based on the major findings, some concrete suggestions/recommendations have been made for government/management of PSEs for their better functioning.

The findings suggest that liberalization and economic reforms have yielded positive impact on the performance of the sample PSEs in India as reflected by the majority of the ratios over a period of time. Survey findings have indicated satisfying compounded annual growth rate in their net profits over the time.

Sector-wise disaggregate analysis shows that there is no sector-wise statistically significant difference, though better profitability and liquidity have been recorded in service sector PSEs than those of manufacturing sector PSEs. It is worth noting that the loss-making PSEs have positive operating profits as well as positive rates of return on their investments from year 2005–2006 onwards. This is a signal for their turnaround. There is a need to review the policy of their closure. In operational terms, closure of sick/loss-making PSEs should be taken on the merits of each case instead of having blanket policy of closing them.

The study has inferred that there is better profitability, assets turnover, productivity of capital, and liquidity position in disinvested PSEs vis-à-vis non-disinvested PSEs.

MoU has brought about a positive impact on the financial performance of MoU PSEs; the increase in profitability, efficiency, liquidity, and productivity is commendable during the post-MoU phase; *t*-test has also corroborated significant difference between MoU and non-MoU PSEs in many ratios. Phase three has shown marked improvement in the parameters of profitability and productivity compared to previous two phases in MoU PSEs. Similarly, efficiency, liquidity, and leverage ratios have also shown satisfactory results in sizable number of cases.

The study indicates that MoU has made significant impact in improving the profitability, operational efficiency, liquidity, and productivity of PSEs. It is important to note that the loss-making MoU PSEs have reduced their losses and have turned their losses into profits by enhancing their productivity and operational efficiency over period of time. Further, manufacturing PSEs over which service PSEs have an edge have shown better profitability after signing MoUs. In sum, MoUs have yielded the desired results. *Therefore, it is recommended that MoU should be mandatory for all the PSEs (instead of the current practice of its being voluntary in nature).*

It is reasonable to infer from the study that economic reforms, liberalization policies, and MoU have laid positive and salutary impact in improving the financial performance of PSEs in a large number of cases over the phases. The study is useful for the government, ministries, academics, and the public at large to develop the policies as well as strategies for the development of PSEs in India.

It would not, therefore, be out of context to state that contrary to the normal expectation, the disinvestment has not made the desired impact on financial performance. It may be due to the inadequate level of disinvestment (partial disinvestment), on the one hand, and the lack of full autonomy in their functioning, on the other. *Therefore, the study suggests that the government henceforth should aim at strategic disinvestment, as small and modest sizes of disinvestment are not likely to be fruitful. The government's intervention in the operational functioning and managerial decision making should be a matter of last resort.*

It is also for consideration of the government that the disinvestment should be driven by the objective of most efficient allocation of resources, both monetary and non-monetary. The resources currently blocked in non-strategic PSEs should be released as soon as possible through sale of government stakes in such PSEs for redeployment.

Another important outcome is that the global recession has not made any significant dent on Indian PSEs. It may be, therefore, inferred that the Indian economy has remained insulated to a large extent from the recessionary influences in the recent past. However, this needs to be taken with a note of caution as the impact may be felt with a time lag or in a gradual manner.

New Delhi, India

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Abbreviations

ANOVA	Analysis of variance
APM	Administrative price mechanism
ATR	Acid test ratio
CATR	Current assets turnover ratio
CR	Current ratio
DCP	Debtor collection period
DPE	Department of Public Enterprises
EBIT	Earnings before interest and taxes
EMP	Employment level
FATR	Fixed assets turnover ratio
FGIHP	Finished-goods inventory holding period
FP	Financial performance
GDP	Gross domestic product
GDRs	Global depository receipts
HPC	High Power Committee
IHP	Inventory holding period
LM	Loss making
MoU	Memorandum of understanding
NCAER	National Council of Applied Economic Research
NCMP	National Common Minimum Program
NIE	Net income per employee
NPM	Net-profit margin
OPM	Operating profit margin
PM	Profit making
PRP	Performance related pay
PSEs	Public sector enterprises
Q1	Lower quartile
Q3	Upper quartile
R&D	Research and development
RMHP	Raw-material inventory holding period

ROCE	Return on capital employed
ROI	Return on investment
RONW	Return on net worth
ROR	Rates of return
ROTA	Return on total assets
SE	Sales efficiency per employee
SEBI	Security and Exchange Board of India
SPSS	Statistical Package for Social Sciences
TATR	Total assets turnover ratio
TD/TE	Total debt to total equity
TF	Task force
VRS	Voluntary Retirement Scheme
WIPIHP	Work-in-process inventory holding period

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Chapter 1

The Impact of Disinvestment and Self-Obligation on Financial Performance of PSEs in India: An Introduction

Abstract This chapter is aimed at providing brief outline of the study. It has described the importance of public enterprises, their contribution towards achieving self-reliant economic growth and capital formation. Two major recommendations of economic reform policies, namely, disinvestment and signing of Memorandum of Understanding (MoU)/charter of self-obligations, have also been discussed in it. Additionally, the chapter also describes the objectives, scope, need, significance of the study, research methodology (in brief), and the chapter plan of the research.

Keywords Public sector enterprises (PSEs) • Liberalization • Globalization • Financial performance • Disinvestment and Memorandum of Understanding (MoU)/self-obligation

1.1 Introduction

Public enterprises have played a pivotal role in overcoming not only the socio-economic problems but also in the development of Indian economy after independence. The rationale for setting up public enterprises, inter-alia, was to ensure easier availability of vital articles for mass consumption, to introduce check on prices of important/essential products, and to promote emerging areas like tourism (Public Enterprises Survey 2002–2003). In other words, it was pragmatic compulsion to use public sector enterprises (PSEs) as an instrument for achieving self-reliant economic growth heterogeneously, in the areas of basic and infrastructure industries, consumer goods industries, and industries engaged in trade and services. Accordingly, Industrial Policy Resolution (IPR) 1956 was formulated with certain policies to ensure that public sector played a strategic role in Indian economy. As a result of these policies and efforts, PSEs have attained commanding heights in many crucial areas and the vanguard of the country's variegated development (Kumar 1994). Their contribution to the national income, capital formation, industrialization, and provision of economic and social infrastructure has been impressive (Ghuman 1998).

PSEs, as per their charter, are also required to perform certain social obligations which are poorly defined and hard to quantify. This has led to a heavy burden on these PSEs, which, in turn, has further compounded their increased losses (Kaur and Singh 2005). Evidently, this was a precarious situation.

Further, liberalization and globalization have caused competition and lowered the profit margin. At the same time, government has reduced subsidies and budgetary support for PSEs. This has entailed financial crunch, causing/forcing the government to bring strategic and economic reforms in the Indian PSEs. It became necessary for the government to turn from the command economy to the market-friendly economy. This constitutes the genesis of the “statement of Industrial Policy” (announced on 24 July 1991) which, inter-alia, includes statement on public sector reforms. Major policy recommendations in this respect were to review their portfolios; to revive/rehabilitate/turnaround sick enterprises; to raise resources through disinvestment of government equity, signing of memorandum of understanding, and assigning high accountability and responsibility to the top executives by extending greater autonomy in decision making; to introduce variegated professional practices etc. These recommendations primarily have aimed at making PSEs commercially profitable so that they can meet their financial requirements for expansion on their own as well as their social commitments.

Two major recommendations of economic reforms, namely, disinvestment and signing of Memorandum of Understanding (MoU), have been analyzed in depth in the study.

Mounting interest burden of external economic community and unbridled non-planned expenditure have landed Indian economy almost on the verge of financial disaster; it forced government to raise resources in terms of encouraging wider public participation in government equity through disinvestment, as suggested by economic reforms policy of 1991. Disinvestment has larger implications rather than just selling the government equity; it contributes to the growth of Indian economy and encourages private participation which, in turn, brings in operational efficiency, professional competency, control over unplanned expenditure, cost reduction and induction of global as well as domestic capital. Disinvestment of PSE shareholdings is an economic necessity (Sankar and Mishra 1994) which is desirable to finance further economic development besides meeting social responsibilities. Further, management of available resources profitably has been emphasized as an important element of operational efficiency (Jain and Yadav 2005).

Notwithstanding the above, earning profit is not the sole criteria of setting up PSEs. Hence, there is an imperative need for an instrument which quantifies both social and commercial objectives into measurable terms. To overcome this, Arjun Sengupta Committee (in its report submitted in 1986) has suggested the concept of Memorandum of Understanding (MoU)/self-obligations. MoU policy consists of comprehensive set of criteria for the evaluation of public enterprise’s performance which brings back to life the two salient features laid in Industrial Policy Resolution (IPR) 1956, i.e., to manage public enterprises on commercial lines and their

performance should be judged by their total performance. Another innovative feature of assigning weights has also been included in it. MoU implies privatization of public style of management (Trivedi 1991).

1.2 Significance and Motivation of the Study

Although the PSEs have made their vital contribution in developing the Indian economy holistically since their nascent stage yet to overcome the associated economic and social problems in public enterprises, several committees (appointed by government) have made several recommendations and have suggested policies with a view to reform them. Inter-alia, disinvestment and self-obligations are the two prominent suggestive measures which help in overcoming financial crunch as well as bringing the PSEs in tune with commercial lines.

There is no comprehensive study (to the best of our knowledge) which has assessed the impact of disinvestment and MoU on the performance of PSEs in India. Second, probably no single study has covered the time span of two decades (i.e., 1991–1992 to 2010–2011) for assessing the performance of PSEs by using both the dimensions. Third, this is perhaps the first study which has used virtually all financial parameters such as profitability, efficiency, liquidity, leverage, and productivity in evaluating their performance. This study has been carried out to fill these important gaps. The study would be found useful to the government regulatory bodies, government agencies in policy formulation, investment community and PSEs.

1.3 Objectives of the Study

The main objectives of the study are as follows:

- To examine the financial performance of the public sector enterprises (PSEs) during the post-liberalization period in terms of major ratios, namely, profitability, efficiency, liquidity, leverage and productivity.
- To study the financial performance of manufacturing and service sector PSEs over a period of time.
- To analyze the performance of profit-making and loss-making PSEs over a period of time.
- To compare the financial performance of the disinvested and non-disinvested PSEs.
- To determine the financial performance of MoU PSEs over the period of time.
- To carry out the comparative study on the financial performance of MoU PSEs and non-MoU PSEs.

1.4 Scope of the Study

- The study is restricted to the nonfinancial central public sector enterprises in India; state PSEs are excluded.
- The period of the study is limited to 1991–1992 to 2010–2011.

1.5 Methodology of the Study

The study has adopted comprehensive framework to judge the financial performance of the central public sector enterprises (PSEs) in India. The study has used secondary data available in the several volumes of Public Enterprises Survey. Primary data has been collected through questionnaire survey among the PSEs to synthesize the findings of secondary data. Supplementary information has been sought through personal interviews with the executives of the PSEs.

The ratio analysis, a well accepted tool to measure the financial performance, has been employed to analyze the data. Moreover, the derived results of ratio analysis have been presented in the form of descriptive and positional values. Statistical tools such as paired *t*-test and independent *t*-test are also used for testing the various hypotheses and drawing the inferences. The whole data set has been analyzed through Statistical Package of Social Science (SPSS) software.

1.6 Organization of the Study

The study has been divided into eight chapters. Chapter 1 relates to the background. Chapter 2 is an attempt to provide an overview of public sector enterprises in India. Chapter 3 covers the review of literature primarily in the areas of transition phase of PSEs, disinvestment, MoU, and the related dimensions of financial performance. Data and research methodology used are presented in Chap. 4.

The core of study is available in Chaps. 5, 6, and 7. Chapter 5 is devoted to assess financial performance of public sector enterprises. Chapter 6 deals with a comparison of disinvested and non-disinvested PSEs. Chapter 7 contains a comparative analysis on MoU and non-MoU PSEs. Chapter 8 presents concluding observations.

1.7 Summary

This chapter is aimed at providing brief outline of the study. It has described the importance of public enterprises, disinvestment, and MoU in India. The chapter has discussed the objectives, scope, need, significance of the study, research methodology (in brief), and chapter plan of the proposed research.

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Chapter 2

Public Sector Enterprises in India: An Overview

Abstract This chapter highlights the significant role played by public sector enterprises (PSEs) in shaping the path of the Indian economic development. It also delineates changes since the 1990s after the liberalization and globalization of Indian economy, key sectors for PSE operations (such as balanced regional development, increasing employment opportunities, concentration of economic power, export promotion and import substitution, research and development, etc.), operational excellence initiatives adopted by PSEs, and the contribution of them towards Indian economy.

Keywords Public sector enterprises (PSEs) • Economic growth • Key sectors • Balanced development • Corporate governance • Corporate social responsibility and environment excellence

2.1 Introduction

Central public sector enterprises (henceforth, referred to as PSEs) have been established, managed, and controlled by the Government of India as government companies (under the Companies Act or statutory corporations under the specific statutes of Parliament). In these enterprises, the Central Government holding in paid up share capital is more than 50 %. The government has used these public enterprises as an instrument for attaining self-reliant economic growth, and over the years they have played an eminent role in the sustainable growth of Indian economy.

The importance of public sector in the Indian economy has been recognized since 1948. The public sector in India, since then, has experienced a phenomenal growth both in terms of number and volume of investment. The government has made sustained efforts to break the vicious circle of poverty and underdevelopment by setting up public sector enterprises or by nationalizing certain key industries.

Since inception, PSEs have been the mainstay of the Indian economy and were set up with the mandate to:

1. Serve the broad macroeconomic objectives of higher economic growth.
2. Achieve self-sufficiency in the production of goods/services.
3. Facilitate long-term equilibrium in the balance of payments.
4. Ensure stability in prices and create benchmarks for prices of essential items.
5. Promote redistribution of income/wealth and balanced regional development.
6. Create employment opportunities.

Historically, PSEs assume significant importance to India's economy, in both pre- and post-independence period. In the pre-independence era, the PSEs were confined primarily to select sectors including railways, posts and telegraphs, port trust, ordnance factories, etc. Post-independence era was characterized by an agrarian economy with a weak industrial base, regional imbalance in economic development, low level of savings, inadequate infrastructure facilities, and considerable inequality in income and levels of employment; thus, the development of public sector enterprises was identified as a key driver for self-reliant economic growth in the absence of significant private capital. Consequently, the Industrial Policy Resolutions 1948 and 1956 laid emphasis on constituting public enterprises by the Central Government for industrial development in the core sectors.

As a result of the initiatives taken during the five-year plans, the role of PSEs in terms of contribution to the Indian economy has increased manifold. The number of PSEs as of 31 March 2009 was 246, with a total capital employed of nearly Rs. 5.3 lakh crore,¹ raised to 260 on 31 March 2012, with a total capital employed 13.43 lakh crore as against 5 PSEs having a total investment of Rs. 29 crore on the eve of the First Five-Year Plan (April 1951).

With the onset of economic reforms in 1991, the Government initiated a systemic shift to a more open economy with greater reliance on market forces and a larger role of the private sector including foreign investment. Accordingly, the PSEs were exposed to competition from domestic private sector companies as well as large multinational corporations. Given the competitive environment, the PSEs undertook significant initiatives for upscaling technologies and capacities in order to operate at par with the private counterparts in the liberalized economy. The continued focused efforts towards achieving excellence have helped several of the PSEs to become self-reliant and to play a critical role in building the Indian economy.

It may not be out of context to mention that many of today's success stories in the developing world began life as state-owned enterprises (SOEs). In France, for instance, Renault, Alcatel, EdF, Thomson, and Elf were SOEs for a long time, as were Rolls-Royce and British Aerospace in the UK. In the Indian context also, consequent to the initiatives taken during the five-year plans, the role of central PSEs in terms of contribution to the Indian economy has increased manifold.

¹ 1 crore = 10 million.

Given the unique features of PSEs, the underlying heads describe the role of PSEs in India, changes in PSEs since 1990, key sectors of their operations, initiatives adopted for operational excellence, and key contribution to the economy.

2.2 The Role of Public Sector Enterprises in India

The following arguments may be put forth in support of the PSEs (public sector) in India in spite of their criticism on account of inefficiency, government controls, lack of professionalism, etc.

2.2.1 Catalyst of Acceleration of the Rate of Economic Growth

Originally, the activities of the public sector enterprises were limited to a definite field of basic and key industries of strategic importance. There were certain fields where the private enterprises were shy to operate as they involved huge investment and risk. It was the public sector alone which could build the capital-intensive infrastructure such as power, transport, etc. Since then the ideological objective of capturing the “commanding heights” by the public sector appears to be fulfilled. It not only has succeeded in creating the necessary infrastructural base for sustained industrial growth but also has tremendously boosted the technological capabilities.

The public sector enterprises have firmly established the foundation for the construction of a self-generating industrial economy. During the planned era, the public sector has diversified its activities to cover a wide spectrum of industries. Today, the public sector in India has entered into the production of consumer goods such as bread, paper, watches, scooters, T.V., cement, and drugs. Some of the researchers are of the view that the public sector should now enter the fields of distribution and rural development as well.

2.2.2 Development of Capital Intensive Sector

The industrial development of a country necessitates a strong infrastructural base. This foundation is provided by the development of capital-intensive industries and the basic infrastructure. Historically, in India, the private sector neither had the zeal nor the capacity to invest in such infrastructural activities. From this point of view, the public sector in India has earned a magnificent record. The State has successfully implemented various schemes of multipurpose river projects, hydroelectric projects, transport and communication, atomic power, steel, etc. It has significantly contributed in the fields like nuclear power or steel technology, aeronautics, defense materials, ship building, etc.

2.2.3 Development of Agriculture

The public sector has played an important role in the field of agriculture as well. It has assisted in the manufacture of fertilizers, pesticides, insecticides, and mechanical implements used in agriculture. Through the various research institutes, the public sector has augmented agricultural productivity by introducing new high-yielding variety of seeds, preventing crop diseases, and innovating new agricultural practices.

2.2.4 Balanced Regional Development

In the pre-independence period, a major problem was regional economic disparities. There were certain areas with heavy concentration of industrial activity. On the other hand, there were certain backward areas which went without industries. Industrial development was highly lopsided. States such as Maharashtra, West Bengal, Gujarat, and Tamil Nadu were industrially developed, while states like Orissa, Assam, Bihar, and Madhya Pradesh were highly backward. Besides, industries used to be gravitated towards the metropolitan areas, rather than the smaller towns. As stated earlier, this has led to imbalanced economic development; from social point of view, it is as bad as underdevelopment.

Through the extension of PSEs, the government desired to remove such regional imbalances. The State, consequently, participated in the industrial growth of the less developed areas by setting up public enterprises in those areas. While locating new public enterprises, the claims of the relatively backward areas have been given due consideration. The policy of dispersal of industries aims at removing regional disparities. A conscious attempt has been made in the successive five-year plans to accelerate the development of relatively backward areas.

2.2.5 Increasing Employment Opportunities

The growth of the public sector has led to the expression of gainful employment opportunities. In addition to the primary effect in creating employment opportunities, public sector investments also have a multiplier effect on other sectors of the economy. This has a beneficial effect on the total employment position. In 1960–1961, the number of people employed in public enterprises was only 1.82 lakh.² This figure rose to 7.01 lakh in 1971–1972 (excluding casual workers) involving an increase of 385 %. In 2011–2012, the number of working population in these industries stands at 13.98 lakh (Public Enterprises Survey 2004–2005 and 2011–2012).

² 1 Lakh = 100,000.

2.2.6 Model Employer

Researchers have observed that in India “the State has inaugurated the era of the model employer in contrast to the employer with a feudal outlook. It has laid down guidelines for employer-employee relations and for developing good and efficient personnel.” The public sector has been the pacesetter in the field of labor welfare and social security.

The government aims at establishing an industrial democracy in order to provide a fair deal to the workers. The public enterprises have been investing liberally on matters pertaining to labor welfare and social security. Not only the wages have been substantially increased, the conditions of service have also been improved. For instance, wages in the coal industry have nearly trebled since nationalization.

2.2.7 Preventing Concentration of Economic Power

Preventing private monopolies and concentration of economic power is the avowed objective of economic policy (in India). Nationalization is considered as an antidote for the concentration of economic power in private hands. Today, the public sector not only occupies the commanding heights in the economy; it has also penetrated into the production of essential consumer goods. The share of the public sector in the overall industrial production has substantially gone up. This has effectively curbed the concentration of economic power. It has created a countervailing force against the growth of larger industrial houses.

2.2.8 Export Promotion and Import Substitution

The public sector enterprises are substantially contributing to the country’s export earnings. The public sector has built up a reputation abroad in selling plants, heavy equipments, machine tools, and other industrial products. They have created goodwill in the third world countries for their consultancy services and technical know-how. Now public sector exports also include consumer goods and export of merchandise.

They have also succeeded in their efforts in import substitution. Today, many commodities – starting from basic drugs to highly advanced equipments – are manufactured in public sector, which previously used to be imported from abroad. In certain fields, public enterprises were specially started to achieve self-sufficiency and to reduce imports from abroad. This has resulted in saving of precious foreign exchange. At present, there is a special drive in the public enterprises to utilize indigenous materials and domestic skill.

Table 2.1 Taxes and duties paid by Central PSEs to the Government, 2007–2008 to 2011–2012

Sl. No.	Particulars	(Amount in Rs crore)				
		2011–2012	2010–2011	2009–2010	2008–2009	2007–2008
I	Excise duty	61,165.14	57,755.25	52,641.5	63,261.89	68,932.2
II	Custom duty	11,518.43	19,958.12	6,903.19	8,704.53	13,385.59
III	Corporate tax	44,358.47	40,324.23	38,155.49	35,338.55	40,670.64
IV	Dividend tax	6,093.33	7,477.39	9,524.65	4,211.67	4,434.41
V	Sales tax	2,234.09	2,294.71	2,664.62	2,546.79	2,640.84
VI	Other duties and taxes	3,394.57	3,980.27	9,642.41	17,533.62	15,757.59
Total		128,764	131,790	11,9531.9	13,1597.1	14,5821.3

Source: Public Enterprises Survey 2011–2012 and 2008–2009 on pages 15 and 12 respectively

2.2.9 Research and Development

Today no country can industrially prosper without research and development. Such research is essential not only for the introduction of new goods and new technologies of production but also for lowering the cost of production and improving the quality of the product. In this respect also, the public sector is playing a crucial role. A lot of research activities are being carried on in the laboratories of the public sector organizations.

2.2.10 Mobilisation of Resources

The public sector enterprises have played an important role in financing the planned development of the country. They have significantly contributed to the Central Exchequer in the form of interest and various taxes (Table 2.1). Besides this, an increasing trend in the generation of internal resources has been witnessed in these enterprises. As per some estimates in the total capital formation of the country, more than 50 % is contributed by the public sector.

2.3 Changes Since the 1990s

With the economy embarking on the process of liberalization, privatization, and globalization since the early 1990s, the role of the Indian public sector has subsequently undergone a rapid change. The integration of the domestic economy with global markets has thrown up a plethora of opportunities and challenges. Some of the public sector enterprises with strategic vision are actively exploring new avenues and have increased their activities to go in for mergers, acquisitions, amalgamations, and takeovers and for creating new joint ventures.

Table 2.2 Summary of grading the performance of MoU signing CPSEs, 2005–2006 to 2011–2012

Rating	2005–2006	2006–2007	2007–2008	2008–2009	2009–2010	2010–2011	2011–2012
Excellent	49	46	55	47	74	67	76
Very good	32	37	34	34	30	44	39
Good	15	13	15	25	20	24	33
Fair	6	6	8	17	20	24	25
Poor			0	1	1	2	0
Total	102	102	112	124	145	161	175

Source: Public Enterprises Survey 2011–2012 (page 19) and 2008–2009 (page 17)

Of late, disinvestment (evolved in 1991–1992) of select central PSEs has also gathered attention to meet the government’s massive social spending and bridge the economy’s growing fiscal deficit. Today, both the public and private sectors have become an integral part of the economy, with both the sectors complimenting each other in strengthening the nation’s industrial landscape. However, the recent economic meltdown has initiated a debate about the way business and operations are being handled by the PSEs, especially against the backdrop where globally several corporates either have gone bankrupt or have marginally survived owing to state-sponsored bailouts. In this context, it is worth noting that the Indian PSEs have emerged relatively unscathed to register reasonable growth rates.

In addition to significant contribution towards the growth of the Indian economy, most of the PSEs have been able to ensure viable operations on a self-sustainable basis which is evident from the decline in budgetary support in terms of loans and equity from the government over the years.

The Government of India has accepted the recommendations of Arjun Sengupta Committee (introduced Memorandum of Understanding (MoU)/self-obligations) to quantify ambiguous and unaccountable socio-economic objectives of PSEs; MoU is a negotiable instrument between government (as owner) and specific PSEs, meant to bring proper coordination between accountability and autonomy; it takes into account the complexity of fusing social and financial objectives into measurable terms. MoU is used as a document that clearly specifies the intentions, obligations, and mutual responsibilities of both the parties; as a result, it enhances operational efficiency of an organization to face the competition and forthcoming challenges. It is aimed at converting management from control and procedures to results and objectives (details are described in Chap. 7). Performance of PSEs in this regard is presented in Table 2.2.

2.4 Key Sectors for PSE Operations

Based on the Public Enterprises (PE) Surveys, more than 80 % PSEs operate in five sectors/cognate groups, namely, (1) agriculture, (2) mining, (3) manufacturing, (4) electricity, and (5) services (Public Enterprises Survey 2011–2012).

The analysis of the market share of the PSEs further shows that, within these sectors, the key industries where PSEs have significant/dominant share include (1) coal and crude oil in the mining sector; (2) steel, petroleum (refinery and marketing), fertilizers, and heavy engineering in the manufacturing/processing sector; (3) power generation in the electricity sector; and (4) telecommunications, transport, and contract and construction in the service sector. The following brief discussion on each of these key sectors is self-explanatory:

2.4.1 Coal

With a view to enable investment of public funds to enhance growth in the coal industry and to optimize available coal resources and improve mining standards and working conditions, the industry was nationalized in the early 1970s. Consequently, the coal industry has been dominated by the PSEs under the Central and State Government. Nine public enterprises belong to the coal and lignite group, the prominent being Coal India Ltd., Central Coalfields Ltd., Eastern Coalfields Ltd., etc. (refer to Annexure 4A.1 for the list of these enterprises).

2.4.2 Oil and Natural Gas

Crude oil and natural gas is another industry within the mining sector characterized by significant presence of PSEs. However, with the introduction of New Exploration Licensing Policy in 1999, the industry has witnessed significant change with private players gradually gaining foothold in the industry. There are 13 PSEs in this domain (refer to Annexure 4A.1 for the list of these enterprises).

2.4.3 Power Generation

With the National Electricity Policy aiming at the accelerated development of power sector in India, power generation has witnessed significant growth with total generation being 723.8 BU in financial year 2009, registering a compound annual growth rate of 5.5 % during financial years 2005–2009. While there has been an increased emphasis laid on diversifying the energy sources like biomass, solar, wind, etc., in recent years, thermal power generation continues to dominate with over 80 % contribution to the power generation in India; the list includes National Hydroelectric Power Corp. Ltd., National Thermal Power Corp. Ltd., North Eastern Electric Power Corp. Ltd., and Nuclear Power Corp. of India Ltd.

2.4.4 Telecommunications

Telecommunication services in India, encompassing both wire line and wireless connectivity, have witnessed unparalleled growth by global standards in the last decade with the country emerging as the second largest market in the world in wireless connectivity. According to Telecom Regulatory Authority of India, the total subscriber base currently (2011–2012) is over 650 million with wireless connectivity accounting for around 94 % of the total subscriber base. While wireless connectivity is primarily dominated by the private players, the PSEs have a strong foothold in wireless connectivity; they are Bharat Sanchar Nigam Ltd., Mahanagar Telephone Nigam Ltd., Millennium Telecom Ltd., and RailTel Corporation of India Ltd.

2.5 Representative Operational Excellence Initiatives Adopted by PSEs

As highlighted earlier, the PSEs continue to have a dominant/significant share in several sectors/industries on account of their continued efforts towards achieving competitiveness and excellence to operate at par vis-à-vis their private sector counterpart. Some of the key operational best practices embraced by PSEs in their quest towards maintaining market share as well as being corporate citizens may be categorized as follows (seminar by Indian Chamber of Commerce 2010):

1. Corporate governance,
2. Organizational development/Human resource management,
3. Streamlining business processes and practices,
4. Environment excellence,
5. Corporate social responsibility, and
6. Empowerment with due accountability.

2.5.1 Corporate Governance

Most established codes of corporate governance for PSEs, including the OECD Guidelines on corporate governance to envisage a proactive role of the PSEs, include the following: (a) ensuring equitable treatment of shareholders; (b) recognizing, respecting, and reporting on relations with all key stakeholders; (c) maintaining high standards of transparency and disclosure; and (d) having requisite systems and practices for its board of directors to discharge effectively its role of guiding and monitoring the PSEs.

Most PSEs in India would compare favorably when it comes to adoption of the above measures, as they have:

- (a) An active policy for communication with all shareholders for ensuring dissemination of information on key business decisions,
- (b) Internal code of business conduct and ethics for ensuring ethical and transparent process in managing the affairs of the enterprise, and
- (c) Obligation to ensure the representation of minority shareholders on the board of directors for assuring them that their interests are taken into consideration.

2.5.2 Organization Development/Human Resources Management

There is an increasing realization that deployment of quality human resources is critical for sustainable performance of the PSEs. Accordingly, in pursuance of attracting and retaining quality talent, most of the PSEs have taken requisite initiatives like having a succession planning policy aimed at identifying employees with leadership potential and accordingly grooming them to fit into the envisaged leadership roles.

2.5.3 Streamlining Business Processes and Practices

In order to ensure competitiveness vis-à-vis private sector players in terms of productivity, technological capability, and cost-effective operations, most of the PSEs have taken initiatives towards streamlining the business processes and practices with focus on the following:

- (a) Investing in state-of-the-art technology with the objectives of (1) improving product quality, (2) enhancing productivity through streamlining manufacturing processes, and (3) achieving cost reduction.
- (b) Adopting integrated IT system, including ERP packages to support reengineered business processes and enhance efficiency in decision making, through real-time information availability besides capturing transaction-level data for MIS purposes.
- (c) Increased level of outsourcing, particularly non-core activities/support functions, with a view to increase focus and enhance productivity in core operations together with reduction in overhead costs of the enterprises.
- (d) Increased focus on entering public-private partnership (PPP) primarily with the objective of attracting funds in sectors like infrastructure, requiring significant investments, along with requisite expertise of the private player.

2.5.4 *Environment Excellence*

The concept of environment and ecological balance has assumed a new dimension in the wake of increasing levels of deforestation, waste generation and environmental pollution. Most of the key PSEs have taken a lead role towards achieving environment excellence with initiatives such as:

- (a) Having a dedicated environment department/cell focusing on environment-related initiatives.
- (b) Preventing the use of or generation of toxic/hazardous materials which may have an adverse impact on the health of the workforce, customers, and overall community.
- (c) Conserving the use of scarce and non-renewable resources such as usage of recycled water.
- (d) Ensuring adequate treatment of hazardous liquid waste/solid through effluent treatment plant.
- (e) Preventing wasteful use and promoting conservation of resources, especially scarce and non-renewable resources.

2.5.5 *Corporate Social Responsibility (CSR)*

The PSEs in India were set up with the objective of achieving inclusive growth aimed at ensuring equity and justice to the overall community/society. Consequently, PSEs have been pioneers in implementing corporate social responsibility (CSR) initiatives towards community growth and development while achieving their commercial mandate. Over the years, most of the PSEs have consciously and extensively promoted corporate social activities including:

1. Providing employment to the weaker and underprivileged sections of the society on a more equitable basis.
2. Providing all inclusive social facilities to the employees and their families, especially in the areas of education, healthcare, and entertainment.
3. Providing assistance to social and cultural activities beneficial to employees and associated sections of the community.
4. Participating in or contributing to the causes and activities dealing with natural disaster initiatives by PSEs.

2.5.6 *Empowering PSEs with Due Accountability*

In the era of economic liberalization and globalization, PSEs have continued to contribute significantly in building Indian economy and have demonstrated competitiveness virtually in all major aspects, viz., productivity, technological capability,

product quality, etc., vis-à-vis their counterparts, i.e., private sector players in the respective industries/sectors. Post-liberalization in 1991, the PSEs have continuously focused their efforts in keeping pace with the competitive environment to ensure economically viable operations and long-term sustainability. In the process, several PSEs have become self-reliant and have transformed into world-class organizations. The stellar performance of prominent PSEs is borne out by the fact that “out of the seven Indian companies selected in the Fortune Global 500 list for 2009, five were PSEs.”

Needless to say, such a transformation would never have been achieved by these PSEs without the support of relevant interventions by the Government. In pursuance of competing with the external environment, the Government realized the need for empowering these enterprises with a view to delegate higher financial and operational powers to provide a level playing field with the private sector players (who had the competitive advantage of taking business decisions on their own).

Accordingly, the Department of Public Enterprises, Government of India, which has been the coordinating entity has adopted a categorization framework for grouping these enterprises into (1) Navratna, (2) Miniratna I, and (3) Miniratna II, in order to facilitate the delegation of powers in line with their categorization. Taking a step forward in this direction, the Department of Public Enterprises has recently introduced a new category of Maharatna’s classification for empowering select PSEs listed on stock exchanges to facilitate the expansion of their operations and to enable them to emerge as global giants. While the government has empowered the PSEs with the objective of providing a level playing field with the private sector entities, it has also instituted a mechanism in terms of adherence to corporate governance guidelines to ensure due accountability by these enterprises for discharging their functions.

2.6 Contribution to Indian Economy

PSEs undoubtedly, since inception, have extended their eminent contribution in bringing up the industrial base for the holistic development of Indian economy. For ensuring that the Indian economy continues to scale new heights and emerges as an economic superpower, it is imperative for the PSEs to continue to demonstrate global competitiveness and achieve market leadership. As highlighted earlier, the empowerment of these enterprises by the Government has been a key enabler which has helped them in overcoming some of the operational constraints, critical for successful functioning of these organizations. PSEs, in turn, have also given their contribution to the government under the various heads (as per Public Enterprises Surveys 2011–2012 and 2007–2008) besides complying with social responsibilities assigned to them; the select list includes the following:

1. PSEs share in India’s gross domestic product (GDP),
2. Contribution to the Central Exchequer,
3. Contribution to foreign exchange earnings,

4. Contribution towards employment generation in the organized sector, and
5. Growth in market capital.

While the principles underlying some of the above interventions are already reflected in the existing guidelines for managing PSEs in India, there is an urgent need for implementing them in a time-bound manner so that Indian PSEs can be key beneficiaries from emerging economic opportunities both in India and globally.

2.7 Summary

The public sector enterprises in the Indian economy are to play an important role that needs no emphasis. They account for over 22 % of the country's GDP, around 6 % of the total employment in the organized sector, and over 20 % of direct and indirect tax collections (2011–2012). A number of PSEs also serve critical functions of furthering the socio-economic objectives of the government and ensuring stability in prices of key products and commodities.

The public sector in India has always played a dominant role in shaping the path of the country's economic development. Visionary leaders of independent India drew up a road map for the development of public sector as an instrument for self-reliant economic growth. The public sector has provided the much-required thrust and has been instrumental in setting up a strong and diversified industrial base in the country. Keeping pace with the global changes over a period of time, the PSEs in India also have adopted the policies like disinvestment, self-obligation/MoU, restructuring, etc.

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Chapter 3

Literature Review on Aspects of PSEs

Abstract The objective of this chapter is to present the major research works and their findings on aspects such as the performance of public sector enterprises (PSEs), disinvestment in PSEs, Memorandum of Understanding (MoU), and measures of financial performance (including ratio analysis). The literature survey shows that there are potentials for further inquiry which focuses on the policies and reforms of public sector enterprises primarily in terms of disinvestment and Memorandum of Understanding (MoU).

Keywords Public sector enterprises (PSEs) • Disinvestment • MoU • Financial performance • Measures of performance and ratio analysis

3.1 Introduction

The objective of this chapter is to present the major research works and their findings on aspects such as performance of public sector enterprises (PSEs), disinvestment in PSEs, Memorandum of Understanding (MoU), and measures of financial performance (including ratio analysis).

3.2 Literature Review

For better exposition, literature review has been broadly classified into the following four major heads:

- (a) Transition and performance of public sector enterprises in India,
- (b) Disinvestment and privatization,
- (c) Memorandum of Understanding (MoU), and
- (d) Measures of financial performance.

Table 3.1 Studies related to performance of public sector enterprises, 1974–2012

S. no.	Year	Author(s)	Issue studied
1.	1974	Sharma	Public interest and development perspective of economies.
2.	1982	Ahmad	Political economic approach of government
3.	1986	Trevedi	Growth and performance of PSEs
4.	1988	Reddy	Need of reforms and price regulation
5.	1990	Narain	Compares economic and non-economic objectives of PSEs
6.	1994	Kumar	Role of PSEs and their financial profitability (FP)
7.	1997	Gouri	Hierarchical structure of the government in India
8.	2001	Ganesh	States the position of PSE's restructuring
9.	1998, 1999 and 2001	Ghuman	Contribution towards economic and social development
10.	2002	Sengupta	A case on Indian Telephone Industries (ITI) Ltd.
11.	2004	World Bank	Suggestion for Indian environment and industry
12.	2004	Naib	Principal-agent problem in public enterprises
13.	2005	Kaur and Singh	Problems of PSEs and the outcome of reforms
14.	2006	Patnaik	Recruitment issues and incentives in PSEs
15.	2006	Bala	Role of state in economic development of PSEs
16.	2005	Jain and Yadav	Financial performance of the central PSEs
17.	2006	Dept of PSEs	National Common Minimum Program (NCMP)
18.	2007	Mukul G. Asher	Reforms in Urban Cooperative Banks
19.	2008	Arnold et al.	Growth of India's manufacturing sector PSEs
20.	2009	Dilip K. Das	Performance of Indian economy
21.	2010	Chris	Public sector compensation
22.	2010	BMI Report	State of Indian petrochemicals industry
23.	2010	Frank Ohemeng	Failures in public management and suggestion to deal with them
24.	2011	BMI Report	Indian telecom industry
25.	2011	Chubrik et al.	Problems of transition
26.	2011	Meine Pieter	Structural weaknesses observed in Chinese economy during global financial crisis
27.	2011	Muhammad et al.	Performance of select public organizations in Rawalpindi and Islamabad
28.	2011	Mustaruddin	Corporate social responsibility and corporate financial performance
29.	2012	Michaela	Aspects of economic globalization
30.	2012	Ahmet and Asli	High-performance companies in matured economies
31.	2012	Anshu	Problems of Indian economy

3.2.1 Transition and Performance of Public Sector Enterprises in India

This part primarily deals with select studies (a) related to financial performance of PSEs and (b) other important aspects such as their contribution to the development of economy, problems faced, and suggestive measures and recommendations to improve their performance. Table 3.1 lists (in a chronological order) the studies reviewed under this sub-head.

Sharma (1974) has focused on the issues of public interest and profit. He suggests the best public interest which public enterprises can serve is to fulfill all the desired financial and economic obligations as per the government's plans and perspectives.

In an economy where the government is committed to a socialist pattern of society for reasons of social and economic policy, it will be incumbent on the government not only to interfere but have a decisive hand also in all important matters such as price fixation and plowing back of profits.

Ahmad (1982) uses a political economy approach to show that size and nature of the public sector in a country depends upon the class interest of the dominant political groups. Jones and Mason (1982) assume that governments are pragmatic and rational. They claim that the size of the public sector increases until the marginal benefit from doing so just becomes equal to the marginal cost.

The real solution to the problem of poor performance of PSEs requires action on two broad fronts. First, the government is to decide on the criteria to monitor public enterprises. Second, it is to devise a control mechanism, with appropriate incentives and disincentives to motivate its agents (public enterprise) to pursue these criteria.

Trivedi (1986) sketches the profiles of the Indian public sector enterprises (PSEs) and traces their growth and performance over time. He has attempted to diagnose the reasons for the poor performance of the PSEs in India. One major reason identified is that public managers are intrinsically inefficient; the other reasons cited are controlled output prices, while input prices continue to increase, setting up non-commercial objectives, different output mix, overemployment, corruption, and lack of autonomy. He suggests that the government needs to design proper criteria to monitor performance and effective institutionalized arrangements to implement a performance evaluation system.

Reddy (1988) focuses on the need of reforms due to the fiscal crisis. Due to this, the government finds it necessary to lend some urgency to reform public enterprises with an implicit admission of relatively limited liability of the government to inject finances unlike in the past. He emphasizes the need to examine/quantify the loss, attributable to subserve social obligations.

Most of the profit and loss leaders (implying PSEs) operate in an atmosphere of price regulation, and a large part of the markets in which they operate (input or output) are in the exclusive domain of public sector enterprises themselves. This makes any analysis of profitability very unrealistic. Further, it is not clear which of the loss leaders have had "locational" problems and how much its effect on the costs are taken into account in price fixation by the government. Moreover, non-availability of inputs like power, fuel, etc., indicates mismatch between supply and demand within the PSEs. More importantly, pricing restrictions or general price policies appear as much relevant to profit leaders as to loss leaders. Price increases in most loss leaders would have led to higher input prices to other public enterprises.

Narain (1990) has evaluated the performance of the organization; it has been judged in the light of its objectives. Unfortunately, there is no clarity about the objectives of government companies in India. Many of the objectives are vague, difficult to quantify, and, to an extent, conflicting with each other. In fact, the economic and non-economic objectives have got so inextricably mixed up in the case of public enterprises that it is not easy to judge their overall performance. A public

enterprise may be located at an economically unviable place in backward region and may adopt a technology with high employment potential which may be economically unsuitable. In the face of these constraints, its performance in financial terms (analyzed with reference to their gross profits, operating profits and net profits) may not be up to the mark.

He further stresses that it is difficult to lay down a uniform pricing policy for public enterprises in view of their widely varying nature of business and competitive environment. Some of these are industrial, while others are commercial, promotional, or developmental in nature. Some of these are operating in the competitive market, and some have monopolistic market. Hence, no single pricing policy can be suitable in all these cases.

Kumar (1994) emphasizes the important role played by the public sector enterprises (PSEs) in the Indian economy. The public sector has indeed attained commanding heights in many crucial areas and has been the vanguard of the country's variegated development. It plays a key role in the infrastructure sector of the nation's economy. Public enterprises are instruments of public policy. Their operations should enhance social welfare. Since an increase in financial profitability is neither a necessary nor a sufficient condition for the enhancement of society's well-being, a more comprehensive system of assessing performance than the present/traditional one is obviously required. Policy-makers must devise a policy to improve the performance of public enterprises in order to serve public purpose as well.

Gouri (1997) describes a complex hierarchical structure of the government which constitutes the public sector in India. The PSE is a subsystem of the public sector system and consists of departmental enterprises and non-departmental enterprises. Although they form a part of the government financial systems, departmental enterprises have separate accounts of income and expenditure. However, their surpluses or deficits are merged in the accounts of the departments of government, e.g., Indian railways, telecommunication, and postal departments.

Non-departmental enterprises are legally separated from the government and are made to maintain a separate account of all their financial transactions and to set them out in the form of a profit and loss account. These enterprises are set up either under the Companies Act or under special statutory provisions.

Ganesh (2001) has conducted a study on PSEs and suggests that even though PSEs were set up half century ago as an extension of the socio-economic philosophy, they have fallen from the "commanding heights" of economy as they were expected to scale. He has advocated restructuring which deals with business operations, organizational management, technology up-gradation, and financial reengineering. Staff is up in arms due to measures such as reduction of staff strength and redeploying the surplus staff elsewhere. The voluntary retirement scheme (VRS) may also pose problems due to financial paucity. Therefore, good governance of PSEs, though a possible and appropriate solution, is difficult to achieve.

Ghuman (1998, 1999, 2001) acknowledges the critical contribution of public enterprises to India's economic and social development. He argues that positive note must be taken of their performance and achievements, as they continue to perform a vital role in the management of public affairs. An analysis of national enterprises

since the 1980s indicates that many have achieved commendable levels of performance and often outperformed enterprises in the private sector.

Public enterprises have played a pivotal role in the Indian economy. Their contribution to national income, capital formation, industrialization, and the provision of economic and social infrastructure has been impressive. Their financial performance has varied over time, but with a clear distinction between the pre-reform period and the period since the reforms began to be introduced in the early 1990s. Indicators such as percentage of net profit to capital employed, internal resource generation, and contribution to the exchequer show that their performance has improved during the reform period, even when the Indian economy was experiencing a downturn. The constant reduction in the government's budgetary support for them seems to have had a positive impact on their ability to generate resources.

They are themselves increasingly more conscious of the need to promote and achieve management excellence, as testified by the introduction of the Standing Conference of Public Enterprises (SCOPE) awards for excellence in public management. While recognizing the impressive achievements of public enterprises, it is essential not to deny such persistent and major shortcomings as over-capitalization, overstaffing, under-utilization of installed capacity, delays in the implementation of projects, and inadequate attention to R&D. These matters as well as the effects of various privatization initiatives taken to date clearly deserve to be studied and addressed by concerted government action. Yet, at the same time, the author opined that they must not be allowed to overshadow the very positive aspects of India's public enterprise experience.

Sengupta (2002) deals with a case of Indian Telephone Industries (ITI) Ltd., India's oldest public sector company, and describes the recommendations of the Arjun Sengupta Committee (appointed by the Government of India in 1984 and submitted its report in 1986). First, the committee recommended that the PSEs should operate in the core sector. Secondly, it suggested various measures for the improvement of performance of the PSEs such as technology up-gradation, organizational restructuring, dependence on public borrowings, and some degree of linkage of wages and productivity. Third, the loss-incurring, non-core enterprises should be studied in detail so that they could be made economically viable. Fourth, those enterprises which incurred losses over a period of time and where the value added per employee had been less than the average emoluments and where equity capital had been wiped out by mounting deficits should be closed down.

World Bank Report (2004) states that India has provided an interesting environment for study. Rapid liberalization in the service sector during the 1990s followed the economic and political success of the liberalization of the manufacturing sectors in the late 1980s and early 1990s. In the 1980s, the service sector in India was dominated by state enterprises; there were restrictions on the entry of private, domestic, and foreign service providers, and prices of services were largely fixed by the government.

Naib (2004) says poor monitoring is a common criticism of public ownership and finds principal-agent problem in public enterprises is more severe than private enterprises. The reason is that the full monitoring hierarchy includes voters, elected political representatives, civil servants, and the managers of state-owned enterprises

(SOEs); this leads to a number of principal-agent problems. The politicians and/or bureaucrats responsible for monitoring SOEs can themselves be viewed as agents of the wider public (the principals), and it is the welfare of the public that is the ultimate benchmark against which performance should be judged. The incentives for politicians to act in the best interests of the wider public will depend upon factors such as the nature of the relevant political system and the closeness of impending elections.

There are considerable informational asymmetries between politicians and voters. Informational asymmetries indicate that an efficiency improvement may sometimes lead to worsening of the electoral prospects. On the other hand, there would be electoral benefits in setting politically sensitive low prices even below marginal costs, since the direct positive impact on consumers is more visible than the indirect negative effects arising out of giving subsidy to SOEs.

Bureaucrats and politicians can introduce their own agenda (say, redistribution of resources to favored/interest groups) into the process. Bureaucratic agenda may, therefore, result in excessive monitoring and control over SOEs. This implies that the objectives of political decision makers can be expected to deviate significantly from social welfare objectives. Political attractiveness of SOE reforms depends on its political costs and benefits. In a typical case, the political costs must be borne up-front in the form of antagonizing labor unions, managers, suppliers, and other powerful beneficiaries of state ownership. In return, some political benefits may flow immediately.

The main cause of fiscal crisis has been attributed to the failure of the public sector to generate investible resources and unbridled non-plan government expenditure. This situation arose because of a variety of problems such as an inefficient, high-cost, and non-competitive industrial structure and serious infrastructure-related bottlenecks. The reforms initiated in 1991 were distinct precisely because they recognized the need for a system change, involving liberalization of government controls, a larger role for the private sector, and greater integration with the world economy.

From 1991, increasing levels of deregulation and globalization have ushered in an era of intense competition in the economy, the effects of which have been felt on certain PSEs. In some cases, even profitable PSEs have been adversely affected, while in some other cases, the losses of the loss-incurring PSEs have compounded. The main reasons for poor performance of PSEs are overstaffing, outdated technology, and lack of funds to invest.

Kaur and Singh (2005) identify the problems of PSEs. The major problems include lack of proper management of human resources, proper planning, organizational structure, and autonomy in decision making. This, in turn, causes low total production in relation to cost and investment, inefficient internal administration, poor financial planning, and ineffective rules and regulations regarding the higher-level decisions.

Huge amount of investments with little or no return on investment have created heavy burden of borrowings along with interest burden, which further mounts the fiscal deficit and the losses. This has led to the idea of reforms in the PSEs by initiating disinvestment.

Patnaik (2006) states that the recruitment in PSEs is carried out by individuals who (themselves) have poor incentives to maximize the performance of the firm. A variety of conflicts of interest induce bad decisions in recruitment. Interference by the

political system plays its own part in reducing the quality of recruitment; once a person is recruited, the PSEs fail to adequately incentivize the person; whether a person performs well or badly, there is little variation in the wage; the probability of being sacked from a PSE is negligible.

Bala (2006) endeavors to look into the evolution of the role of the state and its intervention in the economic development within the contours of socio-economic and political circumstances.

In many developing countries, state enterprises are assigned the responsibility of fulfilling specific social goals. The state intervenes through state-owned enterprises in the countries where investment needs for different projects are large and the expected returns (at least in the short run) are too low to motivate private capital to invest. Excessive political interference and lack of managerial interests (autonomy) hamper the performance of state enterprises. It has resulted in the reflection of various theories on assessing the performance of state enterprises which includes property rights theory, public choice theory, non-market failure, and competition theory.

Jain and Yadav (2005) have evaluated financial performance of the central PSEs. The central PSEs were sub-divided in two categories, namely, manufacturing and services. Their analysis of the relevant data relating to return on total assets (ROTA) of PSEs indicates that service enterprises have better profitability than manufacturing enterprises during the aggregate period (1991–2003). They have also examined in depth the financial management practices of PSEs in India.

The *Public Sector Enterprises Survey (2005–2006)*, in the National Common Minimum Program (NCMP), outlines the policy of the government with respect to the public sector, including disinvestment of government's equity in Central Public Sector Enterprises (CPSEs). The salient features of the NCMP are as follows:

1. The government is committed to a strong and effective public sector whose social objectives are met by its commercial functioning. For the purpose, there is a need for selectivity and a strategic focus. The government is committed to devolve full managerial and commercial autonomy to successful and profit-making PSEs/companies operating in a competitive environment.
2. In general, profit-making companies will not be privatized. The government will retain existing "Navratna" (performing very well) companies in the public sector; these companies raise resources from the capital market. While every effort will be made to modernize and restructure sick public sector companies and revive sick industry, chronically loss-incurring companies will either be sold off or closed, after all workers have got their legitimate dues and compensation. The government will induct private industry to turnaround companies that have potential for revival.
3. The government believes that privatization should increase competition, not decrease it. It will not support the emergence of any monopoly that only restricts competition. It also believes that there must be a direct link between privatization and social needs. Public sector companies and nationalized banks will be encouraged to enter in the capital market to raise resources and offer new investment avenues to retail investors.

Mukul G. Asher (2007) has identified certain areas of reforms in Urban Cooperative Banks (UCBs), i.e., current business model, governance and regulation practices, and capital adequacy. The study suggests for a paradigm shift by the UCBs and how better governance and regulatory structure can assist this shift. He also suggests that if the UCBs are to remain relevant and play a significant developmental role in India, they will require the same quality of governance and regulation as well as professionalism and modernization as practiced in the commercial banks. The governance and regulatory structures need to be brought in conformity with India's current and prospective economic structure.

Arnold et al. (2008) perceive that conventional explanations for the post-1991 growth of India's manufacturing sector are focused on trade liberalization and industrial de-licensing. They demonstrate the contribution of India's policy reforms in services. The link between these reforms and the productivity of manufacturing firms has been examined using panel data for about 4,000 Indian firms for the period 1993–2005.

They observed that banking, telecommunication, and transport reforms had laid significant positive effects on the productivity of manufacturing firms. Service sector reforms benefited both foreign and locally owned manufacturing firms, but the effects on foreign firms tended to be stronger.

Dilip K. Das (2009) enumerates the performance of the Indian economy in the context of its growth rate acceleration. He emphasizes that sluggish and tardy reform implementation is one of the serious bottlenecks. In 2008, myriads of domestic and global factors coalesced to drive GDP growth rate sharply down. He infers that the growth spurt of the Indian economy is unsustainable. Sustainability of high-growth momentum is regarded as a serious challenge. Unlike that in China, the implementation of economic reforms in India was tardy and slow. Bureaucratic incompetence, foot-dragging and powerful vested interests, political wrangling, and constants disagreements were among the principal causal factors.

Chris (2010) suggests that public sector compensation is becoming a high-profile policy issue. While private sector wages and benefits have stagnated during the recession, many governments continue to increase compensation for public sector workers. At the same time, there are growing concerns about huge underfunding in public sector retirement plans across the nation.

Business Monitor International (BMI) Report (2010) states that overcapacity and high inventories are major downside risks for Indian petrochemicals producers. Despite increased global supply, the domestic market will find difficult to prevent price volatility. Although India's economic recovery could be rocky in the short term, the mean real GDP growth over the next 10 years is forecasted at 7.6 % compared with 7.2 % in the previous 10 years. This should sustain demand for petrochemicals and ensure that India remains a net importer over the long term. The main downside for the Indian petrochemicals industry is the massive increase in global capacities, which will push down prices at a time of rising feedstock costs, thereby putting pressure on petrochemicals margins.

Further, the report states that the product mix is favorable to the development of an export-oriented petrochemicals industry in the context of global market patterns. Another factor in favor of Indian producers, as opposed to foreign imports, is the immediacy of supply.

Frank Ohemeng (2010) develops a theoretical framework to explain the failure in public management of wholesale policy transfer from well-developed to developing economies. He suggests that the context in which public sector reform policies are implemented matters. In short, the environment (with structural and contextual variables) is an essential element in the success of policies. He explains “how” and the “why” of the success or failure of such models has become a daunting task for many because of the lack of a general theoretical framework that can be used to compare and explain why such models work in their original location but not in other environments. The analysis indicates that the socio-economic and political environment, including a country’s history, past development, system of governance and relationship with the outside world (particularly, International Financial Institutions), the bureaucracy, and the culture should all be of serious concern in determining the policies for reforms.

Business Monitor International (BMI) Report (2011) has observed that the growth and development is having a positive effect on India’s telecom industry, though the sector continues to be mired in corruption and regulatory mismanagement scandals. The Indian government revived a proposal in February 2011 to merge the two operators in order to boost their competitiveness in India’s increasingly harsh business environment. Prospects for India’s state-owned Bhartiya Sanchar Nigam Ltd. (BSNL) and Mahanagar Telephone Nigam Ltd. (MTNL) continue to look bleak after the two telecom companies reported net losses due to the launch of mobile number portability in January 2011. The country’s telecom industry remains attractive in the long term due to its growth potential. However, the short-term outlook is uncertain as the industry continues to be hampered by the ongoing political wrangles and regulatory uncertainties.

Chubrik et al. (2011) analyzed the process of post-communist transition, both in economic and political spheres. The lack of democracy and freedom makes it difficult to fight corruption and improve the quality of state institutions. The decade of the 2000s was marked as the era of rapid economic growth, falling poverty rates (but not necessarily inequality), lower inflation, and a relatively favorable fiscal situation. However, in 2006–2008, many countries started to experience signs of overheating, with current account deficits widening rapidly and inflation pressures growing. The crisis adversely affected and worsened their fiscal situation.

van Meine Pieter (2011) highlights the structural weaknesses in the Chinese economy during the global financial crisis of 2008–2009. These include the functioning of its capital and labor markets and the substantial income differences between the developed eastern and less developed western provinces.

Muhammad et al. (2011) examine the performance of the select public sector organizations working in Rawalpindi and Islamabad. They suggest that the combination of the latest technology and qualified manpower as well as improved infrastructure has increased the competition among different organizations, necessitating the performance appraisal. They assess the performance of the public sector organizations using non-financial measures based on an eight-item scale. The results indicate that productivity obtains the highest rank compared to other indicators; profitability has been ranked second; quality of products, market share, personnel activities

coordination, and internal process coordination stood third, fourth, fifth, and sixth, respectively, in ranking. Finally, personnel voluntary rotation is ranked second last aspect followed by personnel absenteeism as the least preferred item to indicate the performance of public sector organizations.

Mustaruddin (2011) examines the relationship between corporate social responsibility (CSR) and corporate financial performance (CFP) of Malaysian public listed companies (PLCs) in an emerging market setting. They are 200 in number, using panel data analysis during 7-year period (1999–2005). Results indicate that they are positively and significantly related. Two of the CSR dimensions, namely, employee relations and community involvement, were observed to be positively related to financial performance. This proves that CSR practices can be considered as an effort to enhance the financial performance of PLCs in Malaysia. The findings suggest that Malaysian PLCs should be involved consistently in their CSR practices as CSR has a significant impact on improving financial performance in Malaysian PLCs. Thus, the Malaysian PLCs which are actively involved in CSR activities are also able to create customer loyalty in the long term.

Michaela (2012) focuses on the impact of three specific aspects of economic globalization: trade, foreign direct investment, and technological progress on the US labor market. He analyzes that the inward as well as outward foreign direct investment contributes to employment in the USA and provides an additional boost to the US labor market.

Ahmet and Aslı (2012) have examined the characteristics of high-performance companies (HPCs) in mature economies and in an Asian emerging economy (India). This study of HPCs in the developing economy investigates Turkish companies that are listed in the Istanbul Stock Exchange (ISE) and companies that display specific characteristics of HPCs, namely, superior cash flow returns, growth rates and total shareholder returns. They test the hypothesis that there will be no significant difference between the financial performance drivers and measures from before the financial crisis era (2005–2007) and those of after the financial crisis (2008–2009). When comparing HPCs with ISE ordinary companies, both in the pre-financial crisis period (2005–2007) and the post-financial crisis period 2008–2009, Turkish HPCs were shown to maintain superior asset management and performance profitability, lower financial risk, and stronger cash flow returns compared to the benchmark group over economic periods of rapid growth and stable market conditions as well as the periods of economic decline and uncertainty. The results provide direction for the management of companies that aspire to HPC status and to maintain HPC status, especially during periods of financial crisis.

Anshu (2012) has discussed that the Indian economy has been adversely affected, to a marked extent, by factors such as high fiscal deficit, poor infrastructure facilities, sticky legal system, and cutting of exposures to emerging markets by banks. Genuine borrowers face the difficulties in raising funds from banks; either the bank is reluctant in providing the requisite funds to the genuine borrowers or if the funds are provided, they come at a very high cost to compensate the lender's losses caused due to high level of non-performing assets (NPAs).

3.2.2 *Disinvestment and Privatization*

To gain better insight, literature relating to privatization or disinvestment has further been sub-divided into two parts. While part one deals with the global experience and studies related to privatization, literature related to Indian perspective has been classified in part two; Tables 3.2 and 3.3, respectively, present the brief review of the empirical studies carried out on these aspects.

Table 3.2 Studies related to disinvestment in PSEs at global level, 1952–2012

S. no.	Year(s)	Author(s)	Issue studied
1.	1952	Little	Incentives and productive efficiency after disinvestment
2.	1986	Kay and Thompson	Privatization in the UK, their objectives, and problems
3.	1986	Brittan Samuel	Aims of denationalization
4.	1988, 1991	Bishop and Kay	Compared performance of privatized UK companies with public sector enterprises
5.	1989	De Fraja and Delbono	Shareholding position, problems, and benefits
6.	1989	Boardman and Vining	Relationship between ownership and performance
7.	1991	Lorch	Financial performance of textile mills in Bangladesh
8.	1992	Takano	Nippon Telegraph and Telephone (NTT)'s privatization
9.	1994	Galal et al.	Cases of privatization in four countries with non- privatized enterprises
10.	1993	Dewatripont and Roland	Conditions, dynamics, and feasibility for rapid and gradual privatization
11.	1994	Megginson et al.	Financial and operating performance after privatization
12.	1995	Martin and Parker	Examine the impact of privatization on 11 British firms
13.	1997	Newberry and Poliitt	Social cost-benefit analysis on Central Electricity Generating Board (CEGB)
14.	1996	Zsuzsanna et al.	Dynamics and evolution of privatization
15.	1997	Ramamurti	Restructuring and privatization
16.	1998	Sueyoshi	NTT's performance before/after privatization
17.	1998	LaPorta and Lopez	Competitive and noncompetitive markets
18.	1998	Matsumura	Performance of private firm and privatized firm
19.	1998	Boubakri and Cosset	Performance in full or partial privatization
20.	1998, 1999	D'Souza and Megginson	Privatization of telecommunication firms
21.	1998	Koen	Size of the PSEs after privatization
22.	1999	Frydman et al.	Compare privatized with non-privatized firms
23.	1999	Bradbury	Financial performance of Government Computing Services (GCS)
24.	2000	Gupta et al.	Fiscal constraints and partial privatization

(continued)

Table 3.2 (continued)

S. no.	Year(s)	Author(s)	Issue studied
25.	2001	Asian Development Bank	Effectiveness of privatization
26.	2002	Maw	Policies and objectives of partial privatization
27.	2003	Bennett and Maw	Ownership effects on investment and production
28.	2003	Abelson	Cases of Australian jurisdictions, industry and disinvestment methods
29.	2005	Gonzalez P. and De Cos	Problems of government-owned organizations
30.	2006	Hamid and Chao	Privatization effects on environment
31.	2008	Carino	Challenges of privatization
32.	2009	Jonas Nnanna Okafor	Privatization in Nigerian Telecommunications
33.	2010	Akintayo, D. I.	Privatization during recession in Nigerian industry
34.	2010	Lisa	Short-term effects of government bailouts
35.	2011	Mushtaq and Zahir	Model for privatization in developing countries
36.	2012	Goher and Wali	Privatization policies and impact of privatization

Table 3.3 Studies related to disinvestment in public sector enterprises in India, 1988–2011

S. no.	Year(s)	Author(s)	Issue studied
1.	1988	Mishra and Nandagopal	Feasibility of privatization
2.	1989	Sankar and Reddy	Purpose and factors of disinvestment
3.	1992	Kumar	Categories and performance of PSEs
4.	1994	Basu	Reforms, restructuring and commercialization
5.	1994	Sankar and Mishra	Objectives of disinvestment program
6.	1997	Gouri	Ownership transfer and its effects
7.	1999	Das	Performance at post-reform period
8.	2001	Naik	Plans and actual achievements in disinvestment
9.	2001	Ganesh	Pros and cons of privatization
10.	2002	Ray and Maharana	Progress in the process of disinvestment
11.	2004	Naib	Objectives and performance of privatization
12.	2004	Gupta and Kaur	Objectives and experiences related to disinvestment
13.	2004	Kaur	New economic policies
14.	2005	Kaur and Singh	Utility and process of disinvestment
15.	2005	Nagaraj	Affects of disinvestment
16.	2005	Sangeeta	Reforms, policies and categories
17.	2005	Gupta	Impact of privatization
18.	2006	Patnaik	Rationale and process of disinvestment
19.	2005	Gupta	Importance and difficulties in privatization
20.	2007	Vadlamannati	Determinants and impact of disinvestment
21.	2007	Disinvestment Manual	Recommendations for privatization
22.	2008	Arnold et al.	Conventional measures used for disinvestment
23.	2008	Shivendu	Institutional qualities and determinants of privatization
24.	2008	Cuong and Tyrone	Reforms in public financial management
25.	2009	Sabnavis	Ideology of disinvestment
26.	2011	Kumar	Factors associated with privatization

Part I, Global Perspective

This part describes the literature related to the disinvestment at global level; the brief of the subject/issue reviewed is presented in Table 3.2.

Little (1952) was concerned with PSEs' neglect of appropriate incentives to productive efficiency. He emphasized on the burgeoning literature on business management, which would stress increasingly that efficient organization required those managers who would have specific objectives and their performance was monitored in relation to them.

Kay and Thompson (1986) examine the privatization in the UK. One purpose is to improve the economic performance of the industries concerned. Another is to resolve the persistent problems of management and control, i.e., the relations between government and nationalized industries. The treasury is greatly interested in the revenue which can be obtained from privatization. A final objective is the promotion of a kind of popular capitalism through wider share ownership.

They further observe that each one of these objectives of PSEs at different times has been sacrificed for others. The outcome is that no objective has been effectively attained. Dissatisfaction with the performance of nationalized industries led to repeat the attempts to prescribe more specific objectives. The authors are concerned with incentives of both productive and allocative efficiency. Productive efficiency requires whatever is done should be achieved at minimum cost; allocative efficiency implies what is done meets consumer needs at prices which reflects the costs of provision.

Brittan (1986) lists five possible aims in the denationalization of public sector industry: (i) improvement of economic performance of the industries concerned, (ii) resolving the difficulties of relations between government and nationalized industries, (iii) revenue raising, (iv) reduction of the power of the public sector unions, and (v) the promotion of a popular capitalism through wider share ownership.

Bishop and Kay (1989, 1991) compare performance of privatized UK companies with those that stayed in the public sector. They find no strong evidence to indicate that privatized firms perform better. They have measured profitability, in terms of return on capital employed (ROCE) and return on sales (ROS), and found both ROCE and ROS were generally higher among the privatized companies than among the public sector ones, but this had been true even before the companies had been privatized. Thus, it appears that the more profitable firms were sold early, leaving the less profitable ones in the public sector.

De Fraja and Delbono (1989) show that welfare may be higher when a public firm is profit maximizer rather than welfare maximizer. They also suggest that full privatization is not optimal.

Boardman and Vining (1989) classify 55 research results during 30 years' time span (1956–1987) into three categories (6, 16, and 33), based upon the relationship between ownership and performance. The first six empirical results, including Bruggink (1982), Neuberger (1977), Hirsch (1965), and Pier et al. (1974), support that public corporations are more efficient than private firms. The second 16 empirical studies, including Becker and Sloan (1985) and Caves and Christensen (1980),

indicate that no performance difference has been observed between the two types of ownership. The last 33 research works, including De Alessi (1974), McGuire and VanCott (1984), and Schlesinger and Dorwart (1984), empirically confirm the economic assertion.

Lorch (1991) compares the performance of 24 privatized textile mills in Bangladesh with 35 other mills that the government did not privatize by using unconventional measures of performance. He focuses on four functional areas: procurement, production, sales and support function. "Efficiency" was defined as "cost advantage." He concludes that the Bangladesh textile industry does not offer a very strong endorsement of privatization as far as its efficiency implications are concerned.

Takano (1992) studied the privatization of Nippon Telegraph and Telephone (NTT, converted from a public corporation to a joint-stock company in April 1985). Starting in late 1986, shares of the company were sold through the stock market in trenches, and government's shareholding had been reduced to about two-third of the shares. As a result, the "privatization" of NTT was partial in nature, and the control of the company did not change hands. Simultaneous with the privatization of NTT, government has introduced significant competition and deregulation in essentially all the markets in which NTT operates. He identifies two critical differences between the privatization and non-privatization scenarios: (1) non-operating income and (2) personnel expenses. The privatized NTT also lowered non-operating expenses in terms of a substantial reduction in interest costs.

In another study, Galal et al. (1994) analyzed the post-privatization performance of 12 companies in Chile, Malaysia, Mexico, and the UK to determine whether the transfer of ownership has increased efficiency. The authors documented net welfare gains in 11 of the 12 cases. They examined the performance of three privatized firms in each country and compare it to a hypothetical counterfactual of how the firm would have performed had it not been privatized. This approach has the important benefits of controlling, at least in principle, for environmental effects such as economic growth or government policy. The study has examined at the overall welfare impact of privatization rather than just the performance of the enterprise. The study provided a desegregation of the distribution of welfare impact among consumers, workers, owners, competitors and the government.

According to them, it is unfair to hold privatization accountable for all the problems of transition. China presents an interesting case where, to begin with, the country moved its loss-incurring state enterprises to market conditions more slowly than other transition countries and at the same time had explosive growth of new enterprises. But, of late, China's effort in fundamental restructuring of large number of state-owned enterprises (SOEs) has led to massive lay off of excess workers. This has resulted in huge loss of jobs which can lead to social turmoil.

In terms of financial performance, improvement in profitability, real sales, sales efficiency, and dividend payout has been recorded. Leverage ratios have shown decline. Although the studies have not examined the linkage between improvement in profitability and price increase, they have offered indirect evidence that performance gains were not the result of market power exploitation.

Dewatripont and Roland (1993) make a strong case for gradual privatization programs with the option to reverse reform at a low cost. Gradual privatization is a strategy that implements privatization in stages: possibly to be followed up by complete privatization later (if successful).

Roland (1994) and Katz and Owen (1995) are proponents of gradual privatization; they claim that it can make the transition process smoother and less painful and, at the same time, increase the chance for strong economic progress by taking advantage of the “learning by doing” effect. There are two reasons for a government to privatize partially. Some governments may view partial privatization as the final stage of privatization; these governments may never want to fully privatize. Other governments may eventually want to fully privatize the economy. They view partial privatization as the intermediate/experimental stage; they may proceed to fully privatize the economy subject to the success or failure of partial privatization.

The study provides a complete characterization of the dynamic patterns which arise in this case. The resulting models closely predict the paths of evolution in economies such as Cuba, the USA, the United Kingdom, India, and many others. In the second part of the chapter, they study some history-dependent patterns induced by habit formation, learning by doing, and revolution of rising expectations. The dynamics obtaining in these cases is more complex and resembles patterns observed in Russia and China and economies in Central and South America.

Meggison et al. (1994) compare the pre- and post-privatization financial and operating performance of the period of 3-years-after with that of the 3-years-before privatization of 61 companies from 18 countries (6 developing and 12 industrialized) and 32 different industries that experience full or partial privatization during the time span of 1961–1989. Under these companies, the government sold off its equity but no capital flowed to the firm itself. Therefore, any improvement in performance after divestment must be traced to changes in incentives, regulation, and ownership structure rather than to cash injections into the firm from a new capital issue. They document significant increase in profitability, output per employee, capital spending, and total employment after privatization.

Meggison et al. (1994), Boubakri and Cosset (1998), and D’Souza and Meggison (1999): these three studies collectively examine 211 companies from 42 countries and 50 different industries. Of these firms, 103 are from 26 developing countries and the remaining 108 from 16 industrialized nations. All the four studies yield consistent findings regarding increase in profitability, efficiency, output, leverage, and dividend payments after privatization.

Martin and Parker (1995) examined whether 11 British firms privatized from 1981 to 1988 had improved their profitability (measured as return on invested capital) and efficiency (annual growth in value added per employee-hour) after being divested. They found mixed results.

Newberry and Politt (1997) performed a social cost-benefit analysis of restructuring and privatization of the Central Electricity Generating Board (CEGB). The authors concluded that CEGB’s restructuring and privatization was in fact “worth it”; they further observed that these steps could have been implemented more efficiently and

with greater concern for the welfare of the public. The study finds strong evidence that privatization improves performance.

Zsuzsanna et al. (1996) examine the dynamics of privatization and provide an explanation for the different patterns of evolution of private ownership. In their model, they choose degree of privatization and associated corporate governance mechanisms. The management's objective and its alignment with that of the government are determined by the level of privatization. They are able to distinguish characteristics of privatization in stages (experimentation) from those of partial privatization.

There are a large number of cases where governments have implemented different patterns of privatization in stages. In some cases such as Russia and other countries in Eastern Europe, rapid privatization reforms have been initiated even as the economy was in disarray. In other cases such as China, although there is some move towards private ownership, the process is gradual. In other countries while the economy had been booming, steps towards privatization implemented were partially reversed later (Laban and Wolf 1993).

Some researchers and politicians have favored mass privatization plans with no definite sequencing. Frydman and Rapaczynski (1991), Frydman et al. (1993), Lipton et al. (1990), and Blanchard et al. (1991) have advocated this approach. Proponents of immediate full privatization argue that it is necessary to achieve very quickly a critical mass of private ownership in order to get firms to respond to market signals. Otherwise, there is a danger of inertia and continued soft-budget constraints. Moreover, full rapid privatization can be seen as a way of committing the state to avoid continuous intervention in enterprise activity. Avoiding state interference in firm decision making is crucial to privatization.

Frydman and Rapaczynski (1991), Boycko et al. (1996), and Boycko et al. (1992) state that avoiding state interference in firm decision making is crucial to privatization. In contrast, Roland (1994), Dewatripont and Roland (1992a, b, 1993) argue that political constraints necessitate a gradual approach to privatization. They argue that privatization which progresses too fast may cause politically undesirable restructuring prematurely, leading to partial re-nationalization and preventing gradual hardening of budget constraints while developing a private banking and financial sector.

Ramamurti (1997) examines the restructuring and privatization of Ferrocarriles Argentinos, the Argentine national freight and passenger railway system. He observes the incredible 370 % improvement in labor productivity and an equally striking 78.7 % decline in employment (from 92,000 to 18,682 workers). He stressed that performance improvement could not have been achieved without privatization.

Sueyoshi (1998) examines the economic assertion by comparing Nippon Telegraph and Telephone (NTT), a Japanese government company's performance before and after its privatization, and presents the management problems occurring within the partial privatization.

This empirical study has found that NTT's partial privatization has had an impact on its productivity enhancement, primarily due to a natural reduction in personnel. It has failed to achieve any significant improvement in cost management even

after its privatization. The performance and corporate behavior of a firm cannot be determined only by its ownership. The two performance measures are influenced by many other external factors, including the type of corporate environment (regulation or deregulation) and the type of client (government or private firms). A public firm facing serious competition may behave as a private firm. Meanwhile, as identified in this NTT's case study, a private firm under governmental regulation may still function like a public firm.

It is believed that the privatization of a public firm needs major structural changes, including replacement of leadership and education of managers, in order to successfully shift to a competitive private firm. Furthermore, the Japanese government needs to reduce its political control/influence, providing NTT with more corporate freedom. This policy suggestion is very important because the strong governmental regulation delays the future development of Japanese information infrastructure (Hayashi and Sueyoshi 1994) and invites unnecessary misunderstanding from other industrial nations (Sueyoshi and Baker 1994).

NTT's management and its labor union supported the direction of privatization because both believed that its operational inefficiency was directly caused by governmental interference in controlling the telecommunication industry; as reported by Maeda (1985) and Takano (1992), NTT's operation was always restricted by the Japanese government (Naib 2004).

LaPorta and Lopez-De-Silanes (1998) have covered 218 firms in 26 different sectors, privatized between 1983 and 1991. They found that profitability, measured by the ratio of operating income to sales, increased by 24 percentage points. The authors have segregated the gains into three components: increase in prices, reduction in workers, and productivity gains. They found that 57 % of the gains were on account of enhanced productivity.

Matsumura Toshihiro (1998) compares a private firm and a privatized firm jointly owned by the public and private sectors. The private firm maximizes profits, while the privatized firm takes both profits and social welfare into consideration. He considers as to how many shares the government should hold in the privatized firm and finds that neither full privatization (the government does not hold any shares) nor full nationalization (the government holds all of the shares) is optimal under moderate conditions.

Boubakri and Cosset (1998) examine the change in the financial and operating performance of 79 companies from 21 developing countries that have experienced full or partial privatization during the period from 1980 to 1992. The authors used accounting performance measures adjusted for market effects in addition to unadjusted accounting performance measures. Both unadjusted and market-adjusted results show significant increases in profitability, operating efficiency, capital investment spending, output, employment level and dividends. They also find decline in leverage following privatization.

D'Souza and Megginson (1998) examine performance changes in 17 national telecommunication companies that have gone for privatization between 1981 and 1994. They find persuasive evidence that profitability, output, operating efficiency, capital investment spending, the number of access lines, and average salary per

employee all increase significantly after privatization. Leverage declines significantly and employment declines insignificantly.

D'Souza and Megginson (1999) compare the pre- and post-privatization financial and operating performance of 85 companies from 28 countries (13 nonindustrialized and 15 industrialized) for the period of 1990 through 1996. It is based on the methodology used by Megginson et al. (1994) and Boubakri and Cosset (1998). They document significant increase in profitability, real sales, sales efficiency, and dividend payments and significant decreases in leverage ratios after privatization. However, employment decreases after privatization. The most intriguing result of this study was that firms in non-competitive industries showed significantly greater increase in profitability, real sales, sales efficiency, and dividends plus significantly greater reductions in leverage than competitive industry firms.

Koen (1998) stresses that privatization has reduced the size of the public sector; however, the public sector is still quite prominent across the economy. He has suggested that privatization alone is not the answer of good governance. Managerial skills, the existence of performance incentives, transparency, and a sound legal system are also required.

Frydman, Gray et al. (1999) evaluated the impact of privatization on firm performance, by using a standard panel data treatment evaluation procedure, with privatization viewed as the treatment variable. They compared the performance of the group subjected to the treatment (privatization) with that of the non-treatment group (state firms), while controlling for potential pre-privatization between the two groups. The sample consisted entirely of firms that were state owned at the beginning. There were 218 firms, 90 of them state owned and 128 privatized, drawn from three countries, the Czech Republic, Hungary, and Poland, and cover the period 1990–1993. The authors concluded that privatization did work as it increased revenue and employment.

Bradbury (1999) carries out a case study of the comparative financial performance of Government Computing Services (GCS) as it moves from a government department to privatization. The results show that the financial performance of GCS improves. The prime performance measures used in the study are return on equity (ROE), return on assets (ROA), and return on revenue (ROR). Growth in revenue is also measured. Similar measures are employed in major studies that utilize accounting ratios to examine economic performance (Rumelt 1974; Boardman and Vining 1989; Karpoff and Rice 1989).

Gupta et al. (2000) state that fiscal constraints seem to be the main motivating factor in choosing partial privatization and this is consistent with the empirical findings. It is also possible, however, to interpret revenue maximization as a political objective. The ability to generate revenue enables a government to soften the employment impact of the transition process; it raises the government's ability to pay state workers and so on. These factors are arguably very important in gaining support for the transition process.

Asian Development Bank, ADB (2001) describes that privatization is a process for change of ownership and control. It indicates that for privatization to be successful, it is essential to define the roles and powers of participants and ensure that legal, regulatory, and enforcement mechanisms precede divestment.

Maw (2002) analyzes the justifications that have been put forward for adopting partial privatization. These are related to the objectives of economic efficiency and the generation of government revenues as well as to political motivations. The issues covered are the stock-flow problem, risk sharing, restructuring, informational considerations, the role of market structure, bargaining, foreign investment, and the irreversibility of reform. Governments have chosen privatization policies to pursue a variety of objectives. Political objectives have undoubtedly been very important in the choice of policy. Choosing to sell to insiders or outsiders or choosing to distribute ownership to the population at large is a politically motivated decision.

Bennett and Maw (2003) examine how partial state ownership affects the firms' subsequent investment and output behavior. They determine how the state ownership share depends on product-market competitiveness and find the conditions under which it would be preferable to sell the firms to a single owner.

Abelson (2003) reports nine cases that cover a variety of Australian jurisdictions, industry and disinvestment methods. Out of the nine case studies, the author derives three main lessons. First, long-term financial returns have played very little part in the decision to privatize. In all cases, it appears that citizens of Australia have not been adequately compensated for the loss of previously collectively owned assets and governments are concerned mainly with short-term issues. Second, considerable transformation had taken place in many of the organizations in the preparation for the sale, including assistance for the government; he argued that this transformation and assistance were largely responsible for the success of the organizations post-sale. Third, there is a consistent pattern of winners and losers from the privatization. The winners were the financial institutions, the new shareholders and private consultants; the main losers were the workers in the pre-sale organizations and future taxpayers.

In a major review of privatization, Megginson and Netter (2001) conclude that the studies cited almost unanimously report increases in performance associated with privatization. This consistency is perhaps the most telling result; they report privatization appears to improve performance in many different ways and in many different countries.

Gonzalez-Paramo and De Cos (2005) observe that government-owned organizations do not thrive on account of the fact that the expertise, knowledge, experience, skills, and performance of public administrators are inadequate to ensure effectiveness, operational efficiency and accountability.

Hamid and Chao (2006) use a simple model to identify the conditions for assessing the privatization effect on environment. They have shown that privatization may have a negative effect on the environment.

Carino (2008) suggests that privatization initiatives are not without challenges because the citizens would like to know how the shift of functions, control, ownership, and leadership styles from public sector to the private sector would enhance operational efficiency, effectiveness, accountability and productivity. The myths surrounding privatization are often caused by several misconceptions, such as the false impression of removing all state-run welfare activities that create and maintain infrastructure and the ill-founded belief that it leads to exploitation of national resources by foreign establishments (Basu 1994).

Jonas Nnanna Okafor (2009) has explored the factors that hindered government-owned organizations in Nigeria from achieving operational efficiency, effectiveness, accountability and productivity. He examines whether privatization of Nigerian Telecommunications (NITEL) has helped or would help the country to overcome these problems. The study participants were 20 NITEL employees. The study used one-on-one, semi-structured, open-ended interviews; the study explored the relationship between privatization, leadership, efficiency, effectiveness, accountability and productivity. Findings from the study are lack of leadership, performance measures, implementation of best practice strategies, and performance management systems accounted for the failure of Nigerian government-owned organizations from achieving operational efficiency, effectiveness, accountability and productivity.

The privatization exercise in Nigeria has been received with mixed feelings because the proponents of privatization believe that privatization will bring competition and improve quality of goods and services, while the opponents fear that privatization will result in the increase in prices of goods and services. The study provides a baseline to measure the perceptions of the study participants on how privatization may have influenced leadership, efficiency, effectiveness, accountability and productivity. The privatization exercise in Nigeria, as in many other developing countries, is challenged or resisted because the proposed shift in functions, control, and ownership from public to private sector raises questions about the fundamental values, meaning, and purpose of government-owned organizations. Justification for privatization is not limited to the expected efficiency gains but also on leadership, accountability of public officials, operational effectiveness, and increase in productivity (Gollust and Jacobson 2006). The main purpose of reforming the structure and management of public organizations in Nigeria is to increase operational efficiency and productivity.

Akintayo, D. I. (2010) examines the effect of privatization of public enterprises in Nigeria on industrial relation practices in a mixed recessionary economy. He states that privatized public enterprises in a recessionary economy do not create enabling environment for harmonious labor management relations. Though privatization policy enhances efficiency and improved workers performance, retrenchment and job insecurity of workers are always the resultant effects of these enterprises. Therefore, privatization policy implementation should normally be designed to guarantee the job security of workers, while pragmatic efforts towards sustaining the level of efficiency and productivity attained by privatized public enterprises should always be given a priority.

Lisa (2010) states that government bailouts of the private sector have an impact on the attitudes of the overall market and economic output in the short term. Using event study methodology, he examines the short-term effects on the greater domestic economy of nine government bailouts of the private sector: Lockheed (1970), Penn Central Railroad (1971), Franklin National Bank (1974), Chrysler (1980), Continental Illinois National Bank and Trust Company (1984), Savings and Loan (multiple institutions 1989), Long-Term Capital Management (1998), the Airline Industry (2001), and the most recent bailouts enacted through the Troubled Asset Relief Program (2008 and 2009).

The results show that public bailout of a private firm or industry appears to have a small, but significant, positive impact on the S&P 500 in the very short term. Due to the ease and efficiency with which trading can be done, investor expectations of the financial markets are quickly factored into the pricing and indexing, thus enabling the S&P to serve as a leading indicator of economic recovery or recession. The speed with which it incorporates new information is even more pronounced when the bailout occurs in the financial industry. It signifies an increase in investor confidence in the government's ability to manage and mitigate a financial crisis.

Mushtaq and Zahir (2011) describe a planning and implementation model for privatizing the state-owned enterprises (SOEs) in developing countries. They emphasize that active support of key stakeholders is essential for privatization in developing countries to succeed. Targeted marketing strategies, together with financial considerations and public sector initiatives and oversight, can bolster successful implementation of privatization objectives and initiatives. The privatization of failed or poorly performing SOEs into viable private sector firms can improve market efficiencies, reduce government deficits, offer better service alternatives, meet public service expectations, and promote economic development. It also improves resource use and fosters collaboration between the public and private sectors and highlights the critical role of marketing in achieving success with private and public partnership initiatives.

The marketing model encapsulates the role of marketing in harnessing both the government and private sectors to convert failed or inadequately performing SOEs into responsible private organizations with minimal economic, social, and structural displacements. Support from various groups during and after the SOEs going to private and strategic marketing programs may improve perceptions, goals, and benefits from privatization. Such success can enhance market efficiencies, reduce government deficits, improve public service alternatives, and promote economic growth through improved resource use, allocation, and collaboration between the public and private sectors.

Goher and Wali (2012) state that privatization is one of the options with the government to enhance their production capabilities and improve the productivity of the state-owned entities, when they are observed to be under-performed. They have reviewed privatization policies of Pakistan. Privatization is commonly known as transfer of burden of production of goods or services to the private sector, by reducing the public/government control over the production; it facilitates either partially or fully, for efficient conduct of businesses. The study analyzed two major impacts of privatization of state-owned industries on economy of Pakistan in terms of foreign direct investment and employment opportunities. The results showed positive impact of foreign direct investment on employment opportunities. The results also explore negative impact of privatization on the economy by creating uncertainty in the employees working in the state-owned organizations, which have potentials to be privatized.

They are of the opinion that privatization has not as much benefited as it should be. In privatization process, neither labors leaders nor on social partners were involved by the government in any decision-making process with respect to

privatization policy. From the analysis, it appears that the government's revenue maximization objective has led to the transfer of adversely affected state firms to the highest bidder irrespective of the merit of the buyer; it has not only adversely affected the state of industry but also imposed a high cost in terms of job losses. Attention, therefore, needs to be focused on the manner in which privatization is proceeded with.

In many cases, private parties have obtained entire enterprise for just the value of land and inventories. Many of them had neither the capacity nor the intention to operate the plants.

The privatization of few units have created ethnic problems in the local communities, as a few buyers are from other areas, which have employed labor from their native town, while ignoring the local communities. The process of privatization has generated adverse effect on wages and benefits. The losses in job market and increasing unemployment had resulted in deterioration of workers bargaining position. Privatization has almost finished the unions.

Part II, Indian Perspective

Literature related to disinvestment in India has been described in this part; Table 3.3 provides a brief outline of such issues examined by various studies carried out in this regard.

Mishra and Nandagopal (1988) discuss the feasibility of the privatization of PSEs. They attempt to answer the question "Is there a need to privatize PSEs at all?" Their turnover test ranked the nationalized industries (based on the business performance), and they were of the view that privatization of the industries would add to consumer welfare.

Sankar and Reddy (1989) have prepared a divestment matrix. State-owned enterprises (SOEs) are considered high or low (for disinvestment purposes) on three factors, namely, social purpose, profitability and resource mobilization. According to their model, SOEs operating in competitive markets having low social purpose and also low resource mobilization are the most suitable candidates for disinvestment.

Kumar (1992) categorizes SOEs on the basis of their being high or low with reference to market structure, efficiency and social obligations. The model suggests divestiture of enterprises which are low in efficiency and social obligations. An SOE set up as a statutory corporation under an Act of Parliament or as government department first needs to be transformed into a stock corporation subject to ordinary company laws so that shares can be offered to the private sector.

The profitability of a company, obviously, is one of the determinants of how easy or difficult its sale will be. The experience of developed and developing countries alike demonstrates that privatization is limited only to strong performing SOEs; an SOE in weak financial condition and with a poor record of performance generally cannot be sold "as it is."

Direct sale through competitive bidding is preferable as it allows high degree of transparency and comparison of offers by competing bidders and selects the buyer based not only on the highest purchase price but also on the greatest compliance

with various government requirements and privatization objectives. One of the principal advantages of private sale of shares is that the prospective owner is known in advance and can be evaluated on the basis of his/her ability to bring in benefits such as management, technology, market access, etc.

Basu (1994) contends that divestiture without private sector development can remain “stillborn.” The study supports the policy of state government related to selective privatization/disinvestment of loss-incurring public and cooperative enterprises operating in “non-core” sectors. The primary objective of government’s privatization policy has been to revive potentially viable loss-incurring enterprises and to safeguard the interest of the workers and to create opportunities for further job creation by catalyzing the dynamism of the private enterprises. Efforts are made to establish a system of good corporate governance practices in these core enterprises, so as to enhance transparency and accountability in their operations and stimulate their performance.

Sankar and Mishra (1994) contend that the divestment of PSEs shareholdings is an economic necessity. At a time when the country was on the brink of economic disaster and facing the threat of being declared insolvent by the external economic community, the Government of India rightly swung into action to initiate the divestment of shareholdings of PSEs.

Gouri (1997) observes that privatization in India is low. Privatization for ownership transfer is limited to the disinvestment of public sector enterprises (PSEs) for raising non-inflationary resources. At the same time, there is a gradual withdrawal of budgetary support from PSEs resulting in a gradual dilution of equity as enterprises tap the capital market. Simultaneously, economic liberalization policies have emphasized a level playing field for the public sector. In terms of economic management, and more so public sector management, there is lack of a comprehensive policy on privatization.

Das (1999) examined post-reform periods. He found that productivity performance of Indian industries worsened in the 1990s vis-à-vis the 1980s. Further, Nambiar et al. (1999) report that import liberalization has shrunk India’s manufacturing base. When markets are deregulated, the performance of firms (public as well as private) improves. Contrary to expectation, profitability, liquidity, and assets turnover dropped instead of improving; the expected relationships that there should be drop in employment levels, reduction of debt vis-à-vis total assets, increase in dividend payout, and improvement in sales efficiency were confirmed. Finally, he observed that there was an increase in employment levels in the case of enterprises operating in monopoly environment and drop in sales efficiency in the case of enterprises operating in competitive environment.

Naik (2001) has discussed about the hurdles that existed between plans drawn up and the actual achievement in the process of reforms pertaining to privatization of PSEs since 1991. He is of the opinion that the process of reforms has not moved beyond the limited divestment of equity in select profit-making public sector undertakings (PSUs).

The divestment that has taken place so far has been largely with an eye on reducing the fiscal deficit of the center rather than bringing about a real improvement in

the working of the concerned PSUs. The entire approach has been ad hoc and piecemeal. Because of the frequent changes in government at the center, particularly after the 1996 General Elections and a lack of consensus among coalition partners in the government, it was not possible to make any worthwhile progress towards PSU reforms and privatization. Improving the productive efficiency of the Indian industry to make it globally competitive was among the important objectives of the reform process launched in 1991. For the achievement of this objective, it was imperative that urgent measures were initiated to reform and privatize the public sector, which accounts for a major share of industrial output in the country. The government has been finding it increasingly difficult to continue to subsidize the public sector through budgetary support. The problem has been compounded by the proliferation of public sector enterprises in areas such as hotels, tourism, bakeries, and so on, which was not a part of the original design of industrialization.

Even in core areas that were explicitly reserved for the public sector, the performance fell far short of plans and expectations. Instead of generating resources for development, they have been a burden on the exchequer. He suggested unless the government musters courage to sell off or close down the chronically sick and loss-incurring units and is able to get the cooperation of the coalition partners as well as the state governments, the situation is unlikely to change.

Ganesh (2001) has discussed about the pros and cons of privatization. To achieve the goal of “privatization in India,” proper competitive law supervised by forming Competition Commission is necessary to avoid dominance, prevention of cartels, and merger control. Regulatory authorities to frame suitable rules and regulation, connected with market economy, are also necessary.

Ray and Maharana (2002) have attempted to examine the progress of the process of PSE disinvestment in India during the decade of 1991–2001. In terms of action to the PSE disinvestment, very little has actually materialized. They suggest that the controversies and criticisms against disinvestment can be largely avoided through a transparent process. Disinvestment of government equity in PSEs has many social, economic, and political implications.

There are different forms of privatization, ranging from managerial privatization to the extreme step of partial or complete disinvestment. In the managerial privatization, the ownership of PSEs continues with the government, but the management/board of directors comprises of experts from the private sector. In a joint venture arrangement, a private enterprise owns a part of equity in PSEs and the government owns the balance. The joint venture model is considered to be a transitional arrangement, leading to eventual total disinvestment. Privatization may also take the form of franchising the development of new technology by the PSEs for use by the private sector.

Naib (2004) states that disinvestment of equity has been the key determinant of the Indian public sector reforms. The common perception among various countries that have engaged in substantial program of divestiture is that this not only raises resources for the governments and reduces fiscal deficit but also releases resources for public investment in essential areas like primary education and basic health. It is accordingly argued that such programs ultimately are desirable to create jobs and

add for mass welfare in the long run. It has been revealed that the vast investments have failed to produce the surpluses which they were expected to generate and the return on capital employed is quite low. This raises the issue whether the present ills of the state-owned enterprises (SOEs) can be corrected by change in their ownership.

It is generally believed that in SOEs neither incentives nor sanctions are closely related to performance. Further, objectives of SOEs are likely to include certain social obligations which may be poorly defined and hard to quantify. The resulting looseness of the objectives makes monitoring of SOE performance much difficult. Divestiture results into a shift in the objectives of owners and type of incentive systems for management.

In terms of all profitability indicators, mixed enterprises perform no better and often worse than SOEs. These results also suggest that partial privatization where a government retains some percentage of equity may not be the best strategy. Boardman and Vining (1989) also suggest that partial privatization may be worse, particularly in terms of profitability, than complete privatization or continued state ownership.

Gupta and Kaur (2004) indicate that privatization leads to competition; this, in turn, promotes efficiency. According to them, the following are the primary objectives of privatization of the public sector in India:

- Solution to the problem of low profitability and inefficiency in public sector enterprises.
- End of political interference in economic decisions.
- Increase in government reserves through sale of shares of public sector enterprises.
- Freedom from pulls and pressures on the budget due to the losses in PSEs.
- Solution to the problem of the lack of autonomy and inadequate management incentives.
- Synchronizing with the economic liberalization wave in the world.

Unlike the experience in many other countries (like Great Britain) which have gone for large-scale privatization, the public sector in India continues to be an important component of Indian industry; even after liberalization, disinvestment has larger implications than just selling government equity at the best price.

Authors opined that there should be closure and winding up of sick PSEs. Such terminally sick PSEs are mostly those which were earlier taken over from the private sector as sick units and which are a major contributory factor for the overall unsatisfactory performance of the public enterprises.

Kaur (2004) reports that fiscal compulsions have forced the Government of India to sell their equity in the 1990s and later. So far 39 SOEs have been partially disinvested, while 35 SOEs have been strategically sold. A total of approximately Rs. 300 billion has been raised through disinvestments. However, unlike many other developing economies where an aggressive policy of privatization (i.e., a transfer of ownership from the public sector to the private sector) has been adopted as part of liberalization, this has not been the case in India. In India, the new economic

policies of liberalization are more in the nature of *Greenfield Privatization*. Such policies have prompted private industrialists to venture into areas earlier reserved for the public sector, such as power, aviation, telecommunication, roads and railways. These policies are expected to have a major thrust on enhancing efficiency in the industry.

The process of privatization raises a set of questions. In the first set are questions such as the following: What are the economic consequences of selling public sector enterprises? Is the government doing the right thing by disinvesting? Will privatization deliver? However, in cases where state failures dominate, privatization, in fact, may be a better option. That is to say that ownership does matter. The ownership of the firm (public or private) materially affects the systems of monitoring managerial performance, the incentive structures, the behavior of managements, and hence the efficiency of the organization. Thus, the economic consequences of selling public sector enterprises will get reflected in enhanced efficiency of the privatized unit. However, in the Indian scenario, changes in performance of SOEs have not materialized due to the nature of disinvestment modality adopted till recent years.

Kaur and Singh (2005) state about the utility and process of disinvestment in India. Disinvestment process through liberalization and privatization leads to cost reduction, improved quality, and operational efficiency. It improves efficiency and pushes up growth rates; growth provides jobs and employment; disinvestments also help to attract global capital as well as domestic capital.

They highlight that the major weaknesses of the public sector units are lack of proper management, lack of autonomy, lack of financial resources, low productivity, overstaffing, outdated technology and inefficient staff, etc. Governments and their agents are process oriented, whereas firms have to be result oriented. The two main causes of its failure appear to be the heavy weight of non-commercial obligations of the state; it is required to carry and untrammelled discretionary power with the government that erodes its autonomy.

Nagaraj (2005) opines that it is widely believed that PSEs' profitability ratio (gross profits to capital employed) is mainly on account of the surpluses of the petroleum sector enterprises. Yet, it is important to mention that the profitability ratio of PSEs has improved since the 1980s even after excluding the petroleum sector enterprises; it is a clear evidence of improvement in PSEs' financial performance.

He further states that disinvestment is unlikely to affect economic performance since the state continues to be the dominant shareholder, whose conduct is unlikely to be influenced by share price movements (or return on equity). Privatization can be expected to influence economic outcome provided the firm operates in a competitive environment; if not, it would be difficult to attribute changes in performance solely or mainly to the change in ownership.

Sangeetha (2005) has divided the policy measures adopted by countries to reform the public sector enterprise performance into two broad categories. The first category focuses on distancing the government from ownership and control of these enterprises. Partial privatization falls in the first category of reform. The second

category aims at improving the environment in which these enterprises operate, e.g., delegation of operational and functional autonomy to managers of publicly owned enterprises through performance contracts.

The second category of reforms has been aimed at improving the environment in which the PSEs operate, rather than change the ownership of the firm. Proponents of this viewpoint contest that “ownership per se does not matter.” Instead, they believe that removing the environmental imperfections and distortions in which the state-owned firms operate (Bartel and Harrison 1999; Kalirajan and Shahd 1996; Kornai 1979), improving incentives to top management and linking their benefits to firm’s performance (Bardhan and Romer 1992), delegating enhanced functional and operational autonomy to top management (Gordon 1992; Groves et al. 1994), and introducing product-market competition and capital market discipline (Rawski 1997; Sarkar et al. 1998; Vickers and Yarrow 1991) would make public firms perform as efficiently as private enterprises.

The incremental impact of ownership reform of partial privatization in firms that have undergone environmental reforms on an average does not seem to have laid any impact on the firm performance. One recommended policy measure that may improve the enterprise performance is complete privatization, with both ownership and control of the enterprise being passed on to private participants. Similar reform policy measures adopted in several other developing and industrial countries (D’Souza and Megginson 1999) have given positive results. However, as seen in this study, going half way and implementing privatization partially where the control over the management is still under Central Government has not been effective in improving the performance of the PSEs.

Gupta (2005) observes that partial privatization has a positive impact on profitability, productivity and investment. The study is based on 339 manufacturing and service sector firms owned by the Central (247) and State Governments (92) of India for the year 1990–2002. Firms experience a significant increase in profitability, labor productivity, R&D investment and intensity, assets size, and employment after partial privatization. Partial privatization leads to an increase in the productivity of labor and output without layoffs.

Patnaik (2006) argues that the main rationale for disinvestment is to increase the efficiency in the utilization of resources (labor and capital) of the economy. The study shows that even partial privatization, with the government retaining control, has yielded improved productivity. Disinvestment of profit-making enterprises by public offering of shares is desirable as it leads to dispersed shareholding and avoids concentration of economic power. Above all, the most important argument in favor of disinvestment lies in the improvement of efficiency.

In a study of 40 firms over the period 1990–2000 in which only non-controlling shares were sold, Gupta (2005) found that even with such partial privatization, the levels and the growth rates of profitability, labor productivity, and investment spending improved significantly. Disinvestment could be the vehicle through which government makes progress on the important problems of corporate governance in the country. This would pave the way for a further flowering of widely held, professionally managed companies in the years to come.

The incentives of employees of PSEs could be influenced by sale of shares and employee stock option plans (ESOPs) whereby every employee in the company would end up having a stake in obtaining a higher stock price. This would serve to align the interests of employees with the interests of owners and improve the working of PSEs.

The author further observes that it may be sometimes difficult to privatize the loss-incurring companies even through the strategic sales route. The company can be in such poor shape and saddled with such large obligations that nobody in the private sector is willing to pay money. Yet, it remains important to take the company off the hands of the government and to utilize the resources that lie trapped within it. In order to do this, in a privatization auction, the government should permit negative bids: a bid where government pays someone to take the company off its hands. Negative bids were an important part of the massive privatization which took place in Germany after the end of socialism and helped to get productive assets rapidly into the hands of efficient managers in the private sector.

Vadlamannati (2007) says that India is one of the fast-emerging economies in the world which is striving hard to control all its deficits while implementing all possible measures in the form of economic reforms which were initiated in the 1990s. He attempts to answer whether privatization is one of the determinants of deficits.

Disinvestment and privatization, as one of the measures of economic reforms, was implemented in 1990–1991 in India which resulted in privatizing about 30 public sector undertakings (PSUs) in the country. It is, therefore, expected that it has had direct and indirect influence on these deficit variables. The study used data over 16 years, 1990–2005, and econometric models were used for the analysis. The empirical results show that the correlation of disinvestment and privatization (in India) in relation to these variables is very feeble and weak in view of the very small-sized and slow-paced disinvestment and privatization program.

Disinvestment Manual, Department of Disinvestment (2007) contains no standard recipe for disinvestment in public sector enterprises (PSEs) at the national level or at the state level. It suggests that country would do well to learn from the successful experiences of the West; it would have to be careful with the pitfalls, which were responsible for setback to some of the economies in the East.

In the final analysis, while experience of other countries is available to India by way of guidance, it would have to evolve its own techniques, best suited to its level of development. The historic, cultural, and institutional context influences the way in which and the pace at which privatization is implemented. Where market economy is not fully developed, ways would have to be found to safeguard the interests of consumers and investors, which would ensure a fuller play to the wealth-creating role of the entrepreneurs. The main purpose of this manual is to demystify this process and to share with policy-makers the national and international experience on implementation of privatization.

Arnold et al. (2008) suggest that conventional explanations for the post-1991 growth of India's manufacturing sector have focused on goods, trade liberalization and industrial de-licensing. However, the pace of policy reform has varied across

sectors, and it is determined primarily by political considerations (Hoekman et al. 2007). Sectors in which privatization and competition would mean restructuring and large-scale layoffs were slower to benefit from the reforms than those in which incumbents could remain profitable and employment would not decline even as foreign and local private competitors entered the market. The elimination of barriers to entry in services provoked a dramatic response from foreign and domestic providers. Foreign direct investment (FDI) inflows into services following liberalization by far exceeded than those into other sectors.

They demonstrate a strong and significant empirical link between progress in services reform and productivity in manufacturing industries. They also investigate the relative contribution of reform in each of the service sectors to the productivity of manufacturing firms and find that liberalization in the banking and telecommunication sectors had the largest productivity effects on manufacturing firms over the period.

Shivendu (2008) finds that privatization programs have not been driven by ideological or efficiency reasons, but rather by the pragmatic cost-benefit tradeoffs made by the politicians. The economics of privatization often dominates its politics. Using data from 43 countries on more than 4,700 privatization transactions, the author finds strong empirical support for institutional quality as consistent and significant determinant of proportion of partial privatization. Surprisingly, countries having higher corruption tend to have higher proportion of privatization in competitive sector, but lower privatization in core sector.

Counter to anecdotal evidence, political constraints have no significant impact on partial privatization proportion. Further, fiscal crisis drive politicians to privatize, but has no significant effect on privatization proportion. The findings motivate a political economy model of privatization and indicate three results: First, the distortion in the privatization proportion depends upon the institutional quality parameter relative to a measure of private sector efficiency, and the distortion increases as institutional quality declines; second, the effort level of private buyer firm declines as institutional quality declines. And third, under heterogeneous preferences of citizens, the privatization proportion declines.

Political variable appears to play a role only in determining partial privatization proportion in the core sector irrespective of the fact whether control is transferred or not. He has not observed either political constraint or political fractionalization to play any significant role in partial privatization, though studies (Bortolotti et al. 2004; Banerjee and Munger 2004) have noted a strong relationship between privatization and political factors.

Cuong and Tyrone (2008) enumerate that the literature on public financial management reform has devoted comparatively little attention to the detail and effect of reform process implementation in developing economies. Their study contributes to an understanding of this phenomenon by examining the impact of privatization on a sample of previously state-owned enterprises in Vietnam. Using data sourced from audited general-purpose financial statements, the analysis suggests evidence of material variation in financial performance and position of post-privatization compared

to the position observed immediately prior to privatization. They suggest that after being privatized, firms generally exhibit reductions in profitability, improved liquidity, some degree of improvement in working capital management, an increase in financial leverage accompanied by a higher degree of solvency risk, and greater calls on cash resources for the purpose of funding capital expenditure. The results suggest that the impact of privatization as a reform technique in developing economies may assist policy-makers and managers to target areas of likely risk, during the process of transition from public to private ownership.

Improved profitability is by no means a guaranteed outcome of the decision to transition from public to private ownership, particularly if that transition also occurs against the backdrop of a general recourse to greater competition in product and service markets. They found margin maintenance difficult and were in general unable to reduce their cost structures by an amount sufficiently great to fully compensate, with the result that profitability fell, even in the face of expanded sales volumes. They faced the need to replace obsolete equipment in order to better face more competitive open markets being created as other elements of the government's process, and this, in turn, required them to increase their reliance on external capital, principally debt. The results suggest that irrespective of any of the concerns which might typically be raised in relation to privatization programs such as that adopted in Vietnam (e.g., narrow wealth transfer effects), the enterprises were generally more financially and operationally robust after a 3-year journey into the realm of the private.

Sabnavis (2009) enumerates that disinvestment must be treated more like an IPO where the share capital remains intact and the money goes as premium to the "reserves account." It is not surprising that at a time when fiscal constraints are dominating government thinking, the scanner will turn to disinvestment. The author briefly revisits the ideology behind disinvestment (in Indian context).

In 1991 when this idea was propagated, the objective was to broad base equity, improve management, and raise resources for the enterprise which would help strengthen the organization. The 1991–1992 budget focused on raising resources, encouraging wider participation and increasing accountability. The limits for the so-called privatization went through iterations with the Rangarajan Committee settling for 49 % in certain non-critical sectors, which later increased. By 1999, disinvestment is concerned with helping in restructuring and reviving the PSEs. It was only after 2001–2002 that this program began to be viewed with the purpose of covering budgetary support for social infrastructure and to generate funds to reduce public debt. Now, the question is two fold: Should we be going in for disinvestment, and if so, how should the proceeds be deployed?

Further, he opines that disinvestment makes economic sense when it restricts the thought process to the initial motivations outlined earlier where the idea is to make the units stronger through better management practices, wider dispersal of interest, and probably the introduction of the private sector ethic. However, in the face of the failure of private enterprise, particularly in banking, across the world, the undisputed superiority of a private sector model needs to be qualified. This means that

disinvestment should be preferred in non-profit-making companies which need better management. However, loss-making companies would not generally garner interest (Modern Foods and ITDC could be some glaring exceptions), though ideally they would be the natural choices.

The second question is about the deployment of the disinvestment proceeds. It does not appear to be prudent to use these proceeds to finance the budget. This is because it sets a precedent of moral hazard and leads to slackness in maintaining fiscal balances.

Second, divestible amounts are not infinite and hence cannot be government policy in the long run. Government has raised just over Rs. 53,000 crore (2009–2010), and this is not really substantial to make a lasting impact. Third, disinvestment should ideally be focused on the unit rather than the government. The rationale is that the money which is picked up must be used by the company to grow. When an owner divests, the money belongs to him and he may not be bound to reinvest the money. However, when the entity is the government, it should ideally be used to strengthen the enterprise. The diversion of the funds would be weakening the financial position of the company. In the private sector, any dilution of equity provides funds for growth and ultimately enhances the shareholders' value. But, here, the exercise does not contribute to the company at all.

This will hold for both profit- and non-profit-making companies. At present (2011–2012), there are 161 profit-making central PSEs which can command a premium in the market. These proceeds could instead be channeled to revive the 53 non-profit-making units. Therefore, when funds are scarce for all companies, in general, raising resources through alternative debt routes is expensive and disinvestment provides an effective solution.

Fourth, it is often argued that disinvestment proceeds should be used for repaying debt. While, *prima facie*, this appears to be a viable option, it has to be a concerted action to have really an impact. It has to be done at a time when these funds are not being used to support the budget, as is being done today. Lastly, there is an argument for using these funds for “inclusive development” which certainly deserves deeper thought.

Kumar (2011) examines the factors associated with sustainable privatization of infrastructure projects. He contends that privatization offers a way for governments to make infrastructure delivery more effective and efficient than exclusively public provision, but often the promise is fraught with peril. Project cancellation rates, though rising, are still low. Although trends in cancellation may not be an issue for private infrastructure projects as a whole, it is a concern in the water and sewerage sector. The high probability of cancellation and relatively low level of fresh investment in the sector highlight a declining role for the private sector in making available this essential service. There is value for money to governments from entering into Public-Private Partnerships in infrastructure. Divestment leads to significant improvement in profitability, efficiency, and real output of firms, besides providing some fiscal boost to the government. However, the impact on employment is negative.

Table 3.4 Studies related to Memorandum of Understanding (MoU), 1990–2012

S. no	Year(s)	Author(s)	Issue studied
1.	1990	Murthy	Impact of MoU on the performance of PSEs
2.	1991a and 1991c	Trivedi	Conceptual foundation and usefulness of MoU
3.	1989 and 1990	Trivedi	Ability and purpose of MoU
4.	1991b	Trivedi	Results achieved due to MoU
5.	1994	Kumar	Static and dynamic aspects, strategies and evaluation system
6.	2001	Naik	Purpose and objectives of MoU
7.	2001	Ganesh	Impact of MoU
8.	2001	Vithal	Linking MoU targets with internal incentive schemes
9.	2002	Sengupta	Efficacy and constrains to be removed in MoU
10.	2004	Kaur	Need, goals, and evaluation criteria under MoU
11.	2005	Nagaraj	Composite criteria for MoU
12.	2005	Sangeetha	Case study of Indian reforms
13.	2009	Saroj Koul	Development of organization and competencies
14.	2010	Accord Fintech	MoUs under different public organizations
15.	2012	Raj	New government guidelines for changes in business
16.	2012	Shantanu	Mechanism of MoU
17.	2012	Mohapatra	MoU system and its importance

3.2.3 Memorandum of Understanding (MoU)

The brief outline of the studies relating to Memorandum of Understanding (MoU) has been presented in Table 3.4.

Murthy (1990) describes that the policy of MoU is a typical good news-bad news story. The good news signals an increase in the level of interest and awareness regarding the existence of the MoU policy. The bad news is that it is, unfortunately, factually quite inaccurate and betrays a surprising lack of clarity regarding the current status of the MoU policy.

Trivedi (1991a, c) explains the conceptual foundations of the MoU policy and offers an explanation for widespread misunderstanding regarding this policy. Surely but silently, the performance evaluation of public enterprises by the government has undergone a revolutionary change. From ad hoc, ex post procedure-oriented process, it has now become a systematic and result-oriented exercise. This is exactly what the Industrial Policy Resolution of 1956 had intended, but its implementation has been carried out after introducing the policy of Memorandum of Understanding (MoU) in the 1990s.

Trivedi (1989, 1990) states that the 5-point rating scale used in the MoU system is meant to measure the ability of public enterprise management to meet its commitments; it measures the ability and motivates enterprise to perform better. While carrying out such an exercise, it is not possible for the enterprise to include soft targets due to multiple reasons. Firstly, MoU targets are to be set in the context of public enterprise's corporate plans, which have to be consistent. Secondly, each

MoU is supposed to mention the last 5 year's achievement for every indicator included in the MoU. Therefore, any sudden deviation from the 5-year trend has to be explained convincingly to the ad hoc Task Force. Thirdly, the ultimate responsibility of ad hoc Task Force is to ensure the quality of targets included in the MoU. Finally, the 5-point scale used in the MoU system is supposed to measure the ability of public enterprise management to meet its commitments. However, they (most of the enterprises pointed out in the post-MoU era) now prefer to provide realistic targets with intent to have realistic assessment/evaluation of their performance.

Trivedi (1991b) states that both privatization and MoU are a response to the general perception that public enterprises have not delivered what was expected of them. Privatization involves privatization of public assets. MoU, on the other hand, implies privatization of the public style of management. The former believes that ownership per se is the problem. The latter finds fault with the quality of the control mechanism used by governments to manage their public enterprise portfolio. Privatization generally represents an ideological response to the perceived problems in the public sector, whereas the MoU is rooted in a more technocratic and pragmatic approach to the same problems.

MoU and privatization are complementary to each other in other ways also. In South Korea, performance improvement through an MoU-like system was used to increase the value of public enterprises before selling them.

Kumar (1994) enumerates that MoU takes into account both commercial and non-commercial criteria in their static and dynamic aspects while ensuring performance by making the autonomy aspects more transparent. The objectives of the public enterprises are now more transparent; the performance incentive system has been improved, and comparison of the performance of essentially dissimilar enterprises has become possible.

He stressed that policy-makers must devise a policy to improve the performance of public enterprises in order to serve public purpose as well. For this, he had suggested the basic strategies such as:

- Improving the performance of implicitly loss-incurring public sector enterprises through MoUs with emphasis on cost-effectiveness, higher capacity utilization, energy saving, efficient use of working capital and diversification
- Improving the performance of those loss-incurring public sector enterprises which have high social obligations through restructuring MoUs and partial/full divestiture of such public sector enterprises where turnaround is not possible.

Further, the policy options include encouraging workers' participation in management and ownership, creating competition by inviting the private sector to invest in core/non-core sectors, sale of equity to the public at large, and structural reorganization of public sector enterprises.

Naik (2001) has suggested that some of the measures introduced to reform the PSUs include signing the Memorandum of Understanding with the government to improve performance; restructuring involving modernization, rationalization of capacity, downsizing the workforce, product-mix changes, and so on; gradual phasing out of budgetary support to loss-making units; and referring the sick PSUs

to the Board of Industrial and Financial Reconstruction (BIFR) to initiate measures for the rehabilitation of potentially viable units and to recommend closure of non-viable ones. A National Renewal Fund (NRF) was also created to provide relief to the workers affected by downsizing and closure. The World Bank also came forward to provide assistance and augment this fund.

The system of MoUs, which has been in existence since 1988–1989, was extended to more enterprises post-reform, to facilitate granting of greater autonomy to PSUs. The purpose was to achieve the negotiated and agreed objectives without the ministerial and bureaucratic interference in the day-to-day affairs of the enterprises. However, even as more and more MoUs were entered into over the next few years (by 1993–1994) to cover almost 50 % of the PSUs, the financial performance of the units actually saw a further deterioration; they found it difficult to cope with the growing competition from domestic private as well as foreign companies.

Ganesh (2001) observes that the “MoU” system, introduced to revitalize the public sector units, has had little impact.

Vithal (2001) states that managers, on their part, to achieve commitment from the lower-level managers and employees, are found to link the MoU targets to internal incentive schemes for the junior managers and employees. According to the author, emphasis on replacing multiple objectives/multiple principles by few clear goals for the management to achieve and provide functional and operational autonomy through the MoU system helps management to focus their efforts on improving the performance of the PSEs.

Sengupta (2002) deals with the case of Indian Telephone Industries Ltd. (ITI), Indian’s oldest PSE. The author emphasized that the Government of India should adopt a system of drawing up MoUs with different public enterprises in order to improve their performance.

The efficacy of the MoU in improving performance depended upon how well it removed the internal and external constraints that affected the functioning of the public enterprises. The internal constraints included excess manpower, lack of motivation among the executives and workers, poor internal control systems and inadequate resources, while the external constraints related to the interference of the politicians and bureaucrats in appointments, transfers and award of contracts. Sankar (1990) observes that MoU does not make any attempt to remove these internal or external constraints.

Kaur (2004) discusses the concept of Memorandum of Understanding (MoU). It is supposed to be a “freely” negotiated performance agreement between a public enterprise and the government acting as an owner of the public enterprise, in which both parties clearly specify their commitments and responsibilities. The need for this device arose because no one, including the public enterprises, knew what was expected of them.

The author suggested that the performance of a PSE should be evaluated on a 5-point scale (referred to as 5 criterion values), varying from 1 to 5 (indicating excellent, very good, good, fair, and poor) at the end of the period. Then, through the process of interpolation, a raw score is estimated for each criterion. This raw score when multiplied by its weight gives the weighted raw score (WRS). Summation of all WRS gives a “composite score” (Kaur 1998).

Nagaraj (2005) describes profitability, as a yardstick of measuring PSEs performance; it has gained importance when governments world over started feeling the burden of loss-incurring PSEs on their budget deficit. India followed the suit in this regard; this is evident from the importance accorded to financial performance ratios in the Memorandum of Understanding (MoU). By 1993–1994, 50 % weightage was given to financial profitability (nearly 20 % to return on assets, ROA) in the composite score evaluation of targets set under MoU, by almost all PSEs signing MoUs.

Sangeetha (2005) analyzes the case study of India, where both types of reforms have been implemented over the past decade (1990–2000). India's centrally owned PSEs have undergone environmental reforms of delegation of authority through signing of MoUs, dereservation of sectors by the government that were earlier under public sector domain to private investment, and hard-budget constraints where government put pressure on PSEs to live within their budget. Functional autonomy was delegated to Indian PSE managers through signing of Memorandum of Understanding (MoU).

The results indicate that the incremental impact of delegating authority to PSE management by setting performance targets and grading them for their performance through the MoU system has significant positive impact on the profitability of PSEs. One reason for it may be explicitly stating one/few objectives and attaching weights to them in the individual enterprise. MoU has helped to the managements of PSEs to focus its efforts on improving the performance of the PSEs. Autonomy to managements in achieving these targets through the MoU system and the existence of managerial labor markets (Gerard and Khalid 2000) act as additional incentives for the management to perform better.

Positive results evidenced in this study (Sangeetha 2005) signify that setting of one/few explicit objectives for the enterprise to achieve with higher weightage to profitability targets and delegating authority to top management for achieving these targets through the MoU system helped the PSE management to focus its efforts in improving the firm's profitability performance.

Saroj Koul (2009) has examined the development of the organizational structure, functions, and competencies of the corporate communication/public relation (CC/PR) in the department of the central public sector enterprises (PSEs) in India. She observes that in many PSEs, the development of full-fledged CC departments is still at a nascent stage; however, in other PSEs the development of CC is already streamlined with company vision and is mature as a division. Key acceptable PR roles include communication for the desired perception among target audience and brand sustainability. In established CC departments, CC is a strategic management tool, synchronizing all intentional forms of internal and external communications, thus helping the PSEs to define its corporate image and improve corporate performance. An accelerated need in communication management is evident as India emerges as a world power in economics, trade, and manufacturing, all areas where the country seeks to make its contribution to the world.

Accord Fintech (2010) has mentioned that Neyveli Lignite Corporation (NLC) has entered into a MoU with Uttar Pradesh Rajya Vidyut Utpadan Nigam (UPRVUNL) for setting up a 2,000 MW coal-based thermal power plant in Ghatampur Tehsil of

Kanpur Nagar District in Uttar Pradesh with an equity participation of 51 % by NLC and 49 % by UPRVUNL.

Neyveli Lignite Corporation's net profit stood at Rs. 273.71 crore for the quarter ended 30 September 2010 compared to Rs. 243.59 crore for the quarter ended 30 September 2009, up by 12.36 %. Its total income had increased by 17.71 % to Rs. 1229.60 crore for the quarter ended 30 September 2010 from Rs. 1044.58 crore for the corresponding quarter of the previous year.

Raj (2012) states that in order to help India's top state-run companies to meet their investment targets involving other public sector firms, the government is considering new guidelines that will allow for revising their commitments by factoring in changes in business conditions.

Further, the author suggests that in situations where MoUs have unrealistic targets, greater operational flexibility should be encouraged. In the case of Maharatnas and Navratnas, he proposes to have a review mechanism and appeal mechanism where MoU targets can be revised if there is a change in the business environment. It has been suggested that investment plans that have been provided by the PSUs will be built into the Memorandum of Understanding so that they can be suitably appraised as a part of the MoU.

Shantanu (2012) opines that the target setting mechanism called Memorandum of Understanding (MoU) is crucial for nearly 200 profit-making central PSEs such as ONGC, Indian Oil, Coal India, NTPC, etc. As their performance-related pay goes up to 200 % of the basic pay in case of a CMD, it actually depends on whether they achieve those targets or not. This MoU mechanism ensures autonomy to those enterprises while making them accountable to the government which sets targets and evaluates their performances.

He further explains that one of the major concerns before government is how to bring loss-making public enterprises into the ambit of the MoU system. The department of public enterprises (DPE) has formed a working group. The panel is examining the possibility of different MoU formats for different sizes and categories of CPSEs including Maharatna and Navratna companies and whether more operational flexibility could be given to CPSEs while setting targets.

Mohapatra (2012) has described the role, purpose, and usage of the MoU system; the MoU system was first introduced in India in 1986, based on the Arjun Sengupta Committee Report (1984); the Committee has recommended agreements for 5 years that may be reviewed annually. Since the planning exercise laid much emphasis on the core sectors of steel, heavy engineering, coal, power, petroleum, and fertilizers, the Committee favored MoUs in respect to such enterprises only. According to the MoU system, the management of the enterprise is made accountable to the government through a promise of performance or "performance contract."

The MoU system did help public enterprises; it was corroborated by the profitability of MoU-bound enterprises. Their profits increased from Rs. 12,013 crore in 1994–1995 to Rs. 91,062 crore in 2007–2008. MoUs were critical to the turnaround of many enterprises like National Building Construction Corpn. Ltd. (NBCC), Electronics Corporation of India Ltd. (ECIL), Engineering Projects India Ltd. (EPIL),

Table 3.5 Studies related to financial performance of corporate enterprises, 1985–2011

S. no	Year(s)	Author(s)	Issue studied
1.	1985	Barbro	Weaknesses of cost-benefit analysis
2.	1991	Vickers and Yarrow	Ratio analysis to assess profitability
3.	1988	Sarkar et al.	Profitability ratios to assess 541 companies
4.	1988	Jain	Measures to assess operational and allocational efficiency
5.	1989	Boardman and Vining	Profitability measures and concentration ratio
6.	1990	Sheikh	Factors associated with PSEs
7.	1992	Boardman and Vining	Private, public, and mixed enterprise performance
8.	1992	Kumar	Case study approach
9.	1993	Murli	Regression technique
10.	1994	Megginson et al.	Financial ratios
11.	1998	Boubakri and Cosset	Accounting performance measures
12.	1999	Bradbury	Accounting ratios
13.	2005	Jain and Yadav	Profitability ratios
14.	2005	Sangeetha	Regression technique
15.	2005	Gupta	Fixed effect regression technique
16.	2007	Amiti and Konings	Productivity impact
17.	2007	Vadlamannati	Econometrics model
18.	2009	Ivo Sever et al.	Modern economic policies in recession
19.	2010	Sunil and Rachita	Performance of public sector banks
20.	2011	Ruchira Singh	Sovereign debt crisis
21.	2011	Hemal Pandey	Effect of corporate governance structure

Metallurgical & Engineering Consultants (India) Limited (MECON), Mineral Exploration Corporation Limited (MECL), Projects & Development India Ltd. (PDCIL), and Hindustan Insecticides Ltd. (HIL). Overall, the MoU system has helped CPSEs: improve top- and bottom-line performances, upgrade process and systems, address corporate governance imperatives, increase corporate autonomy, and improve accountability.

3.2.4 Measures of Financial Performance

The select/major studies relating to the measurement of financial performance have been listed in Table 3.5.

Barbro (1985) examines 12 Swedish cases. He observes that the cost-benefit analysis does not seem preferable as a basis for decision making where ordinary business accounts are available. Albeit ordinary business accounting, expressed in annual reports, does not give an altogether true and valid picture (Burchell et al. 1980), it is less subject to manipulation and less biased than the cost-benefit analysis. Considerations, therefore, need to be given to produce a better basis for decision making.

Vickers and Yarrow (1991) measure profitability of the public and private industrial firms in the UK from 1970 to 1985. They find the average profitability for private firms is consistently higher. On an average, the ratio of gross trading profit (before allowance for stock appreciation and depreciation) to net capital stock for privately owned companies has been about three times higher than the nearest equivalent measure for public corporations (the ratio of gross trading surplus to net capital stock).

Sarkar et al. (1989) examine the combined balance sheet of 541 public limited companies whose financial details are summarized in annual reports of Reserve Bank of India (RBI). They measure return on capital employed (ROCE), return on total assets (ROTA), and return on shareholder's equity (ROSE). They contend that the profit before interest and tax (PBIT) to the total net assets is a suitable measure to assess the total impact on the economy, PBIT to effective capital employed to assess the effectiveness of the management and profit after tax (PAT) to net worth from shareholders' point of view. They conclude that profitability to capital in India appears to be rather low in both private and public enterprises.

Jain (1988) has given emphasis on operational and allocational efficiency criteria to judge the financial performance of Industrial Finance Corporation of India (IFCI), a leading development bank of that time. Operational efficiency criteria should be used to judge its efficiency as financial institution and allocational efficiency criteria for its developmental functions.

Sheikh (1990) describes that the PSEs have not lived to their expectations due to variety of factors. In particular, there has been growing concern over their poor financial performance and the consequent financial burden upon developing countries (like India) which is viewed as unsustainable in the long run.

Boardman and Vining (1989, 1992) compare the performance of private corporations (PCs), state-owned enterprises (SOEs), and mixed enterprises (MEs) among the largest non-US industrial corporations (500 in number); among them 419 were PCs, 58 SOEs, and 23 MEs. For analysis, they used four profitability measures: (1) return on equity (ROE), (2) return on assets (ROA), (3) return on sales (ROS), and (4) net income (NI). In addition, they used two measures to examine aspects related to efficiency, viz, (5) sales per employee and (6) sales per rupee of asset.

The model contained dummy variables for SOEs and MEs, thereby making PCs the benchmark. In order to reflect the competitive position of each firm, they included assets, sales, employees, and a measure of (international) market share. Assets, sales, and employees measure size; they reflect economies of scale and, to some extent, market power. In order to control for the competitive/regulatory environment of the industry, they included concentration and dummy variables for each industrial sector and each country. Concentration is measured by a four-firm concentration ratio. The concentration ratio is the percentage of an industry's employees accounted for by the four largest firms in an industry. The results showed that on an average, the ROE of PCs is 14.5 % higher than that of SOEs and 18.4 % higher than MEs. PCs generally have higher performance than the rest in terms of profitability and efficiency.

Kumar (1992) measures performance of privatized companies and classifies companies into two categories: first, where enterprise performance before and after divestiture is compared and, second, where enterprise performance after divestiture is compared to some benchmark.

In the case study approach, the performance of the enterprise before divestiture is compared with its performance after divestiture, attributing any observed changes to the divestiture. This approach, however, is applicable only in a static environment. In reality, changes in enterprise performance could be driven by changes in the economic environment rather than by divestiture. Thus, in individual case studies, it is difficult to segregate the effect of divestiture from other factors such as growth of economy, policies of liberalization and deregulation. Another drawback with the case study approach is selection bias. One tends to study only “interesting” cases leading to subjective judgment. However, if we take large number of firms simultaneously, then the effect of compounding factors might be expected to “average out.”

Murli (1993) suggests a modified regression technique (known as polar regression) to discriminate between financial ratios to isolate a set of more significant ratios appropriate for performance analysis, vis-à-vis other financial ratios.

Meggison et al. (1994) have used the set of following financial ratios to measure the financial impact resulting from privatization:

- For profitability: return on sales (ROS), return on assets (ROA), and return on equity (ROE).
- For operating efficiency: sales efficiency (sales (inflation adjusted)/number of employees) and net income efficiency (net income/number of employees).
- For employment: total employment (in terms of total number of employees).
- For leverage: debt to assets and long-term debt to equity.
- For payout: cash dividend/net income.
- For capital investment: capital expenditure to sales and capital expenditure to assets.
- For output: real sales (nominal sales/consumer price index).

They used Wilcoxon signed-rank test as their principal method to test for significant changes in the variables. This procedure tests whether the median differences in variable values between the pre- and post-divestiture samples is zero.

Emphasis is given on ratios which have used current year “flow” measures such as sales. Return on sales (ROS) was considered more representative of profitability. They have used two measures of efficiency: inflation-adjusted sales per employee and real net income per employee. As partial productivity measures, these are only suggestive of efficiency measures of greater interest, such as total factor productivity.

The mean and median profitability, real sales, operating efficiency, and capital investment spending of their sample firms increased significantly (in both statistical and economic terms) after divestiture. They also documented significantly lower leverage ratios and higher dividend payments after divestiture.

Boubakri and Cosset (1998) have examined the change in the financial and operating performance of 79 companies from 21 developing countries that have experienced full or partial privatization during the period from 1980 to 1992.

They used accounting performance measures adjusted for market effects as well as unadjusted accounting performance measures. Both unadjusted and market-adjusted results show significant increases in profitability, operating efficiency, capital investment spending, output, employment level and dividends. They also find decline in leverage following privatization, but this change is significant only for unadjusted leverage ratios.

Bradbury (1999) examines the financial performance of New Zealand Government Computing Services (GCS). GCS is required to be as profitable and efficient as comparable businesses. He also emphasizes that from the point of view of the equity holder, cross-sectional comparison requires an examination of the returns earned by firms with similar systematic risk characteristics.

The author states that accounting ratios are used to assess the financial performance despite their well-known shortcomings. The prime performance measures are return on equity (ROE), return on assets (ROA), and return on revenue (ROR). Growth in revenue is also measured. Similar measures are employed in major studies that utilize accounting ratios to examine economic performance (Rumelt 1974; Boardman and Vining 1989; Karpoff and Rice 1989). The financial performance, in terms of return on equity, shows a steady improvement during the transition from a government department to a state-owned enterprise (SOE). The mean ROE during pre-SOE period (1985–1988) is 15.5 % compared to 24.6 % over the SOE period (1989–1994).

Jain and Yadav (2005) have measured financial performance of the central PSEs (classified in service and manufacturing groups) in India. Relevant data relating to return on total assets (ROTA) of PSEs indicates that service enterprises have better profitability than manufacturing enterprises during the aggregate period (1991–2003), whereas return on capital employed (ROCE) is substantially higher than ROTA for manufacturing PSEs compared to service PSEs.

Sangeetha (2005) uses regression technique with dummy variable approach to measure the performance of PSEs. The study captures this with a dummy variable *autonomy* that takes the value of 1 in period “t” if the enterprise had signed an MoU in period “t–1.” It is hypothesized that signing of MoU by a PSE will have positive impact on its profitability performance.

Gupta (2005) has cautioned that the before/after estimators are not reliable if there are significant changes in the overall state of the economy between these years or if there are changes in the life-cycle position of some of these privatized firms. The author has used fixed effects regression with dummies to describe the results. Using fixed effects and instrumental variable regression, they find that partial privatization, in which minority shares of state-owned firms become available on stock markets, has a positive and highly statistically significant impact on the operating performance of firms. Partial privatization leads to an increase in the productivity of labor and output without layoffs. Hence, results support the managerial view that improved managerial efficiency is a significant factor in explaining the effect of privatization on performance.

Amiti and Konings (2007) are of the opinion that liberalization affects productivity. Their study has been carried out separately by identifying the impact of input and output tariffs. They find that the reduction in tariffs has positive productivity effects in Indonesia.

Vadlamannati (2007) has used econometric models to measure the impact of deficit variables on privatization. The empirical results show that the connectivity of disinvestment and privatization in relation to these variables is very feeble and weak in view of the very small and slow-paced disinvestment program, which the country has witnessed all these years.

Ivo Sever et al. (2009) have shown the abilities of modern economic policy in providing the answer on important issues brought by recession and crisis of the Croatian economy (short-term solutions, they also extend to a longer horizon as well). It provides basis for the new economic policy to overcome the recession as well as to assist the recovery of production in the Croatian economy. The results of their research show that the causes of recession and economic crisis in Croatia only partly refer to the external origin and are dominated by internal factors. Among those factors, the crucial one is the application of the so-called stabilization program in 1993 and related policy of overvalued and stable exchange rate.

The evaluation framework of anti-recessionary economic policy indicated that Croatian economic crisis was partly the consequence of external factors such as declining marginal efficiency of capital, insufficient demand, the privileged status of the dollar, and its dual use. In terms of evaluation of the causes of recession and crisis of the Croatian economy, it was found that the main problem for Croatian society and economy is not a global recession. Over-indebtedness of the state and of economic entities, which disturbs all economic balances, is the fundamental problem. It is a consequence of application of the so-called stabilization program of 1993.

Sunil and Rachita (2010) give emphasis to appraise the efficiency, effectiveness, and performance of 27 public sector banks (PSBs) operating in India. They suggest that in their drive to improve overall performance, PSBs should pay more attention to their income-generating capabilities (i.e., effectiveness) relative to their ability to produce traditional outputs such as advances and investments (i.e., efficiency).

Ruchira Singh (2011) opines that the downgrade of US credit rating by Standard and Poor's, along with weak economic data from there and the lingering European sovereign debt crisis, has stoked fears of a second recession after the one that followed the bankruptcy of financial service firm Lehman Brothers in September 2008.

Hemal Pandya (2011) examines the effect of corporate governance structures, particularly board structure and CEO duality, on the performance of selected Indian Banks. Using samples of public and private banks operating in India, he examines the relationship between CEO duality and the proportion of independent directors on firm performance as measured by return on assets (ROA) and return on equity (ROE). Results show that there is no significant relationship between corporate governance structures and financial performance of the banks.

3.3 Gaps Identified in the Literature

The literature survey shows that there are potentials for further inquiry which focuses on the policies and reforms of public sector enterprises primarily in terms of disinvestment and Memorandum of Understanding (MoU). There is no

comprehensive study which has covered the entire universe of PSEs to examine the impact of disinvestment and MoUs on financial performance of PSEs in India. The present study makes an attempt to fill this void.

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Chapter 4

Research Methodology to Assess the Financial Performance of PSEs

Abstract This chapter delineates the research methodology followed in the study to assess the financial performance of public sector enterprises (PSEs) and the performance of disinvested PSEs and Memorandum of Understanding (MoU) PSEs. It also enumerates gaps identified from literature review, research objectives, hypotheses, sources of primary data (based on questionnaire survey, personal visit/interview, telephonic calls and emails) and secondary data (drawn from Public Enterprises Surveys and Prowess database from Centre for Monitoring Indian Economy, considered credible in Indian context relating to virtually all 209 non-financial central public sector enterprises), data analysis (primarily in terms of major financial ratios, namely, profitability, efficiency, solvency, liquidity, and productivity), statistical techniques used (such as ANOVA, paired test, independent *t*-test, frequency distribution techniques), and research model.

Keywords Public sector enterprises (PSEs) • Disinvestment • MoUs • Financial performance • Financial ratios and research model

4.1 Introduction

The objective of this chapter is to delineate the methodology followed in the study to assess the financial performance of public sector enterprises (PSEs) and the performance of disinvested PSEs¹ and MoU PSEs.² Section 4.2 discusses the gaps identified from literature review and enumerates research objectives and research hypotheses. The data sources (primary and secondary data) have been summarized

¹Disinvested PSEs under the study are those enterprises that have led partial disinvestment but yet continue to be PSEs, since the shareholding of the government is more than 50 %.

²MoU PSEs are those enterprises which have signed MoU with the government to attain certain operational and financial objectives.

in Sect. 4.3. Section 4.4 deals with the methodology used to analyze the data. Finally, Sect. 4.5 contains the summary.

4.2 Identified Gaps, Research Objectives, and Hypotheses

4.2.1 Gaps Identified from Literature Review

The research gaps identified from the study are enumerated as follows:

1. There is virtually no comprehensive study which has covered the entire gamut of financial ratios to measure the performance of PSEs and has assessed the impact of MoU and disinvestment on the financial performance.
2. There is hardly any study which has used all the measures, viz., profitability, efficiency, liquidity, leverage, and productivity of capital, to assess financial performance of these PSEs for a period of two decades (1991–1992 to 2010–2011).

4.2.2 Research Objectives

In the light of identified gaps, six research objectives have been formed:

1. To examine the financial performance of the public sector enterprises (PSEs) during the post-liberalization period using major financial ratios, namely, profitability, efficiency, liquidity, leverage and productivity.
2. To measure the financial performance of loss-incurring PSEs over a period of time.
3. To compare the financial performance of the disinvested and non-disinvested PSEs.
4. To determine the financial performance of MoU PSEs over the period of time.
5. To carry out the comparative study on the financial performance of MoU PSEs and non-MoU PSEs.

4.2.3 Hypotheses

Liberalization and globalization have initiated several economic reforms in the Indian PSEs which were expected to enhance their operational efficiency and productivity. This, in turn, would have enhanced the profitability of these PSEs. Hence, the following hypotheses have been formulated to address the first objective:

- H1: It is hypothesized that the financial performance of the sample PSEs is likely to be low in the initial phase and likely to show improvement in the subsequent phases.
- H2: It is hypothesized that there will be a decrease in the holding period of various types of inventories and collection period of debtors due to liberalization which has improved the management practices and means of communication. Above all, globalization of Indian economy has provided a situation of better availability of raw materials and other supplies.
- H3: It is hypothesized that the efficiency of loss-incurring PSEs in utilization of its resources has improved over a period of time.

Disinvestment and MoU are the two major recommendations of economic reforms policy 1991; it is meant to overcome/bridge the financial crisis and is supposed to promote better utilization of existing resources so that they become commercially profitable. It leads to the formation of the following hypotheses to assess the other objectives:

- H4: The financial performance of disinvested PSEs is better compared to non-disinvested PSEs.
- H5: Productivity of capital is lower in non-disinvested PSEs compared to disinvested public sector enterprises.
- H6: The financial performance of MoU PSEs has improved over the period of time.
- H7: Operational efficiency of loss-making PSEs has improved after signing MoUs.
- H8: The performance of MoU PSEs is higher compared to non-MoU PSEs.
- H9: Productivity of capital is higher in MoU PSEs compared to non-MoU PSEs.
- H10: Disinvestment and MoUs have made direct impact on the profitability of PSEs.

4.3 Data Collection

To analyze the financial performance of 209 central non-financial PSEs, the study proposes to use primary and secondary data.

4.3.1 Primary Data

The study has attempted to collect the primary data primarily through questionnaire. The questionnaire was mailed to all the 209 operating PSEs. The questionnaire captures the opinion/preferences and actual practices of the finance managers of the central PSEs on six major aspects which have a bearing on financial performance; they are related to financial performance practices and investment

decisions, decision-making process, financial structure, working capital management, disinvestment decision and MoU.

The questionnaire contained simple, specific, and objective-type questions (mostly multiple choice) keeping in view the busy schedule of corporate executives; opinion based and queries requiring subjective information were kept to the minimum in order to keep the questionnaire more objective and scientific. Questions were related to the practices used to assess financial performance of PSEs and their opinion for disinvestment and MoU. Questionnaire was framed and finalized after incorporating suggestions and improvement from various academic and practicing managers/professionals in and around Delhi and it was pilot tested.

The analysis is based on 30 responses received out of 209 PSEs after two reminders, emails, telephonic calls, and direct personal contacts. The initial response level was not encouraging; merely 7 organizations responded to the questionnaire. In order to increase the response rate, two reminders were sent. By that, 8 more responses were received. In an effort to improve the response rate and utilize the benefits of the information technology, email version of the questionnaire was formed which was dispatched through email, and 3 more firms responded to the email questionnaire. In the last effort to improve the responses, the sample PSEs in and around Delhi, Noida, and Faridabad were personally contacted. With this effort, we were able to receive 12 more responses. Annexures 4A.2 and 4A.3 provide the list of respondent PSEs and their industry-wise classification, respectively.

The response proportion of nearly 14 % should not be considered as low. The reason is survey response to the subject of finance is not encouraging. Generally, the respondents are apprehensive and shy away from providing information related to financial decision making and consider information related to financial matters as very sensitive and confidential. Hence, as a matter of policy, more often than not, most of the business enterprises are reluctant to respond to a questionnaire. Annexure 4A.5 contains a copy of the questionnaire.

The survey response of 30 questionnaires also satisfies the condition of minimum sample size (for *t*-test and *z*-test) and is acceptable for statistical analysis. Viewed from this perspective, the sample size may be considered as representative of the universe consisting of 184 PSEs (209 PSEs – 26 closed/merged PSEs, mentioned in Annexure 4A.4).

4.3.2 Secondary Data

Major source of secondary data is several volumes of Public Enterprises Survey. The gaps in the case of a few public sector enterprises (on select aspects) have been filled from Centre for Monitoring Indian Economy (CMIE) data. The data from CMIE (in India) is considered credible. The study covers 209 non-financial public sector enterprises (PSEs) in India. There are 38 disinvested PSEs (where less than

50 % of the disinvestment has taken place up to year 2010–2011), and there are 66 MoU PSEs (which have continuously signed MoUs from 1994 to 1995 onwards).

The period of the study is 20 years (i.e., 1991–1992 to 2010–2011). It may be noted that the sample size varies from year to year on account of incorporation and closure of the PSEs and availability of data. There are adequate number of PSEs in each industrial group (the list of PSEs is available in Annexure 4A.1).

4.4 Research Model and Data Analysis

4.4.1 Research Model

The primary objective of the study is to determine the financial performance of PSEs and to measure the impact of disinvestment and MoU on the financial performance of the respective PSEs. Research model has been exhibited in Fig. 4.1.

4.4.2 Data Analysis

In this section, we enumerate the tools used and procedure followed in analyzing the secondary data. We have relied primarily on the “financial ratios,” a widely accepted tool to analyze the financial performance of the sample enterprises. The key financial ratios are profitability, efficiency, liquidity, leverage, and productivity of capital; these ratios 18 in numbers are as follows:

- For profitability:
 - Return on net worth (RONW),
 - Return on capital employed (ROCE),
 - Return on total assets (ROTA),
 - Operating profit margin (OPM) and
 - Net-profit margin (NPM).
- For efficiency, measured in three ways:
 - (a) Assets turnover basis:
 - Total assets turnover ratio (TATR),
 - Fixed assets turnover ratio (FATR) and
 - Current assets turnover ratio (CATR).
 - (b) Sub-constituents of current assets basis:
 - Raw-material inventory holding period (RMIHP),
 - Work-in-process inventory holding period (WIPIHP),
 - Finished-goods inventory holding period (FGIHP) and
 - Debtor collection period (DCP).

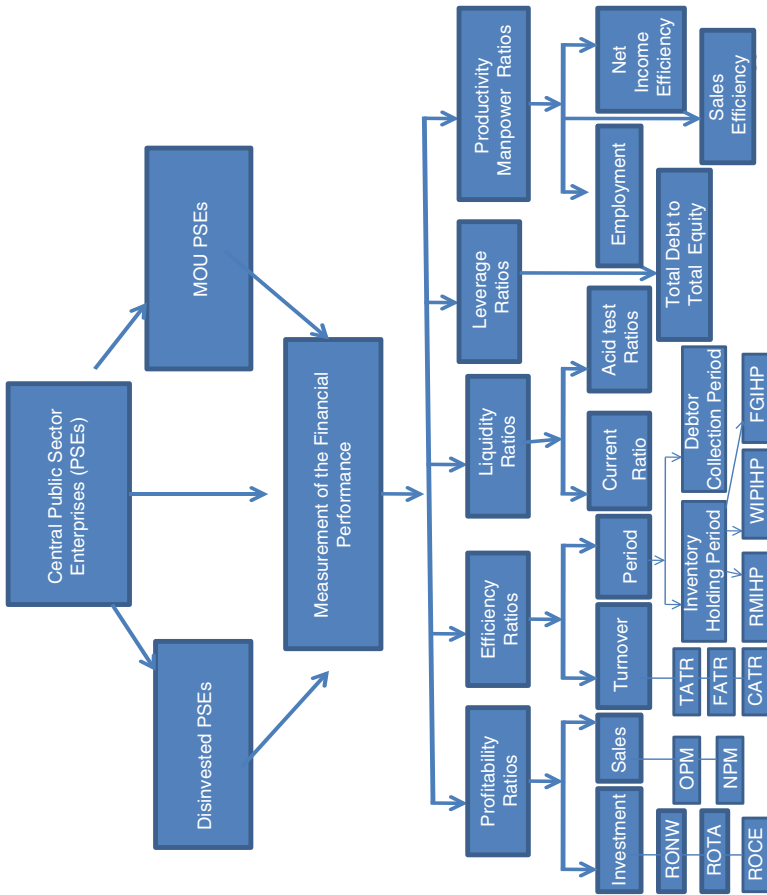


Fig. 4.1 Research model (Note: For abbreviations, please refer to pages 75–77)

- Leverage and liquidity:
 - Total debt to total equity (TD/TE),
 - Current ratio (CR) and
 - Acid test ratio (ATR).
- Productivity of manpower:
 - Employment level,
 - Sales efficiency per employee and
 - Net income per employee.

Profitability has been measured in terms of rate of return on investment and sales. For the purpose of analysis, the return on investment has been computed in three ways, viz., ROTA, ROCE and RONW. The first two rates of return highlight how efficiently financial resources are deployed by the PSEs, and RONW indicates the return provided to the equity owners (primarily government in the context of PSEs). ROTA has been determined on the basis of earnings before interest and taxes (EBIT); it expresses the relationship between total income earned before interest and taxes and average total assets in use. Total assets in use includes net block of fixed/long-term assets, other items in the nature of fixed assets, investments, total current assets, and deferred revenue/preliminary expenditure, and it excludes accumulated deficits, capital work in progress, and unallocated expenditures during construction, since these assets are yet to contribute to the services provided or revenue generated by PSEs. Investments refer to the amount of share capital or long-term loans invested by holding company in its subsidiaries ([Public Sector Enterprises Survey 2002–2003](#)). Prima facie, investments as well as income earned on such investments should have been excluded as they are made outside the business firms, but we have included them due to non-availability of data on interest/dividend income earned from such investments. Therefore, income derived from such investments forms part of profits while computing ROTA.

ROCE indicates how efficiently the long-term funds of the lenders and owners are being used; it is a ratio of operating profit (EBIT minus other incomes or miscellaneous receipts) and average capital employed (includes gross block of fixed assets less accumulated depreciation plus net working capital). ROTA and ROCE preclude the effect of financial structure and taxes, since government as an owner also gets the taxes. As a result, these ratios focus directly on operating efficiency. Further, while ROTA is useful as an overall measure of performance in respect to operating efficiency, ROCE shows how efficiently the funds of owners and lenders are used (Jain and Yadav 2005). In general, the higher the ratio, the more efficient is the use of funds.

As far as RONW is concerned, it has been computed dividing net profit after taxes minus preference divided to the average net worth (share capital plus reserves minus accumulated deficit and deferred expenditures). It is important to note that the ROCE and RONW have not been computed in the case of PSEs having negative net worth and negative capital employed. The reason is that the ratio provides ridiculous results when the denominator is negative. However, the numerator can be negative as it indicates that the PSE has suffered a loss (at the computed negative

rate) on capital employed/net worth. In other words, positive net worth and positive capital employed with negative net profit and negative EBIT have been included in the study; they signify that the PSE does have net worth or capital employed but has incurred negative profits or losses.

Secondly, return on the basis of sales has been computed on the basis of operating profit margin (OPM) and net-profit margin (NPM). The OPM indicates the magnitude of operating profit on sales; it represents the operating profit before any compensation paid to the debt-holders. The ratio provides a clear view of profit margin (undistorted by financing pattern and tax calculation) referred to as earnings before interest and tax (EBIT) in relation to sales. The NPM determines the relationship of reported net profit after taxes to sales; it indicates the management's ability to carry on the business profitably and expresses the overall cost/price effectiveness (Helfert 2003). Thus, the methodology outlined above is appropriate for evaluating profitability.

Similarly, efficiency or effectiveness in the utilization of resources has been determined on the basis of three dimensions (the first relates to utilization of assets, the second assesses the firm's ability to meet its short-term obligations and obligations arising from long-term debt, and third judges the productivity of the manpower). The first one is concerned with the efficiency with which assets are used in business enterprises by its management. Turnover is the primary mode for measuring the extent of efficient use of assets by relating them to net sales; they are total assets turnover ratio (TATR), fixed assets turnover ratio (FATR), and current assets turnover ratio (CATR). Low turnover is indicative of under-utilization of available resources and presence of idle capacity. TATR indicates the efficiency with which firm uses its assets to generate sales. Generally, the higher the firm's TATR, the more efficiently the assets are being used (Gitman 2009). TATR, FATR, and CATR are computed dividing average net sales by average total assets in use, average fixed assets (excluding depreciation), and average current assets, respectively. Net sales excludes excise duty, commission, rebates, and discount on gross sales. Total assets in use have been determined by deducting accumulated deficit, work in progress, and unallocated expenditures during construction to the total assets (assets not in use merits exclusion); fixed assets include gross fixed assets minus accumulated depreciation plus other items in the nature of assets. It should be borne in mind that the current assets take into account five items, namely, cash and bank balances, sundry debtors, inventories, loans and advances, and stock of other current assets.

The efficiency of current assets is based on examining the change in holding period (in number of days) of various types of inventories and collection period of debtors; these are two major constituents of current assets. The objective of inventory management is to minimize the investment in the inventory and to meet the demand of products by efficient production and sales operation with a view to reduce carrying cost and stock-out cost (Khan and Jain 2013). Inventory consists of raw materials, spare parts, and other stores as raw-material inventory holding period (RMIHP), work-in-progress inventory holding period (WIPIHP), and finished-goods inventory holding period (FGIHP). RMIHP is the ratio of raw materials consumed during the year and average raw materials (average at the beginning and end of the year); WIPIHP has been computed on the basis of cost of production

(represents all costs incurred on production/operation including depreciation but excludes excise duty) and average work in progress; the rationale of excluding excise duty is to preclude the impact of changes in the excise rates from the analysis. Similarly, FGIHP is based on the relationship between cost of goods sold, i.e., cost of production plus opening stock of finished goods minus closing stock of finished goods (numerator) and average finished goods (denominator). Materials management is one of the key factors for improving performance of any unit; higher inventories saddle an organization with avoidable costs, besides blocking scarce funds which might be required by the enterprise for its own operations. Therefore, proper management of materials assumes considerable importance in corporate functioning; it is believed that the level of inventories has come down over the years (Public Sector Enterprises Survey 2002–2003).

Debtor collection period (DCP) presents the relationship between gross sales (numerator) and average debtors (denominator). Debtors/receivables represent an important component of current assets among all the business corporate enterprises. It is an extension of credit that involves both risk and cost. Management should weigh both risk and benefits for granting and extending credits as per risk-return trade-off. In fact, credit sales generates receivables which are treated as marketing tool to promote sales and thereby profits (Jain and Yadav 2005).

The second dimension assesses capital structure and liquidity aspects. Capital structure practices assume vital significance in corporate financial management as they influence both return and risk of equity owners of corporate enterprises. Whereas the excessive use of debt may endanger their survival, a conservative policy deprives them of its advantages in terms of magnifying the rates of return to their equity owners-government in the context of public sector enterprises (Jain and Yadav 2005). This part provides an insight into their capital structure practices and liquidity position. Total debt to total equity (TD/TE) has been used to determine the capital structure practices; it is the relationship between borrowed funds and owner's funds (known as shareholders' funds or net worth); shareholders' funds are equal to equity capital + preference capital + reserves and surpluses - accumulated deficit - deferred expenditures not written off. At the same time, total debt is inclusive of long- and short-term debt (in the name of secured and non-secured loans and provisions); short-term advances are ostensibly short term but are generally renewed year after year and, hence, serve the long-term needs of the firm (Jain and Yadav 2005). Working capital requirements of PSEs in India are generally met through cash credit and advances from banks (Government of India 2002). Similarly, Sen (1979) long back has observed that the use of short-term debt instruments like bank cash-credit limit serves as long-term debt which is a common practice in India. Therefore, the exclusion of short-term debt might present a distorted picture of the magnitude of debt. This constitutes the rationale to have a broader measure of debt which includes short-term debt obligations also. For the purpose of analysis, we have employed book values as shown in the balance sheet as it provides consistency in data as all the PSEs are not listed at stock exchanges. Chakraborty (1977) and Barges (1963) state that book values have been preferred to market values, because debt-equity ratio based on market values creates systematic bias in financial risk measures. For these reasons, book values have been used in our study.

Further, the position of liquidity has been measured in terms of current ratio (CR) and acid test ratio (ATR). Jain and Yadav (2005) have eloquently described the importance of adequate liquidity. Maintenance of adequate liquidity without impairing profitability is the foremost requirement of sound working capital requirement. Excessive liquidity may be desired by short-term creditors, as they are interested in the ability of the firm to pay them in time. It may be undesirable to carry excessive funds as these funds are either non-earning or earn very little, indicative of slack management practices. It might signal excessive inventories for current requirement and poor credit management in terms of overextended accounts receivables.

The PSEs should maintain adequate liquidity in terms of satisfactory CR and ATR which depends on their access to sources of funds and ease with which these funds can be tapped in times of need. In general, sizable numbers of PSEs in India have arrangements for short-term credit needs, say, in the form of bank borrowings/overdraft and cash-credit limit from banks which enables them to operate on the lower margin of working capital. This is reflected in relatively lower current ratio (CR) as well as acid test ratio (ATR). It is important to mention that conventionally a CR of 2:1 and an ATR of 1:1 are considered satisfactory. Current assets refer to the assets which in the ordinary course of business can be converted into cash within 1 year or the length of operating cycle (whichever is higher) without undergoing diminution in value and without disrupting the operations of the enterprise.

The CR takes into account five items of current assets, i.e., cash and bank balances, sundry debtors, inventories, loans and advances, and stock of other current assets. The current liabilities are those liabilities which are intended, at their inception, to be paid in ordinary course of business, within a year, out of current assets or earnings of the firm. Further, ATR is more rigorous test of liquidity which excludes inventories and prepaid expenditures out of current assets. It measures the firm's ability to convert its current assets quickly into cash, in order to meet its current liabilities. Since inventories and prepaid expenses are not readily and easily converted into cash, prepaid expenses merely reduce the amount of cash required in one period because of payment in prior period.

One of the social responsibilities of PSEs is to employ large number of workforce; therefore, it works as a model employer. Their successful operation and productivity, to an extent, depends on the skill and capability of the workforce. Large-scale employment led to the situation where some of the enterprises are saddled with excess manpower, resulting in low level of per capital productivity. The government has initiated voluntary retirement scheme (VRS) in PSEs during 1988 and 2002 (a new scheme for VRS) to shed the excess manpower and to improve the age mix and skill mix. Simultaneously, in order to improve the quality of the manpower, several training programs are organized which update their knowledge and skills. Thus, third test relates to assess the productivity of capital per employee which has been determined in terms of the level of employment, sales efficiency, and net income efficiency ratios. It highlights the employment position (number of employees, excluding casual and daily wage workers) over a period of time.

All these ratios are calculated on year-to-year basis for the sample PSEs. The sample varies from year to year depending on the incorporation and closure of the company and availability of data. Descriptive and positional values, i.e., mean, median, and quartiles, of each ratio for each year have been computed to analyze the trend and its implications; the descriptive and positional values of the individual organization during each phase have been measured on the basis of calculated value of each parameter (which are 19 in number) related to the number of years consist in that phase. Further, the respective mean, median, and quartile values of all the sample organizations during each phase have been computed on the basis of determined mean of mean values, median of median values, and quartile of quartile values.

To determine the change over a period of time and across the phases on the same set of companies or between two sets of companies or among more than two sets, paired *t*-test, independent *t*-test, and the analysis of variance (ANOVA) tests have been carried out, respectively. The significance levels of 1 % and 5 % have been considered for reporting the results.

The entire set of data has been analyzed by using Statistical Package for Social Sciences (SPSS) and Excel worksheet. The data was analyzed on the aggregative as well as disaggregative basis. While the former dealt with the financial performance of sample PSEs in India as a whole, the latter examined the aspects related to the specific sectors, earning capacity, industry affiliation, and size of the sample companies. To do away with the influence of extreme values, they have been excluded from the data. However, their inclusion has been considered important in preparing the frequency distribution.

The excluded extreme values in the cases of all the central PSEs are plus/minus above 75 % in the case of RONW, ROCE, and OPM and above plus/minus 60 % each for ROTA and NPM; it is above 6, 8, and 12 times in the cases of TATR, CATR, and FATR, respectively. Similarly, the respective excluded extreme values for RMIHP, WIPIHP, FGIHP, and DCP are 770, 365, 270, and 365 days (and above). As far as liquidity (CR and ATR) and leverage (TD/TE) are concerned, the corresponding eliminated values are 7, 5, and above (for CR and ATR, respectively) and 8 (and above for TD/TE). In the case of productivity of manpower (measured in terms of sales efficiency and net income efficiency), the excluded extreme values are plus/minus 200 (for sales efficiency) and 100 (in respect to net income efficiency). The details of excluded values are described at the footnote of tables.

To study the trend and its implications in a comprehensive manner, an attempt has been made to analyze the data over a period of time (i.e., on time series basis). For this purpose, the period of the study has been divided into four broad phases: Phase one 1991–1992 to 1995–1996 is considered as initial phase of liberalization, economic reforms, and disinvestment; phase two from 1996–1997 to 1999–2000 is referred to as intermediate phase where the introduction of global depository receipts (GDRs) and the institutionalization of disinvestment have taken place; phase three, i.e., 2000–2001 to 2007–2008, represents matured phase of liberalization and economic reforms as both the strategic disinvestment and

regulation relating to the provision of corporate governance³ have been introduced. Recession seems to have set in, in India (due/subsequent to American financial crisis in June 2008 impacting the world economy), during the second half of 2008⁴; to assess the impact of recession on the performance of PSEs, fourth phase from 2008–2009 to 2010–2011 has been referred to as post-recession phase. It is to be noted that there are primarily two reasons to include the entire year (2008) in the postrecession phase: First, the data source (based on several volumes of Public Enterprises Survey) was available in a consolidated manner (in the form of balance sheet and income statement). Second, it was not feasible to separate the data for a particular year on the basis of when recession actually started impacting a particular variable (discussed by Jain et al. 2013). From the statistical point of view, the “first” phase, “second” phase, “third” phase, and “fourth” phase have been considered as four independent samples.

It is important/imperative to mention that the impact of recession would perhaps be felt for the longer period of time than the period covered under study. However, the objective is to keep the study as contemporary as possible; this then constitutes the rationale for including post-recession analysis.

In addition to secondary data analysis, the study has used primary data to validate the findings of secondary data. The primary data is in the form of responses received through the questionnaire.

4.5 Summary

This chapter has discussed the methodology, followed in the present study. Identified research gaps, research objectives, and hypotheses have been enumerated in the present chapter. Further, the different types of data sets used to determine the financial performance of 209 nonfinancial central PSEs have been summarized in this chapter. Moreover, details related to the analysis of data, usage of statistical tools, and methods of investigation have also been explained in chapter. Based on the outline presented in the chapter, the empirical analysis is carried out in the subsequent Chaps. 5, 6, 7.

³To improve the level on corporate governance in India, a committee was set up by Security and Exchange Board of India (SEBI) in May 1999 under chairmanship of Kumar Mangalam Birla. In January 2000, SEBI has accepted the recommendations of corporate governance committee. The Companies Act 1956 was amended to incorporate certain provisions to raise the level of corporate governance.

⁴According to United Nations Council on Trade and Development (UNCTAD) investment brief (November 2009), the year 2008 marked the end of a growth cycle in global foreign direct investment (FDI) with worldwide flows down by more than 20 %. Therefore, the capacity of the companies to invest has been weakened by reduced access to financial resources, both internally and externally. In India, total net capital flows fell from US \$17.3 billion in April to June 2007 to US \$ 13.2 billion in April to June 2008 (Sources: UNCTAD 2009).

Annexure 4A.1 List of the Central PSEs in India Used in the Study

S. No.	Name of PSEs	Industry
1.	Ferro Scrap Nigam Ltd.	Steel
2.	Indian Iron & Steel Co. Ltd. [merged]	Steel
3.	Maharashtra Elektros melt Ltd.	Steel
4.	Mishra Dhatu Nigam Ltd.	Steel
5.	Rashtriya Ispat Nigam Ltd.	Steel
6.	Sponge Iron India Ltd.	Steel
7.	Steel Authority of India Ltd.	Steel
8.	Bharat Gold Mines Ltd.	Minerals and metals
9.	Bharat Refractories Ltd.	Minerals and metals
10.	Hindustan Copper Ltd.	Minerals and metals
11.	Hindustan Zinc Ltd.	Minerals and metals
12.	Indian Rare Earths Ltd.	Minerals and metals
13.	J&K Mineral Devp. Corp. Ltd.	Minerals and metals
14.	Kudremukh Iron Ore Co. Ltd.	Minerals and metals
15.	Manganese Ore (India) Ltd.	Minerals and metals
16.	National Aluminium Co. Ltd.	Minerals and metals
17.	National Mineral Development Corp. Ltd.	Minerals and metals
18.	Uranium Corp. of India Ltd.	Minerals and metals
19.	Bharat Coking Coal Ltd.	Coal and lignite
20.	Central Coalfields Ltd.	Coal and lignite
21.	Coal India Ltd.	Coal and lignite
22.	Eastern Coalfields Ltd.	Coal and lignite
23.	Mahanadi Coalfields Ltd.	Coal and lignite
24.	Neyveli Lignite Corp. Ltd.	Coal and lignite
25.	Northern Coalfields Ltd.	Coal and lignite
26.	South Eastern Coalfields Ltd.	Coal and lignite
27.	Western Coalfields Ltd.	Coal and lignite
28.	National Hydroelectric Power Corp. Ltd.	Power
29.	National Thermal Power Corp. Ltd.	Power
30.	North Eastern Electric Power Corp. Ltd.	Power
31.	Nuclear Power Corp. of India Ltd.	Power
32.	Bharat Petroleum Corp. Ltd.	Petroleum
33.	Bongaigaon Refinery & Petrochemicals Ltd.	Petroleum
34.	Chennai Petroleum Corp. Ltd. (Madras refinery)	Petroleum
35.	Gas Authority of India Ltd.	Petroleum
36.	Hindustan Petroleum Corp. Ltd.	Petroleum
37.	IBP Co. Ltd. [merged]	Petroleum
38.	Indian Oil Blending Ltd. [merged]	Petroleum
39.	Indian Oil Corp. Ltd.	Petroleum
40.	Kochi Refineries Ltd. [merged]	Petroleum
41.	Numaligarh Refinery Ltd.	Petroleum

(continued)

S. No.	Name of PSEs	Industry
42.	Oil and Natural Gas Corp. Ltd.	Petroleum
43.	Oil India Ltd.	Petroleum
44.	ONGC Videsh Ltd.	Petroleum
45.	Fertilisers and Chemicals, Travancore Ltd.	Fertilizers
46.	Fertilizer Corp. of India Ltd.	Fertilizers
47.	Hindustan Fertilizer Corp. Ltd.	Fertilizers
48.	Madras Fertilizers Ltd.	Fertilizers
49.	National Fertilizers Ltd.	Fertilizers
50.	Pyrites, Phosphates & Chemicals Ltd.	Fertilizers
51.	Rashtriya Chemicals & Fertilizers Ltd.	Fertilizers
52.	Bengal Chemicals & Pharmaceuticals Ltd.	Chemicals and pharmaceuticals
53.	Bengal Immunity Ltd.	Chemicals and pharmaceuticals
54.	Bharat Immunologicals & Biologicals Corp. Ltd.	Chemicals and pharmaceuticals
55.	Hindustan Antibiotics Ltd.	Chemicals and pharmaceuticals
56.	Hindustan Fluorocarbons Ltd.	Chemicals and pharmaceuticals
57.	Hindustan Insecticides Ltd.	Chemicals and pharmaceuticals
58.	Hindustan Organic Chemicals Ltd.	Chemicals and pharmaceuticals
59.	Hindustan Salts Ltd.	Chemicals and pharmaceuticals
60.	Indian Drugs & Pharmaceuticals Ltd.	Chemicals and pharmaceuticals
61.	Indian Medicines Pharmaceuticals Corp. Ltd.	Chemicals and pharmaceuticals
62.	Indian Petrochemicals Corp. Ltd. [merged]	Chemicals and pharmaceuticals
63.	Karnataka Antibiotics & Pharmaceuticals Ltd.	Chemicals and pharmaceuticals
64.	Maharashtra Antibiotics & Pharmaceuticals Ltd.	Chemicals and pharmaceuticals
65.	Manipur State Drugs & Pharmaceuticals Ltd.	Chemicals and pharmaceuticals
66.	Orissa Drugs & Chemicals Ltd.	Chemicals and pharmaceuticals
67.	Projects & Development India Ltd.	Chemicals and pharmaceuticals
68.	Rajasthan Drugs & Pharmaceuticals Ltd.	Chemicals and pharmaceuticals
69.	Sambhar Salts Ltd.	Chemicals and pharmaceuticals
70.	Smith Stanistreet Pharmaceuticals Ltd.	Chemicals and pharmaceuticals

(continued)

S. No.	Name of PSEs	Industry
71.	Uttar Pradesh Drugs & Pharmaceuticals Ltd.	Chemicals and pharmaceuticals
72.	Bharat Bhari Udyog Nigam Ltd.	Heavy engineering
73.	Bharat Heavy Electricals Ltd.	Heavy engineering
74.	Bharat Heavy Plate & Vessels Ltd.	Heavy engineering
75.	Bharat Wagon & Engg. Co. Ltd.	Heavy engineering
76.	Bharat Yantra Nigam Ltd.	Heavy engineering
77.	Braithwaite & Co. Ltd.	Heavy engineering
78.	Burn Standard Co. Ltd.	Heavy engineering
79.	Heavy Engineering Corp. Ltd.	Heavy engineering
80.	Jessop & Co. Ltd.	Heavy engineering
81.	Triveni Structural Ltd.	Heavy engineering
82.	Tungabhadra Steel Products Ltd.	Heavy engineering
83.	Andrew Yule & Co. Ltd.	Medium and light engineering
84.	Antrix Corporation Ltd.	Medium and light engineering
85.	Balmer Lawrie & Co. Ltd.	Medium and light engineering
86.	Bharat Brakes & Valves Ltd.	Medium and light engineering
87.	Bharat Dynamics Ltd.	Medium and light engineering
88.	Bharat Electronics Ltd	Medium and light engineering
89.	Bharat Pumps & Compressors Ltd.	Medium and light engineering
90.	Biecco Lawrie Ltd.	Medium and light engineering
91.	Central Electronics Ltd.	Medium and light engineering
92.	Electronics Corporation of India Ltd.	Medium and light engineering
93.	HMT Bearings Ltd.	Medium and light engineering
94.	HMT Chinar Watches Ltd.	Medium and light engineering
95.	HMT Ltd.	Medium and light engineering
96.	HMT Machine Tools Ltd.	Medium and light engineering
97.	HMT Watches Ltd.	Medium and light engineering
98.	Hindustan Cables Ltd.	Medium and light engineering
99.	ITI Ltd.	Medium and light engineering

(continued)

S. No.	Name of PSEs	Industry
100.	Instrumentation Ltd.	Medium and light engineering
101.	National Instruments Ltd.	Medium and light engineering
102.	Praga Tools Ltd.	Medium and light engineering
103.	Rajasthan Electronics & Instruments Ltd.	Medium and light engineering
104.	RBL Ltd.	Medium and light engineering
105.	Richardson & Cruddas (1972) Ltd.	Medium and light engineering
106.	Semiconductor Complex Ltd.	Medium and light engineering
107.	Vignyan Industries Ltd.	Medium and light engineering
108.	BEML Ltd.	Transportation equipments
109.	Central Inland Water Transport Corp. Ltd.	Transportation equipments
110.	Cochin Shipyard Ltd.	Transportation equipments
111.	Garden Reach Shipbuilders & Engineers Ltd.	Transportation equipments
112.	Goa Shipyard Ltd.	Transportation equipments
113.	Hindustan Aeronautics Ltd.	Transportation equipments
114.	Hindustan Shipyard Ltd.	Transportation equipments
115.	Hooghly Dock & Port Engineers Ltd.	Transportation equipments
116.	Mazagon Dock Ltd.	Transportation equipments
117.	Scooters India Ltd.	Transportation equipments
118.	Bharat Ophthalmic Glass Ltd.	Consumer goods
119.	Birds Jute & Exports Ltd.	Consumer goods
120.	Bushware Ltd.	Consumer goods
121.	Cement Corp. of India Ltd.	Consumer goods
122.	Hindustan Latex Ltd.	Consumer goods
123.	Hindustan Newsprint Ltd.	Consumer goods
124.	Hindustan Paper Corp. Ltd.	Consumer goods
125.	Hindustan Photo Films Mfg. Co. Ltd.	Consumer goods
126.	Hindustan Vegetable Oils Corp. Ltd.	Consumer goods
127.	Hooghly Printing Co. Ltd.	Consumer goods
128.	Nagaland Pulp & Paper Co. Ltd.	Consumer goods
129.	National Jute Mfrs. Corp. Ltd.	Consumer goods
130.	NEPA Ltd.	Consumer goods
131.	Tyre Corp. of India Ltd.	Consumer goods
132.	British India Corp. Ltd.	Textile
133.	Cawnpore Textiles Ltd.	Textile
134.	Elgin Mills Co. Ltd.	Textile
135.	National Handloom Develop. Corp. Ltd.	Textile
136.	National Textile Corp. Ltd.	Textile
137.	National Textile Corp. (A.P., Ker. & Mahe) Ltd.	Textile

(continued)

S. No.	Name of PSEs	Industry
138.	National Textile Corp. (Delhi, Pun., & Raj.) Ltd.	Textile
139.	National Textile Corp. (Gujarat) Ltd.	Textile
140.	National Textile Corp. (Madhya Pradesh) Ltd.	Textile
141.	National Textile Corp. (Maharashtra North) Ltd.	Textile
142.	National Textile Corp. (South Maharashtra) Ltd.	Textile
143.	National Textile Corp. (T.N. & Pondicherry) Ltd.	Textile
144.	National Textile Corp. (Uttar Pradesh) Ltd.	Textile
145.	National Textile Corp. (W.B, Ass, Bihar, & Orissa) Ltd.	Textile
146.	Bharat Leather Corp. Ltd.	Trade and marketing services
147.	Central Cottage Industries Corp. of India Ltd.	Trade and marketing services
148.	Central Warehousing Corp. Ltd.	Trade and marketing services
149.	Cotton Corporation of India Ltd.	Trade and marketing services
150.	Electronics Trade & Technology Develop. Corp. Ltd.	Trade and marketing services
151.	Food Corp. of India Ltd.	Trade and marketing services
152.	HMT (International) Ltd.	Trade and marketing services
153.	Handicrafts & Handlooms Exports Corp. of India Ltd.	Trade and marketing services
154.	Jute Corp. of India Ltd.	Trade and marketing services
155.	MMTC Ltd.	Trade and marketing services
156.	MSTC Ltd.	Trade and marketing services
157.	North Eastern Handicrafts and Handloom Develop. Corp. Ltd.	Trade and marketing services
158.	PEC Ltd.	Trade and marketing services
159.	Spices Trading Corp. of India Ltd.	Trade and marketing services
160.	State Trading Corp. of India Ltd.	Trade and marketing services
161.	Tea Trading Corp. of India Ltd.	Trade and marketing services
162.	Air India Ltd.	Transportation services
163.	Air India Charters Ltd.	Transportation services
164.	Airline Allied Services Ltd.	Transportation services

(continued)

S. No.	Name of PSEs	Industry
165.	Airports Authority of India Ltd.	Transportation services
166.	Container Corp. of India Ltd.	Transportation services
167.	Dredging Corp. of India Ltd.	Transportation services
168.	Ennore Port Ltd.	Transportation services
169.	Indian Airlines Ltd.	Transportation services
170.	Pawan Hans Helicopters Ltd.	Transportation services
171.	Shipping Corp. of India Ltd.	Transportation services
172.	Braithwaite Burn & Jessop Construction Co. Ltd.	Contract and construction services
173.	Bridge and Roof Co. (India) Ltd.	Contract and construction services
174.	Hindustan Prefab Ltd.	Contract and construction services
175.	Hindustan Steelworks Construction Ltd.	Contract and construction services
176.	Ircon International Ltd.	Contract and construction services
177.	Konkan Railway Corp. Ltd.	Contract and construction services
178.	Mineral Exploration Corp. Ltd.	Contract and construction services
179.	Mumbai Railway Vikas Corp. Ltd.	Contract and construction services
180.	National Buildings Construction Corp. Ltd.	Contract and construction services
181.	National Projects Construction Corp. Ltd.	Contract and construction services
182.	Broadcast Engineering Consultant India Ltd.	Industrial development and technical services
183.	Central Mine Planning & Design Institute Ltd.	Industrial development and technical services
184.	Certification Engineers International Ltd.	Industrial development and technical services
185.	Educational Consultants (India) Ltd.	Industrial development and technical services
186.	Engineering Projects (India) Ltd.	Industrial development and technical services
187.	Engineers India Ltd.	Industrial development and technical services
188.	HSCC (India) Ltd.	Industrial development and technical services
189.	MECON Ltd.	Industrial development and technical services
190.	National Industrial Develop. Corp. Ltd.	Industrial development and technical services
191.	National Small Industries Corp. Ltd.	Industrial development and technical services

(continued)

S. No.	Name of PSEs	Industry
192.	Power Grid Corp. of India Ltd.	Industrial development and technical services
193.	Rites Ltd.	Industrial development and technical services
194.	Telecommunications Consultants India Ltd.	Industrial development and technical services
195.	Water & Power Consultancy Services (India) Ltd.	Industrial development and technical services
196.	Assam Ashok Hotel Corp. Ltd.	Tourist services
197.	Donyi Polo Ashok Hotel Corp. Ltd.	Tourist services
198.	Hotel Corp. of India Ltd.	Tourist services
199.	India Tourism Develop. Corp. Ltd.	Tourist services
200.	Indian Railway Catering & Tourism Corp. Ltd.	Tourist services
201.	Indo Hokke Hotels Ltd.	Tourist services
202.	Madhya Pradesh Ashok Hotel Corp. Ltd.	Tourist services
203.	Pondicherry Ashok Hotel Corp. Ltd.	Tourist services
204.	Ranchi Ashok Bihar Hotel Corp. Ltd.	Tourist services
205.	Utkal Ashok Hotel Corp. Ltd.	Tourist services
206.	Bharat Sanchar Nigam Ltd.	Telecommunication and IT
207.	Mahanagar Telephone Nigam Ltd.	Telecommunication and IT
208.	Millennium Telecom Ltd.	Telecommunication and IT
209.	RailTel Corporation of India Ltd.	Telecommunication and IT

Annexure 4A.2 List of the PSEs Responded to the Questionnaire

S. No.	Name of the respondent PSEs
1.	Andrew Yule & Company Ltd.
2.	Antrix Corporation Ltd.
3.	Balmer Lawrie & Co. Ltd.
4.	Bengal Chemicals & Pharmaceutical Ltd.
5.	Bharat Electronics Ltd.
6.	Bharat Petroleum Corp. Ltd.
7.	Bongolian Refinery & Petroleum Ltd.
8.	Coal India Ltd.
9.	Cochin Shipyard Ltd.
10.	Container Corp. of India Ltd.
11.	Dredging Corp. of India Ltd.
12.	Engineers India Ltd.
13.	Fertilisers and Chemicals Travancore Ltd.
14.	Gas Authority of India Ltd.
15.	Hindustan Prefab Ltd.

(continued)

S. No.	Name of the respondent PSEs
16.	Hindustan Salts Ltd.
17.	HSCC Ltd.
18.	Indian Rare Earth Ltd.
19.	ITI Ltd.
20.	Kochi Refinery Ltd.
21.	Mishra Dhatu Nigam Ltd.
22.	MMTC Ltd.
23.	National Film Development Corp. Ltd.
24.	National Handloom Development Corp. Ltd.
25.	National Thermal Power Corp. Ltd.
26.	Nuclear Power Corp. of India Ltd.
27.	Pawan Hans Helicopter Ltd.
28.	Power Grid Corp. of India Ltd.
29.	State Trading Corp. of India Ltd.
30.	Steel Authority of India Ltd.

Annexure 4A.3 Industry-Wise Classification of the PSEs Responded to the Questionnaire

Industry	Total PSEs responded	Respondent (in %)
<i>1. Manufacturing</i>		
Steel	1	3.3
Minerals and metals	2	6.7
Coal and lignite	1	3.3
Power	3	10.0
Petroleum	4	13.3
Chemicals and pharmaceuticals	2	6.7
Fertilizers	1	3.3
Heavy engineering	1	3.3
Medium and light Engg.	4	13.3
Total	19	63.3
<i>Services</i>		
Trading and marketing	3	10.0
Transport services	2	6.7
Contract and construction	2	6.7
Industrial develop and tech Consultancy	3	10.0
Telecommunication	1	3.3
Total	11	36.7
<i>Total no. of enterprises</i>	30	100.0

Annexure 4A.4 List of the Merged and Closed PSEs

S. No.	Company name	Remarks
1.	Indian Iron & Steel Co. Ltd.	Merged in 2005–2006 with SAIL
2.	Bharat Gold Mines Ltd.	Closed in 2002–2003
3.	IBP Co. Ltd.	Merged with IOC May 2006
4.	Indian Oil Blending Ltd.	Merged in 2005–2006 with IOC
5.	Kochi Refineries Ltd.	Merged in 2005–2006 with BPC
6.	Bengal Immunity Ltd.	Closed in 2004–2005
7.	Maharashtra Antibiotics & Pharmaceuticals Ltd.	Closed in 2004–2005
8.	Manipur State Drugs & Pharmaceuticals	Closed in 2004–2005
9.	Smith Stanistreet Pharmaceuticals Ltd.	Closed in 2004–2005
10.	Uttar Pradesh Drugs & Pharmaceuticals Ltd.	Closed in 2004–2005
11.	Bharat Brakes & Valves Ltd.	Closed in 2002–2003
12.	RBL Ltd.	Closed in 2002–2003
13.	Cawnpore Textiles Ltd.	Closed in 2002–2003
14.	Elgin Mills Co. Ltd.	Closed in 2002–2003
15.	National Textile Corpn. (W.B., Assam, Bihar, & Orissa) Ltd.	Merged with NTC in May 2006
16.	National Textile Corpn. (A.P., Karnataka, Kerala, & Mahe) Ltd.	Merged with NTC in May 2006
17.	National Textile Corpn. (Delhi, Punjab & Rajasthan) Ltd.	Merged with NTC in May 2006
18.	National Textile Corpn. (Gujarat) Ltd.	Merged with NTC in May 2006
19.	National Textile Corpn. (Madhya Pradesh) Ltd.	Merged with NTC in May 2006
20.	National Textile Corpn. (Maharashtra North) Ltd.	Merged with NTC in May 2006
21.	National Textile Corpn. (South Maharashtra) Ltd.	Merged with NTC in May 2006
22.	National Textile Corpn. (T.N. & Pondicherry) Ltd.	Merged with NTC in May 2006
23.	National Textile Corpn. (Uttar Pradesh) Ltd.	Merged with NTC in May 2006
24.	Bharat Leather Corpn. Ltd.	Closed in 2005–2006
25.	Electronics Trade & Technology Development Corpn. Ltd.	Closed in 2004–2005
26.	National Industrial Development Corpn. Ltd.	Closed in 2004–2005

BPC – Bharat Petroleum Corpn Ltd.

NTC – National Textile Corpn.

IOC – Indian Oil Corpn. Ltd.

SAIL – Steel Authority of India Ltd.

Annexure 4A.5 Questionnaire Survey on Financial Decisions and Performance of Public Sector Enterprises in India

Kindly specify the following profile of your organization:

1. Name and address of the company _____
 Year of incorporation _____
 Please tick the name of your industry.

I. Manufacturing

- i. Steel
- ii. Minerals and metals
- iii. Coal and lignite
- iv. Power
- v. Petroleum
- vi. Chemical and pharmaceuticals
- vii. Fertilizer
- viii. Heavy engineering
- ix. Medium and light engineering
- x. Transportation equipment
- xi. Consumer goods
- xii. Textiles
- xiii. Any other (please specify) _____

II. Services

- i. Trading and marketing
- ii. Transportation services
- iii. Contracts and construction
- iv. Industrial dev. and technical consultancy
- v. Tourist services
- vi. Telecommunication
- vii. Any other (please specify) _____

2. During the last 10 years (1998–2008), please indicate whether the top management team (consisting of chairman and chief executives/managing directors) have completed their full assigned tenure. Yes/No

Questions relating to decision-making process

(1a) Please mention the decision-making approach pertaining to financial aspects in your organization.

- i. Only by top management (highly focused)
- ii. Participative (result oriented)
- iii. Any other (please specify) _____

(b) How frequently the major activities relating to financial decisions are reported to the

	Daily	Monthly	Quarterly	Annually	As and when needed
i. Board of directors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii. Chief financial officer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii. Government	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(2a) Please mention the levels at which financial proposals for new/further investment are initiated at

- | | |
|-------------------------------------|--------------------------|
| 1. Head office | <input type="checkbox"/> |
| 2. Regional office | <input type="checkbox"/> |
| 3. Operational/plant level | <input type="checkbox"/> |
| 4. Any other (please specify) _____ | <input type="checkbox"/> |

(b) Time taken for financial approval and implementation of a project/proposals (month = mth)

- | | 1 mth | 1-3 | 3-6 | 6-12 | more than 12 |
|-------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. Approval | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Implementation | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

(3a) Please indicate whether your enterprise has been given power to increase the selling price in tune with increase in input cost of your product. Yes/No

(b) Whether the govt. has enhanced the power of management of your company Yes/No

(b1) If yes, whether it helps in taking timely action, whenever required Yes/No

(b2) Whether it helps in increasing profitability Yes/No

(b3) Whether it helps in changing product mix Yes/No

Questions relating to financial structure and disinvestments

Financial structure

(1a) The ratio of debt to equity(D/E) should be maintained around

- | | |
|-------------------|--------------------------|
| i. Less than 1 | <input type="checkbox"/> |
| ii. 1:1 | <input type="checkbox"/> |
| iii. 2:1 | <input type="checkbox"/> |
| iv. 3:1 | <input type="checkbox"/> |
| v. Greater than 3 | <input type="checkbox"/> |

(b) If relying on equity, specify the order of preference (1, 2, 3...) number, 1 refers to first preference.

- | | |
|---|--------------------------|
| i. Equity shares | <input type="checkbox"/> |
| ii. Preference shares | <input type="checkbox"/> |
| iii. Internal, i.e., reserves and surplus | <input type="checkbox"/> |
| iv. Raising funds on your own by using GDR, ADR, etc. | <input type="checkbox"/> |
| v. Any other (please specify) _____ | <input type="checkbox"/> |

(c) If preferring to have more equity, the possible reason(s) could be

- | | |
|--|--------------------------|
| i. Not bound to pay dividend | <input type="checkbox"/> |
| ii. Flexibility in paying dividend | <input type="checkbox"/> |
| iii. Leads to more absolute earnings after taxes | <input type="checkbox"/> |
| iv. Any other (please specify) _____ | <input type="checkbox"/> |

(d) If preferring to have more debt, the possible reason(s) could be

- | | |
|--|--------------------------|
| i. Relatively cheaper source of finance | <input type="checkbox"/> |
| ii. Easily raised than equity | <input type="checkbox"/> |
| iii. Flexibility such as call ability, early repayment, etc. | <input type="checkbox"/> |
| iv. Any other (please specify) _____ | <input type="checkbox"/> |

(2a) Please mention whether the dependence on capital market of your organization in post-1997 period

- | | |
|-------------------------|--------------------------|
| i. Increased | <input type="checkbox"/> |
| ii. Decreased | <input type="checkbox"/> |
| iii. Remained unchanged | <input type="checkbox"/> |

- (b) Please indicate whether your organization has ever forgone any expected profitable investment opportunity due to paucity of financial resources. Yes/No
- (c) Whether retained earning constitutes an important source of finance Yes/No

Disinvestments

- (1a) Please mention whether your enterprise has gone for disinvestment in the past. Yes/No
 - (a1) If it has, please mention the percentage of disinvestment till March 2008: _____
 - (a2) In case it did not, the possible reasons could be
 - i. The disinvestment process is time consuming. It causes delay in the strategic objectives of the corporate
 - ii. Disinvestment does not guarantee success
 - iii. Leads to dispersion of economic power away from govt.
 - iv. Any other (please specify) _____
 - (b) In case the answer is yes, whether it has affected in improving (if required tick more than 1 option(s))
 - i. Profitability
 - ii. Efficiency in utilization of resources
 - iii. Management control
 - iv. Autonomy in decision making
 - v. No effect at all
 - vi. Any other _____
- (2a) Please indicate to what extent the disinvestments should take place.
 - i. Not at all (zero percent)
 - ii. Below 25 % (as a policy matter)
 - iii. In between 25 and 49 % (govt. having 51 % holding)
 - iv. In between 50 and 75 % (control of private sector)
 - v. Above 75 % (govt. diversify in other area)
- (b) Please specify whether disinvestments are required to improve the financial and operating performance of your organization. Yes/No

Questions relating to dividend decisions

-
- (1a) Whether your organization likes to pay dividend in changed scenario Yes/No
 - (b) Whether the payment of dividend during (In percentages) Absolute

2003–2008 has		
i. Increased	<input type="checkbox"/>	<input type="checkbox"/>
ii. Decreased	<input type="checkbox"/>	<input type="checkbox"/>
iii. Steady	<input type="checkbox"/>	<input type="checkbox"/>
 - (2a) Whether your organization follows a stable dividend policy Yes/No
 - (b) If not yet, would you like to adopt stable dividend policy in years to come? Yes/No

Questions relating to working capital

-
- (1a) Please tick whether your organization has experienced working capital shortage. Yes/No
 - (b) If yes, whether it occurs frequently/occasionally
 - (2a) Mention the sources used by your firm in financing working capital needs.
 - i. Mainly from long-term sources
 - ii. Short-term credit from commercial banks
 - iii. Short-term loans from government

- iv. Short-term credit only for the period needed
- v. Utilization of internal resources
- vi. Permanent from long-term sources and variable need from short-term sources
- (b) Please mention whether the cash surplus situation exists. Yes/No
- (3) In general, please mention the trend in respect to following items during the year 2000–2008:
- | | Increased | Decreased | Steady |
|------------------------------------|--------------------------|--------------------------|--------------------------|
| i. Inventory holding period | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ii. Collection period from debtors | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| iii. Payment period to creditors | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| iv. Trend of bad-debt losses | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Questions relating to financial performance

- (1a) Please specify whether the liberalization policies initiated in 1991 have enhanced the financial performance of your organization.
- i. Yes
- ii. No
- iii. Expected in near future
- (a1) If yes, whether the compensation of chairman has also increased in tune with financial performance Yes/No
- (b) Please rank the financial objectives of your organization, by using five-point scale (i.e., 1, extremely important; 2, very important; 3, important; 4, less important; and 5 not important at all).
- | | 1 | 2 | 3 | 4 | 5 |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| i. Maximizing return on investment in assets | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ii. Obtaining desired growth rate in earnings per share | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| iii. Maximizing share prices | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| iv. Maximizing earnings | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| v. Any other (please specify) _____ | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
- (c) Please indicate whether the financial targets of your company are communicated to
- | | Always | Generally | Sometimes | Very rarely | Never |
|-----------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| i. Subordinates | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ii. Government | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
- (2a) Please indicate whether financial performance of your organization is measured in
- i. Absolute terms
- ii. Relative terms
- iii. Both
- (b) Whether ratio analysis is used in your firm to measure the financial performance Yes/No
- (b1) If yes, which standards are being used (please tick more than one if applicable)?
- i. Budgeted standards
- ii. Historical performance of the organization
- iii. Other organization/industry standards of performance
- iv. Any other (please specify) _____
- (3a) Conceptually ROAs should be measured by dividing (EAT + interest-tax saving on interest) by average total assets. Is your company using this method? Yes/No
- (a1) If not, would you prefer to use it? Yes/No
- (b) Please mention the measures of financial performance used in your organization (tick more than one if applicable).
- i. Return on investment
- ii. Return on shareholders' fund

- iii. Return on capital employed
 - iv. Return to the govt. (including dividend, income tax, excise duty, sales tax, etc.)
 - v. Economic value added
 - vi. Any other (please specify) _____
- (4a) Please specify how inventories are handled in your organization.
- i. On the basis of demand forecast
 - ii. On the basis of production needs
 - iii. On the basis of expected sales volume
- (b) Mention the factors which cause deviation between actual and budgeted cash figures (please tick more than one, if applicable).
- i. Increase in input cost
 - I. Material
 - II. Labor
 - III. Overheads
 - ii. Decline in the demand of product
 - iii. Delay in collection from debtors
 - iv. Extraordinary expenditure for non-anticipated items
 - v. Longer time span covered in cash forecast
 - vi. Any other (please specify) _____
- (c) The compound annual growth rate of net profit for the last 5 years (2003–2008) has been
- i. Highly satisfactory
 - ii. Satisfactory
 - iii. Barely satisfactory
 - iv. Unsatisfactory
 - v. Highly unsatisfactory
- (5a) Please mention the effect of major macroeconomic factors on
- | | Very high | Moderately high | Low |
|---------------------------|--------------------------|--------------------------|--------------------------|
| i. Productivity | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ii. Financial performance | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
- (b) There is a list of important macroeconomic factors which affects the productivity and profitability of your organization. Please mention their importance on 5-point scale, e.g., 1, extremely important; 2, very important; 3, important; 4, less important; and 5, not important at all
- | | Productivity | Profitability |
|---|--------------------------|--------------------------|
| i. Govt. policies relating to business | <input type="checkbox"/> | <input type="checkbox"/> |
| ii. Product demand-supply gap | <input type="checkbox"/> | <input type="checkbox"/> |
| iii. Pricing and availability of raw materials | <input type="checkbox"/> | <input type="checkbox"/> |
| iv. Industry trends | <input type="checkbox"/> | <input type="checkbox"/> |
| v. Govt. interference in functioning of the org | <input type="checkbox"/> | <input type="checkbox"/> |
| vi. Any other (please specify) _____ | <input type="checkbox"/> | <input type="checkbox"/> |
- (6a) Please mention whether the productivity (incremental capital output ratio) has enhanced in post-liberalization period. Yes/No
- (b) Please indicate whether there is an improvement in the productivity and efficiency of workers in your organization compatible with increase in wages. Yes/No

Questions relating to Memorandum of Understanding (MoU)

(1a) Please indicate whether your organization has signed an MoU or not. Yes/No

(a1) After signing the MoUs whether the attitude of ministries has changed towards the functioning of the organization

- i. Completely
- ii. Marginally
- iii. Not at all (giving full cooperation)

(2) In case, not signed, possible reason(s) could be (tick more than one if applicable)

- i. Increases control on the organization
- ii. Restricts the functioning of the organization
- iii. Restricts the flexibility
- iv. Any other (please specify) _____

(b) Please mention to what extent MoUs help in improving the following areas on five-point scale (1, high improvement; 2, moderate improvement; 3, average improvement; 4, less than average improvement; and 5, not at all improvement)

	1	2	3	4	5
i. Financial performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii. Operating performance (assets resources)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii. Productivity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iv. Control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
v. Strategies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
vi. Information system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(2a) Are the targets mentioned in MoU consistent with the budgeted targets? Yes/No

(a1) Are the targets setting and growth parameters influenced by the Govt. of India? Yes/No

(b) Please mention whether the targets given in MoU are different from the targets when there was no MoU Yes/No

(b1) If yes, to what extent they are different?

- i. Widely different
- ii. Different
- iii. Very close

(3a) Please mention whether MoUs are flexible in readjusting the targets. Yes/No

(b) How flexible is MoU in adjusting the uncertainty and readjustment of targets based on changing conditions?

- i. Completely
- ii. Moderately
- iii. Not to great extent
- iv. Not at all

(4a) Whether MoUs help in quality enhancement in your organization Yes/No

(b) Do you think the existing performance evaluation criteria are enough to evaluate the performance of public sector enterprises in MoU? Yes/No

(b1) Whether the criteria set in MoU based on the last 5-year data Yes/No

(c) Whether the managers are free to manage within the agreed parameters (i.e., set under MoU by the government and your organization) Yes/No

(5a) To achieve its objectives and improve the performance whether MoU really delegates power as desired by public enterprises Yes/No

(a1) If not whether again you have to follow the cumbersome procedure for govt. approval Yes/No

- (a2) If yes, it improves the performance in
 - i. Short term
 - ii. Long term

(b) Please specify whether MoU assists your enterprise to face competition with private counterparts. Yes/No

(b.1) If yes, please mention on five-point scale (1 for completely, 2 partially, 3 average, 4 very low, and 5 not at all)

	1	2	3	4	5
i. Obligation of social objectives reduced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii. Autonomy in decision making increased.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii. Autonomy in financial decision increased.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iv. Reduction in govt. interference.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
v. Targets are explicit.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
vi. Objectives are focused.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(6) The difficulties anticipated by your organization in the adoption of MoU may be (please tick more than one, if applicable)

- i. The initial process of negotiation and signing of MoU
- ii. The difference in the perception of the govt. and among different govt. agencies
- iii. Assessment of the performance of unquantifiable objectives is difficult
- iv. Due to multiple objectives, focus is diluted
- v. Delay on the part of government to fulfill its commitments that it undertakes
- vi. Any other (please specify) _____

(7) Please state any other information which in your considered opinion can be helpful to my research work _____

Thanks for your cooperation

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Chapter 5

Financial Performance of PSEs in India

Abstract The public sector enterprises (PSEs) have been set up to overcome the socio-economic problems of the Indian economy; these socio-economic responsibilities have been identified as one major reason for non-profitable operations of a large number of such enterprises and financial crisis in the country. Therefore, economic reforms in 1991 have been introduced by the government to overcome with this crisis and to make these PSEs profitable as profitable organizations (only) can also discharge their social obligations better. Therefore, this chapter aims at assessing the financial performance of virtually all the non-financial central public sector enterprises (PSEs) in India for the time period of two decades (1991–1992 to 2010–2011, post-reform period). The financial performance (in terms of select financial ratios, i.e., profitability, efficiency, solvency, liquidity and productivity) has been analyzed separately for (1) manufacturing and service sector central PSEs and (2) profit-making and loss-making central PSEs.

Findings suggest that service sector PSEs have indicated better profitability and liquidity compared to manufacturing sector PSEs; the productivity of capital, inventory holding period, and debtor collection period have shown an appreciable improvement in both types of manufacturing and service PSEs. As far as profit-making and loss-making PSEs are concerned, (as expected) profitability, operating efficiency, liquidity, and productivity of profit-making CPSEs are better compared to loss-incurring CPSEs. It is gratifying to note that inventory holding period, leverage position, and productivity per manpower have recorded satisfying performance in loss-incurring CPSEs. The loss-incurring CPSEs (as a group) have ceased their losses and have started earning profits w.e.f. 2005–2006 onwards. However, they have continued to be beset with low assets turnover ratios, dissatisfactory liquidity position, usage of high debt, and deterioration (decrease) in net income efficiency over the years; they seem to be in worrisome zone, needing urgent attention and effective governmental policies. It is important to mention that among the loss-incurring CPSEs, one-fourth of the enterprises (as per upper quartile) have recorded a good amount of improvement and satisfactory trend in almost all the parameters across the phases.

Keywords Public sector enterprises (PSEs) • Economic reforms • Financial performance • Ratio analysis • Profitability ratios • Efficiency ratios • Liquidity ratios • Leverage ratios and productivity ratios

5.1 Introduction

Public sector enterprises (PSEs) in India have been initially expected to act primarily as an instrument to achieve self-reliant economic growth and to overcome the socio-economic problems. These socio-economic responsibilities of PSEs have been identified as one of the major reasons for non-profitable operations of a large number of such enterprises; this, in turn, has caused heavy burden on a large number of enterprises leading to mounting losses, eventually causing precarious situation. Therefore, subsequent to Economic Reforms 1991, the government has desired that these PSEs should be financially profitable as profitable organizations can also discharge their social obligations better; they should not depend on government for budgetary support (to meet their mounting losses and expansion needs) in view of its own rising fiscal deficits. This chapter, therefore, aims at assessing the financial performance of virtually all the non-financial central PSEs in India.

For better exposition, the chapter has been divided into five sections (including introduction). Section 5.2 discusses the methodology, data source, and scope of the study. The financial performance of the manufacturing and service sector central public sector enterprises (in terms of select financial ratios) has been carried out in Sect. 5.3. Section 5.4 examines and compares the performance of profit-making and loss-making central PSEs. Section 5.5 presents the summary of results and major findings.

5.2 Scope and Methodology

Research methodology (used for analysis) has already been described in Chap. 4. This section recapitulates its major points.

The study is limited to 209 non-financial central public sector enterprises (PSEs) in India, in respect of which complete required data was available. It contains virtually the universe of the entire industrial group of PSEs in India. Further, the sample size varies from year to year on account of year of incorporation/closure of the sample PSEs and availability of data. The secondary data, for this purpose, has been collected from the various volumes of Public Enterprises Survey. The period of the study covers 20 years, i.e., 1991–1992 to 2010–2011. The time span of the study has been divided into four phases, i.e., 1991–1992 to 1995–1996 (first phase), 1996–1997 to 1999–2000 (second phase), 2000–2001 to 2007–2008 (third phase), and 2008–2009 to 2010–2011 (fourth phase) with intent to judge whether their performance has improved over the years (in these phases) or not. The rationale of the period coverage of the phase has been outlined in the following paragraphs.

The 1990s witnessed the emergence of globalization and liberalization in India. During the same time frame, the government was facing a severe fiscal crisis; this inevitably forced the Government of India to introduce economic reforms (in terms of disinvestment, signing of MoUs, etc.) and to introduce liberal or market-friendly/oriented policies/practices. Accordingly, the process of liberalization started in the year 1991 followed by disinvestment process initiated in 1991–1992 and up to 1995–1996 partial disinvestments were taking place in piecemeal manner. Therefore, the first phase from 1991–1992 to 1995–1996 has been considered as the initial phase of liberalization, economic reforms, and disinvestment.

During the year 1996–1997, the government introduced global depository receipts (GDRs) in international market (Public Enterprises Survey 2000–2001) as well as institutionalized the disinvestment process by constituting the Disinvestment Commission in August 1996 for the period of 3 years. The term of Commission was further extended in November 1999. Till 1999–2000, disinvestment was mainly through sale of minority shares in small lots; this phase has been referred to as the second phase of disinvestment or intermediate phase of liberalization policies (i.e., 1996–1997 to 1999–2000) when many institutions are streamlined.

Further, the regulations relating to the provisions of corporate governance¹ have been accepted in the year 2000, and from 2000 to 2001, the emphasis of disinvestment policy has shifted from partial disinvestment to strategic disinvestment. Hence, the third phase for the study relates to 2000–2001 to 2007–2008, referred to as matured phase of liberalization policies. The subsequent period (i.e., 2008–2009 to 2010–2011) is of particular importance, due to the recession (subsequent/due to American financial crisis) that had impacted the world economy during the second half of 2008 (details have been discussed in Chap. 4). It is pertinent to mention here that to assess the impact of recession, the entire year of 2008–2009 has been included in the post-recession phase primarily due to two reasons: First, the balance sheet and statement of profit and loss of these companies are available in a consolidated manner and second, it was not feasible to separate it for a particular year 2008–2009 on the basis of when recession actually started impacting a particular data variable (Jain et.al., 2013). Hence, to assess the impact of recession on the performance of these PSEs, the fourth phase (2008–2009 to 2010–2011) has been referred to as post-recession phase.

On the basis of time series data of two decades (i.e., 1991–1992 to 2010–2011) of the sample PSEs (209 in number), mean, median, and quartile values of all the 18 ratios (pertaining to profitability, efficiency, liquidity, leverage, and productivity) have been computed; mean, median, and quartiles of all the sample PSEs during each of the respective phase are based on the calculated values of mean of mean values, median of median values, and quartile of quartile values of each enterprise during each individual phase.

¹To improve the level on corporate governance in India, a committee was set up by the Security and Exchange Board of India (SEBI) in May 1999 under the chairmanship of Kumar Mangalam Birla. In January 2000, SEBI has accepted the recommendations of corporate governance committee. The Companies Act 1956 was amended to incorporate certain provisions to raise the level of corporate governance.

The questionnaire survey has been carried out to collect information related to various aspects, having a bearing on their financial performance. The questions were simple, specific, and objective type; opinion-based and subjective information/queries were kept to the minimum in order to keep the study more objective and scientific. The analysis is based on 30 responses received out of 209 enterprises after two reminders, email, and telephonic conversation. All the 30 respondents have not responded to all the questions contained in the questionnaire. Prima facie, the response level is low. However, this response level needs to be seen in the light of what is commonly perceived as sensitive nature of information sought for the purpose of the study and much smaller size of sample for the past such studies on the subject in India and abroad.

To determine the change over a period of time among the four phases, paired *t*-test and *t*-test have been carried out. The financial performance of sample enterprises has been measured primarily in terms of ratio analysis pertaining to the several variants of profitability, efficiency, liquidity, and solvency. Profitability has been measured based on investment as well as sales; there are three major concepts of investment, namely, assets, capital employed, and shareholder's equity; based on each of them, three broad categories of rates of return (ROR) are formed, i.e., return on total assets (ROTA), return on capital employed (ROCE), and return on net worth or shareholder's equity (RONW); the first two RORs determine how efficiently the financial resources are deployed by the PSEs, and the third ROR indicates the return earned for their equity owners (government). These rates of return have been computed based on average assets, average capital employed and average net worth; the average is based on their respective values at the beginning and end of the year. ROTA has been determined on the basis of earnings before interest and taxes (EBIT) (which includes other incomes/revenue receipts); it expresses the relationship between total EBIT earned and average total assets in use (which includes net block of fixed assets, other items in the nature of fixed assets, investments, total current assets, and deferred revenue/preliminary expenditure; it excludes accumulated deficits, capital work-in-progress, and unallocated expenditures during construction).

Similarly, ROCE indicates how efficiently the long-term funds of the owners and lenders are being used; these rates focus directly on operating efficiency. It is computed dividing (EBIT – other incomes) by average capital employed. RONW has been computed dividing net profit after taxes minus preference divided to the average net worth (share capital plus reserves minus accumulated deficit and deferred expenditures).

Return on the basis of sales has been computed in terms of operating profit margin (OPM) and net-profit margin (NPM). OPM indicates the magnitude of operating profit in terms of sales; NPM determines the relationship of reported net profit after taxes to sales; these margins indicate the management's ability to perform the business profitably and express the overall cost/price effectiveness (Helfert 2003).

Similarly, efficiency/effectiveness in utilization of resources has been determined on the basis of three dimensions, i.e., the first one is concerned with the extent of utilization of assets, namely, total assets turnover ratio (TATR), fixed assets turnover ratio (FATR), and current assets turnover ratio (CATR). Low

turnover is indicative of under-utilization of available resources and presence of idle capacity. TATR indicates the efficiency with which the firm uses its assets to generate sales; in general, the higher the firm's TATR, the more efficiently are the assets being used (Gitman 2009). TATR, FATR, and CATR are computed dividing average net sales to average total assets in use, average fixed assets, and average current assets, respectively. Net sales excludes excise duty, commission, rebates, and discount from gross sales.

The efficiency of current assets is based on analyzing the change in holding period (in number of days) of various types of inventories and collection period of debtors which are the two major constituents of current assets. Inventory management has dual effect: first, to minimize investments in inventory (in order to reduce its carrying costs) and to meet the demand for products by efficient production and sales operations (to minimize stock-out or holding costs). In other words, inventory management signifies trade-off between cost and benefits associated with holding of inventory. Similarly, credit sales play an important role in modern competitive economic system. In fact, it has been treated as marketing tool to promote sales and, therefore, to generate profits. For obvious reasons, extension of credit carries both risk and cost; therefore, the aspect of debtor collection period (credit policy) has been analyzed.

Raw-material inventory holding period (RMIHP) is the ratio of raw materials used during the year and average raw materials. Work-in-process inventory holding period (WPIHP) has been computed on the basis of cost of production and average work in progress. Finished-goods inventory holding period (FGIHP) is based on the relationship between cost of goods sold and average finished goods. Debtor collection period (DCP) presents the relationship between gross sales (numerator) and average debtors.

The second dimension provides insight of their capital structure practices and liquidity position. Total debt to total equity (TD/TE) has been used to determine the capital structure practices; it is the relationship between total external obligations and owners' funds/shareholders' funds; shareholders' funds include equity capital, preference capital, reserves, and surpluses and exclude accumulated deficit and deferred expenditures not written off. Total debt is inclusive of short-term debt as bank/cash-credit advances, current liabilities and provisions, and long-term loans; the reason is that the short-term advances are ostensibly short term, but they are generally renewed year after year and, hence, serve the long-term needs of the firm (Jain and Yadav 2005).

Liquidity has been assessed by current ratio (CR) and acid test ratio (ATR). CR takes into account five items of current assets, i.e., cash and bank balances, sundry debtors, inventories, loans and advances, and stock of other current assets.

One of the social responsibilities of PSEs is to employ large number of workforce; therefore, it works as a model employer. Their successful operation and productivity to an extent depends on the skill and capability of the workforce. Thus, third test is based on analyzing the productivity of capital per manpower which has been assessed in terms of level of employment, sales efficiency, and net income efficiency ratios.

The entire set of data has been analyzed by using Statistical Package for Social Sciences (SPSS) and Excel worksheet. To do away with the influence of extreme values, they have been excluded from the data. However, their inclusion has been

considered important in preparation of the frequency distribution tables. The details of the excluded values have been provided at the footnotes of the tables of the respective ratios.

5.3 Manufacturing and Service Sector PSEs

The objective of this section is to assess the financial performance of the sample enterprises by bifurcating them into two broad categories, namely, manufacturing and service sectors; this is to ascertain whether the financial performance is the same for both types of enterprises or different.

For the purpose of analysis of both types of PSEs, the section has been sub-divided into four parts. While the Sect. 5.4.1 assesses profitability, Sect. 5.4.2 examines efficiency; the aspects of leverage and liquidity have been dealt in Sect. 5.4.3; productivity of capital forms the subject matters of Sect. 5.4.4. It is hypothesized that the financial performance of both types of sample PSEs is likely to show improvement in subsequent phases compared to the first/initial phase.

5.3.1 Profitability Test

Profitability has been measured in terms of RONW, ROCE, ROTA, OPM and NPM parameters; the values of mean, median, quartile one, and quartile three of these ratios have been presented in Tables 5.1, 5.2, 5.3, and 5.4 (including the paired *t*-test).

The relevant data related to the mean profitability (in terms of investment and sales) of manufacturing and service PSEs (contained in Tables 5.1 and 5.3) indicates that the service PSEs have better profitability (except in ROCE) during the aggregate period as well as in almost all the sub-phases of the study vis-à-vis manufacturing PSEs. The profitability measured in terms of RONW, ROTA, OPM, and NPM of manufacturing enterprises (expressed in percentages) are 10.85, 2.34, 7.34, and 1.49, respectively, whereas the respective figures for service PSEs are 11.58, 4.36 (nearly two times higher), 9.61 (higher than 30 %), and 2.29 (more than one and a half times).

Although the profit record of manufacturing PSEs is unsatisfactory for the period as a whole, it is gratifying to note that there has been an improvement in its profitability record in phases 3 and 4 compared to the earlier two phases. For instance, ROTA of manufacturing enterprises during the first two phases is extremely low (less than one percent). Likewise, net-profit margin was at dismal low during the first two phases; in fact, it was negative, being -2.57 % and -3.02 %, respectively. In marked contrast, there has been a substantial improvement in all the five profitability ratios in phases 3 and 4 compared to the previous phases. It is statistically significant in the case of RONW during phases 2 and 3 as well as phases 3 and 4. Similarly, as expected ROCE is higher than ROTA over the period of the study; the respective figures are 6.29 and 2.34 %.

Table 5.1 Mean values of key profitability ratios of the manufacturing PSEs, 1991–1992 to 2010–2011 (Figures are in percentages)

Years	RONW		ROCE		ROTA		OPM		NPM	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
1991–1992	6.65	80	8.83	95	1.42	131	4.72	119	-1.53	109
1992–1993	8.94	82	6.95	98	0.62	133	3.58	119	-1.16	111
1993–1994	6.06	85	5.21	96	0.24	130	3.96	116	-2.34	108
1994–1995	7.33	86	6.04	94	0.44	130	4.69	113	-0.73	106
1995–1996	7.40	83	6.32	93	1.14	129	4.71	117	-0.02	106
1996–1997	7.47	76	6.41	91	2.41	123	8.20	108	2.42	100
1997–1998	7.66	79	5.26	99	1.42	123	6.20	108	-2.20	104
1998–1999	7.26	78	2.23	99	0.53	122	4.79	109	-3.43	104
1999–2000	6.00	76	-2.50	97	-1.93	122	-0.30	106	-5.68	103
2000–2001	6.71	67	2.72	84	-0.17	113	6.29	93	-0.02	89
2001–2002	8.49	65	1.63	83	-0.34	116	4.93	96	0.42	90
2002–2003	11.00	66	1.79	85	0.21	116	4.01	98	-0.59	90
2003–2004	17.61	68	8.02	84	4.98	118	7.20	93	-0.49	92
2004–2005	19.28	70	10.79	85	4.00	118	9.71	93	5.76	90
2005–2006	19.48	75	8.59	85	4.68	116	14.42	93	7.11	90
2006–2007	16.75	73	8.15	76	5.35	100	12.79	78	7.73	86
2007–2008	15.92	70	11.29	78	5.39	111	12.98	81	7.56	85
2008–2009	13.76	70	8.56	77	4.27	99	10.32	83	4.65	84
2009–2010	11.38	68	7.52	79	4.81	103	11.50	86	5.66	85
2010–2011	11.86	71	11.89	78	7.24	98	12.17	82	6.66	85
Mean 1991–1992 to 1995–1996 (phase 1)	7.39	87	6.34	98	0.23	134	3.47	123	-2.57	113
Mean 1996–1997 to 1999–2000 (phase 2)	7.05	80	1.95	100	0.11	125	4.71	111	-3.02	106
Mean 2000–2001 to 2007–2008 (phase 3)	14.43	77	6.49	90	2.00	124	8.47	102	2.48	99
Mean 2008–2009 to 2010–2011 (phase 4)	12.34	72	9.18	80	5.29	103	10.82	87	5.58	86
Aggregate mean (1992 to 2011)	10.85		6.29		2.34		7.34		1.49	

Notes:

1. PSEs having negative net worth have been excluded and RONW has been based on net profit
2. OPM and NPM stand for operating profit margin and net-profit margin on sales
3. ROTA is based on earnings before interest and taxes (EBIT)
4. ROCE is based on operating profit which excludes nonoperating incomes (or other incomes) from EBIT
5. *ROTA*: return on total assets, *ROCE*: return on capital employed, *RONW*: return on net worth, *OPM*: operating profit margin, *NPM*: net-profit margin
6. RONW plus/minus 75 %, ROCE plus/minus 75 %, ROTA plus/minus 60 %, OPM plus/minus %, NPM plus/minus 60 % have been excluded

These points hold true for other tables mentioned in this chapter

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
RONW	77	0.37	69	0.00**	69	0.02*
ROCE	89	0.01**	92	0.69	77	0.54
ROTA	123	0.05*	115	0.25	102	0.09
OPM	106	0.04*	99	0.60	84	0.50
NPM	99	0.03*	91	0.07	83	0.19

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

The findings are revealing in nature in that recession has not affected the profitability of manufacturing PSEs (except marginally in respect to RONW) and service PSEs (save RONW and ROCE). On the contrary, there has been an improvement in profitability in years after 2002–2003 notwithstanding recession in phase 4. The increase in rate of return may primarily be attributed to the efforts undertaken by the government (as a matter of policy decisions) over a period of time. These include reduction in the amount of excise duty, custom duty, sales tax, and other duties; decline in operating expenditures; deregulation of administrative price mechanism (APM); enhancement of capacity utilization; manifold increase in turnover; reduction of number of sick units; and revival of loss-making PSEs (over a period of time by inducting sizable investments in these PSEs as a government policy to overcome them).

It is gratifying to note that both types of public enterprises have earned positive operating profit(s) (profit before interest and tax) during the entire period of the study. However, net-profit record has not been equally good in all the years under study due to interest burden and higher amount of provision(s) of income tax. The reason for higher interest may be ascribed to more than twelvefold increase in investments of PSEs during the period of the study (i.e., 1990–2011). Investment in PSEs has grown from Rs. 99,329 crore (Rs. 993,290 millions) as of 31 March 1990 to Rs. 421,089 crore (Rs. 4,210,890 millions) as of 31 March 2007 and further to 1,237,051 crore (12,370,510 millions) as of 31 March 2011 (Public Enterprises Survey 2006–2007, 2010–2011). The substantial part of additional investments has been made through debt/borrowings.

Figures 5.1, 5.2, 5.3, and 5.4 depict the trend of these ratios; it is almost an upward trend after 1999–2000 (except RONW, registering downward movement after 2006–2007) in the case of manufacturing enterprises and from 2001 to 2002 for service PSEs in majority of the cases. Paired *t*-test has also established significant difference in RONW (during second and third phases as well as in third and fourth phases), ROCE, ROTA, and NPM (in first and second phases) in the case of manufacturing enterprises (Table 5.1). Accordingly, the difference has been observed significantly in ROTA (during first and second phases) only for service enterprises (Table 5.3).

Table 5.2 Median, lower (Q1), and upper quartile (Q3) values of key profitability ratios of the manufacturing PSEs, 1991–1992 to 2010–2011 (Figures are in percentages)

Ratios	Median											
	Q1				Q3				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
RONW	6.9	7.4	14.1	11.7	-0.1	-1.6	2.1	1.3	18.4	17.7	28.9	23.3
ROCE	6.3	3.6	8.0	9.1	-2.4	-14.9	-16.6	-5.0	18.5	16.5	28.6	25.2
ROTA	4.55	3.64	3.47	6.31	-10.68	-12.81	-12.97	-3.52	11.39	11.42	16.02	16.07
OPM	6.8	6.6	6.7	8.2	-12.6	-10.0	-9.7	0.2	16.5	19.5	23.9	24.8
NPM	1.8	1.4	3.6	5.3	-12.0	-18.8	-16.6	-3.1	10.6	11.0	17.4	18.3

Table 5.3 Mean values of key profitability ratios of the service PSEs, 1991–1992 to 2010–2011 (Figures are in percentages)

Years	RONW		ROCE		ROTA		OPM		NPM	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
1991–1992	7.50	37	4.84	46	6.12	52	10.10	50	-0.30	48
1992–1993	7.41	39	2.04	47	5.65	53	10.86	50	0.76	50
1993–1994	6.83	39	2.60	48	4.66	53	8.98	52	-1.24	50
1994–1995	3.13	39	3.11	44	5.35	52	9.63	52	-1.11	51
1995–1996	12.81	35	1.03	41	6.15	52	12.32	50	3.02	50
1996–1997	11.65	38	1.49	49	4.73	57	13.99	51	3.24	52
1997–1998	11.18	38	1.32	48	4.49	56	11.32	52	1.14	53
1998–1999	11.19	39	0.21	50	2.57	57	7.13	53	0.15	52
1999–2000	10.22	39	-0.14	47	2.78	55	7.66	50	0.38	52
2000–2001	8.91	33	2.07	47	1.27	54	4.91	50	1.50	48
2001–2002	9.45	41	1.02	51	0.82	60	5.50	53	-0.53	52
2002–2003	15.43	42	4.98	52	1.81	61	6.24	57	-0.10	54
2003–2004	16.26	43	4.76	51	4.60	60	9.45	54	5.08	52
2004–2005	13.63	43	7.95	51	3.70	61	8.94	56	3.60	54
2005–2006	15.41	43	8.49	49	5.02	59	10.31	54	5.81	54
2006–2007	16.84	42	4.39	49	6.42	55	11.11	51	6.30	53
2007–2008	14.46	40	4.45	48	6.49	58	12.85	53	6.07	55
2008–2009	14.31	45	4.36	52	6.43	55	11.38	54	6.04	55
2009–2010	13.76	45	3.32	51	3.79	57	10.60	53	2.76	54
2010–2011	11.18	46	3.10	48	3.58	58	8.97	55	3.32	53
Mean 1991–1992 to 1995–1996 (phase 1)	7.12	40	2.93	48	5.57	53	10.39	52	0.31	52
Mean 1996–1997 to 1999–2000 (phase 2)	10.94	40	0.74	51	3.57	57	9.71	53	0.70	53
Mean 2000–2001 to 2007–2008 (phase 3)	14.28	44	4.10	55	3.39	61	9.01	57	2.24	56
Mean 2008–2009 to 2010–2011 (phase 4)	12.65	47	3.52	53	4.55	57	10.35	55	3.79	55
Aggregate mean (1992–2011)	11.58		3.27		4.32		9.61		2.29	

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
RONW	34	0.62	32	0.99	41	0.57
ROCE	45	0.08	47	0.71	50	0.62
ROTA	52	0.04*	53	0.36	55	0.82
OPM	47	0.82	50	0.21	53	0.65
NPM	48	0.76	50	0.96	54	0.53

*Signifies to significant difference at 5 % level

Table 5.4 Median, lower (Q1), and upper quartile (Q3) values of key profitability ratios of the service PSEs, 1991–1992 to 2010–2011 (Figures are in percentages)

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
RONW	9.3	10.4	11.8	13.1	1.4	0.4	2.4	3.0	20.8	19.9	28.9	23.9
ROCE	2.0	2.2	4.8	3.3	-10.7	-13.7	-13	-11.9	13.5	18.2	22.5	19.0
ROTA	6.67	6.04	5.03	5.27	0.16	-2.98	-1.23	0.62	12.18	14.69	13.92	11.14
OPM	8.1	4.7	5.6	6.8	-0.1	-1.7	-1.9	1.1	23.1	21.2	26.6	21.2
NPM	1.9	1.2	1.0	3.6	-13.4	-7.4	-5.3	-0.6	12.0	11.8	19.2	13.1

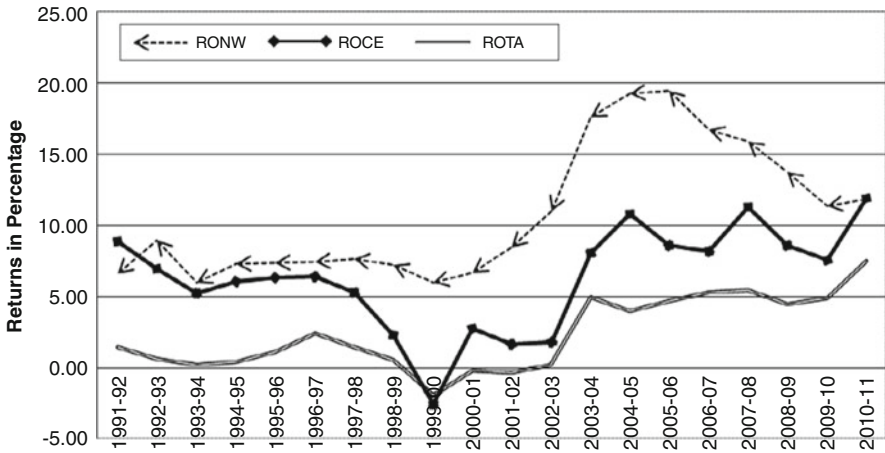


Fig. 5.1 Mean values of profitability ratios (RONW, ROCE and ROTA) of the manufacturing PSEs for the years 1991–1992 to 2010–2011

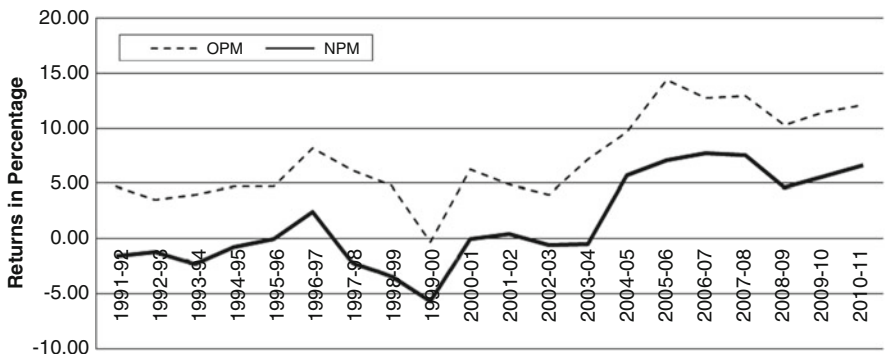


Fig. 5.2 Mean values of the profitability ratios (OPM and NPM) of the manufacturing PSEs for the years 1991–1992 to 2010–2011

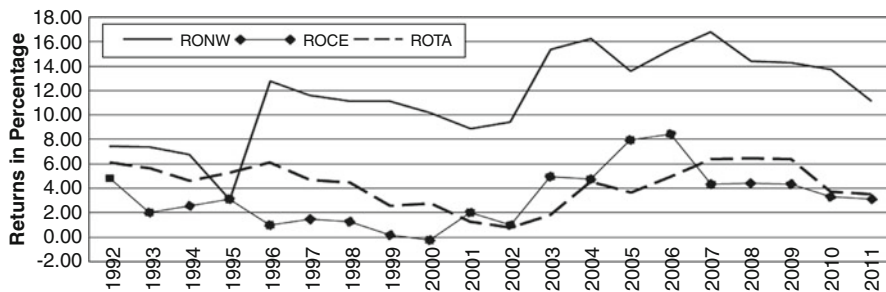


Fig. 5.3 Mean values of profitability ratios (RONW, ROCE and ROTA) of the service PSEs for the years 1991–1992 to 2010–2011

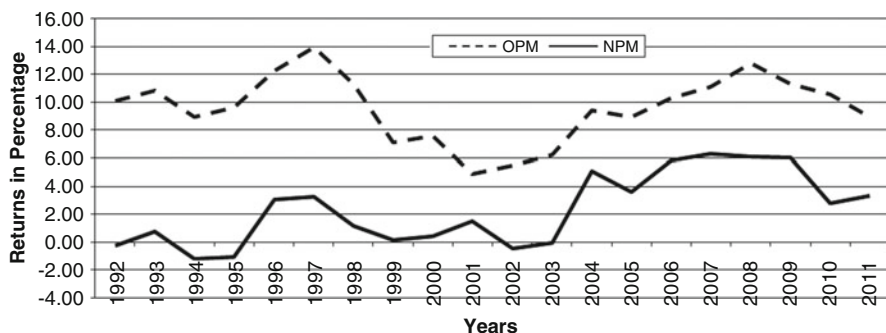


Fig. 5.4 Mean values of the profitability ratios (OPM and NPM) of the services PSEs for the years 1991–1992 to 2010–2011

The positional values (median, quartile one, and quartile three) contained in Tables 5.2 and 5.4 manifest better profitability in four parameters of profitability (albeit marginally, except ROTA) in three-fourth of the manufacturing and service enterprises during phases 3 and 4 (as per median and upper quartile) compared to the first two phases. Marked decline in profitability has been observed during phase 2 of both types of PSEs, whereas profitability of the remaining one-fourth (as per lower quartile) of the manufacturing enterprises has declined severely compared to service PSEs in the corresponding period. It is useful to mention that all the profitability ratios in respect to PSEs are significantly lower compared to Indian private sector corporates in a recent study conducted by Jain et al. (2013).

It is gratifying to learn from the survey that the tenure of top management team is completed in three-fourth of the responded PSEs to the survey (Table 5.5); inter se, the share of tenure completion of service enterprises is above nine-tenth compared to six-tenth of manufacturing enterprises. Further, the decision-making approach has been reported to be highly participative in three-fifth of the manufacturing enterprises; this figure is two-fifth in service sector enterprises (Table 5.6). It needs no emphasis that stable tenure of the top management team and focused/participative decision-making approach have salutary effect on the operating performance of business enterprises.

Table 5.5 Relative proportion of the sample PSEs (based on survey) in which top management team has completed their tenure in India

Opinion	Service (out of 11)		Manufacturing (out of 19)		Combined (out of 30)	
	In no.	In %	In no.	In %	In no.	In %
Yes	10	90.9	12	63.2	22	73.3
No	1	9.1	7	36.8	8	26.7
Total	11	100.0	19	100.0	30	100.0

Table 5.6 Decision-making approach on financial aspects among survey PSEs in India

Preference	Service (out of 11)		Manufacturing (out of 19)		Combined (out of 30)	
	In no.	In %	In no.	In %	In no.	In %
Focused	5	50.0	5	26.3	10	34.48
Participative	4	40.0	13	68.4	17	58.62
Any other	1	10.0	1	5.3	2	6.90
Total	10	100.0	19	100.0	29	100.00

Frequency distribution data is more revealing (refer to Annexures 5A.1, 5A.2, 5A.3, 5A.4, and 5A.5). The sizable number of enterprises has incurred negative return (or losses) on their investments; they are in the range of less than one-tenth, more than one-third to one-half, three-seventh to less than one-fourth, three-seventh to one-fifth, and two-fifth to less than one-fourth enterprises in the cases of RONW, ROCE, ROTA, OPM, and NPM, respectively. However, it is gratifying to note that the number of loss-making PSEs has declined to nearly 10, 35, 17, 18.3, and 22.6 % (in five measures of profitability, respectively) in the subsequent years. Further, the modal class group of the enterprises earning positive return in the block of 0–30 % are in the range of about three-fifth to three-fourth in the case of RONW, two-fifth to three-fifth for ROCE, and one-half to more than three-fifth for ROTA; the same is two-fifth to more than one-half for OPM and less than one-half for NPM; findings of frequency distribution equally support the analysis. Recession hardly has an impact on the profitability of both manufacturing and service sector PSEs.

It is worth mentioning that according to the questionnaire survey, two-third of the sample PSEs are computing the return on total assets (ROTA) on theoretically and conceptually sound basis: dividing earnings after taxes (EAT) + interest – tax savings on interest by the average assets (Table 5.7). Likewise, equally satisfying observation from the survey is that a vast majority (five-sixth) of the responded PSEs has mentioned that the compounded annual growth rate (CAGR) in their net profits has remained satisfying during 2003–2008 (Table 5.8). In view of the above, it is reasonable to infer that the findings of the survey corroborate with our study that there has been an improvement in profitability of sizable number of the sample PSEs during the later phases of the study. The enterprises which have shown improvement in profitability either have increased their profits or reduced losses over a period of time (Public Enterprises Survey 2002–2003).

The survey findings (tabulated in Table 5.9) indicate that the four-fifth of responded PSEs reckon to maximize earnings and return on investment (ROI) as

Table 5.7 Survey response to sound basis^a of computing ROA followed by sample PSEs in India

Opinion	Public sector enterprises (responded 30)	
	In no.	In %
Yes	19	66.7
No	8	33.3
Total	27	100.0

^aROA (EAT + interest-tax savings on interest) divided by average total assets

Table 5.8 Survey response on compounded annual growth rate of net profit of sample PSEs in India from 2003 to 2008

S. no.	Options	Public sector enterprises (responded 30)	
		In no.	In %
1	Satisfactory	25	86.21
2	Barely satisfactory	1	3.45
3	Unsatisfactory	3	10.35
	Total	29	100.00

Table 5.9 Financial objectives followed by sample PSEs in India

Options	Maximize return on investment		Desired earning per Share		Maximize share prices		Maximize earnings	
	In no.	In %	In no.	In %	In no.	In %	In no.	In %
Very important	24	80.0	17	56.7	8	28.57	24	80.0
Important	2	6.7	9	30.0	12	42.85	4	13.4
Not important at all	4	13.3	4	13.3	8	28.57	2	6.7
Total	30	100.0	30	100.0	28	100.00	30	100.0

their most important objectives out of all the objectives. Desired EPS has been considered to be very important nearly by one-half of the PSEs. It is surprising to note that “to maximize share prices” is the least preferred choice.

The independent samples test (shown in Table 5.10) of the mean profitability of manufacturing PSEs (Table 5.1) and mean profitability of service PSEs (Table 5.3) indicates insignificant difference across the phases in both types of PSEs (save ROTA and OPM during phase 1 only); it is reasonable to conclude from the relevant data and group statistics referred in these tables that service PSEs have performed better (albeit, insignificant statistically) in majority of the parameters related to profitability compared to manufacturing PSEs.

5.3.2 Efficiency Test

This sub-section assesses operational and productive efficiency of resources/assets as the second variant of measuring the financial performance of the sample manufacturing and service PSEs. The analysis is based on computation of all major

Table 5.10 Independent sample *t*-test to find out significance of difference between the sample manufacturing and service PSEs during 1991–1992 to 2010–2011 (group statistics)

Ratios	Coding	Mean		Mean		Mean		Mean	
		<i>N</i>	Phase 1	<i>N</i>	Phase 2	<i>N</i>	Phase 3	<i>N</i>	Phase 4
RONW	M	87	7.4	80	7.0	77	14.4	72	12.3
	S	40	7.1	40	10.9	44	14.3	47	12.6
ROCE	M	98	6.3	100	1.9	90	6.5	80	9.2
	S	48	2.9	51	0.7	55	4.1	53	3.5
ROTA	M	134	0.2	125	0.1	124	2.0	103	5.5
	S	53	5.6	57	3.6	61	3.4	57	4.6
OPM	M	123	3.5	111	4.7	102	8.5	87	10.8
	S	52	10.4	53	9.7	57	9.0	55	10.3
NPM	M	113	-2.6	106	-3.0	99	2.5	86	5.6
	S	52	0.3	53	0.7	56	2.2	55	3.8

Notes:

M stands for manufacturing PSEs, *S* for service PSEsIndependent samples *t*-test

Ratios	Variances	<i>t</i> -test for equality of means							
		Phase 1		Phase 2		Phase 3		Phase 4	
		df	Sign.	df	Sign.	df	Sign.	df	Sign.
RONW	EV	125	0.92	118	0.17	119	0.95	117	0.92
	NEV	58	0.93	75	0.18	86	0.95	103	0.92
ROCE	EV	144	0.2	149	0.73	143	0.45	131	0.12
	NEV	97	0.2	89	0.74	131	0.43	106	0.12
ROTA	EV	185	0.02*	180	0.15	183	0.53	158	0.68
	NEV	166	0.00**	139	0.12	136	0.51	147	0.65
OPM	EV	173	0.05*	162	0.15	157	0.87	140	0.9
	NEV	108	0.04*	106	0.15	112	0.87	112	0.9
NPM	EV	163	0.36	157	0.27	153	0.94	139	0.58
	NEV	108	0.35	97	0.28	118	0.94	126	0.57

Notes:

EV: equal variances assumed, *NEV* equal variances not assumed

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

turnover ratios (namely, TATR, FATR and CATR), as turnover is the primary mode to measure the extent of utilization of assets. Low turnover ratios are indicative of under-utilization of available resources and presence of idle capacity. The CATR and FATR ratios would be indicative of the effectiveness in utilization of current assets and fixed assets, respectively.

Further, debtor collection period (DCP) and holding period of various types of inventories (namely, RMIHP, WIPIHP, and FGIHP) have also been computed. The government has introduced several policies to enhance the operational efficiency and competitiveness in them. Therefore, it is hypothesized that the assets utilization capacity of both types of the sample PSEs has improved over a period of time.

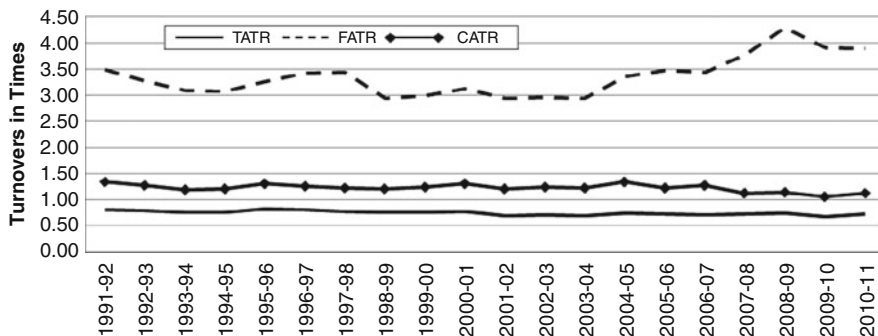


Fig. 5.5 Mean values of turnover ratios (TATR, FATR and CATR) of the manufacturing PSEs for the years 1991–1992 to 2010–2011

As far as the efficiency in respect to utilization of total assets (measured in terms of TATR) and current assets (based on CATR) is concerned, the performance of service enterprises has been observed to be marginally better compared to manufacturing enterprises during the entire period and sub-phases of the study. However, there is virtually no difference pertaining to FATR in the two types of PSEs, albeit better in manufacturing PSEs (Tables 5.11 and 5.13). The TATR of less than one for both the categories of PSEs for the entire period of the study can be regarded, *prima facie*, as unsatisfactory. It is indicative of under-utilization of resources available with them. However, its segregated FATR and CATR have not been observed to be equally unsatisfactory. In fact, the FATR can be reckoned as satisfactory (the ratio is more than three times) for both categories of PSEs, the reason ascribed to this is notable increase in the capacity utilization of assets. Therefore, it is gratifying to note that recession has not caused an adverse impact in long-term assets utilization of these enterprises (Annexure 5A.6).

The mean CATR of 1.22 (manufacturing PSEs) and of 1.39 (service PSEs), *per se*, signals/signifies the excessive investments in current assets in relation to sales made by them as well as carrying/holding substantial cash and bank balances. This, *prima facie*, reinforces their contention of not using them efficiently due to worldwide pressure of recession on them. Positional values have also broadly depicted the similar results (Tables 5.12 and 5.14). As per trend (phase-wise), significant difference has been observed in phases 3 and 4 in the stated rates of CATR (both types of enterprise). It is important to note that total assets, in computation of TATR, include investment, capital work in process, and deferred revenue expenditures; these items have been excluded in determining FATR. Given the satisfactory level of FATR, unsatisfactory level of TATR may primarily be attributed to low CATR; the impact of recession has been observed primarily in CATR as it has recorded a decrease during phase 4 *vis-à-vis* phase 3.

Data pertaining to frequency distribution are supportive to the above findings (refer to Annexures 5A.7 and 5A.8). For instance, less than one-fourth of the sample PSEs have FATR of less than one; likewise, 40–60 % of such enterprises have CATR

Table 5.11 Mean values of key turnover ratios of the manufacturing PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Years	TATR		FATR		CATR	
	Mean	N	Mean	N	Mean	N
1991–1992	0.82	137	3.49	128	1.34	133
1992–1993	0.80	140	3.27	130	1.27	135
1993–1994	0.77	140	3.09	130	1.19	136
1994–1995	0.77	140	3.07	131	1.21	136
1995–1996	0.83	140	3.26	129	1.31	136
1996–1997	0.81	140	3.42	126	1.26	138
1997–1998	0.79	139	3.44	130	1.22	138
1998–1999	0.76	139	2.95	126	1.20	138
1999–2000	0.76	139	2.98	126	1.23	136
2000–2001	0.78	131	3.13	119	1.31	127
2001–2002	0.70	137	2.94	125	1.20	132
2002–2003	0.72	136	2.96	124	1.25	132
2003–2004	0.71	137	2.94	125	1.22	134
2004–2005	0.75	136	3.35	122	1.33	129
2005–2006	0.73	130	3.47	113	1.23	126
2006–2007	0.72	118	3.44	104	1.27	115
2007–2008	0.73	117	3.77	99	1.12	115
2008–2009	0.74	110	4.29	100	1.14	110
2009–2010	0.68	110	3.90	98	1.05	110
2010–2011	0.73	108	3.89	94	1.13	108
Mean 1991–1992 to 1995–1996 (phase 1)	0.80	140	3.30	132	1.26	136
Mean 1996–1997 to 1999–2000 (phase 2)	0.78	139	3.31	130	1.22	138
Mean 2000–2001 to 2007–2008 (phase 3)	0.73	137	3.40	129	1.25	134
Mean 2008–2009 to 2010–2011 (phase 4)	0.72	109	4.15	101	1.10	110
Aggregate mean (1992–2011)	0.75		3.35		1.22	

Notes:

1. *TATR*: total assets turnover ratio, *FATR*: fixed assets turnover ratio, *CATR*: current assets turnover ratio, *N*: number of firms2. *TATR* 6 and above, *CATR* 8 and above, *FATR* 12 and above have been excluded*These abbreviations and exclusion of extreme items also apply for other tables mentioned in this chapter*Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
TATR	138	0.60	130	0.62	108	0.93
FATR	126	0.47	122	0.47	100	0.00**
CATR	135	0.50	128	0.77	108	0.02*

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

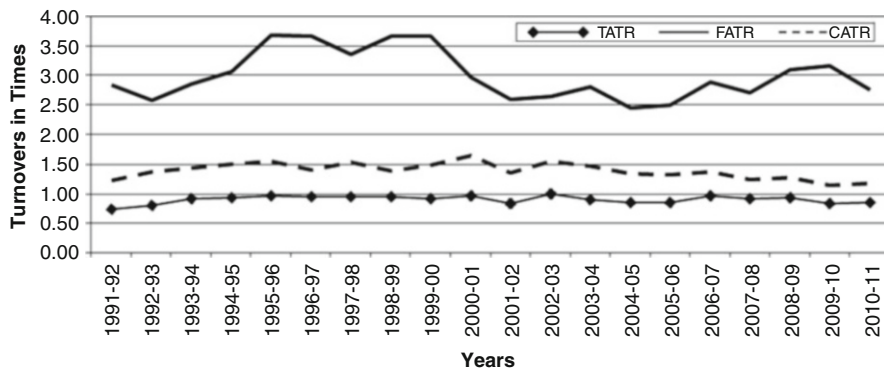


Fig. 5.6 Mean values of turnover ratios (TATR, FATR and CATR) of the service PSEs for the years 1991–1992 to 2010–2011

Table 5.12 Median, lower (Q1), and upper quartile (Q3) values of key turnover ratios of the manufacturing PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
TATR	0.69	0.66	0.59	0.55	0.36	0.31	0.16	0.20	1.04	1.01	1.11	1.03
FATR	2.5	2.3	2.6	3.6	1.0	0.9	0.8	1.0	5.6	6.1	6.2	7.8
CATR	1.0	1.1	0.9	0.8	0.6	0.5	0.3	0.3	1.8	1.8	2.0	1.4

of less than one. In operational terms, it implies that the firm is carrying excessive current assets and total assets than warranted by its sales/production. Clearly, underutilization of resources (at the command of most of the sample PSEs) seems to have caused a dent in their profitability. There is an imperative need of better utilization of resources/capacity/infrastructure on the part of the managers of most of the sample PSEs.

The second part of efficiency deals with inventory and debtor management of manufacturing and service PSEs; it has been assessed primarily in terms of holding period of raw materials and spare parts, work-in-progress, finished goods, and debtor collection period. The objective of inventory management consists of two counterbalancing parts, namely, to minimize investments in inventory (with a view to reduce carrying cost) and to meet demand for the product by efficient production and sales operations (to minimize stock-out cost). In operational terms, its goal is to have a trade-off between cost and benefit associated with holding of inventory.

There is an ex hypothesi expectation that the holding period of inventory would have declined on account of significant improvement in the facilities and means of communication due to liberalization and globalization of Indian economy which has enhanced competition and improved management practices and brings out better availability of raw materials and other supplies, in general. Faster means of bank remittances and encashment of checks along with facility of electronic payments would have helped in reduction of debtor collection period; prima facie, raw-material inventory holding period of all the PSEs appears to be high; the respective

Table 5.13 Mean values of key turnover ratios of the service PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Years	TATR		FATR		CATR	
	Mean	N	Mean	N	Mean	N
1991–1992	0.74	50	2.85	32	1.22	50
1992–1993	0.81	52	2.58	34	1.37	52
1993–1994	0.91	53	2.85	35	1.43	53
1994–1995	0.94	53	3.07	35	1.50	53
1995–1996	0.96	53	3.69	36	1.55	53
1996–1997	0.95	56	3.68	39	1.41	56
1997–1998	0.95	54	3.36	38	1.54	55
1998–1999	0.95	55	3.67	40	1.40	55
1999–2000	0.91	54	3.67	39	1.48	55
2000–2001	0.97	54	2.97	33	1.65	53
2001–2002	0.83	61	2.60	39	1.36	59
2002–2003	1.00	62	2.65	38	1.56	60
2003–2004	0.91	62	2.81	40	1.47	60
2004–2005	0.85	62	2.45	36	1.34	60
2005–2006	0.85	59	2.50	35	1.33	55
2006–2007	0.97	59	2.89	34	1.37	55
2007–2008	0.91	58	2.71	33	1.24	58
2008–2009	0.93	58	3.11	35	1.28	58
2009–2010	0.84	58	3.16	35	1.14	58
2010–2011	0.85	58	2.76	33	1.18	58
Mean 1991–1992 to 1995–1996 (phase 1)	0.90	53	3.08	36	1.47	53
Mean 1996–1997 to 1999–2000 (phase 2)	1.00	56	3.71	40	1.49	56
Mean 2000–2001 to 2007–2008 (phase 3)	0.90	62	2.95	40	1.40	60
Mean 2008–2009 to 2010–2011 (phase 4)	0.87	58	3.31	36	1.20	58
Aggregate mean (1992–2011)	0.90		3.00		1.39	

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
TATR	52	0.06	54	0.66	56	0.22
FATR	34	0.06	33	0.73	31	0.07
CATR	53	0.65	52	0.63	56	0.04*

*Signifies to significant difference at 5 % level

Table 5.14 Median, lower (Q1), and upper quartile (Q3) values of key turnover ratios of the service PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
	TATR	0.60	0.64	0.72	0.75	0.30	0.37	0.29	0.35	1.15	1.17	1.23
FATR	1.3	2.2	1.8	2.1	0.6	0.9	0.7	0.5	6.7	7.2	4.6	6.0
CATR	1.2	1.2	1.0	1.0	0.5	0.5	0.6	0.6	2.1	1.9	2.2	1.6

figures of manufacturing and service enterprises are 153 and 156 days (i.e., more than 5 months) as per Tables 5.15 and 5.17.

Frequency distribution data is equally revealing. It indicates that the PSEs (in the range of one-fourth to two-fifth) have RMIHP of more than 6 months; in contrast, model class group of two-fifth to three-fifth of the PSEs have been holding inventory for less than 4 months (Annexure 5A.9). It is gratifying to note that as expected, there has been a decrease in RMIHP as shown in Figs. 5.7 and 5.8. The decrease in RMIHP is in tune with the importance attached to materials management by the Department of Public Enterprises in this regard. Materials management is one of the key factors for improving performance of any unit. Higher inventories saddle an organization with avoidable costs besides blocking scarce funds which might be required by the enterprise for its own operations.

Moreover, frequency distribution (Annexures 5A.10 and 5A.11) also suggests that the model class group of WIPIHP of almost three-fourth to nine-tenth of the PSEs and FGIHP of more than three-fifth to nine-tenth of the enterprises has been less than 30 days. It is equally worth noting that the inventory holding period of various types of inventories has shown a decrease; this finding supports the hypothesis of better utilization of inventories over a period of time.

As far as debtor collection period is concerned, the period has been hovering around 3 months in both types of PSEs. While reduction has taken place in phases 3 and 4 compared to phase 2 in service as well as manufacturing PSEs, the decrease has been statistically significant only in the case of manufacturing PSEs during phases 2 and 3 (Tables 5.15 and 5.17). In operational terms, the results indicate that there does not seem to be any major change in terms of credit period extended to debtors as well as collection policies of the sample PSEs; the marginal reduction of 4–6 days in the DCP (during pre-recession phase 3 and post-recession phase 4) may be attributed, to an extent, to the improvement in the modus operandi of the check collection procedures of banks (which have become faster). The positional values of the manufacturing and service sector PSEs, shown in Tables 5.16 and 5.18, respectively, indicate that one-fourth of the PSEs (as per upper quartile) are responsible for the high holding period of inventory and debtor collection period in both types of the enterprises. Data pertaining to frequency distribution (Annexure 5A.12) also validates the above results, as model class group of more than half of the PSEs have DCP of less than 3 months.

The survey indicates that more than four-fifth of the manufacturing enterprises and nearly one-half of the service enterprises (responding to the survey) are adopting the absolute as well as relative measures to assess the financial performance of their organizations (Table 5.19). Ratio analysis is a widely used measure of financial performance, predominantly used by vast majority of the PSEs (Table 5.20). As far as the macroeconomic factors such as government policies, product demand and supply, pricing, industry trend, etc., are concerned, they appear to influence moderately to the productivity and the performance of virtually all the responding PSEs (Table 5.21).

The survey findings (based on the opinion of the responding PSEs) reinforce the contention that there has been a reduction in the debtor collection period. Nearly half of the managers of the sample PSEs have stated that there has been a decline in

Table 5.15 Mean values of inventory holding period and debtor collection period of manufacturing PSEs, 1991–1992 to 2010–2011 (Figures are in no. of days)

Years	RMIHP		WPIHP		FGIHP		DCP	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1991–1992	165.23	119	23.58	132	30.04	137	91.19	131
1992–1993	159.68	122	25.28	132	32.07	139	91.25	130
1993–1994	168.43	123	23.28	134	33.03	140	101.18	133
1994–1995	166.75	118	21.60	135	31.77	140	99.92	132
1995–1996	159.49	118	20.38	135	26.30	139	91.39	126
1996–1997	165.33	118	19.13	134	26.64	138	98.95	128
1997–1998	174.25	117	21.29	138	24.57	139	102.36	129
1998–1999	183.80	115	24.64	138	22.15	139	103.16	128
1999–2000	175.55	114	20.47	137	19.85	140	98.03	127
2000–2001	163.62	109	16.09	130	22.44	130	90.91	116
2001–2002	165.71	111	17.42	131	21.64	133	94.12	120
2002–2003	163.55	112	15.33	131	19.14	134	93.17	120
2003–2004	143.60	112	16.51	129	20.11	133	89.09	118
2004–2005	141.32	112	14.49	126	19.63	129	76.44	114
2005–2006	141.47	107	14.70	124	21.19	121	74.19	112
2006–2007	120.17	97	17.25	113	18.02	116	79.86	100
2007–2008	148.23	96	16.88	108	16.99	110	74.78	98
2008–2009	124.18	82	20.14	98	15.83	108	74.26	93
2009–2010	129.37	81	21.33	98	16.81	105	79.17	96
2010–2011	112.99	76	17.06	91	16.15	96	78.83	91
Mean 1991–1992 to 1995–1996 (phase 1)	168.72	125	22.58	135	30.79	140	97.72	134
Mean 1996–1997 to 1999–2000 (phase 2)	183.21	122	22.68	138	23.25	140	103.01	130
Mean 2000–2001 to 2007–2008 (phase 3)	151.79	119	17.41	133	19.64	135	86.01	125
Mean 2008–2009 to 2010–2011 (phase 4)	122.79	82	20.50	98	16.53	108	81.23	97
Aggregate mean (1992–2011)	153.64		19.34		22.72		89.11	

Notes:

1. *DCP*: debtor collection period, *RMIHP*: raw-material inventory holding period, *WPIHP*: work-in-progress inventory holding period, *FGIHP*: finished-goods inventory holding period, *N* number of PSEs2. *RMIHP* 770 days and above, *DCP* 365 days and above, *WPIHP* 365 days, *FGIHP* 270 days and above have been excluded*These abbreviations and exclusion of extreme items also apply for other tables mentioned in this chapter*Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
RMIHP	114	0.47	108	0.00**	80	0.10
WPIHP	134	0.07	126	0.08	97	0.71
FGIHP	139	0.00**	129	0.00**	107	0.23
DCP	127	0.03*	120	0.00**	96	0.31

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

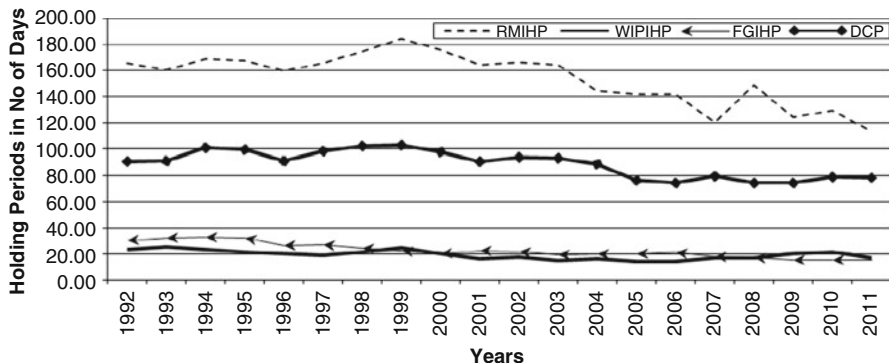


Fig. 5.7 Mean values of the inventory (RMIHP, WIPIHP and FGIHP) and debtor collection periods (DCP) of the manufacturing PSEs for the years 1991–1992 to 2010–2011

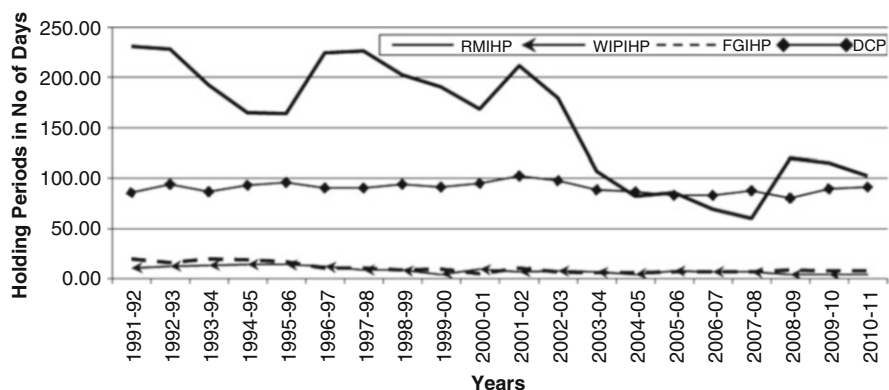


Fig. 5.8 Mean values of the inventory holding (RMIHP, WIPIHP and FGIHP) and debtor collection periods (DCP) of the service PSEs for the years 1991–1992 to 2010–2011

the debtor collection period (Table 5.22). Likewise, decrease in bad-debt losses has been mentioned by more than two-fifth of the respondents. As far as inventory holding period (IHP) is concerned, more than two-fifth of the respondents have experienced decrease in it (Table 5.22); less than one-fifth of the sample PSEs have stated increase in the IHP. This decrease in the IHP may primarily be attributed to the fact that a vast majority of the respondent PSEs have inventories to conform to their production requirements (Table 5.23).

Survey data related to the impact of macroeconomic factors (such as government policies, product demand and supply, pricing of raw materials, industry trend and government interference) that affect the productivity and profitability of the PSEs have been presented in Tables 5.24 and 5.25. Among the cited factors, government policies, product demand and supply gap, and pricing and availability of raw materials have been considered as the very important factors that affect the

Table 5.16 Median, lower (Q1), and upper quartile (Q3) values of inventory holding and debtor collection period of manufacturing PSEs, 1991–1992 to 2010–2011 (Figures are in no. of days)

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
RMHP	132.57	96.65	81.70	108.10	64.98	43.74	37.94	84.36	297.48	266.35	158.11	158.11
WIPHP	5.48	4.82	4.85	3.16	0.26	0.45	0.22	0.00	40.62	30.15	24.38	20.13
FGIHP	19.00	15.35	11.44	9.52	3.50	3.44	1.42	0.75	52.09	36.29	36.75	27.10
DCP	78.1	89.0	64.0	60.6	29.2	33.5	20.6	18.6	159.3	165.6	149.2	142.0

Table 5.17 Mean values of inventory holding period and debtor collection period of service PSEs, 1991–1992 to 2010–2011 (Figures are in no. of days)

Years	RMIHP		WPIHP		FGIHP		DCP	
	Mean	N	Mean	N	Mean	N	Mean	N
1991–1992	230.86	26	10.41	50	19.38	49	85.31	46
1992–1993	228.19	29	13.00	52	16.21	51	93.82	48
1993–1994	191.93	28	13.67	51	19.49	52	86.86	48
1994–1995	165.04	28	14.53	51	18.89	52	93.28	49
1995–1996	164.00	27	14.27	51	16.59	52	95.71	49
1996–1997	224.26	33	12.88	54	11.12	55	90.30	52
1997–1998	226.14	34	9.26	54	11.04	56	90.41	52
1998–1999	201.98	31	9.42	55	8.69	57	93.79	53
1999–2000	190.76	31	6.17	54	9.78	57	91.06	52
2000–2001	168.27	32	9.52	52	5.44	56	95.14	50
2001–2002	211.57	31	7.63	59	10.65	62	102.18	56
2002–2003	179.23	30	8.24	59	7.31	62	97.97	57
2003–2004	106.67	40	7.49	59	6.31	60	88.02	57
2004–2005	81.63	39	5.26	58	6.44	59	86.69	57
2005–2006	85.57	35	8.34	57	7.36	58	82.72	55
2006–2007	69.36	33	6.78	58	7.53	60	83.07	55
2007–2008	59.77	30	7.05	57	7.43	58	87.07	55
2008–2009	119.12	25	5.06	55	8.95	55	80.46	54
2009–2010	114.62	24	4.34	55	8.02	55	89.52	54
2010–2011	102.06	22	4.46	55	8.30	55	91.11	55
Mean 1991–1992 to 1995–1996 (phase 1)	194.98	30	12.82	51	18.54	52	92.06	49
Mean 1996–1997 to 1999–2000 (phase 2)	223.26	34	10.06	55	10.09	57	97.04	54
Mean 2000–2001 to 2007–2008 (phase 3)	122.30	44	7.31	59	7.50	62	90.02	57
Mean 2008–2009 to 2010–2011 (phase 4)	112.81	25	4.62	55	8.42	55	87.49	55
Aggregate mean (1992–2011)	156.05		8.89		10.75		90.22	

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
RMIHP	26	0.42	31	0.00**	24	0.56
WPIHP	50	0.41	51	0.20	54	0.04*
FGIHP	51	0.01**	54	0.28	54	0.41
DCP	47	0.68	48	0.58	54	0.56

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

Table 5.18 Median, lower (Q1), and upper quartile (Q3) values of inventory holding period and debtor collection period of service PSEs, 1991–1992 to 2010–2011 (Figures are in no. of days)

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
RMHP	143.58	156.66	54.51	16.29	36.34	68.36	4.64	1.28	382.27	346.33	299.46	210.32
WPIHP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.07	0.12	1.46	0.00
FGIHP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.34	6.12	3.81	0.35
DCP	67.0	77.2	76.6	76.9	34.4	41.8	25.9	38.2	161.7	151.2	163.1	128.0

Table 5.19 Financial performance measurement adopted by sample PSEs in India

Options	Service (out of 11)		Manufacturing (out of 19)		Combined (out of 30)	
	In no.	In %	In no.	In %	In no.	In %
Absolute	5	45.5	1	5.88	6	21.43
Relative	1	9.1	1	5.88	2	7.14
Both	5	45.5	15	88.24	20	71.43
Total	11	100.0	17	100.00	28	100.00

Table 5.20 Usage of ratio analysis in the measurement of financial performance among sample PSEs in India

Options	Service (out of 11)		Manufacturing (out of 19)		Combined (out of 30)	
	In no.	In %	In no.	In %	In no.	In %
Yes	9	81.82	14	93.33	23	88.46
No	2	18.18	1	6.67	3	11.54
Total	11	100.0	15	100.0	26	100.0

Table 5.21 Effect of macroeconomic factors on productivity and financial performance of PSEs in India

Options	Productivity		Financial performance	
	In no.	In %	In no.	In %
Very high	3	10.00	6	20.69
Moderately high	23	76.67	22	75.86
Low	4	13.33	1	3.45
Total	30	100.0	29	100.0

Table 5.22 Opinion of sample PSEs related to the trend of DCP and bad-debt losses in India

Options	Debtor collection period		Trend of bad-debt losses		Inventory holding period	
	In no.	In %	In no.	In %	In no.	In %
Increase	6	20.69	2	7.69	5	17.86
Decrease	13	44.83	11	42.31	12	42.86
Steady	10	34.48	13	50.00	11	39.29
Total	29	100.00	26	100.00	28	100.00
Missing	1		4		2	

Table 5.23 Opinion to handle the usage of inventories, adopted by the sample PSEs in India

S. no.	Options	Public sector enterprises (responded 30)	
		In no.	In %
1	On the basis of demand forecast	5	16.67
2	On the basis of production needs	18	60.00
3	On the basis of expected sales volume	7	23.33
	Total	30	100.00

Table 5.24 Macroeconomic factors affecting the productivity of the responded PSEs in India

Options	Govt policies		Product demand-supply gap		Pricing and availability of raw materials		Industry trend		Govt. interference in org. functioning	
	In no.	In %	In no.	In %	In no.	In %	In no.	In %	In no.	In %
	Very important	14	73.69	17	85	13	72.33	8	44.45	5
Important	4	21.05	3	15	5	27.78	10	55.56	8	50.0
Not important	1	5.26							3	18.75
Total	19	100	20	100	18	100	18	100	16	100
Missing	11		10		12		12		14	

Table 5.25 Macroeconomic factors affecting the profitability of the responded PSEs in India

Options	Govt policies		Product demand-supply gap		Pricing and availability of raw materials		Industry trend		Govt. interference in org. functioning	
	In no.	In %	In no.	In %	In no.	In %	In no.	In %	In no.	In %
	Very important	19	90.48	15	78.95	14	77.78	8	44.45	5
Important	2	9.52	4	21.05	4	22.23	9	50	10	55.55
Not important							1	5.56	3	16.67
Total	21	100	19	100	18	100	18	100	18	100

profitability and productivity of nearly three-fourth to more than four-fifth of the PSEs, whereas industry trend and government interference in organizational functioning are less important factors in nearly one-fourth to two-fifth of the PSEs. Control lies in the government hand and the major policy decisions, such as administrative price mechanism, price fixation, financial power, etc., are still lying under the government control which affect the functioning and financial performance of these PSEs.

Independent sample *t*-test pertaining to the mean values of all the measures of efficiency, namely, assets turnover, inventory holding period, and debtor collection period (between manufacturing and service sector PSEs) has been presented in Table 5.26; it indicates that there is no significant difference in both types of enterprises among most of stated parameters of efficiency across the phases (except FGIHP and WIPIHP in almost all the phases). It is commendable (indeed) that neither of the sectors (i.e., manufacturing and service) appears to have negative impact (to a marked extent) on their assets expansion due to recession. Group statistics, inter se, shows that mean efficiency in utilization of resources of service sector PSEs is better compared to manufacturing enterprises in majority of the phases.

Table 5.26 Independent sample *t*-test of efficiency ratios to find out significance of difference between the sample manufacturing and service PSEs during 1991–1992 to 2010–2011 (group statistics)

Ratios	Coding	Mean		Mean		Mean		Mean	
		<i>N</i>	Phase 1	<i>N</i>	Phase 2	<i>N</i>	Phase 3	<i>N</i>	Phase 4
TATR	M	140	0.8	140	0.8	137	0.7	110	1.0
	S	53	0.9	56	1.0	62	0.9	53	1.4
FATR	M	132	3.3	130	3.3	129	3.4	101	4.2
	S	36	3.1	40	3.7	40	2.9	36	3.3
CATR	M	136	1.3	138	1.2	134	1.3	110	1.1
	S	53	1.5	56	1.5	60	1.4	58	1.2
DCP	M	134	97.7	130	103.0	125	86.0	97	81.2
	S	49	92.1	54	97.0	57	90.0	55	87.5
RMIHP	M	125	168.7	122	183.2	119	151.8	82	122.8
	S	30	195.0	34	223.3	44	122.3	25	112.8
WPIHP	M	135	22.6	138	22.7	133	17.4	98	20.5
	S	51	12.8	55	10.1	59	7.3	55	4.6
FGIHP	M	140	30.8	140	23.3	135	19.6	108	16.5
	S	52	18.5	57	10.1	62	7.5	55	8.4

Notes:

M stands for manufacturing PSEs, *S* for service PSEs

Independent samples *t*-test

Ratios	Variances	<i>t</i> -test for equality of means							
		Phase 1		Phase 2		Phase 3		Phase 4	
		df	Sign.	df	Sign.	df	Sign.	df	Sign.
TATR	EV	191	0.35	193	0.09	197	0.14	165	0.19
	NEV	72	0.43	75	0.15	97	0.18	99	0.22
FATR	EV	166	0.67	168	0.43	167	0.35	135	0.19
	NEV	49	0.70	55	0.48	70	0.33	62	0.19
CATR	EV	187	0.20	192	0.11	192	0.41	166	0.60
	NEV	75	0.26	81	0.16	128	0.39	135	0.58
DCP	EV	181	0.62	182	0.61	180	0.70	150	0.60
	NEV	95	0.60	99	0.61	118	0.69	130	0.58
RMIHP	EV	153	0.33	154	0.20	161	0.17	105	0.73
	NEV	38	0.41	45	0.26	82	0.15	33	0.77
WPIHP	EV	184	0.09	191	0.07	190	0.04*	151	0.01**
	NEV	97	0.08	149	0.03*	153	0.02*	146	0.00**
FGIHP	EV	190	0.02*	195	0.00**	195	0.00**	161	0.05*
	NEV	75	0.04*	91	0.00**	99	0.00**	69	0.11

Notes:

EV: equal variances assumed, *NEV*: equal variances not assumed

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

5.3.3 *Solvency and Liquidity Test*

The third part of performance measurement assesses the position of solvency and liquidity of the sample enterprises. The objective of this part is to examine separately the financing pattern (in terms of TD/TE) and liquidity position (reflected by CR and ATR) of manufacturing and service sector PSEs in India with intent to assess whether they are satisfactory or not.

The relevant data (contained in Tables 5.27 and 5.29 and Figs. 5.9 and 5.10) indicates that the proportion of TD/TE of service enterprises (in the range of 1.51–2.57) is higher compared to manufacturing enterprises (in the range of 1.31–2.49) during the entire period (20 years) of the study as well as during its sub-phases. The corresponding positional values indicated in Tables 5.28 and 5.30 for manufacturing and service PSEs corroborate the higher magnitude of external debt used by the service sector PSEs.

As per trend, there has been a decline in TD/TE ratio (as expected) in phases 2 and 3 vis-à-vis phase 1 for both types of PSEs (save service PSEs in phase 3, as it appears to be/have increased). Inter se, the decrease has been more pronounced in the case of manufacturing PSEs compared to service organizations. Though this decrease has been statistically insignificant among the phases (in the case of manufacturing enterprises), debt proportion to equity increases in phases 3 and 4 vis-à-vis phase 1 of service PSEs (Tables 5.27 and 5.29) indicates their exposure to higher debt during recession.

The management of liquidity is concerned with the problems that arise in attempting to manage current assets (CA) and current liabilities (CL) and interrelation that exists between them. Hence, the importance of adequate liquidity to meet short-term maturing obligations when they become due for payment without impairing profitability needs no emphasis. For the purpose of analysis, liquidity ratios (current ratio (CR) and acid test ratio (ATR)) have been computed.

The mean and positional values of the respective ratios contained in Tables 5.27 and 5.28 and Fig. 5.9 (manufacturing sector) and Tables 5.29 and 5.30 and Fig. 5.10 (service sector) show that mean, median, and lower quartile of manufacturing enterprises are much lower (particularly in respect to ATR) than the service sector enterprises during the entire period of the study. Given the fact that ATR (a more rigorous test of liquidity) of service PSEs is considerably higher than one (though decreasing gradually), it would be reasonable to infer that these organizations have sound liquidity position (as ATR is more than the desired benchmark, i.e., 1:1). Though the ATR of manufacturing enterprises is nearly one (satisfying the desired benchmark), they are following sound principles of liquidity management/requirement for meeting their short-term maturity obligations.

As per trend also, there has been a significant decrease in CR (statistically significant) in phase 4 compared to phase 3 in the manufacturing PSEs. The CR value of 1.50 in phase 4 assumes significance in view of the widely prevalent use of cash-credit system in India by manufacturing PSEs (Table 5.27). In operational terms, the findings suggest that the sample companies are not likely to encounter

Table 5.27 Mean values of key leverage and liquidity ratios of the manufacturing PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Years	Leverage ratios		Liquidity ratios			
	TD/TE		CR		ATR	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1991–1992	1.99	72	1.66	137	1.05	136
1992–1993	2.05	76	1.63	138	1.05	138
1993–1994	2.49	81	1.52	137	0.96	136
1994–1995	2.15	78	1.47	138	1.00	138
1995–1996	1.86	79	1.46	140	1.00	139
1996–1997	1.78	70	1.65	135	1.09	134
1997–1998	1.77	72	1.63	136	1.09	135
1998–1999	1.65	70	1.56	135	1.07	134
1999–2000	1.67	69	1.46	136	1.01	136
2000–2001	1.62	61	1.55	125	1.11	125
2001–2002	1.83	64	1.52	133	1.09	130
2002–2003	1.40	60	1.59	132	1.16	128
2003–2004	1.31	63	1.47	131	1.07	127
2004–2005	1.42	67	1.48	131	1.10	127
2005–2006	1.41	69	1.53	126	1.19	118
2006–2007	1.50	70	1.64	113	1.24	110
2007–2008	1.50	69	1.58	108	1.26	108
2008–2009	1.69	65	1.49	104	1.12	104
2009–2010	1.69	68	1.52	106	0.99	105
2010–2011	1.60	66	1.42	103	1.11	103
Mean 1991–1992 to 1995–1996 (phase 1)	2.19	81	1.56	140	1.03	140
Mean 1996–1997 to 1999–2000 (phase 2)	1.72	71	1.58	137	1.08	137
Mean 2000–2001 to 2007–2008 (phase 3)	1.62	75	1.54	134	1.16	131
Mean 2008–2009 to 2010–2011 (phase 4)	1.69	67	1.50	106	1.12	107
Aggregate mean (1992 to 2011)	1.72		1.54		1.09	

Notes:

1. CR: current ratio, ATR: acid test ratio, TD/TE: total debt/total equity, *N*: number of firms

2. CR consisting value 7 and above, ATR 5 and above, TD/TE 8 and above have been excluded

*These abbreviations and exclusion of extreme items also apply for other tables mentioned in this chapter*Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
TD/TE	66	0.26	63	0.17	65	0.38
CR	136	0.78	125	0.20	105	0.03*
ATR	136	0.11	126	0.43	106	0.16

*Signifies to significant difference at 5 % level

Table 5.28 Median, lower (Q1), and upper quartile (Q3) values of key leverage and liquidity ratios of the manufacturing PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
TD/TE	1.8	1.4	1.2	1.3	0.7	0.6	0.5	0.5	3.6	2.9	2.7	2.5
CR	1.4	1.4	1.3	1.4	0.6	0.7	0.5	0.9	2.4	2.2	2.3	2.0
ATR	0.8	0.9	1.0	1.1	0.3	0.4	0.3	0.5	1.5	1.6	1.8	1.6

Table 5.29 Mean values of key leverage and liquidity ratios of service PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Years	Leverage ratios		Liquidity ratios			
	TD/TE		CR		ATR	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1991–1992	2.57	35	1.84	46	1.61	49
1992–1993	2.00	37	1.64	49	1.46	52
1993–1994	2.14	38	1.65	49	1.53	53
1994–1995	2.03	34	1.58	51	1.33	53
1995–1996	2.08	33	1.72	52	1.31	53
1996–1997	1.68	34	1.90	56	1.43	55
1997–1998	1.77	35	1.90	56	1.48	56
1998–1999	1.51	34	1.74	55	1.34	54
1999–2000	1.61	32	1.72	55	1.29	54
2000–2001	1.50	27	1.80	54	1.44	52
2001–2002	1.89	34	1.67	57	1.38	57
2002–2003	1.94	34	1.61	58	1.42	58
2003–2004	1.91	34	1.55	57	1.41	58
2004–2005	2.16	35	1.50	57	1.16	55
2005–2006	2.22	37	1.54	55	1.37	55
2006–2007	2.21	35	1.67	55	1.41	54
2007–2008	2.47	35	1.74	57	1.54	57
2008–2009	2.12	37	1.78	56	1.34	54
2009–2010	2.41	39	1.68	56	1.24	52
2010–2011	2.13	38	1.71	55	1.36	53
Mean 1991–1992 to 1995–1996 (phase 1)	2.36	39	1.73	52	1.43	54
Mean 1996–1997 to 1999–2000 (phase 2)	1.60	34	1.84	56	1.45	56
Mean 2000–2001 to 2007–2008 (phase 3)	2.10	37	1.76	61	1.48	60
Mean 2008–2009 to 2010–2011 (phase 4)	2.26	38	1.78	57	1.39	56
Aggregate mean (1992–2011)	2.02		1.70		1.39	

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
TD/TE	29	0.08	26	0.10	32	0.13
CR	51	0.26	50	0.11	55	0.88
ATR	53	0.66	52	0.18	55	0.44

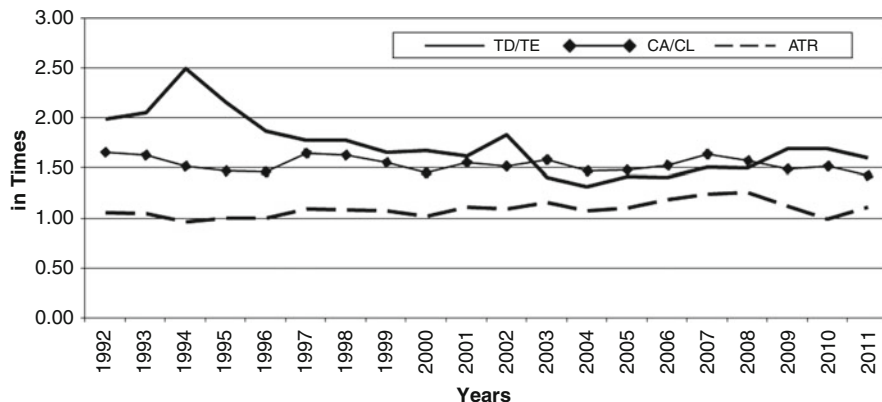


Fig. 5.9 Mean values of leverage ratio (TD/TE) and liquidity ratios (CA/CL and ATR) of the manufacturing PSEs for the years 1991–1992 to 2010–2011

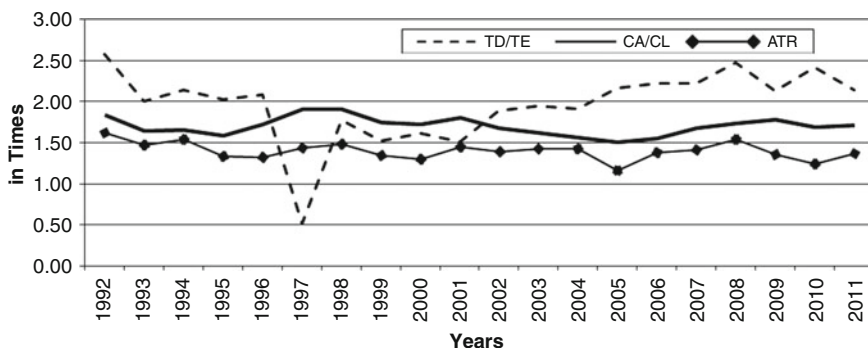


Fig. 5.10 Mean values of leverage ratio (TD/TE) and liquidity ratios (CA/CL and ATR) of the service PSEs for the years 1991–1992 to 2010–2011

Table 5.30 Median, lower (Q1), and upper quartile (Q3) values of key leverage and liquidity ratios of the service PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
TD/TE	1.96	1.39	1.32	1.84	0.96	0.82	0.57	0.74	3.55	2.24	4.28	3.38
CR	1.4	1.4	1.4	1.2	0.9	1.0	0.8	0.9	2.3	2.2	2.2	1.8
ATR	1.2	1.3	1.2	1.1	0.7	0.9	0.7	0.8	1.9	1.4	1.4	1.2

problems in meeting their short-term maturing obligations in time. Very few companies (i.e., one-fourth as per quartile three) hold high liquidity (CR and ATR) across the phases in both types of PSEs. The inferences are in conformity with the importance of liquidity requirement for firm’s survival and are supported by number of the empirical studies on the subject; the select list includes Lamberson (1995), Mramor and Valentincic (2003), and Jain and Yadav (2005).

Table 5.31 Independent sample *t*-test of leverage and liquidity ratios to find significant difference between sample manufacturing and service PSEs during 1991–1992 to 2010–2011 (group statistics)

Ratios	Coding	Mean		Mean		Mean		Mean	
		<i>N</i>	Phase 1	<i>N</i>	Phase 2	<i>N</i>	Phase 3	<i>N</i>	Phase 4
TD/TE	M	81	2.2	71	1.7	75	1.6	67	1.7
	S	39	2.4	34	1.3	37	2.1	38	2.3
CR	M	140	1.6	137	1.6	134	1.5	106	1.5
	S	52	1.7	56	1.8	61	1.8	57	1.8
ATR	M	140	1.0	137	1.1	131	1.2	107	1.1
	S	54	1.4	56	1.4	60	1.5	56	1.4

Notes:

M stands for manufacturing PSEs, *S* for service PSEsIndependent samples *t*-test

Ratios	Variances	<i>t</i> -test for equality of means							
		Phase 1		Phase 2		Phase 3		Phase 4	
		df	Sign.	df	Sign.	df	Sign.	df	Sign.
TD/TE	EV	118	0.63	103	0.27	110	0.09	103	0.07
	NEV	84	0.61	54	0.31	58	0.12	62	0.09
CR	EV	190	0.29	191	0.15	193	0.20	161	0.12
	NEV	82	0.32	85	0.19	102	0.23	81	0.17
ATR	EV	192	0.00**	191	0.01**	189	0.02*	161	0.07
	NEV	82	0.00**	101	0.01**	111	0.02*	111	0.07

Notes:

EV equal variances assumed, *NEV* equal variances not assumed

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

In view of the preceding analysis, it is reasonable to conclude that no major change has been noted in respect to liquidity position of both types of PSEs in India during recession. Independent *t*-test also signifies no significant difference (except in ATR, but not adverse in nature) in the parameters of liquidity and leverage between manufacturing and service PSEs (Table 5.31); group statistics indicates that service PSEs have better liquidity compared to manufacturing PSEs (Annexure 5A.13).

Similar conclusions follow on the basis of frequency distribution; the vast majority (nearly 60–75 %) of the PSEs have CR less than two and (two-fifth to three-fifth PSEs have) ATR less than one (Annexures 5A.14 and 5A.15).

There are reasons for such a contention, as a sizable number of PSEs in India have arrangements for short-term needs, say, in the form of bank borrowings/ overdraft and cash-credit limit from banks which facilitate them to operate on the lower margin of working capital reflected in relatively lower current ratio as well as acid test ratio (Jain and Yadav 2005). Working capital requirement of PSEs in India is generally met through cash credit and advances from banks (Department of Public Enterprises 2002–2003).

5.3.4 *Productivity Test*

Productivity per employee has been yet another major dimension attempted in the study. It has been measured in terms of employment, sales efficiency, and net income efficiency (NIE). It is expected that economic reforms and liberalized policies would have enhanced the productivity of capital in sample PSEs.

Tables 5.32 and 5.34 depict the trend of employment, sales efficiency, and net income efficiency of manufacturing and service PSEs over a period of 20 years. It highlights a consistent reduction in employment over the first three phases in manufacturing organizations (as expected in VRS targets); it is substantial (nearly 25 %) in phase 3 vis-à-vis phase 2 (significant statistically). Whereas in the post-recession period (phase 4), it is gratifying to note that employment record has shown a moderate increase, the results are consistent with earlier analysis of improvement in capacity utilization and productivity of fixed assets which, in turn, generates employment (requires more number of employees to effectively work with); in other words, no major impact of recession has been observed in manufacturing PSEs.

However, in marked contrast, the trend is quite reverse in the case of service sector; nearly twofold increase in employment has been noted in phase 3 compared to phase 1. Employment record has shown a decrease in phase 4 vis-à-vis phase 3. Moreover, impact of recession (retrenching workforce by opting VRS) has been noticed in service PSEs.

Similarly, an increase of more than two times has also been observed in sales efficiency of manufacturing organizations between phases 3 and 4; the corresponding figure related to service sector indicates a one and half fold increase. Notwithstanding the increase in sales efficiency for manufacturing as well as service sector enterprises (statistically significant), an increasing trend has been noted in net income efficiency in both types of enterprises (albeit statistically significant in service PSEs only during phases 2 and 3 and phases 3 and 4), shown in Tables 5.32 and 5.34 as well as in Figs. 5.11 and 5.12.

Median and quartile results pertaining to manufacturing enterprises also validate the above observations (Table 5.33). On the contrary, service sector PSEs have shown reverse trend (Table 5.35); employment has increased (marginally) in one-half of such enterprises (as per median) and decreased substantially (two times) in another one-half (as per lower and upper quartile). As far as sales efficiency is concerned, there has been nearly twofold increase in the sales efficiency among all the organizations. However, the improvement in NIE is notable more in respect to service PSEs compared to manufacturing PSEs

Trivedi (1986) suggests that controlled output prices (while input prices continue to increase) setting up non-commercial objectives, different output mix, over-employment, corruption, and lack of autonomy would be the reasons of their poor performance; he is of the view that more autonomy in the presence of multiple objectives will lead to more self-seeking behavior by public enterprise management.

Frequency distribution pertaining to sales efficiency ratio (Annexure 5A.16) is more revealing on two aspects. Firstly, steady decrease has been noted in the percentage of PSEs having sales efficiency up to 3 % over a period of time (i.e., decreases

Table 5.32 Mean values of key productivity ratios of the manufacturing PSEs, 1991–1992 to 2010–2011

Years	Employment		Sales efficiency		Net income efficiency	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1991–1992	13,078	137	7.77	137	0.05	137
1992–1993	12,781	138	9.27	138	0.26	138
1993–1994	12,161	139	10.00	139	-0.05	139
1994–1995	12,104	139	10.01	138	0.18	139
1995–1996	12,075	139	10.23	137	-0.08	139
1996–1997	11,910	140	8.48	134	0.61	139
1997–1998	12,430	140	9.13	134	0.83	140
1998–1999	11,234	140	10.39	134	1.05	140
1999–2000	11,294	140	9.48	132	0.68	140
2000–2001	10,286	138	10.89	123	0.26	129
2001–2002	9,715	138	10.49	127	0.13	132
2002–2003	9,170	136	13.16	127	0.11	132
2003–2004	8,617	136	14.60	126	1.05	132
2004–2005	8,439	133	16.19	121	1.59	125
2005–2006	8,352	130	17.76	118	0.96	125
2006–2007	8,787	117	22.32	107	3.07	111
2007–2008	10,074	112	24.27	103	1.07	108
2008–2009	9,506	111	27.71	101	2.63	102
2009–2010	9,364	109	29.68	100	4.10	101
2010–2011	8,607	109	32.18	98	2.60	99
Mean 1991–1992 to 1995–1996 (phase 1)	12,416	139	10.03	139	0.07	139
Mean 1996–1997 to 1999–2000 (phase 2)	11,717	140	9.91	134	0.81	140
Mean 2000–2001 to 2007–2008 (phase 3)	8,836	138	15.43	127	0.80	134
Mean 2008–2009 to 2010–2011 (phase 4)	9,062	111	30.21	101	3.35	102
Aggregate mean (1992–2011)	10,499		15.20		1.06	

Notes:

1. *SE*: sales efficiency, *NIE*: net income efficiency, *N*: number of firms2. *SE* consisting value plus/minus 200 and above, *NIE* plus/minus 100 above have been excluded
*These abbreviations and exclusion of extreme items also apply for other tables mentioned in this chapter*Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
Employment	139	0.15	132	0.00**	110	0.05*
SE	133	0.00**	123	0.00**	100	0.00**
NIE	138	0.35	129	0.56	101	0.39

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

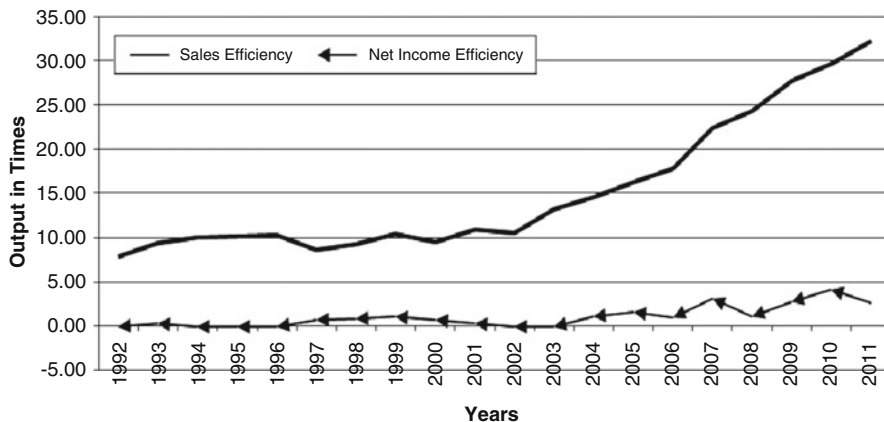


Fig. 5.11 Mean values of the output ratios (sales and net income efficiency) of the manufacturing PSEs for the years 1991–1992 to 2010–2011

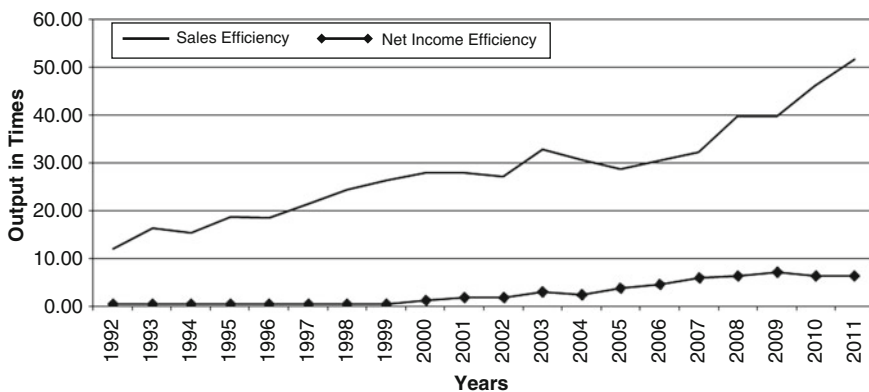


Fig. 5.12 Mean values of the output ratios (sales and net income efficiency) of the service PSEs for the years 1991–1992 to 2010–2011

from 53 to 11 %). Secondly, the percentage of enterprises having sales efficiency above 5 % has increased from the year 2001. As far as NIE is concerned (Annexure 5A.17), it has shown a deteriorating trend in one-third to one-half of the public sector organizations. From the above analysis, it is reasonable to infer that an improvement in sales efficiency (SE) has taken place during the period of the study. This improvement is attributed to increase in net sales and reduction in the employment over a period of time; the deterioration in NIE may primarily be attributed to higher cost of production and fixed cost of interest which these organizations have to bear even if running in losses.

Table 5.33 Median, lower (Q1), and upper quartile (Q3) values of key productivity ratios of the manufacturing PSEs, 1991–1992 to 2010–2011

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
Employment	3,080	2,922	1,772	1,425	1,119	997	417	350	11,859	10,082	7,216	6,395
SE	2.93	4.25	7.31	17.02	1.02	1.45	1.24	5.65	7.14	9.47	20.41	35.19
NIE	0.01	-0.11	-0.03	0.93	-0.68	-1.25	-3.73	-2.18	0.58	0.73	3.20	7.51

Table 5.34 Mean values of key productivity ratios of the service PSEs, 1991–1992 to 2010–2011

Years	Employment		Sales efficiency		Net income efficiency	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1991–1992	5,040	52	12.02	51	0.57	52
1992–1993	5,034	53	16.34	53	0.59	53
1993–1994	5,063	53	15.38	53	0.50	53
1994–1995	5,081	53	18.68	53	0.44	53
1995–1996	5,285	54	18.51	52	0.67	53
1996–1997	5,100	57	21.48	56	0.86	57
1997–1998	5,094	57	24.35	55	0.95	57
1998–1999	5,045	57	26.28	56	0.91	57
1999–2000	4,813	57	27.92	54	1.36	57
2000–2001	4,258	61	27.80	49	1.85	53
2001–2002	10,083	63	27.05	55	1.86	59
2002–2003	9,704	62	32.86	55	3.00	60
2003–2004	9,236	62	30.66	54	2.45	60
2004–2005	9,490	59	28.71	50	3.85	59
2005–2006	9,239	59	30.51	48	4.70	58
2006–2007	9,042	59	32.26	49	6.08	58
2007–2008	8,500	58	39.58	47	6.41	55
2008–2009	8,379	58	39.63	46	7.21	56
2009–2010	8,121	58	46.01	46	6.38	55
2010–2011	7,843	58	51.59	45	6.38	55
Mean 1991–1992 to 1995–1996 (phase 1)	5,282	54	16.91	53	0.55	53
Mean 1996–1997 to 1999–2000 (phase 2)	5,013	57	25.86	56	1.02	57
Mean 2000–2001 to 2007–2008 (phase 3)	9,044	63	34.22	56	3.90	60
Mean 2008–2009 to 2010–2011 (phase 4)	8,114	58	46.60	46	6.84	56
Aggregate mean (1992–2011)	6,972		28.38		2.85	

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
Employment	54	0.63	55	0.01**	57	0.11
Sales efficiency	52	0.00**	49	0.00**	45	0.00**
NIE	52	0.22	52	0.02*	55	0.04*

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

Independent *t*-test (Table 5.36) has not observed significant difference in the productivity of both types of PSEs (save sales efficiency ratio); it does not mark sector-wise variation. However, group statistics of mean values suggests better performance of service PSEs.

Table 5.36 Independent sample *t*-test of productivity ratios to find out significant difference between the sample manufacturing and service PSEs during 1991–1992 to 2010–2011 (group statistics)

Ratios	Coding	Mean		Mean		Mean		Mean	
		<i>N</i>	Phase 1	<i>N</i>	Phase 2	<i>N</i>	Phase 3	<i>N</i>	Phase 4
Employment	M	139	12,416	140	11,717	138	8,836	111	9,062
	S	54	5,282	57	5,013	63	9,044	58	8,114
Sales efficiency	M	139	10.0	134	9.9	127	15.4	101	30.2
	S	53	16.9	56	25.9	56	34.2	46	46.6
NIE	M	139	0.1	140	0.8	134	0.8	102	3.4
	S	53	0.6	57	1.0	60	3.9	56	6.8

Notes:

M stands for manufacturing PSEs, *S* for service PSEsIndependent samples *t*-test

Ratios	Variances	<i>t</i> -test for equality of means							
		Phase 1		Phase 2		Phase 3		Phase 4	
		df	Sign.	df	Sign.	df	Sign.	df	Sign.
Employment	EV	191	0.07	195	0.06	199	0.96	167	0.83
	NEV	188	0.01**	191	0.01**	75	0.97	73	0.86
Sales efficiency	EV	190	0.09	188	0.00**	181	0.00**	145	0.02*
	NEV	82	0.12	71	0.00**	73	0.00**	78	0.03*
NIE	EV	190	0.19	195	0.84	192	0.07	156	0.25
	NEV	104	0.17	175	0.80	138	0.05*	134	0.22

Notes:

EV: equal variances assumed, *NEV*: equal variances not assumed

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

5.4 Profit-Making and Loss-Making PSEs

This section of disaggregative analysis compares the financial performance of profit-making and loss-making PSEs primarily in terms of profitability, efficiency, liquidity, leverage and productivity.

5.4.1 Profitability Test

Profitability has been computed both in respect to their investments (RONW, ROCE and ROTA) and sales (OPM and NPM); the mean and positional (median, lower and upper quartile) values of profit-making (PM) and loss-making (LM) enterprises have been presented in Tables 5.37 and 5.38 (PM) and 5.39 and 5.40 (LM).

As expected, the profitability of the profit-making enterprises has increased over the first three phases; the percentage increase is about 18.5 % and 24 % (RONW), 8.1 % and –2.2 % (ROCE), 8.2 % and 10.3 % (ROTA), 5.8 % and 1.5 % (OPM), and 13 % and 46 % (NPM) during the second phase compared to first phase and in third

Table 5.37 Mean values of key profitability ratios of the profit-making PSEs, 1991–1992 to 2010–2011 (Figures are in percentages)

Years	RONW		ROCE		ROTA		OPM		NPM	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1991–1992	9.02	81	11.04	86	8.77	95	15.30	90	5.67	88
1992–1993	11.30	84	9.88	89	7.89	97	14.70	90	7.06	92
1993–1994	11.79	86	9.21	90	8.05	97	15.45	92	6.44	91
1994–1995	11.29	86	10.30	86	8.25	97	15.69	92	7.46	92
1995–1996	12.63	81	8.82	83	9.00	97	15.99	93	7.66	92
1996–1997	11.97	84	11.14	90	9.23	100	16.96	94	7.79	95
1997–1998	13.67	87	13.00	93	10.88	100	17.90	94	9.02	96
1998–1999	12.94	88	10.13	96	8.82	99	15.56	95	6.70	96
1999–2000	12.32	88	7.52	95	7.77	100	13.20	91	6.14	96
2000–2001	12.40	89	9.36	96	8.75	98	15.41	93	8.80	96
2001–2002	13.85	92	9.80	96	10.80	99	17.36	91	11.14	96
2002–2003	15.95	91	8.86	97	9.23	98	15.19	94	9.79	97
2003–2004	18.72	92	10.68	96	10.83	100	15.47	91	10.78	96
2004–2005	17.85	92	12.62	94	10.54	100	16.48	94	10.40	97
2005–2006	17.86	93	12.15	93	10.30	99	18.24	91	11.84	94
2006–2007	17.01	90	7.71	89	9.22	91	16.75	84	12.35	92
2007–2008	15.69	87	11.46	88	9.63	95	16.43	83	11.42	91
2008–2009	15.62	87	9.81	85	8.30	93	15.73	87	10.07	91
2009–2010	12.44	87	8.36	88	6.82	96	13.87	87	7.12	90
2010–2011	12.13	89	10.81	87	8.40	95	13.36	87	8.87	89
Mean 1991–1992 to 1995–1996 (phase 1)	10.80	88	9.88	90	8.38	98	15.37	95	6.53	94
Mean 1996–1997 to 1999–2000 (phase 2)	12.80	89	10.68	96	9.07	100	16.26	95	7.38	96
Mean 2000–2001 to 2007–2008 (phase 3)	15.88	100	10.44	102	10.00	102	16.50	99	10.82	103
Mean 2008–2009 to 2010–2011 (phase 4)	13.21	89	9.87	89	7.88	96	14.32	89	8.31	92
Aggregate mean (1992–2011)	13.82		10.13		9.07		15.75		8.83	

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
RONW	84	0.48	88	0.05*	87	0.01**
ROCE	88	0.89	95	0.70	88	0.23
ROTA	98	0.54	97	0.88	95	0.01**
OPM	91	0.49	93	0.97	86	0.01**
NPM	92	0.33	95	0.07	91	0.02*

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

Table 5.38 Median, lower (Q1), and upper quartile (Q3) values of key profitability ratios of the profit-making PSEs, 1991–1992 to 2010–2011 (Figures are in percentages)

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
RONW	10.71	11.23	14.30	12.45	1.83	2.96	4.49	3.10	22.90	20.33	28.88	23.83
ROCE	8.44	9.79	10.17	7.24	-0.40	-1.33	-2.14	-2.68	20.44	21.80	28.48	24.16
ROTA	7.92	9.04	8.22	7.17	2.59	3.68	2.48	2.11	14.53	15.62	18.23	13.27
OPM	12.09	11.41	12.01	8.37	4.49	4.38	2.22	2.33	30.65	29.31	28.67	28.80
NPM	4.53	4.56	7.52	5.82	0.0	0.4	1.3	0.6	17.57	17.04	22.44	19.84

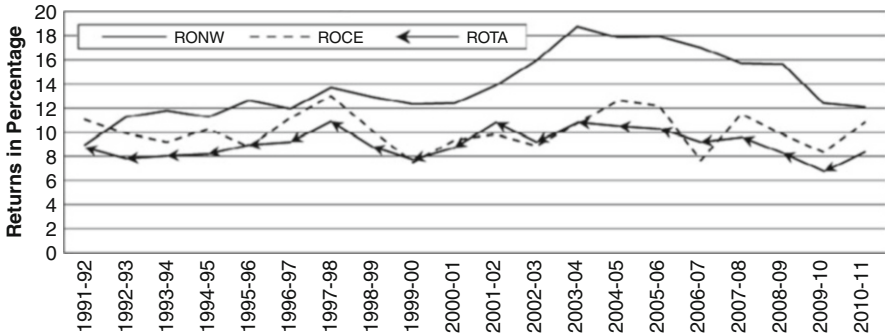


Fig. 5.13 Mean values of profitability ratios (RONW, ROCE and ROTA) of the profit-making PSEs for the years 1991–1992 to 2010–2011

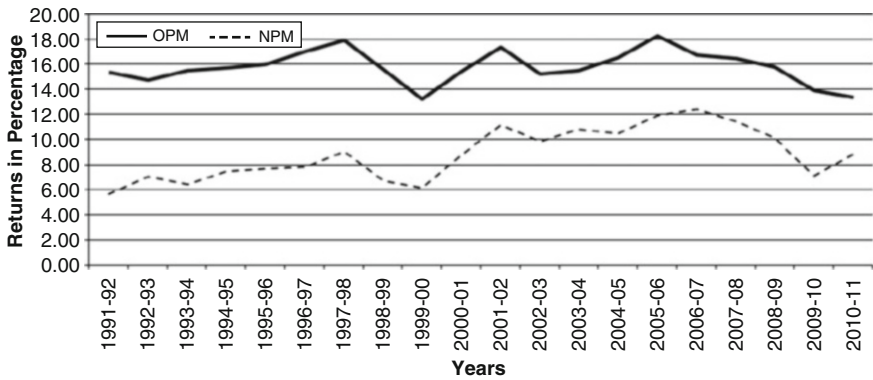


Fig. 5.14 Mean values of the profitability ratios (OPM and NPM) of the profit-making PSEs for the years 1991–1992 to 2010–2011

phase compared to second phase, respectively. The difference is statistically significant in the parameters of RONW during phases 2 and 3 (Table 5.37).

It is to be noted that all the profitability ratios have shown a declining trend (significant statistically also in all parameters, except ROCE) in recession phase 4 against phase 3. The notable impact of recession has been observed in the profit-making PSEs. However, it is worth emphasizing that the absolute decrease in the rates of return as well as profit margins in phase 4 compared to phase 3 does not appear to be worrying/unsatisfactory. For instance, operating profit margins have decreased from 16.5 % (in phase 3) to 14.32 % (in phase 4). Likewise, RONW has declined from 15.88 to 13.21 % (marginal in nature) during these phases under reference; decrease in ROCE and ROTA is also by 1 or 2 % points only during the referred phases.

In contrast, the losses of loss-making enterprises (depicted in Table 5.39) have mounted further during the second phase (when compared to phase 1); such enterprises continued to incur losses in phase 3 (Figs. 5.15, and 5.16). Reddy (1988) enumerates that the loss is attributable to subserve social obligations. Naib (2004) identifies the

Table 5.39 Mean values of key profitability ratios of loss-making PSEs, 1991–1992 to 2010–2011 (Figures are in percentages)

Years	RONW		ROCE		ROTA		OPM		NPM	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
1991–1992	0.72	37	2.05	55	-3.67	89	-3.94	79	-9.87	69
1992–1993	0.03	38	-1.84	56	-4.31	89	-4.48	79	-10.73	69
1993–1994	-6.10	38	-3.77	54	-5.85	86	-6.51	76	-13.44	67
1994–1995	-5.60	39	-3.48	52	-5.47	85	-5.65	73	-12.62	65
1995–1996	1.06	37	-2.00	51	-4.83	84	-4.33	74	-8.69	64
1996–1997	0.17	30	-6.93	50	-4.47	80	0.07	65	-5.77	57
1997–1998	-5.30	30	-11.57	54	-8.38	79	-6.43	66	-16.96	61
1998–1999	-4.70	29	-13.98	53	-8.28	80	-8.62	67	-16.54	60
1999–2000	-8.49	27	-19.67	49	-11.57	78	-13.08	65	-19.58	59
2000–2001	-20.13	21	-13.02	45	-11.41	72	-12.87	59	-18.22	53
2001–2002	-22.11	15	-19.65	40	-13.75	77	-14.04	58	-23.02	46
2002–2003	-4.54	17	-11.35	42	-9.74	79	-11.13	61	-20.38	48
2003–2004	9.20	19	-3.14	40	-2.81	78	-4.05	56	-17.00	48
2004–2005	13.98	21	0.80	45	-4.50	79	-2.65	55	-6.31	47
2005–2006	18.35	26	-0.14	46	-2.38	76	4.25	56	-3.20	50
2006–2007	13.51	26	4.07	37	0.78	63	3.50	45	-2.93	47
2007–2008	11.91	24	0.71	42	0.82	74	7.22	51	-1.26	49
2008–2009	8.85	28	1.18	44	0.07	61	2.05	50	-5.00	49
2009–2010	11.96	26	0.67	42	0.89	64	6.62	52	-0.23	49
2010–2011	9.89	28	3.47	39	1.96	61	6.58	50	-0.97	49
Mean 1991–1992 to 1995–1996 (phase 1)	-2.12	40	-2.27	56	-5.48	90	-6.16	80	-12.51	71
Mean 1996–1997 to 1999–2000 (phase 2)	-4.44	31	-14.42	55	-8.42	82	-7.35	69	-15.74	63
Mean 2000–2001 to 2007–2008 (phase 3)	1.88	32	-6.81	56	-6.48	84	-5.98	69	-13.91	65
Mean 2008–2009 to 2010–2011 (phase 4)	10.24	30	0.96	44	0.74	64	4.45	53	-2.56	50
Aggregate mean (1992–2011)	1.13		-4.88		-4.85		-3.37		-10.64	

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
RONW	27	0.00**	22	0.35	24	0.58
ROCE	46	0.00**	49	0.14	39	0.03*
ROTA	81	0.00**	74	0.66	62	0.00**
OPM	62	0.00**	63	0.35	51	0.00**
NPM	57	0.00**	58	0.93	49	0.00**

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

Table 5.40 Median, lower quartile (Q1), and upper quartile (Q3) values of key profitability ratios of the loss-making PSEs, 1991–1992 to 2010–2011 (Figures are in percentages)

Ratios	Q3											
	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
RONW	2.56	-4.30	2.20	11.68	-18.47	-20.29	-26.30	-3.25	11.67	6.49	22.30	23.42
ROCE	-1.07	-8.95	-3.82	3.24	-16.38	-34.16	-26.07	-17.85	10.97	3.47	14.18	18.99
ROTA	-0.78	-6.07	-3.02	3.34	-19.10	-20.79	-23.36	-9.37	7.62	5.12	7.01	13.73
OPM	0.95	-1.45	-0.02	6.43	-27.85	-26.21	-31.87	-8.20	11.51	9.17	15.52	22.21
NPM	-4.01	-12.08	-9.72	2.32	-38.35	-37.90	-36.71	-13.61	3.86	1.60	5.43	12.25

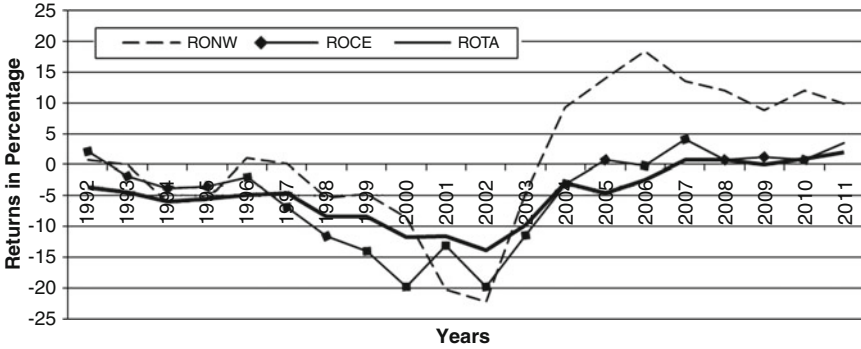


Fig. 5.15 Mean values of profitability ratios (RONW, ROCE and ROTA) of the loss-making PSEs for the years 1991–1992 to 2010–2011

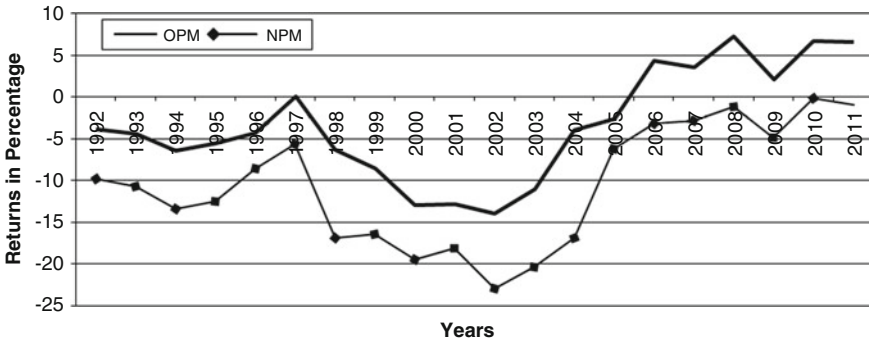


Fig. 5.16 Mean values of the profitability ratios (OPM and NPM) of the loss-making PSEs for the years 1991–1992 to 2010–2011

reasons for poor performances of PSEs as overstaffing, outdated technology, and lack of funds to invest. Ghuman (1999) states overcapitalization, under-utilization of the installed capacity, delay in implementation of the projects, overstaffing, and inadequate attention to R&D as plausible reasons of their poor performance.

However, it is a matter of satisfaction that loss-making PSEs have positive operating profit margins as well as positive rates of return on their investments from the year 2005–2006. Equally significant observation is that during recession phase, a good amount of improvement (statistically significant) has been recorded in all the profitability ratios vis-à-vis phase 3. Positional values are more revealing in this regard; inter se, one-fourth of such enterprises (as per upper quartile) have adequate profits across the phases and very satisfactory rates of returns in phase 4; another one-half of such enterprises (as per median) have also recorded positive and improved results in phase 4 (Table 5.40). It is reasonable to conclude that there has been no adverse impact of recession on these enterprises. On the contrary, there has been a marked improvement in their performance. The plausible reasons may be that government as a policy matter gave emphasis on reduction of number of sick PSEs (i.e., from 111 in March 2003 to 45 in March 2010); central PSEs were

Table 5.41 Opinion related to the impact of liberalization policies on financial performance of sample PSEs in India

Options	Profit-making (out of 21)		Loss-making (out of 9)		Combined (out of 30)	
	In no.	In %	In no.	In %	In no.	In %
Yes	20	95.2	4	50.0	24	82.76
No	1	4.8	4	50.0	5	17.24
Total	21	100	8	100	29	100

Table 5.42 Policy on communicating financial targets to subordinates among sample PSEs in India

Options	Profit-making (out of 21)		Loss-making (out of 9)		Combined (out of 30)	
	In no.	In %	In no.	In %	In no.	In %
Generally	16	75.00	9	100.00	25	86.21
Sometimes	1	5.00	0	0.00	01	3.45
Very rarely	3	15.00	0	0.00	03	10.34
Total	20	100	9	100	29	100

Table 5.43 Policy on communicating financial targets to government among sample PSEs in India

Options	Profit-making (out of 21)		Loss-making (out of 9)		Combined (out of 30)	
	In no.	In %	In no.	In %	In no.	In %
Generally	19	90.5	9	100.0	28	93.34
Very rarely	2	9.5	–	0.00	02	6.67
Total	21	100	9	100	30	100

brought under the purview of Sick Industrial Companies Act 1985 (SICA). Further, the government has also set up the Board for Reconstruction of Public Sector Enterprises (BRPSE) in December 2004 to advise the government measures for reconstruction/revival (Public Sector Enterprises Survey 2009–2010, Vol I). Signing of MoUs and professionalization of the board of these enterprises by inducting outside professionals on the board has also been introduced.

The findings have policy implications. Though these PSEs may continue to have accumulated losses in their balance sheet, the positive RONW of more than half of loss-making enterprises (median is 2.58 %) in phases 3 and 4 is a signal of their turnaround; there is need to review the policy of closure of the loss-making PSEs, recommended to the government by various committees. In concrete/operational terms, closure of loss/sick PSEs should be taken on the merits of each case.

Virtually all the profit-making enterprises (responding to the survey) feel that the government liberalization policies (initiated in 1991) have yielded salutary impact on the financial performance (Table 5.41). In marked contrast, only half of the loss-making organizations feel so. It is gratifying to learn from the survey that the financial targets are generally communicated to the subordinates as well as to the government in almost all the organizations (Tables 5.42 and 5.43).

Table 5.44 Levels where financial/new investment proposals are initiated among sample PSEs in India

Levels	Profit-making (out of 21)		Loss-making (out of 9)		Combined (out of 30)	
	In no.	In %	In no.	In %	In no.	In %
Head office	13	61.90	5	55.56	18	60.00
Regional office	4	19.05	0	0.00	4	13.33
Operation level	4	19.05	4	44.44	8	26.67
Total	21	100.00	9	100.00	30	100.00

Table 5.45 Period required for approval of projects/proposals among sample PSEs in India

Period	Profit-making (out of 21)		Loss-making (out of 9)		Combined (out of 30)	
	In no.	In %	In no.	In %	In no.	In %
Less than 3 months	14	66.7	5	55.5	19	63.3
3–6 months	0	0	2	22.2	2	6.7
More than 6 months	7	33.3	2	22.2	9	30
Total	21	100	9	100	30	100

Table 5.46 Period for implementation of projects/proposals among sample PSEs in India

Period	Profit-making (out of 21)		Loss-making (out of 9)		Combined (out of 30)	
	In no.	In %	In no.	In %	In no.	In %
Less than 3 months	9	42.8	5	55.5	14	46.7
3–6 months	5	23.8	2	22.2	7	23.3
More than 6 months	7	33.3	2	22.2	9	30
Total	21	100	9	100	30	100

Tables 5.44, 5.45, and 5.46 have described the various levels at which financial and new investment proposals are initiated and the time span generally used for the approval and implementation of these proposals. Although more than three-fifth of the new investment proposals originate at head office only, it is interesting to note that more than two-fifth of the investment proposals are initiated/routed at operational level in loss-making PSEs (Table 5.44). The positive aspect of this part of survey is that the operating managers are likely to put in their best efforts to ensure the success of their proposed investment proposals; evidently, such proposals have better potentials of profit. More than three-fifth of PM and one-half of LM PSEs investment proposals are approved within the time span of 3 months (Table 5.45), whereas two-fifth of PM and one-half of LM enterprises implement them within 3 months (Table 5.46). In fact, majority of the profit-making PSEs are taking more than 3 months to implement the proposals.

As expected, the independent *t*-test (shown in Table 5.47) in respect to mean values of profit-making PSEs (Table 5.37) and mean values of loss-making PSEs (Table 5.39) signifies that there is a significant difference between them in profitability ratios. The test reinforces better profitability position of profit-making PSEs. On the contrary, loss-making PSEs seem to be in the unsafe zone in this

Table 5.47 Independent sample *t*-test of profitability ratios to find out significance of difference between the sample profit-making and loss-making PSEs during 1991–1992 to 2010–2011 (group statistics)

Ratios	Coding	Mean		Mean		Mean		Mean	
		<i>N</i>	Phase 1	<i>N</i>	Phase 2	<i>N</i>	Phase 3	<i>N</i>	Phase 4
RONW	PM	88	10.8	89	12.8	100	15.9	89	13.2
	LM	40	-2.1	31	-4.4	32	1.9	30	10.2
ROCE	PM	90	9.9	96	10.7	102	10.4	89	9.9
	LM	56	-2.3	55	-14.4	56	-6.8	44	1.0
ROTA	PM	99	8.49	100	9.07	103	9.79	96	7.94
	LM	95	-6.79	83	-8.95	85	-6.81	64	1.00
OPM	PM	95	15.4	95	16.3	99	16.5	89	14.3
	LM	80	-6.2	69	-7.4	69	-6.0	53	4.4
NPM	PM	94	6.5	96	7.4	103	10.8	92	8.3
	LM	71	-12.5	63	-15.7	65	-13.9	50	-2.6

Notes:

PM stands for profit-making PSEs, *LM* for loss-making PSEsIndependent samples *t*-test

Ratios	Variances	<i>t</i> -test for equality of means							
		Phase 1		Phase 2		Phase 3		Phase 4	
		df	Sign.	df	Sign.	df	Sign.	df	Sign.
RONW	EV	126	0.00**	118	0.00**	130	0.00**	117	0.36
	NEV	69	0.00**	49	0.00**	37	0.00**	39	0.45
ROCE	EV	144	0.00**	149	0.00**	156	0.00**	131	0.02*
	NEV	125	0.00**	101	0.00**	87	0.00**	78	0.02**
ROTA	EV	192	0.00**	181	0.00**	186	0.00**	158	0.00**
	NEV	155	0.00**	138	0.00**	133	0.00**	117	0.00**
OPM	EV	173	0.00**	162	0.00**	166	0.00**	140	0.01**
	NEV	162	0.00**	132	0.00**	122	0.00**	104	0.01**
NPM	EV	163	0.00**	157	0.00**	166	0.00**	140	0.00**
	NEV	139	0.00**	123	0.00**	114	0.00**	88	0.00**

Notes:

EV equal variances assumed, *NEV* equal variances not assumed

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

regard, albeit many of them have performed better in the later part of the study. Public Enterprises Survey (2002–2003) suggests that the reasons for losses/sickness are manifold and may vary from unit to unit; however, some common problems faced/being faced by sick and loss-making PSEs include inherent problems of taking over sick enterprise, resource crunch, erosion of net worth due to continuous losses incurred, heavy interest burden, high input cost, stiff competition, reluctance of financial institutions to provide funds for revival/rehabilitation of obsolete plants and machinery, outdated technology, low capacity utilization, excess manpower, weak marketing strategies, etc.

In view of the above, the policy-makers must devise a policy to improve the performance of public enterprises in order to serve public purpose as well (Kumar 1994). Gupta et al. (2011) suggests technology up-gradation, organizational restructuring, dependence on public borrowings and some degree of linkage of wages, and productivity would enhance the performance of loss-making PSEs. Loss-making non-core enterprises should be studied in detail so that they could be made economically viable; inter se, those enterprises which incurred losses over a period of time and where the value added per employee had been less than the average emoluments and where equity capital had been wiped out by mounting deficits should be closed down.

5.4.2 Efficiency Test

Efficiency test assesses the operational performance of profit-making (PM) and loss-making (LM) PSEs. Analysis has been carried out primarily on the basis of assets turnover ratio (total, current and fixed), inventory holding period, and debtor collection period (major constituents of current assets). On a priori basis, though it is expected that PM PSEs would have better efficiency levels compared to LM PSEs, the analysis would be useful to ascertain whether there has been an improvement in efficiency ratios of the LM PSEs over the years. It is hypothesized that the efficiency of loss-making PSEs has shown an improvement in utilization of resources over the phases.

The relevant data contained in Tables 5.48 and 5.50 suggest that the TATR of both types of enterprises is less than one for the entire period of the study (20 years); the TATR, prima facie, does not seem to be satisfactory and is indicative of under-utilization of resources. For instance, TATR is the highest in the year 2002–2003 (1.04, range being 0.78–1.04) in the case of PM PSEs and the highest in 1991–1992 (0.81, range of 0.53–0.81) for LM PSEs. As per trend, it is disheartening to note a decline in TATR in almost all the phases of PM and first three phases of LM organizations (Tables 5.48 and 5.50); however, in recession phase 4, an improvement has been observed in terms of total assets turnover (insignificant statistically) in the LM PSEs. The difference of TATR is significant only in PM organizations (Tables 5.48 and 5.50) as per paired *t*-test (except phases 2 and 3).

Positional values indicate that median, lower, and upper quartile TATR of the profit-making enterprises are between 0.59 and 0.72, less than 0.37, and range from 1.14 to 1.39, respectively (Table 5.49); salutary impact has been observed in the total assets utilization of PM PSEs during recession phase of the study.

It may be recalled that more than one-fourth of loss-making PSEs are having adequate profit margins and satisfactory rates of returns (Table 5.40). In practical terms, one-fourth of PSEs (in the loss-making category) have ceased their losses and have started earning profits. Their efficiency levels seem to match with those of profit-making PSEs.

In contrast, FATR has presented a better picture in utilization of fixed assets in all the public sector enterprises. For instance, FATR of PM firms is greater than

Table 5.48 Mean values of key turnover ratios of the profit-making PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Years	TATR		FATR		CATR	
	Mean	N	Mean	N	Mean	N
1991–1992	0.78	93	3.04	77	1.31	90
1992–1993	0.82	97	2.98	79	1.35	94
1993–1994	0.90	98	3.03	79	1.38	95
1994–1995	0.93	98	3.20	80	1.42	95
1995–1996	0.98	98	3.55	80	1.49	96
1996–1997	0.97	100	3.64	78	1.44	98
1997–1998	0.99	99	3.59	79	1.52	97
1998–1999	0.98	100	3.26	77	1.45	97
1999–2000	0.98	99	3.32	75	1.53	96
2000–2001	0.98	96	3.17	73	1.58	97
2001–2002	0.95	101	3.27	72	1.48	98
2002–2003	1.04	100	3.11	71	1.61	99
2003–2004	0.97	101	3.44	74	1.51	101
2004–2005	0.94	101	3.88	75	1.53	100
2005–2006	0.92	99	3.94	71	1.49	97
2006–2007	0.91	96	3.89	70	1.48	96
2007–2008	0.86	96	3.98	69	1.37	96
2008–2009	0.90	95	4.52	73	1.38	95
2009–2010	0.82	95	4.01	72	1.25	95
2010–2011	0.86	95	3.92	69	1.31	95
Mean 1991–1992 to 1995–1996 (phase 1)	0.90	98	3.25	81	1.41	96
Mean 1996–1997 to 1999–2000 (phase 2)	1.00	100	3.63	80	1.50	98
Mean 2000–2001 to 2007–2008 (phase 3)	0.96	101	3.77	81	1.51	104
Mean 2008–2009 to 2010–2011 (phase 4)	0.86	95	4.41	75	1.31	95
Aggregate mean (1992–2011)	0.92		3.54		1.44	

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
TATR	97	0.00**	99	0.57	91	0.00**
FATR	76	0.00**	75	0.02*	70	0.00**
CATR	95	0.12	97	0.65	94	0.02*

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

Table 5.49 Median, lower (Q1), and upper quartile (Q3) values of key turnover ratios of the profit-making PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
TATR	0.60	0.68	0.72	0.59	0.27	0.37	0.34	0.32	1.19	1.28	1.39	1.14
FATR	2.02	2.18	2.61	3.50	0.77	1.01	0.97	1.09	6.53	6.49	7.03	8.20
CATR	1.03	1.16	1.05	0.85	0.55	0.58	0.56	0.51	1.91	2.02	2.34	1.63

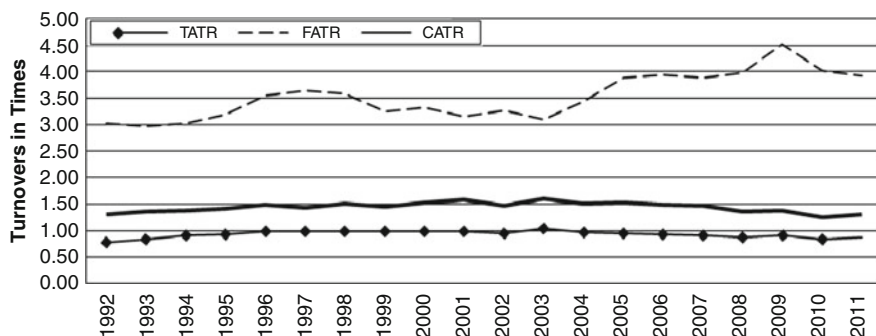


Fig. 5.17 Mean values of the turnover ratios (TATR, FATR and CATR) of the profit-making PSEs for the years 1991–1992 to 2010–2011

3 (highest being 4.52 in 2008–2009) in 19 out of 20 years period of the study, mean figure being 3.54. Similar conclusions follow based on median and quartile values. As per trend, there is an improvement, duly corroborated by paired *t*-test showing significant difference during all the sub-phases (Table 5.48 and Fig. 5.17).

Table 5.50 is indicative of better utilization of fixed assets in loss-making PSEs; the FATR is greater than 3 in 13 out of 20 years and the aggregate mean is 3.01. However, Table 5.51 suggests that the performance is not evenly distributed; one-fourth of such PSEs have FATR quite low at 0.29, while another one-fourth fall in the range of 2.04–3.0 (as per median) and only one-fourth such PSEs have FATR 3.0 or above. One-fourth of the loss-making PSEs (affiliated to quartile one) seem to be responsible for deteriorating the productivity level of fixed assets across the phases and bringing down the profit margin; it corroborates the earlier findings of profitability test. However, at aggregate level, negligible effect of recession has been observed; in fact, nearly 15 % improvement in FATR has been recorded in recession phase against phase 3 (pre-recession phase).

The CATR is quite low in both types of enterprises (Tables 5.48 and 5.50); the corresponding range lies between 1.25–1.58 for PM and 0.87–1.31 for LM PSEs. Positional values (mentioned in Table 5.49) highlight that one-fourth of PM PSEs (as per lower quartile) have CATR in the range of 0.51 and 0.58 or less and the next one-fourth of such PSEs (as per median) have this ratio between 0.85 and 1.16; only next one-fourth generate CATR above 1.63–2.34. On the other hand, steep decline has been observed in the trend of utilization of current assets in the case of LM PSEs (presented in Table 5.50 and Fig. 5.18) compared to PM enterprise (in Table 5.48 and Fig. 5.17). The findings do not support the hypothesis of better assets utilization capacity of LM PSEs across the phases.

Second dimension of operational efficiency assesses the holding period of various types of inventories (such as RMIHP, WIPIHP, and FGIHP) and debtor collection period of the sample enterprises. Mean and positional values in respect to inventory and debtors of profit-making enterprises are contained in Tables 5.52 and 5.53; these values are available in Tables 5.54 and 5.55 for loss-making PSEs. Paired *t*-test has been conducted in Tables 5.52 and 5.54 for profit-making and loss-making PSEs, respectively.

Table 5.50 Mean values of turnover ratios of the key loss-making PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Years	TATR		FATR		CATR	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1991–1992	0.81	94	3.66	83	1.31	93
1992–1993	0.78	95	3.27	85	1.24	93
1993–1994	0.71	95	3.04	86	1.14	94
1994–1995	0.70	95	3.03	87	1.16	94
1995–1996	0.75	95	3.21	86	1.26	94
1996–1997	0.73	95	3.34	87	1.17	96
1997–1998	0.67	94	3.28	89	1.10	96
1998–1999	0.64	94	3.00	89	1.07	96
1999–2000	0.62	94	3.00	90	1.08	95
2000–2001	0.67	90	3.00	89	1.13	95
2001–2002	0.53	97	2.54	92	1.02	93
2002–2003	0.57	98	2.71	91	1.06	93
2003–2004	0.56	98	2.48	91	1.06	93
2004–2005	0.61	97	2.49	83	1.11	89
2005–2006	0.61	90	2.60	77	1.00	84
2006–2007	0.68	81	2.71	68	1.08	74
2007–2008	0.70	79	2.99	63	0.90	77
2008–2009	0.69	73	3.34	62	0.94	73
2009–2010	0.62	73	3.34	61	0.87	73
2010–2011	0.65	71	3.21	58	0.92	71
Mean 1991–1992 to 1995–1996 (phase 1)	0.75	95	3.32	88	1.22	94
Mean 1996–1997 to 1999–2000 (phase 2)	0.69	95	3.20	90	1.10	96
Mean 2000–2001 to 2007–2008 (phase 3)	0.61	98	2.85	98	0.99	102
Mean 2008–2009 to 2010–2011 (phase 4)	0.66	72	3.27	61	0.91	73
Aggregate mean (1992–2011)	0.66		3.01		1.08	

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
TATR	93	0.09	89	0.28	70	0.97
FATR	84	0.23	88	0.33	60	0.01**
CATR	93	0.04*	94	0.24	71	0.04*

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

Raw materials and spare-parts holding period (RMIHP) of both types of enterprises is fairly high; the aggregate mean over the 20 years period is nearly 5 months, i.e., 150 days for PM PSEs and 159 days for LM PSEs; however, an appreciable reduction from 6 months to less than 4 months (i.e., nearly 35 %) in holding period of raw materials has been observed in the PM organizations during phase 4 vis-à-vis phase 1; the same is 22 % in the case of LM organizations. Similar

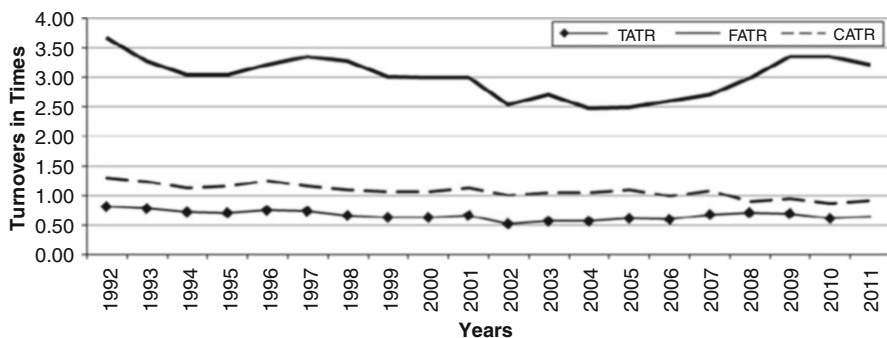


Fig. 5.18 Mean values of the turnover ratios (TATR, FATR and CATR) of the loss-making PSEs for the years 1991–1992 to 2010–2011

Table 5.51 Median, lower (Q1), and upper quartile (Q3) values of key turnover ratios of the loss-making PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
TATR	0.69	0.59	0.46	0.62	0.38	0.26	0.06	0.10	1.00	0.88	1.05	1.03
FATR	2.66	2.33	2.04	3.00	1.13	0.83	0.40	0.29	4.99	5.45	4.82	5.77
CATR	1.14	0.95	0.77	0.81	0.56	0.44	0.22	0.15	1.77	1.59	1.57	1.27

conclusions follow based on positional values as well as from Figs. 5.19 and 5.20. Paired *t*-test has identified the significant difference during the second and third phases in PM as well as LM PSEs.

As far as WIPIHP and FGIHP are concerned, the PM and LM PSEs have shown improvement and have recorded a decline in holding period of respective inventories over a period of time; the difference is significant statistically for FGIHP across the phases of LM PSEs and in phases 1 and 2 for profit-making PSEs.

The average debtor collection period is shorter for profit-making PSEs compared to loss-making PSEs; the respective figures are less than 3 months (85 days) and more than 3 months (96 days). It is a matter of some satisfaction to note the reduction in DCP (statistically significant) in the case of LM PSEs in phases 1 and 2 and for PM in phases 2 and 3. Positional values also indicate (Table 5.55) that one-fourth of LM PSEs have reduced their DCP to 25 days (lower quartile) and one-half PSEs to 78 days (median) during phase 4; only one-fourth of the LM enterprises (represented by upper quartile) are responsible to have DCP at precarious level of more than 145 days which merits management attention. In operation terms, the effect of recession is observed neither on DCP nor on inventories (RMIHP, WIPIHP and FGIHP).

It was of interest to ascertain experiences to deal with working capital requirements and sources of its financing from the public sector executives. The survey highlights that the shortage of working capital has been experienced by more than

Table 5.52 Mean values of inventory holding period and debtor collection period (DCP) of the profit-making PSEs, 1991–1992 to 2010–2011 (Figures are in days)

Years	RMIHP		WPIHP		FGIHP		DCP	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1991–1992	186.99	64	17.40	92	19.27	94	89.44	86
1992–1993	182.18	69	19.16	93	19.42	97	93.37	89
1993–1994	183.55	70	18.55	94	22.07	98	97.09	91
1994–1995	177.33	68	17.23	95	22.33	98	89.51	91
1995–1996	161.16	65	16.58	95	18.79	97	84.13	90
1996–1997	177.16	71	16.79	96	16.75	98	86.77	92
1997–1998	186.14	70	17.55	97	14.92	99	91.00	93
1998–1999	182.34	70	17.63	98	13.85	100	94.05	94
1999–2000	174.11	70	15.47	97	14.55	100	87.24	93
2000–2001	157.09	71	15.59	95	12.05	97	85.39	94
2001–2002	160.14	71	14.38	99	15.84	100	86.81	96
2002–2003	153.32	70	15.08	99	13.19	101	94.16	98
2003–2004	120.97	81	13.66	99	12.16	101	83.84	96
2004–2005	115.36	82	11.21	99	11.83	101	79.35	98
2005–2006	114.51	78	14.36	96	13.33	98	75.18	95
2006–2007	101.73	75	17.58	96	12.02	97	78.16	93
2007–2008	113.54	74	16.16	95	12.08	96	76.41	92
2008–2009	121.19	69	16.69	88	13.91	92	69.34	89
2009–2010	118.09	68	16.95	88	13.54	91	77.88	91
2010–2011	103.90	65	13.16	86	13.42	88	80.60	90
Mean 1991–1992 to 1995–1996 (phase 1)	181.11	70	17.55	95	20.78	98	93.08	92
Mean 1996–1997 to 1999–2000 (phase 2)	191.50	72	17.30	98	14.94	100	91.63	94
Mean 2000–2001 to 2007–2008 (phase 3)	126.43	85	16.65	100	12.95	101	82.78	103
Mean 2008–2009 to 2010–2011 (phase 4)	114.27	69	16.57	88	13.91	92	76.55	92
Aggregate mean (1992–2011)	149.54		16.06		15.27		84.99	

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
RMIHP	64	0.89	69	0.00**	67	0.48
WPIHP	94	0.85	93	0.21	87	0.62
FGIHP	97	0.00**	95	0.21	91	0.48
DCP	89	0.95	93	0.05*	91	0.23

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

Table 5.53 Median, lower (Q1), and upper quartile (Q3) values of inventory holding period and debtor collection period of profit-making PSEs, 1991–1992 to 2010–2011 (Figures are in days)

Ratios	Median											
	Q1				Q3							
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
RMHP	143.58	137.61	70.88	58.56	50.67	57.48	16.78	17.37	268.67	253.53	212.54	204.43
WIPHP	0.57	0.81	0.82	0.44	0.00	0.00	0.00	0.00	24.01	16.21	14.97	8.06
FGIHP	8.59	4.88	3.39	3.41	0.00	0.00	0.00	0.00	31.57	20.72	22.74	20.77
DCP	72.18	76.70	72.84	62.25	24.40	28.79	20.22	17.22	151.14	144.13	143.17	129.33

Table 5.54 Mean values of inventory holding period and debtor collection period (DCP) of the loss-making PSEs, 1991–1992 to 2010–2011 (Figures are in days)

Years	RMIHP		WPIHP		FGIHP		DCP	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1991–1992	169.10	81	22.34	91	35.37	92	89.88	91
1992–1993	164.98	82	24.25	92	36.58	93	90.51	89
1993–1994	163.48	81	22.53	92	36.97	94	96.61	91
1994–1995	156.91	78	21.96	92	34.49	94	107.73	92
1995–1996	159.67	80	20.69	92	28.68	94	100.68	87
1996–1997	179.14	80	17.71	93	27.86	95	106.56	88
1997–1998	185.75	81	18.08	96	26.63	96	107.30	88
1998–1999	192.56	76	22.82	96	22.80	96	107.29	87
1999–2000	183.18	75	17.24	95	19.40	97	105.48	86
2000–2001	172.37	70	12.56	88	23.06	89	107.98	86
2001–2002	191.30	71	14.21	92	20.57	95	108.79	81
2002–2003	180.02	72	10.88	92	17.74	95	95.26	80
2003–2004	148.62	71	13.55	90	19.84	92	94.70	79
2004–2005	138.43	69	11.87	86	19.74	87	80.54	73
2005–2006	143.76	64	10.82	85	20.80	81	79.40	72
2006–2007	114.83	55	8.74	75	17.42	79	85.25	62
2007–2008	146.56	52	9.86	70	15.84	72	83.39	61
2008–2009	126.29	38	11.74	67	12.99	71	87.59	58
2009–2010	140.53	37	12.88	65	14.12	69	90.63	59
2010–2011	123.61	33	11.09	60	13.11	63	88.06	56
Mean 1991–1992 to 1995–1996 (phase 1)	167.78	85	22.37	93	34.45	94	99.49	93
Mean 1996–1997 to 1999–2000 (phase 2)	192.31	84	20.70	96	24.09	97	111.31	90
Mean 2000–2001 to 2007–2008 (phase 3)	166.03	79	11.64	93	18.84	96	100.78	94
Mean 2008–2009 to 2010–2011 (phase 4)	131.69	38	12.06	67	13.65	71	94.15	60
Aggregate mean (1992–2011)	159.06		15.79		23.20		95.68	

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
RMIHP	76	0.22	70	0.01**	37	0.13
WPIHP	91	0.00**	85	0.11	66	0.64
FGIHP	93	0.00**	88	0.00**	61	0.00**
DCP	86	0.00**	87	0.18	59	0.56

**Signifies to significant difference at 1 % level

one-fourth of the profit-making PSEs and virtually by all the loss-making PSEs (Table 5.56). The large numbers of loss-making PSEs are using short-term credit from banks and government to meet their working capital needs, though the profit-making enterprises are filling this gap greatly through the usage of

Table 5.55 Median, lower (Q1), and upper quartile (Q3) values of inventory holding period and debtor collection period of loss-making PSEs, 1991–1992 to 2010–2011

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
RMHP	113.09	137.13	96.65	83.21	52.68	66.15	47.55	54.45	256.58	323.04	299.93	144.05
WIPHP	6.79	4.44	1.21	0.07	0.00	0.00	0.00	0.00	39.63	22.86	18.43	14.41
FGIHP	25.65	12.79	7.33	2.32	3.24	1.50	0.08	0.00	65.55	37.14	37.19	21.29
DCP	76.83	97.67	74.92	77.97	34.89	36.53	23.05	25.55	168.80	174.10	173.29	145.10

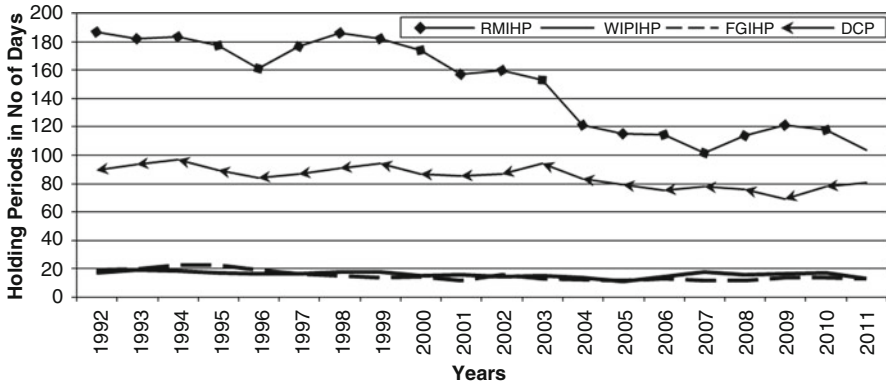


Fig. 5.19 Mean values of the inventory (RMIHP, WIPIHP and FGIHP) and debtor collection period (DCP) of the profit-making PSEs for the years 1991–1992 to 2010–2011

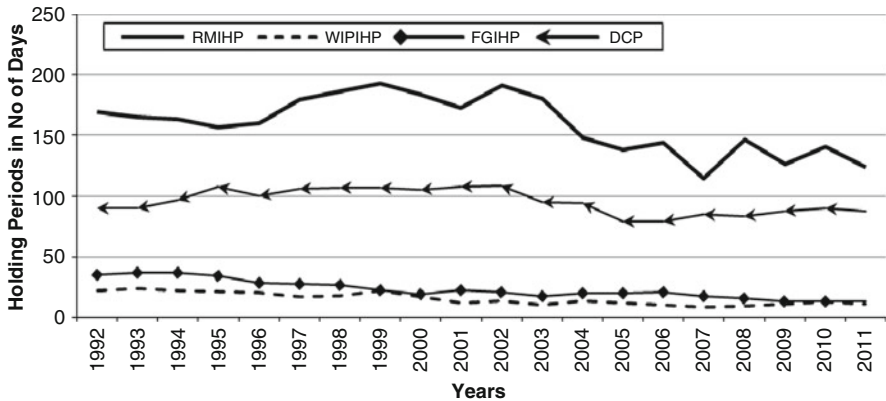


Fig. 5.20 Mean values of the inventory (RMIHP, WIPIHP and FGIHP) and debtor collection period (DCP) of the loss-making PSEs for the years 1991–1992 to 2010–2011

internal resources (Table 5.57). Further, the survey findings indicate that the excess of cash is available in more than three-fourth of the profit-making and one-third of the loss-making enterprises (Table 5.58).

Independent *t*-test has been conducted (Table 5.59) to examine the operating and productive efficiency difference between profit-making and loss-making PSE; significant difference has been observed during phase 4 (for FATR and CATR), phase 3 (for TATR, FATR, CATR, and RMIHP), phase 2 (for TATR, CATR, and FGIHP), and phase 1 (for FGIHP). Group statistics suggests that profit-making PSEs have, *perforce*, better efficiency in almost all the measures compared to loss-making enterprises. It is gratifying to note that loss-making enterprises have improved their assets utilization capacity over a period of the study; the findings are in conformity with the studies undertaken by Raheman et al. (2010), Hill et al. (2010), Jain and Yadav (2005), and Public Enterprises Survey (2009–2010).

Table 5.56 Working capital shortage experienced among responded PSEs in India

Options	Profit-making (out of 21)		Loss-making (out of 9)		Combined (out of 30)	
	In no.	In %	In no.	In %	In no.	In %
Yes	6	28.6	8	88.9	14	46.7
No	15	71.4	1	11.1	16	53.3
Total	21	100	9	100	30	100

Table 5.57 Sources used to finance working capital needs by responded PSEs in India

S. no.	Sources	Profit-making (out of 21)		Loss-making (out of 9)		Combined (out of 30)	
		In no.	In %	In no.	In %	In no.	In %
1	Long-term sources	3	15.8	2	22.2	5	17.9
2	Short-term credit from commercial banks	6	31.5	4	44.4	10	35.7
3	Short-term loans from government	0	0	2	22.2	2	7.1
4	Utilization of internal resources	10	52.7	1	11.1	11	39.3
	Total	19	100	9	100	28	100
	Missing			2		2	

Table 5.58 Cash surplus situation among responded PSEs in India

Options	Profit-making (out of 21)		Loss-making (out of 9)		Combined (out of 30)	
	In no.	In %	In no.	In %	In no.	In %
Yes	16	76.2	3	33.3	19	63.3
No	3	14.2	6	66.7	9	30.0
Total	19	100	9	100	28	100

5.4.3 Solvency and Liquidity Test

A comparison of capital structure practices and liquidity position has been made between profit-making and loss-making PSEs over a period of 20 years; the mean and positional values have been presented in Tables 5.60 and 5.61 of profit-making (PM) enterprises, and Tables 5.62 and 5.63 contain these values for loss-making (LM) enterprises. A test of significance has been recorded in Tables 5.60 and 5.62 of PM and LM enterprises, respectively.

Debt is the major source of financing for both types of the PSEs; the aggregate TD/TE is 2.12 for LM PSEs and 1.72 for PM PSEs during the 20-year period; declining trend of debt has been observed during almost the first three phases of profit-making as well as of loss-making PSEs (Figs. 5.21 and 5.22). As far as test of significance is concerned, it has been observed not to be significant in any of the phases of the study in the LM PSEs; its significance has been restricted to phases 1 and 2 only in PM PSEs. The reduction in external obligations to internal equity (TD/TE) has also been corroborated by positional values in both categories of PSEs

Table 5.59 Independent sample *t*-test of efficiency ratios to find out significance of difference between sample profit-making and loss-making PSEs during 1991–1992 to 2010–2011

		<i>t</i> -test for equality of means							
		Phase 1		Phase 2		Phase 3		Phase 4	
Ratios	Variances	df	Sign.	df	Sign.	df	Sign.	df	Sign.
TATR	EV	191	0.15	193	0.01**	197	0.00**	165	0.07
	NEV	142	0.15	156	0.01**	184	0.00**	162	0.06
FATR	EV	167	0.88	168	0.32	177	0.02*	134	0.05*
	NEV	155	0.88	156	0.33	154	0.03*	133	0.04*
CATR	EV	188	0.17	192	0.01**	204	0.00**	166	0.02*
	NEV	153	0.17	162	0.01**	183	0.00**	156	0.01**
DCP	EV	183	0.53	182	0.07	195	0.06	150	0.13
	NEV	182	0.53	180	0.07	179	0.06	110	0.14
RMIHP	EV	153	0.54	154	0.98	162	0.04*	105	0.50
	NEV	134	0.54	138	0.98	161	0.04*	74	0.51
WIPIHP	EV	186	0.34	192	0.59	191	0.27	153	0.46
	NEV	183	0.34	178	0.59	142	0.26	142	0.43
FGIHP	EV	190	0.00**	195	0.02*	195	0.09	161	0.95
	NEV	189	0.00**	191	0.02*	194	0.09	159	0.95

Notes:

PM stands for profit-making PSEs, *LM* for loss-making PSEs, *EV* equal variances assumed, *NEV* equal variances not assumed

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

over the years (except quartile 3), whereas small proportion of debt increase in relation to equity has been noted in phase 4 against phase 3 in both types of PSEs, though insignificant statistically. Similar observations have been derived by Jain and Yadav (2000) and Jain et.al (2013). Broadly, the findings are in conformity of the hypothesis that usage of debt has decreased. This, in turn, is likely to reduce their interest cost in years to follow and improve their net profits. Equally important inference is that debt-equity ratios of PM PSEs in India are satisfactory.

The PM enterprises have maintained an adequate amount of liquidity in almost all the phases (Table 5.60 and Fig. 5.21); the mean CR (1.93) and ATR (1.47, more than desired benchmark, i.e., 1:1) are very satisfactory, albeit decline over the phases; the difference is significant in phases 3 and 4 (for CR and ATR) and in phases 1 and 2 (in ATR) as per paired *t*-test of profit-making PSEs. However, unequal distribution of liquidity has been observed in Table 5.61 (median and quartiles); one-fourth of the PM PSEs (as per lower quartile) operate at unsatisfactory liquidity level, the range being 1.09–1.17(CR) and 0.78–0.89 (ATR), and might be encountering working capital shortage. Next one-fourth (median) seem to have satisfactory position, in this regard, lying in range 1.19–1.83 (CR) and 0.89–1.40 (ATR) during all phases. The position of liquidity is very much satisfactory (in fact, may be carrying excessive liquidity) in the case of one-fourth of the PM enterprises affiliated to upper quartile.

Table 5.60 Mean values of key leverage and liquidity ratios of the profit-making PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Years	Leverage ratios		Liquidity ratios			
	TD/TE		CR		ATR	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1991–1992	2.23	75	1.85	92	1.39	94
1992–1993	1.99	78	1.94	93	1.43	95
1993–1994	2.18	82	1.95	93	1.44	95
1994–1995	1.92	79	1.84	94	1.39	96
1995–1996	1.80	77	1.96	97	1.40	98
1996–1997	1.10	80	2.08	95	1.51	95
1997–1998	1.67	82	2.12	96	1.54	96
1998–1999	1.44	79	1.97	94	1.48	94
1999–2000	1.52	80	1.96	94	1.49	95
2000–2001	1.53	81	2.08	93	1.58	95
2001–2002	1.72	85	2.02	99	1.55	98
2002–2003	1.51	82	2.09	98	1.64	96
2003–2004	1.48	80	1.94	97	1.59	97
2004–2005	1.69	82	1.85	97	1.46	96
2005–2006	1.69	83	1.84	95	1.50	94
2006–2007	1.75	84	1.90	90	1.50	88
2007–2008	1.88	83	1.87	90	1.57	91
2008–2009	1.78	78	1.80	89	1.33	88
2009–2010	1.86	81	1.75	91	1.16	89
2010–2011	1.71	79	1.77	88	1.40	87
Mean 1991–1992 to 1995–1996 (phase 1)	2.16	83	1.96	97	1.42	99
Mean 1996–1997 to 1999–2000 (phase 2)	1.46	83	2.06	96	1.54	96
Mean 2000–2001 to 2007–2008 (phase-3)	1.76	94	2.01	102	1.58	102
Mean 2008–2009 to 2010–2011 (phase 4)	1.81	81	1.81	92	1.34	92
Aggregate mean (1992–2011)	1.72		1.93		1.47	

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
TD/TE	76	0.01**	81	0.53	78	0.14
CR	93	0.36	92	0.96	91	0.01**
ATR	95	0.05*	93	0.72	91	0.01**

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

In contrast, the working capital/liquidity position of loss-making PSEs is highly unsatisfactory (Table 5.62 and Fig. 5.22); declining trend in mean values of liquidity has also been noted over the first three phases; however, phase 4 denotes an increase of nearly 17 % over phase 3. In fact, it is revealing to that the ATR is hovering around 1 during all the years of recession phase (the average figure being 1.04)

Table 5.61 Median, lower (Q1), and upper quartile (Q3) values of key leverage and liquidity ratios of the profit-making PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
TD/TE	1.57	1.30	1.16	1.55	0.68	0.63	0.55	0.61	3.57	2.19	2.98	2.91
CR	1.83	1.84	1.67	1.42	1.09	1.17	1.12	1.13	2.57	2.70	2.93	2.28
ATR	1.23	1.40	1.33	1.23	0.78	0.87	0.89	0.81	2.02	2.13	2.33	1.76

Table 5.62 Mean values of key leverage and liquidity ratios of the loss-making PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Years	Leverage ratios		Liquidity ratios			
	TD/TE		CR		ATR	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1991–1992	2.05	32	1.56	91	1.01	91
1992–1993	2.13	35	1.33	94	0.90	95
1993–1994	2.82	37	1.16	93	0.80	94
1994–1995	2.58	33	1.16	95	0.78	95
1995–1996	2.20	35	1.10	95	0.76	95
1996–1997	2.17	25	1.37	96	0.87	94
1997–1998	2.11	25	1.31	96	0.86	95
1998–1999	2.14	25	1.26	96	0.82	94
1999–2000	2.14	21	1.12	97	0.70	95
2000–2001	2.37	16	1.09	92	0.75	91
2001–2002	2.70	13	1.07	91	0.77	89
2002–2003	2.20	12	1.07	92	0.81	90
2003–2004	1.71	17	1.02	91	0.73	88
2004–2005	1.59	20	1.10	91	0.74	86
2005–2006	1.69	23	1.19	86	0.95	79
2006–2007	1.69	21	1.36	78	1.06	76
2007–2008	1.62	22	1.35	75	1.09	74
2008–2009	2.07	24	1.33	71	1.02	70
2009–2010	2.27	26	1.34	71	0.96	68
2010–2011	2.05	25	1.21	70	0.94	69
Mean 1991–1992 to 1995–1996 (phase 1)	2.43	37	1.26	95	0.86	95
Mean 1996–1997 to 1999–2000 (phase 2)	2.18	25	1.26	97	0.84	96
Mean 2000–2001 to 2007–2008 (phase 3)	2.04	29	1.12	99	0.85	98
Mean 2008–2009 to 2010–2011 (phase 4)	2.18	26	1.31	71	1.04	71
Aggregate mean (1992–2011)	2.12		1.23		0.87	

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
TD/TE	20	0.48	18	0.09	23	0.93
CR	94	0.88	91	0.00**	70	0.73
ATR	93	0.88	90	0.43	70	0.19

**Signifies to significant difference at 1 % level

Table 5.63 Median, lower (Q1), and upper quartile (Q3) values of key leverage and liquidity ratios of the loss-making PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
TD/TE	2.22	1.87	1.55	1.42	1.08	1.00	0.51	0.74	4.10	3.52	3.29	3.41
CR	0.89	1.02	0.76	1.04	0.44	0.50	0.31	0.61	1.96	1.87	1.69	1.75
ATR	0.52	0.63	0.55	0.88	0.26	0.30	0.20	0.29	1.36	1.21	1.27	1.46

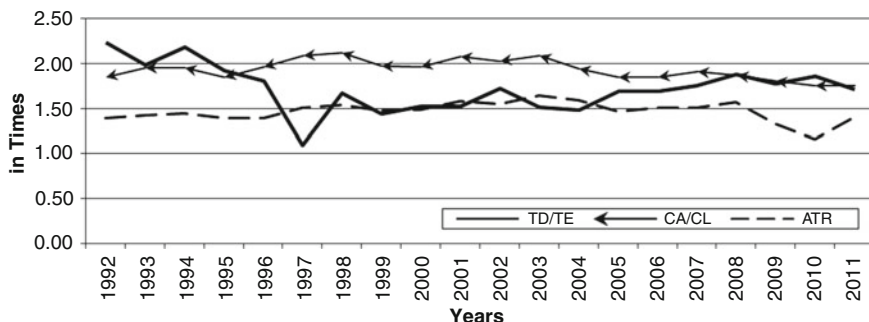


Fig. 5.21 Mean values of leverage ratio (TD/TE) and liquidity ratios (CA/CL and ATR) of the profit-making PSEs for the years 1991–1992 to 2010–2011

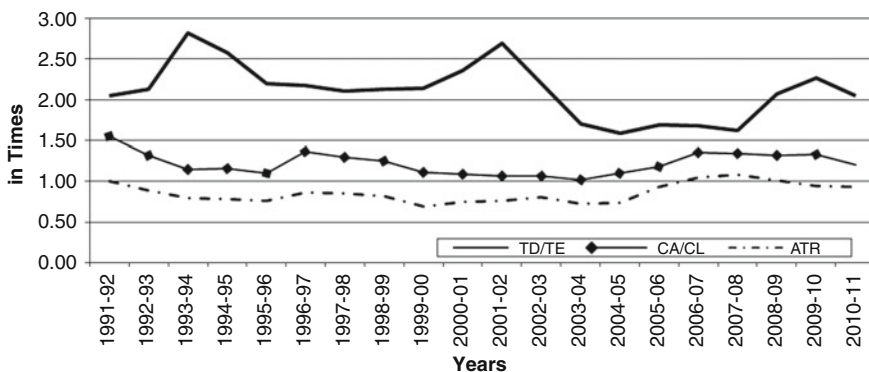


Fig. 5.22 Mean values of leverage ratio (TD/TE) and liquidity ratios (CA/CL and ATR) of the loss-making PSEs for the years 1991–1992 to 2010–2011

in the case of LM PSEs in India. In other words, it implies that there has been a considerable improvement in liquidity position of such PSEs during recession, the findings are contrary to the normal expectation of apprehension of deterioration in liquidity in the case of loss-making PSEs. Positional values (indicated in Table 5.63) also corroborate the mean observation.

Table 5.64 Independent sample *t*-test of leverage and liquidity ratios to find out significance of difference between the sample profit-making and loss-making PSEs during 1991–1992 to 2010–2011 (group statistics)

Ratios	Coding	Mean		Mean		Mean		Mean	
		<i>N</i>	Phase 1	<i>N</i>	Phase 2	<i>N</i>	Phase 3	<i>N</i>	Phase 4
TD/TE	PM	83	2.2	83	1.5	94	1.8	81	1.81
	LM	37	2.43	25	2.18	29	2.04	26	2.18
CR	PM	97	1.96	96	2.06	102	2.01	92	1.81
	LM	95	1.26	97	1.26	99	1.12	71	1.31
ATR	PM	99	1.4	96	1.5	102	1.6	92	1.3
	LM	95	0.9	96	0.8	98	0.8	71	1.0

Notes:

PM stands for profit-making PSEs, *LM* for loss-making PSEsIndependent samples *t*-test

Ratios	Variances	<i>t</i> -test for equality of means							
		Phase 1		Phase 2		Phase 3		Phase 4	
		df	Sign.	df	Sign.	df	Sign.	df	Sign.
TD/TE	EV	118	0.46	106	0.08	121	0.36	105	0.29
	NEV	60	0.49	64	0.03*	47	0.35	38	0.32
CR	EV	190	0.00**	191	0.00**	199	0.00**	161	0.00**
	NEV	190	0.00**	189	0.00**	198	0.00**	151	0.00**
ATR	EV	192	0.00**	190	0.00**	198	0.00**	161	0.04*
	NEV	191	0.00**	188	0.00**	198	0.00**	156	0.03*

Notes:

EV: equal variances assumed, *NEV*: equal variances not assumed

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

The plausible reason is that the government has infused funds in these enterprises so that they can meet their liquidity requirement in time and are able to negotiate price for their input requirement at low input cost as well as withstand recession.

Independent *t*-test (shown in Table 5.64) has observed, as expected, significant difference in liquidity (CR and ATR) ratios of profit-making and LM PSEs across the phases; values in the case of leverage are significant in phase 2 only. It suggests debt is the major source of finance for loss-making PSEs; it needs to be reduced.

5.4.4 Productivity Test

Productivity of capital deals with the statistics of workforce employed with PSEs as well as with the measurement of sales and net income generated per employee (referred to as sales efficiency and net income efficiency, NIE). It goes to the

Table 5.65 Mean values of key productivity ratios of the profit-making PSEs, 1991–1992 to 2010–2011

Years	Employment		Sales efficiency		Net income efficiency	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1991–1992	9,995	95	13.80	94	0.63	95
1992–1993	9,726	98	18.21	97	1.08	97
1993–1994	9,620	98	18.75	97	0.99	97
1994–1995	9,550	98	19.90	96	1.10	97
1995–1996	9,495	100	19.71	95	0.86	97
1996–1997	9,504	100	18.67	93	2.15	99
1997–1998	9,407	100	20.57	92	2.87	100
1998–1999	9,350	100	23.66	93	3.39	100
1999–2000	8,934	100	23.15	89	3.35	100
2000–2001	8,372	104	25.21	88	4.21	100
2001–2002	11,722	104	25.05	88	4.12	100
2002–2003	11,398	102	29.28	88	4.40	100
2003–2004	10,953	102	28.41	86	5.92	100
2004–2005	10,809	101	30.08	84	6.82	99
2005–2006	10,784	99	32.83	82	7.27	97
2006–2007	10,789	97	36.28	82	9.47	95
2007–2008	11,090	96	41.10	79	9.36	92
2008–2009	11,220	96	42.94	78	8.29	93
2009–2010	11,007	96	46.23	78	9.37	92
2010–2011	10,128	96	53.37	76	8.46	90
Mean 1991–1992 to 1995–1996 (phase 1)	9,654	100	19.27	98	0.93	97
Mean 1996–1997 to 1999–2000 (phase 2)	9,299	100	22.76	93	2.96	100
Mean 2000–2001 to 2007–2008 (phase 3)	10,908	105	33.08	93	7.17	105
Mean 2008–2009 to 2010–2011 (phase 4)	10,785	96	48.04	78	9.30	93
Aggregate mean (1992–2011)	10,192		28.36		4.71	

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
Employment	99	0.04*	99	0.00**	95	0.24
Sales efficiency	91	0.00**	88	0.00**	77	0.00**
NIE	96	0.00**	99	0.00**	92	0.02*

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

credit of the management of PM PSEs as an incredible increase in sales efficiency, and NIE has taken place during all the sub-phases of such organizations (Table 5.65 and Fig. 5.23). For instance, there has been nearly two and half times increase in sales efficiency and 10 times in net income efficiency during phase 4

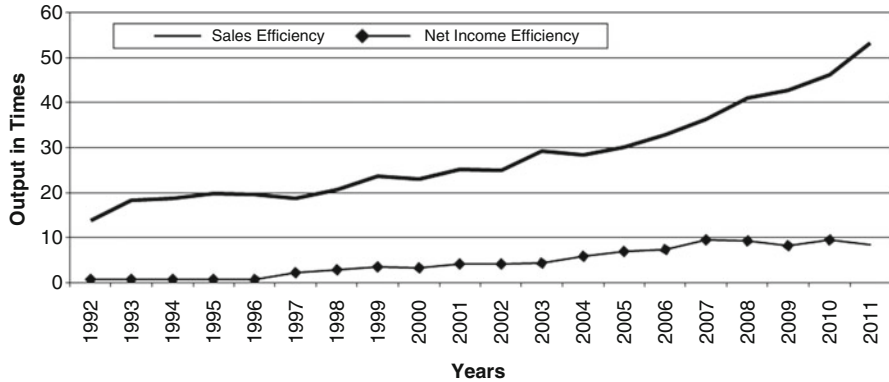


Fig. 5.23 Mean values of the output ratios (sales and net income efficiency) of the profit-making PSEs for the years 1991–1992 to 2010–2011

vis-à-vis phase 1 of PM PSEs. The difference is significant (as per paired *t*-test) in all the parameters during all the phases of profit-making PSEs. Median and quartile values (depicted in Table 5.66) are also impressive; the redeeming feature of quartile values is that they are indicative of significant improvement perhaps among all PM PSEs. Equally notable observation is that there has been a modest growth rate of 12 % only in employment during the period of the study. This statistics related to manpower manifests a significant improvement in manpower policies of the PSEs in India.

Improvements are also notable in the case of LM PSEs. There has been a considerable decrease in employment (nearly 45 %) during recession phase vis-à-vis phase 1 which is statistically significant during phases 2 and 3 as well as in phases 3 and 4 (Table 5.67); as a result, the sales efficiency has shown an increase to one and half times during phase 2 compared to phase 1 as well as in phase 3 vis-à-vis phase 2; similarly, the increase is two times in phase 4 vis-à-vis phase 3. However, these factors have not yielded improvement in NIE. On the contrary, there has been a marked deterioration in the already existing dismal position of negative NIE, the negative NIE figures being -0.54 in phase 1 and -2.15 in phase 4 (Fig. 5.24). However, sales efficiency and NIE have proved to be statistically significant across the phases (except in phases 3 and 4). The probable reasons of negative NIE may include high cost of retrenchment in employment by following voluntary retirement scheme, losses, high interest, poor technology, pricing policy, and high production cost. Emphasizing pricing policy, Reddy (1988) contends that general pricing policy seems to be equally relevant to both the profit as well as loss leaders. Price increases in most loss leaders would have led to higher input prices to other PSEs (Table 5.68).

Significant difference has been identified in sales efficiency and NIE across the phases between both types of PSEs as per independent *t*-test (Table 5.69); minor impact of recession has been observed in some of the PSEs. Group statistics of

Table 5.66 Median, lower (Q1), and upper quartile (Q3) values of key productivity/output ratios of the profit-making PSEs, 1991–1992 to 2010–2011

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
Employment	2,718	2,706	1,976	1,873	401	469	310	310	10,257	10,101	7,408	7,893
Sales efficiency	5.21	8.26	15.20	29.73	2.08	4.19	6.52	13.40	20.30	24.42	59.95	78.04
Net income efficiency	0.36	0.62	1.62	3.74	0.00	0.06	0.21	0.27	1.84	3.03	9.76	12.37

Table 5.67 Mean values of key productivity ratios of the loss-making PSEs, 1991–1992 to 2010–2011

Years	Employment		Sales efficiency		Net income efficiency	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1991–1992	11,748	94	4.05	94	-0.26	94
1992–1993	11,461	94	4.03	94	-0.40	94
1993–1994	10,695	95	4.08	95	-0.81	95
1994–1995	10,694	95	4.85	95	-0.62	95
1995–1996	10,678	95	5.40	95	-0.62	95
1996–1997	10,389	97	6.22	97	-0.82	97
1997–1998	11,235	97	6.91	97	-1.20	97
1998–1999	9,540	97	6.84	97	-1.44	97
1999–2000	9,920	97	7.21	97	-1.67	97
2000–2001	8,252	102	7.90	96	-2.41	96
2001–2002	7,536	103	6.55	94	-3.13	91
2002–2003	6,982	99	9.59	94	-2.67	92
2003–2004	6,535	96	11.19	94	-3.33	92
2004–2005	6,490	91	9.97	87	-2.93	85
2005–2006	6,258	90	10.33	84	-3.63	86
2006–2007	6,519	79	13.43	74	-2.79	74
2007–2008	7,522	74	15.68	71	-5.54	71
2008–2009	6,356	73	18.44	69	-1.52	65
2009–2010	6,127	71	21.75	68	-1.51	64
2010–2011	5,926	71	21.17	67	-2.38	64
Mean 1991–1992 to 1995–1996 (phase 1)	11,006	95	4.46	95	-0.54	95
Mean 1996–1997 to 1999–2000 (phase 2)	10,271	97	6.79	97	-1.28	97
Mean 2000–2001 to 2007–2008 (phase 3)	6,573	103	10.54	102	-3.43	103
Mean 2008–2009 to 2010–2011 (phase 4)	6,043	73	20.98	69	-2.15	65
Aggregate mean (1992–2011)	8,543		9.78		-1.98	

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
Employment	94	0.35	95	0.00**	72	0.01**
Sales efficiency	94	0.02*	95	0.00**	68	0.00**
NIE	94	0.00**	95	0.00**	64	0.97

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

mean values suggests the better performance of profit-making PSEs and an alarming situation of loss-making PSEs, warranting remedial measures to be initiated on the part of management/government.

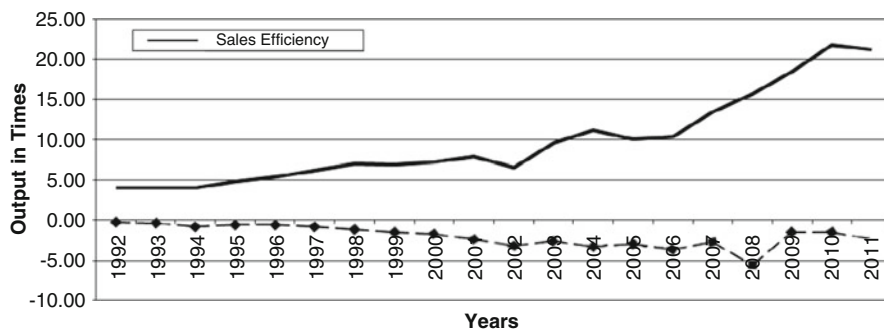


Fig. 5.24 Mean values of the output ratios (sales and net income efficiency) of the loss-making PSEs for the years 1991–1992 to 2010–2011

5.5 Summary of Results and Main Findings

5.5.1 Summary of Results

This section summarizes results of paired *t*-test (Table 5.70) and independent *t*-test (Table 5.71) of all the aspects dealt in this chapter. Broadly, significant difference has been observed mainly in productivity and inventory holding period in large number of cases as per paired *t*-test; minor difference in the parameters of profitability (in manufacturing and loss-making PSEs) and assets turnover (in profit-making PSEs) has been observed mainly in phases 1 and 2 and phases 2 and 3. However, in phases 3 and 4, significant impact has been noted in profitability and assets turnover parameters of PM as well as LM enterprises.

Independent *t*-test corroborates (as expected) significant difference between profit-making and loss-making PSEs in the parameters of profitability (all the phases), assets turnover (except phase 1), liquidity, and productivity (sales efficiency and NIE) which signifies better performance of profit-making PSEs over loss-making PSEs over a period of time. Though difference in ROTA and OPM has also been recorded between manufacturing and service PSEs during phase 1 only, difference across the phases (by and large) has been observed in FGIHP, ATR and sales efficiency. Hence, it is reasonable to conclude that there are not significant sector-wise variations in the financial performance of manufacturing and service PSEs during the period of the study under reference.

5.5.2 Main Findings

The following are major findings of the study, based on analysis carried out in this chapter:

1. Service sector PSEs have indicated better profitability compared to manufacturing sector PSEs. As per trend, profit record of manufacturing PSEs is unsatisfactory during the first two phases; however, it is gratifying to note that they

Table 5.68 Median, lower (Q1), and upper quartile (Q3) values of key productivity ratios of the loss-making PSEs, 1991–1992 to 2010–2011

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
Employment	2,509	2,313	1,089	802	778	737	158	141	9,091	6,753	3,671	2,013
Sales efficiency	1.85	2.59	3.68	11.63	0.77	0.68	0.19	2.30	4.91	5.06	13.00	25.89
NIE	-0.26	-0.79	-1.6	0.08	-0.9	-2.0	-6.1	-4.7	0.08	0.03	0.36	2.06

Table 5.69 Independent sample *t*-test of productivity ratios between the sample profit-making and loss-making PSEs during 1991–1992 to 2010–2011 (group statistics)

Ratios	Coding	Mean		Mean		Mean		Mean	
		<i>N</i>	Phase 1	<i>N</i>	Phase 2	<i>N</i>	Phase 3	<i>N</i>	Phase 4
Employment	PM	100	9,654	100	9,299	105	10,908	96	10,785
	LM	95	11,006	97	10,271	103	6,573	73	6,043
Sales efficiency	PM	98	19.27	93	22.76	93	33.07	78	48.04
	LM	95	4.46	97	6.79	102	10.54	69	20.98
NIE	PM	97	0.93	100	2.96	105	7.17	93	9.30
	LM	95	-0.54	97	-1.28	103	-3.43	65	-2.15

Notes:

PM stands for profit-making PSEs, *LM* for loss-making PSEsIndependent samples *t*-test

Ratios	Variances	<i>t</i> -test for equality of means							
		Phase 1		Phase 2		Phase 3		Phase 4	
		df	Sign.	df	Sign.	df	Sign.	df	Sign.
Employment	EV	193	0.70	195	0.77	206	0.28	167	0.27
	NEV	150	0.71	160	0.77	167	0.28	159	0.24
Sales efficiency	EV	191	0.00**	188	0.00**	193	0.00**	145	0.00**
	NEV	113	0.00**	134	0.00**	136	0.00**	136	0.00**
NIE	EV	190	0.00**	195	0.00**	206	0.00**	156	0.00**
	NEV	144	0.00**	111	0.00**	193	0.00**	151	0.00**

Notes:

EV: equal variances assumed, *NEV*: equal variances not assumed

**Signifies to significant difference at 1 % level

have shown a significant improvement during the third phase and in particular in the fourth phase (dealing with recession years). In operational terms, recession has not affected the profitability of both types of PSEs; on the contrary, it has improved.

As far as liquidity position is concerned, both types of PSEs have adequate liquidity. Between the two, service PSEs have more satisfactory liquidity ratios compared to manufacturing sector PSEs; finally, productivity of capital has shown an appreciable improvement in both types of PSEs.

2. Liberalization and economic reforms have yielded positive impact on the performance of the manufacturing and service PSEs in India in majority of the ratios over a period of time. Fixed assets turnover ratio has indicated satisfactory performance over the years; in the category of current assets; notable decrease has been recorded in the inventory holding period and debtor collection period of PSEs over the phases. Survey findings indicate that the decrease in IHP is primarily due to the usage of inventories on the basis of production requirement. Further, the trends of leverage and liquidity have also indicated satisfying results

Table 5.70 Summary of results based on paired sample *t*-test pertaining to financial performance of the sample PSEs, 1991–1992 to 2010–2011

Ratios/phases	Manufacturing PSEs		Service PSEs		Profit-making PSEs		Loss-making PSEs	
	Phases 1 and 2	Phases 3 and 4	Phases 1 and 2	Phases 3 and 4	Phases 1 and 2	Phases 3 and 4	Phases 1 and 2	Phases 3 and 4
RONW	**	*			*	**	**	*
ROCE	**						**	**
ROTA	*		*				**	**
OPM	*						**	**
NPM	*						*	**
TATR					**	**	**	**
FATR		**			**	**	**	**
CATR		*		*		*	*	*
RMIHP	**		**		**	**	**	**
WIPIHP				*		*		
FGIHP	**				**	**	**	**
DCP	*				*	*	**	**
TD/TE					**	**	**	**
CR		*					**	**
ATR					*	**	**	**
Emp.	**	*		**	*	**	**	**
Sales eff.	**	**	**	**	**	**	*	**
NIE			*	*	**	*	**	**

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

Table 5.71 Summary of results based on independent sample *t*-test pertaining to financial performance of the sample PSEs, 1991–1992 to 2010–2011

Ratios/phases	Manufacturing/services PSEs				Profit making/loss making			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
RONW					**	**	**	
ROCE					**	**	**	*
ROTA	*				**	**	**	**
OPM	*				**	**	**	**
NPM					**	**	**	**
TATR				*		**	**	
FATR							*	*
CATR						**	**	*
DCP								
RMIHP							*	
WIPIHP			*	**				
FGIHP	*	**	**	*	**	*		
TD/TE								
CR					**	**	**	**
ATR	**	**	*		**	**	**	*
Sales efficiency		**	**	*	**	**	**	**
NIE			*		**	**	**	**
Employment	**	**						

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

(particularly viewed in the light of fact that cash-credit limit facility is provided to PSEs by the banks).

3. The profitability of profit-making PSEs has improved over the phases; in contrast, the losses of loss-making PSEs have mounted up further in the subsequent phases. However, from 2005 to 2006 onwards, loss-making PSEs (as a group) have ceased to have losses and have started earning profits. But, they have continued to be beset with low assets turnover ratios, dissatisfactory liquidity position, usage of high debt, and deterioration in net income efficiency (NIE) over the years.
4. Vast majority of the respondents (based on questionnaire survey) are of the opinion that compensation in terms of reward to chairman or top executives and power to increase selling price are not in accordance with the organizational requirement of the loss-making PSEs.
5. It is a matter of some satisfaction that inventory holding period has shown improvement in both types of PSEs. Independent sample *t*-test identifies significant difference in sizable number of financial parameters between profit-making and loss-making PSEs. Loss-making PSEs are in the unsafe zone in this regard and require remedial measures to be initiated on the part of management of such PSEs and government.

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Chapter 6

Impact of Disinvestment on Financial Performance of PSEs

Abstract The objective of this chapter is to assess and compare the financial performance of disinvested and non-disinvested central public sector enterprises (PSEs) based on 19 financial ratios (pertaining to the profitability, efficiency, leverage, liquidity, and productivity per manpower) over a period of 20 years (1991–1992 to 2010–2011). The findings indicate that the profitability in most of the parameters of disinvested PSEs is several times higher compared to non-disinvested PSEs in the major time span covered by the study. Similarly, better assets turnover, productivity of capital, and liquidity position have been observed in disinvested PSEs vis-à-vis non-disinvested PSEs. Further, no major impact of recession has been observed in both types of PSEs.

Keywords Disinvested PSEs • Non-disinvested PSEs • Efficiency ratios • Financial performance ratios • Leverage ratios • Liquidity ratios • Productivity ratios and profitability ratios

6.1 Introduction

The emergence of disinvestment was recognized in the 1990s when Indian economy was continuously facing high burden of financial debt (nationally and internationally). Due to the constant increase of financial burden since the 1980s, the economy was almost on the verge of financial disaster. Disinvestment was conceived as an important measure to salvage such a grim situation; it had larger implications rather than just selling the government equity in PSEs at the best price; the reason is it has many social, economic, and political implications (Ray and Maharana 2002). In operational terms, it was expected to contribute towards the growth of Indian economy by promoting competition that, in turn, was likely to lead to cost reduction, improved quality and operational efficiency. Above all, disinvestment was also expected to attract global capital as well as domestic capital.

The objective of this chapter is to compare the performance of disinvested and non-disinvested PSEs, primarily in terms of profitability and operating efficiency. For better exposition, this chapter has been divided into five sections (including introduction). An overview of disinvestment process in India has been presented in Sect. 6.2. The third section provides a conceptual framework in terms of scope, methodology, and sources of the data. The financial performance of disinvested and non-disinvested PSEs has been examined in Sect. 6.4. The summary of results and main findings has been enumerated in Sect. 6.5.

6.2 An Overview of Disinvestment

The objective of this section is to provide a brief account of the rationale for the disinvestment made in PSEs and the major events leading to the process of the disinvestment policy. The subject matter of this section has been largely drawn from the Government of India publications, namely, disinvestment policy, procedures, and progress (published by Ministry of Disinvestment and Public Enterprises Surveys 2004–2005 to 2010–2011).

6.2.1 *Genesis and Rationale*

Constant increase of financial and economic burden faced by Government of India during the 1990s forced the government to incorporate disinvestment as an important element of reforms. The increased revenue expenditure of the government on the items such as interest payments, wages and salaries of the government employees, and subsidies left the government with hardly any surplus for expenditure on social and physical infrastructure. While the government would like to spend on basic education, primary health, and family welfare, large amount of resources were blocked in several non-strategic sectors such as hotels, trading companies, consultancy companies, textile companies, chemical and pharmaceuticals companies, consumer goods companies, etc. Above all, huge amount of debts overhang which needs to be serviced, before money is available to invest in infrastructure. All these factors made disinvestment of the government stake in the PSEs absolutely imperative.

The government started to deregulate the areas of its operations, and subsequently the disinvestment in public sector enterprises (PSEs) was announced. Prior to 1991, a large number of industries were reserved for public sector; these industries were reduced to eight areas from the previous list of seventeen. This list by December 2002 included only three areas reserved for PSEs domain, i.e., atomic energy, minerals specified in the schedule of atomic energy and railway transport. The process of deregulation was aimed at enlarging competition and allowing new firms to enter in the market. The market was thus opened up for domestic entrepreneurs/industrialists, and norms for entry of foreign capital were liberalized.

6.2.2 *Disinvestment Policies and Process*

Disinvestment makes an economic sense as it was introduced with the objective to broad base equity, improve management practices, and raise resources for the enterprise; it would make the units stronger through better management practices, wider dispersal of interest, and initiation of the private management practices.

The proceedings of disinvestment had started with the budget 1991–1992, to divest 20 % of government equity in the select PSEs in favor of investors, mutual funds, and workers. Rangarajan Committee Report (April, 1993) emphasized the need for substantial disinvestment. The report stated that the percentage of equity to be divested for strategic sector should not be more than 49 %; these industries explicitly reserved for the public sector included coal and lignite, mineral oils, arms, ammunition and defense equipment, atomic energy, radioactive minerals, and railway transport. Further, in March 1999, the strategic sector reduced to atomic energy, railway transport, arms and ammunition, and defense equipments. All other PSEs were to be considered as non-strategic, where government stake could be reduced to 26 %.

A decision pertaining to the percentage of disinvestment would depend on two factors: first, whether the industrial sector required the presence of the public sector as a countervailing force to prevent concentration of power in private hands and second, whether the industrial sector required a regulatory mechanism to protect the consumer interests before privatization. However, the government did not take any decision on the recommendations of the Rangarajan Committee.

During the initial period, the government continued to disinvest 3–5 % of the equity in different non-strategic PSEs every year. This disinvestment or more popularly the minority privatization was more governed by the compulsion of financing the fiscal deficit of the government. This provided stronger commercial consideration in response to normal shareholders' expectations.

In pursuant of the policies of the United Front government, a Disinvestment Commission was set up in 1996. Disinvestment Commission, by August 1999, made specific recommendations on 58 PSEs; it suggested a shift from public offerings to strategic/trade sales, with transfer of management, instead of public offerings, as was recommended by the Rangarajan Committee in 1993. From December 1999, government had created a separate Department of Disinvestment to actively pursue the disinvestment.

Ray and Maharana (2002) described that during 1998–1999, the finance ministry came out with a novel method of disinvesting PSEs stock by selling it to a special purpose vehicle (SPV). According to this proposal, financial institutions and banks would float SPV in the form of mutual funds and subscribe the equity of profit-making PSEs in excess of 49 % and sell these shares to the public at the opportune time when the market picks up. In 1998–1999, the government decided in the generality of cases to bring down government shareholdings in PSEs to 26 %. In the cases of public sector enterprises involving strategic consideration, government will continue to retain majority holdings.

During the period 1991–2000, the sale of minority shares of public sector undertakings had generated resources of Rs. 19,000 crore (Rs. 190,000 million). Most of the shares during this period were picked up by financial institutions. Thus, before the year 2000, the government had primarily sold minority shares in public sector companies. The price realized through the sale of shares, even in blue-chip companies like Indian Oil Corporation Ltd. (IOC), Bharat Petroleum Corporation Ltd. (BPCL), Hindustan Petroleum Corporation Ltd. (HPCL), Gas Authority of India Ltd. (GAIL), and Videsh Sanchar Nigam Ltd. (VSNL), was quite low. On the other hand, price realized through strategic disinvestment was on the higher side. The reasons ascribed for such low proceeds from disinvestment against the actual targets set were unfavorable market conditions, unattractive offer for private sector investors, different views on valuation process, ambiguous policies, strong opposition of employees and trade unions, non-transparent system, and lack of political will.

Further, with the budget 1999–2000, the government continued strengthening the strategic units and privatizing non-strategic ones through gradual disinvestment or strategic sale and devising rehabilitation strategies for weak units. An important highlight of the policy was that the expression “privatization” was used for the first time.

Budget 2000–2001 highlighted for the first time that the government was prepared to reduce its stake in the non-strategic PSEs below 26 %, if necessary; it also stated that there would be increasing emphasis on strategic sales and the entire proceeds from disinvestment would be deployed in social sector, organizational restructuring, closing down of PSEs which could not be revived, etc. As the term of the first Disinvestment Commission expired in the year 1999, a new Disinvestment Commission was constituted in July 2001, under the chairmanship of Dr. R. H. Patil, to advise the government on disinvestment in those public sector units which were referred to it by the government. The Disinvestment Commission had given its recommendations on 41 PSEs including review reports on 4 PSEs already studied by the earlier commission, out of which 20 reports were submitted in the year 2003–2004.

Budget 2001–2002 provided additional budgetary support for the plan, primarily in the social and infrastructure sectors.

In January 2003, the government decided to offer for sale 35.2 % of its equity in BPCL. In June 2003, it was decided to offer for sale in the domestic market of its residual equity in five disinvested PSEs; they were VSNL, Bharat Aluminium Corporation Ltd. (BALCO), Indo Burma Petroleum Company Ltd. (IBP), Indian Petrochemical Corporation Ltd. (IPCL), and Computer Management and Consulting Services Ltd. (CMC). In July 2003, it was decided to offer 20 % of its equity in Dredging Corporation of India in the domestic market. In December 2003, the government also decided to offer for sale up to 10 % of its equity in Oil and Natural Gas Corporation Ltd. (ONGC) and GAIL in the domestic market.

In 2003–2004, out of listed and unlisted PSEs (at Bombay Stock Exchange), disinvestment has taken place in 34 PSEs through strategic sale at various stages (19 companies were loss making and 15 were profit making). In addition, the process for offer of sale of residual shares to public in BALCO and VSNL had been

under negotiation with the strategic partner. The target in the revised budget estimate for the year 2003–2004 was Rs. 14,500 crore (Rs. 145,000 million). Against this target, the total amount realized was Rs. 15,547 crore (Rs. 155,470 million).

During the period 2001–2002 to 2003–2004, maximum number of disinvestment has taken place either through strategic sale (transfer of control and management to a private entity) or through an offer for sale to the public (with government retaining control over the management). During this period, against an aggregative target of Rs. 38,500 crore (Rs. 385,000 million), the government has managed to raise Rs. 21,163.68 crore (Rs. 211,636.8 million) from disinvestment of PSEs.

The Ministry of Disinvestment was converted into a department under the Ministry of Finance with effect from 27 May 2004 and had been assigned all the work relating to disinvestment which was earlier being handled by the Ministry of Disinvestment. The disinvestment of government equity in public sector enterprises is required to be carried out in accordance with the policy laid down in the National Common Minimum Programme (NCMP).

Government decided on 27 January 2005 to constitute a “fund” into which the realization from sale of minority shareholding of the government in profitable PSEs would be channelized, namely, National Investment Fund. The Fund would be maintained outside the Consolidated Fund of India and would be professionally managed by selected public sector financial entities, which have the requisite experience to provide sustainable returns to the government without affecting the corpus.

During the year 2004–2005, the government realized a sum of Rs. 2,765 crore (Rs. 27,650 million), out of which the major receipt of Rs. 2,684 crore (Rs. 26,840 million) was from the sale of 43.29 crore (432.9 million) equity shares of Rs. 10 each of National Thermal Power Corporation Ltd. (NTPC) out of Government of India holding. A sum of Rs. 64.81 crore (Rs. 648.1 million) was realized from the sale of shares to employees of IPCL. Further, no target was fixed by the government during 2005–2006 to 2009–2010, though the government realized Rs. 1,569.68 crore (Rs. 15,696.8 million) from the sale of Maruti Udyog Ltd. shares to their employees and to the Indian public sector financial institutions and banks. No disinvestment has taken place during 2006–2007 and 2008–2009. In 2007–2008, the government realized Rs. 4,181.39 crore (Rs. 41,813.9 million) from the sale of equity shares of Maruti Udyog Ltd. (MUL, Rs. 2,366.94 crore/Rs. 23,669.4 million), Power Grid Corporation of India Ltd. (PGCIL, Rs. 994.82 crore/Rs. 9,948.2 million), and Rural Electrification Corporation Ltd. (REC, Rs. 819.63 crore/Rs. 8,196.3 million) through the sales of residual shareholdings and minority shareholdings. In addition, the receipts through the sale of minority shareholdings in NHPC (Rs. 2,012.85 crore/Rs. 20,128.5 million) and OIL (Rs. 2,247.05 crore/Rs. 22,470.5 million) during 2009–2010, the government realized Rs. 4,259.90 crore (Rs. 42,599.0 million).

On 6 July 2006 the government decided to keep all disinvestment decisions and proposals on hold. It is expected that disinvestment proceeds from PGCIL, NHPC, and REC constituted the first trench of funds to NIF. Accordingly, a provision of Rs. 1,651 crore (Rs. 16,510 million) has been made in the budget estimates for 2007–2008. The receipts from disinvestment during the period 1 April 1991 to 31

March 2007 amounted to Rs. 49,241.64 crore (Rs. 492,416.4 million). Further, all proposals of PSEs to tap capital markets and to raise funds would be considered on a consultative case by case basis (Naib 2004). The proceeds from disinvestment and related transactions from April 1991 to March 2010 amounted to Rs. 57,682.93 crore (Rs. 576,829.30 million).

Disinvestment of PSEs remained a contentious issue during the period 2004–2005 to 2008–2009; as a result, disinvestment agenda stagnated during the referred time period. In the 5 years from 2003–2004 to 2008–2009, the total receipt from disinvestment was only Rs. 8,515.93 crore (Rs. 85,159.3 million).

From the year 2009–2010, a stable government and improved market condition led to a renewed thrust on disinvestment. The government started selling minority stakes in listed and unlisted (profit-making) PSEs through public offer, such as NHPC, Oil India Ltd., NTPC, REC, National Minerals Development Corp. (NMDC), Satluj Jal Vikas Nigam (SJVN), Engineers India Ltd. (EIL), Coal India Ltd. (CIL), Manganese Ore India Ltd. (MOIL), etc. However, from 2011 onwards disinvestment activities have slowed down considerably, as against a target of Rs. 40,000 crore (Rs. 400,000 million) for 2011–2012, the government was able to raise only Rs. 14,000 crore (Rs. 140,000 million) as per Disinvestment Report 2013. The government has also announced its intention of raising the minimum public shareholding in listed companies to 25 % which was subsequently revised to 10 %.

The government used various modalities of disinvestment ranging from bundling and bidding followed by tendering and global depository receipts for disinvestment. It is being suggested that in the profitable PSEs, equity should be offered to the public and also to the employees. It is expected to accord better acceptability; it also provides opportunity to people in sharing wealth through disinvestment process. Strategic sale route is beneficial as concentrated ownership offers incentive to maximize long-term enterprise profits through good governance. Disinvestment is expected to have larger resources for government, lesser debt burden, healthier fiscal position and vibrant economy.

6.3 Scope and Methodology

The scope of the study is limited to non-financial central PSEs in India that have gone for the disinvestment, since 1991–1992. The sample consists of 38 PSEs (out of 45, total disinvested PSEs till March 2010–2011) and 171 non-disinvested PSEs. Further, it may be noted that the sample consists of central PSEs where less than 50 % of the disinvestment has taken place during the period under reference; the rationale for choosing to cover disinvestments only up to the magnitude of 50 % is that the organization ceases to be PSE with disinvestment of more than 50 %. It would be useful to mention here that the strategic disinvestment of PSEs (of more than 50 %) in India has commenced in 2001. The sample is representative in nature as it adequately represents all the industrial groups in which disinvestment has taken place (Public Enterprises Survey).

For the purpose of the study, the financial performance of disinvested PSEs has been compared with non-disinvested PSEs. The performance of disinvested and non-disinvested PSEs has been analyzed over a period of 20 years (i.e., 1991–1992 to 2010–2011) which has been divided into four phases, 1991–1992 to 1995–1996 (first phase), 1996–1997 to 1999–2000 (second phase), 2000–2001 to 2007–2008 (third phase), and 2008–2009 to 2010–2011 (fourth phase), with intent to assess their performance across the phases. The process of disinvestment was introduced in 1991–1992 and disinvestments had taken place in piecemeal manner up to 1995–1996. Therefore, the first phase from 1991–1992 to 1995–1996 has been considered as the initial phase of disinvestment. Although global depository receipts (GDRs) were introduced in the year 1996–1997 in international market (Public Enterprises Survey 2000–2001) and disinvestment process was institutionalized by constituting the Disinvestment Commission in August 1996, till 1999–2000, disinvestment was mainly through sale of minority shares in small lots; hence, the second phase of disinvestment has the period with effect from 1996–1997 to 1999–2000. It may be recapitulated from the previous section that emphasis of disinvestment policy had shifted from partial disinvestment to strategic disinvestment from the year 2000–2001. Apart from this, government had accepted the recommendations of corporate governance practices initiated by SEBI in 2000 to improve the level of corporate governance. The third phase for the study covers the time span of 2000–2001 to 2007–2008 (just prior to the subprime financial crisis in America). To assess the impact of recession on the performance of disinvested PSEs, the fourth phase covers years from 2008–2009 to 2010–2011 (referred to as the recession phase). It is expected/hypothesized that the financial performance of the disinvested PSEs has improved over a period of time and their performance is better than those of non-disinvested PSEs.

Relevant data (secondary) concerning disinvested and non-disinvested enterprises has been collected from the various volumes of Public Enterprises Survey. Financial performance has been assessed primarily on 18 financial ratios pertaining to profitability, operating efficiency, leverage, liquidity and productivity. It may be recalled that the primary objective of disinvestment has been to enhance operational efficiency leading to better/higher profitability. Therefore, profitability and efficiency ratios are relatively of higher significance than liquidity and solvency ratios.

Statistical tests, namely, paired *t*-test and independent *t*-test, have been used to assess the financial performance of disinvested public enterprises. To study the trend and its implications, the descriptive statistics and positional values, i.e., mean, median, and quartiles, have been computed. To do away with the influence of extreme values, they have been excluded from the data. However, being important, extreme values are considered while preparing frequency distribution tables. The entire set of data has been analyzed by using Statistical Package for Social Sciences (SPSS).

Survey findings are predominantly based on 15 responses received from disinvested PSEs. All the analysis of the questionnaire survey is presented for the sample responding companies. Limited attempt has been made to generalize the results, since the response number is low. The details of survey have already been discussed in Chap. 4.

6.4 Financial Performance Disinvested and Non-disinvested Central PSEs in India

The objective of this section is to assess the comparative financial performance of the sample disinvested and non-disinvested PSEs, on the basis of major financial parameters, namely, profitability, efficiency, liquidity, solvency and productivity. This is to ascertain whether the financial performance of both types of PSEs is the same or different. In order to facilitate greater competitiveness, self-reliance, public participation, and market-friendly environment (especially in disinvested PSEs), the Government of India has launched several policies and programs as being recommended by various committees from time to time. Hence, it is hypothesized that profitability and operational efficiency of disinvested PSEs have shown better performance than those of non-disinvested PSEs during the period of the study.

6.4.1 Profitability Ratios

Profitability has been assessed on the basis of two broad horizons of rate of return (ROR), i.e., investment and sales; the set of three returns computed are return on net worth (RONW), return on capital employed (ROCE), and return on total assets (ROTA). Returns on the basis of sales are operating profit margin (OPM) and net-profit margin (NPM). The descriptive (mean) and positional (median and quartiles) values pertaining to profitability ratios of disinvested PSEs have been presented in Tables 6.1 and 6.2 and of non-disinvested PSEs in Tables 6.3 and 6.4. Paired *t*-test of disinvested and non-disinvested PSEs has been presented in Tables 6.1 and 6.3, respectively.

Contrary to the common belief, a decline in all the five mean profitability ratios (i.e., RONW, ROCE, ROTA, OPM, and NPM) has been observed in disinvested public enterprises during phase 2 vis-à-vis phase 1, significant statistically in the case of RONW and ROCE. However, a modest increase in all the three RORs (related to investment) and NPM has been recorded (insignificant statistically) during phase 3 against phase 2 (Table 6.1), whereas, in phase 4 (recession period), a reduction has been observed in profitability ratios (significant only for RONW) of disinvested PSEs against phase 3. However, the corresponding decrease (in phase 4) is marginal (or quite low); it is less than one-half percentage points in respect to NPM and nearly two percentage points for ROTA and OPM during the two referred phases (3 and 4). Therefore, it is reasonable to contend that with this small decrease, the effect of recession is marginal on the profitability of disinvested PSEs. In fact, profitability position of these enterprises may be considered quite satisfactory given the fact that such PSEs (unlike private sector enterprises) are also entrusted with the responsibilities of social obligations along with fulfilling commercial obligations. In addition to this, the funds raised through disinvestment were generally used for serving other social causes/obligations and for the upliftment of disinvested organizations.

Table 6.1 Mean values of key profitability ratios of the disinvested public sector enterprises, 1991–1992 to 2010–2011 (Figures are in percentages)

Years	RONW		ROCE		ROTA		OPM		NPM	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
1991–1992	15.07	36	15.50	35	11.89	38	16.24	37	8.31	38
1992–1993	13.01	36	14.11	35	10.54	38	13.44	35	4.92	38
1993–1994	12.26	36	13.92	36	10.21	38	15.26	37	6.55	37
1994–1995	11.63	36	14.79	36	10.33	38	13.61	38	8.94	36
1995–1996	15.08	34	16.42	35	11.16	38	13.78	38	8.78	36
1996–1997	11.12	35	12.13	36	10.39	38	15.26	36	6.68	37
1997–1998	12.41	35	12.51	38	10.84	38	15.11	37	6.57	37
1998–1999	10.33	35	10.64	38	9.03	38	13.54	37	5.27	37
1999–2000	7.60	35	7.07	38	7.67	38	10.83	37	3.92	37
2000–2001	6.28	34	7.70	36	9.14	37	11.74	35	5.68	35
2001–2002	5.55	33	7.42	35	7.02	37	9.66	35	2.14	35
2002–2003	12.30	31	7.46	36	8.69	37	8.79	35	1.53	35
2003–2004	21.98	29	12.61	35	9.89	36	11.43	34	4.81	34
2004–2005	23.85	29	17.72	33	14.43	36	17.24	34	9.84	32
2005–2006	19.50	32	12.36	34	9.99	35	16.17	33	9.77	33
2006–2007	18.68	31	12.85	32	12.82	31	16.03	30	10.78	32
2007–2008	17.44	31	12.08	32	11.27	33	15.63	31	10.79	32
2008–2009	10.91	29	7.61	30	7.22	32	10.96	30	7.27	31
2009–2010	7.97	28	5.50	31	7.35	33	11.39	29	5.43	30
2010–2011	10.58	30	8.45	30	10.13	32	9.81	30	8.89	30
Mean 1991–1992 to 1995–1996 (phase 1)	13.22	36	15.28	36	10.83	38	14.34	38	6.05	38
Mean 1996–1997 to 2000–2001 (phase 2)	10.36	35	10.69	38	9.48	38	13.54	37	5.61	37
Mean 2001–2002 to 2007–2008 (phase 3)	14.86	33	11.23	36	10.28	37	12.52	35	7.06	34
Mean 2008–2009 to 2010–2011 (phase 4)	9.60	30	7.10	31	8.23	33	10.28	30	6.85	31
Aggregate mean (1992–2011)	13.18		11.44		10.00		13.30		6.84	

Notes:

1. PSEs having negative net worth have been excluded and RONW has been based on net profit
2. OPM and NPM stand for operating profit margin and net-profit margin on sales
3. ROTA is based on earnings before interest and taxes (EBIT)
4. ROCE is based on operating profit which excludes nonoperating incomes (or other incomes) from EBIT
5. *ROTA*: return on total assets, *ROCE*: return on capital employed, *RONW*: return on net worth, *OPM*: operating profit margin, *NPM*: net-profit margin
6. RONW plus/minus 75 %, ROCE plus/minus 75 %, ROTA plus/minus 60 %, OPM plus/minus 75 %, NPM plus/minus 60 % have been excluded

These points hold true for other tables mentioned in this chapter

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
RONW	33	0.04*	31	0.08	29	0.04*
ROCE	35	0.03*	35	1.00	30	0.11
ROTA	37	0.26	36	0.53	32	0.24
OPM	36	0.22	34	0.68	29	0.33
NPM	36	0.54	33	0.94	30	0.84

*Signifies to significant difference at 5 % level

Table 6.2 Median, lower quartile (Q1), and upper quartile (Q3) values of key profitability ratios of the disinvested PSEs, 1991–1992 to 2010–2011 (Figures are in percentages)

Ratios	Median											
	Q1				Q3							
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
RONW	13.38	11.16	15.34	11.92	4.98	2.19	3.76	-2.40	22.90	19.83	29.28	19.69
ROCE	13.28	10.22	13.47	8.70	5.55	-0.85	-13.3	-7.81	24.58	18.65	33.17	24.16
ROTA	10.00	9.48	9.99	7.72	6.06	3.14	-0.14	2.82	16.24	14.92	21.40	17.02
OPM	13.45	11.07	7.97	7.86	5.92	2.37	0.40	1.24	23.45	21.55	28.08	23.44
NPM	5.17	4.56	3.88	5.78	1.33	0.37	-0.26	0.21	16.49	15.69	19.25	17.72

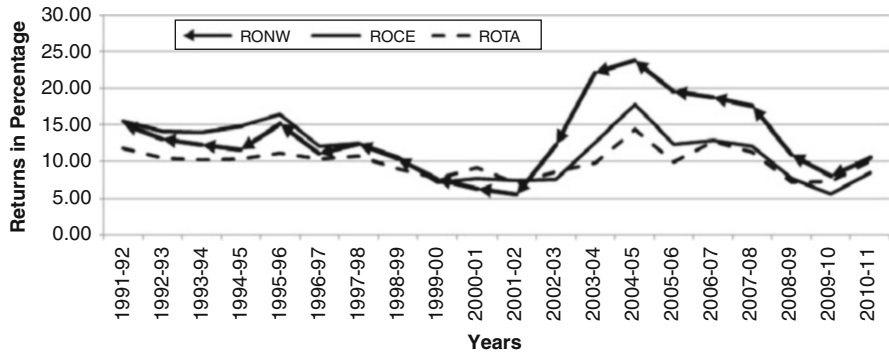


Fig. 6.1 Mean values of select significant profitability ratios (RONW, ROCE and ROTA) of the disinvested PSEs for the years 1991–1992 to 2010–2011

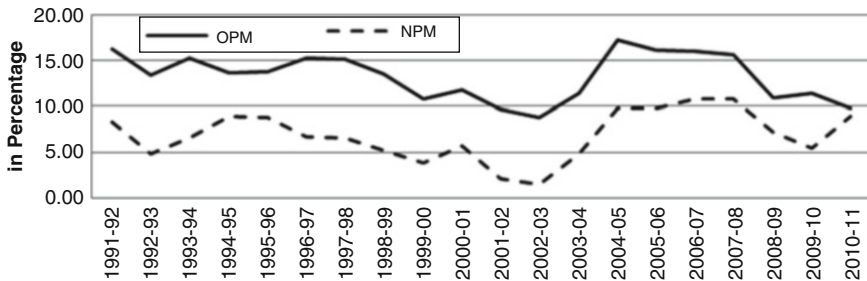


Fig. 6.2 Mean values of the select significant profitability ratios (OPM and NPM) of the disinvested PSEs for the years 1991–1992 to 2010–2011

Figures 6.1 and 6.2 portray the trend of profitability ratios; these figures exhibit that profitability has been worst affected during the years 1999–2000 to 2001–2002. Similar conclusions follow based on median and quartiles (Table 6.2).

In contrast, mixed behavior has been observed in respect to profitability parameters of the non-disinvested PSEs during phase 2 vis-à-vis phase 1 (Table 6.3 and Figs. 6.3 and 6.4). While there has been a marginal increase in RONW, the reduction has been noted in other returns, namely, ROCE, NPM, and ROTA. Like disinvested PSEs, there has been a notable increase in all the measures of profitability of non-disinvested PSEs during phase 3 vis-à-vis phase 2. One-half of the non-disinvested PSEs (as per median) have followed the mean findings (Table 6.4). It is revealing to note that sizable increase has been recorded in recession phase 4 against previous phases 2 and 3, implying no impact of recession on the profitability parameters of non-disinvested PSEs. Figures 6.3 and 6.4 exhibit positive trend of profitability (in all the five parameters) from the year 2003–2004 onwards.

Notwithstanding the above, it is important to note that profitability in all the parameters of disinvested enterprises has been many times higher compared to

Table 6.3 Mean values of key profitability ratios of the non-disinvested PSE, 1991–1992 to 2010–2011 (Figures are in percentages)

Years	RONW		ROCE		ROTA		OPM		NPM	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
1991–1992	3.30	81	4.90	106	-0.35	150	5.57	112	-4.18	119
1992–1993	6.52	85	2.57	110	-0.48	150	7.15	105	-2.26	123
1993–1994	3.87	88	1.15	108	-0.85	146	5.86	112	-4.60	121
1994–1995	3.76	88	1.72	103	-0.52	145	6.27	115	-4.06	122
1995–1996	6.57	83	-0.04	101	0.05	144	6.72	115	-1.65	120
1996–1997	7.04	81	2.02	106	0.98	142	10.98	105	1.08	117
1997–1998	6.77	83	0.20	112	0.10	141	6.75	109	-3.45	124
1998–1999	8.38	83	-1.81	114	-1.27	142	4.59	117	-4.79	121
1999–2000	7.87	82	-4.73	107	-2.69	139	0.03	109	-6.02	118
2000–2001	7.57	77	0.08	106	-2.10	141	4.39	101	-1.89	111
2001–2002	9.73	76	-2.23	104	-1.98	142	2.83	113	-0.89	102
2002–2003	12.21	80	1.10	104	-1.62	143	2.99	120	-3.79	109
2003–2004	14.90	83	5.18	101	3.57	142	7.47	110	-0.03	109
2004–2005	14.71	85	7.17	103	1.24	144	6.42	113	4.79	99
2005–2006	17.24	87	6.97	105	3.45	142	11.82	113	5.49	100
2006–2007	16.28	85	4.05	100	3.96	124	10.09	101	5.87	100
2007–2008	15.44	80	6.93	98	4.44	136	11.94	105	5.34	107
2008–2009	15.43	83	6.26	99	4.49	120	10.08	108	4.05	100
2009–2010	13.51	85	6.48	100	3.72	126	11.07	112	2.72	99
2010–2011	11.53	84	8.27	99	5.02	123	11.12	108	4.41	101
Mean 1991–1992 to 1995–1996 (phase 1)	5.18	88	2.28	109	-1.52	155	5.89	122	-4.17	125
Mean 1996–1997 to 2000–2001 (phase 2)	7.51	85	-1.54	113	-1.35	145	5.84	120	-4.07	120
Mean 2001–2002 to 2007–2008 (phase 3)	13.81	87	3.51	111	0.33	151	7.44	125	0.84	114
Mean 2008–2009 to 2010–2011 (phase 4)	13.63	85	7.38	100	4.20	126	10.94	111	3.92	102
Aggregate mean (1992–2011)	10.13		2.81		0.96		7.21		-0.19	

Paired samples *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
RONW	75	0.55	69	0.06	77	0.43
ROCE	99	0.01**	100	0.56	95	0.27
ROTA	141	0.02*	135	0.80	124	0.06
OPM	111	0.14	111	0.73	107	0.11
NPM	109	0.09	105	0.09	98	0.04

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

Table 6.4 Median, lower (Q1), and upper quartile (Q3) values of key profitability ratios of non-disinvested PSEs, 1991–1992 to 2010–2011 (Figures are in percentages)

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
RONW	5.53	6.99	12.35	12.27	-0.77	-1.04	1.58	2.56	19.57	19.14	28.19	26.07
ROCE	3.36	0.06	3.64	6.76	-9.67	-20.47	-16.75	-5.70	13.75	16.71	22.57	22.62
ROTA	3.03	2.34	2.67	5.27	-11.77	-14.47	-15.05	-2.22	9.86	10.47	13.25	12.88
OPM	6.57	4.32	5.44	7.16	-4.17	-8.29	-9.12	0.39	17.87	19.84	23.81	24.71
NPM	0.61	0.56	2.13	3.79	-21.5	-23.6	-17.7	-2.7	8.39	11.12	14.92	15.71

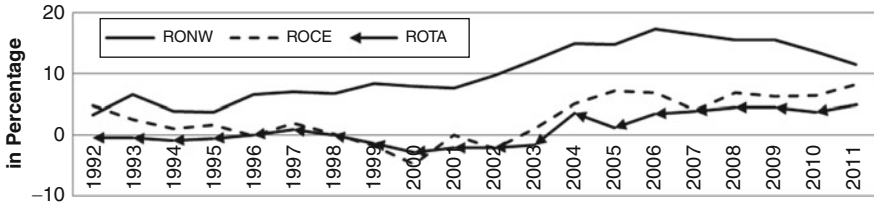


Fig. 6.3 Mean values of select significant profitability ratios (RONW, ROCE and ROTA) of non-disinvested PSEs for the years 1991–1992 to 2010–2011

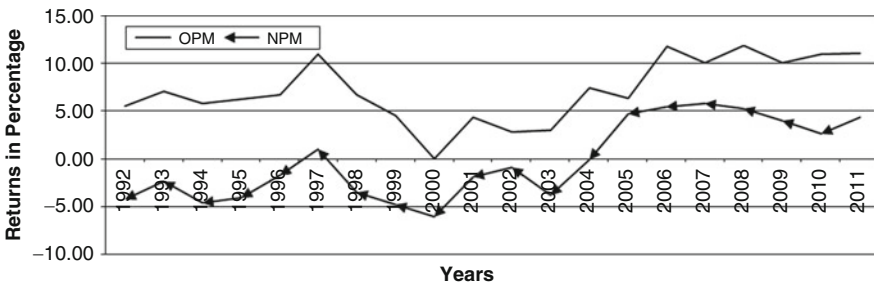


Fig. 6.4 Mean values of the select significant profitability ratios (OPM and NPM) of the non-disinvested PSEs for the years 1991–1992 to 2010–2011

non-disinvested public enterprises during the first three phases; however, in phase 4, non-disinvested PSEs’ profitability position is almost at par with disinvested PSEs in the parameters of RONW, ROCE, and OPM. The better performance of non-disinvested PSEs may be ascribed to manifold increase in investment, focused approach opted by signing MOU, etc., for non-disinvested PSEs; in contrast, the funds obtained from disinvestment had been used for meeting other social needs. Shivendu (2008) aptly states that diverting funds weaken the financial position of the company as the value does not increase; this exercise does not contribute to the company at all.

Independent *t*-test (shown in Table 6.5) indicates the significant difference in most of the measures of profitability of disinvested and non-disinvested PSEs during the first three phases (except in phase 3 related to RONW, OPM and NPM). In sum, it is reasonable to conclude that the disinvested PSEs have better profitability record compared to non-disinvested PSEs.

Moreover, nearly one-half of responding disinvested and one-third of non-disinvested PSEs are of the opinion that disinvestment is a time-consuming process, not guaranteeing success and dispersing economic power from government and the policy decisions of the government (Table 6.8). It is revealing to ascertain from the survey data that dependence on capital market has remained unchanged for the majority of respondent PSEs (Table 6.9); in other words, dependence on capital market has not reduced subsequent to disinvestment. This finding is contrary to the common belief that disinvested enterprises would have less dependence on capital market.

Table 6.5 Independent sample *t*-test to find out significance of difference between the sample disinvested and non-disinvested PSEs during 1991–1992 to 2010–2011 (group statistics)

Ratios	Coding	Mean		Mean		Mean		Mean	
		<i>N</i>	Phase 1	<i>N</i>	Phase 2	<i>N</i>	Phase 3	<i>N</i>	Phase 4
RONW	D	36	13.22	35	10.36	33	14.86	30	9.60
	ND	88	5.18	85	7.51	87	13.81	85	13.63
ROCE	D	36	15.28	38	10.69	36	11.23	31	7.10
	ND	109	2.28	113	-1.54	111	3.51	100	7.38
ROTA	D	38	10.83	38	9.48	37	10.28	33	8.23
	ND	155	-1.52	145	-1.35	151	0.33	126	4.20
OPM	D	38	14.34	37	13.55	35	12.52	30	10.28
	ND	122	5.89	120	5.84	125	7.44	111	10.94
NPM	D	38	6.05	37	5.61	34	7.06	31	6.85
	ND	125	-4.17	120	-4.07	114	0.84	102	3.92

Notes:

D stands for disinvested PSEs, *ND* for non-disinvested PSEsIndependent samples *t*-test

Ratios	Variances	<i>t</i> -test for equality of means							
		Phase 1		Phase 2		Phase 3		Phase 4	
		df	Sign.	df	Sign.	df	Sign.	df	Sign.
RONW	EV	122	0.00**	118	0.33	118	0.70	113	0.22
	NEV	94	0.00**	72	0.31	67	0.68	58	0.19
ROCE	EV	143	0.00**	149	0.00**	145	0.03*	129	0.95
	NEV	78	0.00**	92	0.00**	61	0.03*	50	0.95
ROTA	EV	191	0.00**	181	0.00**	186	0.00**	157	0.10
	NEV	104	0.00**	121	0.00**	66	0.00**	49	0.11
OPM	EV	158	0.02*	155	0.04*	158	0.18	139	0.88
	NEV	87	0.01**	91	0.01**	61	0.15	57	0.86
NPM	EV	161	0.00**	155	0.01**	146	0.09	131	0.44
	NEV	70	0.00**	86	0.00**	64	0.06	51	0.43

Notes:

EV stands for equal variances, *NEV* stands for not equal variances

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

Table 6.6 Opinion on the impact of liberalization on the financial performance of sample PSEs in India

Options	Disinvested (responded 15)		Non-disinvested (responded 15)		Combined (out of 30)	
	In no.	In %	In no.	In %	In no.	In %
Yes	13	92.86	11	73.33	24	82.76
No	01	7.14	04	26.67	05	17.24
Total	14	100	15	100	29	100
Missing	01				01	

Table 6.7 Opinion on the use of ratio analysis to measure the financial performance in sample PSEs in India

Options	Disinvested (responded 15)		Non-disinvested (responded 15)		Combined (out of 30)	
	In no.	In %	In no.	In %	In no.	In %
Yes	11	84.62	12	92.31	23	88.46
No	02	15.38	1	7.69	3	11.54
Total	13	100.0	13	100.0	26	100.0
Missing	02		02		04	

Table 6.8 Possible reasons for low or not opting for disinvestment in sample PSEs in India

S. no.	Possible reasons	Disinvested		Non-disinvested		Combined (out of 30)	
		In no.	In %	In no.	In %	In no.	In %
1	Time consuming, cause delay	1	9.09	0	0.00	1	4.35
2	Not guaranteed for success	4	36.36	1	8.33	5	21.74
3	Disperse economic power from govt	0	0.00	3	25.00	3	13.04
4	Any other	6	54.55	8	66.67	14	60.87
	Total	11	100	12	100	23	100
	Missing	4		3		7	

Table 6.9 Dependence on capital market during post-1997 period in sample PSEs in India

Possible reasons	Disinvested (out of 15)		Non-disinvested (out of 15)		Combined (out of 30)	
	In no.	In %	In no.	In %	In no.	In %
Increased	4	26.67	1	7.69	5	17.86
Decreased	5	33.33	3	23.08	8	28.57
Unchanged	6	40.00	9	69.23	15	53.57
Total	15	100	13	100	28	100
Missing			2		2	

6.4.2 Efficiency Analysis

The test of efficiency has been conducted on three broad parameters, i.e., on the basis of assets turnover, holding period of inventory, and debtor collection period. The analysis indicates that the total assets turnover ratio (TATR), fixed assets turnover ratio (FATR), and current assets turnover ratio (CATR) of disinvested PSEs are better compared to non-disinvested PSEs (Tables 6.10 and 6.12 as well as Figs. 6.5 and 6.6) over the entire period of time study as well as across the four phases; TATR in all the years of non-disinvested enterprises is less than one which may be primarily attributed to low CATR, as FATR in both types of PSEs is quite satisfactory; low impact of recession has been observed only on the current assets

Table 6.10 Mean values of key turnover ratios of the disinvested PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Years	TATR		FATR		CATR	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1991–1992	1.02	38	2.84	34	1.78	37
1992–1993	0.98	38	2.95	34	1.63	37
1993–1994	1.07	38	3.14	35	1.62	37
1994–1995	1.13	38	3.00	35	1.73	37
1995–1996	1.10	38	3.16	35	1.75	37
1996–1997	1.05	38	3.30	35	1.60	37
1997–1998	1.02	38	3.29	35	1.62	37
1998–1999	1.03	38	3.28	35	1.74	37
1999–2000	1.10	38	3.45	35	1.87	37
2000–2001	1.11	35	3.16	30	1.99	36
2001–2002	1.08	35	3.04	30	1.91	35
2002–2003	1.22	35	3.40	30	2.18	35
2003–2004	1.16	35	3.56	31	2.10	35
2004–2005	1.23	35	4.28	31	2.26	35
2005–2006	1.15	35	3.90	28	2.07	34
2006–2007	1.37	34	3.98	27	2.23	34
2007–2008	1.23	34	4.59	28	1.92	34
2008–2009	1.20	33	4.88	28	1.99	33
2009–2010	1.06	33	3.99	27	1.77	33
2010–2011	1.15	33	4.10	26	1.83	33
Mean 1991–1992 to 1995–1996 (phase 1)	1.06	38	3.10	35	1.70	37
Mean 1996–1997 to 2000–2001 (phase 2)	1.05	38	3.33	35	1.71	37
Mean 2001–2002 to 2007–2008 (phase 3)	1.20	35	3.88	31	2.09	36
Mean 2008–2009 to 2010–2011 (phase 4)	1.14	33	4.53	28	1.86	33
Aggregate mean (1992–2011)	1.12		3.57		1.88	

Notes:

1. *TATR*: total assets turnover ratio, *FATR*: fixed assets turnover ratio, *CATR*: current assets turnover ratio2. *TATR* 6 and above, *CATR* 8 and above, *FATR* 12 and above have been excluded*These abbreviations and exclusion of extreme items also apply for other tables mentioned in this section*Paired samples *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
<i>TATR</i>	37	0.87	34	0.01**	32	0.96
<i>FATR</i>	34	0.25	30	0.03*	27	0.01**
<i>CATR</i>	36	0.98	35	0.01**	32	0.13

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

Table 6.11 Median, lower quartile (Q1), and upper quartile (Q3) values of key turnover ratios of the disinvested PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
TATR	0.71	0.74	0.85	0.78	0.49	0.48	0.48	0.43	1.05	1.17	1.45	1.51
FATR	2.63	2.02	2.20	2.54	1.02	0.94	1.07	1.13	4.98	6.30	7.19	8.10
CATR	1.11	1.27	1.68	1.08	0.74	0.85	0.70	0.58	2.06	2.02	2.83	2.52

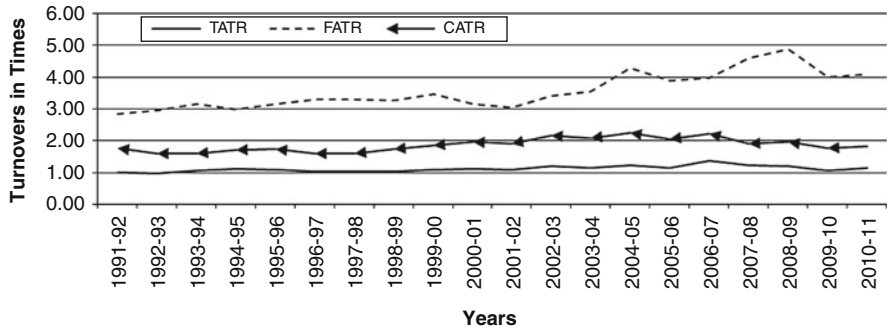


Fig. 6.5 Mean values of select significant turnover ratios (TATR, FATR and CATR) of the disinvested PSEs for the years 1991–1992 to 2010–2011

turnover capacity of both types of PSEs. In fact, the FATR has shown substantial improvement (significant as per paired *t*-test) during the recession period (phase 4) compared to pre-recession period (phase 3) in both types of PSEs; the FATR is 4.53 against 3.88 in disinvested PSEs and 3.74 against 3.14 in non-disinvested PSEs during these referred phases 4 and 3.

Significant difference as per paired *t*-test has been observed in most of the parameters of assets turnover ratios during phases 2 and 3 of disinvested PSEs and in phases 3 and 4 of non-disinvested PSEs. In general, non-disinvested public enterprises seem to be carrying higher level of assets than warranted by their level of production and sales. Positional values presented in Tables 6.11 and 6.13 are also in tune with the mean results in majority of the phases in both types of enterprises.

Secondly, change in the holding period of various constituents of current assets, namely, inventory holding period (RMIHP, WIPIHP, and FGIHP) and debtor collection period (DCP), has been tested further in both types of enterprises over the period of 20 years and during four subphases.

Significant decline in inventory holding period in terms of RMIHP, WIPIHP, and FGIHP has been recorded in disinvested PSEs and in non-disinvested PSEs (save RMIHP in phase 2) across all the phases. They are found significant in respect to RMIHP across the phases and in WIPHP during phases 1 and 2 for disinvested PSEs. Likewise, in non-disinvested PSEs, it is significant in RMIHP and

Table 6.12 Mean values of key turnover ratios of the non-disinvested PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Years	TATR		FATR		CATR	
	Mean	N	Mean	N	Mean	N
1991–1992	0.74	149	3.50	126	1.19	146
1992–1993	0.76	154	3.17	130	1.21	150
1993–1994	0.75	155	3.01	130	1.17	152
1994–1995	0.74	155	3.14	132	1.18	152
1995–1996	0.81	155	3.43	131	1.29	152
1996–1997	0.79	156	3.53	130	1.23	157
1997–1998	0.79	155	3.46	133	1.24	156
1998–1999	0.76	156	3.08	131	1.14	156
1999–2000	0.73	155	3.07	130	1.17	154
2000–2001	0.77	150	2.99	121	1.27	145
2001–2002	0.67	163	2.82	134	1.10	156
2002–2003	0.72	163	2.77	132	1.16	157
2003–2004	0.68	164	2.76	134	1.12	159
2004–2005	0.68	163	2.87	127	1.12	154
2005–2006	0.68	154	3.09	120	1.07	147
2006–2007	0.67	143	3.15	111	1.07	136
2007–2008	0.68	141	3.22	104	0.98	139
2008–2009	0.71	135	3.70	106	0.99	135
2009–2010	0.66	135	3.63	106	0.92	135
2010–2011	0.67	133	3.46	101	0.98	133
Mean 1991–1992 to 1995–1996 (phase 1)	0.77	155	3.33	134	1.23	152
Mean 1996–1997 to 2000–2001 (phase 2)	0.78	156	3.42	135	1.21	157
Mean 2001–2002 to 2007–2008 (phase 3)	0.70	164	3.14	138	1.12	159
Mean 2008–2009 to 2010–2011 (phase 4)	0.68	134	3.74	108	0.96	135
Aggregate mean (1992–2011)	0.72		3.19		1.13	

Paired samples *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
TATR	152	0.67	149	0.02*	132	0.25
FATR	126	0.27	123	0.65	103	0.00**
CATR	151	0.72	145	0.08	132	0.01**

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

Table 6.13 Median, lower (Q1), and upper quartile (Q3) values of key turnover ratios of the non-disinvested PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
TATR	0.64	0.62	0.57	0.59	0.29	0.27	0.16	0.20	1.05	1.01	1.08	1.03
FATR	2.36	2.32	2.31	2.47	0.88	0.87	0.71	0.68	5.68	6.26	5.43	6.16
CATR	1.04	1.04	0.87	0.80	0.51	0.45	0.33	0.35	1.80	1.79	1.73	1.31

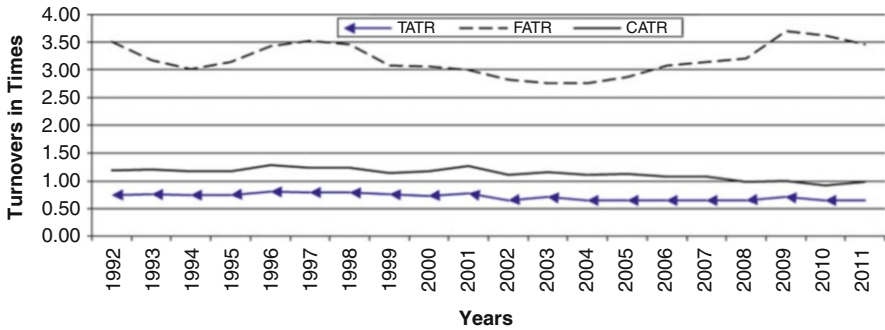


Fig. 6.6 Mean values of select significant turnover ratios (TATR, FATR and CATR) of the non-disinvested PSEs for the years 1991–1992 to 2010–2011

FGIHP during phases 2 and 3 and for FGIHP in phases 1 and 2 as per paired *t*-test (depicted in Tables 6.14 and 6.16); it is important to mention that the decline in DCP is significant only in the case of non-disinvested PSEs during phases 1 and 3 against phase 2. The DCP of non-disinvested PSEs is itself high (more than 3 months) in comparison to disinvested PSEs (less than 2½ months) across all the phases. Similar observations follow on the basis of the mean values shown in Tables 6.14 (for disinvested enterprises) and 6.16 (of non-disinvested enterprises); the aggregate mean values of RMIHP, WIPIHP, FGIHP, and DCP of disinvested PSEs are 129, 13, 17, and 70 days and of non-disinvested enterprises are 160, 17, 20, and 95 days, respectively. The trend is more clearly exhibited in Figs. 6.7 and 6.8. Recession has carried no impact at all on the IHP of both types of PSEs; on the contrary, an improvement in the holding period of inventory has been observed during the recession phase.

It is gratifying to note reduction in the IHP and DCP; median and lower-quartile results indicate that RMIHP, WIPIHP, FGIHP, and DCP in three-fourth of the PSEs have reduced to 45, 1, 9, and 35 days related to disinvested PSEs and to 85, 11, 8, and 75 days in non-disinvested enterprises, respectively, during phase 4 (Tables 6.15 and 6.17); it is only in one-fourth PSEs (as per upper quartile) that the corresponding period is (seems to be at unsatisfactory) more at 105, 12, 21, and 103 days (disinvested PSEs) and 228, 10, 20, and 137 days (non-disinvested PSEs). From this set of statistics, it is reasonable to conclude that majority of the disinvested and non-disinvested public enterprises seem to have satisfactory holding period in respect to work-in-process and finished goods. However, RMIHP in one-fourth of PSEs (as per upper quartile of disinvested as well as of non-disinvested public enterprises) is a matter of concern. The reason is there is sizable cost of carrying and holding the inventory, causing an adverse impact on profitability.

The independent *t*-test (depicted in Table 6.18) has been conducted between mean efficiency ratios of disinvested PSEs (mentioned in Tables 6.10 and 6.14) and mean efficiency ratios of non-disinvested PSEs (Tables 6.12 and 6.16); it indicates

Table 6.14 Mean values of inventory holding period and debtor collection period (DCP) of the disinvested PSEs, 1991–1992 to 2010–2011 (Figures are in days)

Years	RMIHP		WPIHP		FGIHP		DCP	
	Mean	N	Mean	N	Mean	N	Mean	N
1991–1992	182.64	31	15.68	38	20.37	38	69.72	37
1992–1993	169.91	31	17.32	38	24.65	38	73.87	37
1993–1994	182.79	32	18.66	38	24.04	38	77.16	37
1994–1995	181.37	32	17.65	38	20.12	38	81.02	38
1995–1996	171.11	32	16.94	38	18.41	38	66.47	36
1996–1997	164.63	33	13.85	38	18.88	37	81.00	38
1997–1998	166.34	33	13.47	38	18.30	38	74.09	38
1998–1999	166.63	33	14.57	38	19.20	38	67.93	37
1999–2000	156.40	33	13.94	38	17.84	38	66.85	38
2000–2001	132.41	32	14.62	36	18.69	36	71.50	36
2001–2002	140.75	33	11.31	36	16.04	36	76.87	36
2002–2003	132.72	33	13.02	36	14.82	36	81.97	36
2003–2004	98.73	33	13.12	36	13.86	36	63.95	34
2004–2005	89.46	33	10.50	36	12.29	36	61.89	35
2005–2006	88.02	32	8.78	35	11.75	35	63.75	34
2006–2007	71.23	30	7.47	34	12.06	34	64.99	33
2007–2008	78.88	30	8.99	34	13.06	34	62.12	32
2008–2009	73.41	28	9.60	32	12.77	33	63.68	31
2009–2010	73.11	28	10.16	32	14.05	33	66.14	31
2010–2011	74.21	27	11.23	32	13.58	33	67.19	31
Mean 1991–1992 to 1995–1996 (phase 1)	175.85	32	17.25	38	21.52	38	77.30	38
Mean 1996–1997 to 2000–2001 (phase 2)	163.50	33	13.96	38	18.54	38	73.41	38
Mean 2001–2002 to 2007–2008 (phase 3)	102.96	34	10.87	36	14.07	36	70.39	36
Mean 2008–2009 to 2010–2011 (phase 4)	72.77	28	10.33	32	13.47	33	65.67	31
Aggregate mean (1992–2011)	129.74		13.04		16.74		70.11	

Notes:

1. DCP: debtor collection period, RMIHP: raw-material inventory holding period, WPIHP: work-in-progress inventory holding period, FGIHP: finished-goods inventory holding period, N: number of PSEs

2. RMIHP 770 days and above, DCP 365 days and above, WPIHP 365, FGIHP 270 days and above have been excluded

These abbreviations and exclusion of extreme items also apply for other tables mentioned in this chapter

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
RMIHP	31	0.03*	31	0.00**	27	0.00**
WPIHP	37	0.04*	35	0.10	31	0.30
FGIHP	37	0.12	35	0.06	32	0.87
DCP	37	0.42	35	0.43	30	0.84

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

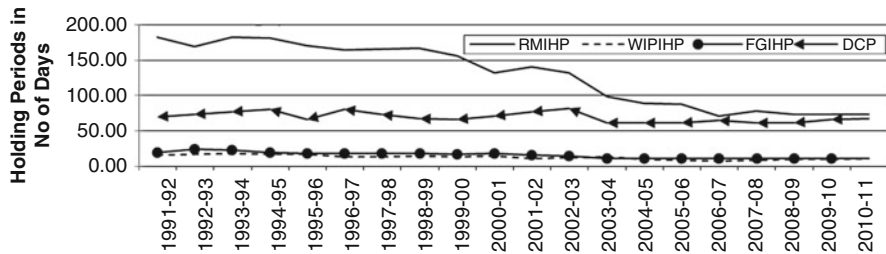


Fig. 6.7 Mean values of the inventory (RMIHP, WIPIHP and FGIHP) and debtors collection periods (DCP) of the disinvested PSEs for the years 1991–1992 to 2010–2011

significant difference in assets turnover (TATR and CATR) in almost all the phases, DCP in phase 2, and RMIHP during phases 3 and 4 in both types of enterprises. These facts further reinforce better efficiency in utilization of resources and collection period of disinvested PSEs vis-à-vis non-disinvested PSEs. Hence, the findings are in broad conformity (to a marked extent) with the hypothesis that the profitability and the operational efficiency of disinvested PSEs are better than those of non-disinvested PSEs.

As per survey, majority of responding disinvested public enterprises (almost three-fourth) are of the opinion that disinvestment has contributed towards better financial and operating performance of their organizations; in marked contrast, nearly three-fourth of the non-disinvested PSEs have disfavored disinvestment (Table 6.19). Out of available responses, less than one-half of the PSEs have stated that disinvestment brings to fore improvement in profitability, efficiency in resource utilization, management control, and autonomy in decision making; the majority holds the view that disinvestment has no impact on the financial performance (Table 6.20).

It is revealing to note from the survey that the expected profitable investment opportunities forgone by disinvested enterprises are higher, i.e., two-fifth compared to one-fourth in non-disinvested enterprises (Table 6.21); it reveals that paucity of funds probably is higher in disinvested enterprises compared to its counterpart. This situation may perhaps be ascribed to the fact that the money raised through disinvestment by and large has been diverted (by the government) for social purposes.

Another notable finding of the survey is that retained earnings constitute an important source of finance (Table 6.22) for disinvested as well as non-disinvested PSEs. The finding is in tune with the desired rank of using various sources of finance (retained earnings being the first in order) as per pecking order hypothesis (for designing capital structure).

Survey data reveals that majority of respondents in the case of the non-disinvested PSEs report the major financial activities to their chief financial officer on daily basis compared to two-fifth disinvested PSEs (Table 6.23); the majority of the disinvested enterprises report in the case of need.

Table 6.15 Median, lower (Q1), and upper quartile (Q3) values of IHP and DCP of the disinvested PSEs, 1991–1992 to 2010–2011 (Figures are in days)

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
RMIHP	133.73	114.29	68.76	41.65	64.06	66.35	28.05	8.77	237.17	219.83	163.07	105.61
WPIHP	1.87	1.46	1.73	1.16	0.00	0.01	0.00	0.00	24.73	16.13	15.21	12.54
FGIHP	15.82	14.78	11.63	9.65	5.52	4.07	2.37	1.26	37.18	28.47	26.03	21.13
DCP	53.14	50.30	36.85	45.20	18.81	17.25	13.46	15.49	135.97	130.59	126.20	103.40

Table 6.16 Mean values of inventory holding period and debtor collection period (DCP) of the non-disinvested PSEs, 1991–1992 to 2010–2011 (Figures are in days)

Years	RMIHP		WPIHP		FGIHP		DCP	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1991–1992	175.46	114	20.95	145	28.99	148	94.93	140
1992–1993	173.60	120	22.82	147	28.61	152	96.69	141
1993–1994	170.09	119	21.00	148	30.68	154	101.87	145
1994–1995	162.23	114	20.04	149	30.29	154	103.29	145
1995–1996	157.28	113	19.02	149	24.96	153	98.85	141
1996–1997	182.01	118	18.10	151	23.01	156	99.39	141
1997–1998	191.41	118	18.88	155	21.26	157	105.53	143
1998–1999	193.80	113	21.57	156	18.00	158	108.76	144
1999–2000	185.40	112	16.94	154	16.72	159	103.86	141
2000–2001	174.01	108	14.01	147	16.99	150	99.77	131
2001–2002	184.83	108	15.00	155	18.62	159	102.53	140
2002–2003	177.20	109	13.07	155	15.53	160	97.87	142
2003–2004	143.63	119	13.72	153	16.27	157	94.72	141
2004–2005	136.09	118	11.76	149	16.25	152	84.48	136
2005–2006	139.23	110	13.64	146	17.92	144	80.39	133
2006–2007	118.09	100	15.25	137	15.02	142	85.33	122
2007–2008	142.36	95	14.65	131	13.85	134	83.71	121
2008–2009	140.58	79	15.95	122	13.70	130	79.98	116
2009–2010	145.23	77	16.56	121	13.72	127	87.26	119
2010–2011	124.35	71	12.61	114	13.21	118	87.84	115
Mean 1991–1992 to 1995–1996 (phase 1)	173.27	123	20.62	150	28.94	154	101.22	147
Mean 1996–1997 to 2000–2001 (phase 2)	199.57	123	20.21	156	19.66	159	107.41	145
Mean 2001–2002 to 2007–2008 (phase 3)	155.96	128	15.01	157	16.21	161	93.23	148
Mean 2008–2009 to 2010–2011 (phase 4)	137.36	79	15.84	122	13.88	130	88.06	121
Aggregate mean (1992–2011)	160.84		16.78		19.68		94.85	

Paired samples *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
RMIHP	109	0.09	107	0.00**	76	0.77
WPIHP	148	0.11	143	0.07	121	0.64
FGIHP	153	0.00**	148	0.01**	129	0.39
DCP	137	0.01**	131	0.01**	120	0.24

**Signifies to significant difference at 1 % level

Table 6.17 Median, lower (Q1), and upper quartile (Q3) values of IHP and DCP of non-disinvested PSEs, 1991–1992 to 2010–2011 (Figures are in days)

Ratios	Q3											
	Q1				Q3				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
RMHP	126.82	137.13	90.06	85.47	49.82	65.08	32.21	36.87	272.48	323.04	298.99	228.47
WPIHP	2.17	2.14	1.01	0.09	0.00	0.00	0.00	0.00	35.47	21.06	17.22	9.70
FGIHP	15.35	7.55	4.46	1.13	0.00	0.00	0.00	0.00	52.45	29.10	24.74	20.61
DCP	82.20	90.07	76.13	75.20	35.64	36.50	22.34	21.87	161.96	170.69	163.84	137.01

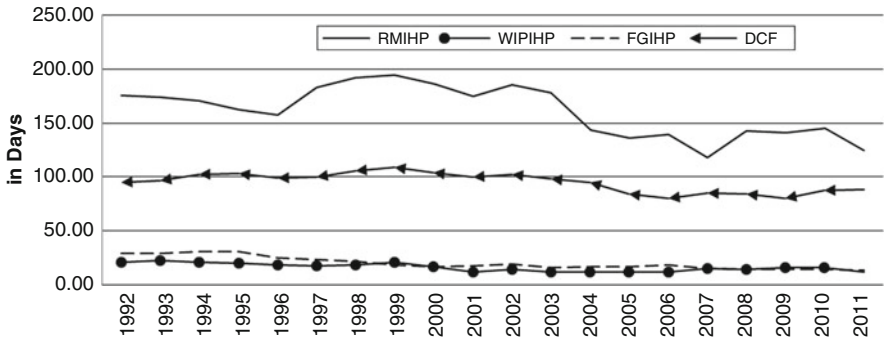


Fig. 6.8 Mean values of the inventory (RMIHP, WIPIHP and FGIHP) and debtors collection periods (DCP) of the non-disinvested PSEs for the years 1991–1992 to 2010–2011

Table 6.18 Independent sample *t*-test to find out significance of difference between the sample disinvested and non-disinvested PSEs during 1991–1992 to 2010–2011 (group statistics)

Ratios	Coding	Mean		Mean		Mean		Mean	
		<i>N</i>	Phase 1	<i>N</i>	Phase 2	<i>N</i>	Phase 3	<i>N</i>	Phase 4
TATR	D	38	1.06	38	1.05	35	1.20	33	1.14
	ND	155	0.77	156	0.78	164	0.70	134	0.68
FATR	D	35	3.10	35	3.33	31	3.88	28	4.53
	ND	134	3.33	135	3.42	138	3.14	108	3.74
CATR	D	37	1.70	37	1.71	36	2.09	33	1.86
	ND	152	1.23	157	1.21	159	1.12	135	0.96
DCP	D	38	77.30	38	73.41	36	70.39	31	65.67
	ND	147	101.22	145	107.41	148	93.23	121	88.06
RMIHP	D	32	175.85	33	163.50	34	102.96	28	72.77
	ND	123	173.27	123	199.57	128	155.96	79	137.36
WIPIHP	D	38	17.25	38	13.96	36	10.87	32	10.33
	ND	150	20.62	156	20.21	157	15.01	122	15.85
FGIHP	D	38	21.52	38	18.54	36	14.07	33	13.47
	ND	154	28.94	159	19.66	161	16.21	130	13.88

Notes:

D stands for disinvested PSEs, *ND* for non-disinvested PSEs

Independent samples *t*-test

Ratios	Variances	<i>t</i> -test for equality of means							
		Phase 1		Phase 2		Phase 3		Phase 4	
		df	Sign.	df	Sign.	df	Sign.	df	Sign.
TATR	EV	191	0.03*	192	0.06	197	0.00**	165	0.00**
	NEV	45	0.09	48	0.11	40	0.01**	36	0.02*
FATR	EV	167	0.65	168	0.87	167	0.16	134	0.26
	NEV	59	0.62	57	0.86	41	0.19	39	0.30
CATR	EV	187	0.01**	192	0.01**	193	0.00**	166	0.00**
	NEV	44	0.04*	46	0.03*	40	0.00**	35	0.01**

(continued)

Ratios	Variances	<i>t</i> -test for equality of means							
		Phase 1		Phase 2		Phase 3		Phase 4	
		df	Sign.	df	Sign.	df	Sign.	df	Sign.
DCP	EV	183	0.06	181	0.01**	182	0.06	150	0.11
	NEV	58	0.06	64	0.01**	49	0.08	53	0.08
RMIHP	EV	153	0.92	154	0.26	160	0.02*	105	0.02*
	NEV	52	0.92	63	0.19	78	0.01**	71	0.01**
WIPIHP	EV	186	0.59	192	0.43	191	0.48	152	0.46
	NEV	78	0.52	130	0.24	109	0.29	106	0.28
FGIHP	EV	190	0.20	195	0.82	195	0.64	161	0.93
	NEV	93	0.09	78	0.78	121	0.46	101	0.90

Notes:

EV stands for equal variances, NEV stands for not equal variances

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

Table 6.19 Opinion pertaining to the impact of disinvestment on financial performance in sample PSEs in India

Options	Responded disinvested (15)		Responded non-disinvested (15)		Combined PSEs (out of 30)	
	In no.	In %	In no.	In %	In no.	In %
Yes	11	73.3	4	30.77	15	53.57
No	4	26.7	9	69.23	13	46.43
Total	15	100	15	100	30	100

Table 6.20 Opinion on parameters that improve due to disinvestment in sample PSEs in India

S. no.	Options	Responded disinvested PSEs (15)	
		In number	In (%)
1	Profitability	3	25.00
2	Efficiency in resource utilization and management control	2	16.67
3	No effect at all	3	25.00
4	Any other	4	33.33
	<i>Total no. of enterprises</i>	<i>12</i>	<i>100.0</i>
	<i>Missing</i>	<i>3</i>	

Table 6.21 Forgone expected profitable investment opportunities due to paucity of funds in disinvested and non-disinvested sample PSEs in India

Options	Disinvested (out of 15)		Non-disinvested (out of 15)		Combined (out of 30)	
	In no.	In %	In no.	In %	In no.	In %
Yes	6	40	4	26.7	10	33.3
No	9	60	11	73.3	20	66.7
Total	15	100	15	100	30	100

Table 6.22 Uses of retained earnings as an important source of finance in sample PSEs in India

Reasons	Disinvested (out of 15)		Non-disinvested (out of 15)		Combined (out of 30)	
	In no.	In %	In no.	In %	In no.	In %
Yes	13	86.7	13	86.7	26	86.7
No	2	13.3	2	13.3	4	13.3
Total	15	100	15	100	30	100

Table 6.23 Major financial activities reported to chief financial officer in sample PSEs in India

Time period	Disinvested (out of 15)		Non-disinvested (out of 15)		Combined (out of 30)	
	In no.	In %	In no.	In %	In no.	In %
Daily	6	40	9	60	15	50
Monthly/quarterly	0	0	3	20	3	10
As needed	9	60	3	20	12	40
Total	15	100	15	100	30	100

6.4.3 Solvency and Liquidity Test

It is apparent from Tables 6.24 (disinvested) and 6.26 (non-disinvested) that debt is the major source of finance in both types of enterprises; as per trend, the proportion of debt to equity (D/E) has reduced during the phases 2, 3, and 4 compared to phase 1 among non-disinvestment PSEs. Inter se, non-disinvested PSEs have higher debt compared to disinvested PSEs during the entire time span of the study; the mean TD/TE over a period of 20 years is 1.56 for disinvested enterprises and 1.91 for non-disinvested enterprises. The decrease is not statistically significant in any of the phases.

It is worth noting that debt of non-disinvested PSEs has shown an increasing trend over the phases 2, 3, and 4. Similar conclusions follow based on positional statistics. The corresponding leverage values of median, lower, and upper quartile of disinvested enterprises during phase 4 are 1.18, 0.59, and 2.17 and of non-disinvested enterprises are 1.67, 0.63, and 3.15, respectively (Tables 6.25 and 6.27 and Figs. 6.9 and 6.10). Viewed from this perspective, it may be reasonable to conclude that economic liberalization does not seem to have caused material impact on the lion share of debt in financing assets, marginal decrease in relative share of debt in phases 2, 3 and 4 notwithstanding. Similarly, recession has caused no major change on the debt financing proportion of these enterprises.

Positional values (indicated in Tables 6.25 and 6.27) have indicated mixed results related to current ratio (CR) in both types of sample disinvested and non-disinvested PSEs. It is gratifying to note that liquidity position of the disinvested PSEs as well as

Table 6.24 Mean values of key leverage and liquidity ratios of the disinvested public sector enterprises, 1991–1992 to 2010–2011 (Figures are in times)

Years	Leverage ratio		Liquidity ratios			
	TD/TE		CR		ATR	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1991–1992	2.10	36	1.94	25	1.33	38
1992–1993	2.00	36	2.12	25	1.38	37
1993–1994	2.02	36	2.24	25	1.51	38
1994–1995	1.54	35	2.11	25	1.49	38
1995–1996	1.63	35	2.01	37	1.46	38
1996–1997	1.56	34	2.12	36	1.55	37
1997–1998	1.65	35	2.12	37	1.54	38
1998–1999	1.42	34	1.92	37	1.40	38
1999–2000	1.76	35	1.86	37	1.30	38
2000–2001	1.53	31	2.08	35	1.52	36
2001–2002	1.71	31	1.84	36	1.27	35
2002–2003	1.34	28	1.80	36	1.39	36
2003–2004	1.24	27	1.68	36	1.30	36
2004–2005	1.28	28	1.80	36	1.28	35
2005–2006	1.29	30	1.90	35	1.50	35
2006–2007	1.41	31	2.00	33	1.49	32
2007–2008	1.51	30	1.88	32	1.47	32
2008–2009	1.15	26	1.74	31	1.39	31
2009–2010	1.53	28	1.85	31	1.41	30
2010–2011	1.47	28	1.84	31	1.33	30
Mean 1991–1992 to 1995–1996 (phase 1)	1.87	36	2.05	37	1.43	38
Mean 1996–1997 to 2000–2001 (phase 2)	1.69	35	2.02	37	1.46	38
Mean 2001–2002 to 2007–2008 (phase 3)	1.53	33	1.88	36	1.44	36
Mean 2008–2009 to 2010–2011 (phase 4)	1.43	28	1.81	31	1.42	31
Aggregate mean (1992–2011)	1.56		1.94		1.42	

Notes:

1. CR: current ratio, ATR: acid test ratio, TD/TE: total debt/total equity, *N*: number of firms
2. CR consisting value 7 and above, ATR 5 and above, TD/TE 8 and above have been excluded
These abbreviations and exclusion of extreme items also apply for other tables mentioned in this chapter

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
TD/TE	33	0.67	31	0.45	26	0.76
CR	24	0.68	34	0.34	30	0.93
ATR	37	0.74	35	0.76	30	0.62

non-disinvested PSEs is satisfactory (including recession phase 4). The difference in liquidity is insignificant in both types of enterprises as per paired *t*-test. Between the two (disinvested and non-disinvested PSEs), disinvested PSEs have better liquidity ratios than non-disinvested PSEs (Table 6.28).

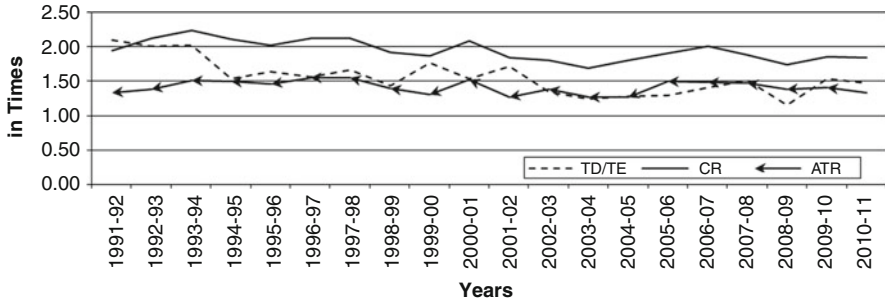


Fig. 6.9 Mean values of select significant leverage ratios (TD/TE) and liquidity ratios (CR and ATR) of the disinvested PSEs for the years 1991–1992 to 2010–2011

Table 6.25 Median, lower (Q1), and upper quartile (Q3) values of key leverage and liquidity ratios of disinvested PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
TD/TE	1.50	1.14	1.05	1.18	0.69	0.72	0.55	0.59	2.91	2.21	2.38	2.17
CR	1.81	1.86	1.63	1.64	1.33	1.32	1.20	1.29	2.53	2.53	2.52	2.29
ATR	1.34	1.24	1.23	1.25	0.90	0.87	0.56	0.71	2.02	1.98	2.13	1.78

Table 6.26 Mean values of key leverage and liquidity ratios of the non-disinvested PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Years	Leverage ratio		Liquidity ratios			
	TD/TE		CR		ATR	
	Mean	N	Mean	N	Mean	N
1991–1992	2.15	70	1.94	25	1.17	2.15
1992–1993	2.05	77	2.12	25	1.11	2.05
1993–1994	2.53	83	2.24	25	1.02	2.53
1994–1995	2.38	77	2.11	25	0.99	2.38
1995–1996	2.06	77	2.04	25	0.99	2.06
1996–1997	1.25	71	2.12	36	1.10	1.25
1997–1998	1.83	72	2.12	37	1.11	1.83
1998–1999	1.69	70	1.92	37	1.09	1.69
1999–2000	1.70	65	1.86	37	1.04	1.70
2000–2001	1.61	57	2.08	35	1.11	1.61
2001–2002	1.91	67	1.84	36	1.16	1.91
2002–2003	1.71	66	1.80	36	1.20	1.71
2003–2004	1.63	70	1.68	36	1.15	1.63
2004–2005	1.82	74	1.80	36	1.08	1.82
2005–2006	1.85	76	1.90	35	1.18	1.85
2006–2007	1.88	74	2.00	33	1.25	1.88
2007–2008	1.95	73	1.88	32	1.33	1.95
2008–2009	2.09	76	1.74	31	1.15	2.09
2009–2010	2.11	79	1.85	31	1.11	2.11

(continued)

Table 6.26 (continued)

Years	Leverage ratio		Liquidity ratios			
	TD/TE		CR		ATR	
	Mean	N	Mean	N	Mean	N
2010–2011	1.91	76	1.84	31	1.16	1.91
Mean 1991–1992 to 1995–1996 (phase 1)	2.35	83	2.09	25	1.07	2.35
Mean 1996–1997 to 2000–2001 (phase 2)	1.69	72	2.02	37	1.12	1.69
Mean 2001–2002 to 2007–2008 (phase 3)	1.88	80	1.88	36	1.20	1.88
Mean 2008–2009 to 2010–2011 (phase 4)	2.06	79	1.81	31	1.20	2.06
Aggregate mean (1992–2011)	1.91		1.94		1.13	1.91

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
TD/TE	62	0.04*	58	0.31	71	0.07
CR	136	0.17	140	0.10	130	0.05*
ATR	151	0.14	143	0.98	131	0.12

*Signifies to significant difference at 5 % level

Table 6.27 Median, lower (Q1), and upper quartile (Q3) values of key leverage and liquidity ratios of the non-disinvested PSEs, 1991–1992 to 2010–2011 (Figures are in times)

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
TD/TE	2.06	1.45	1.28	1.67	0.88	0.69	0.51	0.63	3.69	2.79	3.50	3.15
CR	1.17	1.27	1.20	1.24	0.49	0.71	0.49	0.84	2.16	2.15	2.26	1.88
ATR	0.86	0.95	1.05	1.06	0.32	0.40	0.32	0.53	1.58	1.60	1.86	1.57

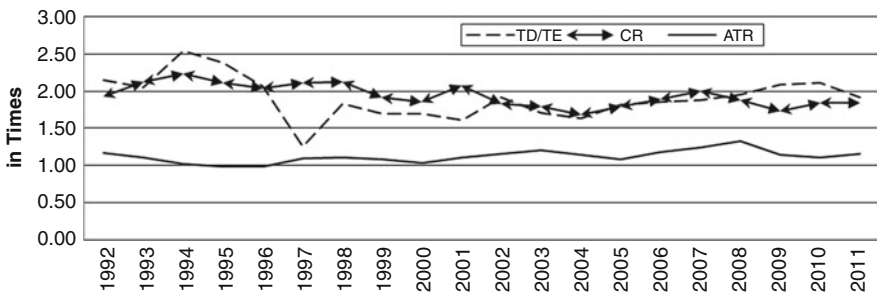


Fig. 6.10 Mean values of select significant leverage ratios (TD/TE) and liquidity ratios (CR and ATR) of the non-disinvested PSEs for the years 1991–1992 to 2010–2011

Table 6.28 Independent sample *t*-test to find out significance of difference between the sample disinvested and non-disinvested PSEs during 1991–1992 to 2010–2011 (group statistics)

Ratios	Coding	Mean		Mean		Mean		Mean	
		<i>N</i>	Phase 1	<i>N</i>	Phase 2	<i>N</i>	Phase 3	<i>N</i>	Phase 4
TD/TE	D	36	1.88	35	1.69	33	1.53	28	1.43
	ND	83	2.35	72	1.69	80	1.88	79	2.06
CR	D	25	2.09	37	2.02	36	1.88	31	1.81
	ND	139	1.45	156	1.57	156	1.52	132	1.54
ATR	D	38	1.44	38	1.46	36	1.44	31	1.42
	ND	156	1.07	155	1.12	158	1.20	132	1.20

Notes:

D stands for disinvested PSEs, *ND* for non-disinvested PSEsIndependent samples *t*-test

Ratios	Variances	<i>t</i> -test for equality of means							
		Phase 1		Phase 2		Phase 3		Phase 4	
		df	Sign.	df	Sign.	df	Sign.	df	Sign.
TD/TE	EV	117	0.18	105	1.00	111	0.22	105	0.06
	NEV	97	0.12	79	1.00	74	0.18	66	0.03*
CR	EV	162	0.00**	191	0.03*	190	0.06	161	0.23
	NEV	42	0.00**	74	0.01**	66	0.03*	56	0.16
ATR	EV	192	0.01**	191	0.03*	192	0.14	161	0.21
	NEV	59	0.01**	66	0.01**	56	0.13	45	0.22

Notes:

EV stands for equal variances, *NEV* stands for not equal variances

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

However, non-disinvested PSEs are not likely to have problems in meeting their current liabilities in time, given the fact that sizable number of PSEs in India have arrangements of short-term credit facility, such as bank borrowings/overdraft and cash-credit limit from banks; these facilities facilitate them to operate on the lower margin of working capital reflected in relatively lower current ratio as well as acid test ratio (Jain and Yadav 2005).

Survey data indicates (Table 6.29) that two-third of the responding disinvested and non-disinvested PSEs prefer to have lower D/E ratio (of up to 1:1). The cited reasons for equity preference among responded PSEs are flexibility/non-payment of dividends and to have more absolute net profit (Table 6.30). The vast majority of disinvested PSEs (nearly 85 %) and less than one-half of the non-disinvested PSEs prefer debt as it is the cheaper source of finance than equity (Table 6.31).

Table 6.29 Opinion on maintaining debt-equity (D/E) ratio in sample PSEs in India

D/E ratio	Disinvested (out of 15)		Non-disinvested (out of 15)		Combined (out of 30)	
	In no.	In %	In no.	In %	In no.	In %
Less than 1	4	26.7	5	33.3	9	30.0
1:1	6	40.0	5	33.3	11	36.7
2:1	2	13.3	2	13.3	4	13.3
Greater than 2	3	20.0	3	20.0	4	20.0
Total	15	100	15	100	30	100

Table 6.30 Possible reasons for preference of equity in sample PSEs in India

S. no.	Possible reasons	Disinvested (out of 15)		Non-disinvested (out of 15)		Combined (out of 30)	
		In no.	In %	In no.	In %	In no.	In %
1	Not bound to pay dividend	2	15.4	1	7.7	3	11.5
2	Flexible in paying dividend	4	30.8	6	46.2	10	38.4
3	More absolute net profit	4	30.8	5	38.5	9	34.5
4	Any other	3	23.1	1	7.7	4	15.4
	Total	15	100	15	100	30	100

Table 6.31 Possible reasons for preference of more debt in sample PSEs in India

S. no.	Possible reasons	Disinvested (out of 15)		Non-disinvested (out of 15)		Combined (out of 30)	
		In no.	In %	In no.	In %	In no.	In %
1	Cheaper source of finance and flexible	12	85.7	7	46.7	19	65.5
2	Easily raised than equity	2	14.2	4	26.7	6	20.6
3	Any other	1	7.1	4	26.7	4	13.8
	Total	15	100	15	100	30	100

6.4.4 Productivity Test

Productivity of the sample enterprises has been determined on the basis of output and income generated per manpower; it has been expressed in terms of employment (number of employees employed), sales efficiency ratio (SE), and net income efficiency (NIE) ratio. It is hypothesized that the productivity of capital is lower in non-disinvested PSEs compared to disinvested PSEs.

Large-scale employment by public enterprises over the years has led to a situation where some of the PSEs are saddled with excess manpower, resulting in low level of per capital productivity. This has caused government to initiate voluntary retirement scheme (VRS) in 1988 to help them to shed excess manpower and to improve the age mix and skill mix (Public Enterprises Survey 2002–2003). Consistent decrease in the mean employment (till the year 2004–2005) of disinvested organizations has been observed over a period of time (Table 6.32); it has reduced by 24 and 27 %

Table 6.32 Mean values of key productivity ratios of the disinvested PSEs, 1991–1992 to 2010–2011

Years	Employment		Sales efficiency		NIE	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1991–1992	18,229	38	23.86	37	1.48	38
1992–1993	18,181	38	31.80	38	1.64	38
1993–1994	17,949	38	32.24	38	1.85	38
1994–1995	17,739	38	35.20	37	2.26	38
1995–1996	17,493	38	35.92	36	2.93	38
1996–1997	17,376	38	31.95	33	2.92	38
1997–1998	16,953	38	34.60	33	3.58	38
1998–1999	16,667	38	36.05	33	3.45	38
1999–2000	15,406	38	35.12	31	3.34	38
2000–2001	15,073	36	27.66	26	4.55	36
2001–2002	14,277	36	28.61	26	3.70	36
2002–2003	13,625	36	33.33	26	6.16	36
2003–2004	12,995	36	40.05	26	8.88	36
2004–2005	12,758	36	36.11	25	10.23	36
2005–2006	13,251	35	37.86	25	9.01	35
2006–2007	13,312	34	42.23	25	11.18	34
2007–2008	15,180	34	48.93	26	11.29	34
2008–2009	13,304	33	60.28	25	11.10	32
2009–2010	13,005	33	58.77	25	14.31	32
2010–2011	12,779	33	68.87	25	12.39	31
Mean 1991–1992 to 1995–1996 (phase 1)	17,918	38	34.28	38	2.03	38
Mean 1996–1997 to 2000–2001 (phase 2)	16,600	38	36.22	33	3.32	38
Mean 2001–2002 to 2007–2008 (phase 3)	13,601	36	40.47	27	8.19	36
Mean 2008–2009 to 2010–2011 (phase 4)	13,029	33	62.64	25	13.18	32
Aggregate mean (1992–2011)	15,278		38.97		6.31	

Notes:

NIE stands for net income efficiency, *SE* sales efficiency

NIE above plus/minus 100 and sales efficiency above 200 (plus/minus) have been excluded

This abbreviation and exclusion of extreme item also apply for other tables mentioned in this chapter

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
Employment	37	0.02*	35	0.01**	32	0.08
SE	32	0.00**	26	0.00**	24	0.00**
NIE	37	0.05*	35	0.01**	31	0.13

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

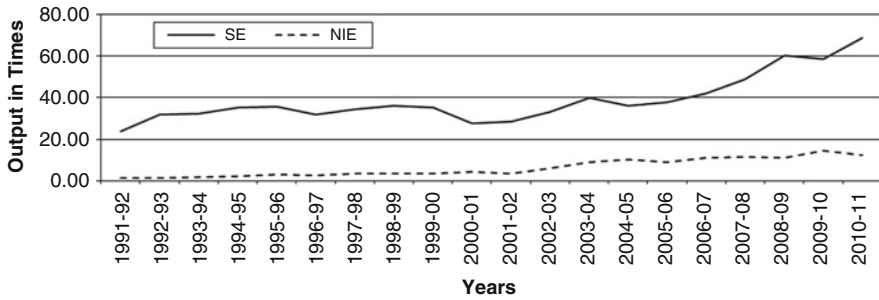


Fig. 6.11 Mean values of the select significant productivity/output ratios (sales and net income efficiency) of the disinvested PSEs for the years 1991–1992 to 2010–2011

(nearly one-fourth) in phases 3 and 4 against phase 1, whereas, during the same time frame, the employment has reduced by 6 and 6.8 % in non-disinvested PSEs (Table 6.34). This is in tune with the VRS targets set by the government to enhance the productivity. Shivendu (2008) finds that partial privatization has no negative impact on employment of disinvested firms. It has also been observed from Tables 6.32 and 6.34 that the employment level (number of employees) in disinvested PSEs is almost double than non-disinvested PSEs across all the phases. It is quite apparent that in order to improve the performance as well as to overcome with the pressure of trade unions, government may have given greater emphasis to disinvest those PSEs having higher employment record.

Likewise, there has been an increase in mean sales efficiency and NIE of disinvested PSEs over the years (Table 6.32 and Fig. 6.11). However, in non-disinvested enterprises, sales efficiency only has shown an appreciable increase over the years of the study (Table 6.34 and Fig. 6.12).

Similar inferences follow from the positional values presented in Tables 6.33 and 6.35. Above all, across all the phases, the difference is significant in almost all the measures of output among disinvested enterprises; the same does not hold true for all the measures among all phases in respect to non-disinvested PSEs (Tables 6.32 and 6.34); thus, the findings of negative NIE during phase 1, less than one-half percent point in phases 2 and 3, as well as overall one-half percent point of non-disinvested PSEs (during the referred period) support the hypothesis, i.e., the productivity of capital is lower in non-disinvested PSEs vis-à-vis disinvested PSEs.

As far as recessionary phase is concerned, it is gratifying to note that recession has not impacted the performance of two productivity measures (SE and NIE) of disinvested and non-disinvested PSEs; contrary to the normal expectation of decrease, substantial enhancement of productivity has been recorded in both the measures in disinvested as well as non-disinvested PSEs during the recession phase 4.

The independent *t*-test (Table 6.36) indicates significant difference in sales efficiency and NIE across all phases of the study in disinvested PSEs compared to non-disinvested PSEs. It reinforces better productivity of capital of disinvested PSEs vis-à-vis non-disinvested PSEs during the time span of study.

Table 6.33 Median, lower (Q1), and upper quartile (Q3) values of key productivity ratios of disinvested PSEs, 1991–1992 to 2010–2011

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
Employment	7.394	7.335	3,831	4,760	2.683	2.565	1,805	1,800	18,656	17,497	13,687	13,279
SE	13.72	16.11	23.69	45.39	4.03	7.19	9.62	17.01	55.32	38.44	69.58	89.48
NIE	1.15	1.61	3.59	7.12	0.12	0.02	-0.33	0.04	3.31	4.41	20.55	14.82

Table 6.34 Mean values of key productivity ratios of the non-disinvested PSEs, 1991–1992 to 2010–2011

Years	Employment		Sales efficiency		NIE	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1991–1992	8,899	149	5.30	149	-0.14	149
1992–1993	8,585	152	6.16	151	0.03	151
1993–1994	8,122	153	6.41	152	-0.34	152
1994–1995	8,139	153	6.99	152	-0.25	152
1995–1996	8,169	153	7.04	151	-0.57	152
1996–1997	8,075	157	8.24	155	0.14	156
1997–1998	8,648	157	9.17	154	0.22	157
1998–1999	7,642	157	10.75	155	0.43	157
1999–2000	7,924	157	10.85	153	0.29	157
2000–2001	6,909	161	13.61	145	-0.20	142
2001–2002	8,829	163	13.42	154	-0.04	153
2002–2003	8,237	163	16.89	154	-0.17	154
2003–2004	7,866	160	16.06	152	-0.22	154
2004–2005	7,829	154	17.18	144	0.39	146
2005–2006	7,621	153	18.61	140	0.53	147
2006–2007	7,856	141	22.34	130	2.34	134
2007–2008	8,177	135	25.02	123	0.66	128
2008–2009	8,204	134	25.76	120	2.53	125
2009–2010	7,980	133	30.02	120	2.50	123
2010–2011	7,295	133	31.95	117	1.84	122
Mean 1991–1992 to 1995–1996 (phase 1)	8,354	153	6.46	152	-0.26	152
Mean 1996–1997 to 2000–2001 (phase 2)	8,072	157	10.14	155	0.29	157
Mean 2001–2002 to 2007–2008 (phase 3)	7,848	163	17.88	155	0.33	154
Mean 2008–2009 to 2010–2011 (phase 4)	7,790	134	30.03	120	2.42	125
Aggregate mean (1992–2011)	8,050		15.09		0.50	

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 3 and 4	
	df	Sign.	df	Sign.	df	Sign.
Employment	154	0.48	152	0.00**	134	0.04*
SE	152	0.00**	146	0.00**	120	0.00**
NIE	153	0.82	143	0.67	125	0.24

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

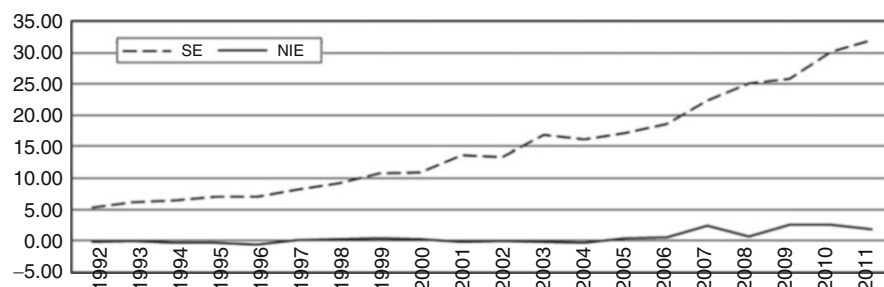


Fig. 6.12 Mean values of the select significant productivity/output ratios (sales and net income efficiency) of the non-disinvested PSEs for the years 1991–1992 to 2010–2011

Table 6.35 Median, lower quartile (Q1), and upper quartile (Q3) values of key productivity ratios of the non-disinvested PSEs, 1991–1992 to 2010–2011

Ratios	Median				Q1				Q3			
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4	Phase 1	Phase 2	Phase 3	Phase 4
Employment	1,920	1,724	940	810	347	332	126	149	7,653	5,597	3,984	2,889
SE	2.09	3.34	7.31	16.60	0.96	1.46	1.66	5.70	6.24	9.10	24.64	41.58
NIE	-0.02	-0.15	0.02	0.86	-0.69	-1.20	-3.16	-1.39	0.35	0.54	2.14	6.03

Table 6.36 Independent sample *t*-test to find out significance of difference between the sample disinvested and non-disinvested PSEs during 1991–1992 to 2010–2011 (group statistics)

Ratios	Coding	Mean		Mean		Mean		Mean	
		<i>N</i>	Phase 1	<i>N</i>	Phase 2	<i>N</i>	Phase 3	<i>N</i>	Phase 4
Employment	D	38	17,918	38	16,601	36	13,601	33	13,029
	ND	155	8,462	159	8,147	165	7,880	135	7,740
Sales eff.	D	38	34.28	33	36.22	27	40.47	25	62.64
	ND	154	6.41	157	10.07	157	17.74	121	29.89
NIE	D	38	2.03	38	3.32	36	8.19	32	13.18
	ND	154	-0.25	159	0.29	156	0.33	126	2.41

Notes:

D stands for disinvested PSEs, *ND* for non-disinvested PSEsIndependent samples *t*-test

Ratios	Variances	<i>t</i> -test for equality of means							
		Phase 1		Phase 2		Phase 3		Phase 4	
		df	Sign.	df	Sign.	df	Sign.	df	Sign.
Employment	EV	191	0.03*	195	0.04*	199	0.29	166	0.33
	NEV	46	0.09	46	0.10	60	0.23	62	0.25
Sales eff.	EV	190	0.00**	188	0.00**	182	0.00**	144	0.00**
	NEV	38	0.00**	34	0.00**	30	0.01**	28	0.01**
NIE	EV	190	0.00**	195	0.01**	190	0.00**	156	0.00**
	NEV	41	0.00**	53	0.02*	40	0.01**	38	0.02*

Notes:

EV stands for equal variances, *NEV* stands for not equal variances

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

6.5 Main Findings

The major findings of this chapter are summarized in this section:

1. The profitability in most of the parameters of disinvested PSEs is several times higher compared to non-disinvested PSEs across the first three phases. However, in phase 4, non-disinvested PSEs have also performed at par with disinvested PSEs in many of the profitability parameters. Further, no major impact of recession has been observed in both types of PSEs.
2. Similarly, better assets turnover, productivity of capital, and liquidity position have been observed in disinvested PSEs vis-à-vis non-disinvested PSEs. Independent *t*-test reinforces better operating efficiency in utilization of resources, productivity, and liquidity of disinvested PSEs compared to non-disinvested PSEs. In addition to this, recession has also not impacted the performance of disinvested and non-disinvested PSEs in respect to efficiency, liquidity and productivity.

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Chapter 7

Impact of MoU/Self-Obligation on Financial Performance of PSEs

Abstract Memorandum of Understanding (MoU)/charter of self-obligation has been conceived as an instrument to quantify/assess social and commercial obligations/performance of central public sector enterprises (PSEs) in India. The purpose of this chapter is to measure the financial performance of the MoU PSEs, to compare their performance with PSEs which have not opted for MoU (referred to as non-MoU PSEs), to examine the performance of manufacturing and service MoU PSEs, and to analyze the performance of profit-making and loss-making MoU PSEs over a period of 17 years (i.e., 1993–1994 to 2010–2011). The financial performance of PSEs has been assessed on the basis of ratio analysis pertaining to the profitability, efficiency, liquidity, solvency and productivity.

The findings suggest that MoU seems to have yielded decisive improvement in the performance of PSEs which have signed MoUs during the period of the study under reference. At the same time, the performance of non-MoU PSEs is unsatisfactory. As expected, profitability of profit-making PSEs (PME) has increased after signing MoUs over the phases. MoU has played pivotal role in bringing up the performance of loss-making MoU PSEs (LME) after signing MoUs. Hence, several committees' recommendations for closing down the LME need to be relooked at.

In view of salutary impact of MoU, it is suggested that the government should encourage the remaining non-MoU PSEs to sign it; in fact, there is a merit of considering to make signing of MoU mandatory for all PSEs.

Keywords Memorandum of Understanding/self-obligation • Non-MoU PSEs • Profit-making PSEs • Loss-making PSEs • Manufacturing PSEs • Service PSEs • National Council of Applied Economic Research (NCAER) • Financial performance • Profitability ratios • Operating efficiency • Solvency ratios • Liquidity ratios and productivity Ratios

7.1 Introduction

Memorandum of Understanding (MoU)/self-obligations is an instrument which describes the mutual obligations and responsibilities between the government (represented by administrative ministry) and the public enterprise. The efficacy of the MoU in improving performance depends upon how well it has removed the internal and external constraints that have affected the functioning of the public enterprises. The internal constraints include over-manning, lack of motivation among the executives and workers, poor internal control systems, and inadequate resources, while the external constraints relate to the interference of the politicians and bureaucrats in appointments, transfers, and award of contracts (Sengupta 2002).

Given the fact that the efficiency of public sector enterprises cannot be measured in terms of their profitability alone, other criteria like their capacity to contribute to public exchequer, generation of employment opportunities, earnings through foreign exports, and other social considerations should also be given due weight in the evaluation of their performance (Bureau of Public Enterprises 1997–1998).

MoU measures the total performance of the PSEs; it takes into account the complexity of fusing social and financial objectives and translates them into measurable parameters. In fact, a number of PSEs were set up with the positive social cost-benefit and social internal rate of return, ignoring commercial profitability. In other words, MoU is an appropriate technique which measures the performance of PSEs on the basis of both social and financial objectives.

For the purpose, the Government of India appointed the Arjun Sengupta Committee in 1984. It made two major recommendations: the first one urged the government to manage public enterprises in a commercially viable manner, and the second suggested that public enterprises should be judged by their total performance (through MoU). Following the recommendations of the committee, the Government of India introduced the concept of the Memorandum of Understanding on an experiment basis in 1988 with the objective of performance evaluation of the PSEs. The new MoU policy system came into effect in 1989 and remains in vogue at present (Government of India 2010–2011).

The objective of this chapter is to measure the impact of MoU on the performance of PSEs over a period of time. For better exposition, the subject matter of the chapter has been divided into seven sections (including introduction). Section 7.2 outlines the detailed modus operandi of using MoU system for performance evaluation. Section 7.3 describes the scope, data source, and methodology of the study. Financial performance of MoU PSEs (which have signed MoU) and non-MoU PSEs (which have not signed MoU) has been compared in Sect. 7.4. Section 7.5 deals with the performance evaluation of MoU PSEs at the aggregate level. Financial performance at the disaggregative level has been discussed under Sect. 7.6. Finally, Sect. 7.7 enumerates the summary of results and main findings.

7.2 Features of MoU

The objective of this section is to present the concept of MoU, its features, and its modus operandi in MoU organizations. It is expected that the signing of MoU would improve the performance of PSEs and also help the government in monitoring their performance. The subject matter of this section has largely been drawn from the Arjun Sengupta Committee Report and Public Enterprises Surveys. Initially only 4 PSEs signed MoU, with time it has steadily increased to 100 by 1994–1995, and it increased to 144 in 2007–2008 and 2008–2009 and further rose to 197 in the year 2009–2010.

MoU is a negotiated document between the government, acting as the owner of public sector enterprise (PSE) and a specific PSE. It documents the intentions, obligations, and mutual responsibilities of both parties. In operational terms, it serves as an instrument of evaluating the performance of PSE (signing the MoU). Since the management has provided a written undertaking of its obligations (say, in terms of number of units to be produced or amount of profit to be earned), it makes the management of the PSE result oriented.

7.2.1 Objectives of MoU System

The main objectives of the MoU system are to:

- Measure the performance of PSEs by taking into account both social and financial objectives and translating them into measurable parameters.
- Ensure increase in autonomy as well as commensurate accountability of the board of PSEs.
- Set up new institutions and administrative and personnel systems.
- Replace “multiple principles with multiple objectives” with clarity in goals and objectives.

7.2.2 Structure of MoU

The MoU, a management system, consists of three sub-systems, namely, performance information system, performance evaluation system, and performance incentive system.

7.2.2.1 Performance Information System

It provides sources of information which assists in designing performance evaluation system. The major sources are the original objectives at the project formulation stage, comparison with similar other firms in the PSEs and the private

sector, standards achieved by the similar undertakings of the other selected developed and developing countries, comparison with the performance of the same firm in the previous years, and professional judgment by third parties at the ministry level and at the enterprise level.

7.2.2.2 Performance Evaluation

Performance evaluation in MoU involves five steps. The first three steps, namely, criterion selection, criterion weight selection, and criterion value selection, are taken at the beginning of the year, and the last two steps (of evaluation and reward of performance) are taken at the end of the year.

Criterion Selection

According to the MoU philosophy, only those criteria should be included in the MoU which are “fair” to the manager, as well as “fair” to the country, and have been negotiated freely. Fairness to manager implies that the criteria included in the MoU should measure only those aspects of managerial performance which are under manager’s control. Performance criteria must be selected carefully, not arbitrarily. These should be based on the enterprise’s corporate plan that looks at 3–5 years in the future. They must also be consistent with plan and budgetary goals of the government. MoU is an instrument that measures the performance of the manager and not that of the enterprise. While selecting performance criteria, this must be kept in mind, and only those parameters that judge managerial performance should be selected.

Criteria Weight Selection

For running an enterprise successfully, a chief executive has to undertake a number of tasks. However, not all the tasks are of equal importance. An efficient chief executive, therefore, prioritizes his/her tasks based on his/her perception of the relative importance of different activities in hand. The perception of the chief executive and that of the owner may not coincide in this case. In the interest of clarity of purpose, it is necessary that from the long list of things to do, the manager must be told what the relative priorities are so that he/she can allocate his time more effectively in achieving those priorities. Thus, after a careful examination of how this problem has been overcome in other countries, it was decided to introduce the system of relative weights. The weightage score for each parameter in the MoU is worked out by taking into account the actual achievements and relative weight assigned to that parameter.

Criteria Value Selection

It distinguishes between “criteria” and criteria value. It is a value, which distinguishes at various levels of performance. In MoU, there is a 5-point scale, where “1” represents

“excellent” performance and “5” represents “poor” performance. In simple words, one value or one measure cannot be applied to all the PSEs uniformly. They are to be different for different PSEs. It is suggested that value/targets should be carried out through a participative process, well defined, and not ambiguous.

Performance Assessment

As stated above, performance is to be evaluated/assessed on a 5-point scale; the value of the composite score will also lie between 1 and 5. If the management has done excellent on all parameters mentioned in the MoU, it gets a score of 1. In contrast, if it has totally failed to meet the targets, its score is 5; a score between 1 and 4 represents excellent to fair performance and 5 poor performance. This composite score enables to evaluate the performance of management of their own commitments; it, thus, facilitates measuring ability of the PSEs to meet their own commitments and to compare and rank various central PSEs even though the commitments of these PSEs are different.

This final step in the performance evaluation exercise cannot be a mechanical procedure. For reasons beyond the control of PSEs and its managers, everything in business may not materialize according to plans; there is need to have a mechanism to deal with such exigencies in a credible system. The MoU system does provide an opportunity to adjust the criterion values (at the review meeting at the end of the year) for factors which were genuinely unanticipated by both parties to the MoU, such as natural disasters, wars, etc.

Performance Reward

Performance evaluation of PSEs provides a setup which measures the degree of achievement of the objectives; evaluation by itself does not lead to improvement in performance. Unless performance evaluation is coupled with a system of rewards and penalties (for good and bad performance) and utilized as a means for that purpose, it provides no motivation to the PSEs for improving their performance. A transparent system of rewards and punishment is thus a corollary to the introduction of an objective performance evaluation system of the PSEs. Thus, a performance reward scheme constitutes an essential component of the MoU system.

Institutional Arrangements for Implementing MoU Policy

The reasons for having institutional arrangements in this regard is to ensure commitment from the higher levels of the government, to enable third-party evaluation, to ensure Task Force (TF) professionalism, to have binding recommendations, and to ensure fairness and equality in the process of negotiation of MoUs. The institutional arrangement consists of High Power Committee, Task Force and MoU Division.

High Power Committee (HPC)

The apex of this institutional arrangement is the High Power Committee (HPC) of the following members:

1. Cabinet Secretary, chairman
2. Finance Secretary, member
3. Secretary (Expenditure), member
4. Secretary (Planning Commission), member
5. Secretary (Statistics and Program Implementation), member
6. Chairman (Public Enterprises Selection Board), member
7. Chairman, Tariff Commission
8. Chief Economic Adviser, member
9. Secretary (Public Enterprises), member-secretary

The functions of this committee include assessing the performance of MoU signing enterprises with reference to the commitments made in the MoU. It also assesses how far the administrative ministries have been able to provide the necessary administrative and financial support committed by them in the MoU. It oversees the functioning of the MoU system, provides guidelines, and gives directions to strengthen and improve the system besides taking general decisions on broader issues pertaining to the improvement of the performance of public enterprises. The power to approve the final MoU has been delegated to the Task Force (TF), and only in those cases where the TF is not able to take a decision, it is referred to HPC.

Task Force (TF)

The Task Force on MoU is a neutral and independent body of experts that assists the High Power Committee on MoU and Department of Public Enterprises. The main objective behind the creation of a TF was to take care of the imbalances in technical expertise available between the government and PSEs. The main functions of the TF are (a) to examine the design of MoU at the beginning of the year and (b) to carry out the evaluation procedure at the end of the year. It is the primary responsibility of the Task Force to do evaluation and determine the composite score for each enterprise on the basis of actual achievements vis-à-vis the MoU targets.

This Task Force consists of management professionals and independent members with considerable experience in managing business enterprises. In order to lend greater technical and professional expertise as well as diverse and rich experience to the Task Force on MoU for the year 2011–2012, PSEs were categorized into 11 new syndicate groups including syndicate groups “Sick and Loss-Making CPSEs” and “Section 25¹ central PSEs.” Each syndicate normally consists of 6 members,

¹ PSEs under Section 25 are engaged in promotion of commerce, art, science, charity, and useful purposes as prescribed under Section 25 of the Companies Act (Public Enterprises Survey 2001–2002, Vol 2, pp. 304).

comprising 1 convenor (senior most among the members), 1 administrative member (retired secretary to GOI), 1 finance/CA expert, 1 ex-CMD of any CPSE, 1 renowned academician, and 1 domain expert. There were 66 Task Force members and one chairman for the year 2011–2012.

MoU Division

The HPC and TF are assisted by the MoU Division in the Department of Public Enterprises. It acts as a permanent secretariat to them. The main functions of this division are:

- (a) To reconstitute the Task Force each year and provide logistical support to it. It is expected to provide not only administrative support but also technical support to the Task Force.
- (b) To shortlist PSEs for signing MoU.
- (c) To prepare MoU guidelines on the basis of which MoU signing PSEs draft their MoU.
- (d) To act as buffer between the Task Force members and the two signatories to the MoUs PSEs and administrative ministries. It is expected that TF members will have contacts with signatories to MoU *via* MoU Division only.
- (e) To develop information and data base on MoU signing PSEs.
- (f) To prepare agenda and background papers for the High Power Committee.
- (g) To monitor the progress of MoUs. This division keeps a tab on various stages involved in the preparation of MoUs to ensure that all parties involved in the process adhere to the relevant deadlines.
- (h) To provide advice and counsel to the MoU signatories on methodological and conceptual aspects of the MoU policy.
- (i) To coordinate research and training on various aspects of MoU policy.

Justification for the Institutional Arrangement

The following are the major reasons for institutional arrangement in Indian context:

1. It ensures commitment from the higher levels of the government.
2. It enables objective third-party evaluation.
3. The Task Force ensures professionalism and prevents bureaucratization.
4. High Power Committee can demand the information relating to recommendations and make them binding.
5. Ensures fairness and equality in the process of negotiation of MoUs.

Working of MoU System

The process of signing of MoU is initiated by the MoU Division along with guidelines for its drafting. These guidelines indicate the broad structure and the aspects

to be covered in the draft MoU including the weights to be accorded to the financial parameters. These guidelines reflect the concerns of the government and provide the general direction to the PSEs.

Drafting of MoUs

Based on guidelines, the draft of MoU is prepared by PSEs after due discussions in board and the concerned administrative ministry/department in the month of December and submitted to Department of Public Enterprises (DPE). The MoU's draft received by DPE is examined in MoU Division in consultation with members of Task Force. If required, additional information is sought from PSEs/ministries to ensure that the targets proposed in the draft MoUs are realistic and challenging.

MoUs Negotiation Meetings

MoUs negotiation meetings are held in the month of February/March. Before the meetings, background papers are prepared by MoU Division on the MoU draft of each PSE. These meetings are attended by TF members, senior officials of administrative ministry, top executives of PSEs, and representatives from nodal agencies of the Government of India such as Planning Commission, Ministry of Finance, and Ministry of Statistics and Program Implementation. The targets under various parameters are discussed and finalized during these meetings.

Evaluation of MoU

The performance of MoU signing PSEs is evaluated with reference to their MoU targets in May/June on the basis of provisional results and in October/November on the basis of audited data. The central PSEs are required to submit performance evaluation report on the basis of audited data along with annual accounts, balance sheet, etc. to the Department of Public Enterprises through their administrative ministry departments within the target dates. The performance evaluation at the end of the year indicates the extent to which the mutually agreed targets between central PSEs and administrative ministries are achieved. On the basis of their performance, the PSEs are graded as "Excellent," "Very Good," "Good," "Fair," and "Poor."

Coverage of PSEs Under the MoU System

The MoU system has grown at a steady rate, and from 4 MoUs signed in the year 1987–1988, 101 MoUs were signed in the year 2005–2006. In fact, many of these 101 PSEs are the holding PSEs, and if their subsidiaries are also included, then the total number of PSEs covered under MoU system works out to be much more.

7.2.3 *NCAER Study on MoU and Performance Evaluation*

The Department of Public Enterprises assigned a study to the National Council of Applied Economic Research (NCAER) in 2003 to examine afresh the choice of criteria for performance evaluation and the allocation of weights to the different parameters (Public Enterprises Survey, 2006–2007). The NCAER finally came up with the following principal components for weight of parameters expressed in percentage (%) as:

1. Financial parameters 50
2. Non-financial parameters 50, consisting of the following:
 - (a) Dynamic parameters 30
 - (b) Enterprise-specific parameters 10
 - (c) Sector-specific parameters 10

While the performance evaluation under the earlier system allocated 60 % weight to “financial parameters” and 40 % weight to “non-financial parameters,” the NCAER recommended equal weights (50 %) to both financial and non-financial parameters, similar to the “balanced scorecard” approach of performance evaluation. The financial parameters for evaluation may be both in absolute and relative terms. The “non-financial parameters” were further sub-divided into “dynamic parameters,” “enterprise-specific parameters,” and “sector-specific parameters.” Whereas the “financial” parameters primarily relate to profit and productivity parameters, the “dynamic” parameters refer to project implementation, investment in R&D, extent of globalization, etc. Similarly, while the “sector-specific” parameters refer to macroeconomic factors like change in demand and supply, price fluctuations, variation in interest rates, etc., beyond the control of the management, the “enterprise-specific” parameters relate to the issues, such as safety and pollution. These may broadly comprise the following:

Financial parameters (absolute values)

1. Turnover (net)
2. Gross margin

Financial/management ratios

1. Profit before depreciation, interest and taxes (PBDIT)/turnover (for financial services/trading companies).
2. PBDIT/capital employed (for manufacturing/mining companies).
3. Total cost of production/total output (for all enterprises).
4. Net profit/net worth (for listed companies).
5. PBDIT/total employment (for all enterprises).
6. Share in market (for all enterprises).
7. Research and development (R&D)/turnover (for manufacturing/mining companies).

Non-financial parameters: The non-financial parameters for evaluation, in turn, may broadly comprise the following:

1. Capital expenditure
 - (a) Expansion
 - (b) Technology up-gradation
2. Project implementation/select milestones
3. Research and development (R&D)
 - (a) New designs/patents
 - (b) New products/process/patents
 - (c) Cost reduction/patents
 - (d) Energy conservation/patents
4. Strategic planning
 - (a) Capacity utilization/occupancy rate
 - (b) Forward contract with buyers and sellers/vendors
 - (c) Vertical integration with suppliers/JVs/mergers and acquisition
 - (d) Advertising
 - (e) Customer satisfaction
 - (f) Globalization/exports
 - (g) Diversification
5. Human resource development (HRD)
 - (a) Recruitment and training
 - (b) Safety
 - (c) Career management
 - (d) Employee satisfaction
6. Environmental conservation
 - (a) Pollution control/CDM
 - (b) Afforestation
7. Corporate social responsibility

While the above mentioned principal components recommended were to be the same for all central PSEs, the individual items/suggested as criteria for performance evaluation under each of these principal components were indicated to be different for different central PSEs classified as (a) social sector, (b) financial sector, (c) trading and consulting sector, and (d) other than financial trading/consulting and social sector (overview of these is described in Annexure 7A.1). Besides, the new approach allowed discretion to the Task Force to change the weights of the different criteria included under dynamic and enterprise-specific and sector-specific parameters depending on their perception of the PSEs under consideration. The recommendations of the NCAER were subsequently accepted

by the government and the new methodology for setting up performance targets came into force with effect from the financial year 2004–2005.

As per DPE's guidelines issued for drafting MoUs to be signed between central PSEs and administrative ministries for the year 2010–2011, corporate social responsibility (CSR), R&D, and sustainable development were included in non-financial parameters with a mandatory 5 % weightage each. The choice of individual non-financial parameters constituting 50 % of weightage is left to the combined wisdom of the PSE, administrative ministry, and the Task Force. All parameters are required to be SMART (i.e., specific, measurable, attainable, result oriented, and tangible) and objectively verifiable. Whereas, with effect from 2011–2012, the non-financial targets would assess the performance of the PSE under corporate social responsibility, R&D, sustainable development, human resource management, and corporate governance, for which at least 5 % marks each are earmarked. To the extent possible, the targets for non-financial parameters should be independently verifiable, and PSE should also specify the agency and means of their verification.

7.2.3.1 Research and Development

In the MoU guidelines for 2010–2011, research and development (R&D) has been included as a compulsory element under the non-financial parameters with a mandatory weightage of 5 %. The basic rationale behind R&D activities is the changed business environment, highly competitive markets, the rapid pace of change in technology, stringent quality control criteria, heightened expectations and demands of customers, lack of transfer of technology, know-how from competitors, etc. R&D activities by PSEs result in substantial increase in market share and demonstrable increase in competitiveness. It leads to greater increase in profitability for manufacturing firms and a greater reduction in costs for service firms. R&D activities can help strengthen country's (India's) technological strength and ensure growth and creation of jobs in the country and also allow PSEs to address the new challenges and opportunities.

7.2.3.2 Sustainable Development

Another important feature added in the MoU guidelines for 2010–2011 is sustainable development, included as a compulsory element under the non-financial parameters with a mandatory weightage of 5 %. It meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development involves an enduring, balanced approach to economic activity, social progress, and environmental responsibility. While conservation of environmental resource is necessary to secure livelihoods and well-being of all, the most secure basis for conservation is to ensure that people dependent on particular resources obtain better livelihood from the fact of conservation than from degradation of the resource.

7.2.3.3 Compliance of Corporate Governance

Corporate governance involves a set of relationships between a company's management, its board, its shareholders, and other stakeholders, and it provides a principled process and structure through which the objectives of the company, the means of attaining the objectives, and systems of monitoring performance are also set. Corporate governance involves issues like grant of autonomy to PSEs matched with accountability. It is about commitment to values, ethical business conduct, and transparency and makes a distinction between personal and corporate funds in the management of a company. In the guidelines for MoU issued in 2011–2012, compliance of corporate governance will be a compulsory element under the non-financial parameters with a mandatory weightage of 5 %.

7.2.3.4 Human Resource Management

A PSE must adopt best HR practices on better manpower planning, strengthening skill development, entrepreneurial culture, training, institutionalization of system of tracking and reward innovation, voluntary retirement scheme, etc. In 2011–2012 guidelines, human resource management will be a compulsory element under the “non-financial parameters” with a mandatory weightage of 5 %.

7.2.4 Basic Targets

Basic target will be placed in “good” column in respect to PSEs which are in growth phase and are operating below 100 % capacity utilization. For PSEs which are performing near or above 100 % capacity utilization and are fully operative, the basic target will be placed in “very good” column. No provisional or conditional target fixation is permissible. Hence, all performance targets are unconditional.

7.2.5 Awards Under the MoU System

Performance evaluation under the MoU system is followed by “performance incentive.” The incentive system assumes two forms, namely, monetary and non-monetary. MoU scores have implications for monetary incentive as performance-related payments are based on them. The non-monetary incentive is in the form of MoU excellence award and MoU excellence certificate.

7.2.5.1 Old System of Excellence Awards (Up to 2005–2006)

Under the old system, the top 10 excellent performing central PSEs were awarded with “MoU excellence certificates and trophy,” and other excellent performing PSEs were awarded with “merit certificates.” The top 10 central PSEs were

ranked on the basis of their MoU composite score, irrespective of which sector/syndicate they belonged to.

7.2.5.2 System of Excellence Awards (After 2005–2006)

The High Power Committee (HPC) on MoU during its meeting held on 15 December 2006 decided to constitute a committee under the Chairmanship of Shri N. K. Sinha to review the then system of MoU excellence awards to central PSEs. The HPC considered the Sinha Committee report in July, 2007 and decided that the total number of excellence awards will be 12, that is, one from each of 10 syndicates, one from the listed central PSEs, and one from among the turnaround sick and loss-making enterprises. All other excellent performing central PSEs will get merit certificates. The three basic principles for selection of central PSEs for MoU excellence awards as laid down by HPC in its meeting dated 10 March 1995 will continue. Compliance of corporate governance should also be included as one of the criteria for consideration of the awards in all the three categories from 2007 to 2008 onwards.

7.2.5.3 New Incentives System Under MoU (from 2008 to 2009)

The incentives under the present system take two forms, namely, “monetary” and “non-monetary” incentives. As per the Jagannath Rao Committee’s (Second Pay Revision Committee) recommendations (for the executives of central PSEs) in Nov. 2008, the variable performance-related pay (PRP) would be payable in the case of profit-making central PSEs (PSEs) at 100 % eligibility levels, if the PSE achieves the MoU rating as “excellent.” If the PSE’s MoU is rated as “very good,” the eligibility of PRP would be 80 % of the basic pay. In respect to “good” and “fair” ratings, the eligibility levels would be 60 % and 40 %, respectively. However, there will be no PRP irrespective of the profitability of PSE, in case it is rated as “poor.” Moreover, 60 % of the PRP will be given with the ceiling of 3 % of profit before tax (PBT), and 40 % of the PRP will come from 10 % of incremental profit. Further, the PRP has been linked to the performance of the individual executives, which will be based on a robust and transparent performance management system (Public Enterprises Survey 2008–2009). The signing of MoU by the central PSEs with their parent ministries/departments/holding companies has been made mandatory for making them eligible for PRP variable pay; the MoU rating also forms the basis of PRP with all key results identified in MoU (as per report on MoU Model 2010).

7.2.6 Achievements of the MoU System

The major achievements of the MoU system may be summarized as follows:

- Since the focus under the MoU system has shifted to achievements of results, ministries have begun to withdraw from their tendency to control by procedures. MoU has thus increased the operational autonomy of the enterprises.

- Operational autonomy has also been increased by delegating more financial and administrative powers to the MoU signing PSEs.
- By laying stress on marketing effort and comparing with private sector enterprises, MoUs are helping PSEs to face competition.
- The quarterly performance review (QPR) meetings have become more focused, since the introduction of MoUs. Discussion is confined to overall achievement as outlined in the MoUs. This has led to higher quality of debate about PSE's performance.
- By making a distinction between enterprise performance and managerial performance, MoUs have improved the quality of debate and made the judgments on PSE's managements much fairer. This has been very good for the morale of the employees who know that gross generalization about public sector is unfair.

7.3 Methodology, Data Source, and Scope of the Study

This section aims at assessing whether or not the non-financial central PSEs in India which have signed MoU (referred henceforth MoU PSEs) have better financial performance compared to PSEs which have not signed MoU (referred to as non-MoU PSEs). The benchmark year is 1994–1995 (a year in which 100 PSEs signed MoUs). On the basis of cutoff year 1994–1995, the sample consists of 66 MoU PSEs (having MoU in all subsequent years till 2010–2011, the last year of the present study; it excludes the enterprises which have not signed MoU in the later year/years) and 90 non-MoU PSEs.

The time span of the study is 17 years (1994–1995 to 2010–2011); it has been divided into three phases. The first phase (covering the time span from 1994–1995 to 1999–2000) is referred to as initial phase of the PSEs signed MoU/MoU initial phase. To improve the level on corporate governance in India, SEBI has accepted the recommendations of the corporate governance committee in January 2000 (details are available in Chap. 4). Therefore, the second phase time span starts from 2000 to 2001 and closes at pre-recession year 2007–2008. The last/third phase (2008–2009 to 2010–2011) is the post-recession phase.

Further, the financial performance of MoU PSEs has been assessed in view of National Council of Applied Economic Research (NCAER) recommendations also. For this purpose, the second phase (2000–2001 to 2007–2008) of MoU has been segregated into two sub-phases; the first sub-phase consists of 2001–2002 to 2003–2004, referred to as pre-NCAER recommendation phase 2, and the second sub-phase covers 2004–2005 to 2007–2008, referred to as post-NCAER recommendation phase 2. The rationale for splitting the second phase stems from the recommendations of NCAER in 2003; the Council had proposed new criteria for performance evaluation and weight allocation which came into force in the year 2004–2005.

The ratio analysis, being an effective technique to assess the financial performance, has been used in the study. For this purpose, 18 ratios pertaining to profitability, efficiency, liquidity, solvency, and productivity of capital have been computed. To lend credence to the findings, paired *t*-test and independent *t*-test have been conducted.

7.4 MoU and Non-MoU Central PSEs in India

The objective of this section is to compare the financial performance of MoU PSEs with non-MoU PSEs during the post-MoU phases. It is hypothesized that MoU PSEs would have posted better financial performance vis-à-vis non-MoU PSEs. The primary reason is the managers of MoU PSEs would have their best efforts to meet the targets laid down in MoU as their own evaluation is based on achieving the parameters contained in MoU. The financial analysis is based on the five major groups of ratios, namely, profitability, efficiency, leverage, liquidity and productivity.

7.4.1 Profitability Ratios

Mean profitability, measured in terms of rate of return on investment (RONW, ROCE and ROTA) and return on sales (OPM and NPM), has shown an improvement in the MoU PSEs during post-MoU phases 2 and 3 vis-à-vis phase 1 (Table 7.1); the increase is significant as per paired *t*-test in the parameters of RONW and NPM. Positional values (depicted in Table 7.2) also corroborate the better performance in three-fourth of the sample enterprises (as per median and upper quartile). However, the profitability of the lower quartile MoU PSEs has shown a decrease (in respect to ROTA, ROCE and OPM) during phase 3 vis-à-vis phase 2.

Similarly, a marginal decrease in all the parameters of profitability (insignificant statistically) has been recorded during the referred time period (save ROCE). In fact, recession has caused no major impact on the profitability of MoU PSEs. Figures 7.1 and 7.2, respectively, portray key RORs and profit margins of MoU PSEs during the period of the study.

In contrast, the profitability record of non-MoU PSEs has been unsatisfactory in respect to all ratios (save RONW; it may be noted that the companies with negative net worth are excluded from the analysis) during the period of the study in that, there have been losses (reflected in negative ROR and margins). As per trend, the solace is that there have been positive operating profits as well as positive ROCE and RONW in phases 2 and 3 compared to phase 1. In respect to ROTA, the negative return has declined to 1.5 % in 2010–2011; it had declined to 2.06 % in the second phase and became positive in phase 3 compared to the negative 5.18 % in phase 1. A sharp decrease is notable in negative NPM also during the referred phases (Table 7.3 and Figs. 7.3 and 7.4). However, statistically the difference is not significant in any of the profitability ratios (except RONW and ROTA in phases 1 and 2 and in ROCE and ROTA in phases 1 and 3) between the phases as per paired *t*-test. Similar conclusions about “poor” financial performance follow based on positional values of median and lower quartile (Table 7.4).

As far as the impact of recession is concerned, the findings are revealing in nature. Contrary to the expected decrease in profitability parameters, there has been a notable improvement in all these parameters of non-MoU PSEs. In fact, it was statistically significant in RONW and ROTA.

Table 7.1 Mean values of key profitability ratios of the MoU PSEs, 1994–1995 to 2010–2011 (Figures are in percentages)

Years	RONW		ROCE		ROTA		OPM		NPM	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1994–1995	8.16	61	7.86	63	7.69	66	14.00	64	4.96	65
1995–1996	10.64	59	8.29	62	8.82	66	16.90	65	6.51	65
1996–1997	8.26	62	7.40	64	9.65	65	18.05	62	8.02	65
1997–1998	8.72	62	7.81	66	9.30	66	16.54	62	8.08	65
1998–1999	8.72	61	5.01	66	7.75	66	14.09	65	5.94	65
1999–2000	8.13	61	1.79	66	6.74	66	11.34	64	3.99	65
2000–2001	8.72	61	4.11	65	8.01	66	14.02	61	7.42	64
2001–2002	8.93	58	4.19	64	8.10	65	13.17	61	5.48	63
2002–2003	11.00	60	4.26	64	7.67	66	11.73	62	6.69	63
2003–2004	16.96	60	8.20	64	9.57	66	14.56	60	10.27	64
2004–2005	16.51	60	13.59	61	10.71	65	19.01	61	12.65	63
2005–2006	17.91	62	10.48	62	10.31	65	20.77	63	13.49	64
2006–2007	18.75	62	8.50	62	11.25	63	16.56	59	13.14	62
2007–2008	16.51	60	11.35	60	11.02	64	16.50	56	12.25	61
2008–2009	14.16	62	6.70	60	8.27	63	12.67	61	8.27	63
2009–2010	12.48	61	8.32	62	8.39	65	13.13	62	9.37	63
2010–2011	11.64	62	9.83	62	9.01	65	14.64	61	10.52	64
Mean 1994–1995 to 1999–2000 (post-MoU phase 1)	8.28	63	6.29	66	8.31	66	15.28	65	6.25	65
Mean 2000–2001 to 2007–2008 (post-MoU phase 2)	14.49	62	7.90	65	9.56	66	16.45	64	10.12	64
Mean 2008–2009 to 2010–2011 (post-MoU phase 3)	12.73	63	8.25	62	8.91	65	13.87	62	9.50	64
Aggregate mean (1994–1995 to 2010–2011)	12.13		7.51		8.96		15.16		8.65	

Notes:

1. PSEs having negative net worth have been excluded, and RONW has been based on net profit
2. *OPM* and *NPM* stand for operating profit margin and net-profit margin on sales
3. *ROTA* is based on earnings before interest and taxes (EBIT)
4. *ROCE* is based on operating profit which excludes nonoperating incomes (or other incomes) from EBIT
5. *ROTA* return on total assets, *ROCE* return on capital employed, *RONW* return on net worth, *OPM* operating profit margin, *NPM* net-profit margin
6. *RONW* plus/minus 75 %, *ROCE* plus/minus 75 %, *ROTA* plus/minus 60 %, *OPM* plus/minus 75 %, *NPM* plus/minus 60 %, have been excluded

These points are also applicable for other tables mentioned in this chapter

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.
RONW	58	0.00**	61	0.21	59	0.01**
ROCE	64	0.41	61	0.79	61	0.73
ROTA	65	0.18	64	0.36	64	0.59
OPM	63	0.53	60	0.31	61	0.38
NPM	63	0.01**	62	1.00	63	0.06

** Signifies to significant difference at 1 % level

Table 7.2 Median, quartile-1 (Q1), and quartile-3 (Q3) values of key profitability ratios of the MoU PSEs, 1994–1995 to 2010–2011 (Figures are in percentages)

Ratios	Median			Q1			Q3		
	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3
RONW	9.73	13.73	12.16	1.81	3.64	4.22	19.15	26.29	21.30
ROCE	7.61	8.00	8.28	-3.83	-12.76	-2.54	18.97	24.39	22.17
ROTA	7.61	8.20	7.68	2.45	1.31	2.19	13.56	17.88	13.30
OPM	10.62	10.31	9.51	4.35	1.29	2.53	27.94	30.42	23.44
NPM	4.36	6.67	6.36	0.37	0.36	1.15	16.78	22.95	18.88

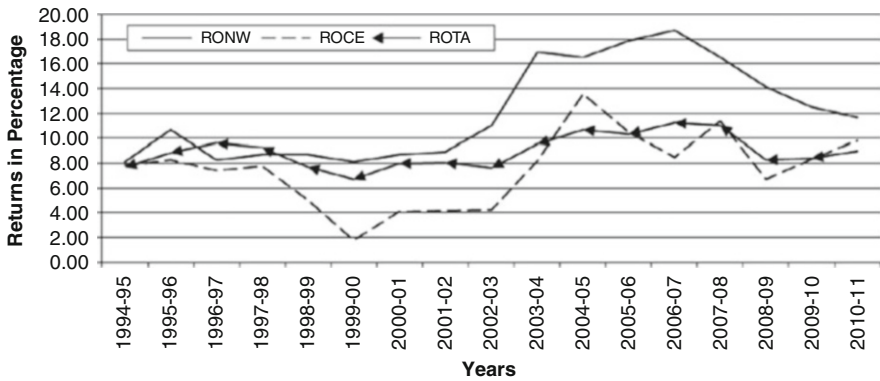


Fig. 7.1 Mean values of profitability ratios (RONW, ROCE and ROTA) of the MoU PSEs for the period 1994–1995 to 2010–2011

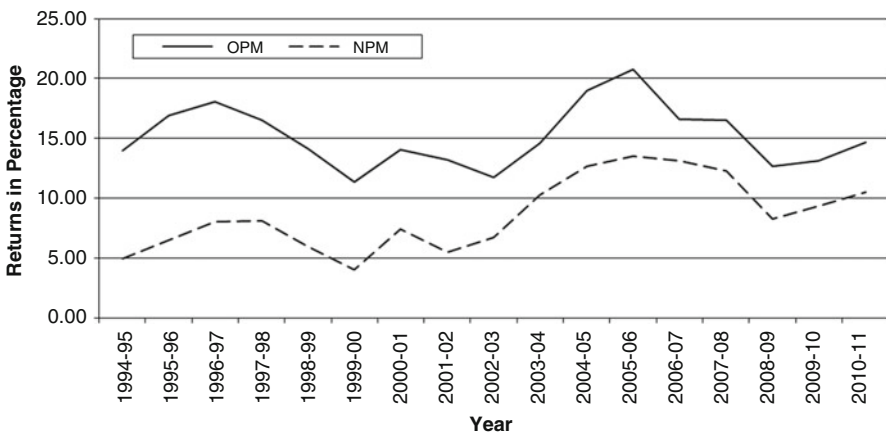


Fig. 7.2 Mean values of the profitability ratios (OPM and NPM) of the MoU PSEs for the period 1994–1995 to 2010–2011

Table 7.3 Mean values of key profitability ratios of the non-MoU PSEs, 1994–1995 to 2010–2011 (Figures are in percentages)

Years	RONW		ROCE		ROTA		OPM		NPM	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
1994–1995	1.20	26	2.81	38	-4.67	73	1.63	50	-7.78	50
1995–1996	5.84	24	1.24	38	-3.62	73	4.36	51	-5.48	52
1996–1997	6.96	25	1.71	43	-2.70	64	4.98	46	-7.09	52
1997–1998	8.40	27	-1.14	48	-3.49	68	2.28	50	-9.70	56
1998–1999	8.45	28	-4.84	48	-5.62	68	-1.23	50	-11.27	52
1999–2000	2.57	27	-8.38	42	-6.84	68	-3.57	46	-11.61	51
2000–2001	4.17	23	-3.89	41	-6.13	66	-1.32	46	-8.40	48
2001–2002	10.33	23	-5.26	41	-6.16	67	-0.85	51	-7.81	43
2002–2003	14.55	23	-4.97	40	-1.62	65	0.64	53	-8.71	44
2003–2004	16.88	27	1.60	36	1.64	67	0.58	48	-4.65	43
2004–2005	19.56	28	8.27	41	1.30	68	3.54	53	1.33	37
2005–2006	18.26	28	8.05	43	1.93	67	7.91	50	3.01	40
2006–2007	17.29	26	8.08	38	1.86	54	7.84	45	3.07	40
2007–2008	16.76	24	4.80	38	3.14	62	7.76	49	2.01	43
2008–2009	15.46	26	9.58	39	3.33	52	7.78	46	0.04	39
2009–2010	14.73	27	6.22	39	2.94	56	7.48	47	-0.62	40
2010–2011	14.04	27	7.62	36	-1.49	52	3.54	46	-6.21	40
Mean 1994–1995 to 1999–2000 (post-MoU phase 1)	5.41	29	-3.78	49	-5.18	75	0.98	54	-10.64	57
Mean 2000–2001 to 2007–2008 (post-MoU phase 2)	13.60	31	1.08	46	-2.06	72	1.78	58	-4.61	54
Mean 2008–2009 to 2010–2011 (post-MoU phase 3)	15.27	27	7.20	39	2.57	53	6.57	48	-0.49	42
Aggregate mean (1994–1995 to 2010–2011)	11.50		1.85		-1.54		3.14		-4.70	

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.
RONW	18	0.25	24	0.03*	17	0.43
ROCE	40	0.63	34	0.41	31	0.01**
ROTA	64	0.91	59	0.00**	52	0.01**
OPM	48	0.33	45	0.18	41	0.99
NPM	43	0.88	40	0.29	37	0.79

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

Table 7.4 Median, lower (Q1), and upper quartile (Q3) values of key profitability ratios of the non-MoU PSEs, 1994–1995 to 2010–2011 (Figures are in percentages)

Ratios	Median			Q1			Q3		
	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3
RONW	3.47	14.06	14.79	-9.84	0.51	1.89	25.45	32.03	31.01
ROCE	0.62	2.21	7.66	-29.22	-23.82	-8.80	14.60	26.04	25.51
ROTA	-2.97	0.10	5.24	-22.35	-21.42	-7.46	10.27	13.57	16.00
OPM	3.42	2.61	6.75	-18.59	-24.94	-8.20	16.03	20.11	19.84
NPM	-3.52	0.80	3.72	-39.95	-27.45	-9.43	4.37	11.82	12.00

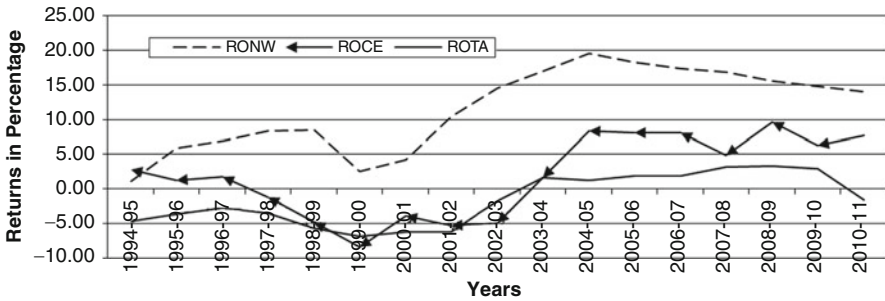


Fig. 7.3 Mean values of profitability ratios (RONW, ROCE and ROTA) of the non-MoU PSEs for the period 1994–1995 to 2010–2011

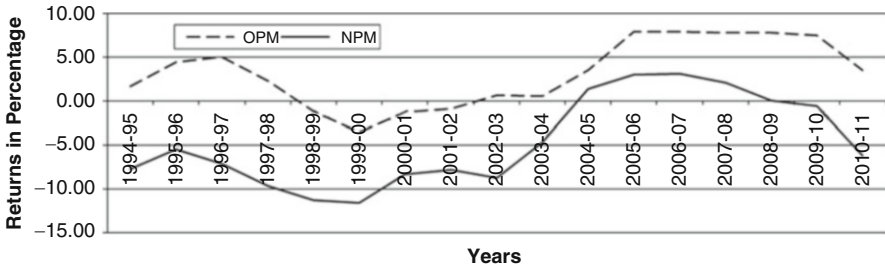


Fig. 7.4 Mean values of the profitability ratios (OPM and NPM) of the non-MoU PSEs for the period 1994–1995 to 2010–2011

Independent *t*-test has been tabulated in Table 7.5 to measure the difference between the mean values of profitability in MoU PSEs (Table 7.1) and non-MoU PSEs (Table 7.3); significant difference has been noted between the profitability (except RONW in all the phases as well as ROCE and OPM in phase 3) of both types of enterprises during phases 1, 2 and 3. MoU PSEs depict better profitability and marked improvement (group statistics) compared to non-MoU PSEs, supporting the hypothesis of better performance of MoU PSEs.

Table 7.5 Independent sample *t*-test of key profitability ratios between the sample MoU and non-MoU PSEs, 1994–1995 to 2010–2011 (group statistics)

Ratios	Coding	Mean		Mean		Mean	
		<i>N</i>	Phase 1	<i>N</i>	Phase 2	<i>N</i>	Phase 3
RONW	MoU	63	8.28	62	14.49	63	12.73
	Non-MoU	29	5.41	31	13.60	27	15.27
ROCE	MoU	66	6.29	65	7.90	62	8.25
	Non-MoU	49	-3.79	46	1.08	39	7.20
ROTA	MoU	66	8.31	66	9.56	65	8.91
	Non-MoU	75	-5.18	72	-2.06	53	2.57
OPM	MoU	65	15.28	64	16.45	62	13.87
	Non-MoU	54	0.98	58	1.78	48	6.57
NPM	MoU	65	6.25	64	10.12	64	9.50
	Non-MoU	57	-10.64	54	-4.61	42	-0.49

Independent samples *t*-test

Ratios	Variances	<i>t</i> -test for equality of means					
		Phase 1		Phase 2		Phase 3	
		df	Sign.	df	Sign.	df	Sign.
RONW	EV	90	0.34	91	0.76	88	0.46
	NEV	41	0.40	46	0.78	34	0.54
ROCE	EV	113	0.00**	109	0.05*	99	0.79
	NEV	81	0.00**	83	0.06	65	0.80
ROTA	EV	139	0.00**	136	0.00**	116	0.01**
	NEV	97	0.00**	125	0.00**	87	0.01**
OPM	EV	117	0.00**	120	0.00**	108	0.06
	NEV	106	0.00**	105	0.00**	90	0.07
NPM	EV	120	0.00**	116	0.00**	104	0.01**
	NEV	89	0.00**	88	0.00**	70	0.01**

Notes:

EV equal variances assumed, *NEV* equal variances not assumed

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

7.4.2 Efficiency Ratios

The efficiency ratios have been computed for MoU as well as non-MoU PSEs to ascertain whether MoU PSEs have better performance than non-MoU PSEs or not. The select efficiency ratios covered are fixed assets turnover ratio (FATR), current assets turnover ratio (CATR) and total assets turnover ratio (TATR), debtor collection period, and inventory holding period (raw-material inventory holding period (RMIHP), work-in-process inventory holding period (WPIHP), and finished-goods inventory holding period (FGIHP)).

It may be noted that improvement (statistically significant) has been observed in FATR of MoU PSEs during phases 2 and 3 as per paired *t*-test (Table 7.6). In fact, it

is gratifying to mention that the mean FATR has increased to more than four times during phases 2 and 3 compared to three and half times in phase 1. The ratio seems to be satisfactory and is indicative of a good usage of long-term assets. TATR is near to one (0.96) for the aggregate 17-year period of the study.

It is important to mention here that total assets are inclusive of investment, deferred revenue expenditures, loans and advances, and capital work in progress

Table 7.6 Mean values of key turnover ratios of the MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Years	TATR		FATR		CATR	
	Mean	N	Mean	N	Mean	N
1994–1995	0.91	66	2.97	54	1.42	66
1995–1996	0.94	66	3.30	54	1.50	66
1996–1997	0.90	66	3.52	54	1.39	66
1997–1998	0.92	65	3.34	54	1.45	65
1998–1999	0.97	66	3.32	54	1.52	66
1999–2000	0.95	65	3.47	53	1.60	66
2000–2001	1.03	66	3.29	51	1.61	66
2001–2002	0.98	66	3.68	53	1.52	66
2002–2003	1.10	66	3.51	53	1.70	66
2003–2004	1.00	66	3.71	55	1.61	66
2004–2005	0.99	66	4.05	54	1.62	66
2005–2006	1.00	66	4.22	53	1.58	66
2006–2007	1.03	65	4.14	51	1.68	66
2007–2008	0.93	65	4.32	52	1.37	65
2008–2009	0.93	64	4.86	52	1.38	64
2009–2010	0.87	64	4.39	49	1.30	64
2010–2011	0.89	64	4.22	48	1.30	64
Mean 1994–1995 to 1999–2000 (post-MoU phase 1)	0.94	66	3.42	55	1.49	66
Mean 2000–2001 to 2007–2008 (post-MoU phase 2)	1.02	66	4.04	55	1.59	66
Mean 2008–2009 to 2010–2011 (post-MoU phase 3)	0.90	64	4.73	52	1.33	64
Aggregate mean (1994–1995 to 2010–2011)	0.96		3.78		1.50	

Notes:

1. TATR total assets turnover ratio, FATR fixed assets turnover ratio, CATR current assets turnover ratio
 2. TATR 4 and above, CATR 6 and above, FATR 12 and above have been excluded
- These abbreviations and exclusion of extreme items also apply for other tables mentioned in this chapter*

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.
TATR	65	0.19	63	0.09	63	0.80
FATR	53	0.00**	51	0.00**	50	0.00**
CATR	65	0.18	63	0.00**	63	0.23

**Signifies to significant difference at 1 % level

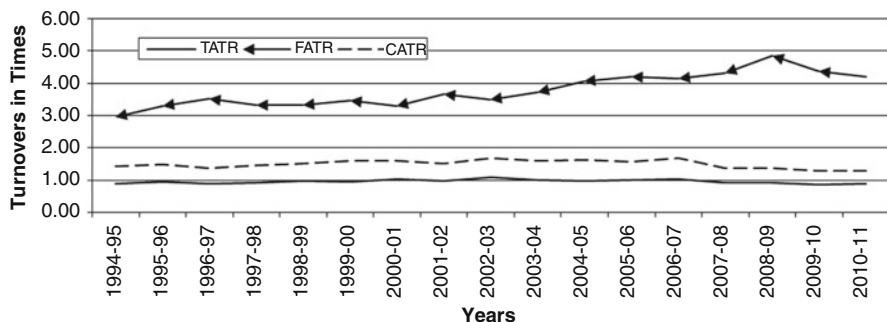


Fig. 7.5 Mean values of turnover ratios (TATR, FATR and CATR) of the MoU PSEs for the period 1994–1995 to 2010–2011

Table 7.7 Median, lower (Q1), and upper quartile (Q3) values of key turnover ratios of the MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Ratios	Median			Q1			Q3		
	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3
TATR	0.64	0.73	0.67	0.33	0.40	0.41	1.12	1.34	1.09
FATR	2.81	2.95	4.55	0.77	1.10	1.60	6.31	6.83	8.10
CATR	1.12	1.04	0.96	0.61	0.60	0.58	1.91	2.28	1.46

Table 7.8 Mean values of key turnover ratios of the non-MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Years	TATR		FATR		CATR	
	Mean	N	Mean	N	Mean	N
1994–1995	0.74	83	2.75	72	1.29	81
1995–1996	0.80	83	3.23	72	1.40	81
1996–1997	0.74	77	3.37	73	1.35	82
1997–1998	0.79	81	3.41	74	1.36	82
1998–1999	0.71	81	3.08	75	1.15	81
1999–2000	0.66	81	2.67	74	1.10	80
2000–2001	0.72	77	2.93	71	1.30	75
2001–2002	0.65	84	2.54	75	1.15	80
2002–2003	0.65	84	2.62	75	1.13	81
2003–2004	0.64	85	2.44	74	1.12	82
2004–2005	0.64	84	2.40	69	1.14	78
2005–2006	0.63	78	2.67	63	1.06	73
2006–2007	0.68	68	2.86	55	1.07	63
2007–2008	0.72	67	3.05	51	1.04	66
2008–2009	0.73	64	3.13	52	1.06	64
2009–2010	0.63	64	3.03	53	0.92	64
2010–2011	0.68	62	2.82	49	1.06	62
Mean 1994–1995 to 1999–2000 (post-MoU phase 1)	0.75	83	3.33	79	1.28	82
Mean 2000–2001 to 2007–2008 (post-MoU phase 2)	0.67	85	2.83	76	1.13	82
Mean 2008–2009 to 2010–2011 (post-MoU phase 3)	0.68	64	3.09	53	1.01	64
Aggregate mean (1994–1995 to 2010–2011)	0.70		2.88		1.16	

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.
TATR	76	0.05*	61	0.18	55	0.50
FATR	68	0.56	50	0.01**	46	0.26
CATR	74	0.01**	61	0.03*	55	0.00**

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

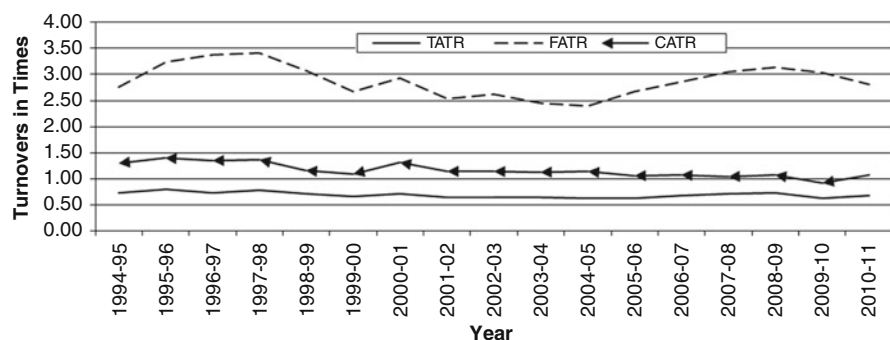


Fig. 7.6 Mean values of turnover ratios (TATR, FATR and CATR) of the non-MoU PSEs for the period 1994–1995 to 2010–2011

Table 7.9 Median, lower (Q1), and upper quartile (Q3) values of key turnover ratios of the non-MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Ratios	Median			Q1			Q3		
	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3
TATR	0.67	0.62	0.63	0.29	0.16	0.21	1.05	1.00	1.03
FATR	2.20	2.04	2.61	0.90	0.77	0.64	6.15	4.63	4.66
CATR	1.08	0.89	0.78	0.43	0.29	0.38	2.06	1.84	1.63

which have neither been included in fixed assets nor in current assets. This, perhaps, accounts for low TATR.

CATR has shown a decline from 1.59 to 1.33 times from phase 2 to 3, reflecting the excessive investment in current assets vis-à-vis sales of PSEs. Positional values (depicted in Table 7.7) have also followed the mean observations and have shown lower CATR in phases 2 and 3 compared to phase 1. CATR continues to be a matter of concern for three-fourth of PSEs.

It is a matter of concern to note that the TATR, FATR, and CATR of the non-MoU PSEs have declined by 11, 15, and 12 %, respectively, during phase

2 and by 9, 7, and 21 % in phase 3 vis-à-vis phase 1; the decrease is statistically significant in the case of CATR across the phases and in TATR during phases 1 and 2 (Table 7.8). Median and quartiles have also corroborated to the mean findings (Table 7.9); the performance of only one-fourth of the non-MoU PSEs belonging to upper quartile is by and large satisfactory. Moreover, recession has caused minor dent in respect to CATR only of non-MoU PSEs; it may be due to maintaining high cushion of cash and bank balances to face the adverse situation. In sum, it is reasonable to conclude that assets utilization efficiency of MoU PSEs is much better compared to non-MoU PSEs. Figures 7.5 and 7.6 clearly exhibit the same.

Table 7.10 Mean values of inventory holding period (IHP) and debtor collection period (DCP) of the MoU PSEs, 1994–1995 to 2010–2011 (Figures are in days)

Years	RMIHP		WIPIHP		FGIHP		DCP	
	Mean	N	Mean	N	Mean	N	Mean	N
1994–1995	226.93	47	15.44	62	23.62	66	94.59	64
1995–1996	188.95	45	14.12	62	22.01	65	89.08	62
1996–1997	216.50	48	13.73	62	20.83	65	93.81	62
1997–1998	212.87	48	17.24	64	19.41	66	88.48	61
1998–1999	221.40	48	18.51	64	18.57	66	95.92	62
1999–2000	195.06	48	12.55	63	18.01	66	85.67	62
2000–2001	193.91	50	14.16	63	18.15	66	83.99	63
2001–2002	214.63	50	12.94	63	18.59	66	89.01	64
2002–2003	198.32	49	14.24	63	16.61	66	94.42	64
2003–2004	142.52	56	13.41	63	15.28	66	85.48	64
2004–2005	135.31	57	11.68	63	14.63	66	74.89	66
2005–2006	117.06	55	13.77	63	14.66	66	67.60	66
2006–2007	96.27	52	17.27	64	13.63	66	68.94	65
2007–2008	113.89	52	16.86	63	13.44	65	68.96	62
2008–2009	117.94	51	19.50	60	15.28	62	65.29	62
2009–2010	108.86	50	19.73	60	14.72	62	67.90	63
2010–2011	117.61	47	13.99	58	14.53	60	76.81	62
Mean 1994–1995 to 1999–2000 (post-MoU phase 1)	226.80	52	17.90	64	20.44	66	95.85	64
Mean 2000–2001 to 2007–2008 (post-MoU phase 2)	148.64	57	17.67	64	15.60	66	80.77	66
Mean 2008–2009 to 2010–2011 (post-MoU phase 3)	114.49	51	19.35	60	14.83	62	69.81	63
Aggregate mean (1994–1995 to 2010–2011)	165.77		15.24		17.18		81.81	

Notes:

1. DCP: debtor collection period, RMIHP: raw-material inventory holding period, WIPIHP: work-in-progress inventory holding period, FGIHP: finished-goods inventory holding period

2. RMIHP 770 days and above, DCP 365 days and above, WIPIHP 365 and above, FGIHP 270 days and above have been excluded

These abbreviations and exclusion of extreme items also apply for other tables mentioned in this chapter

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.
RMIHP	50	0.00**	48	0.13	45	0.00**
WPIHP	62	0.39	59	0.73	58	0.92
FGIHP	65	0.01**	61	0.97	61	0.02*
DCP	63	0.01**	62	0.22	60	0.01**

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

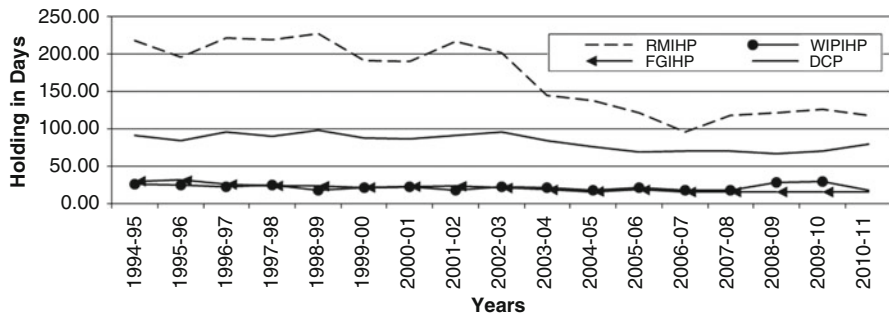


Fig. 7.7 Mean values of the inventory holding periods (RMIHP, WPIHP and FGIHP) and debtor collection period (DCP) of the MoU PSEs for the period 1994–1995 to 2010–2011

Table 7.11 Median, lower (Q1), and upper quartile (Q3) values of IHP and DCP of the MoU PSEs, 1994–1995 to 2010–2011 (Figures are in days)

Ratios	Median			Q1			Q3		
	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3
RMIHP	180.14	90.06	59.03	67.21	18.23	14.80	361.95	284.41	163.14
WPIHP	1.23	1.07	0.40	0.00	0.00	0.00	20.98	18.30	8.78
FGIHP	7.34	5.31	5.20	0.00	0.00	0.12	37.78	27.68	22.41
DCP	72.62	64.98	58.14	29.83	20.61	19.89	175.91	138.98	105.15

The preceding analysis has shown that current assets management of PSEs is not as satisfactory as fixed assets management. Therefore, it became imperative to judge the efficiency of the major sub-constituents of current assets, i.e., inventory in terms of inventory holding period (RMIHP, WPIHP and FGIHP) and debtors in terms of debtor collection period (DCP) for both types of PSEs. It is a matter of satisfaction that there is a substantial amount of reduction in the inventory holding period (IHP) and debtor collection period across the phases in both types of PSEs (Tables 7.10 and 7.12 as well as Figs. 7.7 and 7.8); it pronounces higher/better efficiency of

production department as well as of debt collection department . Except WIPIHP (in the case of MoU PSEs) and DCP (for non-MoU PSEs), the difference is significant in phases 1 and 2 for both types of PSEs and in phases 1 and 3 for MoU PSEs as per paired *t*-test. Notwithstanding, the improvement noted in respect to RMIHP, the RMIHP of more than 4½ months (138 days) in non-MoU PSEs and less than

Table 7.12 Mean values of inventory holding period (IHP) and debtor collection period (DCP) of the Non-MoU PSEs, 1994–1995 to 2010–2011 (Figures are in days)

Years	RMIHP		WIPIHP		FGIHP		DCP	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1994–1995	129.78	62	26.93	83	31.77	82	104.13	77
1995–1996	131.74	63	25.52	83	24.59	82	98.11	75
1996–1997	165.89	70	23.11	82	20.49	81	97.33	76
1997–1998	178.39	70	18.47	83	22.29	82	106.12	79
1998–1999	187.72	69	21.53	84	18.69	83	107.92	78
1999–2000	177.55	67	17.43	83	16.36	84	115.02	77
2000–2001	160.80	63	16.72	80	18.56	78	104.47	69
2001–2002	152.21	63	19.88	83	17.58	83	104.80	73
2002–2003	150.28	66	15.05	82	15.29	83	96.13	73
2003–2004	137.81	65	16.56	81	17.89	81	90.70	72
2004–2005	123.10	64	14.36	77	17.41	76	78.31	67
2005–2006	130.72	58	15.23	75	19.32	69	80.45	64
2006–2007	120.69	53	13.73	66	15.70	67	88.63	55
2007–2008	133.54	49	13.85	62	13.93	62	87.99	57
2008–2009	141.13	38	14.47	58	12.24	62	86.61	54
2009–2010	145.84	38	16.02	57	13.06	61	100.04	55
2010–2011	122.16	34	14.53	53	11.92	56	81.59	52
Mean 1994–1995 to 1999–2000 (post-MoU phase 1)	173.25	73	22.21	84	21.76	85	108.23	80
Mean 2000–2001 to 2007–2008 (post-MoU phase 2)	151.61	73	15.56	83	16.89	83	94.83	77
Mean 2008–2009 to 2010–2011 (post-MoU phase 3)	137.59	38	15.04	58	12.82	62	93.61	55
Aggregate mean (1994–1995 to 2010–2011)	146.43		17.85		18.06		95.79	

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.
RMIHP	59	0.01**	36	0.98	34	0.06
WIPIHP	53	0.02*	40	0.52	35	0.11
FGIHP	61	0.00**	47	0.82	42	0.06
DCP	67	0.34	54	0.58	47	0.75

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

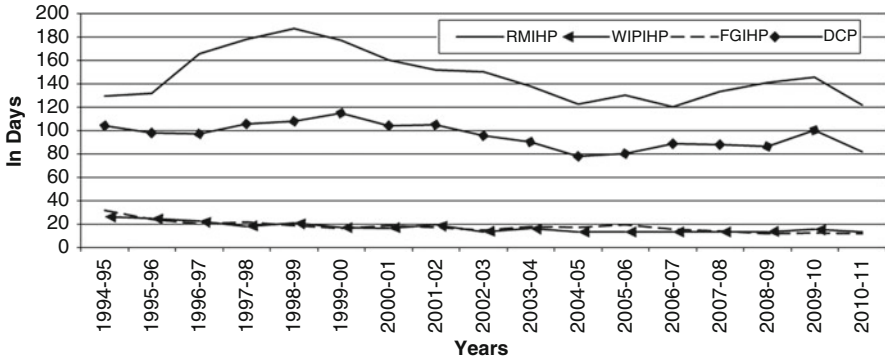


Fig. 7.8 Mean values of the inventory holding periods (RMIHP, WIPIHP and FGIHP) and debtor collection period (DCP) of the non-MoU PSEs for the period 1994–1995 to 2010–2011

Table 7.13 Median, lower (Q1), and upper quartile (Q3) values of IHP and DCP of the non-MoU PSEs, 1994–1995 to 2010–2011 (Figures are in days)

Ratios	Median			Q1			Q3		
	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3
RMIHP	123.77	94.57	86.49	66.68	44.51	39.74	292.00	283.65	203.18
WIPIHP	4.68	2.09	0.44	0.04	0.00	0.00	35.12	22.93	20.13
FGIHP	14.31	6.53	2.52	0.28	0.02	0.00	34.97	30.08	19.48
DCP	94.63	67.47	81.26	33.93	22.08	20.76	180.18	151.30	148.21

4 months (114 days) for MoU PSEs during phase 3, appears to be on higher side. Between the two, MoU PSEs pronounce better efficiency than its counterpart, i.e., non-MoU PSEs. In addition to this, no effect of recession has been observed in the IHP and DCP of both types of PSEs; on the contrary, improvement has been observed.

Figures 7.7 and 7.8 have more explicitly portrayed the trend of these PSEs. Positional values depicted in Tables 7.11 and 7.13 also support these observations. Prima facie, both types of enterprises have a tendency to hold the stock of raw material for the longer time period; it causes higher amount of interest cost, maintenance cost, etc., entailing a dent on their profitability.

Independent *t*-test has been conducted (Table 7.14) between the mean efficiency ratios of MoU PSEs (Tables 7.6 and 7.10) and of non-MoU PSEs (Tables 7.8 and 7.12) during the post-MoU phases 1, 2, and 3; no significant difference in the efficiency parameters has been observed during phase 1 between both types of sample PSEs (save RMIHP). Group statistics (on mean values) indicates higher operational efficiency in almost all the parameters of MoU PSEs compared to non-MoU PSEs, whereas the quantum of reduction in the IHP of MoU PSEs is higher compared to its counterpart over almost all the phases. It is a matter of concern that the RMIHP is higher than warranted and needs significant reduction.

Table 7.14 Independent sample *t*-test of the key efficiency ratios between the sample MoU and non-MoU PSEs, 1994–1995 to 2010–2011 (group statistics)

Ratios	Coding	Mean					
		<i>N</i>	Phase 1	<i>N</i>	Phase 2	<i>N</i>	Phase 3
TATR	MoU	66	0.94	66	1.02	64	0.90
	Non-MoU	83	0.75	85	0.67	64	0.68
FATR	MoU	55	3.42	55	4.04	52	4.73
	Non-MoU	79	3.33	76	2.83	53	3.09
CATR	MoU	66	1.49	66	1.59	64	1.33
	Non-MoU	82	1.28	82	1.13	64	1.01
DCP	MoU	64	95.85	66	80.77	63	69.81
	Non-MoU	80	108.23	77	94.83	55	93.61
RMIHP	MoU	52	226.80	57	148.64	51	114.49
	Non-MoU	73	173.25	73	151.61	38	137.59
WIPIHP	MoU	64	17.90	64	17.67	60	19.35
	Non-MoU	84	22.22	83	15.56	58	15.04
FGIHP	MoU	66	20.44	66	15.60	62	14.83
	Non-MoU	85	21.76	83	16.88	62	12.82

Independent samples *t*-test

Ratios	Variances	<i>t</i> -test for equality of means					
		Phase 1		Phase 2		Phase 3	
		df	Sign.	df	Sign.	df	Sign.
TATR	EV	147	0.09	149	0.01**	126	0.07
	NEV	97	0.11	108	0.01**	102	0.07
FATR	EV	132	0.84	129	0.01**	103	0.01**
	NEV	113	0.84	102	0.01**	98	0.01**
CATR	EV	146	0.25	146	0.01**	126	0.11
	NEV	112	0.27	107	0.02*	112	0.11
DCP	EV	142	0.30	141	0.20	116	0.06
	NEV	132	0.30	141	0.20	101	0.06
RMIHP	EV	123	0.04*	128	0.89	87	0.42
	NEV	87	0.05*	117	0.89	75	0.43
WIPIHP	EV	146	0.53	145	0.72	116	0.58
	NEV	145	0.52	98	0.74	96	0.58
FGIHP	EV	149	0.73	147	0.75	122	0.64
	NEV	136	0.73	136	0.75	107	0.64

Notes:

EV: equal variances assumed, *NEV*: equal variances not assumed

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

7.4.3 Leverage and Liquidity Ratios

It is a known fact that inadequate working capital entails the risk of disrupting the production/sales operations, and at the same time excessive working capital is not equally desirable in view of its adverse impact on profitability. Similarly, excessive use of debt may endanger the survival of the firms, and a conservative policy deprives the equity owners of its advantages in terms of magnifying the rate of return. Being significant, the impact of MoU on the financing decision practices and management of liquidity has also been examined for both types of PSEs.

Table 7.15 Mean values of key leverage and liquidity ratios of the MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Years	Leverage ratios		Liquidity ratios			
	TD/TE		CR		ATR	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1994–1995	1.69	56	1.96	53	1.47	396
1995–1996	1.71	57	2.07	66	1.47	398
1996–1997	1.67	57	2.22	64	1.58	374
1997–1998	1.71	58	2.28	65	1.69	389
1998–1999	1.49	55	2.11	65	1.56	389
1999–2000	1.65	55	2.06	65	1.54	388
2000–2001	1.70	53	2.12	65	1.66	377
2001–2002	1.82	54	2.08	66	1.59	368
2002–2003	1.39	51	2.05	65	1.63	345
2003–2004	1.27	50	1.91	65	1.56	340
2004–2005	1.52	52	2.00	65	1.55	328
2005–2006	1.52	56	2.01	65	1.65	325
2006–2007	1.61	57	2.00	63	1.62	323
2007–2008	1.57	54	2.02	62	1.63	402
2008–2009	1.70	54	1.93	62	1.44	397
2009–2010	1.75	57	1.96	61	1.21	329
2010–2011	1.78	56	1.86	59	1.47	328
Mean 1994–1995 to 1999–2000 (post-MoU phase 1)	1.73	58	2.11	66	1.58	400
Mean 2000–2001 to 2007–2008 (post-MoU phase 2)	1.67	57	2.07	66	1.66	396
Mean 2008–2009 to 2010–2011 (post-MoU phase 3)	1.81	57	1.99	62	1.46	329
Aggregate mean (1994–1995 to 2010–2011)	1.62		2.04		1.55	

Notes:

1. CR: current ratio, ATR: acid test ratio, TD/TE: total debt/total equity

2. CR consisting value 6 and above, ATR 4 and above, TD/TE 7 and above have been excluded
These abbreviations and exclusion of extreme items also apply for other tables mentioned in this chapter

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.
TD/TE	54	0.76	54	0.11	52	0.68
CR	65	0.81	60	0.34	60	0.41
ATR	65	0.31	58	0.14	58	0.35

Table 7.16 Median, lower (Q1), and upper quartile (Q3) values of key leverage and liquidity ratios of the MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Ratios	Median			Q1			Q3		
	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3
TD/TE	1.27	1.05	1.16	0.65	0.44	0.46	2.67	2.67	2.91
CR	2.00	1.63	1.55	1.22	1.12	1.21	2.88	3.09	2.36
ATR	1.41	1.29	1.28	0.75	0.92	0.91	2.28	2.78	1.95

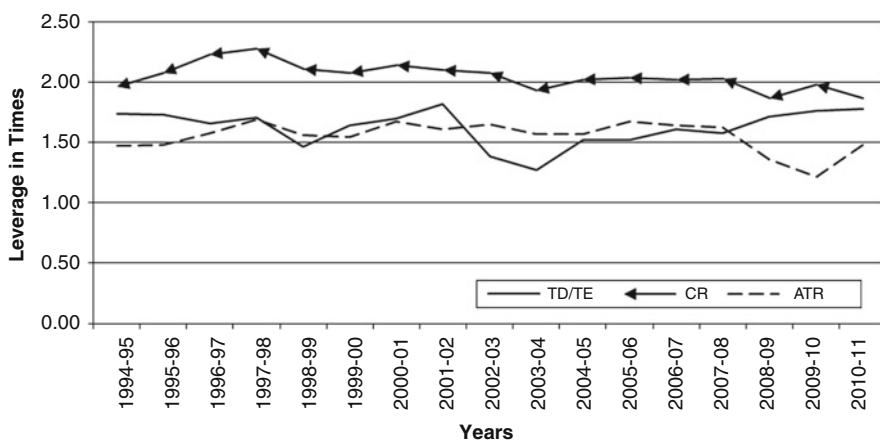


Fig. 7.9 Mean values of leverage ratios (TD/TE) and liquidity ratios (CR and ATR) of the MoU PSEs for the period 1994–1995 to 2010–2011

It is apparent from the data presented in Table 7.17 that the liquidity requirement of non-MoU PSEs (measured in terms of CR) is unsatisfactory, virtually during the entire period of the study (the ratios being about 50 % compared to desired/conventional principle of 2:1 for CR and less than 1:1 for ATR). There has been an improvement (insignificant statistically) in liquidity position in phases 2 and 3 compared to phase 1. In contrast, a satisfactory level of liquidity has been maintained by the MoU PSEs across the phases (Table 7.15). In fact, it is in excess than the required norms/level (Figs. 7.9 and 7.10). The level of liquidity in nearly three-fourth of the non-MoU

PSEs (reflected in median and lower quartile) and one-fourth of the MoU PSEs (lower quartile) has indicated unsatisfactory performance (Tables 7.16 and 7.18).

Independent *t*-test has also observed significant difference in the liquidity position (measured in terms of CR and ATR) in both types of MoU PSEs and non-MoU PSEs over all the phases (Table 7.19). In brief, the liquidity position of the MoU PSEs is more sound vis-à-vis non-MoU PSEs. Further, it is satisfying to note that recession has caused no effect on the liquidity position of both types of PSEs.

Table 7.17 Mean values of key leverage and liquidity ratios of the non-MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Years	Leverage ratios		Liquidity ratios			
	TD/TE		CR		ATR	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1994–1995	2.24	21	1.00	74	0.70	82
1995–1996	1.95	20	1.02	83	0.74	83
1996–1997	1.85	25	1.26	83	0.87	78
1997–1998	1.74	25	1.19	83	0.84	83
1998–1999	1.74	25	1.17	82	0.87	82
1999–2000	1.60	22	1.05	83	0.78	83
2000–2001	1.57	16	1.12	75	0.83	73
2001–2002	1.76	19	1.11	81	0.84	80
2002–2003	1.73	19	1.17	81	0.91	80
2003–2004	1.60	24	1.12	80	0.86	78
2004–2005	1.38	25	1.09	80	0.83	77
2005–2006	1.45	24	1.13	75	0.95	68
2006–2007	1.61	23	1.34	66	1.05	64
2007–2008	1.99	24	1.34	65	1.14	65
2008–2009	1.97	26	1.27	60	0.99	60
2009–2010	1.98	26	1.25	62	0.95	61
2010–2011	1.67	25	1.18	61	0.91	60
Mean 1994–1995 to 1999–2000 (post-MoU phase 1)	1.94	26	1.13	84	0.80	84
Mean 2000–2001 to 2007–2008 (post-MoU phase 2)	1.69	27	1.16	81	0.93	80
Mean 2008–2009 to 2010–2011 (post-MoU phase 3)	1.88	26	1.24	62	0.97	62
Aggregate mean (1994–1995 to 2010–2011)	1.75		1.17		0.89	

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.
TD/TE	16	0.36	23	0.28	15	0.35
CR	74	0.38	61	0.29	55	0.09
ATR	73	0.58	60	0.38	55	0.78

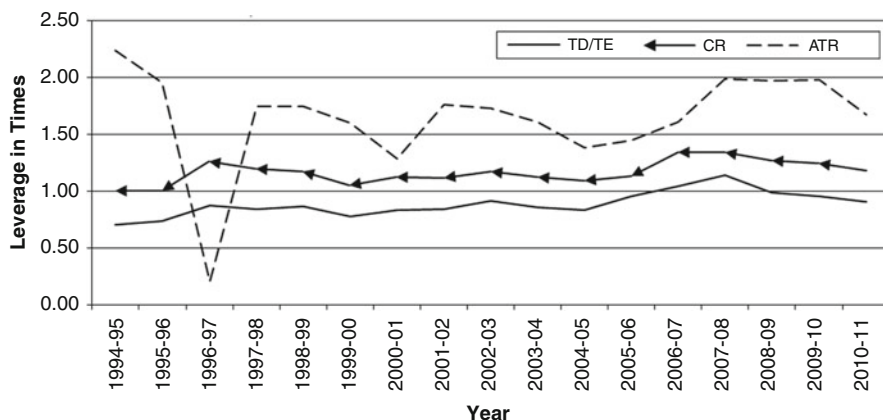


Fig. 7.10 Mean values of leverage ratios (TD/TE) and liquidity ratios (CR and ATR) of the non-MoU PSEs for the period 1994–1995 to 2010–2011

Table 7.18 Median, lower (Q1), and upper quartile (Q3) values of key leverage and liquidity ratios of Non-MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Ratios	Median			Q1			Q3		
	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3
TD/TE	1.74	1.17	1.48	0.76	0.36	0.64	3.21	2.59	2.62
CR	0.92	0.86	1.09	0.38	0.34	0.45	1.82	1.81	1.74
ATR	0.63	0.60	0.85	0.24	0.23	0.29	1.31	1.50	1.51

The analysis in practical terms implies that the MoU PSEs are likely to honor their short-term maturing obligations when they become due; it is apprehended that the non-MoU PSEs may encounter problems in paying current liabilities in time. The results pertaining to profitability, efficiency (in utilization of resources), and liquidity ratios manifest sizable improvement in MoU PSEs vis-à-vis non-MoU PSEs during the post-MoU phases. Hence, the findings support hypothesis of superior/better performance in MoU PSEs compared to non-PSEs.

The debt-equity ratio of both types of PSEs (MoU and non-MoU) is higher than the desired level (Tables 7.15 and 7.17). For instance, TD/TE ratio has been 1.62:1 in the case of MoU PSEs for the aggregate period (1994–1995 to 2010–2011) of the study; this figure is higher at 1.75 for non-MoU PSEs. The data indicates that the debt has financed a significant proportion of total assets of PSEs. As per trend also, the proportion of debt has registered an increase in phase 3 vis-à-vis phase 2.

However, based on positional values (median and quartile one), it is gratifying to note that for nearly half of the PSEs (of both types), the debt level is satisfactory in phases 2 and 3, the respective median figures being 1.05 and 1.16 (MoU PSEs) and 1.17 and 1.48 (non-MoU PSEs) as per Tables 7.16 and 7.18.

Table 7.19 Independent sample *t*-test of key leverage and liquidity ratios between sample MoU and non-MoU PSEs, 1994–1995 to 2010–2011 (group statistics)

Ratios	Coding	Mean					
		<i>N</i>	Phase 1	<i>N</i>	Phase 2	<i>N</i>	Phase 3
TD/TE	MoU	58	1.73	57	1.67	57	1.81
	Non-MoU	26	1.66	27	1.69	26	1.88
CR	MoU	66	2.11	66	2.07	62	1.99
	Non-MoU	84	1.13	81	1.17	62	1.24
ATR	MoU	66	1.58	66	1.66	62	1.46
	Non-MoU	84	0.80	80	0.93	62	0.97

Independent samples *t*-test

Ratios	Variances	<i>t</i> -test for equality of means					
		Phase 1		Phase 2		Phase 3	
		df	Sign.	df	Sign.	df	Sign.
TD/TE	EV	82	0.86	82	0.95	81	0.85
	NEV	36	0.88	47	0.95	53	0.84
CR	EV	148	0.00**	145	0.00**	122	0.00**
	NEV	127	0.00**	126	0.00**	117	0.00**
ATR	EV	148	0.00**	144	0.00**	122	0.00**
	NEV	114	0.00**	126	0.00**	105	0.00**

Notes:

EV: equal variances assumed, *NEV*: equal variances not assumed

**Signifies to significant difference at 1 % level

For one-fourth of MoU and non-MoU PSEs, the debt level is excessive and needs to be reduced. Independent *t*-test (presented in Table 7.19) has highlighted insignificant difference across the phases in debt to equity proportion in both types of PSEs. However, significant difference (statistically significant) has been observed in the liquidity ratios between MoU and non-MoU PSEs; it signifies an edge of MoU PSEs over non-MoU PSEs. Recession has caused insignificant impact on the liquidity and leverage requirement of both types of PSEs.

7.4.4 Productivity Test

The next variant of performance measurement, namely, productivity of capital, has been assessed in terms of employment level, sales efficiency, and net income efficiency generated per manpower in both types of sample PSEs. It has been hypothesized that productivity of capital is higher in MoU PSEs compared to non-MoU PSEs.

Table 7.20 Mean values of key productivity ratios of the MoU PSEs, 1994–1995 to 2010–2011

Years	Employment		Sales efficiency		Net income efficiency	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1994–1995	10,736	66	18.71	63	1.19	66
1995–1996	10,645	66	21.53	63	1.67	66
1996–1997	10,576	66	24.10	63	2.00	66
1997–1998	10,342	66	26.79	63	2.38	66
1998–1999	10,169	66	27.82	63	2.39	66
1999–2000	10,849	66	29.65	61	2.51	66
2000–2001	9,245	66	26.59	57	3.59	66
2001–2002	8,873	66	27.52	57	3.58	66
2002–2003	8,506	66	31.42	57	4.26	66
2003–2004	8,170	66	31.17	56	7.07	66
2004–2005	8,057	66	33.22	56	7.09	66
2005–2006	8,212	66	38.46	56	7.88	66
2006–2007	8,117	66	43.10	57	9.79	66
2007–2008	8,517	65	45.42	54	10.41	65
2008–2009	8,757	65	46.35	52	10.50	65
2009–2010	8,556	65	50.09	52	11.94	65
2010–2011	7,551	65	56.54	51	10.56	63
Mean 1994–1995 to 1999–2000 (post-MoU phase 1)	10,553	66	25.29	63	2.02	66
Mean 2000–2001 to 2007–2008 (post-MoU phase 2)	8,482	66	37.03	58	6.69	66
Mean 2008–2009 to 2010–2011 (post-MoU phase 3)	8,288	65	51.02	52	11.70	65
Aggregate mean (1994–1995 to 2010–2011)	9,169		34.03		5.81	

Notes:

1. *SE*: sales efficiency, *NIE*: net income efficiency, *N*: number of firms2. *SE* consisting value plus/minus 200 and above, *NIE* plus/minus 100 above have been excluded
*These abbreviations and exclusion of extreme items also apply for other tables mentioned in this chapter*Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.
Employment	65	0.00**	64	0.99	64	0.07
Sales efficiency	57	0.00**	51	0.00**	51	0.00**
<i>NIE</i>	65	0.00**	64	0.00**	64	0.00**

**Signifies to significant difference at 1 % level

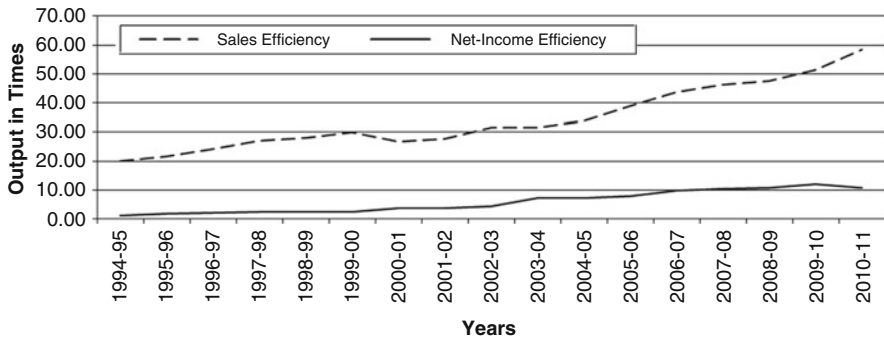


Fig. 7.11 Mean values of the Output ratios (sales and net income efficiency) of the MoU PSEs for the period 1994–1995 to 2010–2011

Table 7.21 Median, lower (Q1), and upper quartile (Q3) values of key productivity ratios of the MoU PSEs, 1994–1995 to 2010–2011

Ratios	Median			Q1			Q3		
	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3
Employment	3,640	2,987	2,894	1,457	1,097	1,137	11,326	8,227	7,591
Sales efficiency	8.33	18.73	31.39	4.27	8.14	18.63	27.87	62.48	80.87
NIE	0.61	2.05	4.47	0.06	0.17	1.17	2.82	12.43	12.37

Table 7.22 Mean values of key productivity ratios of the non-MoU PSEs, 1994–1995 to 2010–2011

Years	Employment		Sales efficiency		Net income efficiency	
	Mean	N	Mean	N	Mean	N
1994–1995	11,696	83	3.52	83	-0.32	83
1995–1996	11,741	83	3.81	83	-1.00	83
1996–1997	11,518	84	4.69	84	-0.73	80
1997–1998	12,580	84	6.04	84	-0.67	84
1998–1999	10,712	84	6.89	84	-0.67	84
1999–2000	10,190	84	5.32	83	-0.97	84
2000–2001	9,720	85	6.34	77	-1.25	75
2001–2002	13,115	86	7.50	82	-0.92	81
2002–2003	12,433	86	8.31	82	-1.82	81
2003–2004	11,819	84	8.79	81	-1.64	81
2004–2005	11,904	80	11.35	76	-1.78	74
2005–2006	11,477	78	10.03	72	-1.79	74
2006–2007	12,549	67	12.19	62	-2.41	62
2007–2008	12,843	64	15.66	60	-5.66	60
2008–2009	12,664	63	16.66	59	-0.64	55
2009–2010	12,434	62	20.73	58	-1.15	53
2010–2011	12,009	62	23.16	58	-2.57	53
Mean 1994–1995 to 1999–2000 (post-MoU phase 1)	11,362	84	5.48	84	-0.72	84
Mean 2000–2001 to 2007–2008 (post-MoU phase 2)	11,716	86	9.31	82	-2.04	81
Mean 2008–2009 to 2010–2011 (post-MoU phase 3)	12,242	63	20.07	59	-2.01	55
Aggregate mean (1994–1995 to 2010–2011)	11,847		10.06		-1.55	

Paired sample *t*-test

Ratios	Significance (two tailed) and degree of freedom (df) of phases					
	Phases 1 and 2		Phases 2 and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.
Employment	79	0.00**	62	0.01**	56	0.00**
Sales efficiency	76	0.00**	58	0.00**	53	0.00**
NIE	74	0.02*	53	0.23	47	0.22

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

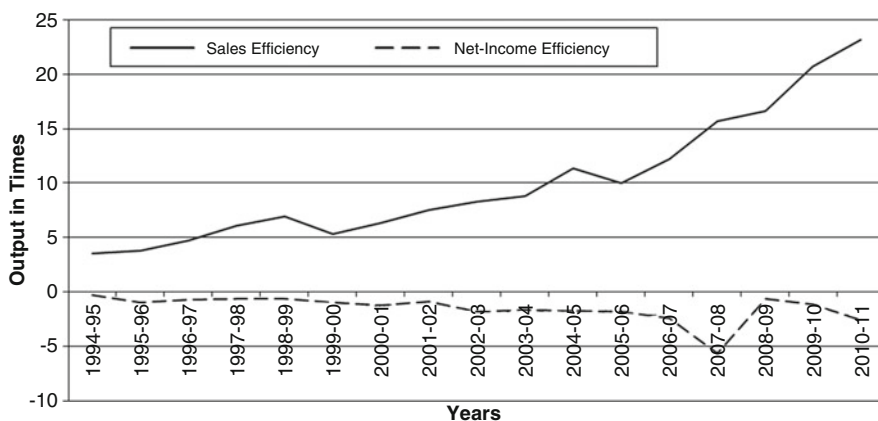


Fig. 7.12 Mean values of the productivity ratios (sales and net income efficiency) of the non-MoU PSEs for the period 1994–1995 to 2010–2011

Table 7.23 Median, lower (Q1), and upper quartile (Q3) values of key productivity ratios of non-MoU PSEs, 1994–1995 to 2010–2011

Ratios	Median			Q1			Q3		
	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3
Employment	1,524	662	431	228	101	86	8,406	4,559	1,485
Sales efficiency	2.43	4.44	11.09	0.63	0.62	3.83	4.68	10.43	31.71
NIE	-0.53	-0.89	0.44	-1.35	-4.64	-2.00	0.16	0.80	2.93

It is worth noting that there has been a significant decline in the employment level (nearly by one-fifth) in the MoU PSEs over the phases (Table 7.20), statistically significant in phases 1 and 2. On the contrary, the level of employment has increased (significantly as per paired *t*-test across the phases) by nearly 8 % in the non-MoU PSEs during the referred time period (Table 7.22).

Equally notable observation is significant increase (statistically) in sales efficiency (SE) and net income efficiency (NIE) in the PSEs signed MoU during phases 2 and 3 vis-à-vis phase 1, the respective increase being one and half times and two

times in sales efficiency; it is more than three times and five and half times in respect to NIE during the referred time period. Similarly, the sales efficiency of non-MoU PSEs has shown an increase of more than one and half times and three and half times. However, it has not resulted into a commensurate increase in NIE; on the contrary, NIE has shown substantial reduction (Figs. 7.11, 7.12 and Tables 7.20 and 7.22). The decline in NIE may primarily be attributed to increase in production cost, uncontrolled expenditures, excessive employment, and improper government control. Positional values (Tables 7.21 and 7.23) relating to both types of sample PSEs are in conformity to the results based on mean values in majority of the cases. Therefore, it is reasonable to infer that the productivity level (measured in terms of employment, sales efficiency and NIE) neither of MoU nor of non-MoU PSEs (as per aggregative and positional values) is affected by recession.

In view of the above, the productivity of capital has indicated marked improvement in terms of reduction in employment level (as per voluntary retirement scheme targets) and enhancement in sales efficiency and NIE of MoU PSEs compared to non-MoU PSEs. These findings are again in tune with the hypothesis (of better productivity of capital in MoU PSEs over non-MoU PSEs).

Table 7.24 Independent sample *t*-test of key productivity ratios between sample MoU and non-MoU PSEs, 1994–1995 to 2010–2011 (group statistics)

Ratios	Coding	Mean					
		<i>N</i>	Phase 1	<i>N</i>	Phase 2	<i>N</i>	Phase 3
Employment	MoU	66	10,552.90	66	8,482.26	65	8,287.84
	Non-MoU	84	11,362.09	86	11,716.17	63	12,241.63
Sales efficiency	MoU	63	25.29	58	37.03	52	51.02
	Non-MoU	84	5.48	82	9.31	59	20.07
Net income efficiency	MoU	66	2.02	66	6.69	65	11.70
	Non-MoU	84	-0.72	81	-2.04	55	-1.58

Independent samples *t*-test

Ratios	Variances	<i>t</i> -test for equality of means					
		Phase 1		Phase 2		Phase 3	
		df	Sign.	df	Sign.	df	Sign.
Employ	EV	148	0.85	150	0.55	126	0.47
	NEV	148	0.84	123	0.52	82	0.48
SE	EV	145	0.00**	138	0.00**	109	0.00**
	NEV	73	0.00**	67	0.00**	78	0.00**
NIE	EV	148	0.00**	145	0.00**	118	0.00**
	NEV	82	0.00**	140	0.00**	116	0.00**

Notes:

EV: equal variances assumed, NEV: equal variances not assumed

**Signifies to significant difference at 1 % level

Independent *t*-test signifies significant difference between MoU and non-MoU PSEs during phases 1, 2, and 3 in both sales efficiency and NIE (productivity measures) as per Table 7.24. Group statistics is also indicative of better performance of MoU PSEs. Above all, in almost all the measures, MoU PSEs have *perforce* better performance compared to their counterpart, i.e., non-MoU PSEs.

In brief, based on above analysis, it is reasonable to conclude that MoU has salutary impact, and the MoU PSEs have shown better performance. Moreover, no major effect of recession has been observed in both types of PSEs. The PSEs that have opted for signing MoU become more focused and result oriented to achieve the targets/objectives. Moreover, MoU system is based on twin objectives of autonomy and accountability; while autonomy is necessary for good performance, the accountability of management is measured through performance evaluation. Above all, assigning explicit weightage to social objectives also (in addition to commercial), to a marked extent, in the non-MoU PSEs, has resulted in the better performance record (measured by composite score) of the MoU signed PSEs compared to non-MoU PSEs.

The findings are in conformity with what Sangeetha (2005) states that reforms aim at improving the environment in which PSEs operate through delegation of operational and functional autonomy to the managers of publicly owned enterprises through performance contracts. Likewise, Kumar (1994) enumerates that the MoU is rooted in an evaluation system which not only looks at performance comprehensively, i.e., at both commercial and non-commercial criteria in their static and dynamic aspects, but also ensures performance by making the autonomy and accountability aspects more transparent. It attempts to ensure a proper balance between accountability and autonomy and, through this, improves performance.

7.5 MoU PSEs in India

The previous section has presented a comparative picture of the financial performance of the MoU PSEs and non-MoU PSEs during the period (1994–1995 to 2010–2011) of the study. The analysis has eloquently brought out that the MoU PSEs have better record of performance compared to non-MoU PSEs. This apart, it has also been noted that after signing MoUs, there has been a significant improvement for such PSEs in most of the parameters assessed in phases 2 and 3 compared to phase 1.

This section, in particular, aims at assessing the performance of the MoU PSEs subsequent to the recommendations of NCAER which have been implemented from the year 2004 to 2005; in the light of these recommendations, an attempt has been made to assess the performance of MoU PSEs by comparing their performance before and after implementation of these recommendations. It may be recapitulated that the period of the study has been divided into three phases. The periods of the first phase (1994–1995 to 1999–2000) and third phase (2008–2009 to 2010–2011) remain unchanged. The second phase period (2000–2001 to 2007–2008) has been sub-divided into two more phases: 2000–2001 to

2003–2004 is referred to as pre-NCAER recommendation phase 2 and 2004–2005 to 2007–2008 as post-NCAER recommendation phase 2. The greater focus is on “new” two sub-phases and phase 3. It has been hypothesized that the financial performance of MoU PSEs has improved during the referred two sub-phases.

7.5.1 Analysis of Profitability

Relevant data contained in Table 7.25 indicates that there has been a significant improvement in all the profitability parameters during phase 2, i.e., in view of pre- and post-NCAER recommendations basis; the same has been validated by the paired *t*-test. Positional values (indicated in Table 7.26) relating to these profit measures, by and large, have followed the mean observations. In view of the above, it is reasonable to conclude that the NCAER recommendations have contributed further towards better profitability of MoU PSEs. However, notable impact of recession has been observed in profitability ratios when compared with post-recession phase (2008–2009 to 2010–2011) to pre-recession sub-phase two (2004–2005 to 2007–2008), significant statistically.

Although it is true that there has been a significant decrease in profitability ratios in recession phase 3 compared to new sub-phase two (subsequent to NCAER recommendation), virtually all profitability ratios, per se, in recession phase seem to be at satisfactory levels. For instance, RONW is 12.73 %, and net-profit margin is 9.5 % during the referred third phase; likewise, ROTA has decreased by only 1.2 % points only during the period under reference. In operational terms, the recession impact was not severe on the functioning of MoU PSEs.

Table 7.25 Mean values of key profitability ratios of the MoU PSEs, 1994–1995 to 2010–2011 (Figures are in percentages)

Years	RONW		ROCE		ROTA		OPM		NPM	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
Mean 1994–1995 to 1999–2000 (phase 1)	9.10	62	6.29	66	8.34	66	15.28	65	6.25	65
Mean 2000–2001 to 2003–2004 (phase 2, before NCAER recommendation)	10.69	62	4.49	65	8.23	66	13.42	63	7.53	64
Mean 2004–2005 to 2007–2008 (phase 2, after NCAER recommendation)	17.55	62	11.80	65	11.05	66	19.55	64	12.98	64
Mean 2008–2009 to 2010–2011 (phase 3, recession period)	12.73	63	8.25	62	8.85	65	13.87	62	9.50	64
Aggregate mean (1994–1995 to 2010–2011)	12.13		7.51		8.94		15.16		8.65	

Note: Mean value of each phase has been computed on the basis of mean of mean values of each enterprise during each phase is the reason of difference of aggregative mean, mentioned in this table and in Table 7.1. These points hold true for other tables

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom df)							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post- NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
RONW	58	0.59	61	0.01**	61	0.00**	58	0.03*
ROCE	64	0.17	64	0.00**	61	0.06	61	0.73
ROTA	65	0.89	65	0.01**	64	0.01**	64	0.65
OPM	62	0.21	62	0.00**	60	0.00**	61	0.38
NPM	63	0.48	63	0.00**	62	0.01**	63	0.06

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

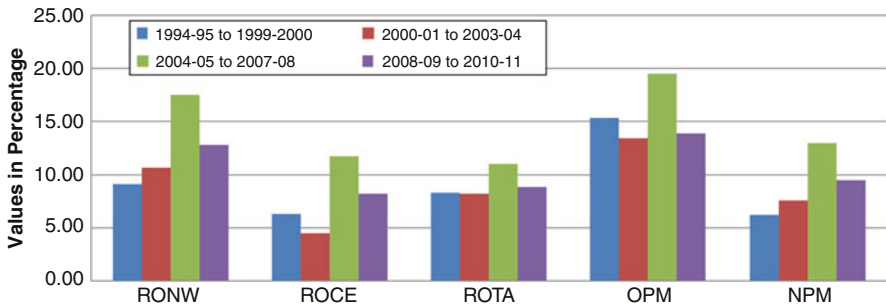


Fig. 7.13 Mean values of the profitability ratios (RONW, ROCE, ROTA, OPM and NPM) of the MoU PSEs for the period 1994–1995 to 2010–2011

7.5.2 Analysis of Efficiency

The operational and productive efficiency levels of MoU PSEs have been assessed on the basis of assets turnover, debtor collection period, and inventory holding period (two important constituents of current assets). The TATR, FATR, and CATR (variants of assets turnover) have been computed in respect to net sales (sales excluding commission, rebate, discount and excise duty). The mean and positional values of TATR, FATR, and CATR are presented in Tables 7.27 and 7.28.

The analysis suggests that among total assets, the fixed assets category only has shown an improvement across the phases, statistically significant in the phases of pre- and post-basis of NCAER recommendations as well as in phase 3 against phase 1 (Table 7.27 and Fig. 7.14). Similar conclusions follow based on median value (Table 7.28). There is no notable change in CATR in phase 2 (after NCAER recommendations) compared to phase 2 (before NCAER recommendations). As far as the impact of recession is concerned, it has been observed in the case of CATR only.

Table 7.26 Median, lower (Q1), and upper quartile (Q3) values of key profitability ratios of the MoU PSEs, 1994–1995 to 2010–2011 (Figures are in percentages)

Ratios	Median			Q1			Q3				
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3		
RONW	9.96	11.36	14.99	12.16	1.90	7.21	4.22	19.17	21.79	28.42	21.30
ROCE	7.93	5.76	9.77	8.28	-3.83	-1.56	-2.54	18.97	22.38	30.96	22.17
ROTA	7.61	6.40	8.64	7.68	2.45	3.50	2.19	13.56	15.85	18.16	13.30
OPM	10.62	6.80	14.44	9.51	4.35	3.25	2.53	27.94	23.99	31.91	23.44
NPM	4.36	4.91	9.38	6.36	0.37	1.76	1.15	16.78	16.04	22.95	18.88

Table 7.27 Mean values of key turnover ratios of the MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Years	TATR		FATR		CATR	
	Mean	N	Mean	N	Mean	N
Mean 1994–1995 to 1999–2000 (phase 1)	0.94	66	3.43	55	1.49	66
Mean 2000–2001 to 2003–2004 (phase 2 before NCAER recommendation)	1.03	66	3.74	55	1.61	66
Mean 2004–2005 to 2007–2008 (phase 2 after NCAER recommendation)	1.01	66	4.36	54	1.58	66
Mean 2008–2009 to 2010–2011 (phase 3 recession period)	0.90	64	4.49	49	1.33	64
Aggregate mean (1994–1995 to 2010–2011)	0.96		3.78		1.50	

Note: Mean value of each phase has been computed on the basis of mean of mean values of each enterprise during each phase is the reason of difference in the aggregative mean, mentioned in this table and in Table 7.6

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post-NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
TATR	65	0.08	65	0.78	63	0.17	63	0.80
FATR	53	0.14	53	0.02*	48	0.12	47	0.00**
CATR	65	0.06	65	0.64	63	0.00**	63	0.23

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

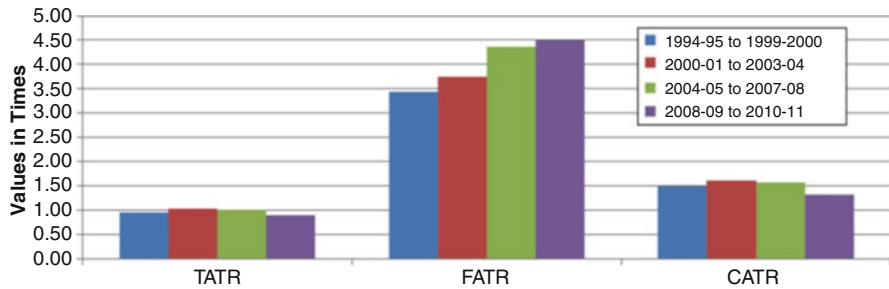


Fig. 7.14 Mean values of the turnover ratios (TATR, FATR and CATR) of the MoU PSEs for the period 1994–1995 to 2010–2011

As far as constituents of current assets are concerned, relevant data contained in Table 7.29 indicates that there has been a significant reduction in RMIHP and FGIHP as well as in DCP during phase 3 vis-à-vis earlier phases 2 and 1. The improvements in these two parameters have been observed to be statistically significant. Median and quartile values (shown in Table 7.30) reinforce the contention.

Table 7.28 Median, lower (Q1), and upper quartile (Q3) values of key turnover ratios of the MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Ratios	Median						Q1			Q3				
	Phase 1		Phase 2 (pre- and post-NCAER)		Phase 3		Phase 1		Phase 2 (pre- and post-NCAER)		Phase 3			
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3		
TATR	0.64	0.68	0.74	0.67	0.67	0.67	0.33	0.44	0.39	0.41	1.12	1.27	1.34	1.09
FATR	2.81	3.29	3.63	4.28	4.28	4.28	0.77	1.01	1.56	1.44	6.31	6.28	7.97	7.29
CATR	1.12	1.14	1.09	0.96	0.96	0.96	0.61	0.68	0.59	0.58	1.91	2.34	2.12	1.46

Table 7.29 Mean values of inventory holding period and debtor collection period (DCP) of the MoU PSEs, 1994–1995 to 2010–2011 (Figures are in days)

Years	RMIHP		WPIHP		FGIHP		DCP	
	Mean	N	Mean	N	Mean	N	Mean	N
Mean 1994–1995 to 1999–2000 (phase 1)	217.07	50	17.90	64	20.44	66	217.07	50
Mean 2000–2001 to 2003–2004 (phase 2, before NCAER recommendation)	178.67	55	13.69	63	17.16	66	178.67	55
Mean 2004–2005 to 2007–2008 (phase 2, after NCAER recommendation)	122.60	56	17.11	64	14.04	66	122.60	56
Mean 2008–2009 to 2010–2011 (phase 3, recession period)	123.22	47	19.35	60	14.83	62	123.22	47
Aggregate mean (1994–1995 to 2010–2011)	165.77		15.24		17.18		165.77	

Note: Mean value of each phase has been computed on the basis of mean of mean values of each enterprise during each phase is the reason of difference in the aggregative mean, mentioned in this table and in Table 7.10

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post- NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
RMIHP	49	0.01**	54	0.00**	44	0.76	43	0.00**
WPIHP	62	0.53	62	0.50	59	0.56	58	0.92
FGIHP	65	0.04*	65	0.03*	61	0.21	61	0.02*
DCP	63	0.23	64	0.02*	62	0.31	60	0.01**

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

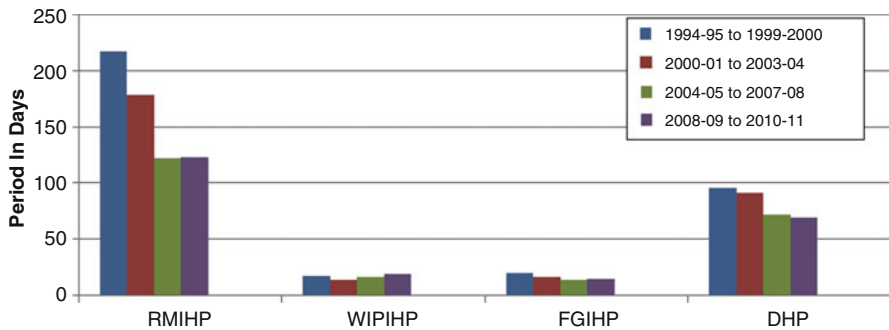


Fig. 7.15 Mean values of the inventory holding period (RMIHP, WPIHP and FGIHP) and debtors collection period (DCP) of the MoU PSEs for the period 1994–1995 to 2010–2011

Table 7.30 Median, lower (Q1), and upper quartile (Q3) values of inventory holding period and DCP of the MoU PSEs, 1994–1995 to 2010–2011 (Figures are in days)

Ratios	Median			Q1			Q3					
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3			
RMIHP	176.77	131.32	67.79	70.64	67.13	57.55	16.06	22.03	343.23	317.37	224.49	189.25
WPIHP	1.23	1.40	1.13	0.40	0.00	0.00	0.00	0.00	20.98	17.20	14.40	8.78
FGIHP	7.34	6.00	5.95	5.20	0.00	0.00	0.00	0.12	37.78	28.80	23.75	22.41
DCP	72.62	78.33	56.49	58.14	29.83	27.49	20.50	19.89	175.91	142.94	110.43	105.15

For instance, the median in respect to RMIHP is 67.79 and 70.64 days during post-NCAER recommendation phase 2 and post-recession phase 3, respectively, compared to 131.32 days in phase 2 (pre-NCAER recommendation phase). Figure 7.15 depicts the trend during these phases more clearly.

The NCAER recommendation have been observed to have a salutary impact (statistically significant) on RMIHP, FGIHP and DCP; there has been a reduction of nearly 2 months in raw-material holding period as well as debtor collection period during two sub-phases (one prior to NCAER recommendation and one after).

7.5.3 Analysis of Leverage and Liquidity Position

As far as leverage and liquidity levels are concerned, no significant change has been observed over the phases in MoU PSEs, except TD/TE in phase 3 of post-recession phase and pre-recession phase 2 (Tables 7.31 and 7.32). The results are not surprising. The reason is that the MoU PSEs were already operating with adequate and satisfactory levels of current ratios and acid test ratios. Further, increase would have amounted to unwarranted excessive working capital; they seem to be conscious in this regard as there has been a corresponding decrease in CR and ATR to 1.93 and 1.42 during phase 3 compared to 2.08 and 1.66, respectively, in phase 2. Likewise, reduction in D/E ratio is, in general, not plausible in a short span of 3 years. Therefore, almost the same proportion of debt to equity has been maintained between two sub-phases of NCAER recommendations; likewise, there has been virtually no change in these two referred sub-phases pertaining to liquidity ratios (Fig. 7.16).

7.5.4 Analysis of Productivity

Productivity (output) per employee has been assessed in terms of sales efficiency, net income efficiency, and employment level. The mean and median figures of these ratios are presented in Tables 7.33 and 7.34 (Fig. 7.17).

It is a matter of immense gratification that there has been a significant improvement (statistically significant) in SE and NIE across the phases. Similarly, a declining trend of employment has been noticed in almost all the phases; it is in tune with the VRS targets set by government in order to enhance the productivity and profitability and to meet the other challenges. Positional values also corroborate the inference. Recession, in general, has not affected the productivity level of MoU PSEs. In a nutshell, MoU PSEs have performed better during 2004–2005 to 2007–2008 and afterwards following the recommendation of the NCAER; it is satisfying to observe that the MoU PSEs (which incorporates both social and commercial interest) have shown improvement in almost all the measures over a period of time. Thus, the findings are in conformity with the hypothesis of improvement in financial performance of MoU PSEs over the period of time, in particular subsequent to NCAER recommendations.

Table 7.31 Mean values of key leverage and liquidity ratios of the MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Years	Leverage ratios		Liquidity ratios			
	TD/TE		CR		ATR	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
Mean 1994–1995 to 1999–2000 (phase 1)	1.73	58	2.11	66	1.58	66
Mean 2000–2001 to 2003–2004 (phase 2, before NCAER recommendation)	1.68	54	2.06	66	1.63	66
Mean 2004–2005 to 2007–2008 (phase 2, after NCAER recommendation)	1.65	57	2.08	66	1.66	65
Mean 2008–2009 to 2010–2011 (phase 3, recession period)	1.81	57	1.93	61	1.42	61
Aggregate mean (1994–1995 to 2010–2011)	1.62		2.04		1.55	

Note: Mean value of each phase has been computed on the basis of mean of mean values of each enterprise during each phase is the reason of difference in the aggregative mean, mentioned in this table and in Table 7.15

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post- NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
TD/TE	52	0.78	53	0.64	53	0.01**	51	0.65
CR	65	0.65	65	0.88	60	0.24	60	0.37
ATR	60	0.37	64	0.58	60	0.13	60	0.51

**Signifies to significant difference at 1 % level

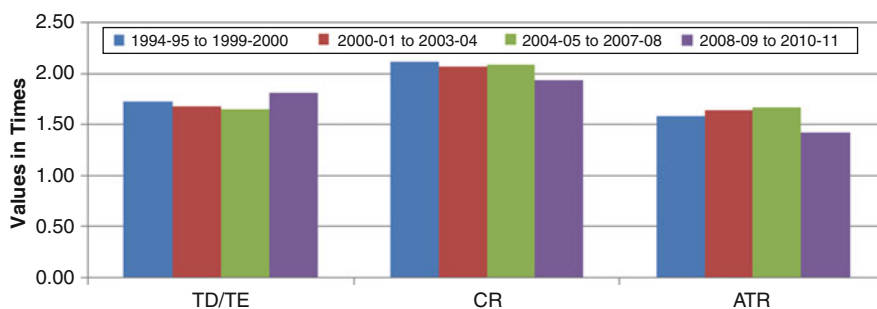
**Fig. 7.16** Mean values of the leverage (TD/TE) and liquidity (CR and ATR) ratios of the MoU PSEs for the period 1994–1995 to 2010–2011

Table 7.33 Mean values of key productivity ratios of the MoU PSEs, 1994–1995 to 2010–2011

Years	Employment		Sales efficiency		Net income efficiency	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
Mean 1994–1995 to 1999–2000 (phase 1)	10,810.17	62	25.29	63	2.08	65
Mean 2000–2001 to 2003–2004 (phase 2, before NCAER recommendation)	8,698.80	66	29.79	57	4.63	66
Mean 2004–2005 to 2007–2008 (phase 2, after NCAER recommendation)	8,262.53	66	40.34	57	8.75	66
Mean 2008–2009 to 2010–2011 (phase 3, recession period)	8,287.84	65	51.02	52	11.70	65
Aggregate mean (1994–1995 to 2010–2011)	9,169.35		34.03		5.81	

Note: Mean value of each phase has been computed on the basis of mean of mean values of each enterprise during each phase is the reason of difference in the aggregative mean, mentioned in this table and in Table 7.20

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post- NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
Employment	61	0.00**	65	0.09	64	0.67	60	0.10
Sales efficiency	56	0.00**	55	0.00**	51	0.00**	51	0.00**
NIE	64	0.00**	65	0.00**	64	0.01**	63	0.00**

**Signifies to significant difference at 1 % level

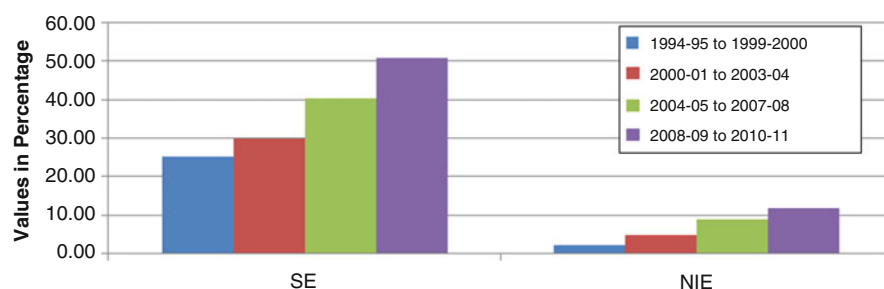


Fig. 7.17 Mean values of the productivity (SE and NIE) ratios of the MoU PSEs for the period 1994–1995 to 2010–2011

Table 7.34 Median, lower (Q1), and upper quartile (Q3) values of key productivity ratios of the MoU PSEs, 1994–1995 to 2010–2011

Ratios	Median			Q1			Q3				
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3		
Employment	3,640.00	3,116.25	2,835.50	2,894.00	1,456.88	1,111.69	1,136.50	11,325.56	9,440.56	7,877.88	7,590.50
Sales efficiency	8.33	13.73	25.43	31.39	4.27	7.83	18.63	27.87	43.37	65.37	80.87
NIE	0.61	1.17	2.98	4.47	0.06	-0.01	1.17	2.82	6.37	12.48	12.37

7.6 MoU PSEs (Disaggregative Analysis)

At disaggregative level, the performance of MoU PSEs has been analyzed with reference to two major dimensions; Part I is concerned with the performance measurement of manufacturing and service MoU PSEs, and Part II is related to profit-making and loss-making MoU PSEs.

7.6.1 Part I: Manufacturing and Service Sector MoU PSEs

This part of the study examines and compares the financial performance of MoU manufacturing and MoU service sector PSEs (hereafter referred to as manufacturing PSEs and service PSEs as all the enterprises covered in this section have signed MoU) in terms of five parameters, i.e., profitability, efficiency, leverage, liquidity, and productivity per manpower.

7.6.1.1 Profitability Analysis

Relevant data contained in Table 7.35 indicates that there has been a significant improvement in all the parameters of profitability in the case of manufacturing PSEs during the first three phases; these improvements are statistically significant during pre- and post-NCAER phase 2. Figures 7.18 and 7.19 depict the rising trend in respect to these ratios. However, reduction has been noted in these parameters during phase 3, statistically significant (save ROCE) compared to phase 2. Notwithstanding this decrease, the various rates of return and profit margins (during recession phase) seem to be at satisfactory levels. In other words, stand-alone profitability ratios during recession phase of MoU PSEs are satisfactory.

Similar conclusions follow based on positional values of median and quartiles (Table 7.36). Median and quartile three values show consistent increase in phases 3 and 2 compared to phase 1 for all the five measures of profitability. Further, it is a matter of satisfaction to note that there has been positive ROCE for one-fourth of manufacturing PSEs in phases 2 (pre-recession) and 3 (post-recession); these enterprises were incurring losses in earlier two phases (Table 7.36).

In contrast, the statistics of profitability of service PSEs is not equally commendable from the perspective of all parameters. It is satisfactory in respect to RONW only. In other four measures, namely, ROCE, ROTA, OPM, and NPM, there has been a decline in both sets of phase 2 and 3 (Table 7.37 and Figs. 7.20 and 7.21); the decrease is statistically significant in the case of ROTA and OPM in phases 1 and 2. Though the increase is noted in post-NCAER phase 2 in all the parameters of profitability compared to pre-NCAER phase 2, the difference is significant as per paired *t*-test in NPM only (Table 7.37). Marginal decline has also been observed in post-recession phase compared with pre-recession phase of these enterprises. In other words, positive effect of NCAER recommendations and minor effect of recession have been observed in service MoU PSEs.

Table 7.35 Mean values of key profitability ratios of the manufacturing MoU PSEs, 1994–1995 to 2010–2011 (Figures are in percentages)

Years	RONW		ROCE		ROTA		OPM		NPM	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
1994–1995	8.40	40	10.24	40	8.69	42	15.11	40	6.60	41
1995–1996	8.58	39	10.13	40	8.75	42	18.27	41	7.74	41
1996–1997	7.97	40	9.93	41	9.48	42	17.25	40	8.07	41
1997–1998	8.27	41	9.74	42	9.85	42	17.59	39	9.05	41
1998–1999	8.13	40	7.39	42	8.17	42	15.04	41	6.57	41
1999–2000	7.31	40	3.46	42	7.59	42	10.85	40	4.06	41
2000–2001	8.20	41	6.99	41	8.98	42	15.94	39	9.52	40
2001–2002	8.72	38	7.30	41	10.11	42	16.53	38	9.04	39
2002–2003	10.42	39	7.61	41	9.79	42	12.89	39	8.43	39
2003–2004	16.48	39	11.44	41	12.15	42	17.20	38	12.02	40
2004–2005	17.55	39	16.25	39	13.78	41	22.11	38	15.14	40
2005–2006	18.03	41	13.32	40	12.97	41	24.45	40	15.66	40
2006–2007	18.41	41	10.95	39	12.20	39	19.95	36	15.64	39
2007–2008	17.19	40	13.42	38	12.42	40	18.36	33	14.13	38
2008–2009	13.74	40	10.07	38	8.95	40	13.36	38	8.80	40
2009–2010	11.67	40	10.14	40	9.32	42	14.26	39	10.62	40
2010–2011	10.91	40	11.25	40	9.85	42	14.79	38	11.84	41
Mean 1994–1995 to 1999–2000 (phase 1)	7.97	41	8.76	41	8.97	41	16.49	40	7.48	40
Mean 2000–2001 to 2003–2004 (phase 2, before NCAER recommendation)	9.78	41	8.34	41	10.26	42	15.78	39	9.83	40
Mean 2004–2005 to 2007–2008 (phase 2, after NCAER recommendation)	17.75	41	14.12	41	13.46	42	22.47	39	15.45	40
Mean 2008–2009 to 2010–2011 (phase 3)	12.02	41	10.38	40	9.91	42	14.75	39	10.58	41
Aggregate mean (1994–1995 to 2010–2011)	11.76		9.98		10.18		16.70		10.17	

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post- NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
RONW	40	0.32	41	0.02*	41	0.01**	40	0.01**
ROCE	40	0.78	41	0.03*	40	0.07	40	0.66
ROTA	40	0.09	41	0.02*	41	0.00**	40	0.44
OPM	38	1.00	39	0.00**	37	0.00**	37	0.78
NPM	39	0.15	40	0.00**	40	0.04*	39	0.01**

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

Table 7.36 Median, lower (Q1), and upper quartile (Q3) values of key profitability ratios of manufacturing MoU PSEs, 1994–1995 to 2010–2011 (Figures are in percentages)

Ratios	Median			Q1			Q3			
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	
RONW	8.34	9.44	15.09	11.40	1.73	7.23	17.54	21.92	27.56	19.82
ROCE	8.14	7.37	12.84	9.12	-1.60	2.93	20.08	26.02	32.35	21.87
ROTA	7.83	7.90	10.26	8.40	2.49	5.02	14.28	17.95	21.58	16.62
OPM	11.21	11.86	17.44	13.51	5.29	3.82	27.94	27.17	39.21	29.57
NPM	4.52	7.76	12.36	8.21	0.93	3.52	17.74	18.11	27.59	21.46

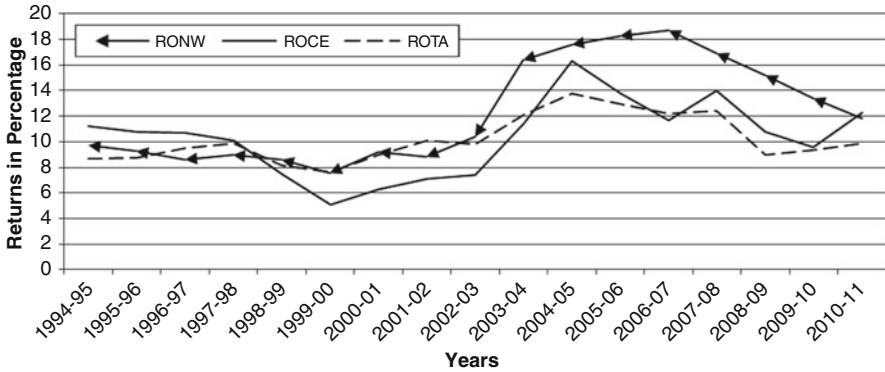


Fig. 7.18 Mean values of profitability ratios (RONW, ROCE and ROTA) of the manufacturing MoU PSEs for the period 1994–1995 to 2010–2011

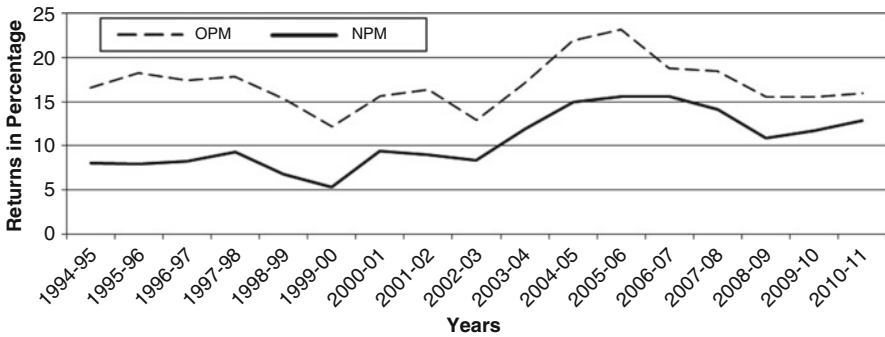


Fig. 7.19 Mean values of the profitability ratios (OPM and NPM) of the manufacturing MoU PSEs for the period 1994–1995 to 2010–2011

Positional values indicated in Table 7.38 have also followed the mean observations in majority of the cases. It is pathetic to note that one-fourth of the service PSEs have negative ROCE in all the phases of the study, indicative of erosion in capital employed in such enterprises. From the above, it is reasonable to conclude that manufacturing PSEs have shown better performance in respect to profitability compared to service PSEs in their post-MoU period.

Independent *t*-test shown in Table 7.39 (group statistics) also demonstrates better profitability of manufacturing enterprises compared to service PSEs across the phases, though the difference is significant only in the parameters of ROTA, OPM, and NPM (during phase 2) and in OPM during phase 3. The finding is in conformity with observations of Arnold et al. (2008); they have emphasized that post-1991 growth of Indian manufacturing sector is based on trade liberalization and industrial de-licensing and laid positive effects on the productivity of manufacturing firms.

Table 7.37 Mean values of key profitability ratios of the service MoU PSEs, 1994–1995 to 2010–2011 (Figures are in percentages)

Years	RONW		ROCE		ROTA		OPM		NPM	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
1994–1995	7.72	21	3.72	23	7.01	24	12.16	24	2.16	24
1995–1996	14.65	20	4.96	22	9.33	24	14.57	24	4.40	24
1996–1997	8.79	22	2.90	23	9.81	24	19.49	22	7.94	24
1997–1998	9.62	21	4.43	24	8.84	24	14.76	23	6.42	24
1998–1999	9.86	21	0.86	24	7.43	24	12.47	24	4.88	24
1999–2000	9.68	21	-1.13	24	7.02	24	12.18	24	3.87	24
2000–2001	9.79	20	-0.81	24	6.94	24	10.59	22	3.92	24
2001–2002	9.32	20	-1.37	23	4.57	24	7.62	23	-0.30	24
2002–2003	12.06	21	-1.71	23	4.58	24	9.75	23	3.86	24
2003–2004	17.84	21	2.44	23	7.38	24	10.00	22	7.35	24
2004–2005	14.58	21	8.89	22	8.30	24	13.88	23	8.32	23
2005–2006	17.67	21	5.32	22	8.81	24	14.38	23	9.88	24
2006–2007	19.41	21	4.34	23	9.22	24	11.26	23	8.89	23
2007–2008	15.14	20	7.78	22	8.54	24	13.83	23	9.16	23
2008–2009	14.92	22	0.88	22	6.96	23	11.53	23	7.34	23
2009–2010	14.03	21	5.01	22	6.90	23	11.22	23	7.20	23
2010–2011	12.98	22	7.25	22	6.92	23	14.39	23	8.16	23
Mean 1994–1995 to 1999–2000 (phase 1)	11.31	21	4.45	21	9.47	21	15.52	21	8.36	21
Mean 2000–2001 to 2003–2004 (phase 2, before NCAER recommendation)	12.46	21	0.23	23	5.87	24	9.59	24	3.71	24
Mean 2004–2005 to 2007–2008 (phase 2, after NCAER recommendation)	17.15	21	7.84	24	8.72	24	12.89	24	8.87	24
Mean 2008–2009 to 2010–2011 (phase 3)	14.06	22	4.38	22	6.92	23	12.38	23	7.57	23
Aggregate mean (1994–1995 to 2010–2011)	12.83		3.16		7.56		12.59		6.08	

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post- NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
RONW	18	0.52	20	0.17	20	0.31	18	0.61
ROCE	19	0.28	22	0.08	21	0.54	18	0.59
ROTA	20	0.03*	23	0.09	22	0.08	19	0.05*
OPM	20	0.03*	23	0.07	22	0.42	19	0.21
NPM	20	0.09	23	0.02*	22	0.15	19	0.56

*Signifies to significant difference at 5 % level

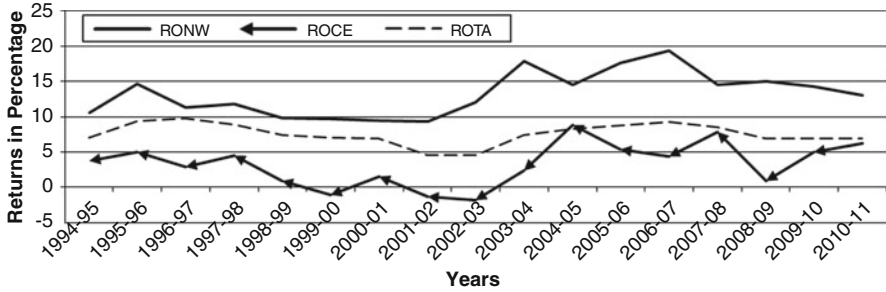


Fig. 7.20 Mean values of profitability ratios (RONW, ROCE and ROTA) of the service MoU PSEs for the period 1994–1995 to 2010–2011

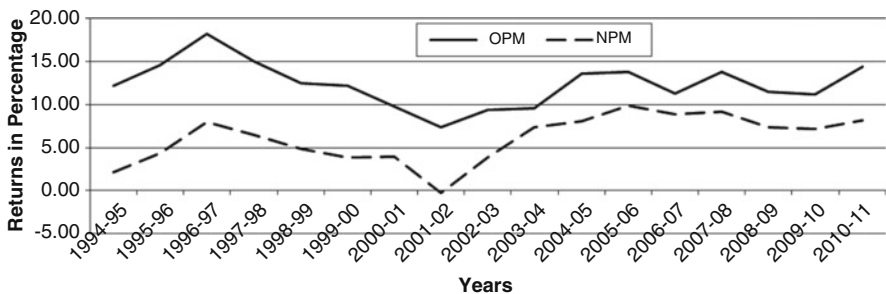


Fig. 7.21 Mean values of the profitability ratios (OPM and NPM) of the service MoU PSEs for the period 1994–1995 to 2010–2011

7.6.1.2 Efficiency Ratios

Further, efficiency has been assessed on three parameters (as followed in other sections), i.e., turnover basis, inventory holding period, and debtor collection period. It has been observed that the assets turnover (measured in terms of TATR, FATR and CATR) of service PSEs is better compared to manufacturing PSEs (Tables 7.40 and 7.42 as well as Figs. 7.22 and 7.23), the respective mean figures being 0.84, 3.75, and 1.48 (manufacturing MoU enterprises) and 1.17, 3.87, and 1.55 (serving MoU enterprises) for the period of 17 years. Independent *t*-test depicted in Table 7.48 has indicated a higher edge in turnover ratios of service PSEs over manufacturing PSEs after signing MoUs, though the difference is not statistically significant except in phase 2 of TATR.

It may be noted that TATR of manufacturing sample PSEs is not satisfactory; it is less than one in all the 17-year period of the study, indicative of under-utilization of total assets; likewise, CATR has not depicted satisfactory results after signing

Table 7.38 Median, lower (Q1), and upper quartile (Q3) values of key profitability ratios of the service MoU PSEs, 1994–1995 to 2010–2011 (Figures are in percentages)

Ratios	Median										
	Q1			Q3							
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3		
RONW	11.45	12.19	14.89	13.47	3.38	7.01	3.79	20.05	21.42	28.91	23.75
ROCE	3.01	-1.47	7.74	4.73	-9.91	-10.62	-8.05	13.51	18.28	21.68	20.80
ROTA	7.10	4.22	6.35	6.66	3.04	1.69	2.57	12.50	11.10	12.55	11.15
OPM	9.90	4.41	7.96	8.17	3.13	1.53	1.81	25.36	19.34	20.43	19.64
NPM	2.62	0.99	5.76	4.49	-0.16	0.81	0.50	14.31	12.66	14.55	12.34

Table 7.39 Independent sample *t*-test of key profitability ratios of the sample manufacturing and service MoU PSEs during 1994–1995 to 2010–2011 (group statistics)

Ratios	Coding	Phase 1		Phase 2 (pre- and post-NCAER recommendations)				Phase 3	
		<i>N</i>	Mean	<i>N</i>	Mean		<i>N</i>	Mean	
					Pre-NCAER	Post-NCAER		<i>N</i>	3 year
RONW	Manuf.	41	8.65	42	9.90	42	17.77	42	13.20
	Service	21	11.32	21	12.42	21	17.01	22	14.10
ROCE	Manuf.	41	9.51	42	8.07	42	14.53	41	10.74
	Service	21	4.44	23	0.23	24	7.84	22	4.43
ROTA	Manuf.	41	8.97	42	10.26	42	13.46	42	9.91
	Service	21	9.47	24	5.87	24	8.71	23	6.92
OPM	Manuf.	40	17.14	40	15.66	40	22.42	39	16.29
	Service	21	15.53	24	9.59	24	13.04	23	12.38
NPM	Manuf.	40	8.09	41	9.75	41	15.39	41	11.94
	Service	21	8.36	24	3.71	24	8.91	23	7.57

Independent samples *t*-test

Ratios	Variances	<i>t</i> -test for equality of means							
		Phase 1		Phase 2 (Pre-NCAER)		Phase 2 (Post-NCAER)		Phase 3 (3 year postrecession)	
		df	Sign.	df	Sign.	df	Sign.	df	Sign.
RONW	EV	60	0.31	61	0.57	61	0.83	62	0.78
	NEV	52	0.26	38	0.58	39	0.84	53	0.76
ROCE	EV	60	0.17	63	0.09	64	0.2	61	0.18
	NEV	28	0.24	44	0.09	48	0.21	40	0.2
ROTA	EV	60	0.77	64	0.06	64	0.06	63	0.24
	NEV	35	0.79	41	0.07	59	0.04*	62	0.16
OPM	EV	59	0.68	62	0.15	62	0.04*	60	0.38
	NEV	43	0.68	43	0.17	58	0.03*	55	0.35
NPM	EV	59	0.92	63	0.1	63	0.06	62	0.26
	NEV	45	0.92	48	0.1	60	0.04*	61	0.18

Notes:

EV: equal variances assumed, NEV: equal variances not assumed

*Signifies to significant difference at 5 % level

MoU (less than the ideal standard) in all the phases compared to service sector MoU PSEs. However, the position of FATR is quite satisfactory. Further, decrease in TATR is primarily attributed due to decrease in CATR. The difference is statistically significant in almost all the phases of manufacturing PSEs. On the other hand, difference is found to be significant in TATR and CATR during phases 1 and 3 only of service PSEs. Positional values have also shown wide variations (Tables 7.41 and 7.43). While the assets turnover of one-fourth of the sample manufacturing as well as service enterprises (as per quartile 3) can be reckoned quite satisfactory, another one-fourth of total MoU PSEs (indicated as per quartile 1) have

Table 7.40 Mean values of key turnover ratios of the manufacturing MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Years	TATR		FATR		CATR	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1994–1995	0.75	42	2.81	40	1.27	42
1995–1996	0.78	42	3.02	40	1.34	42
1996–1997	0.78	42	3.49	40	1.34	42
1997–1998	0.80	42	3.19	40	1.38	42
1998–1999	0.81	42	3.18	40	1.49	42
1999–2000	0.87	42	3.40	39	1.54	42
2000–2001	0.90	42	3.28	38	1.57	42
2001–2002	0.85	42	3.64	39	1.46	42
2002–2003	0.94	42	3.54	39	1.62	42
2003–2004	0.87	42	3.65	40	1.57	42
2004–2005	0.94	42	4.14	40	1.69	42
2005–2006	0.95	42	4.31	40	1.64	42
2006–2007	0.86	41	4.14	39	1.69	42
2007–2008	0.84	41	4.28	39	1.41	41
2008–2009	0.83	41	4.87	40	1.44	41
2009–2010	0.74	41	4.41	38	1.31	41
2010–2011	0.79	41	4.39	38	1.34	41
Mean 1994–1995 to 1999–2000 (phase 1)	0.80	41	3.11	39	1.40	41
Mean 2000–2001 to 2003–2004 (phase 2, before NCAER recommendation)	0.89	42	3.67	40	1.55	42
Mean 2004–2005 to 2007–2008 (phase 2, after NCAER recommendation)	0.94	42	4.28	40	1.63	42
Mean 2008–2009 to 2010–2011 (phase 3)	0.79	41	4.54	38	1.36	41
Aggregate mean (1994–1995 to 2010–2011)	0.84		3.75		1.48	

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post-NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
TATR	40	0.00**	41	0.03*	40	0.00**	39	0.00**
FATR	37	0.01**	39	0.04*	37	0.19	35	0.00**
CATR	40	0.01**	41	0.32	40	0.00**	39	0.72

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

indicated dissatisfactory performance across the phases. Further, it is important to note a significant increasing trend in all the turnover ratios during the first two phases of manufacturing MoU PSEs, whereas the trend is reversed (decreasing) in the case of service MoU PSE.

Second test of efficiency relates to the assessment of inventory holding period (IHP) and third to debtor collection period (DCP) of MoU manufacturing and service PSEs over a time span of more than one and a half decade (i.e., 17 years). The IHP

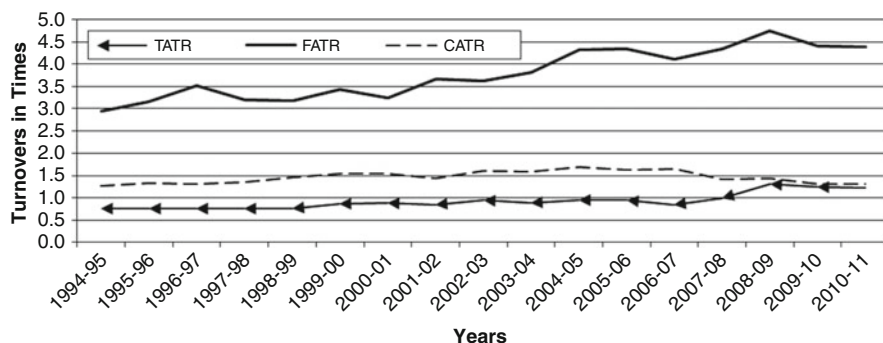


Fig. 7.22 Mean values of turnover ratios (TATR, FATR and CATR) of the manufacturing MoU PSEs for the period 1994–1995 to 2010–2011

Table 7.42 Mean values of key turnover ratios of the service MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Years	TATR		FATR		CATR	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1994–1995	1.18	24	3.44	14	1.67	24
1995–1996	1.23	24	4.09	14	1.77	24
1996–1997	1.10	24	3.63	14	1.47	24
1997–1998	1.14	23	3.78	14	1.57	23
1998–1999	1.23	24	3.74	14	1.59	24
1999–2000	1.09	23	3.66	14	1.71	24
2000–2001	1.24	24	3.33	13	1.70	24
2001–2002	1.21	24	3.80	14	1.64	24
2002–2003	1.38	24	3.43	14	1.83	24
2003–2004	1.22	24	3.89	15	1.67	24
2004–2005	1.07	24	3.82	14	1.51	24
2005–2006	1.09	24	3.92	13	1.48	24
2006–2007	1.11	23	4.14	12	1.68	24
2007–2008	1.08	24	4.41	13	1.30	24
2008–2009	1.11	23	4.82	12	1.29	23
2009–2010	1.11	23	4.32	11	1.27	23
2010–2011	1.06	23	3.57	10	1.23	23
Mean 1994–1995 to 1999–2000 (phase 1)	1.30	21	3.75	13	1.80	21
Mean 2000–2001 to 2003–2004 (phase 2, before NCAE recommendation)	1.26	24	3.91	15	1.71	24
Mean 2004–2005 to 2007–2008 (phase 2, after NCAER recommendation)	1.11	24	4.56	14	1.49	24
Mean 2008–2009 to 2010–2011 (phase 3)	1.09	23	4.30	11	1.27	23
Aggregate mean (1994–1995 to 2010–2011)	1.16		3.87		1.55	

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post- NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
TATR	20	0.62	23	0.74	18	0.08	16	0.00**
FATR	12	0.92	13	0.11	10	0.41	9	0.21
CATR	20	0.76	23	0.07	22	0.17	19	0.03*

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

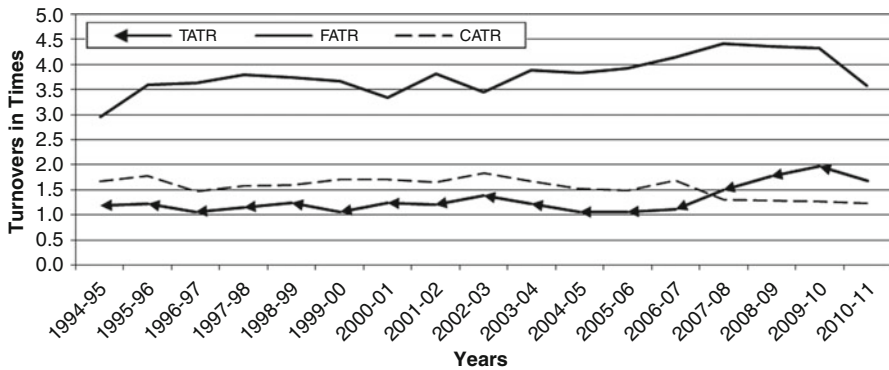


Fig. 7.23 Mean values of turnover ratios (TATR, FATR and CATR) of the service MoU PSEs for the period 1994–1995 to 2010–2011

(measured in terms of RMIHP, WIPIHP and FGIHP) and DCP have shown a declining trend over the phases in both types of sample manufacturing and service PSEs except WIPIHP and FGIHP of service PSEs (Tables 7.44 and 7.46). The differences are significant in majority of the phases (for RMIHP), during phase 2 (related to pre- and post-NCAER recommendations) as well as in phases 3 and 1 (for FGIHP) and in phases 3 and 1 and phases 1 and 2 (for DCP) of the sample manufacturing enterprises, though it is statistically significant in the case of service enterprises during phase 2 in the parameter of RMIHP only. Inter se, the IHP of service PSEs is lower compared to manufacturing PSEs. The effect of recession has hardly been observed in the IHP and DCP in both types of PSEs. The holding periods of raw materials, work-in-process, and finished goods during the pre-recessionary period (2004–2005 to 2007–2008) and post-recessionary period (2008–2009 to 2010–2011) are 151, 21, and 17 days and 129, 27, and 18 days, respectively, for manufacturing firms; the corresponding figures are 71, 14, and 19 days and 68, 10, and 22 days for service firms.

The improved efficiency in terms of reduction in inventory holding period and debtor collection period is manifested in Figs. 7.24 and 7.25. A steep decline from the year 1999 to 2000 for manufacturing firms and from 2003 to 2004 for service firms is very apparent.

Table 7.43 Median, lower (Q1), and upper quartile (Q3) values of key turnover ratios of the service MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Ratios	Q3											
	Median			Q1			Q3					
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3			
TATR	0.79	0.90	0.86	0.80	0.45	0.58	0.50	0.48	1.42	1.43	1.68	0.97
FATR	2.99	3.69	4.29	4.59	0.89	1.34	1.55	1.28	6.87	6.20	7.71	6.85
CATR	1.13	1.30	1.16	0.97	0.65	0.75	0.82	0.69	2.24	2.86	2.23	1.17

Table 7.44 Mean values of inventory holding period and debtor collection period of the manufacturing MoU PSEs, 1994–1995 to 2010–2011 (Figures are in days)

Years	RMIHP		WPIHP		FGIHP		DCP	
	Mean	N	Mean	N	Mean	N	Mean	N
1994–1995	234.58	35	19.99	39	29.43	42	89.67	41
1995–1996	186.27	33	18.12	39	25.95	41	87.69	39
1996–1997	210.36	34	17.22	39	26.43	42	96.19	40
1997–1998	208.37	33	23.43	41	22.43	42	91.84	40
1998–1999	228.85	34	26.61	41	23.13	42	97.76	40
1999–2000	204.39	34	16.72	40	21.31	42	80.03	40
2000–2001	203.12	36	19.13	40	22.09	42	76.30	40
2001–2002	184.08	35	17.87	40	20.97	42	77.04	40
2002–2003	188.57	35	18.98	40	20.68	42	85.97	40
2003–2004	170.37	37	18.08	40	18.62	42	82.59	40
2004–2005	165.34	38	16.12	40	16.81	42	69.23	42
2005–2006	144.21	37	15.52	40	15.83	42	63.68	42
2006–2007	114.06	37	15.96	40	14.07	42	63.15	41
2007–2008	143.33	38	16.21	40	14.06	42	62.80	39
2008–2009	128.32	37	21.17	37	15.41	40	57.61	39
2009–2010	127.27	37	21.48	37	16.30	40	58.25	40
2010–2011	125.29	35	20.30	36	15.93	38	65.62	39
Mean 1994–1995 to 1999–2000 (phase 1)	227.48	34	25.57	28	28.12	37	89.90	39
Mean 2000–2001 to 2003–2004 (phase 2, before NCAER recommendation)	186.93	36	24.98	29	23.37	37	85.00	41
Mean 2004–2005 to 2007–2008 (phase 2, after NCAER recommendation)	150.50	37	21.40	29	17.24	37	68.28	42
Mean 2008–2009 to 2010–2011 (phase 3)	128.58	36	26.95	29	18.08	35	60.35	40
Aggregate Mean (1994–1995 to 2010–2011)	174.52		18.99		19.97		76.79	

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post- NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
RMIHP	33	0.00**	35	0.00**	33	0.91	32	0.00**
WPIHP	28	0.74	29	0.11	27	0.19	26	0.76
FGIHP	34	0.10	35	0.00**	33	0.29	32	0.02*
DCP	38	0.00**	40	0.13	39	0.40	36	0.00**

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

Table 7.45 Median, lower (Q1), and upper quartile (Q3) values of IHP and debtor collection period of the manufacturing MoU PSEs, 1994–1995 to 2010–2011 (Figures are in days)

Ratios	Median			Q1			Q3					
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3			
RMHP	179.63	146.18	113.34	89.93	83.40	75.26	41.89	37.05	294.93	287.45	251.50	182.24
WPIHP	5.87	7.43	7.49	3.21	1.06	1.92	1.82	1.07	54.49	50.02	21.50	21.32
FGIHP	19.04	22.57	13.15	18.08	4.58	3.86	5.09	4.17	44.85	37.92	28.02	26.81
DCP	71.95	65.84	49.09	50.53	29.83	21.71	19.78	19.95	150.58	134.82	103.59	98.16

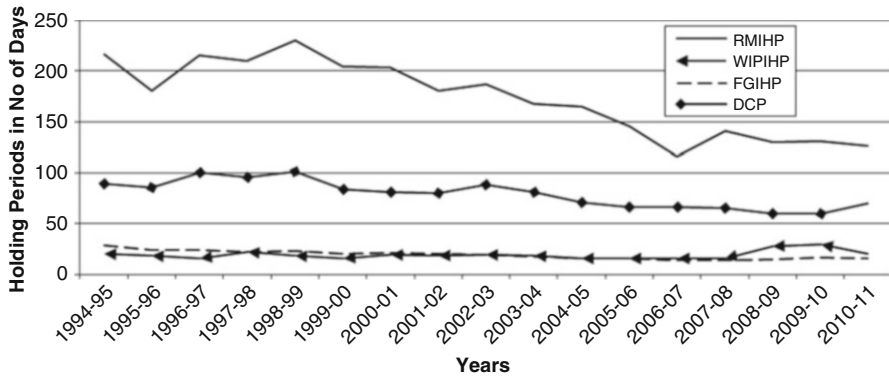


Fig. 7.24 Mean values of the inventory holding and debtors collection periods of the manufacturing MoU PSEs for the period 1994–1995 to 2010–2011

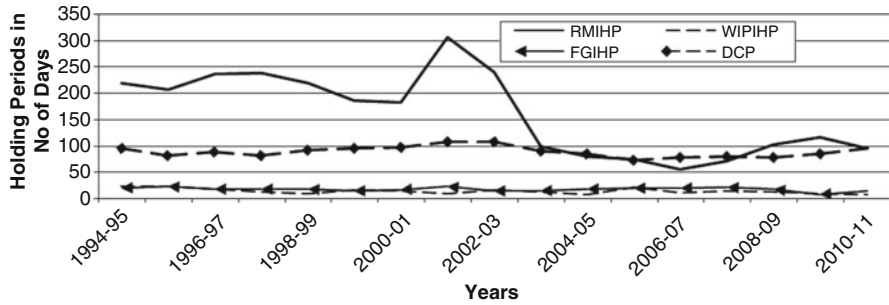


Fig. 7.25 Mean values of the inventory holding and debtors collection periods of service MoU PSEs for the period 1994–1995 to 2010–2011

At the same time, positional values (depicted in Tables 7.45 and 7.47) indicate that one-fourth of manufacturing and service sample PSEs (as per upper quartile) have very high RMIHP, i.e., 6 months to 1 year and more than 4 months to 14 months, respectively. The select list from manufacturing sector PSEs includes Indian Rare Earths Ltd., Neyveli Lignite Corp. Ltd., Oil India Ltd., Garden Reach Shipbuilders Ltd., and Engineers India Ltd.; similarly, the list consists of National Small Industries Corp. Ltd., Mineral Exploration Corp. Ltd., and Central Warehousing Corp. Ltd. from service sector PSEs.

The inventory holding period, prima facie, seems to be of a longer time span than desired, causing high carrying cost of inventory, adversely impacting production costs and profit margins. Independent *t*-test has observed no significant difference in any of the efficiency parameters between manufacturing and service PSEs (Table 7.48); group statistics suggests better performance of service PSEs compared to manufacturing PSEs.

Table 7.46 Mean values of inventory holding period and debtor collection period of the service MoU PSEs, 1994–1995 to 2010–2011 (Figures are in days)

Years	RMIHP		WPIHP		FGIHP		DCP	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1994–1995	204.59	12	7.74	23	13.46	24	103.37	23
1995–1996	196.32	12	7.34	23	15.28	24	91.42	23
1996–1997	231.43	14	7.81	23	10.60	23	89.49	22
1997–1998	222.76	15	6.20	23	14.12	24	82.09	21
1998–1999	203.30	14	4.07	23	10.60	24	92.58	22
1999–2000	172.39	14	5.31	23	12.25	24	95.93	22
2000–2001	170.23	14	5.50	23	11.26	24	97.36	23
2001–2002	252.26	14	4.36	23	14.43	24	108.97	24
2002–2003	221.93	13	5.98	23	9.47	24	108.51	24
2003–2004	92.99	18	5.29	23	9.45	24	90.29	24
2004–2005	78.28	18	3.95	23	10.82	24	84.80	24
2005–2006	64.06	17	10.74	23	12.63	24	74.45	24
2006–2007	52.38	15	5.65	23	12.86	24	78.84	24
2007–2008	34.01	14	6.48	22	12.31	23	79.40	23
2008–2009	60.95	13	5.69	22	15.04	22	78.30	23
2009–2010	56.48	13	4.30	22	11.84	22	84.70	23
2010–2011	60.01	11	3.66	22	12.12	22	95.80	23
Mean 1994–1995 to 1999–2000 (phase 1)	215.46	12	6.83	9	22.87	13	98.64	23
Mean 2000–2001 to 2003–2004 (phase 2, pre-NCAER recommendation)	162.71	17	11.02	11	18.04	14	103.03	24
Mean 2004–2005 to 2007–2008 (phase 2, post-NCAER recommendation)	71.10	18	13.85	11	19.86	14	79.16	24
Mean 2008–2009 to 2010–2011 (phase 3)	68.43	10	10.00	10	22.00	13	86.27	23
Aggregate mean (1994–1995 to 2010–2011)	139.67		5.89		12.27		90.37	

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post- NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
RMIHP	11	0.30	17	0.00**	14	0.26	9	0.44
WPIHP	8	0.56	11	0.99	9	0.14	7	0.98
FGIHP	12	0.59	13	0.59	12	0.65	11	0.22
DCP	19	0.71	23	0.07	22	0.50	18	0.92

**Signifies to significant difference at 1 % level

Table 7.47 Median, lower (Q1), and upper quartile (Q3) values of IHP and DCP of the service MoU PSEs, 1994–1995 to 2010–2011 (Figures are in days)

Ratios	Median											
	Q1				Q3							
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3
RMHP	181.53	91.25	24.76	10.08	36.19	14.45	2.07	1.81	404.76	340.29	133.12	59.62
WIPHP	2.88	5.42	5.68	1.49	0.00	0.00	0.30	0.00	22.82	18.71	19.16	9.82
FGIHP	2.10	2.35	3.83	3.16	0.00	0.00	0.12	0.28	28.05	10.03	13.95	17.97
DCP	73.07	89.35	62.30	91.88	26.36	40.69	31.98	27.81	167.80	175.05	127.20	117.51

Table 7.48 Independent sample *t*-test of key efficiency ratios of the sample manufacturing and service MoU PSEs during 1994–1995 to 2010–2011 (group statistics)

Ratios	Coding	Phase 1		Phase 2 (pre- and post-NCAER recommendations)				Phase 3	
		<i>N</i>	Mean	<i>N</i>	Mean		<i>N</i>	Mean	
					Pre-NCAER	Post-NCAER		3 year	
TATR	Manuf.	41	0.79	42	0.89	42	0.98	41	1.26
	Service	21	1.30	24	1.26	24	1.23	19	1.86
FATR	Manuf.	39	3.17	40	3.72	40	4.43	38	4.55
	Service	13	3.75	15	3.91	14	4.56	11	4.30
CATR	Manuf.	41	1.39	42	1.55	42	1.63	41	1.36
	Service	21	1.80	24	1.71	24	1.49	23	1.27
DCP	Manuf.	39	93.63	41	87.18	42	70.94	40	63.64
	Service	20	85.52	24	103.03	24	79.16	23	86.27
RMIHP	Manuf.	34	225.00	36	184.37	37	147.06	36	128.35
	Service	12	213.88	18	175.98	19	70.01	15	114.66
WIPIHP	Manuf.	29	26.10	30	25.58	30	21.91	31	35.25
	Service	9	6.83	12	13.57	12	13.44	10	10.00
FGIHP	Manuf.	35	28.61	36	23.35	36	17.27	34	18.46
	Service	13	19.62	14	16.93	14	19.18	13	15.21

Independent samples *t*-test

Ratios	Variances	<i>t</i> -test for equality of means							
		Phase 1		Phase 2 (Pre-NCAER)		Phase 2 (Post-NCAER)		Phase 3 (3 year postrecession)	
		df	Sign.	df	Sign.	df	Sign.	df	Sign.
TATR	EV	60	0.05*	64	0.13	64	0.30	58	0.08
	NEV	28	0.10	42	0.15	51	0.29	27	0.12
FATR	EV	50	0.52	53	0.83	52	0.90	47	0.82
	NEV	19	0.55	27	0.83	21	0.90	16	0.83
CATR	EV	60	0.25	64	0.65	64	0.72	62	0.78
	NEV	35	0.27	57	0.63	64	0.68	59	0.76
DCP	EV	57	0.67	63	0.42	64	0.64	61	0.16
	NEV	45	0.65	49	0.42	55	0.63	38	0.18
RMIHP	EV	44	0.84	52	0.85	54	0.03*	49	0.74
	NEV	22	0.83	31	0.85	51	0.01**	20	0.77
WIPIHP	EV	36	0.08	40	0.24	40	0.41	39	0.24
	NEV	36	0.01**	39	0.12	31	0.33	38	0.06
FGIHP	EV	46	0.36	48	0.47	48	0.83	45	0.63
	NEV	17	0.43	16	0.59	14	0.89	14	0.72

Notes:

EV: equal variances assumed, *NEV*: equal variances not assumed

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

7.6.1.3 Leverage and Liquidity Ratios

It has been noted that debt has been a major source of finance for manufacturing as well as service PSEs during the 17-year period of the study. Inter se, the TD/TE ratio is higher at 1.85 in the case of service PSEs compared to 1.52 for manufacturing PSEs (Tables 7.49 and 7.51). Though the relative proportion of external obligation

Table 7.49 Mean values of key leverage and liquidity ratios of the manufacturing MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Years	Leverage ratios		Liquidity ratios			
	TD/TE		CR		ATR	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1994–1995	1.63	36	2.00	29	1.39	41
1995–1996	1.70	37	2.13	42	1.40	41
1996–1997	1.77	37	2.21	40	1.51	40
1997–1998	1.79	38	2.28	41	1.60	41
1998–1999	1.51	36	2.13	41	1.52	41
1999–2000	1.68	36	2.04	41	1.49	42
2000–2001	1.78	36	2.12	41	1.56	42
2001–2002	1.80	37	2.15	42	1.56	41
2002–2003	1.24	34	2.19	42	1.63	41
2003–2004	1.09	35	2.01	42	1.51	41
2004–2005	1.27	37	2.09	42	1.67	42
2005–2006	1.29	39	2.12	42	1.71	42
2006–2007	1.36	40	2.16	41	1.70	40
2007–2008	1.38	39	1.96	39	1.61	39
2008–2009	1.64	39	1.89	40	1.38	39
2009–2010	1.49	40	1.93	40	1.04	39
2010–2011	1.50	39	1.78	39	1.41	39
Mean 1994–1995 to 1999–2000 (phase 1)	1.77	38	2.12	41	1.51	41
Mean 2000–2001 to 2003–2004 (phase 2, pre-NCAER recommendation)	1.65	37	2.11	42	1.60	42
Mean 2004–2005 to 2007–2008 (phase 2, post-NCAER recommendation)	1.38	40	2.12	42	1.72	42
Mean 2008–2009 to 2010–2011 (phase 3)	1.58	40	1.89	40	1.27	39
Aggregate mean (1994–1995 to 2010–2011)	1.52		2.07		1.51	

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post- NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
TD/TE	36	0.47	37	0.05*	40	0.07	37	0.34
CR	40	0.81	41	0.99	39	0.09	38	0.46
ATR	40	0.25	41	0.43	38	0.08	37	0.45

*Signifies to significant difference at 5 % level

Table 7.50 Median, lower (Q1), and upper quartile (Q3) values of key leverage and liquidity ratios of the MoU manufacturing PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Ratios	Median			Q1			Q3		
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3
TD/TE	1.26	1.00	0.98	0.59	0.43	0.43	2.67	2.18	2.09
CR	2.00	1.66	1.70	1.22	1.17	1.25	2.88	2.74	3.04
ATR	1.38	1.21	1.30	0.72	0.78	0.94	2.24	2.39	2.49

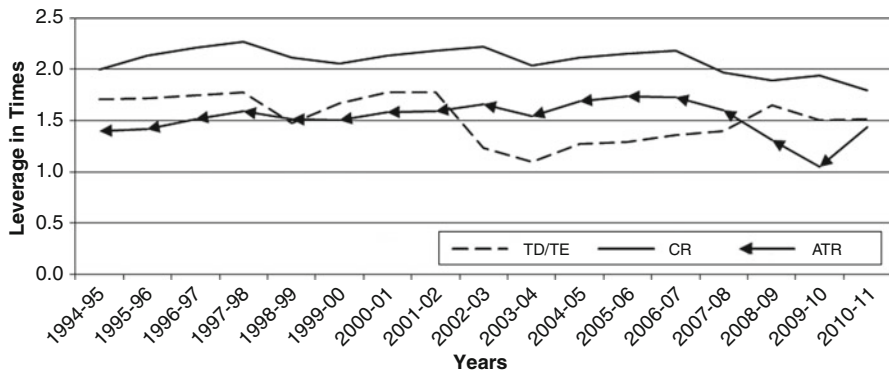


Fig. 7.26 Mean values of leverage ratios (TD/TE) and liquidity ratios (CR and ATR) of the manufacturing MoU PSEs for the period 1994–1995 to 2010–2011

Table 7.51 Mean values of key leverage and liquidity ratios of the service MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Years	Leverage ratios		Liquidity ratios			
	TD/TE		CR		ATR	
	Mean	N	Mean	N	Mean	N
1994–1995	1.79	20	1.92	24	1.60	24
1995–1996	1.74	20	1.95	24	1.59	24
1996–1997	1.49	20	2.24	24	1.69	23
1997–1998	1.56	20	2.28	24	1.86	24
1998–1999	1.44	19	2.08	24	1.64	23
1999–2000	1.59	19	2.10	24	1.62	23
2000–2001	1.53	17	2.13	24	1.84	24
2001–2002	1.89	17	1.94	24	1.65	24
2002–2003	1.69	17	1.80	23	1.64	23
2003–2004	1.70	15	1.72	23	1.63	24
2004–2005	2.15	15	1.83	23	1.33	22
2005–2006	2.07	17	1.82	23	1.55	23
2006–2007	2.19	17	1.71	22	1.48	22
2007–2008	2.05	15	2.12	23	1.67	22
2008–2009	1.88	15	2.00	22	1.55	22
2009–2010	2.38	17	2.03	21	1.56	19
2010–2011	2.40	17	2.02	20	1.57	19
Mean 1994–1995 to 1999–2000 (phase 1)	1.64	20	2.10	21	1.83	21
Mean 2000–2001 to 2003–2004 (phase 2, before NCAER recommendation)	1.74	17	1.97	24	1.70	24
Mean 2004–2005 to 2007–2008 (phase-2-after NCAER recommendation)	2.28	17	2.01	24	1.56	23
Mean 2008–2009 to 2010–2011 (phase-3)	2.35	17	2.01	21	1.57	20
Aggregate mean (1994–1995 to 201011)	1.85		1.98		1.62	

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post- NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
TD/TE	16	0.25	16	0.26	13	0.05*	14	0.05*
CR	20	0.06	23	0.81	20	0.67	17	0.44
ATR	20	0.23	22	0.65	19	0.45	17	0.64

*Signifies to significant difference at 5 % level

is higher for service PSEs, statistically, the difference in the TD/TE ratio between service and manufacturing PSEs is insignificant (Table 7.53).

However, as per trend, the decrease in debt-equity ratio has been noted over the phases (except phase 3) in the case of manufacturing PSEs (Fig. 7.26); the decrease is statistically significant in phase 2 (2004–2005 to 2007–2008) and post-recession phase (2008–2009 to 2010–2011) as per Table 7.49. In contrast, there has been increased use of debt in the case of service PSEs, significant statistically in phases 1 and 3 as well as in phase 2 (post-NCAER) and phase 3 (Table 7.51 and Fig. 7.27).

The data in respect to positional values is more revealing on the subject. The debt-equity ratio for three-fourth of the sample manufacturing PSEs is less than one (a satisfactory level) during phases 2 and 3 (Tables 7.50). Likewise, in the case of service PSEs, this ratio is less than one for one-fourth of PSEs (Table 7.52). In other words, the debt level appears to be higher than warranted only in one-fourth of manufacturing and three-fourth of service PSEs.

In contrast to the above findings, the set of liquidity ratios are satisfactory for both types of PSEs. Between the two, CR of the manufacturing PSEs has an edge over the service PSEs. However, the difference is not statistically significant across the phases (Table 7.53).

It is heartening to note that the acid test ratio for both types of PSEs is higher than the desired norm of 1:1, the respective figures being 1.51 and 1.62 for manufacturing and service PSEs during the 17-year period of the study. Likewise, the current ratio (at 2.07) exceeds the desired norms of 2:1 in the case of manufacturing PSEs. Although, it is lower at 1.9 for the service PSEs, viewed along with ATR of 1.62, it is very safe to conclude that the sample MoU PSEs are not likely to encounter any problems in meeting their short-term maturing obligations in time. Apparently, they have felt almost negligible impact of recession. In view of the above, it would be appropriate to infer that MoU PSEs (service as well as manufacturing) have sound liquidity position and satisfactory level of debt.

Table 7.52 Median, lower (Q1), and upper quartile (Q3) values of key leverage and liquidity ratios of the service MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Ratios	Median			Q1			Q3					
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3			
TD/TE	1.27	1.11	1.93	2.01	0.79	0.80	0.89	0.63	2.49	2.55	3.40	3.06
CR	2.00	1.65	1.32	1.33	1.21	1.17	1.05	1.13	2.83	2.36	2.22	2.23
ATR	1.56	1.57	1.14	1.26	1.09	1.03	0.95	1.06	2.53	2.25	1.75	1.86

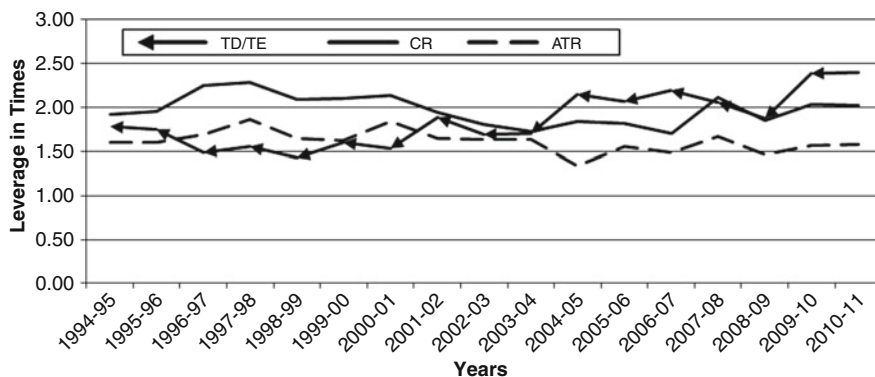


Fig. 7.27 Mean values of leverage ratios (TD/TE) and liquidity ratios (CR and ATR) of the service MoU PSEs for the period 1994–1995 to 2010–2011

Table 7.53 Independent sample *t*-test of key leverage and liquidity ratios of the sample manufacturing and service MoU PSEs during 1994–1995 to 2006–2007

		<i>t</i> -test for equality of means							
		Phase 1		Phase 2 (Pre-NCAER)		Phase 2 (Post-NCAER)		Phase 3 (3 year postrecession)	
Ratios	Variiances	df	Sign.	df	Sign.	df	Sign.	df	Sign.
TD/TE	EV	56	0.73	53	0.82	56	0.06	56	0.10
	NEV	53	0.70	35	0.81	24	0.10	25	0.14
CR	EV	60	0.82	64	0.57	64	0.67	59	0.74
	NEV	36	0.83	47	0.57	37	0.70	32	0.76
ATR	EV	60	0.15	64	0.77	63	0.49	57	0.30
	NEV	38	0.16	55	0.76	49	0.48	44	0.28

7.6.1.4 Productivity Analysis

An attempt has also been made under the fourth test of efficiency to assess and compare the productivity of manufacturing and service PSEs in terms of sales and net profit per employee. The major parameters used for the analysis are employment, sales efficiency, and net income efficiency (NIE). There has been a consistent decrease in employment in the manufacturing as well as in service PSEs over the phases (Tables 7.54 and 7.56); it is significant as per paired *t*-test in phases 1 and 2 in sample PSEs belonging to manufacturing and service sector. Similar conclusions follow on the basis of positional values (Tables 7.55 and 7.57). For instance, there has been almost a consistent decrease in median and both sets of quartiles over the phases in respect to both manufacturing and service MoU PSEs (Fig. 7.28).

Table 7.54 Mean values of key productivity ratios of the manufacturing MoU PSEs, 1994–1995 to 2010–2011

Years	Employment		Sales efficiency		NIE	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1994–1995	14,862	42	12.45	40	1.40	42
1995–1996	14,712	42	14.98	40	1.86	42
1996–1997	14,631	42	17.38	40	2.12	42
1997–1998	14,295	42	19.27	40	2.66	42
1998–1999	14,058	42	22.15	40	2.54	42
1999–2000	15,350	42	16.89	38	2.39	42
2000–2001	12,892	42	18.55	38	3.32	42
2001–2002	12,439	42	19.77	38	3.82	42
2002–2003	11,937	42	24.98	38	4.34	42
2003–2004	11,481	42	26.24	38	6.88	42
2004–2005	11,175	42	31.07	38	7.90	42
2005–2006	11,443	42	34.26	38	8.46	42
2006–2007	11,311	42	39.40	38	10.58	42
2007–2008	12,181	42	39.09	37	10.64	42
2008–2009	12,514	42	44.19	37	10.69	42
2009–2010	12,218	42	45.12	37	12.64	42
2010–2011	10,669	42	52.00	36	10.18	40
Mean 1994–1995 to 1999–2000 (phase 1)	14,553	41	18.41	39	2.25	41
Mean 2000–2001 to 2003–2004 (phase 2, pre-NCAER recommendation)	12,187	42	22.38	38	4.59	42
Mean 2004–2005 to 2007–2008 (phase 2, post-NCAER recommendation)	11,527	42	36.59	38	9.39	42
Mean 2008–2009 to 2010–2011 (phase 3)	11,800	42	47.17	37	12.26	42
Aggregate mean (1994–1995 to 2010–2011)	12,833.35		28.11		6.03	

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases-2 (post- NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
Employment	40	0.01**	41	0.09	41	0.67	40	0.14
SE	36	0.00**	37	0.00**	36	0.00**	35	0.00**
NIE	40	0.00**	41	0.00**	41	0.06	40	0.00**

**Signifies to significant difference at 1 % level

Table 7.55 Median, lower quartile (Q1), and upper quartile (Q3) values of key productivity ratios of the manufacturing MoU PSEs, 1994–1995 to 2010–2011

Ratios	Median			Q1			Q3					
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3			
Employment	7,016	5,842	4,987	4,727	2,793	2,696	2,437	2,120	16,540	13,076	12,335	12,077
SE	7.06	12.62	19.45	29.52	3.90	6.94	11.13	17.01	18.94	31.67	63.46	62.61
NIE	0.42	1.13	3.17	4.11	0.05	0.06	0.85	1.10	2.86	6.37	12.48	12.23

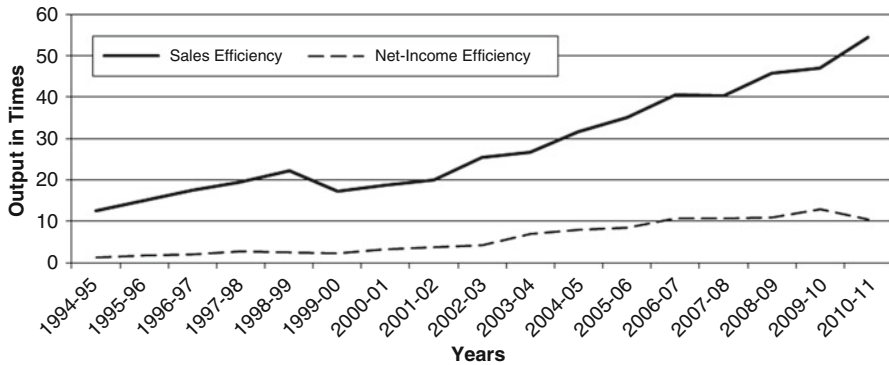


Fig. 7.28 Mean values of the output ratios (sales and net income efficiency) of the manufacturing MoU PSEs for the period 1994–1995 to 2010–2011

It is worth mentioning that sizable increase has been observed in the sales efficiency (SE) and NIE of the manufacturing and service MoU PSEs across the phases. The increase in sales efficiency of manufacturing PSEs is two-and-a-half-fold during the corresponding phases; NIE is more than five times during phase 3 vis-à-vis phase 1; both are statistically significant across the phases (Tables 7.54). Similarly, the sales efficiency and NIE in the case of service PSEs are nearly one and a half times and four times over phase 3 against phase 1, respectively (Table 7.56); the differences are statistically significant over the phases (except pre- and post-NCAER phase 2 for sales efficiency and phases 1, 2, and 3 for NIE). Figure 7.29 portrays this increase in respective ratios in service PSEs from the year 2003 to 2004 onwards and for manufacturing PSEs from 1999 to 2000 onwards. Positional data related to manufacturing and service sector PSEs have almost followed the mean observations (Tables 7.55 and 7.57). Further, it may be inferred that the phase of recession has not reduced the productivity level of the service and manufacturing MoU PSEs; instead, high quantum of increase has been recorded.

In addition, independent *t*-test has identified no significant difference except phases 1 and 2 in sales efficiency between both types of service and manufacturing PSEs (Table 7.58); it also signifies no industry variations as far as productivity of capital per manpower is concerned.

7.6.2 Part II: Profit-Making and Loss-Making MoU PSEs

The objective of this part is to assess the impact of signing MoUs on the financial performance of the profit-making and loss-making PSEs on the basis of five broad parameters, namely, profitability, efficiency, liquidity, leverage, and productivity (as per earlier part). It would be of specific interest to ascertain whether the

Table 7.56 Mean values of key productivity of capital ratios of the service MoU PSEs, 1994–1995 to 2010–2011

Years	Employment		Sales efficiency		NIE	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1994–1995	3,516	24	29.60	23	0.83	24
1995–1996	3,529	24	32.93	23	1.33	24
1996–1997	3,480	24	35.79	23	1.78	24
1997–1998	3,424	24	39.88	23	1.88	24
1998–1999	3,363	24	37.68	23	2.11	24
1999–2000	2,972	24	50.72	23	2.72	24
2000–2001	2,864	24	42.68	19	4.07	24
2001–2002	2,633	24	43.02	19	3.16	24
2002–2003	2,503	24	44.31	19	4.10	24
2003–2004	2,375	24	41.58	18	7.41	24
2004–2005	2,601	24	37.75	18	5.66	24
2005–2006	2,559	24	47.32	18	6.86	24
2006–2007	2,528	24	50.50	19	8.42	24
2007–2008	1,826	23	59.19	17	10.00	23
2008–2009	1,895	23	51.70	15	10.17	23
2009–2010	1,870	23	62.34	15	10.65	23
2010–2011	1,856	23	67.44	15	11.22	23
Mean 1994–1995 to 1999–2000 (phase 1)	3,502	21	41.94	20	2.32	21
Mean 2000–2001 to 2003–2004 (phase 2, pre-NCAER recommendation)	2,594	24	44.61	19	4.69	24
Mean 2004–2005 to 2007–2008 (phase 2, post-NCAER recommendation)	2,549	24	47.85	19	7.63	24
Mean 2008–2009 to 2010–2011 (phase 3)	1,874	23	60.49	15	10.68	23
Aggregate mean (1994–1995 to 2010–2011)	2,693.79		45.56		5.43	

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases-2 (post-NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
Employment	20	0.04*	23	0.85	22	0.94	19	0.10
SE	15	0.02*	17	0.39	14	0.00**	12	0.00**
NIE	20	0.09	23	0.05*	22	0.06	19	0.01**

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

introduction of MoU has witnessed the enhancement of financial performance in loss-making MoU PSEs or not. Hence, it is hypothesized that operational efficiency of loss-making PSEs has improved after signing MoUs. It is also expected that after signing MoUs, the financial performance of profit-making PSEs should show an improvement.

Table 7.57 Median, lower (Q1), and upper quartile (Q3) values of key productivity ratios of the service MoU PSEs, 1994–1995 to 2010–2011

Ratios	Median			Q1			Q3						
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3				
Employment	1.625	1,102	1,079	1,147	524	552	472	477	472	3,625	2,586	2,588	2,169
SE	16.31	19.85	38.00	67.66	5.93	10.37	16.80	16.80	19.56	68.97	67.85	63.98	86.67
NIE	0.68	1.29	2.59	4.78	0.14	-0.27	0.98	0.98	1.69	2.27	6.34	9.64	11.37

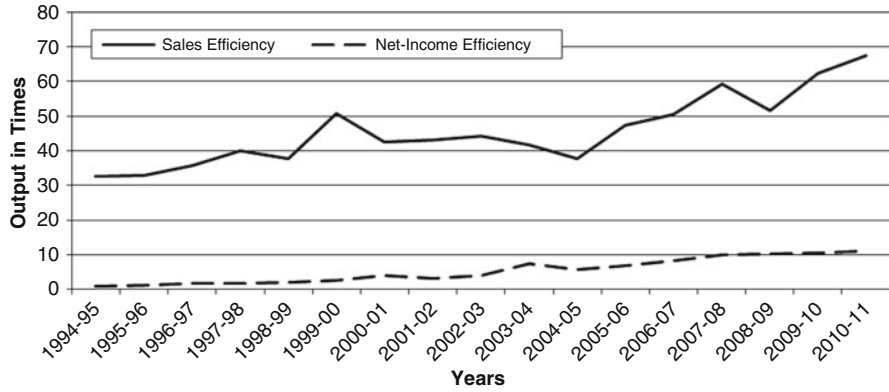


Fig. 7.29 Mean values of the output ratios (sales and net income efficiency) of the service MoU PSEs for the period 1994–1995 to 2010–2011

Table 7.58 Independent sample *t*-test of key productivity ratios of the sample manufacturing and service MoU PSEs during 1994–1995 to 2010–2011

Ratios	Coding	Phase 1		Phase 2 (pre- and post- NCAER recommendations)				Phase 3	
		<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>	Mean
				Pre-NCAER		Post-NCAER		3 year	
Employment	Manuf.	41	16,044	42	13,287	42	12,527	42	12,880
	Service	21	3,502	24	2,594	24	2,549	23	1,874
SE	Manuf.	39	18.60	38	22.76	38	37.55	37	49.15
	Service	21	44.70	19	44.61	19	47.85	15	60.49
NIE	Manuf.	41	2.28	42	4.65	42	9.56	42	12.52
	Service	21	2.39	24	4.69	24	7.63	23	10.68

Independent samples *t*-test

Ratios	Variances	<i>t</i> -test for equality of means							
		Phase 1		Phase 2 (Pre-NCAER)		Phase 2 (Post-NCAER)		Phase 3 (3 year postrecession)	
		df	Sign.	df	Sign.	df	Sign.	df	Sign.
Employment	EV	60	0.05*	64	0.03*	64	0.03*	63	0.01**
	NEV	45	0.01**	45	0.01**	46	0.01**	43	0.00**
SE	EV	58	0.01**	55	0.03*	55	0.35	50	0.41
	NEV	29	0.03*	22	0.09	33	0.36	26	0.42
NIE	EV	60	0.93	64	0.99	64	0.59	63	0.73
	NEV	46	0.93	42	0.99	55	0.57	57	0.70

Notes:

EV: equal variances assumed, NEV: equal variances not assumed

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

7.6.2.1 Profitability Analysis

As expected, the profitability (measured in terms of RONW, ROCE, ROTA, OPM and NPM) of profit-making (PM) sample PSEs has recorded an increasing trend over the phases (including pre- and post-sub-phases 2 of NCAER recommendations and phase 3 compared to phase 1) as per Table 7.59 and Figs. 7.30 and 7.31; the percentage increases during pre- and post-phase 2 compared to first phase are 34 and 50 % (RONW), 12 and 30 % (ROCE), 10 and 16 % (ROTA), -1.4 (decrease) and 16.7 % (OPM), and 39 and 66 % (NPM), respectively. However, a decrease in all the profitability ratios has been recorded during the post-recession phase (2008–2009 to 2010–2011) vis-à-vis immediate pre-recession phase (2004–2005 to 2007–2008).

True, in mathematics terms, there is a decline in profitability ratios in recession phase; in spite of this decrease, business operations of the profit-making PSUs continue to earn satisfactory rates of return on investments as well as profit margins on sales. For instance, RONW has been 13.75 %, and net-profit margin has been more than 10.02 %.

Moreover, one-fourth of the MoU PSEs (only) were having negative ROCE across the phases as per lower quartile, and the remaining three-fourth were earning satisfactory profits during all the phases (Table 7.60).

It is heartening to note commendable increase in all the parameters of profitability in the post-NCAER phases 2 and 3 compared to previous two phases of LM PSEs (Table 7.61); the difference is also statistically significant during the referred time period in majority of the profitability measures. The period from 1998–1999 to 2002–2003 has shown the worst performance; the years 2003–2004 onwards have witnessed a notable improvement in profitability in LM PSEs (depicted in Figs. 7.32 and 7.33) since government has infused substantial amount of investment for uplifting these enterprises. Majority of the LM sample enterprises have indicated higher profitability over a period of time (Table 7.62). In fact, even during recession phase, all five measures of profitability have shown positive profits. This performance is commendable as these PSEs were in red till 2003–2004.

It may be noted that independent *t*-test (conducted in Table 7.63) has indicated significant difference in all the measures of profitability between PM and LM PSEs during the phase 1 and pre-NCAER phase 2; it implies that improvement in mean profitability of PM enterprises is better than that of LM enterprises during the same time frame. It is gratifying to observe that the LM PSEs have shown tremendous improvement during the succeeding phases, i.e., phase 3 and post-NCAER phase 2 (Table 7.61) which has been validated by independent *t*-test. In sum, NCAER recommendations seem to have played an important role in toning up the performance of loss-making PSEs to a large extent. Hence, several committees' recommendations for closing down the loss-making enterprises merit revisit.

Table 7.59 Mean values of key profitability ratios of the profit-making MoU PSEs, 1994–1995 to 2010–2011 (Figures are in percentages)

Years	RONW		ROCE		ROTA		OPM		NPM	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
1994–1995	9.93	50	8.89	51	8.45	54	16.03	52	6.79	53
1995–1996	12.01	49	9.53	50	9.75	54	18.86	53	8.07	53
1996–1997	10.72	50	8.90	52	9.33	54	18.70	51	8.98	53
1997–1998	11.69	51	10.18	54	10.63	54	19.07	50	10.13	53
1998–1999	11.67	50	7.45	54	9.18	54	16.47	53	8.27	53
1999–2000	11.96	50	4.31	54	8.33	54	13.96	52	6.74	53
2000–2001	13.04	52	8.16	53	10.05	54	17.71	50	11.22	52
2001–2002	13.59	51	9.35	53	11.28	53	18.58	49	11.20	51
2002–2003	14.40	52	9.04	53	10.00	54	15.46	50	10.57	51
2003–2004	17.88	52	9.71	53	10.40	54	16.26	48	12.22	52
2004–2005	17.16	52	12.14	50	10.56	53	20.49	50	13.09	52
2005–2006	16.68	53	10.58	51	10.16	53	21.59	51	13.98	52
2006–2007	17.39	53	8.43	52	10.36	51	17.94	49	14.19	52
2007–2008	15.55	51	10.78	49	10.82	52	17.11	46	12.96	51
2008–2009	14.92	52	8.61	49	8.50	52	13.47	51	8.88	53
2009–2010	13.40	51	9.42	51	8.45	54	13.73	51	10.03	52
2010–2011	13.09	52	11.46	51	9.07	54	14.85	50	11.04	53
Mean 1994–1995 to 1999–2000 (phase 1)	11.15	51	8.09	54	9.28	54	17.33	53	8.16	53
Mean 2000–2001 to 2003–2004 (phase 2, before NCAER recommendation)	14.97	53	9.06	53	10.28	54	17.03	51	11.34	52
Mean 2004–2005 to 2007–2008 (phase 2, after NCAER recommendation)	16.74	53	10.54	53	10.81	54	20.22	52	13.58	52
Mean 2008–2009 to 2010–2011 (phase 3)	13.75	53	9.77	51	9.10	54	14.35	51	10.02	53
Aggregate mean (1994–1995 to 2010–2011)	13.83		9.23		9.72		17.08		10.49	

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post-NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
RONW	49	0.01**	52	0.28	52	0.02*	49	0.14
ROCE	52	0.74	52	0.41	50	0.32	50	0.95
ROTA	53	0.19	53	0.57	53	0.08	53	0.87
OPM	50	0.95	50	0.06	49	0.01**	50	0.06
NPM	51	0.03*	51	0.02*	51	0.05*	52	0.29

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

Table 7.60 Median, lower (Q1), and upper Quartile (Q3) values of key profitability ratios of the profit-making MoU PSEs, 1994–1995 to 2010–2011 (Figures are in percentages)

Ratios	Median											
	Q1			Q3			Q3					
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3			
RONW	11.07	14.50	14.89	12.74	2.69	4.63	7.23	6.29	19.20	25.08	27.56	20.66
ROCE	8.86	8.54	9.72	7.94	-2.34	-4.05	-1.56	-1.66	20.08	26.02	30.96	22.02
ROTA	8.53	8.03	8.72	7.65	2.99	3.16	4.87	3.70	15.15	17.98	17.50	13.03
OPM	12.30	14.08	14.66	9.46	6.20	3.69	3.87	2.68	28.72	30.00	33.92	25.92
NPM	6.01	8.79	9.91	6.21	1.19	1.24	2.51	1.56	18.31	22.03	26.72	19.29

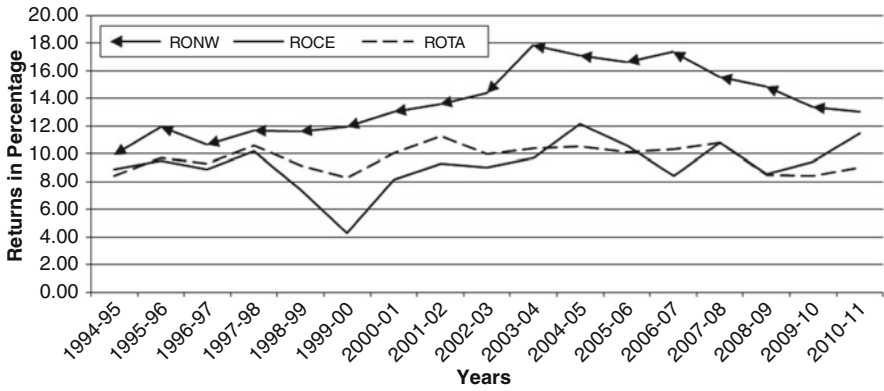


Fig. 7.30 Mean values of profitability ratios (RONW, ROCE and ROTA) of the profit-making PSEs signed MOU for the year 1994–1995 to 2010–2011

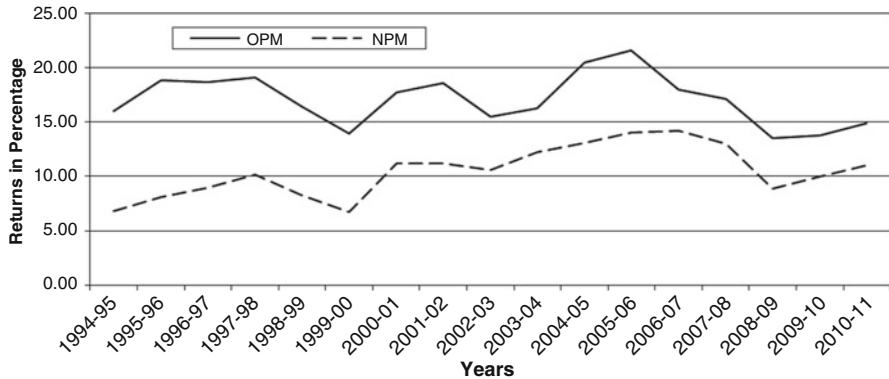


Fig. 7.31 Mean values of the profitability ratios (OPM and NPM) of the profit-making PSEs signed MOU for the years 1994–1995 to 2010–2011

7.6.2.2 Efficiency Analysis

The test of efficiency has been conducted on three parameters for both types of PM and LM MoU PSEs separately; these are turnover ratios, holding period of various inventories, and debtor collection period. The efficiency between both types of sample PSEs has been compared through independent *t*-test. It is hypothesized that after signing MoUs, the efficiency level has enhanced in both types of PSEs.

In the case of turnover/efficiency ratios, it is heartening to note that the increase in mean TATR, FATR, and CATR of LM MoU PSEs is higher than the PM MoU PSEs for most of the years of the study (Tables 7.64 and 7.66). Further, there is a steady and consistent improvement in turnover ratios (except phase 3 for TATR and CATR) in the case of LM MoU PSEs.

Table 7.61 Mean values of key profitability ratios of the loss-making MoU PSEs, 1994–1995 to 2010–2011 (Figures are in percentages)

Years	RONW		ROCE		ROTA		OPM		NPM	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1994–1995	0.14	11	3.47	12	4.28	12	5.21	12	-3.12	12
1995–1996	3.95	10	3.12	12	4.67	12	8.25	12	-0.41	12
1996–1997	-1.99	12	0.94	12	11.52	12	15.03	11	3.79	12
1997–1998	-5.03	11	-2.87	12	3.29	12	6.02	12	-0.98	12
1998–1999	-4.68	11	-5.94	12	1.29	12	3.59	12	-4.31	12
1999–2000	-9.29	11	-9.52	12	-0.42	12	0.01	12	-8.16	12
2000–2001	-16.24	9	-13.74	12	-1.20	12	-2.77	11	-9.05	12
2001–2002	-25.03	7	-20.66	11	-5.94	12	-8.91	12	-18.83	12
2002–2003	-11.14	8	-18.79	11	-2.82	12	-3.83	12	-9.80	12
2003–2004	10.94	8	0.94	11	5.80	12	7.74	12	1.82	12
2004–2005	12.27	8	20.19	11	11.39	12	12.28	11	10.58	11
2005–2006	25.19	9	10.00	11	11.52	12	17.30	12	11.35	12
2006–2007	26.77	9	8.83	10	14.09	12	9.81	10	7.66	10
2007–2008	21.94	9	13.90	11	11.59	12	13.70	10	8.63	10
2008–2009	10.19	10	-1.78	11	6.89	11	8.58	10	5.02	10
2009–2010	7.80	10	3.22	11	8.53	11	10.35	11	6.25	11
2010–2011	4.12	10	2.27	11	7.54	11	13.70	11	7.99	11
Mean 1994–1995 to 1999–2000 (phase 1)	-0.41	11	-1.80	12	4.11	12	6.24	12	-2.20	12
Mean 2000–2001 to 2003–2004 (phase 2, before NCAER recommendation)	-14.57	9	-15.71	12	-1.04	12	-1.90	12	-8.97	12
Mean 2004–2005 to 2007–2008 (phase 2, after NCAER recommendation)	22.31	9	17.35	12	12.15	12	16.63	12	10.39	12
Mean 2008–2009 to 2010–2011 (phase 3)	7.37	10	1.23	11	7.65	11	11.67	11	6.96	11
Aggregate mean (1994–1995 to 2010–2011)	2.94		-0.38		5.41		6.83		0.50	

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post-NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
RONW	8	0.07	8	0.01**	8	0.05*	8	0.06
ROCE	11	0.02*	11	0.00**	10	0.06	10	0.59
ROTA	11	0.06	11	0.00**	10	0.03*	10	0.27
OPM	11	0.05*	11	0.00**	10	0.08	10	0.26
NPM	11	0.11	11	0.00**	10	0.04*	10	0.04*

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

Table 7.62 Median, lower (Q1), and upper quartile (Q3) values of key profitability ratios of the loss-making MoU PSEs, 1994–1995 to 2010–2011 (Figures are in percentages)

Ratios	Median			Q1			Q3			
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	
RONW	4.02	-10.48	17.54	7.67	-12.89	7.67	10.88	6.13	40.16	20.38
ROCE	-1.89	-13.88	15.19	9.17	-14.83	9.17	10.79	1.11	31.75	21.92
ROTA	3.37	-0.44	6.46	8.13	-1.30	8.13	7.83	4.34	25.64	14.38
OPM	4.05	-0.63	12.76	13.37	-3.00	13.37	15.82	5.90	23.30	22.65
NPM	1.49	-4.66	6.47	8.12	-13.04	8.12	4.67	0.98	17.48	14.80

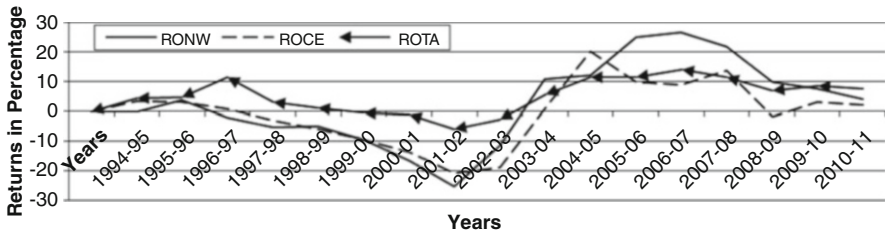


Fig. 7.32 Mean values of profitability ratios (RONW, ROCE and ROTA) of the loss-making PSEs signed MOU for the years 1994–1995 to 2010–2011

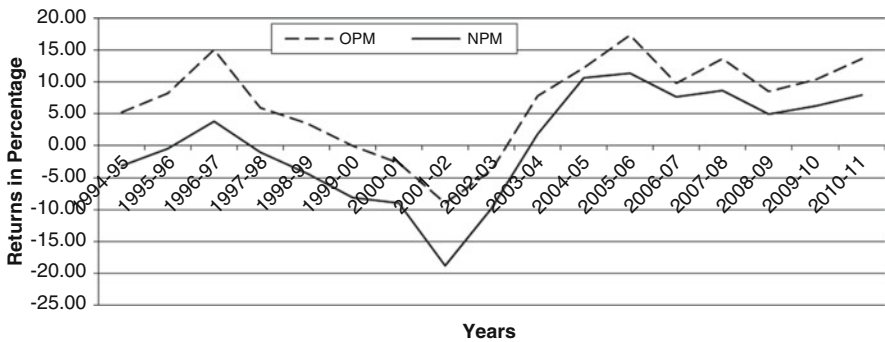


Fig. 7.33 Mean values of the profitability ratios (OPM and NPM) of the loss-making PSEs signed MOU for the years 1994–1995 to 2010–2011

Table 7.63 Independent sample *t*-test of key profitability ratios between the sample profit-making and loss-making MoU PSEs during 1994–1995 to 2010–2011

Ratios	Coding	Phase 1		Phase 2 (pre- and post-NCAER recommendations)				Phase 3		
		N	Mean	N	Mean		N	Mean	N	3 year
					Pre-NCAER	Post-NCAER				
RONW	PM.	51	11.15	53	14.97	53	16.74	53	13.75	
	LM	11	-0.41	9	-14.57	9	22.31	10	7.37	
ROCE	PM	54	8.09	53	9.06	53	10.54	51	9.77	
	LM	12	-1.80	12	-15.71	12	17.35	11	1.24	
ROTA	PM.	54	9.28	54	10.29	54	10.81	54	9.10	
	LM	12	4.11	12	-1.04	12	12.15	11	7.65	
OPM	PM.	53	17.33	51	17.03	52	20.22	51	14.35	
	LM	12	6.24	12	-1.91	12	16.63	11	11.67	
NPM	PM	53	8.16	52	11.34	52	13.58	53	10.02	
	LM	12	-2.20	12	-8.97	12	10.39	11	6.96	

Notes:

PM stands for profit making, *LM* stands for loss-making MoU PSEs

Independent samples *t*-test

		<i>t</i> -test for equality of means							
		Phase 1		Phase 2 (Pre-NCAER)		Phase 2 (Post-NCAER)		Phase 3 (3 year postrecession)	
Ratios	Variances	df	Sign.	df	Sign.	df	Sign.	df	Sign.
RONW	EV	60	0.00**	60	0.00**	60	0.26	61	0.12
	NEV	12	0.01**	9	0.00**	10	0.32	12	0.18
ROCE	EV	64	0.03*	63	0.00**	63	0.30	60	0.14
	NEV	27	0.00**	15	0.00**	14	0.41	13	0.23
ROTA	EV	64	0.01**	64	0.00**	64	0.73	63	0.66
	NEV	18	0.01**	24	0.00**	18	0.71	20	0.57
OPM	EV	63	0.02*	61	0.00**	62	0.56	60	0.66
	NEV	26	0.00**	30	0.00**	16	0.56	24	0.54
NPM	EV	63	0.01**	62	0.00**	62	0.46	62	0.57
	NEV	21	0.00**	18	0.00**	19	0.41	33	0.38

Notes:

EV: equal variances assumed, *NEV*: equal variances not assumed

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

Table 7.64 Mean values of key turnover ratios of the profit-making MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Years	TATR		FATR		CATR	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1994–1995	0.91	54	2.98	44	1.38	54
1995–1996	0.97	54	3.30	44	1.49	54
1996–1997	0.95	54	3.68	44	1.43	54
1997–1998	0.94	53	3.35	44	1.48	53
1998–1999	1.02	54	3.37	44	1.58	54
1999–2000	0.99	53	3.59	43	1.67	54
2000–2001	1.07	54	3.24	41	1.65	54
2001–2002	1.01	54	3.60	42	1.53	54
2002–2003	1.12	54	3.39	42	1.69	54
2003–2004	0.98	54	3.69	44	1.57	54
2004–2005	0.96	54	4.00	44	1.59	54
2005–2006	0.98	54	4.11	43	1.60	54
2006–2007	0.95	53	3.97	42	1.67	54
2007–2008	0.91	53	4.07	42	1.41	53
2008–2009	0.93	53	4.73	43	1.45	53
2009–2010	0.86	53	4.13	41	1.35	53
2010–2011	0.88	53	3.88	39	1.35	53
Mean 1994–1995 to 1999–2000 (phase 1)	0.98	54	3.51	45	1.51	54
Mean 2000–2001 to 2003–2004 (phase 2, before NCAER recommendation)	1.05	54	3.70	44	1.61	54
Mean 2004–2005 to 2007–2008 (phase 2, after NCAER recommendation)	0.98	54	4.23	44	1.59	54
Mean 2008–2009 to 2010–2011 (phase 3)	0.89	53	4.26	40	1.39	53
Aggregate mean (1994–1995 to 2010–2011)	0.97		3.71		1.52	

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post- NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
TATR	53	0.24	53	0.20	52	0.58	52	0.48
FATR	43	0.28	43	0.06	39	0.14	39	0.00**
CATR	53	0.20	53	0.73	52	0.04*	52	0.40

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

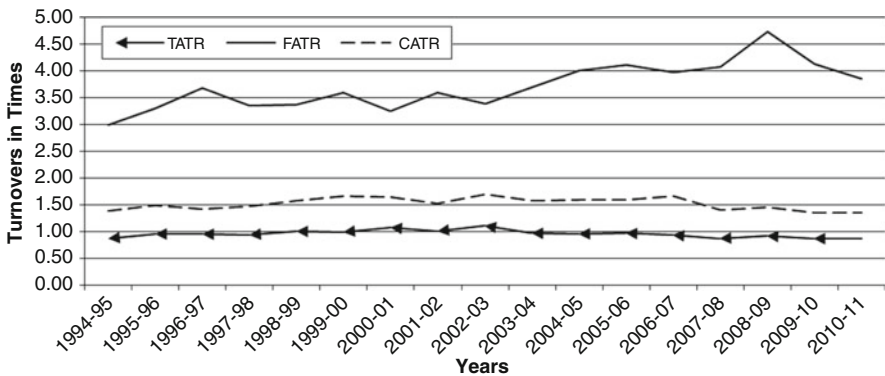


Fig. 7.34 Mean values of turnover ratios (TATR, FATR and CATR) of the profit-making PSEs signed MOU for the years 1994–1995 to 2010–2011

The findings have been corroborated by the paired *t*-test; significant difference has been observed in FATR (during phases 1 and 3) and in CATR (phases 2 and 3) of the PM PSEs; likewise, difference has been found to be statistically significant in respect to TATR (except phases 1 and 3), FATR (phases 1 and 3), and in CATR (phases 1 and 2 as well as 2 and 3) in the case of LM PSEs. In other words, MoU has positive impact, to a marked extent, on LM PSEs. Further, it is revealing to note that the mean assets turnover of LM PSEs is higher compared to PM PSEs (in particular, from the year 2001 to 2002 onwards), shown in Figs. 7.34 and 7.35; the TATR of LM sample firms, prima facie, is quite satisfactory (i.e., more than one in 6 out of 17 years). Positional values indicated in Tables 7.65 and 7.67 have also shown similar trend in both types of PSEs. Group statistics also shows better performance of LM PSEs. No adverse effect of recession has been observed in the long-term assets utilization (FATR) in both PM and LM MoU PSEs; in fact, there has been an improvement during the recession phase vis-à-vis pre-recession phase. However, the impact of recession has been noted in the short-term assets utilization (CATR) capacity of both PM and LM MoU PSEs.

In view of the above findings, it has been desired to have insight about the two major constituents of current assets (i.e., inventory and debtors) in both types of LM and PM sample PSEs. It is gratifying to note a sizable decrease in the holding period of raw materials, work-in-process, and finished goods of both types of sample PM

Table 7.65 Median, lower (Q1), and upper quartile (Q3) values of turnover ratios of the profit-making MoU PSEs, 1994–1995 to 2006–2007 (Figures are in times)

Ratios	Median										
	Q1			Q3			Q3				
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3		
TATR	0.64	0.67	0.61	0.56	0.38	0.34	0.30	0.32	1.29	1.28	1.09
FATR	2.79	2.87	2.77	2.91	0.96	1.38	0.77	1.15	6.27	7.71	8.10
CATR	1.07	1.10	1.02	0.96	0.65	0.55	0.60	0.54	2.07	2.12	1.60

Table 7.66 Mean values of key turnover ratios of the loss-making MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Years	TATR		FATR		CATR	
	Mean	N	Mean	N	Mean	N
1994–1995	0.87	12	2.92	10	1.58	12
1995–1996	0.82	12	3.30	10	1.55	12
1996–1997	0.65	12	2.82	10	1.21	12
1997–1998	0.81	12	3.33	10	1.32	12
1998–1999	0.74	12	3.14	10	1.26	12
1999–2000	0.74	12	2.94	10	1.31	12
2000–2001	0.81	12	3.50	10	1.46	12
2001–2002	0.84	12	4.00	11	1.49	12
2002–2003	1.01	12	3.96	11	1.72	12
2003–2004	1.07	12	3.81	11	1.76	12
2004–2005	1.13	12	4.28	10	1.75	12
2005–2006	1.07	12	4.67	10	1.51	12
2006–2007	1.39	12	4.92	9	1.76	12
2007–2008	1.00	12	5.36	10	1.19	12
2008–2009	0.93	11	5.46	9	1.06	11
2009–2010	0.91	11	5.71	8	1.04	11
2010–2011	0.92	11	5.77	9	1.05	11
Mean 1994–1995 to 1999–2000 (phase 1)	0.77	12	3.08	10	1.37	12
Mean 2000–2001 to 2003–2004 (phase 2, before NCAER recommendation)	0.93	12	3.89	11	1.61	12
Mean 2004–2005 to 2007–2008 (phase 2, after NCAER recommendation)	1.15	12	4.92	10	1.55	12
Mean 2008–2009 to 2010–2011 (phase 3)	0.92	11	5.54	9	1.05	11
Aggregate mean (1994–1995 to 2010–2011)	0.93		4.11		1.41	

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post-NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
TATR	11	0.05*	11	0.02*	10	0.01**	10	0.25
FATR	9	0.31	9	0.18	8	0.60	7	0.02*
CATR	11	0.03*	11	0.73	10	0.00**	10	0.17

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

and LM MoU PSEs across the phases (Tables 7.68 and 7.70 and in Figs. 7.36 and 7.37); the difference is statistically significant in the case of RMIHP among all the phases for PM PSEs and for phase 2 (pre- and post-NCAER recommendation phase) for LM PSEs. The finding is revealing as loss-making PSEs have shown higher reduction in the holding period of raw materials and work-in-process compared to profit-making PSEs during phases 2 and 3; as a result, there is likely to be reduction in carrying and storage cost of inventory.

Table 7.67 Median, lower (Q1), and upper quartile (Q3) key turnover ratios of the loss-making MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Ratios	Median						Q1			Q3		
	Phase 1		Phase 2 (pre- and post-NCAER)		Phase 3		Phase 1		Phase 2 (pre- and post-NCAER)		Phase 3	
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 1	Phase 2 (pre- and post-NCAER)
TATR	0.65	0.72	1.12	0.83	0.45	0.59	0.71	0.71	0.89	1.13	1.42	1.00
FATR	2.97	3.95	4.29	6.14	1.14	1.74	2.55	4.33	4.89	6.20	7.97	7.10
CATR	1.21	1.34	1.38	0.99	0.73	0.79	0.87	0.79	1.76	2.43	2.06	1.22

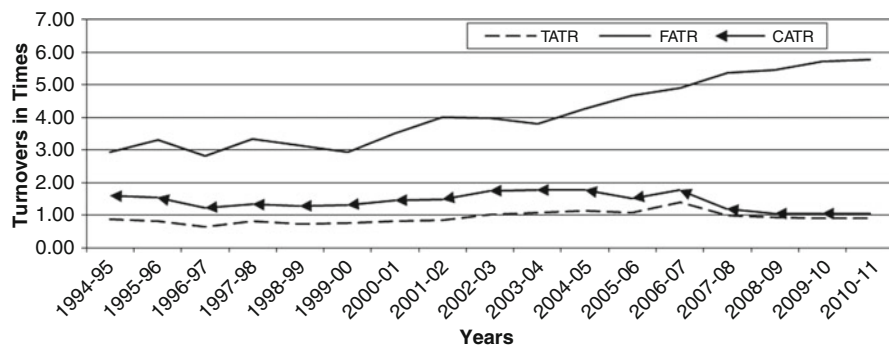


Fig. 7.35 Mean values of turnover ratios (TATR, FATR and CATR) of the loss-making PSEs signed MOU for the years 1994–1995 to 2010–2011

Table 7.68 Mean values of inventory holding and debtor collection period of the profit-making MoU PSEs, 1994–1995 to 2010–2011 (Figures are in days)

Years	RMIHP		WPIHP		FGIHP		DHP	
	Mean	N	Mean	N	Mean	N	Mean	N
1994–1995	220.40	37	14.28	51	22.49	54	94.76	52
1995–1996	176.17	35	12.91	51	21.03	53	89.69	51
1996–1997	197.84	38	12.48	51	20.53	53	92.22	51
1997–1998	191.70	37	15.97	52	16.78	54	91.16	50
1998–1999	208.82	38	12.49	52	15.63	54	95.54	51
1999–2000	190.91	38	11.61	52	16.85	54	88.49	51
2000–2001	187.34	40	13.43	52	16.99	54	84.47	51
2001–2002	182.36	38	13.50	52	18.31	54	90.68	52
2002–2003	184.64	38	14.35	52	15.96	54	97.70	52
2003–2004	145.55	44	13.01	52	14.88	54	85.96	52
2004–2005	138.12	45	11.27	52	14.48	54	75.48	54
2005–2006	129.67	44	14.76	52	14.89	54	69.19	54
2006–2007	107.57	43	20.01	53	14.33	54	73.24	54
2007–2008	118.34	43	18.57	53	13.29	54	71.76	52
2008–2009	121.69	42	21.32	50	14.80	51	64.60	52
2009–2010	108.61	41	21.33	50	13.93	51	66.87	52
2010–2011	116.20	39	14.55	49	14.12	50	75.90	51
Mean 1994–1995 to 1999–2000 (phase 1)	205.82	39	13.86	52	18.93	54	94.91	52
Mean 2000–2001 to 2003–2004 (phase 2, pre-NCAER phase)	163.95	43	13.57	52	16.54	54	93.88	53
Mean 2004–2005 to 2007–2008 (phase 2, post-NCAER phase)	127.48	44	18.90	53	14.25	54	74.56	54
Mean 2008–2009 to 2010–2011 (phase 3)	123.63	39	20.82	50	14.19	51	68.64	52
Aggregate mean (1994–1995 to 2010–2011)	160.35		15.05		16.43		82.81	

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post- NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
RMIHP	38	0.01**	42	0.00**	36	0.85	36	0.00**
WIPIHP	51	0.87	51	0.93	49	0.70	48	0.73
FGIHP	53	0.17	53	0.14	50	0.40	50	0.12
DCP	51	0.51	52	0.05*	51	0.56	49	0.02*

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

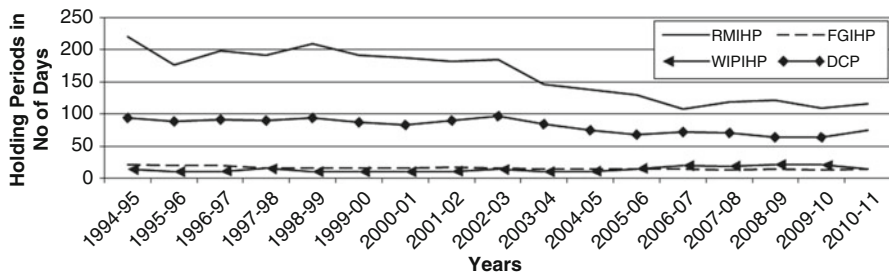


Fig. 7.36 Mean values of the inventory holding and debtors collection periods of the profit-making PSEs signed MOU for the years 1994–1995 to 2010–2011

Median and quartile results depicted in Table 7.71 also are in broad conformity to the mean observations of LM PSEs. In fact, the RMIHP of one-fourth of the PM PSEs (Q3) is quite high, i.e., 7 months in phase 3 (Table 7.69); it is 4 months in LM PSEs. Therefore, it is apparent that MoUs have brought a salutary effect on better functioning of LM PSEs.

Similarly, mean DCP has manifested a decrease in both types of sample PSEs over the phases (Tables 7.68 and 7.70); the declining trend of DCP is significant statistically during phase 2 (pre- and post-NCAER) and in phases 1 and 3 of PM PSEs. Positional values have indicated a decrease in the DCP of all the PM PSEs (Tables 7.69 and 6.71). The collection department of LM PSEs has performed equally well. Further, recession has not affected the inventory holding period as well as collection period of debtors of both PM and LM PSEs.

Independent *t*-test has been conducted between the mean values of PM and LM PSEs (Table 7.72); the difference is insignificant across the phases in both types of PSEs which indicates that MoU has substantially improved the operational efficiency as well as utilization of resources in the loss-making as well as profit-making PSEs. Therefore, the results support the hypothesis of improvement in operational efficiency of LM PSEs after signing MoUs.

Table 7.69 Median, lower (Q1), and upper quartile (Q3) values of inventory holding and DCP of the profit-making MoU PSEs, 1994–1995 to 2010–2011 (Figures are in days)

Ratios	Median			Q1			Q3					
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3			
RMHP	166.16	129.29	77.17	83.17	46.60	43.83	15.49	17.68	281.14	263.75	241.27	196.31
WIPHP	1.23	1.59	2.02	1.16	0.00	0.00	0.00	0.00	12.06	16.92	13.80	9.02
FGIHP	7.34	6.00	5.95	5.06	0.00	0.00	0.00	0.02	36.77	26.28	20.63	21.02
DCP	72.80	78.83	57.38	56.42	32.59	30.15	21.06	19.95	150.58	139.81	109.63	104.79

Table 7.70 Mean values of inventory holding and debtor collection period of the loss-making MoU PSEs, 1994–1995 to 2010–2011 (Figures are in days)

Years	RMIHP		WPIHP		FGIHP		DHP	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1994–1995	251.06	10	20.83	11	28.72	12	93.90	12
1995–1996	233.69	10	19.74	11	26.35	12	86.22	11
1996–1997	287.43	10	19.53	11	22.14	12	101.19	11
1997–1998	284.08	11	22.75	12	31.21	12	76.31	11
1998–1999	269.22	10	44.63	12	31.82	12	97.67	11
1999–2000	210.80	10	17.00	11	23.25	12	72.63	11
2000–2001	220.20	10	17.61	11	23.38	12	81.94	12
2001–2002	316.84	12	10.31	11	19.85	12	81.79	12
2002–2003	245.59	11	13.67	11	19.51	12	80.21	12
2003–2004	131.44	12	15.30	11	17.07	12	83.38	12
2004–2005	124.77	12	13.61	11	15.34	12	72.25	12
2005–2006	66.62	11	9.09	11	13.63	12	60.43	12
2006–2007	42.24	9	4.09	11	10.47	12	47.85	11
2007–2008	92.65	9	7.75	10	14.16	11	54.38	10
2008–2009	100.47	9	10.40	10	17.51	11	68.84	10
2009–2010	110.04	9	11.73	10	18.38	11	72.79	11
2010–2011	124.47	8	10.91	9	16.58	10	81.06	11
Mean 1994–1995 to 1999–2000 (phase 1)	256.92	11	35.40	12	27.25	12	99.92	12
Mean 2000–2001 to 2003–2004 (phase 2, pre-NCAER phase)	231.42	12	14.22	11	19.95	12	81.83	12
Mean 2004–2005 to 2007–2008 (phase 2, post-NCAER phase)	104.71	12	8.47	11	13.12	12	61.77	12
Mean 2008–2009 to 2010–2011 (phase 3)	121.24	8	11.99	10	17.77	11	75.36	11
Aggregate mean (1994–1995 to 2010–2011)	183.04		15.82		20.55		77.23	

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom, df)							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post- NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
RMIHP	10	0.43	11	0.02*	7	0.57	6	0.20
WPIHP	10	0.13	10	0.09	9	0.43	9	0.24
FGIHP	11	0.07	11	0.07	10	0.33	10	0.03*
DCP	11	0.13	11	0.14	10	0.29	10	0.32

*Signifies to significant difference at 5% level

Table 7.71 Median, lower (Q1), and upper quartile (Q3) values of inventory holding and debtor collection period of the loss-making MoU PSEs, 1994–1995 to 2010–2011 (Figures are in days)

Ratios	Median			Q1			Q3					
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3			
RMHP	282.46	167.98	58.94	65.15	104.50	91.97	17.02	49.18	417.29	503.66	134.83	124.13
WIPHP	1.18	0.63	0.27	0.00	0.00	0.00	0.00	0.00	57.36	26.77	13.78	6.88
FGHP	9.29	3.73	6.84	10.90	0.00	0.00	0.28	0.56	66.87	54.76	30.89	25.67
DCP	52.35	51.90	54.22	92.30	14.99	12.91	18.20	22.17	187.96	174.87	114.78	116.54

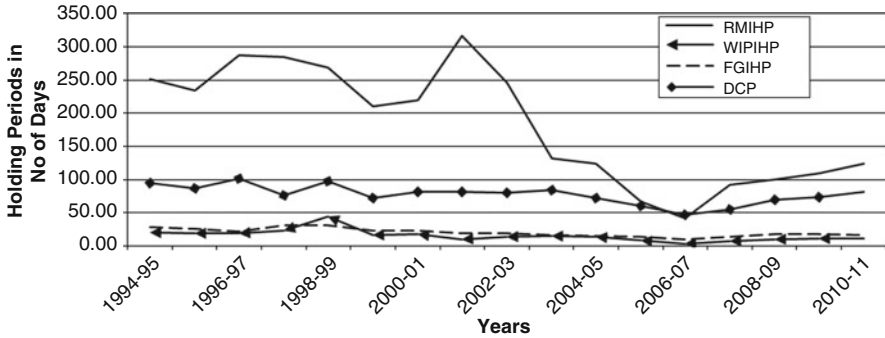


Fig. 7.37 Mean values of the inventory and debtors holding periods of the loss making PSEs signed MOU for the years 1994–1995 to 2010–2011

Table 7.72 Independent sample *t*-test of the key efficiency ratios between profit-making and loss-making MoU PSEs during 1994–1995 to 2010–2011

		<i>t</i> -test for equality of means							
		Phase 1		Phase 2 (Pre-NCAER)		Phase 2 (Post-NCAER)		Phase 3 (3 year postrecession)	
Ratios	Variances	df	Sign.	df	Sign.	df	Sign.	df	Sign.
TATR	EV	64	0.46	64	0.72	64	0.58	62	0.93
	NEV	35	0.26	26	0.64	23	0.48	20	0.91
FATR	EV	53	0.66	53	0.84	52	0.54	47	0.30
	NEV	18	0.59	21	0.81	17	0.46	24	0.13
CATR	EV	64	0.74	64	1.00	64	0.94	62	0.44
	NEV	25	0.65	21	1.00	31	0.91	37	0.21
DHP	EV	62	0.83	63	0.62	64	0.56	61	0.73
	NEV	14	0.86	17	0.61	24	0.45	14	0.74
RMIHP	EV	48	0.36	53	0.16	54	0.58	45	0.96
	NEV	22	0.28	18	0.16	16	0.62	10	0.97
WIPIHP	EV	62	0.06	61	0.94	62	0.48	58	0.62
	NEV	12	0.28	17	0.93	50	0.21	31	0.42
FGIHP	EV	64	0.27	64	0.68	64	0.89	60	0.70
	NEV	13	0.40	18	0.67	30	0.84	20	0.64

Notes:

EV: equal variances assumed, NEV: equal variances not assumed

7.6.2.3 Leverage and Liquidity Test

For the purpose of analysis, major leverage ratio (TD/TE) and liquidity ratios (CR and ATR) have been computed separately for PM and LM MoU PSEs. The debt-equity ratio has decreased over the phases in the PM PSEs, whereas the debt has indicated a sizable increase in the LM PSEs during phases 2 and 3 compared to phase 1 (Tables 7.73 and 7.75); the difference is statistically insignificant for most of the

Table 7.73 Mean values of key leverage and liquidity ratios of the profit-making MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Years	Leverage ratios		Liquidity ratios			
	TD/TE		CR		ATR	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1994–1995	1.74	48	2.00	41	1.52	53
1995–1996	1.76	48	2.10	54	1.51	53
1996–1997	1.65	48	2.22	52	1.63	52
1997–1998	1.66	49	2.27	53	1.69	53
1998–1999	1.41	46	2.08	53	1.61	53
1999–2000	1.55	46	2.06	53	1.62	54
2000–2001	1.64	46	2.16	53	1.69	54
2001–2002	1.60	47	2.13	54	1.64	53
2002–2003	1.28	46	2.14	53	1.71	52
2003–2004	1.17	45	1.95	53	1.60	53
2004–2005	1.48	46	1.96	53	1.57	53
2005–2006	1.40	48	2.04	54	1.67	54
2006–2007	1.49	49	2.02	52	1.63	51
2007–2008	1.55	47	1.97	51	1.63	51
2008–2009	1.62	46	1.90	51	1.43	51
2009–2010	1.65	48	1.89	50	1.20	49
2010–2011	1.60	47	1.85	49	1.53	49
Mean 1994–1995 to 1999–2000 (phase 1)	1.71	49	2.11	54	1.60	54
Mean 2000–2001 to 2003–2004 (phase 2, before NCAER recommendation)	1.52	47	2.12	54	1.69	54
Mean 2004–2005 to 2007–2008 (phase 2, after NCAER recommendation)	1.53	49	2.05	54	1.69	54
Mean 2008–2009 to 2010–2011 (phase 3)	1.68	48	1.88	50	1.45	52
Aggregate mean (1994–1995 to 2010–2011)	1.55		2.04		1.58	

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post-NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
TD/TE	46	0.27	47	0.74	47	0.02*	44	0.78
CR	53	0.76	53	0.56	49	0.24	49	0.43
ATR	53	0.27	53	0.98	49	0.16	49	0.34

*Signifies to significant difference at 5 % level

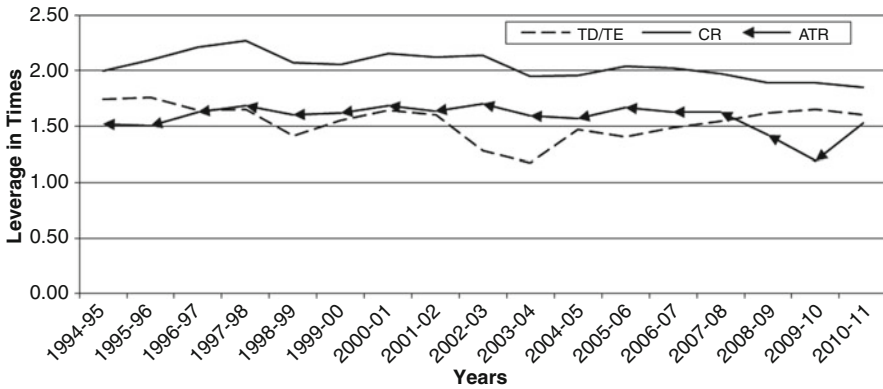


Fig. 7.38 Mean values of leverage ratios (TD/TE) and liquidity ratios (CR and ATR) of the profit-making PSEs signed MOU for the years 1994–1995 to 2010–2011

phases as per paired *t*-test (except phases 1 and 2 for LM and phases 2 and 3 for PM) in both types of PSEs. The higher debt enhances higher interest burden which, in turn, increases the financial cost and affects the profitability of these PSEs. The use of debt in one-fourth of the LM PSEs (based on Q3) is tremendously high; it lies in the range of 3.07–4.99 (Table 7.76); it is a precarious situation; debt needs to be reduced. The PSEs in this category include National Small Industries Corp. Ltd., Hindustan Copper Ltd., and MECON Ltd. Likewise, the debt proportion in PM PSEs is 2.15–2.80 in the same time period; the list includes Hindustan Aeronautics Ltd., Electronics Corporation of India Ltd., Garden Reach Shipbuilders Ltd., and Engineers India Ltd., Hindustan Aeronautics Ltd., and Educational Consultants (India) Ltd.

It is gratifying to note that the CR and ATR of the PM PSEs are satisfactory; it is above the ideal standard (i.e., 2:1 for CR and 1:1 for ATR) during the entire time span of the study as well as during its subphases (Table 7.73 and Fig. 7.38). The level of liquidity of the loss-making PSEs is also reasonably good (Table 7.75 and Fig. 7.39). Even after considering quartile one values, it is safe to conclude that the vast majority of PSEs has comfortable level of liquidity to honor their current liabilities (Tables 7.74 and 7.76). It is worth noting that the satisfactory liquidity position of PM and LM MoU PSEs has not been affected by recession. The same has been corroborated by independent *t*-test (Table 7.77).

7.6.2.4 Productivity Analysis

Finally, productivity of capital per manpower has been assessed in terms of the sales efficiency and net income efficiency (NIE) in the profit-making and loss-making PSEs during the period of the study under reference.

Table 7.74 Median, lower (Q1), and upper quartile (Q3) values of key leverage and liquidity ratios of the profit-making MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Ratios	Median			Q1			Q3			
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	
TD/TE	1.21	1.05	1.01	1.18	0.42	0.37	0.45	2.15	2.25	2.80
CR	2.00	1.81	1.63	1.39	1.19	1.18	1.18	2.70	3.04	2.33
ATR	1.44	1.35	1.27	1.29	0.97	0.95	0.89	2.40	2.43	2.00

Table 7.75 Mean values of key leverage and liquidity ratios of the loss-making MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Years	Leverage ratios		Liquidity ratios			
	TD/TE		CR		ATR	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1994–1995	1.36	8	1.83	12	1.22	12
1995–1996	1.46	9	1.93	12	1.33	12
1996–1997	1.78	9	2.26	12	1.31	11
1997–1998	2.02	9	2.33	12	1.69	12
1998–1999	1.86	9	2.29	12	1.35	11
1999–2000	2.13	9	2.09	12	1.12	11
2000–2001	2.09	7	1.97	12	1.54	12
2001–2002	3.33	7	1.84	12	1.40	12
2002–2003	2.34	5	1.67	12	1.31	12
2003–2004	2.15	5	1.73	12	1.36	12
2004–2005	1.89	6	2.19	12	1.45	11
2005–2006	2.25	8	1.88	11	1.57	11
2006–2007	2.32	8	1.90	11	1.58	11
2007–2008	1.73	7	2.24	11	1.60	10
2008–2009	2.19	8	2.07	11	1.28	9
2009–2010	2.29	9	2.28	11	1.28	9
2010–2011	2.68	9	1.89	10	1.11	9
Mean 1994–1995 to 1999–2000 (phase 1)	1.79	9	2.12	12	1.47	12
Mean 2000–2001 to 2003–2004 (phase 2, before NCAER recommendation)	2.75	7	1.80	12	1.40	12
Mean 2004–2005 to 2007–2008 (phase 2, after NCAER recommendation)	2.39	8	2.19	12	1.52	11
Mean 2008–2009 to 2010–2011 (phase 3)	2.47	9	2.16	11	1.22	9
Aggregate mean (1994–1995 to 2010–2011)	2.11		2.02		1.38	

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post-NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
TD/TE	6	0.05*	6	0.80	6	0.21	7	0.24
CR	11	0.21	11	0.26	10	0.59	10	0.81
ATR	11	0.73	10	0.36	8	0.56	8	0.56

*Signifies to significant difference at 5 % level

Table 7.76 Median, lower (Q1), and upper quartile (Q3) values of leverage and liquidity ratios of the loss-making MoU PSEs, 1994–1995 to 2010–2011 (Figures are in times)

Ratios	Median			Q1			Q3			
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	
TD/TE	1.92	1.11	1.88	1.01	0.84	0.98	3.03	5.74	3.07	4.99
CR	1.92	1.42	1.48	1.65	1.28	1.05	2.78	2.28	2.40	2.38
ATR	1.26	0.86	1.09	1.25	0.51	0.74	2.04	1.70	1.53	1.65

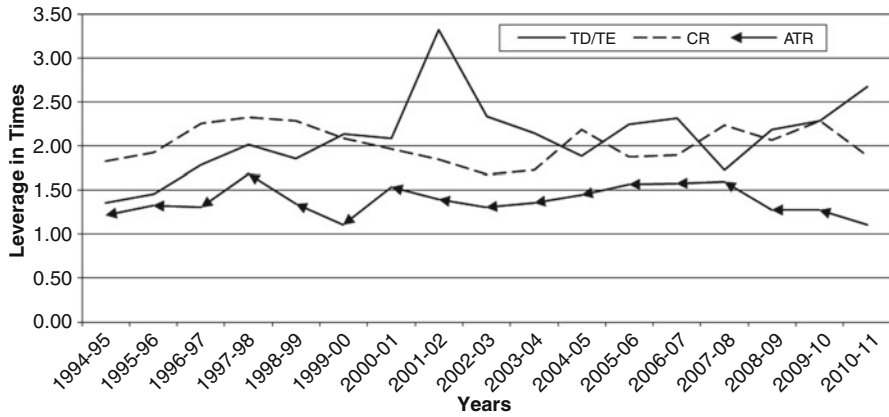


Fig. 7.39 Mean values of leverage ratios (TD/TE) and liquidity ratios (CR and ATR) of the loss-making PSEs signed MOU for the years 1994–1995 to 2010–2011

Table 7.77 Independent sample *t*-test of the select liquidity and leverage ratios between profit-making and loss-making MoU PSEs during 1994–1995 to 2010–2011 (group statistics)

Ratios	Coding	Phase 1		Phase 2 (pre- and post-NCAER recommendations)				Phase 3		
		N	Mean	N	Mean		N	Mean	N	Mean
					Pre-NCAER	Post-NCAER				
TD/TE	PM	49	1.7	48	1.5	50	1.5	49	1.7	
	LM	9	1.8	7	2.7	8	2.4	9	2.5	
CR	PM	54	2.1	54	2.1	54	2.1	50	1.9	
	LM	12	2.1	12	1.8	12	2.2	11	2.2	
ATR	PM	54	1.6	54	1.7	54	1.7	50	1.4	
	LM	12	1.5	12	1.4	11	1.5	9	1.2	

Independent samples *t*-test

Ratios	Variances	<i>t</i> -test for equality of means							
		Phase 1		Phase 2 (Pre-NCAER)		Phase 2 (Post-NCAER)		Phase 3 (3 year postrecession)	
		df	Sign.	df	Sign.	df	Sign.	df	Sign.
TD/TE	EV	56	0.87	53	0.05*	56	0.17	56	0.19
	NEV	16	0.83	7	0.18	8	0.28	10	0.30
CR	EV	64	0.96	64	0.35	64	0.76	59	0.46
	NEV	15	0.97	16	0.38	13	0.82	13	0.54
ATR	EV	64	0.62	64	0.34	63	0.59	57	0.61
	NEV	13	0.70	14	0.41	13	0.65	36	0.35

*Signifies to significant difference at 5 % level

Table 7.78 Mean values of key productivity ratios of the profit-making MoU PSEs, 1994–1995 to 2010–2011

Years	Employment		Sales efficiency		Net income efficiency	
	Mean	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>
1994–1995	8,019	54	19.82	51	1.47	54
1995–1996	7,943	54	23.28	51	2.02	54
1996–1997	7,897	54	25.58	51	1.90	54
1997–1998	7,785	54	27.93	51	2.92	54
1998–1999	7,733	54	30.35	51	2.98	54
1999–2000	7,229	54	33.42	49	3.17	54
2000–2001	7,009	54	30.31	46	4.55	54
2001–2002	6,870	54	31.46	46	4.84	54
2002–2003	6,674	54	35.97	46	5.47	54
2003–2004	6,441	54	35.27	45	8.43	54
2004–2005	6,418	54	36.69	45	8.24	54
2005–2006	6,406	54	42.88	45	9.20	54
2006–2007	6,398	54	47.26	46	11.28	54
2007–2008	7,152	54	49.26	44	11.86	54
2008–2009	7,581	54	50.86	42	12.07	54
2009–2010	7,509	54	54.23	42	13.70	54
2010–2011	6,312	54	62.01	41	12.25	52
Mean 1994–1995 to 1999–2000 (phase 1)	7,779.23	51	27.35	51	2.48	53
Mean 2000–2001 to 2003–2004 (phase 2, pre-NCAER recommendation)	6,748.52	54	33.99	46	5.82	54
Mean 2004–2005 to 2007–2008 (phase 2, post-NCAER recommendation)	6,593.56	54	44.38	46	10.14	54
Mean 2008–2009 to 2010–2011 (phase 3)	7,134.02	54	55.68	42	13.50	54
Aggregate mean (1994–1995 to 2010–2011)	7,139.80		37.45		6.84	

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post- NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
Employment	53	0.00**	53	0.41	53	0.28	53	0.33
SE	45	0.00**	44	0.01**	41	0.00**	41	0.00**
NIE	53	0.00**	53	0.00**	53	0.01**	53	0.00**

**Signifies to significant difference at 1 % level

Table 7.79 Median, lower (Q1), and upper quartile (Q3) values of key productivity ratios of the profit-making MoU PSEs, 1994–1995 to 2010–2011

Ratios	Median											
	Q1		Q3		Q3							
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3						
Employment	3,572.75	3,116.25	3,014.00	3,042.50	1,508.81	1,125.63	1,186.56	1,164.25	10,072.88	8,302.31	3,971.50	3,213.25
Sales efficiency	10.00	15.10	26.41	32.84	4.39	8.01	11.45	19.28	34.85	48.91	10.00	15.46
NIE	0.71	1.58	3.34	5.85	0.15	0.39	1.01	1.47	3.13	9.57	0.83	1.58

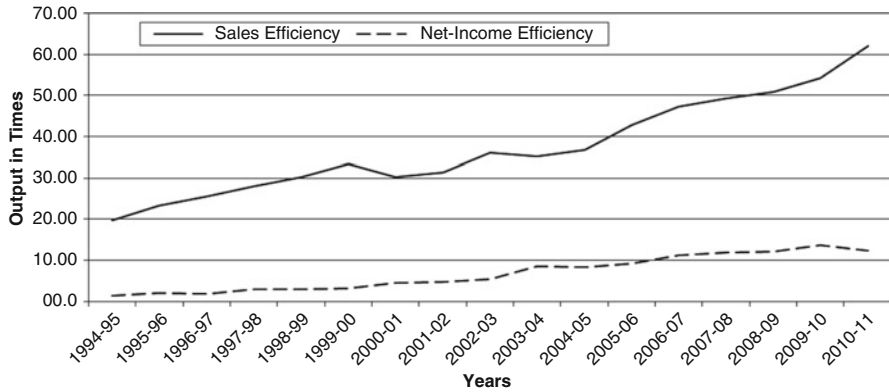


Fig. 7.40 Mean values of the output ratios (sales and net income efficiency) of the profit-making PSEs signed MOU for the years 1994–1995 to 2010–2011

Table 7.80 Mean values of key productivity ratios of the loss-making MoU PSEs, 1994–1995 to 2010–2011

Years	Employment		Sales efficiency		Net income efficiency	
	Mean	N	Mean	N	Mean	N
1994–1995	22,967	12	14.02	12	-0.04	12
1995–1996	22,804	12	14.12	12	0.09	12
1996–1997	22,632	12	17.81	12	2.46	12
1997–1998	21,849	12	21.98	12	-0.03	12
1998–1999	21,130	12	17.04	12	-0.30	12
1999–2000	27,136	12	14.24	12	-0.45	12
2000–2001	19,311	12	11.04	11	-0.71	12
2001–2002	17,888	12	11.04	11	-2.09	12
2002–2003	16,753	12	12.40	11	-1.22	12
2003–2004	15,949	12	14.39	11	0.97	12
2004–2005	15,430	12	19.01	11	1.90	12
2005–2006	16,342	12	20.39	11	1.94	12
2006–2007	15,853	12	25.74	11	3.09	12
2007–2008	15,215	11	28.51	10	3.31	11
2008–2009	14,527	11	27.42	10	2.79	11
2009–2010	13,695	11	32.69	10	3.28	11
2010–2011	13,634	11	34.15	10	2.58	11
Mean 1994–1995 to 1999–2000 (phase 1)	24,863	11	16.54	12	0.29	12
Mean 2000–2001 to 2003–2004 (phase 2, pre-NCAER recommendation)	17,475	12	12.22	11	-0.76	12
Mean 2004–2005 to 2007–2008 (phase 2, after NCAER recommendation)	15,773	12	23.47	11	2.49	12
Mean 2008–2009 to 2010–2011 (phase 3)	13,952	11	31.42	10	2.88	11
Aggregate mean (1994–1995 to 2010–2011)	18,418		19.76		1.03	

Paired sample *t*-test

Ratios	Significance (two-tailed test and degree of freedom (df))							
	Phases 1 and 2 pre-NCAER		Phase 2 (pre- and post-NCAER)		Phases 2 (post- NCAER) and 3		Phases 1 and 3	
	df	Sign.	df	Sign.	df	Sign.	df	Sign.
Employment	10	0.07	11	0.10	10	0.32	9	0.13
Sales efficiency	10	0.00**	10	0.00**	9	0.04*	9	0.00**
NIE	11	0.18	11	0.00**	10	0.85	10	0.01**

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

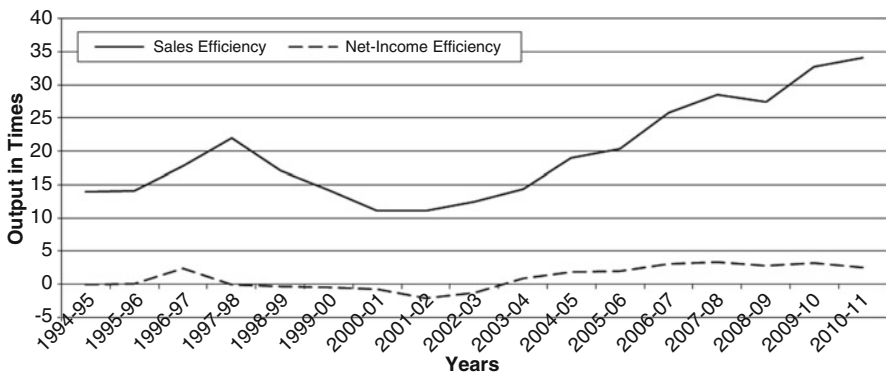


Fig. 7.41 Mean values of the output ratios (sales and net income efficiency) of the loss making PSEs signed MOU, 1994–1995 to 2010–2011

Decrease in the level of employment has been observed in both types of PSEs over the phases (except phase 3 of PM); this decrease is statistically significant during phases 1 and 2 of PM PSEs only (Tables 7.78 and 7.80). Another notable observation is, the increase in sales efficiency and NIE of PM PSEs; it is several times higher and significant statistically during all the phases as per paired *t*-test. Likewise, the loss-making sample PSEs have also shown increase in sales efficiency ratio among all the phases; however, NIE does not present a good picture during the first two phases but shows positive returns during third phase and post-NCAER recommendation phase 2 (shown in Figs. 7.40 and 7.41). This may be due to negative net profit in majority of the years of such LM PSEs. Positional values in both types of PSEs have also followed similar trend (Tables 7.79 and 7.81). The productivity level of PM and LM MoU PSEs has not been affected by recession at all; instead, improvement has been recorded during the referred time period. Thus, it is reasonable to conclude that the loss-making enterprises after signing MoUs became focused and target oriented and have enhanced their operational efficiency and effectiveness over the years.

Table 7.81 Median, lower (Q1), and upper quartile (Q3) values of key productivity ratios of the loss-making MoU PSEs, 1994–1995 to 2010–2011

Ratios	Median						Q1			Q3		
	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3	Phase 1	Phase 2 (pre- and post-NCAER)	Phase 3
Employment	5,737	2,993	2,524	1,947	1,580	993	900	865	18,107	11,866	10,153	6,190
Sales efficiency	6.80	11.15	21.09	23.30	3.98	6.02	13.58	15.18	10.55	15.57	32.90	39.24
NIE	0.12	-0.36	1.32	2.92	-0.65	-2.40	0.23	0.09	0.32	0.21	5.02	5.15

Table 7.82 Independent sample *t*-test of key productivity ratios between profit-making and loss-making MoU PSEs during 1994–1995 to 2010–2011 (group statistics)

Ratios	Coding	Phase 1		Phase 2 (pre- and post-NCAER recommendations)				Phase 3		
		<i>N</i>	Mean	<i>N</i>	Mean		<i>N</i>	Mean	<i>N</i>	Mean
					Pre-NCAER	Post-NCAER				
Employment	PM	54	8,900	54	7,603	54	7,371	54	7,974	
	LM	11	24,863	12	17,475	12	15,773	11	13,952	
Sales efficiency	PM	52	28.89	46	34.30	46	45.17	42	57.42	
	LM	12	16.54	11	12.22	11	23.47	10	31.42	
NIE	PM	54	2.51	54	5.87	54	10.27	54	13.70	
	LM	12	0.29	12	-0.76	12	2.49	11	2.88	

Independent *t*-test

Ratios	Variances	<i>t</i> -test for equality of means							
		Phase 1		Phase 2 (Pre-NCAER)		Phase 2 (Post-NCAER)		Phase 3 (3 year postrecession)	
		df	Sign.	df	Sign.	df	Sign.	df	Sign.
Employment	EV	63	0.04*	64	0.11	64	0.14	63	0.31
	NEV	10	0.32	11	0.42	11	0.45	11	0.58
Sales efficiency	EV	62	0.30	55	0.07	55	0.10	50	0.10
	NEV	18	0.27	54	0.00**	46	0.01**	32	0.01**
NIE	EV	64	0.15	64	0.01**	64	0.08	63	0.10
	NEV	61	0.01**	62	0.00**	64	0.00**	61	0.00**

Notes:

EV equal variances assumed, NEV equal variances not assumed

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

Independent *t*-test (presented in Table 7.82) indicates significant difference in sales efficiency and NIE between both types of PSEs. The same is supported by group statistics as sales efficiency and NIE of PM PSEs are several times higher than LM PSEs.

7.7 Summary of Results and Main Findings

7.7.1 Summary of Results

This section summarizes the significant findings at a glance. Table 7.83 (containing paired *t*-test) presents all results which are statistically significant. The results indicate significant difference in sizable parameters of efficiency and productivity and

Table 7.83 Summary of results of MoU PSEs (at aggregative and disaggregative levels) on the basis of paired sample *t*-test, 1994–1995 to 2010–2011

Ratios	MoU			Non-MoU			Aggregative			Manufacturing			Service			Profit-making			Loss-making		
	1 and 2	1 and 3	2 and 3	1 and 2	1 and 3	2 and 3	1 and 2	1 and 3	2 and 3	1 and 2	1 and 3	2 and 3	1 and 2	1 and 3	2 and 3	1 and 2	1 and 3	2 and 3	1 and 2	1 and 3	2 and 3
RONW	**	**	*	**	*	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
ROCE				**	**	**	**	**	**	*	*	*	*	*	*	*	*	*	*	*	*
ROTA			**	**	**	**	**	**	**	*	*	*	*	*	*	*	*	*	*	*	*
OPM				**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
NPM	**			**	**	**	**	**	**	*	*	*	*	*	*	*	*	*	*	*	*
TATR			*				**	**	**	*	*	*	*	*	*	*	*	*	*	*	*
FATR	**	**	**	**	**	**	**	**	**	*	*	*	*	*	*	*	*	*	*	*	*
CATR	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
DCP	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
RMHP	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
WIHP			*				**	**	**	*	*	*	*	*	*	*	*	*	*	*	*
FGHP	**	*	**	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
TD/TE							**	**	*	*	*	*	*	*	*	*	*	*	*	*	*
CR																					
ATR																					
Sales efficiency	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
NIE	**	**	*	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
Employees	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

Table 7.84 Summary of results of MoU PSEs (at aggregative and disaggregative levels) on the basis of independent sample *t*-test, 1994–1995 to 2010–2011

Ratios	MoU and non-MoU			Manufacturing and servicing PSEs			Profit-making and loss-making PSEs				
	1	2	3	1	2 (pre-NCAER)	2 (post-NCAER)	3	1	2 (pre-NCAER)	2 (post-NCAER)	3
RONW								**	**		
ROCE	**	*						**	**		
ROTA	**	**	**	*				**	**		
OPM	**	**		*	*			**	**		
NPM	**	**	**	*				**	**		
TATR		**		*							
FATR		**	**								
CATR		*									
DCP											
RMIHP	*					**					
WIPIHP				**							
FGIHP											
TD/TE								*			
CR	**	**	**								
ATR	**	**	**								
Sales efficiency	**	**	**	**	*			**		**	**
NIE	**	**	**					**	**	**	**
Employees				*	**	**	**	*			

**Signifies to significant difference at 1 % level

*Signifies to significant difference at 5 % level

in a few cases of profitability in the MoU PSEs during various phases of the study; similarly, notable difference has been observed in many of the efficiency parameters and in RONW of non-MoU PSEs. Independent *t*-test suggests significant difference in profitability (ROTA, OPM, and NPM), efficiency (TATR and FATR), liquidity (CR and ATR), and sales efficiency between MoU and non-MoU PSEs.

Further, in a large number of cases, the differences are significant in many of the parameters of profitability, productivity, and efficiency at aggregate and disaggregate levels of MoU PSEs over the phases. Independent *t*-test (shown in Table 7.84) presents significant difference in all the parameters of profitability, sales efficiency, and NIE during phases 1 and 2 between profit-making and loss-making MoU PSEs. The finding signifies marked improvement of loss-making PSEs during phase 3. In fact, a marginal impact of recession has been observed and that too in few parameters only.

7.7.2 Main Findings

The following are the major findings based on the analysis contained in the chapter:

1. The increase in profitability, efficiency, liquidity, and productivity is commendable in MoU PSEs during the post-MoU phases; MoU has brought salutary impact on the financial performance of these enterprises. In contrast, the non-MoU PSEs have indicated unsatisfactory performance; *t*-test has also corroborated significant difference between MoU and non-MoU PSEs in many ratios.
2. Post-NCAER recommendation phase 2 (2004–2005 to 2006–2007) and post-recession phase 3 (2008–2009 to 2010–2011) have shown marked improvement in the parameters of profitability and productivity compared to previous two phases in MoU PSEs. Similarly, efficiency, liquidity, and leverage ratios have also shown satisfactory results over the phases in sizable number of cases. In operational terms, these PSEs have weathered recession phase well.
3. Among PSEs signing MoU, profitability of manufacturing PSEs is better than that of service PSEs signing MoU. However, services MoU PSEs have shown better performance in utilization of assets vis-à-vis manufacturing PSEs. Except these two parameters, *t*-test signifies no sector-wise variations in other financial performance parameters in both types of MoU PSEs.
4. As expected, profitability of profit-making PSEs (PME) has increased after signing MoUs over the phases. Sizable increase in profitability has also been observed during post-NCAER phase 2 and third phase in loss-making PSEs (LME); it may primarily be attributed to higher reduction in inventory holding period (IHP) compared to PME which, in turn, is likely to have caused a significant reduction in carrying and storage costs of inventory. No significant difference is identified during phase 3 between both types of PSEs; in sum, NCAER recommendations have played an important/pivotal role in bringing up the performance of LME after signing MoUs. Hence, several committees' recommendations for closing down the LME need to be relooked at.

In view of salutary impact of MoU, it is suggested that the government should encourage the remaining non-MoU PSEs to sign it; in fact, *there is a merit of considering to make signing of MoU mandatory for all PSEs.*

Further, in a large number of cases, the difference is significant in many of the parameters of profitability, productivity, and efficiency at aggregative and disaggregative levels of MoU PSEs over the phases. However, independent *t*-test (shown in Table 7.84) signifies significant difference in all the parameters of profitability, sales efficiency, and NIE during phases 1 and 2 between profit-making and loss-making MoU PSEs. The finding signifies marked improvement of loss-making PSEs during phase 3. The marginal impact of recession has been observed in few parameters only; in other words, recession has not affected, to a marked extent, the financial performance of these enterprises. Therefore, it is safe to conclude that MoU has not only enhanced the operational and productive efficiency of all MoU PSEs but also has improved the profitability position of loss-making PSEs after signing MoUs.

Annexure 7A.1 MoU Format for Manufacturing PSEs

Evaluation criteria	Unit	Weight (in %)	MoU target				
			Excellent (1)	V. good (2)	Good (3)	Fair (4)	Poor (5)
I. Financial parameters							
1.1 Absolute values of:							
1.1.1 <i>Turnover (net)</i>	Rs.	20					
	Cr.						
1.1.2 <i>Gross margin (PBDIT)</i>	Rs.	20					
	Cr.						
Subtotal (I.a):		40					
1.2 Management ratios							
1.2.1 PBDIT/capital employed	%						
1.2.2 PBDIT/total employment	Rs.						
1.2.3 Total cost/total output	Rs.						
1.2.4 R&D/turnover	%						
1.2.5 Market share	%						
Subtotal (I.b):		10					
<i>Total (I.a + I.b):</i>		<i>50</i>					
II. Nonfinancial parameters (indicative parameters)							
2.1 Capital expenditure	Rs.						
	Cr.						
2.2 Project implementation/milestones							
2.3 R&D							
2.4 Strategic planning							
2.5 Capacity utilization							
2.6 Customer satisfaction							
2.7 HRD							
2.8 Environmental conservation							
2.9 Corporate social responsibility							
Subtotal (II):		50					
Grand total (I+II):		<i>100</i>					

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Chapter 8

Financial Performance of PSEs in India (with focus on Disinvestment and MoU): Concluding Observations

Abstract The objective of this chapter is to provide a brief summary of main findings of the study. The study covers 209 non-financial central public sector enterprises (PSEs) in India for the time span of two decades (i.e., 1991–1992 to 2010–2011); this period has been divided into different sub-phases for different purposes. The findings of the study have been summarized; they are related to the assessment of financial performance of the central PSEs, disinvested PSEs, MoU PSEs, and impact of recession. Based on the major findings, some concrete suggestions/recommendations have been made for the government/management of PSEs for their better functioning. The chapter also contains major implications and recommendations of the study.

Three major recommendations are as follows: (1) The government should henceforth aim at strategic disinvestment as small and modest sizes of disinvestment are not likely to be fruitful; (2) MoU should be mandatory for all the PSEs (instead of the current practice of its being voluntary in nature); and (3) the government's intervention in the operational functioning and managerial decision making should be a matter of last resort.

Keywords Financial performance • Public sector enterprises (PSEs) • Board for Reconstruction of Public Sector Enterprises • Disinvestment • MoU • Non-MoU and recession

The importance of public sector in the Indian economy has been recognized since independence. The sector accounts for about 22 % of the country's GDP, around 6 % of the total employment in the organized sector, and about 20 % of direct and indirect tax collections (in 2011–2012). A sizable number of public enterprises also serve critical functions of furthering the socio-economic objectives of the government and ensuring stability in prices of key products and commodities.

The government has made sustained efforts to break the vicious circle of poverty and underdevelopment by setting up public sector enterprises or by nationalizing

certain key industries. Visionary leaders of independent India drew up a road map for the development of public sector; it was conceived as an instrument for self-reliant economic growth. As a result, the public sector has provided the much-needed thrust and has been instrumental in setting up a strong and diversified industrial base in the country. At the same time, keeping pace with global changes over a period of time, the central public sector enterprises (PSEs) in India also have adopted the policies like disinvestment, self-obligations (MoU), restructuring, etc.

It was, therefore, considered worthwhile to have a comprehensive study which assesses the financial performance of PSEs as well as evaluates the impact of MoU and disinvestment on their financial performance. Further, the liberalization of Indian economy showed the impact of global upheavals on Indian enterprises, the most recent event being the global recession in 2008. The study also attempts to analyze whether there was any impact of this recession on the performance of Indian PSEs.

The objective of this chapter is to provide a brief summary of main findings of the study. The study covers 209 non-financial central public sector enterprises (PSEs) in India for the time span of two decades (i.e., 1991–1992 to 2010–2011); this period has been divided into different sub-phases for different purposes. The sample virtually covers the universe of central non-financial PSEs in India. Based on the major findings, some concrete suggestions/recommendations have been made for government/management of PSEs for their better functioning.

In this study, primarily, 18 ratios related to the profitability, efficiency, liquidity, leverage, and productivity of capital have been used for assessing financial performance, pertaining to the sample PSEs, disinvested PSEs and MoU PSEs. These ratios are profitability (return on net worth, return on capital employed, return on total assets, operating profit margin, and net-profit margin), assets turnover (total assets turnover ratio, fixed assets turnover ratio, current assets turnover ratio, raw-material inventory holding period, work-in-process inventory holding period, finished-goods inventory holding period, and debtor collection period), leverage (total debt to total equity), liquidity ratios (current ratio and acid test ratio), and productivity of manpower (employment level, sales efficiency per employee, and net income per employee). Another classification in terms of manufacturing PSEs and service PSEs has also been followed for the purpose of analysis. Further, combinations with disinvested and non-disinvested PSEs as well as MoU and non-MoU PSEs have also been considered. Similarly, for better exposition, the profit-making PSEs and loss-making PSEs have also been analyzed separately. Apart from secondary data, the study also takes into account the survey based on the total response of 30 PSEs on various aspects of their performance.

8.1 Major Findings

The main findings related to the assessment of (1) financial performance of the central PSEs, (2) disinvested PSEs, (3) MoU PSEs, and (4) impact of recession have been summarized in this section. This section also contains major implications and recommendations of the study.

8.1.1 Financial Performance

The financial performance of the sample central PSEs (209 in number) has been evaluated by bifurcating them into two broad categories, namely, manufacturing and service sector PSEs and profit-making and loss-making PSEs.

In order to study the trends in respect of financial performance and its implications in a comprehensive manner, an attempt has been made to analyze the data over a period of time (i.e., on time series basis). For this purpose, period of the study (20 years) has been divided into four broad phases: phase one, from 1991–1992 to 1995–1996; phase two, from 1996–1997 to 1999–2000; phase three, from 2000–2001 to 2007–2008; and phase four, from 2008–2009 to 2010–2011. The rationale of the time span covered in each sub-phase has been explained in Chap. 4. From the statistical point of view, the “first” phase, “second” phase, “third” phase, and “fourth” phase have been considered as four independent samples.

Starting with profitability analysis, it is gratifying to note that the notable improvement has been recorded in the select profitability parameters of the sample PSEs during phases three and four (2001–2002 to 2006–2007 and 2008–2009 to 2010–2011) vis-à-vis earlier two phases (1991–1992 to 1995–1996 and 1996–1997 to 2000–2001). Productivity of capital has shown an impressive improvement over the phases; it is primarily due to overall reduction in workforce and increase in net sales over the period of time. The questionnaire survey also reports satisfying compounded annual growth rate in their net profits during the period of phase three.

Based on responses to the questionnaire survey, the factors like macro-economic conditions, stable tenure and its completion by top management executives, and focused/participative decision-making approach have been cited as the major ones contributing to the better performance of these PSEs.

Although the profit record of manufacturing PSEs is unsatisfactory for the period as a whole, it is gratifying to note that there has been an improvement in its profitability record in phases three and four compared to earlier two phases. In marked contrast, there has been a substantial improvement in all the five profitability ratios in phases three and four compared to the first two phases.

The revealing outcome of the study is that recession has not affected the profitability of manufacturing PSEs (except marginally in respect to RONW) and service PSEs (save RONW and ROCE). On the contrary, profitability has improved over the years since 2002–2003. The increase in rates of return may primarily be attributed to the efforts undertaken by the government (in terms of policy decisions) over a period of time. These include reduction in the amount of excise duty, custom duty, sales tax, other duties, etc., along with the decline in operating expenditures, deregulation of administrative price mechanism (APM), enhancement of capacity utilization, manifold increase in turnover, reduction of number of sick units, and revival of loss-making PSEs over a period of time by inducting sizable investments in PSEs.

It is worth noting that both kinds of public enterprises have earned positive operating profit virtually in all the years covered by the study. However, net-profit record has not been equally satisfactory in all the years due to interest burden and higher

amount of provisions of income tax. The reason for higher interest may be ascribed to more than twelfold increase in investments of PSEs during the period of the study, 1990–2011 (Public Enterprises Survey 2006–2007 and 2010–2011, Vol. I). It is to be noted that the substantial part of additional investments has been made through debt/borrowings.

As far as the efficiency in respect to utilization of total assets (measured in terms of TATR) and current assets (based on CATR) is concerned, the performance of service enterprises has been observed to be marginally better compared to manufacturing enterprises during the entire period and sub-phases of the study. The TATR of less than one for both the categories of PSEs for the entire period of the study can be regarded, *prima facie*, as unsatisfactory. It is indicative of under-utilization of resources available with them. However, its segregation into FATR and CATR provides a useful insight. The FATR can be reckoned as satisfactory (as the ratio is more than three) for both categories of PSEs, implying efficient and effective capacity utilization of assets. In operational terms, it is indicative of the fact that recession has not caused an adverse impact on the utilization of long-term assets of these enterprises. It is rather commendable that neither of the sectors (i.e., manufacturing and service) appears to have negative impact (to a marked extent) on their asset-building effort due to recession.

Given the satisfactory level of FATR, unsatisfactory level of TATR may primarily be attributed to low CATR; the impact of recession has been observed primarily in CATR as it has recorded a decrease during the recession phase four vis-à-vis phase three.

Almost a consistent reduction in employment over the first three phases in manufacturing organizations (as expected in VRS targets) has been observed; it is substantial (nearly 25 %) in phase three vis-à-vis phase two (significant statistically). Whereas in the post-recession period (phase 4) employment record has shown a moderate increase, the results are consistent with earlier analysis of improvement in capacity utilization and productivity of fixed assets, which, in turn, generates employment (requires more number of employees to work effectively); no major impact of recession has been observed in manufacturing PSEs. However, in marked contrast, the trend is quite reverse in the case of service sector; nearly twofold increase in employment has been noted in phase three compared to phase one. Employment record has shown a decrease in phase four against phase three. Thus, impact of recession (retrenching workforce by opting VRS) has been noticed in service PSEs only.

Similarly, an increase of more than two times has also been observed in sales efficiency of manufacturing organizations between phases three and four; the corresponding figure related to service sector is one and a half time. Likewise, an increasing trend has been noted in net income efficiency ratio also in both types of enterprises.

Another analysis is based on profit-making PSEs and loss-making PSEs. There is an improvement in the profitability ratios of profit-earning PSEs. In respect to loss-making PSEs, the solace is that PSEs have positive operating profit margins as well as positive rates of return on their investments from the year 2005 to 2006 onwards. In the same way, during phase four, a good amount of improvement (significant statistically) has been recorded in all the profitability ratios (except NPM,

albeit reduced losses) vis-à-vis phase three of these PSEs. The plausible reasons may be that the government, as a policy, gave emphasis on reduction of number of sick PSEs (i.e., from 111 in March 2003 to 45 in March 2010); central PSEs were brought under the purview of Sick Industrial Companies Act 1985 (SICA). Further, the government has also set up the Board for Reconstruction of Public Sector Enterprises (BRPSE) in December 2004 for reconstruction/revival. Signing of MoUs and professionalization of the board of these enterprises by inducting outside professionals on the board have also been introduced.

The findings have policy implications. Though loss-making PSEs may continue to have accumulated losses in their balance sheet, the positive RONW of more than half of loss-making enterprises (median is 2.58 %) in phases three and four is a signal of their turnaround; there is need to review the policy of closure of the loss-making PSEs, recommended to the government by various committees. In concrete/operational terms, closure of loss/sick PSEs should be taken on the merits of each case.

Virtually all the profit-making enterprises (responding to the survey) felt that the government liberalization policies (initiated in 1991) have yielded positive impact on their financial performance. In marked contrast, only half of the loss-making organizations had that feel. It is gratifying to learn from the survey that the financial targets are generally communicated to the subordinates as well as to the government in almost all the enterprises.

The profit-making (PM) enterprises have maintained an adequate amount of liquidity in almost all the phases. In contrast, the working capital/liquidity position of loss-making (LM) PSEs is highly dissatisfactory.

It is suggested that the government may intervene through infusion of funds in those PSEs which have ceased to have losses and have started earning profits so that they can meet their liquidity requirement in time (and also are able to negotiate better price for their input requirement at low input cost) as well as withstand recession.

It goes to the credit of the management of PM PSEs that an incredible increase in sales efficiency and net income efficiency (NIE) has taken place during all the sub-phases of study. For instance, there has been nearly two and half times increase in sales efficiency and ten times in net income efficiency during phase four vis-à-vis phase one of PM PSEs. Equally notable observation is that there has been a growth rate of 12 % in employment during the period of the study.

In sum, notwithstanding the improvement noted in LM PSEs, they continue to be beset with low assets turnover ratios, dissatisfactory liquidity position, unsatisfactory NIE, and relatively higher level of debt.

8.1.2 Disinvestment in PSEs

The study has also assessed the financial performance of 38 disinvested PSEs (where less than 50 % of the disinvestment has taken place); a comparison has also been attempted between disinvested and non-disinvested PSEs, based on three

phases on 20-year data (1991–1992 to 2010–2011). It was expected that disinvestment which was an outcome of liberalization and economic reforms policies would have enhanced the performance and earning capacity of disinvested PSEs in India. The major findings on this aspect are described in the following paragraphs.

It may be noted that though the position of profitability is not encouraging in phase two, a good amount of improvement has been noted in phase three of disinvested PSEs compared to non-disinvested PSEs. The profitability in all the parameters of disinvested PSEs is several times higher compared to non-disinvested PSEs across the phases. Similarly, better performance of the disinvested PSEs is also apparent from the perspectives of assets turnover, productivity of capital, and liquidity ratios vis-à-vis non-disinvested PSEs. Independent *t*-test reinforces better operating efficiency in utilization of resources, productivity, and liquidity of disinvested PSEs compared to non-disinvested PSEs. These results have motivated to conduct an empirical test on disinvested PSEs at aggregate and disaggregate levels.

It is surprising that disinvestment brings no major improvement in majority of the parameters after disinvestment; profitability, assets turnover, and capacity utilization have followed decreasing trend; improvement has been noted in respect to productivity of capital and liquidity only. In fact, actual findings are not in conformity with normal expectations that disinvested PSEs perform better. The plausible reasons for decrease in profitability and operational efficiency, as per the responses to the questionnaire survey, are low profit margins, competitive environment and administrative prices.

In brief, disinvestment has not yielded desired results on majority of dimensions; it may be virtually due to a variety of problems faced by PSEs even after disinvestment, such as high cost and non-competitive industrial structure and operational inefficiency due to high governmental interference and restrictions.

It is not out of place to refer to Sueyoshi (1998); he contends that the performance and corporate behavior of a firm cannot be determined only by its ownership but also by many external factors including type of corporate environment (regulations and deregulations) and types of client (government or private firms); public firm facing serious competition may behave as private firm, and a private firm under government regulation may still function like public firm. Hence, disinvested public enterprise needs major structural changes including replacement of leadership, existence of performance incentives, transparency, and education to managers in order to become a competitive firm.

8.1.3 Memorandum of Understanding (MoU)/Self-Obligations

One of the objectives of the study is also to assess whether or not the non-financial central PSEs in India which have signed MoU (henceforth, referred to as MoU PSEs) have better financial performance compared to PSEs which have not signed MoU (referred to as non-MoU PSEs). The landmark year is 1994–1995 when 100 PSEs signed MoUs. On the basis of cutoff year 1994–1995, the sample consists of

66 MoU PSEs having MoU in all subsequent years till 2010–2011, the last year of the present study, and 90 non-MoU PSEs. The financial performance of MoU PSEs and non-MoU PSEs has been determined and compared by dividing the 17-year period of the study into three phases.

It has been hypothesized that MoU PSEs would have posted better financial performance vis-à-vis non-MoU PSEs. It is expected that the managers of MoU PSEs would have put their best efforts to meet the targets laid down in MoU as their own evaluation is based on achieving the parameters contained in MoU.

It may be mentioned here that minor decrease in all the ratios of profitability has been recorded during the recession phase (save ROCE) in MoU PSEs. In other words, recession has not caused a notable dent in the profitability of these PSEs. In contrast, the profitability record of non-MoU PSEs has been unsatisfactory in respect to all ratios (save RONW) during the period of the study, in that there have been losses (reflected in negative ROR and margins). As per trend, the solace is that there have been positive operating profits as well as positive ROCE and RONW in phases two and three compared to phase one.

As far as soundness of liquidity position is concerned, the analysis indicates that the MoU PSEs are likely to honor their short-term maturing obligations when they become due; it is apprehended that the non-MoU PSEs may encounter problems in paying current liabilities in time. The results pertaining to liquidity ratios show sizable improvement in MoU PSEs vis-à-vis non-MoU PSEs.

Further, the debt-equity ratio of both types of PSEs (MoU and non-MoU) is higher than the desired level. For instance, TD/TE ratio has been 1.62:1 in the case of MoU PSEs for the aggregate period (1994–1995 to 2010–2011) of the study; this figure is higher at 1.75 for non-MoU PSEs. The data indicates that the debt has financed a significant proportion of total assets of PSEs.

Equally notable observation is significant increase (statistically) in sales efficiency and NIE in the MoU PSEs during phases two and three vis-à-vis phase one, the respective increase being one and half times and two times in sales efficiency; it is more than three times and five and half times in respect to NIE during the referred period. Similarly, the sales efficiency of non-MoU PSEs has shown an increase of more than one and half times and three and half times. However, it has not resulted into a commensurate increase in NIE; on the contrary, NIE has shown substantial reduction. The decline in NIE may primarily be attributed to increase in production cost, uncontrolled expenditures, excessive employment, and improper government control.

The performance of the MoU PSEs subsequent to the recommendations of NCAER which have been implemented from the year 2004–2005 has also been evaluated. For this purpose, the second phase period (2000–2001 to 2007–2008) has been sub-divided into two, namely, 2000–2001 to 2003–2004 is referred as pre-NCAER recommendation phase two and 2004–2005 to 2007–2008 denotes post-NCAER recommendation phase two.

A significant improvement in all the profitability ratios during phase two, subsequent to NCAER recommendations, has been observed. Therefore, it is reasonable to conclude that NCAER recommendations have contributed further towards better profitability of MoU PSEs.

It may be recapitulated here that the operational and productive efficiency levels of MoU PSEs have been assessed on the basis of total assets turnover, debtor collection period, and inventory holding period (two major sub-constituents of current assets). Among total assets, fixed assets category only has shown a statistically significant improvement across the phases, including the phases of pre- and post-NCAER recommendations.

As far as leverage and liquidity levels are concerned, no significant change has been observed over the phases in MoU PSEs. The results are not surprising. The reason is the MoU PSEs were already operating with adequate and satisfactory levels of current ratios and acid test ratios. Additional increase would have amounted to unwarranted excessive working capital; PSEs seem to be conscious in this regard as there has been a corresponding decrease in CR and ATR during the period.

It is a matter of immense gratification that there has been a statistically significant improvement in SE and NIE across the phases. The VRS targets set by the government in order to enhance the productivity and profitability and to meet the other challenges have been met in a large number of cases.

While comparing manufacturing and service PSEs, it is important to note an increasing trend in all the turnover ratios during the first two phases of manufacturing MoU PSEs, whereas the trend is reversed (decreasing) in the case of service MoU PSEs; prima facie, the impact of recession has been observed mainly in manufacturing MoU PSEs. The improved efficiency in terms of reduction in inventory holding period and debtor collection period is manifested in the results. A steep decline from the year 1999 to 2000 for manufacturing firms and from 2003 to 2004 for service firms is apparent.

It has been observed that debt has been a major source of finance for manufacturing as well as service PSEs during the period of the study. As per trend, the decrease in debt-equity ratio has been noted in phase two only compared to phase one; increase in D/E ratios has been observed in phase three (again) in the case of manufacturing PSEs. There has been increased use of debt in the case of service PSEs.

It is heartening to note that the acid test ratio for both types of PSEs is higher than the desired norms of 1:1, the respective figures being 1.51 and 1.62 for manufacturing and service PSEs, respectively, during the 17-year period of the study. It is reasonable to conclude that the sample MoU PSEs are not likely to encounter any problems in meeting their short-term maturing obligations in time.

An attempt has been made also to assess and compare the productivity of manufacturing and service PSEs in terms of sales and net profit per employee; the major parameters used for the analysis are employment, sales efficiency, and net income efficiency (NIE). There has been a consistent decrease in employment in the manufacturing as well as in service PSEs over the phases.

Sizable increase has been observed in the sales efficiency (SE) and net income efficiency (NIE) of the manufacturing and service MoU PSEs across the phases. *Further, it may be inferred that the phase of recession has not reduced the productivity level either in the service or in manufacturing MoU PSEs. Rather high quantum of increase has been recorded.*

Another aspect considered in the study is to assess the impact of signing MoUs on the financial performance of the profit-making and loss-making PSEs on the basis of five broad parameters as mentioned earlier. It was felt that it would be of interest to ascertain whether the introduction of MoU has led to an enhancement of financial performance in loss-making MoU PSEs or not. It is expected that after signing MoUs, the financial performance of profit-making and loss-making PSEs should show an improvement.

As expected, the profitability (measured in terms of RONW, ROCE, ROTA, OPM and NPM) of profit-making (PM) sample PSEs has recorded an increasing trend over the first three phases (including pre- and post-sub-phases two of NCAER recommendations and phase 1).

Commendable increase in all the parameters of profitability has been noted in the post-NCAER phase two and phase three compared to previous two phases of LM PSEs. Period from 1998–1999 to 2002–2003 has marked the worst performance; the years 2003–2004 onwards have witnessed a notable improvement in profitability in LM PSEs since the government has infused substantial amount of investment for the upliftment of these enterprises. Majority of the LM sample enterprises has indicated higher profitability over a period of time.

Results have indicated significant difference in all the measures of profitability between PM and LM PSEs during the phase one and pre-NCAER phase two; it implies that improvement in mean profitability of PM enterprises is better than that of LM enterprises during the same time frame. It is gratifying to note that the LM PSEs have shown tremendous improvement during the succeeding phases, i.e., phase three and post-NCAER phase two. In fact, even during recession period (2008–2009 to 2010–2011), they have shown positive profits; this performance can be reckoned as commendable as these enterprises were in red till 2003–2004. In sum, NCAER recommendations seem to have played an important role in toning up the performance of loss-making PSEs greatly. Hence, recommendations of several committees for closing down the loss-making public enterprises merit revisit.

It appears that MoU has positive impact, to a marked extent, on LM PSEs. For instance, the mean assets turnover of LM PSEs is higher compared to PM PSEs (in particular from the year 2001 to 2002 onwards). No adverse effect of recession has been observed in the long-term assets utilization (FATR) in both the MoU PSEs; in fact, the FATR has enhanced during the recession phase vis-à-vis previous or pre-recession phase. The impact of recession has been noted in respect to utilization of current assets only in both the PM and LM PSEs which, in turn, caused an adverse impact on the TATR of these enterprises.

It is gratifying to note that the sizable decrease has been observed in the holding period of raw materials, work-in-process, and finished goods of both the types of sample PM and LM MoU PSEs across the phases. It is worth mentioning that loss-making PSEs have shown higher reduction in the holding period of raw materials and work-in-process compared to profit-making PSEs during phases two and three; as a result, there is likely to be reduction in production, carrying, and storage cost of inventory.

Finally, productivity of capital per manpower has been assessed in terms of the sales efficiency and net income efficiency (NIE) in the profit-making and loss-making PSEs during the period of the study under reference. However, NIE does not present a good picture initially, but shows positive return subsequently and in post-NCAER recommendation phase two. This may be due to negative net profit in majority of the years of such LM PSEs. The productivity level of PM and LM MoU PSEs has not been affected by recession at all; rather, an improvement has been recorded during the referred period.

In brief, based on the above analysis, it is reasonable to conclude that MoU has salutary impact and the MoU PSEs, in general, have shown better performance. Moreover, no major effect of recession has been observed in PSEs. The PSEs that have opted for signing MoU became more focused and result oriented to achieve the targets/objectives. Sangeetha (2005) states that reforms aim at improving the environment in which PSEs operate through delegation of operational and functional autonomy to the managers of publicly owned enterprises through performance contracts. Kumar (1994) says that the MoU is rooted in an evaluation system which not only looks at performance comprehensively, i.e., at both commercial and non-commercial criteria in their static and dynamic aspects, but also ensures performance by making the autonomy and accountability aspects more transparent.

8.1.4 Impact of Recession

Finally, it is gratifying to note that the global recession has not made a significant dent on Indian PSEs; they have remained insulated, to a large extent, from the recessionary influences in the recent past. However, this needs to be taken with a note of caution as the impact may be felt with a time lag or in a gradual manner.

8.1.5 Implications and Recommendations of the Study

It is reasonable to infer from the study that economic reforms and liberalization policies have made a salutary impact on the financial performance of central PSEs in majority of the cases during the period of the study under reference. Contrary to the normal expectation, the disinvestment has not made the desired impact on better financial performance. It may be due to the lower proportion of disinvestment (partial disinvestment), on the one hand, and the lack of autonomy in their functioning, on the other. Therefore, it is recommended that the government henceforth should aim at strategic disinvestment as small and modest sizes of disinvestment are not likely to be fruitful. The government's intervention in the operational functioning and managerial decision making should be a matter of last resort. Similar recommendations have been made by D'Souza and Megginson

(1999); they suggest for complete privatization with both ownership and control of the enterprise being passed on to private participants.

Kumar (1992) has emphasized that public enterprises with a weak financial condition and with a poor record of performance generally cannot be sold as they are; the government preferably requires direct sale through competitive bidding which allows high degree of transparency and comparison of offers by competitive bidders and selects the buyers based not only on the highest purchase price but also on the greatest compliance with various government requirements and privatization objectives which is evaluated on the basis of his ability to bring in benefits, such as management, technology, market access, etc.

It is also for consideration of the government that the disinvestment should be driven by the objective of most efficient allocation of resources, both monetary and non-monetary. The resources currently blocked in non-strategic PSEs should be released as soon as possible through sale of government stakes in such PSEs for redeployment. It may be added that the government should ensure that there is no further flow of resources in these PSEs.

The study indicates that MoU has significant impact in improving the profitability, operational efficiency, liquidity, and productivity of MoU PSEs over the phases. It is important to note that after signing MoUs, the loss-making PSEs have started reducing their losses and have turned their losses into profits. Further, manufacturing PSEs, in majority of the ratios, have shown better profitability and have an edge against their counterpart (service PSEs) after signing MoUs. In sum, MoU has yielded the desired results. *Therefore, it is recommended that MoU should be mandatory for all the PSEs (instead of the current practice of its being voluntary in nature).*

The government should adopt a selective/cautious policy in the case of closing the loss-making PSEs. It is understandable that for social reasons, the government normally finds it difficult to close the sick/loss-making PSEs. The government may sell such PSEs to private sector. For the purpose, it may invite tenders from the private sector. Obviously, in some cases, it may be very difficult to sell them at positive price. Since the condition would be to run them in future, it may sell them with minimum negative tender price. *The payment of one lump sum should be preferred to have operating losses year after year. This needs to be experimented as has been recommended in earlier works of Patnaik (2006) and Gupta (2005).* They emphasize that the loss-making PSEs can be in such a poor shape and saddled with such large obligations that nobody in the private sector is willing to pay money; then the government should permit negative bids in auction (where the government pays someone to take the company off its hands) as followed in Germany.

In sum, it may be reasonable to conclude that the financial performance of the sample PSEs is, by and large, satisfactory. This conclusion is notable as well as revealing as it is contrary to the popular belief that their financial performance/profitability is unsatisfactory. The better profitability record of PSEs may be attributed, to a marked extent, to the various steps taken by the government. These include professionalism of the PSE boards, periodic performance review by the administrative ministries, signing of MoUs with PSEs, rationalization of manpower through

voluntary retirement schemes, technology up-gradation, improved inventory control, and business and financial restructuring, including formulation of joint ventures. Further, the government is delegating enhanced powers to the board of directors of the PSEs to ensure better performance in the new competitive environment from time to time. We believe that these measures seem to have a salutary effect on their performance. More importantly, there is a further potential of improving their profitability. It can be achieved by having strategic disinvestment and making MoU mandatory for all PSEs.

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