

# **Bolder Disinvestment or Better Performance Contracts? Which Way Forward for India's State-Owned Enterprises**

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## **Bolder Disinvestment or Better Performance Contracts? Which Way Forward for India's State-Owned Enterprises**

**Ajay Chhibber and Swati Gupta<sup>1</sup>**

### **Abstract**

This paper analyses the performance of India's Public Sector Undertakings (PSUs) using measures of labour and overall efficiency and productivity indicators as opposed to financial returns. Using methods that correct for selection bias, the results show that performance contracts do not improve firm efficiency but disinvestment has a very strong positive effect on firm efficiency. Disinvestment improves labour productivity and efficiency, which is not surprising, but it also improves overall efficiency. India should pursue much bolder privatization even of PSUs which claim to be making operational profits – such as Air India, because privatization improves overall firm efficiency and unlocks capital for use elsewhere, especially in public infrastructure, and reduces the possibility of political interference in their functioning in future.

**Keywords:** Public Sector Undertakings , State Owned Enterprises, Public Sector Restructuring, MOU (performance contract) , Disinvestment ( privatization)

**JEL Classification Codes:** H11, L32, L33

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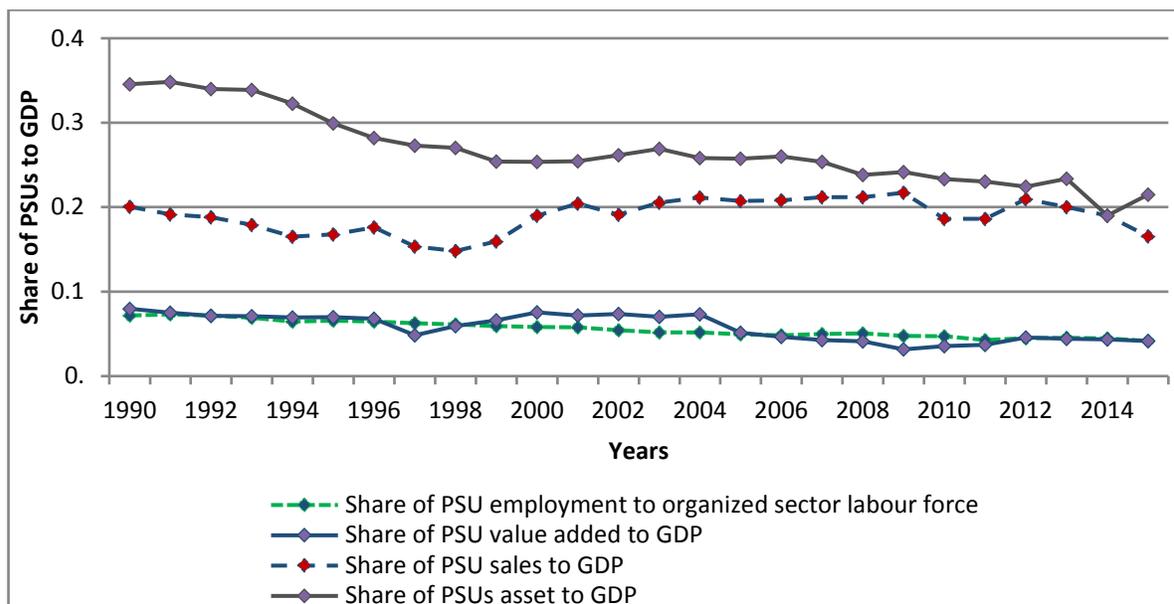
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## 1. Introduction

Since the 1980s, the number of public sector undertakings (PSUs) in India has varied between 213 and 241. Of these, 7 largest PSUs are called Maha Ratnas, 17 are called Nav Ratnas and 73 are given the title of Mini Ratnas. The remainder has no classification as such. About half of them are in manufacturing and mining and the rest are in service sector – transport, telecommunications, financial services etc. (service sector PSUs are about 106, while, those in non-service are 129). These are the remnants of India’s socialistic legacy from the Nehru-Gandhi era.

The combined asset of all PSUs was around 35% of GDP in 1990 but by 2015 had declined to just over 20% of GDP (Figure 1). Over the same period, the sales to GDP ratio declined from 20% of GDP in 1990 to about 16% of GDP in 2015, a much smaller decline indicating that the sales to asset ratio increased from 0.5 in 1990 to around 0.8 in 2015. Value added, created by PSUs, as a share of GDP and the ratio of PSU employment to total organized employment in the economy declined from around 8% of GDP in 1990 to under 5% of GDP by 2015. Post the economic reforms of 1991, although the number of PSUs has remained more or less the same, their share in the economy measured by value added, employment and sales has declined, as the private sector has expanded faster. This is a pattern we see in several other countries with State capitalism such as in Brazil and China, where also the share of State enterprises has been declining.

**Figure 1: Value Added, Sales and Employment in PSUs (1990-2015)**

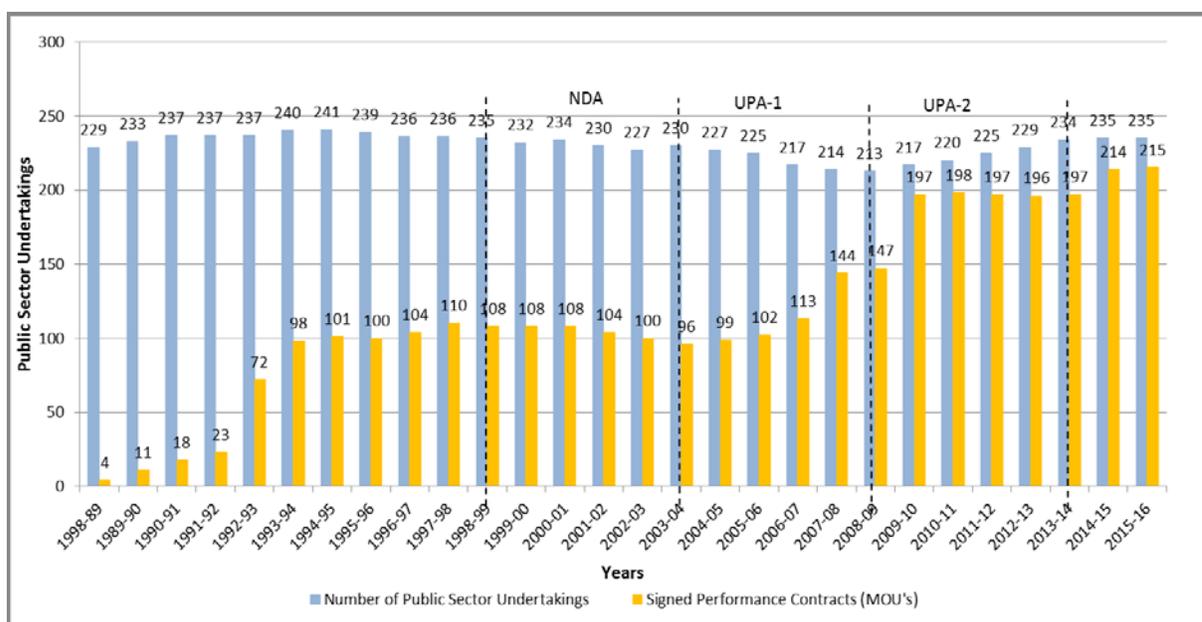


Source: Public Enterprise Survey, 1988-89 to 2014-15

The economic reforms of 1991, dismantled the “license-raj” but left the PSUs more or less intact. Vigorous efforts were made to try and improve their performance through performance contracts called Memorandums of Understanding (MoUs) with some success as the number of loss makers declined. But yet with still a third of the PSUs making substantial losses.

A partially successful attempt, made under the NDA-1 government from 1999-2004 to initiate the dismantling of this legacy with strategic disinvestment (privatization) met with considerable opposition from vested interests and labour unions. Subsequent UPA governments have tried to further improve the performance of these companies through better performance contracts and bringing more PSUs into the Ratna classification. The number of MoUs increased rapidly in the early 1990s from 4 in 1988-89 to over 100 by 1994-95. A second big jump came in the late 2000s and the number of MoUs jumped to 197 by 2009-10 and to 215 by 2015-16, with only 20 PSUs now remaining without performance contracts (Figure 2).

**Figure 2: Growth of PSUs and Performance Contracts (MoUs)**



**Source:** Public Enterprise Survey, 1988-89 to 2014-15

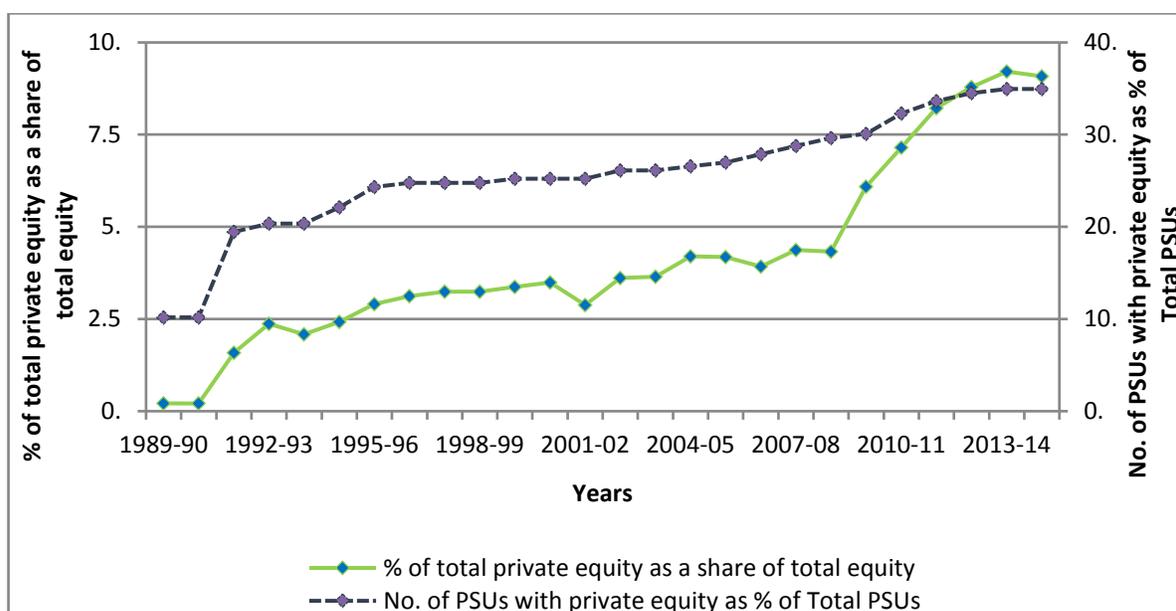
The Department of Disinvestment was created in 1999 and the objective of disinvestment under it was not only to raise revenue but also to improve efficiency. Over 30 companies were either fully privatized or 50 per cent of their stock divested,<sup>2</sup> including one of India’s most successful privatization initiatives — the sale of Maruti to Suzuki was com-

<sup>2</sup> (Bombay Stock Exchange Disinvestments Database, March 2015)

pleted during this period. But, the initiatives were internally opposed within the NDA government and the bureaucracy as the control over PSUs would have meant jobs, patronage and corruption in PSU contracts. What is surprising is that while the NDA government was aggressively pursuing privatization, some new PSUs were also created.

The UPA-1 government which came to power in 2004, backed by the communists, did not aim to privatize PSUs, although, a few were shut down. 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 (Figure 3). Over one-third of the PSUs had some private equity in them.

**Figure 3: Progress on Disinvestment (Partial Privatization) 1990-2015**



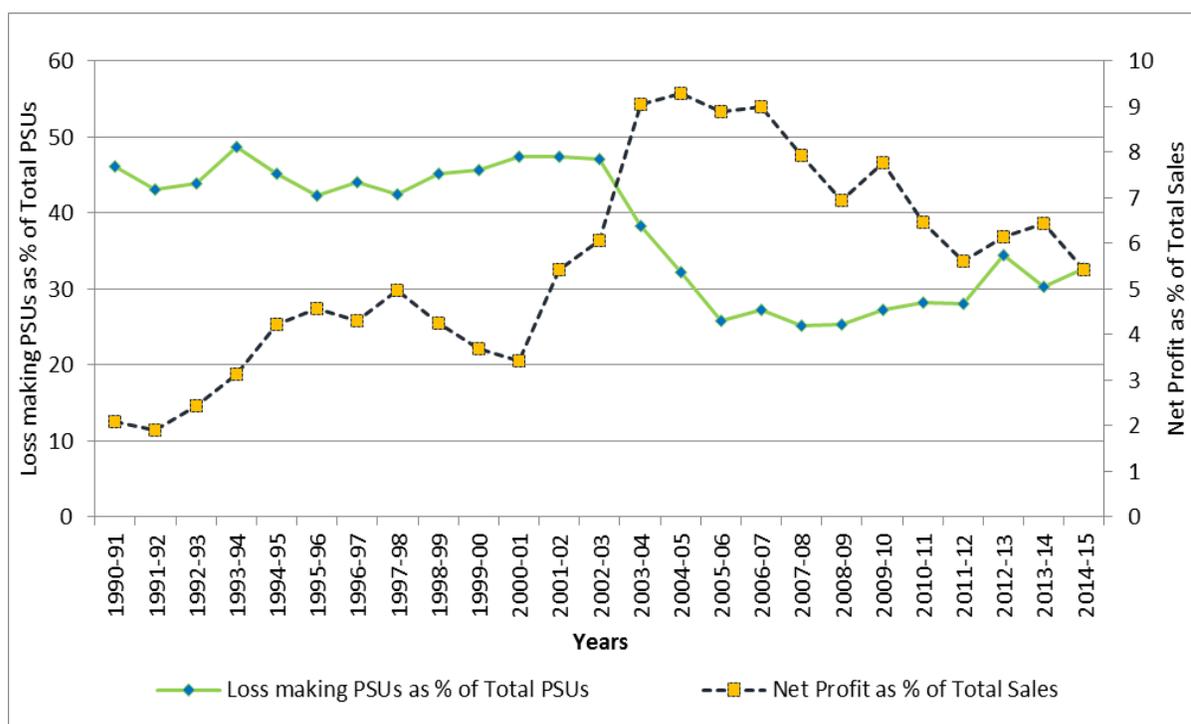
Source: Public Enterprise Survey, 1989-90 to 2014-15

The UPA-1 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 NDA government coming to power in 2014, there was an expectation that the disinvestment, pursued quite aggressively by NDA-1, 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 – especially with the decision to sell Air India.

Almost half of the PSUs were making losses in the 1990s, but with the period of high growth from 2002-3 onwards, the number of loss-making PSUs declined to about a quarter (Figure 4). 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 MoUs 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.

**Figure 4: Trends in Profits and Losses in the Indian PSUs (1990-91 to 2014-15)**



Source: Public Enterprise Survey, 1989-90 to 2014-15

## 2. Earlier studies on PSU performance in India and the proposed approach

There are a vast number of studies on privatization around the world with mixed results. Many of them show that privatization improves labour productivity and even profitability but not necessarily overall efficiency and productivity. A comprehensive survey (Megginson and Netter, 2001) of this literature concluded that divested (fully and partially privatized) firms almost always become more profitable and more efficient. An OECD survey soon thereafter also arrived at the same conclusion. Subsequent surveys (Muhlenkamp, 2013) have questioned these findings and shown that the previous survey suffered from flaws. It questions whether privatization leads to greater efficiency and argues that public

and private sector firms perform the same when subject to competition and better regulation. Few authors have argued that many of the studies have methodological flaws because the gains from privatization may be due to selection bias – since better performing PSUs may be privatized first. The most recent survey by UNDP's Global Centre for Public Service Excellence (GSCPE, 2017) shows that privatization is likely to lead to positive results in markets with greater competition and better regulation. These results are more likely in developed countries but not so in middle income and developing economies, where the results of privatization are more mixed.

There are a large number of studies that discuss the performance of PSUs in the Indian context. But very few of these use rigorous techniques and are therefore largely descriptive (Arun and Nixson, 2000; Mathur, 2010; Nagaraj, 2005 and Trivedi, 1990). Among the most prominent rigorous studies, (Gupta, 2006 and 2011) showed that disinvestment (even the sale of minority shares) had a positive effect on PSU financial performance, ostensibly because new owners injected greater commercial drive, which helped improve profitability. But this result has been challenged by recent studies as it did not factor in the effect of performance contracts - MoUs. More recent studies (Gunasekar and Sarkar, 2014) show that when PSUs with and without MoUs are considered, much of the financial performance improvement – earlier attributed to privatization is due to the performance effect of MoUs. 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 financial performance.

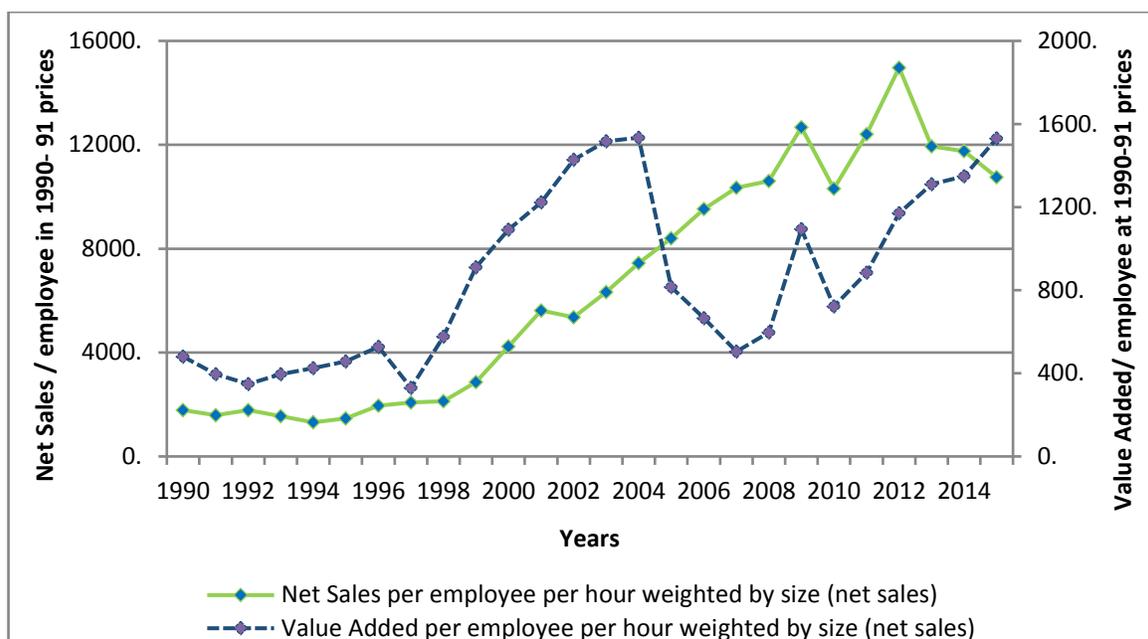
In another recent paper, (Jain, 2016) uses technical efficiency as the performance variable, instead of financial rates of return. She applies a stochastic frontier analysis technique to generate technical efficiency by industry and by firm and then examines the impact of disinvestment and the ideology of the state government in which the enterprise is located as well as whether the state government belongs to a political party that is different from the central government. The results indicate that disinvestment, even partial disinvestment, has a strong positive effect on firm performance. The political ideology of the state government as well as whether the state government and the central government belong to different parties has a significant effect on performance. Her results are, however, dependent on the credibility of the method used to calculate technical efficiency.

In a previous paper (Chhibber and Gupta, 2017) had analyzed the performance of India's 235 PSUs using firm level data over the period 1990-2015 from the Public Enterprise Survey (time series panel data set) that paper looked into factors that explain the financial performance – return on capital (ROC) and return on assets (ROA) of these PSUs. The results showed that MoUs have had a positive impact on PSU performance by increasing their return on capital (ROC). 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) had a positive impact on performance, making them ideal candidates for more aggressive disinvestment. The results also show that larger PSUs – Maharatnas appear to perform better on financial indicators than smaller PSUs and even better than private firms of similar size.

This paper shifts from using financial rates of return which was used in the previous paper (Chhibber and Gupta, 2017) to study measures of productivity in the PSUs. The paper uses value added per employee (VAE) as a measure of labour productivity. In addition it also uses value added per assets (VAA), value added per capital (VAC) as measures of efficient use of assets and capital and the turnover ratio measured by net sales to assets (NSA) as a measure of operational efficiency.

NSE and VAE have increased five-fold and four-fold respectively between 1990 and 2015 (Figure 5). On an annual average basis this translates to a 2.0% per annum for VAE against overall labour productivity growth of 5.2% for the labour force as a whole of the Indian economy. The increase in VAE was very rapid initially increasing from INR 400 per employee per hour in 1989-90 prices to INR 1600/- in 2003-04, fell sharply after that before recovering back to INR 1600/- per employee by 2014-15. Labour productivity in PSUs increased considerably slower than average labour productivity growth of around 5.2 % for the economy as a whole (including low productivity sector such as agriculture) over the same period.

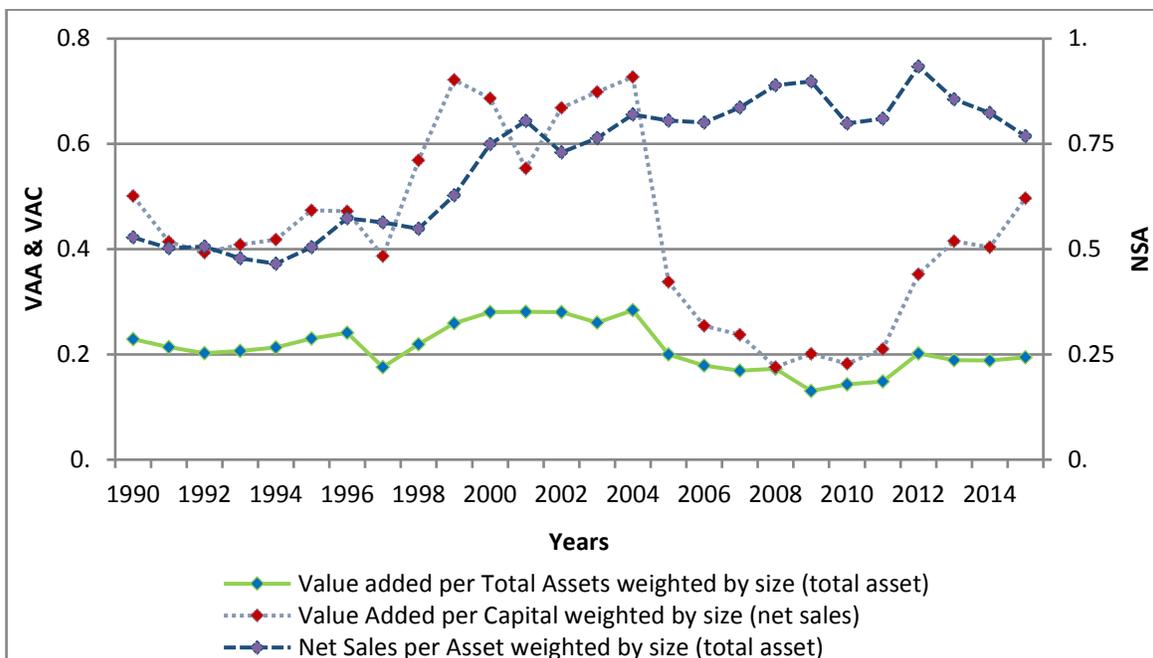
**Figure 5: Net Sales and Value Added per Employee in PSUs (1990-2015)**



Source: Public Enterprise Survey, 1989-90 to 2014-15

Value Added per asset has remained around 0.2 over the entire period 1990 to 2015 (Figure 6). It went upto 0.3 in 2003-04 but since then fell back to settle at 0.2. Value added per unit of capital has remained around 0.5 in 1990 and again at the end of the period 2015 but in between fluctuated considerably rising to 0.7 in 2003-04, falling to 0.2 in 2008-09 and then rising again after that. Net sales per asset (NSA) has increased from around 0.5 to 0.8 over the entire period 1990-2015.

**Figure 6: Value Added per Capital and per Asset and Net Sales per Asset (1990-2015)**



Source: Public Enterprise Survey, 1989-90 to 2014-15

### 3. The Model and Approach Used

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 higher competition from imports.

For a better understanding of the effect of various factors on PSU productivity performance, the paper estimates a model over the period 1990 – 2015 using panel data assembled through the Public Enterprise Surveys which each PSU is required to file every year.

The model estimated for this paper is as follows:

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

Where,

$Y_{it}$  - represents the productivity performance variable, VAE, VAA, VAC for firm 'i' at time 't'

$\alpha_G$  - represents the group effects for Type-1, Type-2 and Type-3 PSUs

$\eta_I$  - represents industry fixed effects

$X_{it}$  - represents the variables for showing before and after effect of a performance contract MOU and partial privatization (disinvestment).

$P_{it}$  - represents the preparation effects - the actions taken to qualify for an MOU and disinvestments.

$Z_{it}$  - represents the control variables

$\varepsilon_{it}$  - 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<sub>constant price</sub> - 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

$\alpha_2$  - Dummy variable that takes value 1 for Type-2 PSUs and zero otherwise

$\alpha_3$  - Dummy variable that takes value 1 for Type-3 PSUs and zero otherwise

These are included to control for selection bias as the first of these dummies measure the average difference between firms with no MoU or disinvestment and the second captures the difference between firms with MoU but no disinvestment with those that had disinvestment.

**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'.

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

$$Y_{it} = \alpha_2 + \alpha_3 + \eta_1 + \beta_1 \text{MoU}_{it} + \eta' P_{it} + \gamma' Z_{it} + \varepsilon_{it} \quad (1)$$

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.

$$Y_{it} = \alpha_3 + \eta_l + \beta_1 \text{MoU}_{it} + \eta' P_{it} + \gamma' Z_{it} + \varepsilon_{it} \quad (2)$$

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

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

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

$$Y_{it} = \eta_l + \beta_1 \text{MOU}_{it} + \eta' P_{it} + \gamma' Z_{it} + \varepsilon_{it} \quad (3)$$

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.

$$Y_{it} = \alpha_2 + \alpha_3 + \eta_l + \beta_1 \text{MoU}_{it} + \beta_2 \text{PPVT\_DUMMY}/ \text{PPVT\_SHR}_{it} + \eta' P_{it} + \gamma' Z_{it} + \varepsilon_{it} \quad (4)$$

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.

$$Y_{it} = \alpha_3 + \eta_l + \beta_1 \text{MoU}_{it} + \beta_2 \text{PPVT\_DUMMY}/ \text{PPVT\_SHR}_{it} + \eta' P_{it} + \gamma' Z_{it} + \varepsilon_{it} \quad (5)$$

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.

$$Y_{it} = \eta_i + \beta_1 \text{MOU}_{it} + \beta_2 \text{PPVT\_DUMMY} / \text{PPVT\_SHR}_{it} + \eta' P_{it} + \gamma' Z_{it} + \varepsilon_{it} \quad (6)$$

#### 4. Empirical Findings and Implications

Using the latest PSU survey data, we have estimated the equations (1), (2), and (3) for the period 1990-2015 with value added per employee (VAE) as the dependent variable.

Value Added per Employee (VAE) is often used as measure of labour productivity. Performance contracts MoU has no significant effect on VAE (Table 2a). Firm size LASSET has a significantly positive effect on VAE. Soft loans have a positive effect on labour productivity – presumably as these funds are used to buy new equipment and/or for labour training.

In contrast to performance contracts disinvestment – whether measured by privatization dummy (ppvt\_dummy) or by the private share in equity has a strong and very significantly positive effect on VAE (Table 2b & 2c). In fact when a privatization dummy is used the benefits of a decision to divest starts three years prior to the actual divestment. Firm size also has a strong positive effect on value added per employee. In the case of S3 firms export orientation has a negative effect on VAE.

The coefficients of the dummy variable  $\alpha_2$  for Type 2 firms which signed an MOU are negative but insignificant which suggests Type 1 firms have on average the same VAE compared to Type 2 firms. The coefficient for the dummy variable  $\alpha_3$ , which control for group effects of firms that had some privatization, is negative and highly significant. This shows that on average VAE is lower for Type 3 firms compared to Type 2 firms. These variables were introduced to remove selection bias.

The results for value added per employee (VAE) as a measure of labour productivity suggest that introduction of performance contracts (MoU) have no significant effect on them. However, disinvestment has a very significant and positive impact on them. This result is not so surprising as many studies find that privatization increases labour productivity, as firms retrench labour and invest in capital after privatization. In the case of Indian PSUs, retrenchment is not so easy so the result is largely due to more efficient use of labour through restructuring and also possibly due to new investment in equipment from the proceeds of the disinvestment: some of which are retained by the PSU and some passed back to the budget.

**Table 2a: Regression for Value Added per Employee (VAE) MOU Effect (1990-2015)**

Variables	Sub-Sample S1		Sub-Sample S2		Sub-Sample S3	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Intercept	-0.2258045***	-0.2223916***	-0.2585025***	-0.2460657***	-0.2363382***	-0.2247423***
mou_prep0		-0.0278763**		-0.0260053*		-0.022787
mou_prep1		-0.0133997		-0.0116697		-0.0101831
mou_prep2		-0.0262621		-0.0244716		-0.019113
mou_prep3		-0.0405593**		-0.0391663*		-0.0267375
MOU	-0.0103466	-0.0152996	-0.0101205	-0.0146697	-0.0128594	-0.0159353
SOFTLN	0.0164172	0.0168321	0.0211019*	0.0212305*	0.0257695**	0.0252534**
LASSET	0.1444896***	0.1398684***	0.1538821***	0.1490752***	0.1452213***	0.1407979***
EXINT	-0.000213	-0.0002221	-0.0051774	-0.0052701	-0.0012675	-0.0013905
DEPINT	0.0000615	0.0000753	-0.0080143	-0.0073881	-0.0067736	-0.0061886
GRGDP constant price	-0.0008827	-0.0004893	-0.0011652	-0.0007507	-0.0022307	-0.0018954
α2	-0.0131572	-0.0040889	NA	NA	NA	NA
α3	-0.13802***	-0.1220562**	-0.1279139***	-0.1211764***	NA	NA
industry effects	Included	Included	Included	Included	Included	Included
Adj. R- sqr	0.342	0.346	0.3453	0.349	0.3748	0.3786
No. of Observations	2536	2536	2401	2401	2121	2121

**Source:** Author's calculation using data from Public Enterprise Survey (1990-2015)

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

**Table 2b: Regression for Value Added per Employee (VAE) Disinvestment Effect (1990-2015)**

Variables	Sub-Sample S4		Sub-Sample S5		Sub-Sample S6	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Intercept	-0.2410661***	-0.2303463***	-0.286218***	-0.2718267***	-0.8713268***	-0.8644863***
ppvt_dummy	0.1594198***	0.2739901***	0.1567953***	0.269816***	0.0926618***	0.1735557***
ppvt_prep1		0.1890245***		0.1863496***		0.1275967***
ppvt_prep2		0.1857151***		0.1833557***		0.1234164***
ppvt_prep3		0.0734235***		0.0717535*		0.0123478
mou_prep0	-0.019572	-0.0229785	-0.0186553	-0.0219736	0.0108952	-0.0033748
mou_prep1	0.0023797	0.0003994	0.0039184	0.0020352	0.0710983	0.066326
mou_prep2	-0.015233	-0.0157661	-0.0128534	-0.013406	-0.0086199	-0.0120891
mou_prep3	-0.032179	-0.0274962	-0.030239	-0.0256122	-0.0845523	-0.0612194
MOU	-0.0140878	-0.0149253	-0.0137239	-0.0144676	-0.0016068	-0.0044511
SOFTLN	0.0138858	0.0137378	0.0182893	0.0181099	-0.0283872	-0.0309465
LASSET	0.161761***	0.1563224***	0.1725626***	0.1669571***	0.3551607***	0.3327858***
EXINT	-0.0003078	-0.0002872	-0.0108614*	-0.009557	-0.2291217***	-0.206119***
DEPINT	-0.0002997	-0.0002538	-0.0009594	-0.0008678	0.0002163	0.0002107
GRGDP constant price	-0.0020222	-0.002253	-0.0024062	-0.0026422*	-0.0054282	-0.0060932
α2	-0.0224055	-0.0191119	NA	NA	NA	NA
α3	-0.2238862***	-0.3130697***	-0.2024044***	-0.2930852***	NA	NA
industry effects	Included	Included	Included	Included	Included	Included
Adj. R- sqr	0.3542	0.3507	0.355	0.3519	0.3898	0.386
No. of Observations	3044	3044	2909	2909	826	826

**Source:** Author's calculation using data from Public Enterprise Survey (1990-2015)

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

**Table 2c: Regression for Value Added per Employee (VAE) Private Equity Effect (1990-2015)**

Variables	Sub-Sample S4		Sub-Sample S5		Sub-Sample S6	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Intercept	-0.2291219***	-0.2270638***	-0.2809798***	-0.2787635***	-0.7803***	-0.7466797***
ppvt_shr	0.4819101***	0.5057038***	0.4814733***	0.5066897***	0.4047398***	0.4886218***
ppvt_prep1		0.0360848		0.0368605		0.0556799
ppvt_prep2		0.0372015		0.0380235		0.059116
ppvt_prep3		-0.0426033		-0.0419697		-0.0443217
mou_prep0	-0.0275489*	-0.0304743**	-0.0264404*	-0.0293759*	-0.0150768	-0.0368187
mou_prep1	-0.0074839	-0.0084549	-0.0057297	-0.0067089	0.0299319	0.0157313
mou_prep2	-0.0255762	-0.0270358	-0.0231265	-0.0245941	-0.0605596	-0.0824371
mou_prep3	-0.0360797	-0.0358677	-0.0341664	-0.0339175	-0.1120478	-0.1093088
MOU	-0.0187982	-0.0193988	-0.0182247	-0.0188196	-0.0140436	-0.0198361
SOFTLN	0.0133763	0.0123373	0.0168880	0.0157818	-0.0283479	-0.0322337
LASSET	0.1588993***	0.1581833***	0.1689318***	0.1682546***	0.3295223***	0.3148682***
EXINT	-0.0003197	-0.0003205	-0.0118556*	-0.0117549*	-0.2336744***	-0.2245043***
DEPINT	-0.0001433	-0.0001116	-0.0006297	-0.0005641	0.0002479	0.0002953
GRGDP constant price	-0.0020436	-0.0020895	-0.0023879	-0.0024376	0.0003644	-0.0057559
$\alpha_2$	-0.0306418	-0.030413	NA	NA	NA	NA
$\alpha_3$	-0.1445915***	-0.1475657***	-0.115329***	-0.1186918***	NA	NA
industry effects	Included	Included	Included	Included	Included	Included
Adj. R- sqr	0.3692	0.3689	0.3686	0.3682	0.4049	0.4076
No. of Observations	3037	3037	2903	2903	826	826

**Source:** Author's calculation using data from Public Enterprise Survey (1990-2015)

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

Having established that privatization improves labour productivity, we turn next to value added per capital VAC (a measure of productive use of capital) and value added per assets VAA (a measure of productive use of assets – which include land and other assets).

Table 3a shows that performance contracts MOU have no positive impact on value added per unit of capital (VAC). Disinvestment as measured by privatization dummy in Table 3b & 3c has a very significant and positive impact on VAC, especially once the privatization preparation dummies are also introduced. But when private equity share is used as the disinvestment variable it has no significant effect on VAC.

**Table 3a: Regression for Value Added per Capital (VAC) MOU Effect (1990-2015)**

Variables	Sub-Sample S1		Sub-Sample S2		Sub-Sample S3	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Intercept	0.1696551*	0.1681746*	0.2940761***	0.2929685***	0.3002602***	0.2962975***
mou_prep0		-0.0037613		-0.0026975		0.0033147
mou_prep1		0.0033147		0.0029524		0.0104903
mou_prep2		0.0154563		0.0147798		0.024276
mou_prep3		-0.0516154*		-0.0523843*		-0.0485762
MOU	-0.0127381	-0.0132915	-0.0128295	-0.0133533	-0.0128998	-0.0122389
SOFTLN	0.0074943	0.0082519	0.0060238	0.0068344	0.0028195	0.0034297
LASSET	0.0283787**	0.0284637**	0.0271776**	0.0272151**	0.024462*	0.0254699*
EXINT	-0.0002233	-0.0002255	-0.0001624	-0.0001643	-0.0001616	-0.00016
DEPINT	-0.0012406	-0.0012429	-0.0128936	-0.0129855	-0.0121612	-0.0124492
GRGDP constant price	-0.0059252***	-0.0057353***	-0.0056466**	-0.005431**	-0.0064354***	-0.0062863**
α2	0.1235755*	0.1240748*	NA	NA	NA	NA
α3	0.2710186***	0.2711567***	0.1544437***	0.1541158***	NA	NA
industry effects	Included	Included	Included	Included	Included	Included
Adj. R- sqr	0.1156	0.1159	0.1054	0.1058	0.1265	0.1271
No. of Observations	2568	2568	2427	2427	2118	2118

**Source:** Author's calculation using data from Public Enterprise Survey (1990-2015)

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

**Table 3b: Regression for Value Added per Capital (VAC) Disinvestment Effect (1990-2015)**

Variables	Sub-Sample S4		Sub-Sample S5		Sub-Sample S6	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Intercept	0.2376224***	0.2423529***	0.4134831***	0.4200107***	0.8559085***	0.8603492***
ppvt_dummy	0.0308124	0.0755507**	0.0307148	0.074858**	0.0622297**	0.1099457***
ppvt_prep1		0.0841775*		0.0833077*		0.0896645**
ppvt_prep2		0.0897114**		0.0884838**		0.0856125**
ppvt_prep3		-0.0154792		-0.0163902		-0.0252378
mou_prep0	-0.006373	-0.008942	-0.0066344	-0.0091981	-0.0402375	-0.0536965
mou_prep1	-0.0003795	-0.0007656	-0.0008993	-0.0012755	-0.0543675	-0.0565279
mou_prep2	0.00352	0.0030238	0.0031117	0.0026169	-0.1241481	-0.1273287*
mou_prep3	-0.0577806*	-0.0556911*	-0.0580139*	-0.0559515	-0.1109501	-0.0935009
MOU	-0.0157053	-0.0158019	-0.0159319	-0.0160309	-0.0518427	-0.0539618
SOFTLN	-0.0107062	-0.0100621	-0.0143004	-0.0136296	-0.0239393	-0.021393
LASSET	-0.0158306	-0.0179637	-0.0188504	-0.0210102*	-0.1127556***	-0.1247056***
EXINT	-0.0002636	-0.0002649	-0.000266	-0.0002675	-0.2777707***	-0.2623968***
DEPINT	-0.0012329	-0.0012008	-0.0016217	-0.0015605	-0.0018209	-0.0018118
GRGDP constant price	-0.007601***	-0.0078021***	-0.0074548***	-0.00766***	-0.0096395**	-0.0103441***
α2	0.1698472***	0.1715388***	NA	NA	NA	NA
α3	0.2819899***	0.2472693***	0.1152893**	0.0793587	NA	NA
industry effects	Included	Included	Included	Included	Included	Included
Adj. R- sqr	0.134	0.1359	0.1232	0.1249	0.2966	0.2989
No. of Observations	3104	3104	2963	2963	889	889

**Source:** Author's calculation using data from Public Enterprise Survey (1990-2015)

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

MoUs have a negative effect on value added per assets (VAA) (Table 4a). Firm size LASSET and GDP growth also have a surprising negative effect on VAA. Larger firms have higher labour productivity – presumably since they use more capital but have lower value added per asset.

Disinvestment on the other hand has a very positive effect on VAA whether we measure disinvestment by a dummy variable for the year of disinvestment (ppvt\_dummy) or whether we measure it by the share of private equity in total equity (ppvt\_shr). The positive effect of disinvestment starts at least two years prior to the actual disinvestment as the variable ppvt\_prior are positive and significant two years before the actual disinvestment. In this latter case the effect of performance contract MOU remains negative. Firm size and the capital intensity of the firm measured by the share of depreciation in total assets are also negative.

Bigger firms were seen to have higher returns on capital (ROC) and returns on assets (ROA) in our earlier paper (Chhibber and Gupta, 2017). Bigger firms also have higher labour productivity measured by VAE and NSPE. But on value added per asset (VAA), size has a negative effect, so bigger firms have lower value added per asset, the efficiency variable, although they have higher financial profitability measured by ROC or ROA.

**Table 3c: Regression for Value Added per Capital (VAC) Private Equity Effect (1990-2015)**

Variables	Sub-Sample S4		Sub-Sample S5		Sub-Sample S6	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Intercept	0.2498616***	0.2514431***	0.4388936***	0.4404136***	0.7696668***	0.7764581***
ppvt_shr	-0.1172725	-0.1099987	-0.1113951	-0.1041454	-0.0901177	-0.0807926
ppvt_prep1		0.0154597		0.0157762		0.0113205
ppvt_prep2		0.0225189		0.0224531		0.0132735
ppvt_prep3		-0.063712		-0.0639547		-0.0784216
mou_prep0	-0.017343	-0.019261	-0.0175515	-0.0194822	-0.0642439	-0.0695861
mou_prep1	-0.0093783	-0.0090615	-0.0097787	-0.0094651	-0.0773891	-0.0703042
mou_prep2	-0.0020394	-0.0030186	-0.0024968	-0.0034763	-0.1439003*	-0.1470565*
mou_prep3	-0.0604468*	-0.0604699*	-0.0606239*	-0.060649*	-0.1188389	-0.1174509
MOU	-0.0262288	-0.0259134	-0.0264213	-0.0261161	-0.0688614*	-0.0646987
SOFTLN	-0.0166632	-0.0171762	-0.0205068	-0.0210318	-0.0403302	-0.0438438
LASSET	-0.0143203	-0.0143711	-0.0176559	-0.0177116	-0.0679489**	-0.066495**
EXINT	-0.0006039	-0.0006049	-0.0006948	-0.000696	-0.2849175***	-0.2834066***
DEPINT	-0.0012204	-0.0012021	-0.0016079	-0.0015715	-0.0016327	-0.0016212
GRGDP constant price	-0.0078698***	-0.0079771***	-0.0077788***	-0.0078896***	-0.0102562***	-0.0106921***
$\alpha_2$	0.1818865***	0.1817683***	NA	NA	NA	NA
$\alpha_3$	0.2951396***	0.2944019***	0.1156574**	0.1150371**	NA	NA
industry effects	Included	Included	Included	Included	Included	Included
Adj. R- sqr	0.134	0.135	0.1236	0.1246	0.3022	0.3048
No. of Observations	3062	3062	2923	2923	889	889

**Source:** Author's calculation using data from Public Enterprise Survey (1990-2015)

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

**Table 4a: Regression for Value Added per Asset (VAA) MOU Effect (1990-2015)**

Variables	Sub-Sample S1		Sub-Sample S2		Sub-Sample S3	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Intercept	0.0936028	0.0952819	0.2574034***	0.2659574***	0.2581818***	0.262715***
mou_prep0		-0.0175408		-0.0176365		-0.0121414
mou_prep1		-0.0146687		-0.0154325		-0.008323
mou_prep2		-0.0226129		-0.0238348		-0.0145553
mou_prep3		-0.0432859*		-0.0445908**		-0.0353317
MOU	-0.0211249	-0.0253886*	-0.020817	-0.0252154*	-0.0226571	-0.0252766
SOFTLN	0.0112711	0.0121075	0.0047442	0.0055124	0.0147281	0.0151082
LASSET	-0.0337779***	-0.0369017***	-0.0373183***	-0.0408755***	-0.0344595***	-0.0364265***
EXINT	-0.0001944	-0.0002032	-0.0001151	-0.0001242	-0.0001125	-0.0001186
DEPINT	-0.0006203	-0.0006199	-0.0143479	-0.0143934	-0.0138563	-0.0139164
GRGDP constant price	-0.0065352***	-0.0061493***	-0.0058853***	-0.0054484***	-0.0070295***	-0.0066907***
$\alpha_2$	0.1598485***	0.1660002***	NA	NA	NA	NA
$\alpha_3$	0.2957047***	0.3059543***	0.1492176***	0.1536461***	NA	NA
industry effects	Included	Included	Included	Included	Included	Included
Adj. R- sqr	0.1726	0.1721	0.1598	0.159	0.1798	0.1794
No. of Observations	2677	2677	2540	2540	2240	2240

**Source:** Author's calculation using data from Public Enterprise Survey (1990-2015)

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

**Table 4b: Regression for Value Added per Asset (VAA) Disinvestment Effect (1990-2015)**

Variables	Sub-Sample S4		Sub-Sample S5		Sub-Sample S6	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Intercept	0.1302193**	0.1355729**	0.3229232***	0.3306753***	0.547848***	0.547375***
ppvt_dummy	0.0364425***	0.1026553***	0.0372656**	0.10265***	0.0582224***	0.1334707***
ppvt_prep1		0.1184834***		0.1172944***		0.1262605***
ppvt_prep2		0.1109643***		0.1090175***		0.1123936***
ppvt_prep3		0.056133		0.0554201		0.0534209
mou_prep0	-0.0140366	-0.016015	-0.0143358	-0.0162856	-0.0181689	-0.0302529
mou_prep1	-0.0115423	-0.0128845	-0.0123172	-0.0136472	-0.0222858	-0.0314619
mou_prep2	-0.024386	-0.0241876	-0.024951	-0.0247419	-0.0840862	-0.0826154
mou_prep3	-0.043374*	-0.0403814*	-0.0440091**	-0.0410532*	-0.099198	-0.0723331
MOU	-0.0225206	-0.0233803	-0.0224855	-0.0233556	-0.0246282	-0.0311409
SOFTLN	0.0011931	0.0026271	-0.0049472	-0.0035431	-0.0249063	-0.0165305
LASSET	-0.057936***	-0.0610423***	-0.0623323***	-0.0655174***	-0.1051901***	-0.1260956***
EXINT	-0.0002051	-0.0002067	-0.0001852	-0.0001871	-0.1551243***	-0.1323275***
DEPINT	-0.0032213***	-0.0031857***	-0.0062682***	-0.0062065***	-0.0062254***	-0.0062509***
GRGDP constant price	-0.0070121***	-0.0071642***	-0.006522***	-0.0066718***	-0.0072779***	-0.0077778***
$\alpha_2$	0.1860889***	0.1883246***	NA	NA	NA	NA
$\alpha_3$	0.2885252***	0.236355***	0.1152371***	0.0615614*	NA	NA
industry effects	Included	Included	Included	Included	Included	Included
Adj. R- sqr	0.188	0.1909	0.1666	0.1692	0.2889	0.2966
No. of Observations	3216	3216	3079	3079	891	891

**Source:** Author's calculation using data from Public Enterprise Survey (1990-2015)

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

**Table 4c: Regression for Value Added per Asset (VAA) Private Equity Effect (1990-2015)**

Variables	Sub-Sample S4		Sub-Sample S5		Sub-Sample S6	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Intercept	0.1447084**	0.1456418**	0.345059***	0.3453838***	0.542859***	0.547195***
ppvt_shr	0.0641623	0.101087*	0.070399	0.1074417**	0.1158683	0.1805307**
ppvt_prep1		0.0528313*		0.0523872*		0.0559589**
ppvt_prep2		0.0450971		0.0438982		0.0473373*
ppvt_prep3		0.0058589		0.0055349		0.0001588
mou_prep0	-0.0206096	-0.0237299	-0.0209546	-0.0240064	-0.0357061	-0.0517509
mou_prep1	-0.0105858	-0.0129954	-0.0114421	-0.0138001	-0.0448145	-0.0591699
mou_prep2	-0.0212065	-0.022768	-0.021972	-0.0235043	-0.1079723**	-0.1211985**
mou_prep3	-0.0445613*	-0.044073*	-0.0452137	-0.0447388**	-0.1105816	-0.1069119
MOU	-0.0286192**	-0.0304762**	-0.0286174**	-0.0304408**	-0.0351891	-0.0431302
SOFTLN	-0.0005734	-0.0009167	-0.0070470	-0.0074458	-0.0305259	-0.0311
LASSET	-0.0608828***	-0.0609205***	-0.0656539***	-0.0657862***	-0.0952227***	-0.1002045***
EXINT	-0.000612*	-0.0006132*	-0.0006631*	-0.0006645*	-0.1613791***	-0.1551633***
DEPINT	-0.0031999***	-0.0031547***	-0.0062303***	-0.0061448***	-0.0061107***	-0.0060583***
GRGDP constant price	-0.0073797***	-0.0074278***	-0.0069162***	-0.0069596***	-0.0076605***	-0.0081229***
$\alpha_2$	0.1926512***	0.1918575***	NA	NA	NA	NA
$\alpha_3$	0.300978***	0.2934732***	0.1216123***	0.1151829***	NA	NA
industry effects	Included	Included	Included	Included	Included	Included
Adj. R- sqr	0.2011	0.2039	0.1795	0.1823	0.2959	0.3037
No. of Observations	3170	3170	3035	3035	891	891

**Source:** Author's calculation using data from Public Enterprise Survey (1990-2015)

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

The coefficients of the dummy variable  $\alpha_2$  for Type 2 firms which signed an MoU are positive which suggests Type 1 firms have on average lower VAA compared to Type 2 firms. The coefficient for the dummy variable  $\alpha_3$ , which control for group effects of firms that had some privatisation is also positive and highly significant. This shows that on average VAA is higher for Type 3 firms compared to Type 2 firms. These variables were introduced to remove selection bias.

Finally, we also analyze net sales per asset (NSA) as a measure of efficiency of the firm. The results in Tables 5a, 5b and 5c show that MOU has no effect on performance. But disinvestment has a very positive effect on firm efficiency. Larger firms are less efficient as the coefficient of size is negative and significant. Greater export orientation has a negative effect on NSA and more capital intensity has a negative effect which we measure by the share of depreciation. We also see that GDP growth has a positive impact on NSA which is to be expected as demand for products rises in a faster growing economy.

**Table 5a: Regression Net Sales per Asset (NSA) MOU Effect (1990-2015)**

Variables	Sub-Sample S1		Sub-Sample S2		Sub-Sample S3	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Intercept	0.4700819**	0.4764372**	0.6324914***	0.6665434***	0.6491935***	0.6705172***
mou_prep0		-0.0431966		-0.0329884		-0.012731
mou_prep1		-0.0754307*		-0.077043**		-0.0608721
mou_prep2		-0.1468405***		-0.1505047***		-0.1270821**
mou_prep3		-0.1872663***		-0.1938496***		-0.1758239***
MOU	-0.0154951	-0.0336814	-0.0152651	-0.0328552	-0.0074218	-0.0205991
SOFTLN	-0.0151677	-0.0139235	-0.0175496	-0.016667	-0.0157277	-0.0155974
LASSET	-0.0699272***	-0.0859553***	-0.0860077***	-0.1024329***	-0.0781492***	-0.0901201***
EXINT	-0.0013926***	-0.0014349***	-0.0008478**	-0.0008926**	-0.0008474**	-0.0008813**
DEPINT	-0.0047206	-0.0047437	-0.096514***	-0.0961587***	-0.0952264***	-0.095411***
GRGDP constant price	0.0076986**	0.009818**	0.0104364***	0.0128012***	0.0081973*	0.0105413**
α2	0.1393024	0.1684783	NA	NA	NA	NA
α3	0.3316639**	0.3780871**	0.2089087**	0.2254308**	NA	NA
industry effects	Included	Included	Included	Included	Included	Included
Adj. R- sqr	0.2708	0.2744	0.2937	0.2976	0.2805	0.2835
No. of Observations	2696	2696	2550	2550	2241	2241

**Source:** Author's calculation using data from Public Enterprise Survey (1990-2015)

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

**Table 5b : Regression Net Sales per Asset (NSA) Disinvestment Effect (1990-2015)**

Variables	Sub-Sample S4		Sub-Sample S5		Sub-Sample S6	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Intercept	0.4620753**	0.4693645**	0.6208374***	0.631205***	0.5112547	0.5037802
ppvt_dummy	0.1290758***	0.2191388***	0.1338202***	0.2242002***	0.0869655**	0.1778847***
ppvt_prep1		0.113963		0.1152548		0.0997122
ppvt_prep2		0.1874123**		0.1869379**		0.1833993***
ppvt_prep3		0.0980761		0.100593		0.069289
mou_prep0	-0.0272051	-0.030045	-0.0274425	-0.0302456	-0.0355586	-0.0525644
mou_prep1	-0.0563963	-0.0590297	-0.059096	-0.0617543	-0.030556	-0.0456736
mou_prep2	-0.1425298***	-0.1435577***	-0.1450906***	-0.1460657***	-0.2656374**	-0.2788926***
mou_prep3	-0.1848095***	-0.1807506***	-0.1879647***	-0.1838707***	-0.3231676**	-0.2893631**
MOU	-0.0276678	-0.0272376	-0.0280505	-0.0276732	-0.0390891	-0.0389229
SOFTLN	-0.0151438	-0.0146884	-0.0173724	-0.0169217	-0.1769657***	-0.1622062***
LASSET	-0.0654842***	-0.0695947***	-0.077581***	-0.081738***	-0.0409528	-0.0626605
EXINT	-0.0014151***	-0.0014175***	-0.0013538***	-0.0013566***	0.0239358	0.0535768
DEPINT	-0.0057814***	-0.005733***	-0.010057***	-0.0099642***	-0.0062832**	-0.0063046**
GRGDP constant price	0.0086693**	0.008416**	0.0104853***	0.0102284***	0.0071721	0.0062224
α2	0.1419706	0.1449833	NA	NA	NA	NA
α3	0.3028812*	0.2314704	0.1760326*	0.1011627	NA	NA
industry effects	Included	Included	Included	Included	Included	Included
Adj. R- sqr	0.3492	0.3505	0.3631	0.3644	0.7074	0.7093
No. of Observations	3228	3228	3082	3082	893	893

**Source:** Author's calculation using data from Public Enterprise Survey (1990-2015)

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

**Table 5c: Regression Net Sales per Asset (NSA) Private Equity Effect (1990-2015)**

Variables	Sub-Sample S4		Sub-Sample S5		Sub-Sample S6	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Intercept	0.5442003***	0.54436***	0.7469765***	0.7462294***	0.557172	0.559231
ppvt_shr	0.4228285***	0.4543925***	0.4257005***	0.4544601***	0.2635199***	0.3306599**
ppvt_prep1		0.0003674		-0.0022132		0.0122526
ppvt_prep2		0.0742417		0.0699556		0.1034338*
ppvt_prep3		0.0070396		0.006677		0.0014073
mou_prep0	-0.0564793*	-0.0593951*	-0.0571779*	-0.0598536*	-0.0624600	-0.0854449
mou_prep1	-0.0664741*	-0.0689744**	-0.0698011**	-0.0721105**	-0.068017	-0.0902385
mou_prep2	-0.1478261***	-0.1506089***	-0.1509447***	-0.1535698***	-0.3078012***	-0.3412084***
mou_prep3	-0.1725013***	-0.1721324***	-0.1757379***	-0.1753921***	-0.3463651**	-0.3445991**
MOU	-0.0527834	-0.0525871	-0.0535846	-0.0532893	-0.0548119	-0.0572858
SOFTLN	-0.0135	-0.0133761	-0.0159885	-0.0158666	-0.1799605***	-0.1775295***
LASSET	-0.096988***	-0.0965476***	-0.109592***	-0.1091493***	-0.0478421	-0.051246
EXINT	-0.0011203	-0.0011213	-0.0007479	-0.0007492	0.0159920	0.0249515
DEPINT	-0.0056106***	-0.0055729***	-0.0097267***	-0.0096609***	-0.0062141**	-0.0061569**
GRGDP constant price	0.0071081**	0.0070029**	0.0089624***	0.008861***	0.0067613	0.0059015
α2	0.1853393	0.1844862	NA	NA	NA	NA
α3	0.3241705**	0.3174403**	0.1567298	0.1514245	NA	NA
industry effects	Included	Included	Included	Included	Included	Included
Adj. R- sqr	0.3952	0.3959	0.4089	0.4095	0.7111	0.7128
No. of Observations	3181	3181	3038	3038	893	893

**Source:** Author's calculation using data from Public Enterprise Survey (1990-2015)

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

## 5. Conclusions

In this paper, the focus is on policy variables and factors affecting the efficiency and productivity of India's PSUs using various measures of value added. In our earlier paper, (Chhibber and Gupta, 2017) in which the focus was on financial rates of return, both performance contracts and disinvestment were seen to be important policy variables. In this paper, value added per employee is used as a measure of labour productivity and value added per capital and value added per asset to measure productive use of capital and assets. The model used ensures correction for self-selection. The results show that MoU – performance contracts – have no positive and sometimes negative effect on performance. On the other hand, disinvestment measured by a privatization dummy in the year of disinvestment and the share of private equity has a very positive effect on these productivity measures.

The results provide very clear support for disinvestment as opposed to use of performance contracts to improve the performance of PSUs. Even if the objective of disinvestment is to raise revenue for the budget rather than a tool for improving performance of the PSU, the paper shows that it does improve both labour productivity and capital/asset productivity. Using disinvestment proceeds to finance the recurrent budget is a questionable practice. Instead disinvestment proceeds should be allocated to the recently created National Infrastructure Strategic Fund (NISF), which can then be used to finance infrastructure projects.

Larger PSUs – the so called 7 Maharatnas and 17 Navratnas were considered better performers but their value added per asset and net sales per asset are significantly lower than even the smaller PSUs. They have higher labour productivity but that simply comes from greater capital intensity in these large PSUs. For these firms the government needs to prepare a strategic plan and decide if they can become world class companies. For those that cannot should also be privatized to extract better value for assets.

In any case the paper shows that a bolder roadmap for gradually getting the government out of the business of business, 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? The recent decision to sell Air India is one such bold decision. The argument, that Air India is profitable and is only in trouble because of past debt, is not relevant, as the issue is not profitability but efficient and productive use of assets.

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 efficiency. 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.

So far India has no clear strategy in dealing with PSUs – it has followed a case by case approach – although more recently with the decision to privatize Air India it appears that the government is getting more serious about privatization. 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.

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