Public Sector Undertakings – Bharat's Other Ratnas

No. 186
04-Sep-2017
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NIPFP

National Institute of Public Finance and Policy
New Delhi

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Abstract

This paper analyzes the performance of India's 235 public sector undertakings (PSUs) – India's socialistic legacy from the Nehru--Gandhi days. Of these 7 largest PSUs are called Maha Ratna's, 17 are called Navratnas and some 73 are given the title of Mini Ratna's. The economic reforms of 1991, dismantled the "license-raj" but left the PSUs intact. Attempts were made to try and improve their performance through performance contracts called Memorandum of Understandings (MOU's) with some success but with still a large number of loss makers. A brief but highly successful attempt was made under the NDA 1 government from 1999-2004 to begin dismantling this legacy but met with considerable opposition from vested interests and labor unions. Subsequent UPA government's tried to further improve the performance of these companies through better performance contracts and bringing more PSUs into the Ratna classification. Under UPA 2 more aggressive disinvestment (partial privatization)) was also pursued to raise more revenue and hopefully improve firm performance.

Using firm level data over the period 1990-2015 from the Public Enterprise Survey now collated in the Capitaline Data Base this paper looks into factors that explain the performance of these PSUs. The results show that MOU's have had a positive impact on PSU performance by increasing their return on capital (ROC) by almost 8-9 percentage points. This result holds mainly for the non-service sector (manufacturing, mining) but less so for service sector firms. In the case of service sector firms, partial privatization (share sales) has a significant impact on performance, making them ideal candidates for more aggressive disinvestment. Strategic disinvestment (privatization) gives much better results with a tripling of the ROC post privatization. The results also show that larger PSUs –Maharatnas appear to perform better than smaller PSUs and even better than private firms of similar size. But smaller PSU – Navratnas and MiniRatnas perform worse than private companies and should be good candidates for strategic disinvestment (privatization). PSUs that do not have Ratna status – and are loss makers should be disposed of for their real estate and scrap value.

The paper concludes that India should raise capital through strategic disinvestment (privatization), disinvestment and liquidation of up to $ 250 billion which can be re-invested in public infrastructure through the National Infrastructure Investment Fund and not into the budget as a revenue raising measure.

1. Introduction

We all know about Bharat Ratna's. They are our heroes - those famous individuals like many of our independence fighters and more recent awardees like the great cricketer Sachin Tendulakar and the famous singer Lata Mangeshkar who have received India's highest civilian award*" the Bharat Ratna*". But there is surprisingly little debate on India's other Ratnas — the 235 public sector undertakings that were once the commanding heights of India's socialistic economy and still account for about 20 per cent of the GDP and 15 per cent of stock market capitalization through 50 listed firms?

Prime Minister Modi made a pledge to the US investors almost two years ago, which he repeated to German investors recently, that "the government has no business to do business". But India still has 235 Central public-sector undertakings (PSUs), of which seven are Maharatnas, 17 are Navratnas and more than 70 are Miniratnas — the crown jewels of India's socialist legacy. There are also over 1,000 PSUs in state and municipal hands. It is time to clean up this costly legacy. But how to do this and what approach to take towards them is not so straightforward given the vast network of vested interests that are keen on their perpetuation. To understand better how to make progress on this issue let us see how we got here.

2. India's Public Sector Undertakings: How Did We Get Here?

India took a sharp turn towards socialism with the Industrial Policy Resolution of 1956 whose key goals were:

i.   To build infrastructure and promote industrialization,
ii.   To promote employment and balanced regional development,
iii.   To create a self-reliant economy through import substitution and promote exports,
iv.   To generate surpluses for development,
v.   To prevent concentration of economic power.

During this period, public sector investment reached over 50 % of total investment. Many new public sector companies were established and a large number of companies in sectors such as coal, airlines, banking and insurance were nationalized. Industrial licensing was introduced mimicking the Soviet Union – prescribing what the private sector could produce. An entire apparatus – often referred to as the "license-raj" was established to make decisions on the number and types of licenses, all run by arcane bureaucratic procedures. The license-raj combined with inefficient public enterprises nurtured inefficiency and corruption, producing a bevy of

intermediaries, whose main function was to grab these licenses and sell them off to the highest bidder. Prof Raj Krishna called the license-raj, "Socialist allocation in the first round followed by market allocation in the second round". In some cases large companies would grab the license to expand production but delay its execution in order to benefit from the shortages, or just keep the license unutilized to stave off a competitor from entry into the industry.

As a result India's GDP growth remained low averaging only 3.5 % between 1950 and 1980, in the first 3 decades after independence with per capita GDP growing at only 1.3% on average. It was famously called the "Hindu growth rate" suggesting that Hindu fatalism was responsible for this slow growth, but as we saw later when with better policies India grew faster, Hinduism had nothing to do with it. India's poverty rose during this period and India fell behind many countries on social and economic indicators. Some internal liberalization was pursued in the 1980's, but it was insufficient to address the growing problems in the economy. It eventually took a balance of payments crisis in 1991 to force the political establishment to accept the need for reform.

After pursuing state-led capitalism for four decades after Independence, India introduced a new industrial policy in the 1990s that emphasized delicensing, greater independence for profitable PSUs and, restructuring of loss-making firms through the Bureau of Industrial Financing and Restructuring. Other elements of the liberalization involved: i) Free entry to private sector firms in industries reserved exclusively for PSUs; ii) Disinvestment of a small part of the government's shareholding (while still holding majority stocks) and listing PSUs on the stock exchanges. The most significant of industries affected by the former policy were telecommunications, petroleum (from extraction to refining and marketing), electricity generation and distribution, several basic goods industries like steel, aluminum, mining and air transportation. And for the latter, ensuring that the listed PSUs follow the stock exchanges' listing requirements necessitated disclosure and governance regulations, appointment of independent directors, independent remuneration and audit committees. Withholding or withdrawing budgetary support to loss-making ('sick') PSUs. Subsequently, sick PSUs were denied permission to revise wages and salaries. Loss making PSUs were to be encouraged to lay off workers to seek commercial viability, failing which, they were to be closed down or privatized.

Bhagwati and Srinivasan (1993)[1] were among the few that recommended outright privatization. But between 1992 and 1998, privatization was not pursued aggressively. One PSU was sold to another PSU but this was more like consolidation rather than outright privatization. The Board of Industrial Financing and Restructuring (BIFR) was created to track performance of PSUs and advise them- especially the sick ones- on investment and restructuring. Three categories of

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[1] Bhagwati, J. and T. N. Srinivasan (1993), India's Economic Reforms, Government of India, Ministry of Finance, New Delhi.

PSUs were formed and named; Maharatnas, Navratna's, and Mini Ratna's, and performance contract (MOU's) were signed with government and several of them to create incentives for better performance (Table 1).

The PSUs meeting the following eligibility criteria were considered for Maharatna Status [2]. Listed on Indian stock exchange with minimum prescribed public shareholding under SEBI regulations, Have an average annual turnover of more than Rs.25, 000 crores during the last 3 years, Have an average annual net worth of more than Rs.15, 000 crore during the last 3 years. Have an average annual net profit after tax of more than Rs.5, 000 crore during the last 3 years, and should have significant global presence/international operations.

The Boards of Maharatna PSUs will have powers to i) make equity investment to establish financial joint ventures and wholly owned subsidiaries in India or abroad, ii) undertake mergers & acquisitions, in India or abroad, subject to a ceiling of 15% of the net worth of the concerned PSU in one project, limited to an absolute ceiling of Rs.5, 000 crore (Rs. 1,000 crore for Navratna PSUs). The overall ceiling on such equity investments and mergers and acquisitions in all projects put together will not exceed 30% of the net worth of the concerned PSU. In addition, the Boards of Maharatna PSUs have powers to create below Board level posts up to E-9 level.

Based on these criteria, 7 PSUs were granted Maharatna status.

    i.   Bharat Heavy Electricals (BHEL)
   ii.   Coal India
  iii.   Gas Authority of India Limited (GAIL)
  iv.   Indian Oil Corporation (IOC)
   v.   Oil and Natural Gas Company (ONGC)
  vi.   National Thermal Power Company (NTPC)
 vii.   Steel Authority of India Limited (SAIL)

The next category was the Navratnas of which there were originally 14 and the last three were made Navratnas in 2014-15.

    i.   Bharat Electronics Limited
   ii.   Bharat Petroleum Corporation Limited
  iii.   Hindustan Aeronautics Limited

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[2] (Public Enterprise Survey, 2014-15)

iv.	Hindustan Petroleum Corporation Limited
v.	Mahanagar Telephone Nigam Limited
vi.	National Aluminum Company Limited
vii.	Neyveli Lignite Corporation Limited
viii.	NMDC Limited
ix.	Oil India Limited
x.	Power Finance Corporation Limited
xi.	Power Grid Corporation of India Limited
xii.	Rashtriya Ispat Nigam Limited
xiii.	Rural Electrification Corporation Limited
xiv.	Shipping Corporation of India Limited
xv.	Engineers India Limited
xvi.	Container Corporation of India
xvii.	National Buildings Construction Corporation Limited

Eligibility Conditions for grant of Navratna status: The PSUs, which are Miniratna I, Schedule 'A' and have obtained 'excellent' or 'very good' MOU rating in three of the last five years, are eligible. 'Composite Score' of performance has to be 60 or above. In order to review the performance of the PSU, a composite score based on its performance for the last three years would be calculated.

Figure 1: Growth of Public Sector Undertakings and Performance Contracts
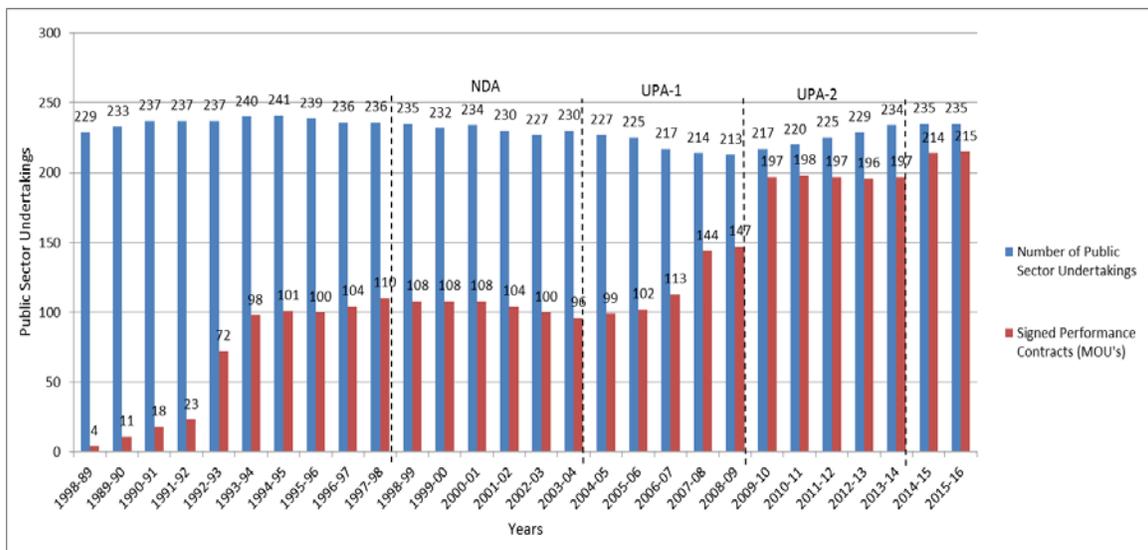
Source: Public Enterprise Survey, 1988-89 to 2015-16

Below the Navratnas are two categories of Miniratna's. There are 56 companies in the Miniratna I category and 17 companies in Miniratna II category. The eligibility conditions and criteria for grant of Miniratna status are as under:

i. Category-I PSUs should have made profit in the last three years continuously, the pre-tax profit should have been Rs.30 crore or more in at least one of the three years and should have a positive net worth.

ii. Category-II PSUs should have made profit for the last three years continuously and should have a positive net worth.

iii. These PSUs shall be eligible for the enhanced delegated powers provided they have not defaulted in the repayment of loans/interest payment on any loans due to the Government.

iv. These PSUs shall not depend upon budgetary support or Government guarantees.

v. The Boards of these PSUs should be restructured by inducting at least three non-official Directors as the first step before the exercise of enhanced delegation of authority.

vi. The administrative Ministry concerned shall decide whether a Public Sector Firms fulfilled the requirements of a Category-I/Category-II company before the exercise of enhanced powers.

It should be noted that in addition to central level PSUs, there are over a 1000 state level PSUs and municipal public companies as well.

This was the elaborate structure of PSUs and mechanisms that the NDA government under PM Vajpayee inherited. It followed an aggressive privatization policy but faced political and bureaucratic hurdles. The Ministry of Disinvestment was created in 1999 and the objective of disinvestment under it was not just to raise revenue but also improve efficiency. Over 30 companies were either fully privatized or 50 per cent of their stock divested[3], including one of India's most successful privatization initiatives — the sale of Maruti to Suzuki was completed during this period. Arun Shourie the then Minister for Disinvestment described it well when he stated "these are not the crown jewels (Ratnas) of India's economy but bleeding ulcers". Under him, privatization which is euphemistically called "strategic disinvestment" was pursued with determination but opposition was faced especially from labour unions who had extracted many concessions from the government. But opposition came even from within the NDA government and the bureaucracy as the control over PSUs meant jobs, patronage and the ability to make money through PSU contracts.

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[3] (Bombay Stock Exchange Disinvestments Database, March 2015)

What is surprising is that while the NDA government was aggressively pursuing privatization, some new PSUs were also created.

Figure 2: Progress on Dis-investment (Partial Privatization) 1990-2015
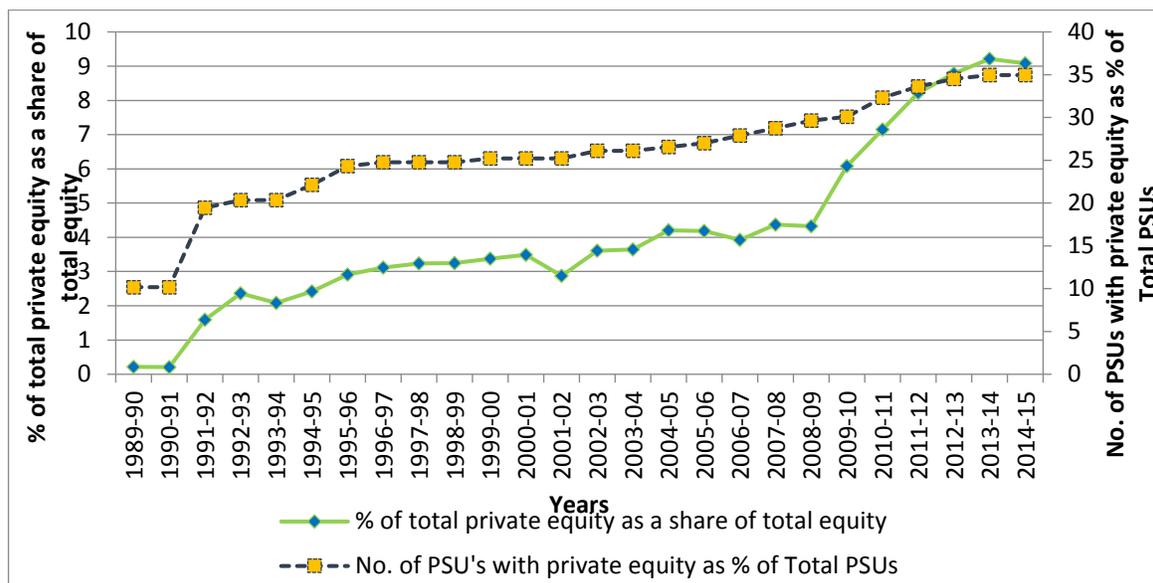
Source: Author's calculation using data from PES and Capitaline (1990-2015)

The UPA 1 government which came to power in 2004, dependent on the communists, did not try to privatize PSUs – although, a few were shut down. Prime Minister Manmohan Singh explained his constraints quite clearly, "We are a coalition government, and that limits our options in some ways. Privatization happens to be one such area." UPA 2 brought back disinvestment with the intent to raise revenue, and the share of private equity in total equity in all PSUs combined jumped from around 4% in 2008-09 to over 9% by 2013-14 (Table 2). Over one third of the PSUs had some private equity in them. The UPA government also encouraged restructuring of state-owned firms by creating the Bureau for Restructuring of Public Firms. A National Investment Fund was also created to collect disinvestment receipts, with the idea that it would be strategically deployed rather than used as part of budget receipts. Following fiscal pressures after the 2009 crisis, the criterion was gradually relaxed until the fund, for all practical purposes, became part of the budget. With the arrival of the NDA government again in 2014 there was an expectation that the disinvestment pursued quite aggressively by NDA1 would be taken up again and while not much has happened in the first two years so far there are signals that more effort will be made in the remainder of its term.

3. Evidence on PSU Performance

There are surprisingly few good studies on the performance of PSUs. The following trends can be gleaned from those available.[45]

Figure 3: Cumulative Overall Performance of the PSUs 1990-91 to 2014-15
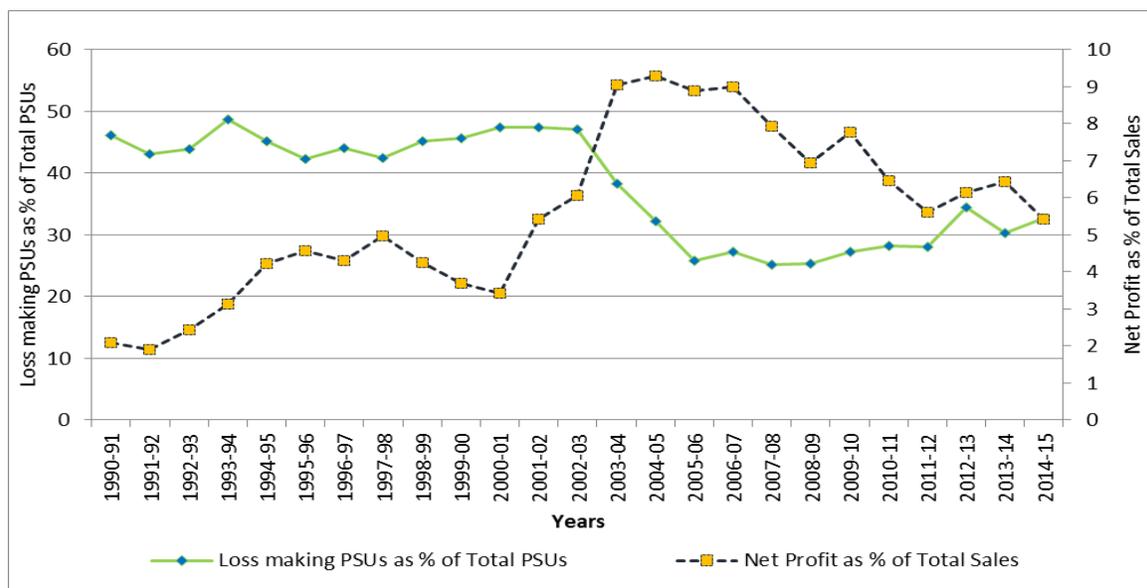
Source: Author's calculation using data from PES and Capitaline (1990-2015)

Almost half the PSUs were making losses in the 1990's , but with the period of high growth from 2002-3 onwards and better MOU's (performance contracts) applied to many more of them, as well as greater private equity, the number of loss-making PSUs declined to about a quarter of the total (Figure 3). But since then and especially once growth slowed down after 2012 the share of loss makers has increased again to almost one-third of the total. Profitability of the PSUs – measured here by profits over total sales has also increased from an abysmal level of 2% in 1990-91 to around 3% by 2000-01, then peaked at almost 9 % between 2003-4 and 2006-7 and has since fallen to between 5-6%. How much of the improved performance is due to MOU's and how much is due to partial privatization will be explored further in the later sections of the paper. We will also explore whether there are differences in performance due to hard budget constraints as well as the degree of competitiveness in the industry in which the PSU is operating.

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[4] "Selling the family silver to pay the Grocer's bill? The case of privatization in India" Nandini Gupta, March 18, 2011 in Jagdish Bhagwati and Arvind Panagriya (ed.) Reforms and Economic Transformation in India , Oxford University Press

[5] "Does Autonomy Matter in State Owned Enterprises? Evidence From Performance Contracts in India" Gunasekra, S and J. Sarkar , Working Paper, IGIDR, Mumbai, August 2014

Second, the return-on-assets and return–on-capital in the largest 7 PSUs – Maharatnas appears to be better than firms in the private sector and in FDI-based companies of similar size, (Figure 4a & 4b) though the value of assets, especially land, needs careful scrutiny. Independent audits are needed to assess their performance. But in the case of the next category of PSUs - Navratnas, the performance of the private firms of similar size is much better (Figure 5a & 5b), except for the better performance of the Navratnas over their private sector comparators during the period of high growth from 2003-4 to around 2008-9. It is also interesting that the returns on both assets and on capital went up during the period of rapid growth and has declined quite sharply since the global economic crisis.

Figure 4a: Comparing Performance of Maharatnas and Private Sector Firms: Weighted Return on Assets (ROA)
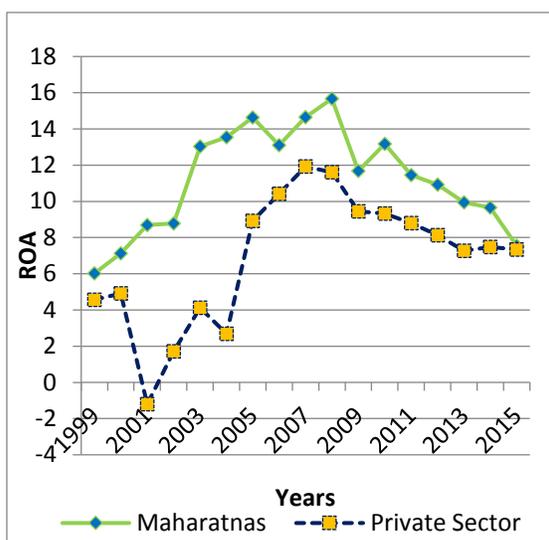
Figure 4b: Comparing Performance of Maharatnas and Private Sector Firms: Weighted Return on Capital (ROC)
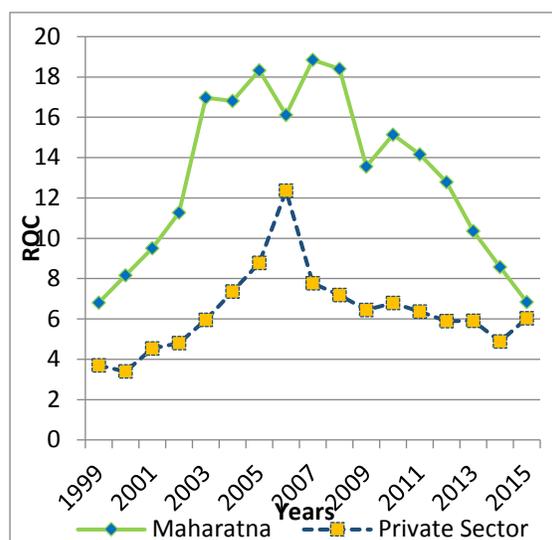
Source: Author's calculation using data from PES and Capitaline (1990-2015)

Third, PSUs in the service sectors, such as Air India, MTNL and BSNL, and those providing a range of other types of services both financial and non-financial have done poorly relative to those in mining and manufacturing (Figure 6a & 6b). This is not surprising, given the lack of service orientation in service-sector PSUs. Not only is the performance of PSUs in service sectors worse but their presence could have also adversely affected the performance of private sector firms in those sectors. Mukherjee (2015) also stated that services erstwhile public monopolies, the vested interest of the government and PSUs adversely affect the performance of the service sector. This is probably truer of the airline sector than in the telecommunication sector. The presence of PSUs in the telecom sector has not had a negative effect on the industry because of a more effective regulatory environment, has not hindered private sector companies. TRAI the telecomm regulator

has had its share of critiques but it has not been accused of helping PSUs against the private sector. But in aviation, the Director General of Civil Aviation DGCA has not worked as effectively in creating a level playing field and has favored Air-India. It has deliberately or unconsciously affected the performance of private sector airlines. But service sector private companies have also performed poorly for other reasons.

Figure 5a: Comparing Performance of Navratnas and Private Sector Firms: Weighted Return on Assets (ROA)
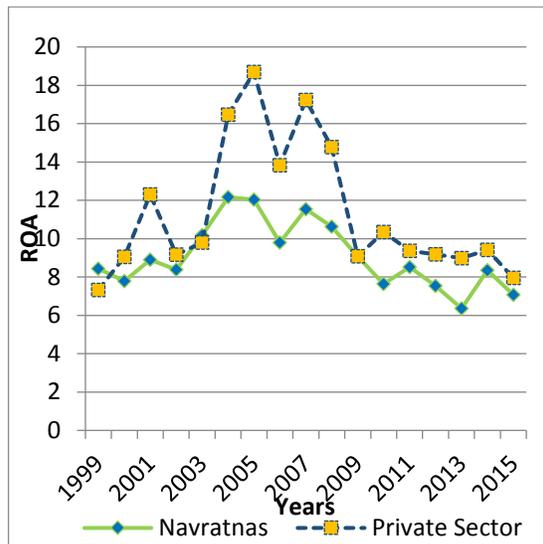
Figure 5b: Comparing Performance of Navratnas and Private Sector Firms: Weighted Return on Capital (ROC)
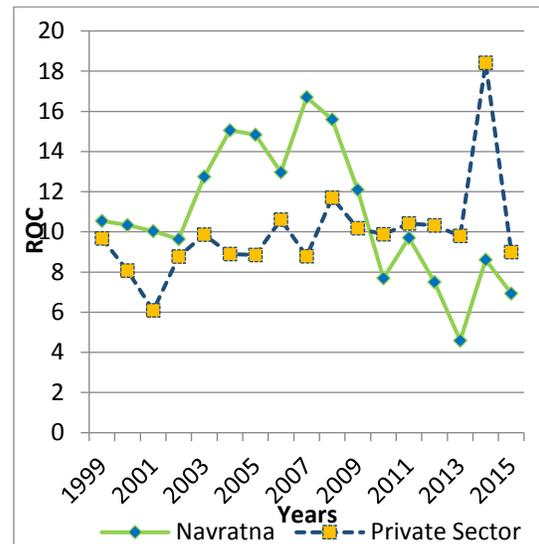
Source: Author's calculation using data from PES and Capitaline (1990-2015)

Earlier, studies (Gupta, 2011) showed that disinvestment (even the sale of minority shares) had a positive effect on PSU performance, ostensibly because new owners injected greater commercial drive, which helped improve productivity. But this result did not factor in the MOU's. More recent studies (Gunasekar and Sarkar, 2014) show that when PSUs with and without MoUs are considered, much of the performance improvement – earlier attributed to privatization is due to the performance effect of MOU's. The positive effect of privatization disappears once the MOU performance effect is taken into account. So a policy of selling a minority stake (up to 49 per cent) as a disinvestment measure is unlikely to have any positive effect on efficiency. But more work on this is needed to better understand the performance of PSUs and in the next section using new data from Capitaline, we look into the factors that explain PSU performance.

Figure 6a: Comparing Performance of Service Sector PSUs, Non Service Sector PSUs and Service Sector Private Firms: Weighted Return on Assets (ROA)
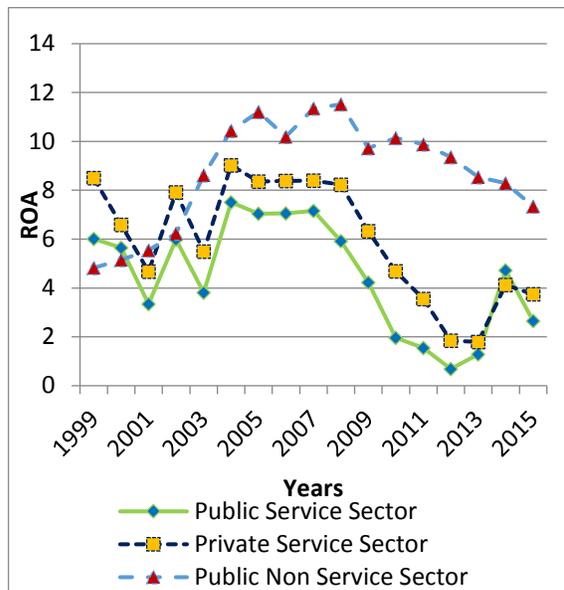
Figure 6b: Comparing Performance of Service Sector PSUs, Non Service Sector PSUs and Weighted Return on Capital (ROC)
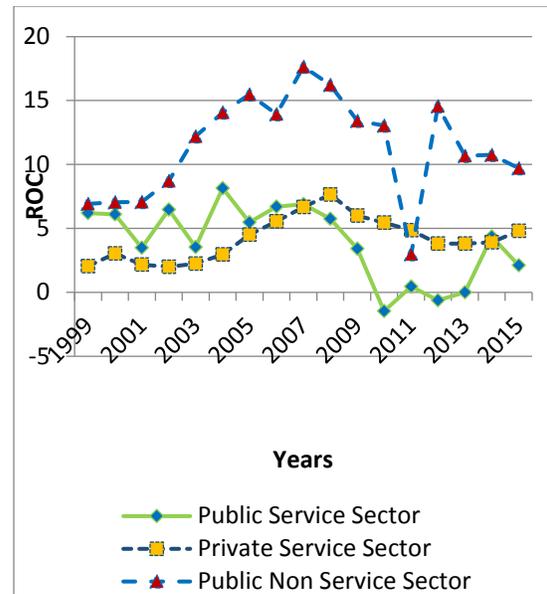
Source: Author's calculation using data from PES and Capitaline (1990-2015)

4. Factors Affecting PSU Performance

As we saw in the previous section the nature of the industry, the size of the PSU, how well the economy is doing and other factors such as a hard budget constraint and the performance contracts can affect the performance of the PSUs. Some PSUs have soft budget constraints per se, some are given soft loans under various dispensations which allow them to have a soft budget as these loans are frequently rolled over. PSUs that are more export –oriented may also have better performance as they face greater external competition as against those that sell in a more protected domestic market – although lately India has become more open so even PSUs selling largely into the domestic market face more competition from imports.

There is a vast literature that describes some of these factors. But as we often cannot see what are the binding actors the affect PSU performance it is hard to come up with a clear strategy of dealing with them. We need a much better understanding of how important are the various factors.

In order to get a better understanding of the effect of various factors on PSU performance we estimate a model on all PSUs over the period 1990 – 2015.

The model estimated for this paper is as follows:

$$Y_{it} = \alpha_G + \eta_I + \beta' X_{it} + \eta' P_{it} + \gamma' Z_{it} + \varepsilon_{it}$$

Where,

Y_{it} - represents the performance variable, ROC and ROA , for firm 'i' at time 't'

α_G - represents the group effects for Type-1, Type -2 and Type-3 PSUs

η_I – represents industry fixed effects

X_{it} – represents the variables for showing before and after effect of a performance contract MOU and partial privatisation

P_{it} – represents the preparation effects – the actions taken to qualify for an MOU.

Z_{it} – represents the control variables

ε_{it} – represents the error term

Type-1 includes firms which neither have management autonomy nor are partially privatized, Type-2 includes firms which signed MOU with the government and, Type-3 includes firms which got partially privatized and signed MOU.

Control Variables:

SOFTLN -Ratio of loans borrowed by PSU from the central government to total loans borrowed, lagged by one year.

LASSET – Log of total assets, which is a size effect

EXINT - Ratio of exports to total sales

DEPINT - Ratio of depreciation expenditure to total sales

GRGDP $_{constant\ price}$ – Growth Rate of GDP at constant prices.

Industry effects - Industry dummies, one dummy for each of the 22 industry groups, taking the value 1 for a particular industry and zero otherwise

α_2 - Dummy variable that takes value 1 for Type-2 PSUs and zero otherwise

α_3 - Dummy variable that takes value 1 for Type-3 PSUs and zero otherwise

Performance Contract Variables are:

MOU - Dummy variable that takes the value 1 in period '*t+1*' if the firms had signed a MOU in year '*t*'; and the value is zero, otherwise

mouprep0 - Dummy variable that takes value 1 for the year PSU signed MOU and zero otherwise

mouprep1 - Dummy variable that takes the value 1 for year 't-1' if the firms signed MOU in year '*t*' and zero otherwise

mouprep2 - Dummy variable that takes the value 1 for year 't-2' if the firms signed MOU in year '*t*' and zero otherwise

mouprep3 - Dummy variable that takes the value 1 for year '*t-3*' if the firms signed MOU in year '*t*' and zero otherwise.

Partial Privatization Variables are:

ppvt_dummy – Dummy variable that takes the value 1 for PSU in time 't' and thereafter if the firm gets partially privatized in year 't' and zero otherwise

ppvt_shr - Share of private equity to the PSU total equity

ppvt_prep1 – Dummy variable that takes value 1 for year 't-1' if the PSU became partially privatized in year 't' and zero otherwise

ppvt_prep2 – Dummy variable that takes value 1 for year 't-2' if the PSU became partially privatized in year 't' and zero otherwise

ppvt_prep3 – Dummy variable that takes value 1 for year 't-3' if the PSU became partially privatized in year 't' and zero otherwise

Table 1 shows the sample description of the sub samples of PSUs to study the differential impact of 'MOU signed with the government'.

Table 1: Description of Sample used in the analysis by type of PSUs

		Sample Observations				
	Type-1		*Type-2*		*Type-3*	
Sample Type	No Reform	Pre-MOU	Post-MOU	Pre-MOU	Post MOU-Pre-PPVT	Post-PPVT
	Regime 1	*Regime 1*	*Regime 2*	*Regime 1*	*Regime 2*	*Regime 3*
S1	√	√	√	√	√	-
S2	-	√	√	√	√	-
S3	-	√	√	-	-	-
S4	√	√	√	√	√	√
S5	-	√	√	√	√	√
S6	-	-	-	√	√	√

Initially, we are using S1 where we include all the observations of type-1 and type-2 and type-3 pre-privatization,

$$Y_{it} = \alpha_2 + \alpha_3 + \eta_I + \beta_1 MOU_{it} + \eta' P_{it} + \gamma' Z_{it} + \varepsilon_{it} \qquad (1)$$

The second estimation is done using S2 which excludes type-1 PSU focusing only on the firms which have an MOU and had share sales. It consists of type-2 and type-3 observations pre-privatization only.

$$Y_{it} = \alpha_3 + \eta_I + \beta_1 MOU_{it} + \eta' P_{it} + \gamma' Z_{it} + \varepsilon_{it} \qquad (2)$$

The third estimation is done using S3 by taking type-2 firms only i.e. those with MOU's but excludes those that had share sales.

$$Y_{it} = \eta_I + \beta_1 MOU_{it} + \eta' P_{it} + \gamma' Z_{it} + \varepsilon_{it} \qquad (3)$$

The fourth estimation is done using S4 by taking all the three types; type-1, type-2 and type-3 to show the impact of partial privatization on the entire sample of firm-year observations. Given that all partially privatized PSUs were also under MOU, the coefficient of the partial privatization variable that is PPVT_DUMMY and PPVT_SHR captures its incremental effect over and above of MOU.

$$Y_{it} = \alpha_2 + \alpha_3 + \eta_I + \beta_1 MOU_{it} + \beta_2 PPVT\_DUMMY/ PPVT\_SHR_{it} + \eta' P_{it} + \gamma' Z_{it} + \varepsilon_{it} \qquad (4)$$

The fifth estimation is done using S5 which excludes type-1 PSUs focusing only on the firms which have an MOU and had share sales. It consists of type-2 and type-3 observations including post-privatization of type-3.

$$Y_{it} = \alpha_3 + \eta_l + \beta_1 MOU_{it} + \beta_2 PPVT\_DUMMY/ PPVT\_SHR_{it} + \eta' P_{it} + \gamma' Z_{it} + \varepsilon_{it} \qquad (5)$$

The sixth estimation done using S6 is similar to S2, to conduct the before and after study of only type-3 PSUs, those who signed the MOU and partially privatized and compare their performance before and after partial privatization.

$$Y_{it} = \eta_l + \beta_1 MOU_{it} + \beta_2 PPVT\_DUMMY/ PPVT\_SHR_{it} + \eta' P_{it} + \gamma' Z_{it} + \varepsilon_{it} \qquad (6)$$

Using the latest PSU survey data, we have estimated the equations (1), (2), and (3) for the period 1990-2015.. Column (i) of Table 2 shows the regression results using the sub- sample S1, S2 and S3 as described above. The effect of MOU on the performance of the PSUs is highly significant which suggests that signing of MOU or transferring more autonomy to them does have positive effect on the performance of PSUs by increasing the return on capital ROC by about 5% points. This is a huge effect of MOU on the performance of the PSUs as it measures a before and after MOU effect.

Larger size PSUs measured by the size of total assets, LASSET, has significant effect on the performance of the firms, which implies that the large firms are performing better than the smaller ones by about 4% points. This is possible because larger PSUs are likely to dominate the industries or sectors in which they operate. And, enterprise with higher capital intensity, proxy by DEPINT, experience low rate of return, although the coefficient is not significant.

A soft budget constraint – which we represent by the availability of soft loans -hurts the performance of PSUs by almost 4% points. Soft loans are a disincentive to hard commercial decisions and allow the perpetuation of waste and inefficiency and reduce returns.

The coefficients of the dummy variable α_2 for Type 2 firms which signed an MOU are positive but insignificant – not surprising since most firms had signed MOU's by 2014-15. But the coefficient for the dummy variable α_3, which control for group effects of firms that had some privatization is positive and highly significant. This shows that privatization has mainly occurred in firms that have higher ROC's.

Column (ii) of Table 3 presents the regression results after controlling for the preparation period by the firms for signing the MOU. The preparation effect is incorporated to account for the argument that the PSUs might be preparing for the autonomy so that relinquishment of autonomy does not lead to any unexpected results. However, the coefficient of the two most immediate year dummy variables namely, mouprep0, mouprep1, is significant whereas in years further back

mouprep2 and, mouprep3 are all insignificant implying that preparing for signing MOU starts giving benefit to the PSUs only in the last two years prior to signing and improves the ROC by 4% points – quite a significant improvement- in addition to the 5% point improvement that comes with MOU itself. The total MOU effect is therefore close to 9% point improvement in the ROC due to the preparatory process and the signing of the MOU.

Table 2: Effect of MOU on Return on Capital (ROC) 1990-2015

Variables	Sub-Sample S1		Sub-Sample S2		Sub-Sample S3	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Intercept	-0.035902	-0.0375647	-0.0165545	-0.0240994	-0.0340032	-0.0417228
mou_prep0		0.0200315*		0.0206216*		0.0265776*
mou_prep1		0.0209393*		0.0207662*		0.0234335*
mou_prep2		0.0179488		0.0178684		0.0190609
mou_prep3		0.0112715		0.0102926		0.0118552
MOU	0.045753***	0.0497025***	0.0465193***	0.0504218***	0.052949***	0.0568163***
SOFTLN	-0.0365683***	-0.0372015***	-0.0367916***	-0.0374149***	-0.0431662***	-0.0437122***
LASSET	0.0356996***	0.0382999***	0.035091***	0.037628***	0.038349***	0.0407785***
EXINT	-0.0000303	-0.0000231	-0.0000172	-0.0000074	-0.0000178	-0.0000058
DEPINT	-0.0034714	-0.0035617	-0.0075681	-0.0081506	-0.0067371	-0.007479
GRGDP $_{constant\ price}$	0.004132***	0.003959***	0.004395***	0.004222***	0.004245***	0.004032***
$\alpha 2$	0.0229949	0.0170898	NA	NA	NA	NA
$\alpha 3$	0.0651729**	0.0549526*	0.0458461**	0.0416313**	NA	NA
industry effects	Included	Included	Included	Included	Included	Included
Adj. R- sqr	0.1374	0.1373	0.1135	0.114	0.1204	0.1208
No. of Observations	2882	2882	2710	2710	2395	2395

Source: Author's calculation using data from PES and Capitaline (1990-2015)

*Significance at 10% level **Significance at 5% level *** Significance at 1% level

How well the economy is doing has an impact on the performance of PSUs. A 1 % point improvement in the GDP growth rate improves the ROC by about 0.4% points. This is also not a surprising result as PSUs would get much better results in a fast growing economy. Export – orientation measured by export sales to total sales does not have any significant effect on PSU performance and neither does capital intensity measured by depreciation expense as a share of total sales.

Column (iii) and (iv) report the results using the sub- sample S2 by eliminating the type-1 firms i.e., those which were neither granted autonomy nor were subject to strategic privatization. The results remain more or less the same as there are very few firms that do not have an MOU.

In column (v) and (vi) of Table 2, we re-estimate the model by considering only Type-2 firms that is those that were subject to MOU's only : so we measure a pure MOU effect. The results between sample S2 and S3 are not very different at all, but the results are much stronger for the effect of MOU on firm performance. The combined effect of the MOU and the preparation benefits add upto an improvement in the ROC by 10% points.

Table 3: Effect of MOU on Return on Assets (ROA) 1990-2015

Variables	Sub-Sample S1		Sub-Sample S2		Sub-Sample S3	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Intercept	-0.4873949***	-0.487959***	-0.1801888***	-0.1880413***	-0.1948141***	-0.2017287***
mou_prep0		-0.0100591		-0.0095391		-0.0127184
mou_prep1		0.0385249		0.0340775*		0.0393646*
mou_prep2		0.0374609		0.0322762		0.0380893
mou_prep3		0.0322069		0.0279242		0.0344784
MOU	0.0019971	0.006003	0.0048323	0.0082351	0.0042387	0.0080292
SOFTLN	-0.0027138	-0.0024337	-0.0115428*	-0.0112367*	-0.0105795	-0.0101833
LASSET	0.1327399***	0.1368493***	0.1144376***	0.1182487***	0.1254672***	0.1290823***
EXINT	-0.0001793	-0.0001703	0.0000748	0.0000831	0.000074	0.0000837
DEPINT	-0.0153749***	-0.0152925***	-0.0122725	-0.0122490	-0.0112133	-0.0112566
GRGDP constant price	-0.010921***	-0.011431***	-0.006366***	-0.006846***	-0.008023***	-0.008636***
$\alpha 2$	0.2948295***	0.2866647***	NA	NA	NA	NA
$\alpha 3$	0.3637179***	0.3518233***	0.0821928*	0.0789396*	NA	NA
industry effects	Included	Included	Included	Included	Included	Included
Adj. R- sqr	0.2232	0.2224	0.168	0.1676	0.1782	0.1777
No. of Observations	2926	2926	2752	2752	2443	2443

Source: Author's calculation using data from PES and Capitaline (1990-2015)

*Significance at 10% level **Significance at 5% level *** Significance at 1% level

We next estimate the same model using the Return on Assets (ROA) and find that very few of the coefficients are significant in sample S1, S2 or S3. The results are provided in Table 3 below. MOU preparation in the year before signing of the MOU does have a significant effect on ROA improving it by almost 4% points. The size of the firm as measured by total assets has a positive and significant effect on ROA. Soft loans also have a negative effect on ROA but the coefficient is only significant at 10% level of significance in sample S2. Higher capital intensity has a significantly negative effect on ROA. There is a significant treatment effect as the coefficients for a2 and a3 are significant. Firms which have MOU's and share sales perform better than those with no such treatment. GDP growth rate has surprisingly a negative effect on ROA, which is counterintuitive. All this suggests that perhaps the data on ROA is not very reliable as the valuation of assets needs to be better audited.

The overall weighted performance of service sector PSUs is much worse than that of the non-service (manufacturing and mining) PSUs. When we look at explanations for the performance

between these two categories of PSUs again we find huge differences. When we look at the performance of service sector PSUs – such as airlines, telecommunications against manufacturing and mining PSUs, we find that the ROC in service sector PSUs cannot be explained by any of the explanatory variables whereas the ROC equation for the non-service sector performs well (Table 4 & 5). In the case of the non-service sector the MOU has a strong positive effect on the return on capital, but MOU's have no effect on performance in the case of the service sector PSUs.

Table 4: Effect of MOU on ROC of Service Sector PSUs 1990-2015

Variables	Sub-Sample S1		Sub-Sample S2		Sub-Sample S3	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Intercept	0.1004521*	0.0980306*	0.0748451**	0.0717434**	0.0695348*	0.0635097
mou_prep0		0.008827		0.0091675		0.0173026
mou_prep1		0.0099275		0.0095069		0.0170274
mou_prep2		0.0216732		0.0211769		0.0279458
mou_prep3		-0.0742332**		-0.0765026***		-0.0891445***
MOU	0.0285764	0.0293293	0.0293096	0.0299415	0.0315521	0.033463
SOFTLN	-0.0281636*	-0.0274937*	-0.0305124*	-0.0298221*	-0.0371677**	-0.0370639**
LASSET	0.0067307	0.0076379	0.0065756	0.0073881	0.0061427	0.0078107
EXINT	0.0056679	0.0058568	0.0051693	0.0053987	0.0054872	0.0058085
DEPINT	0.0034041	0.0037965	0.0150464	0.0174298	0.0171915	0.0187898
GRGDP constant price	0.0028927	0.0031042	0.003337	0.003574*	0.0029858	0.0032514
α2	-0.0206635	-0.0213605	NA	NA	NA	NA
α3	0.0742011	0.0724308	0.0960556***	0.0950483***	NA	NA
industry effects	Included	Included	Included	Included	Included	Included
Adj. R- sqr	0.0844	0.0897	0.081	0.0879	0.0674	0.0768
No. of Observations	949	949	905	905	814	814

Source: Author's calculation using data from PES and Capitaline (1990-2015)

*Significance at 10% level **Significance at 5% level *** Significance at 1% level

Non-service sector PSUs also perform much better when the economy is doing well , but in the case of service sector PSUs the returns are unaffected by overall economic performance. For the service sector PSUs the only significant variable is soft loans and they have a negative effect on performance. These soft loans not only are a drain on the budget but also make the performance of the service sector PSUs much worse.

We next turn to study the effect of disinvestment on PSU performance. Table 6 presents the effects of both partial privatization (using a dummy for privatization from the year in which the first equity sale to the private sector takes place), and MOU on performance. In Columns (i) and (ii), we show the results for the sample S4 which includes all firms whether they had an MOU or not or whether they had any disinvestment or not. We find strong MOU effects on ROC but no privatization effect. The same result holds in sample S5 which excludes all firms which had no

privatization or an MOU. In S6 we study the effect of pure privatization by taking only firms which had disinvestment. This drops the number of firms considerably as only about a third of the PSUs had any disinvestment. Now the effect of disinvestment is significant at 10% level of significance when the preparatory effects are included.

Table 5: Effect of MOU on ROC for Non-Service Sector Firms 1990-2015

Variables	Sub-Sample S1		Sub-Sample S2		Sub-Sample S3	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Intercept	-0.1874486***	-0.1863941***	-0.1457611***	-0.1504919***	-0.1579897***	-0.1620522***
mou_prep0		0.0240735		0.0240809		0.0273503
mou_prep1		0.0250805		0.0242393		0.022206
mou_prep2		0.0106126		0.0090833		0.0102717
mou_prep3		0.0313302		0.030383		0.0323432
MOU	0.0546249***	0.0590925***	0.0542465***	0.0585098***	0.0643231***	0.0679873***
SOFTLN	-0.0372021***	-0.0381888***	-0.036688***	-0.0376138***	-0.0455559***	-0.0459626***
LASSET	0.0611967***	0.0638044***	0.0601824***	0.0627016***	0.0665738***	0.0687553***
EXINT	-0.0000179	-0.0000099	-0.0000013	0.0000082	0.0000048	0.0000156
DEPINT	-0.0034914	-0.0035362	-0.0084165	-0.0087896	-0.0078148	-0.0082427
GRGDP constant price	0.0047377***	0.0042526***	0.0048419***	0.0043517***	0.0048405***	0.0043227**
$\alpha 2$	0.0401612	0.0340245	NA	NA	NA	NA
$\alpha 3$	0.0575488	0.0455326	0.020416	0.0146295	NA	NA
industry effects	Included	Included	Included	Included	Included	Included
Adj. R- sqr	0.1767	0.1775	0.1385	0.1398	0.1489	0.1497
No. of Observations	1933	1933	1806	1806	1582	1582

Source: Author's calculation using data from PES and Capitaline (1990-2015)

*Significance at 10% level **Significance at 5% level *** Significance at 1% level

When we measure the extent of disinvestment by using the share of private equity in total equity we get a stronger positive effect on ROC in S6 (Table 7). The ROC improves by 13 % points due to disinvestment and the positive effect of MOU in S4 and S5 disappears.

Further when we examine the service and non-service sectors separately we find that the non-service sector PSUs show results very similar to the overall set of results. But when we examine the service sector PSUs separately we find very strong effects on performance whether measured by ROC or ROA due to disinvestment. These results need further scrutiny and are presented in Appendix 1. They show that for service sector firms MOU has no effect on performance but disinvestment whether measured by using disinvestment dummy or even the share of private equity in total equity has huge impact on performance. Disinvestment is the right approach for service sector firms whereas for non-service sector firms a mixed approach with a combination of disinvestment and better MOU's may be needed.

Table 6: Effect of Partial Privatization (using privatization dummy) and MOU on ROC

Variables	Sub-Sample S4		Sub-Sample S5		Sub-Sample S6	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Intercept	0.002344	0.0028560	0.0070477	0.0076718	0.2232799***	0.2227927***
ppvt_dummy	-0.0058087	0.0004367	-0.0079991	-0.0025222	0.0116644	0.0284773*
ppvt_prep1		0.0141986		0.0127636		0.0306208
ppvt_prep2		0.0095121		0.0082248		0.0207754
ppvt_prep3		0.0019713		0.0018323		0.0150368
mou_prep0	0.0191878	0.019002	0.0192921*	0.0191278*	0.0069127	0.0055264
mou_prep1	0.020875*	0.0208409*	0.0211409*	0.0211066*	0.0235157	0.0221668
mou_prep2	0.024365*	0.0244337*	0.0242763*	0.024343*	0.019722	0.021527
mou_prep3	-0.0025679	-0.0022805	-0.0027452	-0.0024915	0.0244195	0.0309562
MOU	0.0434917***	0.0433446***	0.0440494***	0.0439071***	0.0273396	0.0256038
SOFTLN	-0.0316081***	-0.0314836***	-0.0307428***	-0.0306303***	0.0148630	0.0176574
LASSET	0.0354582***	0.0351958***	0.0368349***	0.036602***	0.0169412	0.0122031
EXINT	-0.0000519	-0.0000520	-0.0000761	-0.0000764	-0.0513382***	-0.0471891**
DEPINT	0.0009301	0.0009442	0.0037315	0.0037531	0.005113**	0.0050374**
GRGDP constant price	0.0050102***	0.0049925***	0.0051538***	0.0051383***	0.007303***	0.0071838***
$\alpha2$	0.01208	0.0122757	NA	NA	NA	NA
$\alpha3$	0.0414147	0.0364505	0.0348852*	0.0303488	NA	NA
industry effects	Included	Included	Included	Included	Included	Included
Adj. R- sqr	0.1383	0.1381	0.1166	0.1163	0.1944	0.1978
No. of Observations	3224	3224	3066	3066	865	865

Source: Author's calculation using data from PES and Capitaline (1990-2015)

*Significance at 10% level **Significance at 5% level *** Significance at 1% level

We next turn to look at the issue of strategic disinvestment (privatization) as so far we have focused only on disinvestment (partial privatization). What does the evidence on the performance of PSUs that underwent strategic disinvestment tell us? Some 30 entities were strategically disinvested. Of these, several were hotels, sold largely for their land and assets. Some PSUs were sold to other PSUs, and therefore didn't really pass into private hands. Nagaraj (2005) supports the fact that loss making firms can be disposed of by selling the real estate of these firms.

Twelve companies were genuinely privatized — over 50 per cent of their shares and management control passed into private hands. The performance of these 12 PSUs— Bharat Aluminum, CMC, Hindustan Teleprinters, Hindustan Zinc, HTL, ICI India, Indian Petrochemicals, Jessop and Co, Lagan Jute Mills, Maruti Udyog, Modern Food Industries, Paradeep Phosphates and Videsh Sanchar Nigam shows huge improvements after strategic disinvestment.

[6] The weighted return on capital (ROC) tripled on average from around 5 per cent in 1999-2004 to 15.1 per cent in 2010-2015 (Figure 7b), and went even higher in the high growth phase

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[6] Gupta (2011) focused on the evaluation of performance of the PSUs based on the different model than our paper. They have taken the data of 213 manufacturing and non-financial service sector firms from CMIE (Centre of Monitoring the Indian Economy) for the period 1988- 2009. Their paper has supported the fact that the sale of both partial and majority equity stake accompanied by the transfer of management control from government to private owners has economically significant positive impact on performance of PSUs. The paper also considers the impact of the disinvestment on the compensation of employees and employment and shows that the improvement in profitability following privatization is not accompanied by a decline in worker

2004-2009 to average around 25%. The ROA for these firms also stays high - higher than those of the Navratnas that remained in public hands. It also jumps up in the high growth phase and remains over 15% in the period 2010-2015 – of course it was also high in the period 1999-2004.(Figure 7a). But as we have seen previously the ROA statistics need further checking and auditing.

Table 7: Effect of Disinvestment (using private equity share) and MOU on ROC

Variables	Sub-Sample S4		Sub-Sample S5		Sub-Sample S6	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Intercept	-0.0169726	-0.0172540	-0.0054755	-0.0055544	0.2394639***	0.2536213***
ppvt_shr	0.0261482	0.0369378	0.0207063	0.0329928	0.0644991	0.1337881**
ppvt_prep1		0.0178906		0.0181734		0.0245269
ppvt_prep2		0.0130659		0.0134373		0.0156402
ppvt_prep3		0.0035883		0.0046588		0.0108017
mou_prep0	0.0242786**	0.0187279	0.0196751*	0.0188968	0.0039236	-0.0002001
mou_prep1	0.0257636**	0.0211644*	0.022257*	0.0215502*	0.0184606	0.0124779
mou_prep2	0.0243489	0.0233106	0.023868*	0.0233956	0.0135768	0.0087079
mou_prep3	0.0039159	-0.0026460	-0.0029334	-0.0027893	0.0214062	0.0236297
MOU	0.0437332***	0.0431065***	0.0442914***	0.0436812***	0.0264787	0.0245394
SOFTLN	-0.0334151***	-0.0336091***	-0.0321806***	-0.0323951***	0.0159830	0.0190197
LASSET	0.0329806***	0.0329456***	0.0343255***	0.0342253***	0.0118366	0.0039467
EXINT	-0.0000343	-0.0000351	-0.0000938	-0.0000949	-0.05332***	-0.0531498***
DEPINT	0.0009637	0.0010040	0.0037718	0.0038364	0.0049727**	0.004691**
GRGDP constant price	0.0048601***	0.0048487***	0.0050224***	0.0050089***	0.0072091***	0.006949***
$\alpha 2$	0.0179514	0.0180990	NA	NA	NA	NA
$\alpha 3$	0.0303157	0.0283588	0.0174496	0.0152727	NA	NA
industry effects	Included	Included	Included	Included	Included	Included
Adj. R- sqr	0.1436	0.1452	0.1212	0.1232	0.2073	0.2228
No. of Observations	3175	3175	3020	3020	863	863

Source: Author's calculation using data from PES and Capitaline (1990-2015)

*Significance at 10% level **Significance at 5% level *** Significance at 1% level

Given these findings what strategy should the government pursue. First given the ostensibly better performance of the Maharatnas – it can consider providing them greater autonomy and commercialization. But there should be greater contestability even in restricted sectors, including coal and defense, by allowing more private sector participation. The loss making PSUs should be fully privatized (if a buyer can be found) or dissolved and sold for the real estate and equipment. Service sector PSUs such as Air India, BSNL, MTNL and many of the mini ratnas and smaller PSUs — both loss-making and even profit-making ones — could clearly be set up for outright privatization and more aggressive disinvestment.

India's first attempt at strategic disinvestment during NDA 1 was mired in controversy. But a careful analysis shows that it was successful in transforming PSUs into well-run private companies. The way forward is more aggressive privatization — especially for the 17 Navratnas,

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compensation and employment, after controlling for observable and unobservable characteristics of the firms such as firm size, industry Herfindahl index and year dummies to control for contemporaneous macroeconomic shocks.

the 73 miniratna's and the other 140 smaller PSUs which are not even in the ratna category. Only then will the PM's words that "the business of government is not business" have some meaning. Unlike other parts of the world(see Shirley, M.M and L.C.Xu 1998) which shows that performance contracts are not helpful , we do find evidence that MOU's have helped improve performance . But these should be strengthened and reserved for the larger PSUs Mahartana's and the few selected strategic PSUs that will remain in government hands. The MOU's improve performance but our results indicate that for the smaller PSUs which do not perform as well as the larger ones and those in the service sectors where the MOU's have no positive effect : outright privatization and more aggressive disinvestment would be even better..

Figure 7a: Performance of PSUs, Firms Fully Privatized and Private Sector Firms: Weighted Return on Assets (ROA)
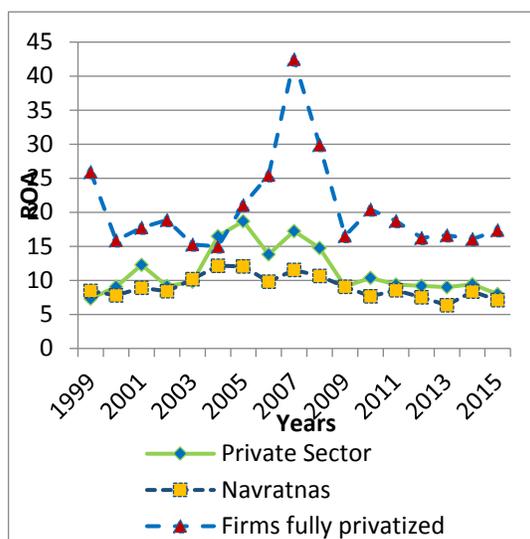
Figure 7a: Performance of PSUs, Firms Fully Privatized and Private Sector Firms: Weighted Return on Assets (ROA)
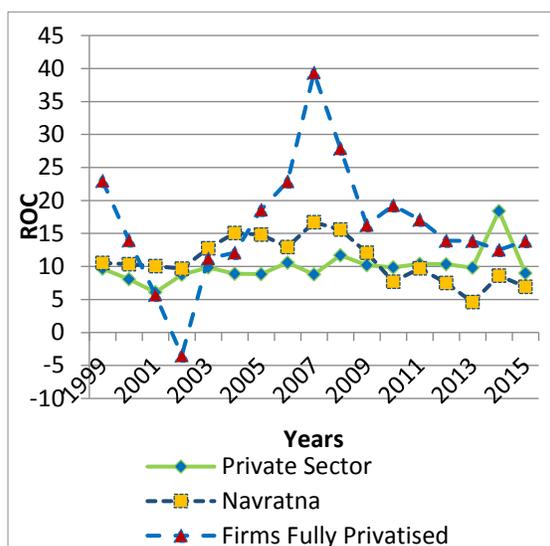
Source: Author's calculation using data from PES and Capitaline (1990-2015)

5. A Ten Year Plan to Convert Public Equity into Public Infrastructure

A 10-year plan to divest at least 50% PSU assets is required. The business of the government is public infrastructure, not public companies. One of the biggest disappointments of 2015 has been the inability to move forward on even the modest targets of disinvestment of Rs 69,000 crore ($11 billion)—especially strategic disinvestment of Rs 28,000 crore ($4 billion)—out of the total assets of public sector undertakings (PSUs) estimated at over Rs 30 lakh crore ($500 billion); not included here are the state banks, which have also locked in huge amounts of public capital. In 2015-16 further disinvestment, including strategic disinvestment is proposed.

What India needs is a much-bolder plan—over the next 10 years—to divest at least half of the government shareholding, largely through strategic disinvestment. The proceeds—roughly $250 billion—could be parked into the strategic investment fund established recently. If these proceeds are used to leverage private funding of the same magnitude, India could be able to invest an additional $50 billion per year—roughly 2.5% of GDP—in public infrastructure for the next 10 years. Such a plan would be essential as we struggle to fund even modest increases of 1% of GDP in public infrastructure in the budget.

However, it's not just about unlocking funds for public infrastructure; strategic disinvestment also improves the efficiency of capital use. It should be remembered that the PSUs which were strategically disinvested under the previous NDA government have done exceedingly well, thereby enhancing efficiency and improving the return on assets. This government needs a clearer medium-term strategy which builds on Prime Minister Modi's promise that the "business of the government is not business", essentially getting the government out of running these companies, increasing the return on capital and raising huge resources for public infrastructure. Such a medium-term plan should be based on performance, size and sector. Ad hoc expediency based on yearly targets is not going to work.

For now, the plan could leave the Maharatnas in state hands—whose total assets are around Rs 10 lakh crore ($133 billion), about one-third of total PSU assets. In any case, the Maharatnas—BHEL, Coal India, GAIL, Indian Oil, NTPC, ONGC and SAIL—are collectively doing well. Their return on capital and return on assets have been higher than those of comparable private firms by 4% and 2%, respectively. However, even in this category the situation has seen a reversal of trends in the last three years; the private sector has shown a surprising improvement in return on capital and return on assets while the Maharatnas are showing a continuous decline in performance. Moreover, more careful audits of their accounts may be needed to review theur performance. Among the Maharatnas, SAIL, BHEL and Indian Oil need serious restructuring and better leadership.

The remaining two-thirds of state assets are Navratna and Miniratna companies. The performance of the 17 Navratnas is consistently worse than that of comparable private privates, with return on capital roughly 2% lower compared to equivalent private firms. This is the group that should be privatized—especially Bharat Electronics, MTNL, NMDC and Oil India.

The category of Miniratna is formed by 73 companies, and these are the ones that are most ripe for strategic disinvestment. A plan to sell most of these companies should be developed, with those in manufacturing and the services sector high on the list for immediate sale as these are the worst performers. There will be many arguments made against selling these companies to the

private sector, but there seems to be no reason to run these as public companies except to provide employment to a small number of people and to be able to provide managerial positions to party members once any new government comes into power. A far more serious issue is that of tainted contracts and procurement, where lucrative deals are handed out to cronies.

How and to whom these companies are sold does matter. Russian-style privatization—where most of Russia's state assets were sold to "oligarchs"—must be avoided. Transparent processes, competitive bidding and ensuring that some of the funds are set aside for worker compensation are vital for strategic disinvestment to succeed.

The opposition to such an approach will come from trade unions, vested interests and even consumers afraid of higher prices. But considering the long-term benefits to the economy and, eventually, better services and products to the consumer, this approach is worth exploring. Without such a bold approach we will perhaps see some temporary improvements in some PSUs but the underlying incentives for better performance will not have changed and future generations will remain saddled with this costly socialistic legacy.

6. Conclusions

A bolder roadmap for gradually getting the government out of the business of business, as promised by the prime minister, must be prepared with a hard look at the real economic benefits from some of the profit-making state-owned firms as well. The question to be asked is, are these firms locking up scarce capital to provide employment for a few, or can they become strategic world-class companies?

Such a bold approach to transferring state-owned assets with generally low return towards public social infrastructure is a win-win idea. Especially because the private sector will improve returns, as was the case with the first batch of PSUs that were privatized under the Vajpayee-led government, whose return on capital tripled after privatization. The second gain is it will unlock funds for building badly-needed social infrastructure—roads, power transmission lines, sewage systems, irrigation systems, railways and urban infrastructure. This will also help draw in private investment, including FDI.

If the Modi government wants to leave behind a lasting transformation of the economy, getting the government out of business and laying a foundation for rapid growth by accelerating India's infrastructure plans is the way forward. Develop a 10-year plan to divest at least 50% of PSU assets, shift the proceeds into the strategic investment fund and reap the rewards. The

business of the government is public infrastructure, not public companies. Transforming public assets into public infrastructure would be a lasting reform.

References

Arun, T.G. and Nixson, F.I. (2000). The disinvestment of public sector enterprises: the Indian experience. *Oxford development studies*, *28*(1): 19-32.

Bhagwati, J. and Srinivasan, T.N. (1993). India's Economic Reforms', Ministry of Finance, Government of India, New Delhi. *Bhagwati India's Economic Reforms1993*.

Bombay Stock Exchange Disinvestments Database.

Department of Disinvestment, (2015). Disinvestment till March 3, 2016

D'souza, J. and Megginson, W.L. (1999). The financial and operating performance of privatized firms during the 1990s. *The Journal of Finance*,*54* (4): 1397-1438.

Gunasekar,S. and Sarkar,J. (2014). Does autonomy matter in state owned Enterprises? Evidence from performance contracts in India. IGIDR Working Paper.

Gupta, N. (2005). Partial privatization and firm performance. *The Journal of Finance*, 60(2): 987-1015.

_____. (2011). Selling the family silver to pay the grocer's bill? The case of privatization in India.

Mathur, B.M.D.R. (2010). Accountability and Autonomy Relationship in Central Public Sector Enterprises (CPSES) In India through Memorandum of Understanding (MOUs) *In International Conference on Applied Economics – ICOAE (p 495).*

Mukherjee, A. (2015). Services sector in India: trends, issues, and the way forward. *Eurasian Geography and Economics*, *56*(6): 635-655.

Nagaraj, R. (2005). Disinvestment and Privatization in India: Assessment and Options. *Asian Development Bank Policy Networking Project, New Delhi.*

NCAER, (2004). Study on the revamping of the MOU System: National Council of Applied Economic Research, New Delhi.

Seema, G., Jain, P.K., Yadav, S.S. and Gupta, V.K. (2011). Financial performance of disinvested central public sector enterprises in India: An empirical study on select dimensions. *Journal of Applied Finance and Banking*, 1(4): 57.

Sharma, G.L. (2013). Public Sector Enterprises and the Memorandum of Understanding: Charting New Frontiers.

Shirley, M.M. and Xu, L.C. (1998). Information, incentives, and commitment: an empirical analysis of contracts between government and state enterprises. *Journal of Law, Economics, & Organization*, 358-378.

Shirley, M.M. and Xu, L.C. (1998). *The empirical effects of performance contracts: evidence from China* (No. 1919). World Bank Publications.

Trivedi, P. (1990). Lack of Understanding on Memorandum of Understanding. *Economic and Political Weekly*, M175-M182.

Various Public Enterprises Survey Reports (1987-2015). Department of Public Enterprises, Government of India.

APPENDIX 1: Effect of Disinvestment on Service Sector PSUs

Table A1: Service Sector PSUs: Independent Variable ROC (1990-2015)

Variables	Sub-Sample S4		Sub-Sample S5		Sub-Sample S6	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Intercept	0.1143365**	0.1148132**	0.0922548***	0.0928441***	0.4243777***	0.3959385***
ppvt_dummy	-0.0067666	-0.0096615	-0.0055509	-0.0075212	0.0785963***	0.1214292***
ppvt_prep1		-0.0010267		0.0006644		0.0909059**
ppvt_prep2		0.0012775		0.0025452		0.0714844*
ppvt_prep3		-0.0246946		-0.0232787		0.0489356
mou_prep0	0.004645	0.0042757	0.0056631	0.0053112	-0.0064441	-0.0070335
mou_prep1	0.0080145	0.0082993	0.009149	0.0094314	-0.0033474	-0.0040078
mou_prep2	0.0204758	0.020155	0.0209176	0.0206331	0.0062853	0.0110831
mou_prep3	-0.042889	-0.0431805*	-0.0421394*	-0.0423514*	-0.0089965	0.0061217
MOU	0.0233413	0.0240162	0.0240987	0.0247468	0.0087865	-0.0025739
SOFTLN	-0.0324452**	-0.0327218**	-0.0328577**	-0.0331974**	0.0829811**	0.0964108***
LASSET	0.0076568	0.0076406	0.0068561	0.006781	-0.0388255**	-0.0421539***
EXINT	0.0025428	0.0025409	0.0023395	0.0023462	-0.0439221	-0.0244608
DEPINT	-0.0015537	-0.0015456	-0.0186197	-0.0186620	-1.347323***	-1.326814***
GRGDP constant price	0.0026896	0.0026311	0.0029222*	0.0028610	0.0030271	0.0025814
α2	-0.0206403	-0.020509	NA	NA	NA	NA
α3	0.0474419	0.0501204	0.071574**	0.0733137**	NA	NA
industry effects	Included	Included	Included	Included	Included	Included
Adj. R- sqr	0.0806	0.0805	0.0742	0.0743	0.407	0.4269
No. of Observations	1064	1064	1023	1023	242	242

Source: Author's calculation using data from PES and Capitaline (1990-2015)

*Significance at 10% level **Significance at 5% level *** Significance at 1% level

Table A2: Service Sector PSUs: Independent Variable ROA (1990-2015)

Variables	Sub-Sample S4		Sub-Sample S5		Sub-Sample S6	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Intercept	-0.0080269	-0.0066165	0.0314428	0.0308819	0.2057976***	0.1366457***
ppvt_dummy	0.036819**	0.1134194***	0.0369363**	0.1132799***	0.0840299***	0.1564831***
ppvt_prep1		0.1199084***		0.119324***		0.15207***
ppvt_prep2		0.1001083***		0.0992861***		0.1118989***
ppvt_prep3		0.1116496***		0.1110425***		0.1513859***
mou_prep0	0.0048991	0.0069956	0.0049348	0.0070784	0.0100296	0.0131862
mou_prep1	0.0082859	0.0099042	0.0082087	0.0098795	0.0190337	0.0119203
mou_prep2	0.0265086*	0.0308441**	0.0261273**	0.0305132**	0.0150568	0.0262179
mou_prep3	0.0108436	0.0190226	0.0108354	0.0190526	0.0009089	0.0276768
MOU	0.013438	0.011845	0.0133383	0.0117908	0.0213977	-0.0101303
SOFTLN	-0.012973***	-0.012637***	-0.0130301***	-0.0126871***	-0.0214279	0.0003102
LASSET	0.0033283	0.00324	0.0014905	0.00152	-0.0260536**	-0.0284498***
EXINT	-0.0025198	-0.0019444	-0.0018851	-0.0013399	-0.039533*	-0.0112164
DEPINT	-0.0230812***	-0.0229699***	-0.0254108	-0.0254897	-0.9529275***	-0.9005104***
GRGDP constant price	0.0020891*	0.0020049	0.0022872*	0.002196*	0.0044879*	0.0046807**
α2	0.0361169	0.034431	NA	NA	NA	NA
α3	0.0983512***	0.0368729	0.0604226**	0.0018891	NA	NA
industry effects	Included	Included	Included	Included	Included	Included
Adj. R- sqr	0.199	0.1972	0.1484	0.1892	0.4756	0.5955
No. of Observations	1056	1056	1017	1017	233	233

Source: Author's calculation using data from PES and Capitaline (1990-2015)
*Significance at 10% level **Significance at 5% level *** Significance at 1% level

Table A3: Service Sector PSUs: Independent Variable ROC (1990-2015)

Variables	Sub-Sample S4		Sub-Sample S5		Sub-Sample S6	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Intercept	0.0862764	0.0864719	0.060555*	0.0617577*	0.4490629***	0.445011***
ppvt_shr	-0.0308279	-0.0285086	-0.0717866	-0.0686443	0.2186363***	0.2353511***
ppvt_prep1		0.003818		-0.0002416		0.0278912
ppvt_prep2		0.0055083		0.0012934		0.0140727
ppvt_prep3		-0.0195963		-0.0205251		0.001352
mou_prep0	0.0064001	0.0060997	0.0073291	0.0071169	-0.0188654	-0.0203204
mou_prep1	0.0095038	0.0097724	0.0106226	0.0108664	-0.0225286	-0.0250046
mou_prep2	0.0219638	0.0217484	0.0223359	0.0221188	-0.011672	-0.0125135
mou_prep3	-0.0441449	-0.0441577	-0.0439569*	-0.0441285*	-0.0202549	-0.0181735
MOU	0.0246745	0.0253038	0.0251373	0.0259149	-0.0041181	-0.0082643
SOFTLN	-0.0330537**	-0.0336362**	-0.0346199***	-0.0356298***	0.0748841**	0.0756981**
LASSET	0.0086351	0.00833	0.0088594	0.0082454	-0.0404871**	-0.0405747**
EXINT	0.0022070	0.0022307	0.0018457	0.001801	-0.0466756	-0.0428764
DEPINT	-0.0021638	-0.0022173	-0.0179785	-0.0178094	-1.297214***	-1.29144***
GRGDP constant price	0.0028213	0.002764	0.0031016*	0.0030506*	0.0026281	0.0023536
α2	-0.0215112	-0.0209804	NA	NA	NA	NA
α3	0.046844	0.0474736	0.0747495***	0.0751691***	NA	NA
industry effects	Included	Included	Included	Included	Included	Included
Adj. R- sqr	0.0801	0.0804	0.0714	0.0723	0.392	0.3939
No. of Observations	1056	1056	1015	1015	240	240

Source: Author's calculation using data from PES and Capitaline (1990-2015)

*Significance at 10% level **Significance at 5% level *** Significance at 1% level

Table A4: Service Sector PSUs: Independent Variable ROA: (1990-2015)

Variables	Sub-Sample S4		Sub-Sample S5		Sub-Sample S6	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Intercept	-0.0013601	-0.0035876	0.0325809	0.0298291	0.2519487***	0.2214306***
ppvt_shr	0.1652567***	0.2086082***	0.0747121	0.117765**	0.2827628***	0.3326532***
ppvt_prep1		0.0575711**		0.0467008**		0.0739751***
ppvt_prep2		0.0403024		0.0284835		0.038503
ppvt_prep3		0.0652584*		0.0585188*		0.0881597***
mou_prep0	0.0027302	0.0026113	0.0022679	0.0024225	-0.001982	-0.0027196
mou_prep1	0.0050539	0.0037129	0.0048936	0.0037146	-0.0016307	-0.0156779
mou_prep2	0.0237409*	0.0237098*	0.023102*	0.0232732*	-0.0043784	-0.0046479
mou_prep3	0.0092741	0.0113093	0.0085732	0.0103006	-0.0112692	-0.0040925
MOU	0.0116037	0.0084416	0.0104309	0.007747	0.0087454	-0.0169857
SOFTLN	-0.0129158***	-0.0128504***	-0.0130211***	-0.0129763***	-0.0243147	-0.0215911
LASSET	-0.0015123	-0.0007537	-0.0013589	-0.0008332	-0.0355164***	-0.0342484***
EXINT	-0.0022628	-0.0020340	-0.0016043	-0.0014419	-0.0368316*	-0.0264678
DEPINT	-0.0213771***	-0.0207128***	-0.0266167	-0.0261883	-0.9088692***	-0.8793109***
GRGDP constant price	0.0019781	0.0020504	0.002099*	0.0021579*	0.0039788	0.0041544
α2	0.0344034	0.0330714	NA	NA	NA	NA
α3	0.1106488***	0.0986642***	0.077307***	0.068165***	NA	NA
industry effects	Included	Included	Included	Included	Included	Included
Adj. R- sqr	0.2049	0.2128	0.1545	0.1657	0.4665	0.5058
No. of Observations	1048	1048	1009	1009	232	232

Source: Author's calculation using data from Capitaline (1990-2015)

*Significance at 10% level **Significance at 5% level *** Significance at 1% level

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