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Financial performance of disinvested central public sector enterprises in India: An empirical study on select dimensions

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Abstract

The objective of this paper is assess the financial performance of disinvested central public sector enterprises (PSEs) in India on the basis of several dimensions on pre and post disinvestment bases over the life span of more than two decades (i.e. 1986-87 to 2009-10); financial performance has been measured on the basis of select profitability, efficiency, liquidity, leverage and productivity ratios. The findings suggest that partial or small amount of disinvestment has not yielded desired results in majority of dimensions; it may be virtually due to variety of problems faced by PSEs even after disinvestment, such as high cost and non-competitive industrial structure, operational inefficiency due to high governmental interference, environment restrictions (delegation of operational and functional

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autonomy to the managers through performance contracts) and less proportion of disinvestment.

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1 Introduction

During 1990's disinvestment was realized to be the only means to vanguard the Indian economy from the mounted/increased burden of financial debt and fiscal crisis. Disinvestment was conceived as an important measure to salvage such a grim situation and expected to attract global capital as well as domestic capital; evidently, it has larger implications rather than just selling the government equity at the best price (Galal et al., 1994; Gupta and Kaur, 2004). Disinvestment of government equity in PSEs has many social, economic and political implications (Ray and Maharana, 2002). Thus, disinvestment of PSEs has become an economic necessity (Sarkar and Mishra, 1994). It was expected to contribute towards the growth of Indian economy by promoting competition that, in turn, leads to cost reduction, improved quality and operational efficiency. Firms became more efficient and profitable (Megginson and Netter, 2001).

The purpose of the paper is to assess the financial performance of the disinvested central public sector enterprises (PSEs) on the basis of multiple dimensions. The paper, for better exposition, has been divided into six sections (including the present one). Section two presents a brief note of literature review. A conceptual framework in terms of scope, methodology and sources of the data has been provided in section three. To gain the insight of the full impact of disinvestment, a disaggregative analysis (based on four aspects) has been carried

out in section four. Section five enumerates the major findings of the study. Recommendations, implications and limitation of the study have been presented in section six.

2 Literature Review

This section presents a brief of literature review based on national (Indian) and international experience.

Omrane and Jeffrey (2011) examine a sample of 1866 privatizations from 37 countries and estimate the impact of disclosure standards and legal institutions that discipline auditors on the method chosen to divest state-owned enterprises. The agency conflict between minority and controlling shareholders can impede a government from privatizing by selling its stake to diffuse investors in the public capital market with a share-issue privatization (SIP) that typically generates important spillover economic benefits, rather than an asset sale to a small group of buyers. They find that SIPs become more likely when countries mandate strict disclosure standards, although result is sensitive to model specification. Investors value reforms that subject auditors to more severe private and public enforcement over several other legal determinants, including enhancing disclosure standards.

Trien and Jonathan (2010) suggest that both state ownership and debt have detrimental performance consequences in transition economies and the confluence of these two conditions may not be harmful. Their results confirm that while debt and state ownership each have a negative impact on firm performance when used in isolation, their interaction has a positive impact on firm performance.

Yan et al. (2010) address the question whether transparency matters among Chinese listed companies. They construct a comprehensive scorecard of 100 major Chinese listed companies and construct a Transparency Index (TI) to assess these companies during 2004–2007. It is found that market valuation is only related to

the Voluntary Disclosure Index; more profitable, overseas-listed and companies with a separate CEO and board chairman tend to disclose more on a voluntary basis.

Estrin et.al (2009) evaluate the effects of privatization from the experiences of post-communist (transition) economies. They distinguish the impact of privatization on efficiency, profitability, revenues and on other indicators. The effect of privatization is mostly positive in Central Europe, but quantitatively smaller than that to foreign owners and greater in the later than earlier transition period. In the Commonwealth of Independent States, privatization to foreign owners yields a positive or significant effect while privatization to domestic owners generates a negative or insignificant effect.

Arnold et.al. (2008) 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 has the largest productivity effects on manufacturing firms over the period.

Eskil et al (2008) examine the differences in performance between private companies (POEs) and state owned enterprises (SOEs). They use a comprehensive panel covering all registered companies during the 1990s in Norway, a country where SOEs play an important role in regular markets. Return on assets as well as costs relative to sales revenue are used as measures of performance in markets where SOEs and POEs compete with each other. Overall, POEs perform significantly better than SOEs. The study tests the hypothesis that SOE managers may learn from POE managers in environments with stronger competition, but finds only weak empirical support for such a learning mechanism.

Vadlamannati (2007) empirical results show that the correlation of disinvestment and privatization (in India) in relation to deficit variables is very

feeble and weak in view of the very small sized and slow paced disinvestment and privatization program.

Gloria (2007) explains a field study and form an agency perspective, how monitoring and incentive alignment mechanisms change to support the interests of a privatized firm's new ownership. In this case, privatization led to important changes in the board of directors and to more formal performance evaluation and compensation systems for top managers; as profitability and financial control gained relevancy with the firm ownership change. He shows that the differences in incentives management before and after privatization are due to different agency relations in the two periods and privatization framework the relation between monitoring and incentive alignment mechanisms is complex, not simply substitutive as agency theory.

Michael et al. (2007) find that ownership concentration, the presence of foreign shareholders, the percentage of tradable shares, the type of dominant shareholder, the supervisory board and independent directors affect the earnings response coefficients and discretionary accruals.

Patnaik (2006) argues that the main rationale for disinvestment is to increase the efficiency in utilization of resources (labour 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.

Michael (2006) enumerates in his results that chairman turnover is related to a firm's profitability but not to its stock returns. Turnover-performance sensitivity is higher if legal entities are major shareholders but the proportion of non-executive directors perversely affects it. He finds no evidence that profitability improves after a change in chairman and suggests that a firm's governance structure is ineffective as it is unable to recruit suitable replacements that can turn around its financial performance.

Mark and David (2006) examine the complexities involved in the liberalization process and distinguish liberalization policies that generally are pro-competitive from corresponding anticompetitive liberalization policies.

Nagaraj (2005) opines 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 prices 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.

Gupta and Kaur (2004) indicate that there should be closure and winding up of terminally sick PSEs and selling of their assets. Such terminally sick PSEs are mostly restricted to those which were earlier taken over from the private sector as sick units, and became a major contributory factor for the overall unsatisfactory performance of the public enterprises.

Rozelle and Johan (2004) analyze the linkages between the reform strategies in transition countries and economic performance; they document post-reform performance in the transition countries of Asia and Europe.

Mike et al (2004) have used Chinese firms of different ownership types and suggest that ownership type can be a parsimonious and important variable that managers use to cognitively classify firms into different strategic groups. They find that state-owned enterprises (SOEs) and privately-owned enterprises (POEs) tend to adopt defender and prospector strategies, respectively, while collectively-owned enterprises (COEs) and foreign-invested enterprises (FIEs) exhibit an analyzer orientation that falls between defenders and prospectors on the strategy continuum.

Bennett and Maw (2003) examine how partial state ownership affects the firms' subsequent investment and output behavior. They determine how the optimum retained 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.

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

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

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).

Megginson and Netter (2001) review the history of privatization, the theoretical and empirical evidence on the relative performance of state owned and privately owned firms, the types of privatization, the degree of privatization in non-transition and transition countries and the impact of privatization on the development of capital markets and corporate governance. They suggest that privatized firms become more efficient, more profitable, financially healthier and reward investors.

Megginson et. al. (1994); Boubakri and Cosset (1998); D'Souza and Megginson (1999), (the 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.

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 bifurcated 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. The authors also compared competitive and non-competitive markets and found that the former had higher gains in profitability than the latter.

In the other study, Galal et.al. (1994) analyze the post-privatization performance of twelve companies in Chile, Malaysia, Mexico and UK to determine whether the transfer of ownership has increased efficiency. The authors document net welfare gains in eleven of the twelve cases. According to them, it is unfair to hold privatization accountable for all the problems of transition. In terms of financial performance, improvement in profitability, real sales, sales efficiency and dividend payout has been recorded. Leverage ratios have also shown decline. Takano (1992) studies the privatization of Nippon Telegraph and Telephone (NTT) and has opined that the privatized NTT lowered non-operating expenses in terms of a substantial reduction in interest costs.

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; they pointed out that the government failed to realize not only the best value but also the other objectives of the divestment program.

Dewatripont and Roland (1993) argue that gradual resolution of uncertainty enhances the *ex-ante* feasibility of gradual privatization programs with the option

to reverse reform at a low cost. They provide insights regarding the conditions under which rapid and gradual privatization dynamics respectively are optimal.

Kumar (1992) suggests that direct sale through competitive bidding is preferable as it allows high degree of transparency, comparison of offers by competing bidders and selects the buyer based not only on 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 ability to bring in benefits such as management, technology, market access etc.

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

Boardman and Vining (1989) classify fifty-five research results during thirty years' time span (1956 to1987) into three categories (6, 16 and 33), based upon the relationship between ownership and performance. The first six empirical results, including Bruggink (1982); Neuberg (1977); Hirsch (1965); Pier et.al. (1974) support that public corporations are more efficient than private firms. The second sixteen empirical studies, including Becker and Sloan (1985) and Caves and Christensen (1980) indicate that no performance difference can be found between the two types of ownership. The last thirty-three research works, including De Alessi (1974); McGuire and VanCott (1984); Schlesinger and Dorwart (1984) empirically confirm the economic assertion.

Sankar and Reddy (1989) have presented the decision of divestment into a matrix form and have stated that state owned enterprises (SOEs) are considered high or low 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 most suitable candidates for disinvestment.

Mishra and Nandagopal (1989) discuss the feasibility of the privatization of PSEs; their turnover test ranked the nationalized industries in terms of the business performance and they advocated that privatization of the industries could maximize consumer welfare.

Brittan (1986) lists five possible aims in the denationalization of public sector industry, *viz.* 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. He further states that the management of nationalized industries will oppose more competition, either in the form of breaking-up existing structures or introducing a more liberal regulatory regime.

Kay and Thompson (1986) examine the privatization in U.K. They observe dissatisfaction with the performance of nationalized industries which led to repeat the attempts to prescribe more specific objectives. The authors state that public corporations may have some non-commercial objectives and these may bias comparisons of efficiency. Where outputs are not sold in a competitive market, appropriate measure of output may need to be devised. Public corporations may, sometimes, face different input prices as a consequence of being in the public sector. They may have access to cheap capital as a result of explicit or implied government guarantees; it should also be borne in mind that they may be advised/ required to purchase more expensive domestically produced inputs also.

Notwithstanding the above notable works/studies on the subject, there has been hardly any study which has examined in depth the impact of disinvestment holistically for the time span of more than two decades by incorporating all major parameters of financial performance, namely, profitability, liquidity, solvency, efficiency, productivity etc. of PSEs in India. The present paper is a modest attempt to fill this gap.

3 Scope and Methodology

The scope of the study is limited to non-financial central PSEs in India that have opted for the disinvestment for the period of 23 years (1986-87 to 2009-10); the sample consists of 38 PSEs (out of 44, total disinvested enterprises till March 2008-09) where less than 50 per cent of the disinvestment has been undertaken up to the year 2001-02. The sample is representative of all the industrial groups (gone for the disinvestment as per Public Enterprises Survey).

While, 23 years (1986-87 to 2009-10) time period has been used in the study on rolling basis, the period has been divided into two sub-parts, namely, pre-disinvestment phase of five years and post-disinvestment phase of eight years; this is to ascertain whether there has been any significant change in the financial performance due to disinvestment and economic liberalization or not.

For this purpose, these phases have been divided on the basis of last year of disinvestment, cut-off year being 2001-02. There are two major reasons for choosing cut-off year 2001-02. The first is that a small amount of disinvestment has taken place during initial years in many of the PSEs. Due to several reforms and policies, the amount of disinvestment has witnessed a decisive increase in the succeeding years in certain PSEs; in operational terms, the cumulative amount of disinvestment (till the cut off year) has turned out to be reliable. The second equally important reason is that the last year used for the purpose of the analysis in the study is 2009-10; to assess the performance (on rolling basis) of disinvestment, the five-year (before) and eight years (after) time-lag, disinvestment requirement gets fulfilled at 2001-02. For statistical tests, the first phase (five years prior to disinvestment) and the second phase (eight years subsequent to disinvestment) are considered as two independent samples.

Relevant data (secondary) has been collected from the various volumes of Public Enterprises Survey. We have relied 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. This would constitute the focus while interpreting the results of post-disinvestment *vis-à-vis* pre-disinvestment period.

Profitability has been measured in terms of rate of return (ROR) on investment and sales; ROR on the basis of investment includes return on total assets (ROTA), return on capital employed (ROCE) and return on net worth (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 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.

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 income or miscellaneous receipts) and average capital employed (includes gross block of fixed assets less accumulated depreciation plus net working capital). As far as RONW is concerned, it has been computed by dividing net-profit after taxes minus preference divided to the average net-worth (share capital plus reserves minus accumulated deficit and deferred expenditures).

Secondly, return on the basis of sales (ROS) has been computed on the basis of operating profit margin (OPM) and net profit margin (NPM). The OPM indicates the magnitude of operating profit in relation to sales; the NPM determines the relationship of reported net-profit after taxes to sales; the ROS

indicates the management's ability to carry on the business profitably and expresses the overall cost/price effectiveness (Helfert, 2003).

Similarly, operating efficiency in utilization of resources has been determined in terms of three dimensions, i.e., assets turnover, inventory holding period (IHP) and debtor's collection period (DCP). Turnover is the primary mode for measuring the extent of efficient use of assets by relating them to net sales; these 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, higher the firm's TATR (more than one), the more efficiently the assets are being used (Gitman, 2009). TATR, FATR and CATR are computed by dividing average net sales to average total assets in use, average fixed assets (excluding depreciation) and average current assets respectively.

The second and third dimension of efficiency determine the change in holding period (in number of days) of various types of inventories and collection period of debtors respectively. 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 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 excluding excise duty) and average work-in-progress in the beginning and end of the year; it 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). Debtor collection period

(DCP) presents the relationship between gross sales (numerator) and average debtors.

The third 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 need of the firm (Jain and Yadav, 2005). Working capital requirements of PSEs in India are generally met through cash-credit and advances from banks (Department of Public Enterprises, 2002a).

Further, the position of liquidity has been measured in terms of 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) and current liabilities and provisions. ATR measures the firm's ability to convert its current assets quickly into cash, in order to meet its current liabilities. Hence, inventories and prepaid expenses are excluded from current assets, as they are not readily and easily converted into cash; they merely reduce the amount of cash required in one period because of payment in prior period.

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. Thus, fourth test is based on analyzing the productivity of capital per employee which has been determined on the basis of level of employment, sales efficiency and net income efficiency ratios. It

highlights the employment position (no. of employees, excluding casual and daily wage workers) over a period of time.

Statistical tests, namely, paired t test and independent t test have been used to assess the financial performance of disinvested public enterprises within a group of firms and with the other group of firms respectively across the phases. The entire set of data has been analyzed by using Statistical Package for Social Sciences (SPSS). Data analysis and discussion explicitly describe/deal with the analysis derived from the tables which have been mentioned in the Annexures 1 to 9.

To study the trend and its implications, the descriptive statistics and positional values, i.e., mean, median and quartiles have been computed for each PSE. Further, to overcome the variations of the sample data mean of mean, median of median and quartile of quartile have also been computed of each enterprise in each phase. To do away with the influence of extreme values, they have been excluded from the data (details are provided at footnote of Annexure I).

Survey findings are predominantly based on 15 responses received form disinvested PSEs (out of total disinvested PSE of 43 till 2007 when the questionnaire was send). The analysis of the questionnaire survey is presented for the sample responding companies.

4 Data Analysis and Discussion

This section analyses the full impact of disinvestment in terms of four dimensions of disaggregative analysis; the first is related to the measurement of the financial performance of listing and non-listing status of disinvested PSEs at national stock exchange (NSE). An analysis in respect of earning position, namely, profit-making and loss-incurring disinvested PSEs has been examined in second part. The third part assesses the financial performance of manufacturing

and service sector disinvested PSEs. Classification based on industries having higher disinvested PSEs and having lower disinvested PSEs has been carried out in part four.

4.1 An analysis of listing and non-listing PSEs at National Stock Exchange(NSE)

It is believed that the disinvested firms, whose shares are listed in NSE have to protect their image and market value in the eyes of the various stakeholders, to whom they are responsible, in particular for shareholders and lenders. Hence, it is hypothesized that the profitability and operational efficiency of the disinvested PSEs listed at NSE is higher compared to non-listed PSEs.

Financial ratios of the disinvested PSEs, (listed at NSE) manifest a considerable increase in liquidity, sales efficiency and NIE ratios (statistically significant as per paired t test) during the post-disinvestment phase *vis-à-vis* pre-disinvestment phase (please refer to Annexure I). Equally gratifying to note is the decrease in leverage ratios. Median and quartile values related to these aspects further reinforce these findings.

Further, equally important finding is that more than one-half of the listed public enterprises have recorded an improvement in their performance in respect of profitability and operating efficiency in majority of the parameters and it is cent per cent in the case of liquidity and productivity of capital (sales efficiency and NIE) ratios after disinvestment in phase two *vis-à-vis* phase one. The results of Yan-Leung et al. (2010) suggest that there is a positive and significant relation between company transparency and market valuation.

In marked contrast, the performance of non-listed PSEs has been observed to be unsatisfactory subsequent to disinvestment on most of the financial parameters (Annexure II). For instance, they have recorded a substantial reduction in their profitability and assets turnover (fixed and current) ratios in phase two *vis-à-vis*

phase one; the impact on RONW, ROCE, ROTA and NPM are statistically significant as per paired t test. Likewise, a declining trend has been noted in respect of liquidity ratios and NIE. The vast majority of the non-listed PSEs have shown decline in most of the important financial parameters in the post-disinvestment period; it is eloquently supported by quartile and median values. In fact, NIE of one fourth of the non-listed PSEs (as per lower quartile) is highly unfavourable (negative).

Annexure IX, relating to the independent t test finds a significant difference in all the parameters of profitability and NIE in two types of organizations, i.e., listed at National Stock Exchange and non-listed PSEs after disinvestment. In other words, the profitability position of listed PSEs is better than those of non-listed PSEs after disinvestment. Hence, the findings support the alternative hypotheses of higher profitability and operational efficiency of listed PSEs compared to non-listed PSEs after disinvestment. Xiao Chen et al (2008) examine how local governments in China help listed firms in earnings management to circumvent the central government's regulation; they provide subsidies to help firms boost their earnings above the regulatory threshold of rights offering and delisting. Moreover, collusion between government and listed firms in earnings management exists mainly in firms controlled by local governments.

It was of interest to note the reason for such dismal performance of non-listed PSEs. It has been noted that in 8 out of 9 non-listed PSEs have disinvestment less than 10 per cent. Perhaps disinvestment in such enterprises has been aimed to bridge the gap of fiscal deficit. In this context, Naik (2001) observes that divestment has taken place largely with an eye on reducing the fiscal deficit of the government rather than bringing about a real improvement in the working of the concerned PSEs. The entire approach has been ad-hoc and piecemeal.

Megginson, Nash and Van Randenborgh (1994) state that government companies 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 the incentives, regulation, macroeconomic policy, or ownership structure rather than to cash injections into the firm from a new capital issue. Nagaraj (2005) states that disinvestment is unlikely to affect economic performance, since, the state continues to be the dominant shareholder. Sueyoshi (1998) identifies that a private firm under governmental regulation may still function like a public firm.

In view of the proceeding analysis, it is reasonable to conclude that the listed PSEs have performed better than their counterparts; in the case of latter since control, to a marked extent, rests in the hands of government even after disinvestment. The results of this model group have supported our alternate hypothesis that the financial and operating performance of disinvested PSEs listed at NSE is moderately higher *vis-à-vis* non-listed PSEs.

4.2 Analysis of manufacturing and service sector disinvested PSEs

The objective of this section is to ascertain the change in the financial performance of manufacturing and service sector enterprises as well as to identify a group which has shown better performance due to disinvestment.

Mean and positional values of (pertaining to important financial ratios) disinvested manufacturing and service enterprises (as per Annexures III and IV respectively) indicate that there has been a decline in the profitability in both types of PSEs after disinvestment. However, it is marked statistically significant (as per paired t test) in the case of RONW and ROCE, pertaining to service enterprises only. Further operating efficiency (measured in terms of assets turnover, DCP and RMIHP) and leverage position of disinvested manufacturing PSEs have shown deteriorating performance in the post disinvestment phase. Likewise, no major change (positive) has been recorded in the performance of liquidity ratios of these PSEs after disinvestment.

It is satisfying to note that there has been a reduction in the inventory holding period (except WIPIHP) as well as leverage ratios of service PSEs after disinvestment; improvement in assets turnover (except CATR) and liquidity ratios (statistically significant in the case of CR) has also been observed during the similar time frame. Median and quartile results have followed the mean findings.

As far as productivity of capital is concerned, notable improvement has been noted in both types of PSEs which is tune with the VRS targets set by the government to shed the excess manpower as well as to enhance the productivity of these PSEs, marked statistically significant pertaining to SE and NIE for manufacturing PSEs and SE for service PSEs; in fact, one-fourth of the manufacturing PSEs have disclosed adverse NIE results after eight years of disinvestment *vis-à-vis* five years before the disinvestment. *Prima-facie*, the profitability of service PSEs is marginally higher compared to manufacturing PSEs. Jain and Yadav (2005) have also observed that return on total assets (ROTA) in the service PSEs have better profitability than manufacturing enterprises during the aggregate period (1991-2003). Ken (2002) enumerates that service quality is positively associated with contemporaneous and subsequent costs; he further points out that competition is used as a potential tool in the nation's efforts to improve the performance of government services.

In sum, it appears that disinvestment has not yielded desired results within the five years of the post-disinvestment phase. The data on ownership of disinvestment indicates that more than 70 per cent of the sample enterprises belonging to the manufacturing group have less than 20 per cent of disinvestment in government equity; this reflects the position of complete control of the government in the management and functioning of the PSEs even after disinvestment. Kaur and Singh (2005) analyze the two main causes of its failure; they are the heavy weight of non-commercial obligations of the state and untrammeled discretionary power with the government that erodes its autonomy. Irvine (1988) states that at times PSEs receive conflicting guidance on capital

budgeting from central government that, in turn, raises questions on which management accounting standards to be maintained in public sector institutions and the role which central government should play in this.

Table 1: Different Levels where Financial/New-Investment Proposals are initiated in Sample PSEs in India

Levels	Service (out of 6)		Manufacturing (out of 9)		Combined (out of 15)	
	In No.	In %	In No.	In %	In No.	In %
Head office	2	33.3	5	55.6	7	53.4
Regional office	1	16.7	2	22.2	3	20.0
Operation level	2	33.3	1	11.1	2	13.3
All three	1	16.7	1	11.1	2	13.4
Total	6	100.0%	9	100.0%	15	100.0%

An examination of survey based on the data of responding manufacturing and service disinvested PSEs (15 in number), have described the causes responsible for low financial performance of manufacturing PSEs: first, the financial/new investment proposals are initiated in nearly more than one half of the manufacturing PSEs at head-office level which are one-third in case of service PSEs (Table 1).

Table 2: Period Required for Approval and Implementation of Project/Proposals in India

Period	Service (out of 6)		Manufacturing (out of 9)		Combined (out of 15)	
	In No.	In %	In No.	In %	In No.	In %
1month	3	50	1	11.1	4	26.7
1-3 month	1	16.7	4	44.4	5	33.3
More than 3	2	33.3	4	44.4	6	40.0
Total	6	100.0%	9	100.0%	15	100.0%

Table 3: Power to Increase Selling Price in tune with Increase in Input Cost in Sample PSEs in India

	Service (out of 6)		Manufacturing (out of 9)		Combined (out of 15)	
	In No.	In %	In No.	In %	In No.	In %
Yes	6	100	1	14.3	7	53.9
No	-	-	6	85.7	6	46.1
Total	6	100.0%	7	100.0%	13	100.0%
Missing			2		2	

Second, nearly two-third of the service PSEs undergo for lesser time (less than three months) consumption in approval and implementation of the projects/proposals (separately) compared to manufacturing PSEs (which is more than three months each in nearly one-half enterprises for approval and in three-fourth enterprises for implementation, mentioned in Table 2).

Table 4: Usage of Working Capital Shortage Experienced by Responded Sample PSEs in India

Options	Service (out of 6)		Manufacturing (out of 9)		Combined (out of 15)	
	In No.	In %	In No.	In %	In No.	In %
Yes	3	50	7	77.8	10	66.7
No	3	50	2	22.2	5	33.3
Total	6	100	9	100	15	100

Third, majority of manufacturing enterprises have not been provided the power to increase selling price in tune with their input cost (Table 3), compared to service PSEs. Fourth, four-fifth manufacturing PSEs have experienced working capital shortage which is one-half in case of service enterprises (Table 4); these factors, *prima-facie*, seem to be responsible and directly affect the profitability

and operational efficiency (in utilization of the resources effectively) of manufacturing PSEs.

Notwithstanding the above, no significant difference has been noted in any of the parameters of profitability and efficiency ratios between manufacturing and service PSEs after disinvestment as per independent t test except TD/TE and ATR after disinvestment (Annexure IX). In operational terms, industry-wise difference has not been supported by t test. The statistics thus, leads us to the conclusion that the phase two of the liberalization era (having sizable disinvestment) has not played a significant role in influencing the financial performance of the sample enterprises whether they are affiliated to manufacturing group or service group. The probable reasons may be traced to observations made by Bordman and Vining (1989); partial privatization may be worse, especially in terms of profitability than complete privatization or continued state ownership.

4.3 An analysis on the basis of financial positions of PSEs

Another important variant relates to the comparison of the profit-making (PM) and loss-incurring (LM) PSEs, subsequent to their disinvestment, there were 29 profitable PSEs and 9 were incurring losses. In other words, the vast majority (more than three-fourth) of the disinvested enterprises are profit-making. Since, the primary objective of the government disinvestment policy is to revive the potentially viable loss-incurring PSEs, therefore, it is hypothesized that the performance of loss-incurring PSEs has improved after disinvestment.

The results in Annexure V pertaining to the mean values of profit-making enterprises indicate no major change in the profitability and assets turnover ratios (statistically insignificant) after disinvestment; performance has been better in respect of inventory holding period, leverage, liquidity and productivity ratios of PM enterprises. Marked improvement has been noted in the case of liquidity ratios as well as productivity ratios related to CR, sales efficiency and NIE which are

statistically significant and seem to be the factors for the enhancement in operational efficiency of the PM PSEs.

In contrast, the post-disinvestment performance/record has been unsatisfactory in the case of LM PSEs (Annexure VI); sizable number of LM PSEs have shown deteriorating performance in majority of the parameters after disinvestment; marked statistically significant in all the parameter of profitability ratios (as per paired t test). Hence, the hypothesis of improvement in profitability of the LM PSEs after disinvestment has been rejected.

The above findings may (perhaps) be ascribed to the factors pointed out by Reddy's (1988). He has observed that most of the profit and loss leaders (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 enterprises themselves. 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 government; moreover, non-availability of inputs like power, fuel etc. essentially indicates mismatch between supply and demand within the PSE. More importantly, pricing restrictions or more general price policies appear as much relevant to profit leaders as to loss leaders. Therefore, the loss is attributable to sub-serve social obligations.

However, mean and upper quartile values (Annexure V) of PM enterprises exhibit mixed results in respect of important turnover ratios related to assets (TATR, FATR and CATR); wherever the improvements are noted in all the ratios after disinvestment based on median and lower quartile values, decrease in the upper quartile value during the period under reference is indicative of deterioration in performance. In other words, assets turnover ratio (fixed and current) in the case of vast majority (more than 75 per cent) of the PM enterprises has enhanced marginally after disinvestment.

Given this fact, the enhancement in operational efficiency and profitability of PM PSEs may primarily be attributed to decrease in man-power, holding period

of inventory and increase in sales; secondly, it is greatly by virtue of, disinvestment in the profit generating service PSEs. Naib (2004) states the main reasons for poor performance of PSEs are overstaffing, outdated technology and lack of funds to invest.

As far as loss-incurring organizations are concerned, substantial decline has been witnessed in almost all the measures of profitability, assets turnover, NIE and liquidity ratios as well as increase in leverage ratio in the post-disinvestment phase *vis-à-vis* pre-disinvestment phase (Annexure VIII). This decline is cent per cent in the measures of profitability. Increase in raw-material holding period is another worrying approach. Perhaps for the reasons of increasing losses and inefficiencies, Gupta and Kaur (2004) have rightly recommended for closure and winding up of terminally sick PSEs and selling of their assets.

The results of independent sample t test (presented in Annexure IX) have marked significant differences primarily in profitability (i.e., RONW, ROCE, ROTA, OPM and NPM), productivity (sales efficiency and NIE) and partially in efficiency, i.e., FATR and FGIHP in both types (i.e., profit-making and loss-incurring) of disinvested enterprises during phase two; the performance of profit-making enterprises has significantly better (during post-disinvestment phase) than their counterpart, i.e., loss-incurring PSEs in virtually majority of the parameters. Though, Bishop and Kay (1989 and 1991) find no strong evidence to indicate that privatized firms perform better; they observe that return among the privatized companies is higher but this would have been applicable before the company is privatized, therefore, it appears more profitable firms were sold early, leaving the less-profitable ones in the public sector.

Based on survey findings of the disinvested PSEs, it is reasonable to conclude that high majority of the profit-making (nearly 80 to 90 per cent) and all the loss-incurring disinvested PSEs have favoured (for the enhancement in financial performance) liberalization policies and increase of management power

by the government (Tables 5 and 7) as they help in expediting the decision-making process.

Table 5: Opinion for Respondent PSEs pertaining to the Impact of Liberalization Policies on Financial Performance of Sample PSEs in India

Options	Profit-Making (out of 11)		Loss-Incurring (out of 4)		Combined (out of 15)	
	In No.	In %	In No.	In %	In No.	In %
Yes	10	90.9	4	100	14	93.3
No	1	9.1	0	0	1	6.7
Total	11	100.0%	4	100.0%	15	100.0%

Table 6: Opinion for Respondent PSEs pertaining to the Impact of Chairman's Compensation on increase in Financial Performance of Sample PSEs in India

Options	Profit-Making (out of 11)		Loss-Incurring (out of 4)		Combined (out of 15)	
	In No.	In %	In No.	In %	In No.	In %
Yes	1	11.11	0	0	1	8.3
No	8	88.89	3	100.0	11	91.7
Total	9	100.0%	3	100.0%	12	100.0%
Missing	2		1		3	

It has also been observed that across the sample enterprises, the compensation of chairman is not in tune with increase in financial performance of that organization (Table 6); probably may be a demotivating factor. Further, as far as power to increase selling price in accordance with input cost is concerned, it is important to note that nearly three-fourth of the loss-incurring PSEs are debarred with this power which are nearly one-third in the case of profit-making PSEs (Table 8); these enterprises are probably be governed by the administered prices

which would (perhaps) have been the basic cause of poor performance of loss-incurring PSEs.

Table 7: Opinion for Respondent PSEs pertaining to the need for the Enhancement of Management Power for Sample PSEs from the Government in India

Options	Profit-Making (out of 11)		Loss-Incurring (out of 4)		Combined (out of 15)	
	In No.	In %	In No.	In %	In No.	In %
Yes	9	81.8	4	100	13	86.7
No	2	18.2	0	0	2	13.3
Total	11	100.0%	4	100.0%	15	100.0%

Table 8: Opinion for Respondent PSEs pertaining to the Power to increase Selling Price with Increase in Input Cost in Sample PSEs in India

Options	Profit-Making (out of 11)		Loss-Incurring (out of 4)		Combined (out of 15)	
	In No.	In %	In No.	In %	In No.	In %
Yes	6	66.67	1	25	7	53.9
No	3	33.33	3	75	6	46.1
Total	9	100.0%	4	100.0%	13	100.0%
Missing	2				2	

Survey indicates that almost one-half of the profit-making and all the loss-incurring PSEs have experienced the working capital shortage (Table 9) which has been primarily attributed by increase in bad-debt losses and decrease in creditors payment period in nearly one half of the enterprises (not due to poor collection from the debtors and excess of inventory accumulation in vast majority of enterprises, since they have shown declining and steady trend).

Table 9: Opinion for Respondent PSEs Pertaining to the Working Capital Shortage Experienced by Disinvested Profit-making/Loss-incurring Sample PSEs in India

Options	Profit-Making (out of 11)		Loss-Incurring (out of 4)		Combined (out of 15)	
	In No.	In %	In No.	In %	In No.	In %
Yes	6	54.5	4	100	10	66.7
No	5	45.5	0	0	5	33.3
Total	11	100.0%	4	100.0%	15	100.0%

Table 10: Opinion for Respondent PSEs Pertaining to the Maintenance of Debt to Equity (D/E) Ratio in Disinvested Profit-making/Loss-incurring Sample PSEs in India

D/E Ratio	Profit-Making (out of 11)		Loss-Incurring (out of 4)		Combined (out of 15)	
	In No.	In %	In No.	In %	In No.	In %
Less than or	8	72.8	2	50.0	10	66.7
2:1	2	18.2	0	0	2	13.3
Greater than 2	1	9.1	2	50	3	20.0
Total	11	100.0%	4	100.0%	15	100.0%

Table 11: Opinion for Respondent PSEs Pertaining to the Possible Reasons for Preference of More Debt in Disinvested Sample PSEs in India

S.no	Possible Reasons	Profit-Making (out of 11)		Loss-Incurring (out of 4)		Combined (out of 15)	
		In No.	In %	In No.	In %	In No.	In %
1	Cheaper source of finance and flexible	9	81.8	3	75	12	80.0
2	Easily raised than equity	1	9.1	1	25	2	13.3
4	Any other	1	9.1	0	0	1	6.7
	Total	11	100.0%	4	100.	15	100.0

Given the current focus on fundamentals (in terms of low D/E ratios) by lenders and ratings of the PSEs by credit rating agencies when funds are to be raised from the market, it was expected that the sizeable majority of disinvested PSEs would have inclination to have lower leverage. The survey findings of nearly three-fourth of the profit-making PSEs and one-half of loss-incurring PSEs are in tune with these expectations (Table 10). The survey also sought from the sample PSEs, the probable reasons of their preference for debt. The survey identifies the major reasons, that is, it is a cheaper source of finance (opted by nearly two-third profit-making and one-half loss-incurring PSEs); the other reasons cited are that debt provides tax shelter, enhances earnings per share, meets large fund requirement and helps in expanding business without dilution of equity (Table 11).

4.4 Industry level analysis based on higher and lesser disinvested PSEs

At the industry level analysis, industries pertaining to petroleum, minerals and metals and fertilizers belong to the group where more than 40 per cent of the firms have opted for disinvestment. Whereas, rest others (i.e., medium & light energy, transportation equipment, transportation services, consumer goods, chemicals and pharmaceuticals, contract and construction, trade and marketing, telecommunication & IT, steel, coal & lignite, heavy engineering, industrial development and technical consultancy and tourist services) have been categorized in the industrial group where less than 40 per cent of PSEs have undergone for the disinvestment. It has been hypothesized that industries belonging to higher disinvestment have performed better than their counterparts.

Kumar (1992) categorizes PSEs with reference to market structure, efficiency and social obligations; he suggests for divestiture of the enterprises which are low in efficiency and social obligations. Likewise, Sangeetha (2005)

suggests that the industries going for 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. Hamid and Chao (2006) emphasise that privatization can have a negative effect on the environment and Das (1999) finds drop in sales efficiency in the case of enterprises operating in competitive environment. The studies from D'Souza and Megginson (1999) have given positive results.

Annexure VII (containing the mean and positional values of industrial group having more than 40 per cent of PSEs disinvested) indicates a marginal increase in the profitability ratio and significant increase in sales efficiency and NIE (as per paired t test) in post-disinvestment phase compared to pre-disinvestment phase. However, decrease in both the assets turnover (current as well as fixed) and liquidity ratios have also been identified during the same phase; *prima facie*, TATR, FATR and CATR of these enterprises are quite satisfactory, i.e., more than one time, three times and two times respectively. At the same time, it is gratifying to observe a decrease in inventory holding periods and debtor collection period. Marginal decrease in DCP and IHP have brought modest improvement in the current assets; however, the aggregative inventory holding period is still quite high, i.e., four and half months nearly.

Reduction in the debt (leverage) and increase in equity capital have been observed from the data. It seems that funds raised through disinvestment are used for other social causes rather than for PSEs. Median and quartiles indicate that nearly three-fourth of the sample organizations have followed the mean results.

In contrast, profitability and assets turnover (save FATR) ratios have shown a declining trend in the industrial groups where less than 40 per cent of the firms disinvested during the second phase (Annexure VIII); it is statistically significant in the case of CATR. At the same time, significant increase in the collection period of debtors and RMIHP has been observed, reflecting the improper management on the part of collection department and inventory mismanagement;

the position of leverage is also unsatisfactory in nearly one-fourth of the PSEs belongs to upper quartile. However, it is gratifying to note decrease in number of employees and increase in sales efficiency and NIE in these PSEs after disinvestment (sales efficiency is marked statistically significant as per paired t test). Positional values in the case of assets turnover, liquidity, sales efficiency ratios are in conformity to mean findings. It is worth mentioning that one-fourth of these PSEs have incurred negative NIE in the post disinvestment phase (as per Q1).

Similar inferences drawn several studies such as Nagaraj (2005) states that 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. Lorch (1991) concludes that the Bangladesh textile industry does not offer a very strong endorsement of privatization as far as its efficiency implications are concerned. 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; whether a person performs well or badly, there is little variation in the wage; the probability of being sacked from a PSE is negligible. State continues to be the dominant shareholder.

Relevant data relating to the mean values of both types of the PSEs (presented in Annexures VII and VIII) is supported by independent t test shown in Annexure IX. As expected, data disclose inter-industry variations; significant difference has been observed in the all the measures of profitability and NIE between them. Median and quartile results suggest that the profitability of nearly three-fourth of the PSEs has enhanced belonging to the industrial group having more than 40 per cent enterprises disinvested, it has deteriorated in the case of other industrial group (having less than 40 per cent PSEs disinvested). Hence, the results are in tune with hypothesis of better performance of industries with higher

disinvested PSEs than that of industries with lesser/lower number of disinvested PSEs.

5 Findings

Based on analysis carried out in the study, followings are the findings:

- Considerable enhancement has been recorded in liquidity and productivity ratios and marginal in efficiency ratios in the performance of listed PSEs at NSE after disinvestment. Whereas, the performance of non-listed PSEs is unsatisfactory subsequent to disinvestment in most of the financial parameters; for instance, profitability, assets turnover and liquidity ratios reduce substantially after disinvestment. Independent t test also corroborates better performance of listed PSEs compared to non-listed PSEs.
- There has been decline in the profitability and major efficiency ratios in both types of manufacturing and service PSEs after disinvestment. *Inter-se,* profitability, assets turnover and liquidity ratios of service PSEs have shown better position compared to manufacturing PSEs. Operationally, it appears that partial disinvestment has not yielded major significant change in improving the financial performance of the PSEs across the sectors.
- A high quantum of decline has been witnessed in majority of the parameters of loss-incurring PSEs subsequent to disinvestment; their position has deteriorated over the years of the study. In contrast, the financial performance of profit-making PSEs has shown improvement in majority of the parameters after disinvestment, some of these are statistically significant. Independent t test also suggests better performance of profit-making PSEs compared to loss-incurring PSEs. Survey suggests that nearly three-fourth of the responding loss-incurring enterprises are debarred with the power to increase selling price in tune with input cost and are governed with administrative prices.

- It is revealing that out of the total number of disinvested PSEs, three-fourth are profit-making which further suggest that the performance of profit-making disinvested PSEs has enhanced not only by virtue of disinvestment itself, it may be due to their affiliation in profit generating organizations even before disinvestment. In the same way, locational problems, lower degree of disinvestment, less autonomy in decision making, under-pricing, low liquidity, and high competitiveness seem to be responsible for bringing down the financial performance of loss-incurring PSEs after disinvestment. In other words disinvestment laid minor impact in enhancing the financial performance in loss-incurring enterprises.
- At the same time, marginal increase in profitability and significant increase in productivity of capital have been observed during the post-disinvestment phase compared to pre-disinvestment phase in the industries having PSEs with higher quantum of disinvestment *vis-à-vis* decline in the industries having PSEs with relatively lower amount of disinvestment.
- Inter-firm comparison has portrayed significant difference in profitability between profit- making and loss-incurring PSEs (all), listed and non-listed PSEs (ROTA, OPM and NPM) and the industries with less number and more number of disinvested PSEs (RONW). In addition to this, significant difference has also been noted between profit-making and loss-incurring PSEs (i.e., in TATR, FGIHP and NIE) and in the industries with higher and lower disinvested PSEs (in FATR, CATR, WIPIHP, TD/TE and sales efficiency). In fact, it highlights better edge of the sample disinvested PSEs listed at NSE, industries with higher disinvested PSEs and profit-making PSEs over non-listed PSEs, industries with less disinvested PSEs and loss-incurring PSEs respectively. In brief, disinvestment has caused no major impact in bringing up the financial performance of PSEs in majority of the cases.

6 Recommendations of the study

Disinvestment has not yielded desired results in majority of dimensions; it may be virtually due to variety of problems faced by PSEs even after disinvestment, such as inefficient, high cost and non-competitive industrial structure, operational inefficiency due to high governmental interference, environment restrictions (delegation of operational and functional autonomy to the managers through performance contracts), less proportion of disinvestment and capital market discipline. Therefore, it is recommended that the government henceforth should aim for 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.

The government should adopt a selective policy in the case of closing the loss-incurring PSEs. It is understandable that for social reasons, the government normally finds difficult to close the sick/loss-incurring 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 lumpsum 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-incurring PSE 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 government should permit negative bids in auction (where government pays someone to take the company off its hands) as followed in Germany.

6.1 Implications of the study

The research should be of value to the academicians, government, policy makers, management of the public sector enterprises and international development agencies. The study has recommended for strategic disinvestment since, small amount of disinvestment or partial disinvestment do not derive planned results in majority of the cases.

6.2 Limitations of the study /direction of future research

The paper is restricted to the non-financial central PSEs in India and has not included environmental and social factors as variables in the study. Further, case studies have not been undertaken in the present work.

References

[1] Armstrong Mark and David E.M. Sappington, Regulation, Competition and Liberalization, *Journal of Economic Literature*, **44**(2), (2006), 325-366.

[2] Arnold Jens, B. Javorcik, Molly Lipscomb and Aaditya Mattoo, Services Reform and Manufacturing Performance: Evidence from India, July 14, (2008), Available at http://molly.lipscomb.googlepages.com/India_Services_Liberalization708.pdf

[3] Asian Development Bank, Special Evaluation Study on the Privatization of Public Sector Enterprises: Lessons for Developing Member Countries, *ADB Report*, (December, 2001).

[4] Becker Edmund R. and Sloan Frank A., Hospital Ownership and Performance, *Economic Inquiry*, **23**(1), (1985), 21-36.

[5] Bennett John and Maw James, Privatization, Partial State Ownership, and Competition, *Journal of Comparative Economics*, **31**(1), (2003), 58-74.

[6] Bishop Matthew R. and Kay John A, Privatization in United Kingdom: Lesson from Experiences, *World Development*, **17**(5), (1989), 643-657.

[7] Boardman Anthony and Vining Aidan R., Ownership and Performance in Competitive Environments: A Comparison of the Performance of Private, Mixed, and State-Owned Enterprises, *Journal of Law and Economics*, **32**(1), (1989), 1-33.

[8] Boubakri Narjess and Cosset Jean Claude, Financial and Operating Performance of Newly Privatized Firms: Evidence from Developing Countries, *Journal of Finance*, **LIII** (3), (1998), 1081-1110.

[9] Brittan Samuel, Privatization: A Comment on Key and Thompson, *The Economic Journal*, **96**(381), (1986), 33-38.

[10] Bruggink Thomas H, Public versus Regulated Private Enterprise in the Municipal Water Industry: A Comparison of Operating Costs, *Quarterly Review of Economics and Business*, **22**, (Spring,1982), 1-25.

[11] Caves Douglas and Christensen Laurits, The Relative Efficiency of Public and Private Firms in a Competitive Environment: the Case of Canadian Railroads, *Journal of Political Economy*, **88**, (October, 1980), 958-976.

[12] Das D., Productivity Growth in Indian Manufacturing: An Application of Domer Aggregation, Paper Presented at the *Workshop* on Measurement of Productivity in India, Institute of Human Development, New Delhi, (July 9-10, 1999).

[13] De Alessi, Lousi, An Economic Analysis of Government Ownership and Regulations: Theory and the Evidence from the Electric Power Industry, *Public Choice*, **19**, (Fall, 1974), 1-42.

[14] Government of India, *Public Enterprises Survey*, **1**(2002a), Department of Public Enterprises, Ministry of Heavy Industries and Public Enterprises, pp.67, New Delhi, India, 2002.

[15] De Fraja G. and Delbono F., Alternative Strategies of a Public Enterprise in Oligopoly, *Oxford, Economic Papers*, **41**(2), (1989), 302-311.

[16] Dewatripont M. and Roland G., The Design of Reform Packages under Uncertainty, Discussion paper, **862**, *CEPR*, London, (1993).

[17] D' Souza Juliet and Megginson William, The Financial and Operating Performance of Privatized Firms during the 1990's, *The Journal of Finance*, **LIV**(54), (1999), 1397-1438.

[18] Eskil Goldeng, Leo A. Grünfeld and Gabriel R. G. Benito, The Performance Differential between Private and State Owned Enterprises: The Roles of Ownership, Management and Market Structure, *Journal of Management Studies*, **45**(7), (2008), 1244-1273.

[19] Estrin, Saul, Jan Hanousek, Evzen Kocenda, and Jan Svejnar, The Effects of Privatization and Ownership in Transition Economies, *Journal of Economic Literature*, **47**(3), (2009), 699-728.

[20] Gitman Lawerence, *Principles of Managerial Finance*, XI Edition, Pearsons, New York, 2009.

[21] Galal Ahmed, Leroy Jones, Pankaj Tandon and Ingo Vogelsang, *Welfare Consequences of Selling Public Enterprises: An Empirical Analysis*, Oxford University Press for the World Bank, Washington D C, 1994.

[22] Gloria Cuevas Rodriguez, Incentives Management during Privatization: An Agency Perspective, *Journal of Management Studies*, **44**(4), (2007), 536-550.

[23] Gupta K.L and Kaur Harvinder, New *Indian Economy and Reforms*, Deep and Deep Publication Pvt Ltd, New Delhi, India, 80-113, 2004.

[24] Gupta Seema, *Financial Performance of Public sector Enterprises in India with Focus on Disinvestment and MOU*, Unpublished Phd Thesis, Department of Management Studies, Indian Institute of Technology (IIT), Delhi, India, 2010.

[25] Gongmeng Chen, Michael Firth, Daniel N. Gao, Oliver M. Rui, Is China's securities regulatory agency a toothless tiger? Evidence from enforcement actions, *Journal of Accounting and Public Policy*, **24**(6), (2005), 451-488.

[26] Helfert Erich A., *Techniques of Financial Analysis: A Guide to Value Creation*, Eleventh Edition, Mcgraw Hill Irwin, New York, 2003.

[27] Hamid Beladi and Chi-Chur Chao, *Environment and Development Economics*, **11**(5), (2006), 559 -568.

[28] Hirsch Werner Z., Cost Function of an Urban Government Service: Refuse Collection, *Review of Economics and Statistics*, **47**(1), (February, 1965), 87-92.

[29] Irvine Lapsley, 'Capital budgeting, public service organizations and UK government policy', *Journal of Accounting and Public Policy*, **7**(1), (1988), 65-74.

[30] Jain P.K. and Yadav Surendra S., *Financial Management Practices: A Study of Public Sector Enterprises in India*, Hindustan Publishing Corporation, New-Delhi, 191-209, 2005.

[31] Kaur Parminder and Singh Bhawandeep, *Disinvestment: An Acceleration of Growth, Economic Reforms in India: A Sectoral Analysi*, New Century Publication, New-Delhi, 2005.

[32] Kay J.A and Thompson D.J., Privatization: A Policy in Search of a Rationale, *The Economics Journal*, **96**(381), (March, 1986), 18-32.

[33] Ken S. Cavalluzzo, Competition, Fee-for-Service Requirements, and Government Performance: Evidence on the Federal Reserve, *Journal of Accounting and Public Policy*, **21**(4-5), (2002), 315-356.

[34] Kumar Suresh, Public Enterprise Policy and Reform Measures in the 1990s, *Management in Government*, **XXII**(2-3), (1992), 433-439.

[35] Kumar Suresh, Public Enterprise Policy and Reform Measures: The Indian Experience, *Public Enterprises Journal*, **11**(4), (1994), 327-333.

[36] LaPorta Rafael and Lopez-De-Silanes, The Benefits of Privatization: Domestic Reform and International Negotiations, World Bank Policy Research, *Working Paper*, **31795**, (1998).

[37] Lorch K., Privatization through Private Sale: The Bangladeshi Textile Industry in R.Ramamurti and R.Vernon (eds), *Privatization and Control of the State-Owned Enterprises*, 126-152, Washington, D.C., The World Bank, 1991.

[38] Magginson W.L and Netter J.M, From State to Market: A Survey of Empirical Studies on Privatization, *Journal of Economic Literature*, **39**(2), (June, 2001), 321-389.

[39] McGuire Robert A and Cott T. Norman, Public verses Private Economic Activity: A New look at School at School Bus Transportation, *Public Choice*, **43**(1), (1984), 25-43.

[40] Megginson William L., Robert C. Nash and Matthias van Randenborgh, 'The Financial and Operating Performance of Newly Privatized Firms: An International Empirical Analysis, *Journal of Finance*, **49**(2), (1994), 403-452.

[41] Michael Firth, Peter M. Y. Fung, Oliver, Firm Performance, Governance Structure and Top Management Turnover in a Transitional Economy, *Journal of Management Studies*, **43**(6), (2006), 1289-1330.

[42] Mike W. Peng, Justin Tan, and Tony W. Tong, Ownership Types and Strategic Groups in an Emerging Economy, *Journal of Management Studies*, **41**(7), (2004), 1105-1129.

[43] Mishra R.K and Nandagopal R., *Capital Market and Privatization of Public Enterprises: The Case of India*, Institute of Public Enterprises and Bobolinks Corp., India, 123-150, 1989.

[44] Michael Firth, Peter M.Y. Fung, Oliver M. Rui, Ownership, two-tier board structure and the informativeness of earnings–Evidence from China, *Journal of Accounting and Public Policy*, **26**(4), (2007), 463-496.

[45] Nagaraj R., *Disinvestment and Privatization in India Assessment and Options*, Paper prepared for the Asian Development Bank Policy Networking Project, New Delhi, (2005).

[46] Naib Sudir, *Disinvestment in India: Policies, Procedure, Practices.* Sage Publication, New Delhi, 2004.

[47] Naik S. D, Decade of Reforms: Privatization: A Dismal Report Card, *Business Line*, Wednesday, (August 22, 2001).

[48] Neuberg Leland Gerson, Two Issues in the Municipal Ownership of Electric Power Distribution System, *Bell Journal of Economics*, **8**(1), (Spring, 1977), 303-323.

[49] Omrane Guedhami, Jeffrey A. Pittman, The choice between private and public capital markets: The importance of disclosure standards and auditor discipline to countries divesting state-owned enterprises, *Journal of Accounting and Public Policy*, **30**(5), (2011), 395-430.

[50] Patnaik Ila, PSU Disinvestment, 1-12, (August 2, 2007), Available at: http://www.India-seminar.com/2006/557/557%20ila%20patnaik.htm.

[51] Pier William, Vernon Robert B. and Wicks John H., An Empirical Comparison of Government and Private Production Efficiency, *National Tax Journal*, **27**, (1974), 653-656.

[52] Ray K.K and Maharana S., Restructuring PSEs through Disinvestment: Some Critical Issues, *Pratibimba*, *Journal of MIS*, **2**(2), (2002), 56-62.

[53] Reddy Y.Venugopal, Privatization of Public Enterprises: Scope and Limits, in T.L. Sankar and Y.V. Reddy (eds), *Privatization: Diversification of Ownership of Public Enterprises*, Bobolinks Corp., Hyderabad, India, 79-116, (1988).

[54] Rozelle, Scott, and Johan F.M. Swinnen, Success and Failure of Reform: Insights from the Transition of Agriculture, *Journal of Economic Literature*, **42**(2), (2004), 404-456.

[55] Sangeetha, Impact of Environmental and Ownership Reforms on Profitability of Public Sector Enterprises: Evidence from India, (2005), Available at: http://www.isb.edu/CAF/htmls/Sangeetha-Impactofenvironmentalandownershipreformsonpublicsectorenterprises.pdf.

[56] Sankar T.L and Mishra, R.K., Divestments in Public Enterprises: The Indian Experience, *International Journal of Public Sector Management*, **7**(2), (1994), 69-88.

[57] Sankar T.L. and Reddy Y.V., *Privatization: Diversification of Ownership of Public Enterprises*, Institute of Public Enterprise and Booklinks Corporation, Hyderabad, 126, 1989.

[58] Schlesinger Mark and Dorwart Robert, Ownership and Mental Health Services, New England, *Journal of Medicines*, **311**, (October, 1984), 959-65.

[59] Sueyoshi Toshiyuki, 'Theory and Methodology Privatization of Nippon Telegraph and Telephone: Was It a Good Policy Decision?, *European Journal of Operational Research*, **107**(1), (May, 1998), 45-61.

[60] Takano Y., *Nippon Telegraph and Telephone Privatization Study*, World Bank Discussion Paper, **1818** H. Street, NW, Washington, DC 20433, (1992).

[61] Trien Vinh Le and Jonathan P. Brien, Can Two Wrongs Make a Right? State Ownership and Debt in a Transition Economy, *Journal of Management Studies*, **47**(7), (2010), 1297-1316.

[62] Vadlamannati, Krishna Chaitanya, Explaining the Relationship between Privatization and Fiscal Deficit, Current Account Deficit, Trade Deficit in India-An Empirical Analysis, (January 22, 2007), Available at SSRN: http://ssrn.com/abstract=994716.

[63] Xiao Chen, Chi-Wen Jevons Lee, Jing Li, Government assisted earnings management in China, *Journal of Accounting and Public Policy*, **27**(3), (2008), 262-274.

Annexure-I: Mean Values of Key Financial Ratios of the Public Sector Enterprises (Listed in NSE) Opted for Disinvestments, 1986-87 to 2009-10

Variables	No of firms Before (After)#	Mean 5 yrs before and 8 yrs after of disinvestments		Significance level	Median 5 yrs before and 8 yrs after of disinvestments		Q1: 5 yrs before and 8 yrs after of disinvestments		Q3: 5 yrs before and 8 yrs after of disinvestments	
		Before	After		Before	After	Before	After	Before	After
Profitability Ratios (in percentage)										
RON	29	13.39	12.73	0.65	11.62	13.33	5.52	4.29	20.28	2
ROC	29	14.13	13.79	0.85	12.71	10.82	6.10	0.67	19.27	2
ROT	29	11.76	12.04	0.80	10.86	10.26	6.86	5.14	16.37	1
OPM	29	16.33	15.96	0.78	14.61	10.61	5.49	4.54	28.45	3
NPM	29	8.69	8.76	0.95	4.85	5.60	2.56	1.04	17.97	1
Efficiency Ratios (in times)										
TAT	28	0.99	0.97	0.76	0.71	0.73	0.46	0.52	1.37	1.
FAT	27	3.04	3.32	0.37	1.96	2.35	1.16	1.00	4.50	6.
CAT	28	1.89	1.77	0.35	1.46	1.49	0.74	0.83	2.78	2.
• DC	29	61.23	67.17	0.32	43.56	45.91	14.68	11.44	93.11	1
• RM	27	143.0	124.3	0.13	139.84	126.5	69.71	49.49	262.2	1
• WI	21	23.21	20.87	0.32	5.33	4.73	0.92	1.39	54.50	4
• FGI	25	29.75	25.50	0.07	22.32	20.90	13.90	11.75	41.92	3
Leverage (in times)										
TD/T	29	0.92	0.99	0.69	0.66	0.57	0.29	0.17	1.47	1.
Liquidity (in times)										
CR	29	1.58	1.90	0.03*	1.36	1.78	0.87	1.08	2.30	3.
ATR	29(2	0.82	1.03	0.04*	0.74	0.90	0.35	0.42	1.29	1.
Productivity/Output										
Sales	29	39.95	98.66	0.00*	11.42	27.31	3.94	8.34	47.90	1
NIE !	29	2.64	6.67	0.00*	0.84	1.92	0.22	0.33	1.95	7.
Empl	29	2138	1867	0.08	8610	7950	2641	2325	2487	2

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 respectively.
3. ROTA is based on earnings before interest and taxes (EBIT).
4. ROCE is based on operating profit which excludes non-operating incomes (or other incomes) from EBIT.
5. ** and * mark to the significant level at 1% and 5% respectively.
6. # Firms in bracket refers to number of firms after disinvestments.
7. @ refer to the ratios to be calculated in number of days.
8. ! represents to be calculated in percentage.
9. CR- current ratio, ATR- acid test, ratio, TD/TA-total debt/total assets, TD/TE- total debt/total equity, TATR-total assets turnover ratio, FATR- fixed assets turnover ratio, CATR-current assets turnover ratio, DCP- debtors Collection period, RMIHP- raw materials inventory holding period, WIPIHP- work-in-progress inventory holding period, FGIHP-finished goods inventory holding period, ROTA- return on total assets, ROCE-return on capital employed, RONW- return on net worth,

OPM- operating profit margin, NPM- net profit margin, NIE- Net Income Efficiency and Sales Eff.- sales efficiency.

10. CR consisting value 5 and above, ATR- 3 and above, TD/TA- 1 and above, TD/TE-5 and above, RMIHP- 0, 770 days and above, DCP- 0, 270 days and above, TATR- 4 and above, CATR- 6 and above, FATR-10 and above, RONW- plus/minus 50 per cent, ROCE- plus/minus 50 per cent, ROTA- plus/minus 35 per cent, OPM- plus/minus 50 per cent and NPM- plus/minus 40 per cent are eliminated.

These points hold true for other annexures mentioned in this paper.

Annexure-II: Mean Values of Key Financial Ratios of the Public Sector Enterprises (Non-Listed at NSE) Opted for Disinvestments, 1986-87 to 2009-10

Variables	No of firms Before (After) #	Mean 5 yrs before and 8 yrs after of disinvestments		Significance level	Median 5 yrs before and 8 yrs after of disinvestments		Q1: 5 yrs before and 8 yrs after of disinvestments		Q3: 5 yrs before and 8 yrs after of disinvestments	
		Before	Afte		Before	Afte	Before	Afte	Before	After
Profitability Ratios (in percentage)										
RON	9(8)	14.20	4.28	0.04*	12.0	6.93	5.77	-6.11	17.26	14.53
ROC	9(8)	13.71	3.17	0.02*	12.5	-	9.49	-15.56	16.71	11.84
ROT	9(9)	12.06	4.24	0.01*	10.5	4.19	8.10	-5.33	14.43	9.31
OPM	9(9)	12.77	0.80	0.06	12.0	2.20	7.26	-11.92	18.48	14.15
NPM	9(8)	6.95	0.45	0.05*	4.72	0.69	1.89	-10.88	9.87	12.02
Efficiency Ratios (in times)										
TAT	9(9)	1.34	1.06	0.07	0.83	0.60	0.63	0.54	1.54	0.96
FAT	8(8)	4.31	3.28	0.28	2.69	2.10	1.81	1.04	8.32	4.56
CAT	9(9)	2.10	1.59	0.11	1.46	1.26	1.08	0.69	1.73	1.60
• DC	8(9)	65.42	80.7	0.33	45.51	44.3	16.75	17.5	123.8	138.6
• RM	8(9)	192.14	171.	0.94	95.92	113.	60.67	65.4	349.3	290.4
• WI	7(7)	25.13	21.8	0.56	15.20	12.0	5.03	2.32	42.33	37.19
• FGI	7(7)	24.25	19.4	0.20	13.80	14.5	9.24	9.24	34.21	30.73
Leverage (in times)										
TD/T	9(8)	1.18	1.14	0.93	0.89	0.55	0.14	0.03	1.80	2.40
Liquidity (in times)										
CR	9(9)	1.96	1.66	0.29	1.63	1.59	1.31	1.12	2.85	2.22
ATR	9(9)	1.16	0.87	0.15	1.15	0.82	0.43	0.19	1.53	1.58
Productivity/Output										
Sales	9(9)	27.38	47.3	0.14	5.31	6.53	1.74	3.63	17.13	27.15
NIE !	9(9)	1.02	0.93	0.93	0.19	0.01	0.09	-	1.10	2.64
No of	9(9)	7911	683	0.17	3830	312	2319	235	8975	7867

Annexure III: Mean Values of Key Financial Ratios of Manufacturing PSEs Opted for Disinvestments, 1986-87 to 2009-10

Variables	No of firms Before (After) #	Mean 5 yrs before and 8 yrs after of disinvestments		Significance level	Median 5 yrs before and 8 yrs after of disinvestments		Q1: 5 yrs before and 8 yrs after of disinvestments		Q3 : 5 yrs before and 8 yrs after of disinvestments	
		Before	Aft		Befor	Afte	Befor	Afte	Befor	After
Profitability Ratios (in percentage)										
RON	30(29)	12.87	10.5	0.21	11.59	10.0	5.55	0.98	19.74	22.79
ROC	30(29)	14.48	11.7	0.22	13.03	10.3	7.67	0.29	22.31	27.06
ROT	30(30)	11.63	9.82	0.22	10.86	8.83	7.03	3.26	16.66	17.53
OPM	30(30)	14.74	11.3	0.14	12.39	8.88	6.23	3.50	20.75	16.75
NPM	30(29)	7.77	6.21	0.28	4.50	4.45	2.44	-	14.68	14.14
Efficiency Ratios (in times)										
TAT	29(29)	1.06	0.94	0.17	0.81	0.70	0.49	0.52	1.46	1.01
FAT	29(29)	3.42	3.37	0.90	2.54	2.35	1.46	1.01	5.84	6.29
CAT	29(29)	1.93	1.68	0.13	1.38	1.36	0.80	0.84	2.57	2.16
• DC	30(30)	67.19	74.3	0.24	36.68	46.6	17.15	13.9	117.8	148.0
• RM	29(28)	139.25	150.	0.41	98.51	113.	59.13	43.8	236.2	207.7
• WI	27(26)	25.18	22.2	0.20	9.54	5.68	1.27	1.60	54.50	52.60
• FGI	25(25)	28.17	24.2	0.05	18.43	20.3	11.41	11.0	41.71	36.14
Leverage (in times)										
TD/T	30(29)	0.97	1.14	0.17	0.86	0.62	0.32	0.17	1.64	2.23
Liquidity (in times)										
CR	30(29)	1.72	1.79	0.65	1.53	1.76	0.93	1.09	2.39	2.56
ATR	30(30)	0.86	0.89	0.81	0.75	0.80	0.32	0.36	1.36	1.52
Productivity/Output										
Sales	30(30)	36.23	89.5	0.00	6.77	16.7	2.78	7.43	28.74	112.4
NIE !	30(30)	2.20	4.94	0.02	0.79	1.50	0.17	-	2.08	5.56
No of Employees	30(30)	15842	14126.16	0.13	8520	9686.50	3430	3405.06	23350	21574.44

Annexure IV: Mean Values of Key Financial Ratios of the Service PSEs Opted for Disinvestments, 1986-87 to 2009-10

Variables	No of firms Before (After) #	Mean 5 yrs before and 8 yrs after of disinvestments		Significance level	Median 5 yrs before and 8 yrs after of disinvestments		Q1: 5 yrs before and 8 yrs after of disinvestments		Q3 : 5 yrs before and 8 yrs after of disinvestments	
		Before	After		Before	After	Before	After	Before	After
Profitability Ratios (in percentage)										
RON	8(8)	16.26	12.3	0.0	12.83	11.29	9.68	4.06	22.8	18.85
ROC	8(8)	12.35	9.39	0.0	9.88	7.88	4.61	-4.17	13.4	16.34
ROT	8(8)	12.59	11.5	0.1	10.44	8.19	8.42	4.56	13.4	17.22
OPM	8(8)	18.30	16.1	0.1	17.40	14.65	6.27	2.18	30.7	29.69
NPM	8(8)	10.16	9.70	0.3	9.57	9.32	1.81	0.88	18.9	19.80
Efficiency Ratios (in times)										
TAT	8(8)	1.15	1.16	0.3	0.74	0.75	0.46	0.51	1.49	1.47
FAT	6(6)	2.91	3.02	0.6	1.60	1.69	0.94	1.02	3.27	3.45
CAT	8(8)	2.01	1.87	0.1	1.81	1.50	0.65	0.67	3.14	3.06
• DC	7(8)	40.47	55.2	0.3	53.44	45.13	9.94	15.84	65.4	82.66
• RM	6(6)	222.31	172.	0.2	192.1	161.2	116	65.42	279.	186.3
• WI	2(2)	5.27	7.75	0.4	5.32	7.93	2.02	2.47	9.17	13.00
• FGI	2(2)	33.40	22.7	0.2	34.40	21.31	27.19	18.68	43.0	26.14
Leverage (in times)										
TD/T	8(8)	1.04	0.60	0.2	0.39	0.49	0.14	0.05	1.71	1.05
Liquidity (in times)										
CR	8(8)	1.50	2.04	0.0	1.42	1.66	1.02	1.28	1.91	3.07
ATR	8(8)	1.04	1.38	0.0	1.01	1.20	0.43	0.57	1.57	1.95
Productivity/Output										
Sales	8(8)	39.76	76.5	0.0	10.18	55.24	4.77	12.07	107.	177.5
NIE !	8(8)	2.46	6.92	0.1	0.83	1.25	0.49	0.35	1.39	7.52
No of Empl	8(8)	27001	224088	0.24	3186	2964.25	2025	1386.44	9284	8256.94

Annexure V: Mean Values of Key Financial Ratios of the Profit-Making PSEs Opted for Disinvestments, 1986-87 to 2009-10

Variables	No of firms Before (After) #	Mean 5 yrs before and 8 yrs after of disinvestments		Significance level	Median 5 yrs before and 8 yrs after of disinvestments		Q1: 5 yrs before and 8 yrs after of disinvestments		Q3 : 5 yrs before and 8 yrs after of disinvestments	
		Before	Afte		Before	Afte	Before	Afte	Before	After
Profitability Ratios (in percentage)										
RONW	29(29)	14.42	14.2	0.93	12.04	13.8	5.77	4.76	20.40	21.67
ROCE	29(29)	14.65	14.6	0.99	12.58	11.1	6.13	2.89	19.27	31.29
ROTA	29(29)	12.05	12.4	0.73	11.55	10.3	7.17	6.21	16.22	17.74
OPM	29(29)	16.56	16.3	0.88	16.19	12.4	4.65	5.31	29.59	30.63
NPM	29(29)	9.10	9.56	0.72	4.85	6.66	2.38	2.33	18.21	19.25
Efficiency Ratios (in times)										
TATR	28(28	1.11	1.04	0.41	0.66	0.73	0.44	0.53	1.49	1.06
FATR	27(27	3.52	3.74	0.48	2.61	2.79	1.01	1.04	6.32	6.68
CATR	28(28	2.02	1.79	0.18	1.32	1.37	0.72	0.80	3.28	2.45
• DCP@	29(28	62.41	68.8	0.46	44.94	45.9	13.51	17.1	93.60	125.0
• RMIHP	25(26	150.22	137.	0.08	118.4	110.	54.74	26.2	246.0	188.4
• WIPIH	20(20	22.26	20.6	0.49	3.42	3.68	0.92	1.02	55.95	48.71
• FGIHP	23(23	24.05	21.0	0.19	18.14	19.3	11.59	9.44	33.33	32.51
Leverage (in times)										
TD/TE	29(29	0.94	0.92	0.88	0.65	0.52	0.28	0.13	1.40	1.88
Liquidity (in times)										
CR	29(28	1.63	1.91	0.05	1.42	1.75	0.92	1.15	2.30	3.00
ATR	29(29	0.89	1.05	0.13	0.89	0.88	0.33	0.47	1.51	1.66
Productivity/Output										
Sales	29	43.44	106.	0.00*	13.2	27.3	3.94	8.34	72.85	198.1
NIE !	29	2.80	7.09	0.00*	0.84	1.96	0.25	0.49	2.66	8.13
No of Employee	29 (29)	19450	1680 3.05	0.09	8430	688 5.50	2641	235 0.75	19290	22029 .50

Annexure VI: Mean Values of Key Financial Ratios of the Loss-Incurring PSEs Opted for Disinvestments, 1986-87 to 2009-10

Variables	No of firms Before (Aft	Mean 5 yrs before and 8 yrs after of disinvestments		Significance level	Median 5 yrs before and 8 yrs after of disinvestments		Q1: 5 yrs before and 8 yrs after of disinvestments		Q3 : 5 yrs before and 8 yrs after of disinvestments	
		Before	After		Before	After	Before	After	Befor	After
Profitability Ratios (in percentage)										
RONW	9(8)	10.87	-	0.02*	8.82	3.33	5.77	-	17.26	11.21
ROCE	9(8)	12.04	2.	0.01*	13.04	1.36	8.90	-	16.71	14.08
ROTA	9(9)	11.12	2.	0.01*	10.05	4.39	7.17	-5.33	12.62	9.90
OPM	9(9)	12.02	-	0.05*	12.04	2.89	9.45	-	14.23	13.45
NPM	9(8)	5.62	-	0.01*	4.72	0.65	2.10	-	9.08	8.75
Efficiency Ratios (in times)										
TATR	9(9)	0.98	0.	0.14	0.85	0.64	0.72	0.50	0.97	0.96
FATR	8(8)	2.69	1.	0.39	1.88	1.74	1.58	0.96	3.33	2.93
CATR	8(8)	1.72	1.	0.03*	1.54	1.31	1.36	0.94	2.35	1.92
• DCP@	8(8)	61.29	75	0.15	29.80	44.35	18.89	12.9	118.5	138.6
• RMIHP	9(8)	140.24	15	0.64	95.63	104.34	67.93	81.2	181.5	235.0
• WIPIH	8(8)	27.85	22	0.33	24.91	12.04	10.57	3.65	42.33	38.17
• FGIHP	8(8)	41.35	33	0.04*	42.40	26.94	22.52	13.6	54.29	47.80
Leverage (in times)										
TD/TE	9(8)	1.13	1.	0.16	1.52	0.89	0.31	0.29	1.74	2.45
Liquidity (in times)										
CR	8(8)	1.80	1.	0.57	1.63	1.69	1.31	1.08	2.38	2.21
ATR	8(8)	0.93	0.	0.68	0.74	0.85	0.44	0.39	1.15	1.53
Productivity/Output										
Sales	8(8)	16.11	22.7	0.06	4.91	6.53	1.74	3.63	9.13	19.52
NIE !	8(8)	0.59	-	0.22	0.19	0.01	0.09	-0.89	1.29	1.60
No of Employees	8(8)	14133	12863	0.11	7077	6197	2530	2326	18381	18399

Annexure VII: Mean Values of Key Financial Ratios of Industries, where more than 40 per cent of PSEs have opted for Disinvestments, 1986-87 to 2009-10

Variables	No of firms Before (After)#	Mean 5 yrs before and 8 yrs after of disinvestments		Significance level	Median 5 yrs before and 8 yrs after of disinvestments		Q1: 5 yrs before and 8 yrs after of disinvestments		Q3 : 5 yrs before and 8 yrs after of disinvestments	
		Before	After		Before	After	Before	After	Before	Aft
Profitability Ratios (in percentage)										
RONW	17(17	15.02	13.4	0.60	12.36	15.03	4.76	4.76	22.23	2
ROCE	17(17	15.46	16.2	0.79	13.55	14.86	7.26	4.77	24.70	3
ROTA	17(17	12.53	12.7	0.93	11.61	10.35	7.17	5.57	17.24	2
OPM	17(17	13.45	13.1	0.90	8.31	8.11	4.11	4.54	21.45	1
NPM	17(17	8.30		0.85	4.46		2.09		16.12	
Efficiency Ratios (in times)										
TATR	16(16	1.35	1.23	0..4	0.97	0.87	0.56	0.62	2.26	1.
FATR	16(16	3.60	3.27	0.32	1.79	2.44	1.07	1.46	7.58	5.
CATR	16(16	2.56	2.26	0.30	1.99	2.01	1.21	1.13	3.42	2.
• DCP	17(17	33.21	29.7	0.24	19.57	20.50	5.77	7.50	63.26	4
• RMIH	15(15	148.4	137.	0.18	93.05	103.0	49.11	21.0	262.6	2
• WIPI	13(13	11.44	10.2	0.46	2.18	2.08	0.74	0.75	6.86	5.
• FGIH	17(17	27.48	22.8	0.12	18.83	20.30	11.41	11.5	41.71	3
Leverage (in times)										
TD/TE	17(17	0.79	0.79	0.98	0.50	0.46	0.26	0.14	1.34	1.
Liquidity (in times)										
CR	17(17	1.71	1.74	0.81	1.44	1.70	0.87	0.81	2.38	2.
ATR	17(17	0.78	0.76	0.80	0.57	0.64	0.25	0.28	1.39	1.
Productivity/Output										
Sales	17(17	60.43	148.	0.00	22.47	46.94	10.20	21.7	111.2	25
NIE !	17(17	3.61	8.58	0.01	1.61	3.35	0.44	1.06	4.20	9.0
No of Employ	17(17)	10640	9923	0.22	6820	6660	2244	228 7	11029	11 97

Annexure VIII: Mean Values of Key Financial Ratios of Industries, where less than 40 per cent of PSEs have opted for Disinvestments, 1986-87 to 2009-10

Variables	No of firms Before (After)#	Mean 5 yrs before and 8 yrs after of disinvestments		Significance level	Median 5 yrs before and 8 yrs after of disinvestments		Q1: 5 yrs before and 8 yrs after of disinvestments		Q3 : 5 yrs before and 8 yrs after of disinvestments	
		Befor	After		Before	Afte	Befor	After	Before	After
Profitability Ratios (in percentage)										
RONW	21(2	12.42	8.74	0.03	11.41	8.7	5.77	-2.34	17.26	18.8
ROCE	21(2	12.88	7.26	0.01	12.20	6.8	6.13	-3.75	16.71	20.5
ROTA	21(2	11.26	8.15	0.02	9.33	7.5	7.17	2.43	13.34	13.7
OPM	21(2	17.14	11.71	0.06	16.19	10.	10.0	2.37	20.91	29.3
NPM	21(2	8.26	6.22	0.07	4.85	5.6	2.92	-2.99	13.99	18.8
Efficiency Ratios (in times)										
TATR	21(2	0.87	0.80	0.1	0.66	0.6	0.48	0.43	0.94	0.83
FATR	19(1	3.10	3.34	0.6	2.61	2.0	1.42	0.94	4.22	6.25
CATR	21(2	1.47	1.31	0.0	1.26	0.9	0.70	0.63	2.25	1.64
• DCP@	20(2	86.72	103.2	0.0	66.38	96.	23.0	41.4	143.8	194.
• RMIH	15(1	146.7	201.3	0.9	106.5	134	79.1	86.5	211.4	204.
• WIPIH	14(1	35.09	31.22	0.3	29.43	30.	9.09	6.78	61.85	58.2
• FGIHP	14(1	29.77	25.65	0.1	21.85	20.	12.6	11.2	41.46	38.5
Leverage (in times)										
TD/TE	21(2	1.15	1.22	0.6	1.16	0.7	0.31	0.28	1.74	2.13
Liquidity (in times)										
CR	21(2	1.64	1.92	0.1	1.46	1.7	1.04	1.29	2.08	2.58
ATR	21(2	1.00	1.19	0.1	0.94	0.9	0.49	0.62	1.53	1.74
Productivity/Output										
Sales	21(2	17.98	36.75	0.01*	4.70	10.	2.39	4.90	9.13	19.5
NIE !	21(2	1.16	2.75	0.21	0.38	1.1	0.16	-0.27	1.13	2.64
No of Employe	21(21)	24304	20684	0.08	8875	7802	3426	2351	24878	23060

Annexure-IX: Independent Samples Test Related to Key Financial Ratios of the Disinvested PSEs at various Disaggregative levels, 1986-87 to 2009-10

Ratios		Listed and Non-Listed PSEs			Manufacturing and Service PSEs			Profit-Making and Loss-incurring PSEs			Industries with high and less Disinvested		
	EV@ & NEV#	t	df	Sig. (2-tailed)	t	df	Sig. (2-tailed)	t	df	Sig. (2-tailed)	t	df	Sig. (2-tailed)
RONW	EV	-	35	0.04*	0.4	35	0.68	-	35	0.00**	1.37	35	0.1
	NEV	-	9	0.12	0.4	13	0.65	-	10	0.00**	1.35	32	0.1
RONW	EV	0.29	36	0.77	1.1	36	0.24	-	36	0.20	1.10	36	0.2
	NEV	0.26	12	0.80	1.0	10	0.31	-	26	0.09	1.07	29	0.2
ROCE (AD)	EV	-	36	0.02*	-	36	0.16	-	36	0.00**	2.41	36	0.0
	NEV	-	14	0.03*	-	8	0.32	-	22	0.00**	2.44	35	0.0
ROCE (BD)	EV	-	36	0.90	0.1	36	0.91	-	36	0.44	0.90	36	0.3
	NEV	-	21	0.88	0.1	10	0.91	-	18	0.37	0.90	33	0.3
ROTA (AD)	EV	-	36	0.01**	0.5	36	0.59	-	36	0.00**	1.83	36	0.0
	NEV	-	13	0.01**	0.4	10	0.64	-	16	0.00**	1.86	36	0.0
ROTA (BD)	EV	0.16	36	0.88	0.4	36	0.63	-	36	0.63	0.77	36	0.4
	NEV	0.19	20	0.85	0.3	8	0.73	-	21	0.55	0.78	35	0.4
OPM (AD)	EV	-	36	0.00**	0.8	36	0.42	-	36	0.00**	0.31	36	0.7
	NEV	-	11	0.03*	0.9	14	0.36	-	11	0.01**	0.32	36	0.7
OPM (BD)	EV	-	36	0.36	0.8	36	0.38	-	36	0.24	-1.1	36	0.2
	NEV	-	21	0.26	0.7	9	0.48	-	36	0.07	-1.1	33	0.2
NPM(AD)	EV	-	35	0.03*	0.8	35	0.38	-	35	0.00**	0.49	35	0.6
	NEV	-	13	0.03*	0.9	12	0.36	-	19	0.00**	0.49	34	0.6
NPM(BD)	EV	-	36	0.53	0.8	36	0.41	-	36	0.21	0.02	36	0.9
	NEV	-	13	0.55	0.8	11	0.42	-	33	0.06	0.02	30	0.9
TATR (AD)	EV	0.31	35	0.76	0.7	35	0.47	-	35	0.47	1.79	35	0.0
	NEV	0.26	11	0.80	0.5	9	0.57	-	26	0.38	1.75	29	0.0
TATR(BD)	EV	1.07	35	0.29	0.2	35	0.80	-	35	0.71	1.75	35	0.0
	NEV	0.87	10	0.40	0.2	10	0.83	-	29	0.58	1.66	25	0.1
FATR (AD)	EV	-	33	0.97	-	33	0.75	-	33	0.06**	-0.1	33	0.9
	NEV	-	10	0.98	-	6	0.80	-	30	0.00**	-0.1	33	0.9
FATR (BD)	EV	1.18	33	0.25	-	33	0.68	-	33	0.45	0.55	33	0.5
	NEV	1.04	10	0.32	-	6	0.74	-	18	0.35	0.53	27	0.6
CATR (AD)	EV	-	35	0.68	0.4	35	0.69	-	35	0.51	2.77	35	0.0
	NEV	-	13	0.70	0.3	10	0.72	-	23	0.40	2.69	28	0.0
CATR(BD)	EV	0.37	35	0.71	0.1	35	0.89	-	35	0.60	2.39	35	0.0
	NEV	0.32	11	0.75	0.1	11	0.89	-	32	0.44	2.25	24	0.0
DCP (AD)	EV	0.58	36	0.57	-	36	0.44	0.27	36	0.79	-4.5	36	0.0
	NEV	0.54	12	0.60	-	20	0.30	0.26	13	0.80	-4.9	29	0.0
DCP (BD)	EV	0.18	35	0.86	-	35	0.29	-	35	0.96	-3.0	35	0.0
	NEV	0.19	13	0.85	-	20	0.12	-	17	0.96	-3.2	26	0.0
RMIHP(AD)	EV	-	33	0.86	1.7	33	0.09	-	33	0.64	-1.3	33	0.2
	NEV	-	19	0.84	1.0	5	0.32	-	15	0.70	-1.3	28	0.2
RMIHP(BD)	EV	0.71	28	0.48	1.4	28	0.16	-	28	0.81	0.05	28	0.9
	NEV	0.58	9	0.58	1.2	2	0.33	-	11	0.82	0.05	26	0.9
WIPIHP	EV	0.09	25	0.93	-	25	0.44	0.17	25	0.87	-2.4	25	0.0
	NEV	0.09	11	0.93	-	2	0.23	0.17	11	0.87	-2.4	25	0.0
WIPIHP	EV												
		0.15	25	0.88	-	25	0.34	0.45	25	0.66	-2.4	25	0.0

	NEV	0.15	10	0.88	-	4	0.06	0.46	11	0.65	-2.4	25	0.0
FGIHP (AD)	EV	-	29	0.39	-	29	0.90	1.90	29	0.07	-0.5	29	0.6
	NEV	-	15	0.30	-	29	0.65	1.44	9	0.18	-0.5	22	0.6
FGIHP (BD)	EV	-	29	0.55	0.3	29	0.74	2.10	29	0.04*	-0.3	29	0.7
	NEV	-	11	0.53	0.6	2	0.60	1.78	10	0.11	-0.3	28	0.7
TD/TE(AD)	EV	0.41	35	0.68	-	35	0.13	1.40	35	0.17	-1.5	35	0.1
	NEV	0.39	10	0.70	-	32	0.02*	1.21	9	0.26	-1.5	35	0.1
TD/TE(BD)	EV	0.93	36	0.36	0.2	36	0.81	0.68	36	0.50	-1.5	36	0.1
	NEV	0.85	12	0.41	0.2	9	0.85	0.74	15	0.47	-1.6	36	0.1
CR (AD)	EV	-	36	0.38	0.9	36	0.35	-	36	0.28	-0.7	36	0.4
	NEV	-	13	0.39	1.0	12	0.33	-	22	0.18	-0.8	31	0.4
CR (BD)	EV	1.36	36	0.18	-	36	0.46	0.58	36	0.56	0.26	36	0.7
	NEV	1.53	17	0.14	-	33	0.23	0.59	14	0.56	0.26	29	0.8
ATR (AD)	EV	-	36	0.45	2.3	36	0.02*	-	36	0.32	-2.6	36	0.0
	NEV	-	19	0.37	1.9	9	0.09	-	24	0.20	-2.7	36	0.0
ATR(BD)	EV	1.79	36	0.08	0.8	36	0.42	0.20	36	0.84	-1.3	36	0.2
	NEV	1.77	13	0.10	0.9	13	0.37	0.20	12	0.85	-1.3	30	0.2
EMP (AD)	EV	-	36	0.26	0.7	36	0.45	-	36	0.71	-1.2	36	0.2
	NEV	-	34	0.06	0.4	7	0.68	-	28	0.64	-1.3	24	0.1
EMP(BD)	EV	-	36	0.28	0.8	36	0.40	-	36	0.67	-1.3	36	0.2
	NEV	-	34	0.07	0.4	7	0.64	-	21	0.57	-1.4	24	0.1
SE (AD)	EV	-	36	0.32	-	36	0.82	-	36	0.10	2.76	36	0.0
	NEV	-	26	0.19	-	23	0.74	-	35	0.01**	2.52	19	0.0
SE(BD)	EV	-	36	0.57	0.1	36	0.87	-	36	0.21	2.41	36	0.0
	NEV	-	18	0.51	0.1	14	0.86	-	29	0.08	2.24	21	0.0
NIE (AD)	EV	-	36	0.18	0.4	36	0.65	-	36	0.08	1.63	36	0.1
	NEV	-	36	0.04*	0.4	10	0.69	-	33	0.00**	1.56	26	0.1
NIE(BD)	EV	-	36	0.43	0.1	36	0.90	-	36	0.28	1.45	36	0.1
	NEV	-	35	0.19	0.1	13	0.89	-	30	0.06	1.34	21	0.1

EV@- denotes to the equal variances assumed,
NEV# –to not equal variances,
BD- before disinvestment, and
AD-after disinvestment