

Title	To profit or not to profit? the case of state level public sector enterprises in India
Sub Title	
Author	Jain, Ritika
Publisher	Keio Economic Society, Keio University
Publication year	2017
Jtitle	Keio economic studies Vol.53, (2017. ) ,p.53- 70
JaLC DOI	
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Notes	
Genre	Journal Article
URL	<a href="https://koara.lib.keio.ac.jp/xoonips/modules/xoonips/detail.php?koara_id=AA00260492-20170000-0053">https://koara.lib.keio.ac.jp/xoonips/modules/xoonips/detail.php?koara_id=AA00260492-20170000-0053</a>

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## TO PROFIT OR NOT TO PROFIT? THE CASE OF STATE LEVEL PUBLIC SECTOR ENTERPRISES IN INDIA

Ritika JAIN

*Centre for Development Studies, P.O. Medical College, Kerala, India*

*First version received March 2018; final version accepted May 2018*

**Abstract:** Given the wide social ambit of state owned enterprises, operational inefficiencies may lead to forgoing profits. The current study examines profitability of state owned enterprises in India from 2007 to 2009 from a political economy perspective. The paper finds that profitability of an enterprise is driven by how right wing the state (where the enterprise is located) is. Additionally, if the state where the enterprise is located is politically aligned with the Central government, the enterprise earns higher profit. Finally, the effect of state subsidies on profits of enterprises reduces in the period just before state level elections.

**Key words:** State owned enterprises, political economy, propensity score matching.

**JEL Classification Number:** D220, L21, L32.

### 1. INTRODUCTION

State owned enterprises (SOEs) are seen as important instruments of social and economic policy in industrialized mixed economies and in developing economies (Aharoni, 1981). Aharoni (1981) further discusses the two contradictory objectives that these enterprises aspire for. Firstly, being publicly owned, these enterprises have a wide set of objectives to be met- ranging from providing employment to the masses, investing in projects that demand long gestation periods and maintaining a low price for certain products. Secondly, since these enterprises are economic units these enterprises have certain economic goals as well. However, with focus heavily inclined towards welfare generation, these enterprises may move away from the narrow paradigm of economic goals such as profit targeting.

Profit, on the other hand is a conventional objective that most firms (private) aspire for. Profit is the key for innovation, investment and attracting top managers. If SOEs choose to maximize profits, innovation and investment may lead to more *efficient* performance. However, by focusing solely on profits, SOEs may fail to meet all aspects of

*Acknowledgments.* The study has been presented at Economic Theory and Policy Conference on February 22-23, 2018, Centre for Development Studies, Trivandrum, India.

E-mail: ritika@cds.ac.in

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the multidimensional objective function. This implies there is a tradeoff between economic and social objectives for an SOE choosing between profits and social welfare. The current study builds against this background.

The aim of the current study is not to contest if the SOEs must maximize profits or social welfare. In fact, recognizing the broader role that SOEs cater to, the study aims to examine the profitability of such enterprises. Meeting social objectives may/ may not imply complete profit ignorance. The moot question that arises is how profitable are these enterprises. In other words, what are the factors that drive profits of these enterprises? Besides firm specific factors, the study highlights the role of political and economic environment (in which SOEs operate) in shaping profitability. Profits is an important criteria even for SOEs because subsidy amount, RATNA status and other important policy decisions are related to profits.

The study draws data on SOEs owned by the state governments of India, better known as the state level public sector enterprises (SLPEs). The prime focus of this study is on SLPEs for two reasons. In general, the issue of profitability is an interesting one in the context of state owned enterprises as compared to private enterprises. Private and state owned enterprises are very different in structure and objectives. Most private enterprises aim to maximize profits. So capturing performance of private enterprises using profit as a measure is an appropriate approach. By contrast, state owned enterprises are owned by the government, and hence have a dual role- social and economic. The social role stems from the state's objective being inclined towards welfare generation. However, the entrepreneurial role by acting as an enterprise in the manufacturing sector, these enterprises act as business units as well. This dual (social and economic) role has two opposing effects on profits of these enterprises- while social objectives may hamper profitability, the entrepreneurial role may enhance it. Using profits as a yardstick to measure performance of state owned enterprises may be misleading. The current study deviates from measuring performance of SLPEs in India. Instead, it aims to examine the profitability aspect against the dual objectives of these enterprises.

Further, the study focuses only on the enterprises owned by the various state governments of India. It does not consider enterprises that are owned by the Centre, called Central public sector enterprises (CPSEs). This is mainly due to the difference in ownership and regulation of the CPSEs and SLPEs. The CPSEs are owned by the Central government of India whereas the SLPEs are owned by the respective state governments. The jurisdiction of CPSEs comes under the Department of Public Enterprises which is monitored by the Ministry of Heavy Industry and Public Enterprises. The jurisdiction of SLPEs lies with the respective state ministries. Further, the issue of profitability of CPSEs and SLPEs cannot be compared because CPSEs have a variety of policy tools that can be used to enhance profits. Some of these policies include disinvestment, memorandum of understanding, ratna status and stock market listing. In contrast, SLPE policies are designed by the various state ministries. In fact, SLPEs are yet to adopt the aforementioned policies. Thus, the two sets of enterprises cannot be analysed in a single framework. The current study aims to contribute to the scarce literature of SLPEs in India.



The scanty literature of SLPEs in India is mainly attributed to the lack of data. The current study uses a data set compiled from the Public Enterprise Survey, Elections Commission of India, Prowess, other government departments and past studies. The financial data has been hand collected for SLPEs owned by various state governments of India for the period 2007 to 2009 from the department of public enterprises (DPE) website. The political and economic factors that shape the business environment is collated. The study uses fixed effects regression to identify the determinants of profitability of SLPEs. As a next step, propensity score matching is used to compare profitability of enterprises between states on the basis of three political factors- ideology of the state, political alignment between the centre and the state (a dummy variable that takes the value 1 if the enterprise is located in the state that is run by the same party running the Centre) and state ideology.

The results of the fixed effects regressions suggest that it is a combination of firm specific and external factors that drive profitability. With respect to firm specific factors, SLPEs that are smaller in size, less loan-burdened and with high capital employed lead to higher profits. Political variables, the key variables of the current study have a significant role to play in the profitability of these enterprises. It is seen that SLPEs that are operating in states that are comparatively right leaning have higher profitability. Further, profits of enterprises in states aligned with the Centre are higher than enterprises located in states with different parties. Finally, profits of SLPEs is higher if the state government is in the last two years of its term.

Further, to test the amalgamation of politics in economic issues, the study examines an interaction of subsidies to these enterprises with political variables. It is seen that the effect of subsidies on profitability is strongly conditioned by political variables. Finally, a host of state level economic factors influence profits of SLPEs. The results from propensity score matching method is also in line with the regression results.

## 2. REVIEW OF LITERATURE

We divide the review of literature in to three strands. The first one focuses on international studies that examine profits of public sector enterprises. Lin and Rowe (2006) examine the determinants of profitability of China's local state enterprises and find that investment share by non-state enterprises contribute positively to profits of these enterprises. In contrast, unhealthy or bad assets contribute negatively to profits. Xu and Gui (2016) empirically establish that high profits of Chinese SOEs in recent years is a result of distorted economic policies such as financial repression. Estrin and Rosevear (1999) investigate the relationship between ownership and performance for a random sample of 150 firms in Ukraine. Among other measures, the study uses firm profit as an important measure of firm performance. The study asserts that profitability is better in private enterprises as compared to state owned enterprises. Omran (2004) studies the performance of 54 newly privatized Egyptian firms after accounting for the performance of control firms in the pre-privatization period over 1994-98. Using matching techniques, the study iterates that there is no significant improvement in the enterprises

selected for privatization. Trebat (1983) discusses that in the 1960s and 1970s the state had taken the role of an entrepreneur to foster faster growth and development. It was the advantage of the ability to assemble large capital, attract skilled managers and earn reasonable profits by the state that helped Brazil progress.

The next strand of literature that the study focuses on is related to the Indian state owned enterprises owned by the Central government of India. These enterprises, referred to as the central public sector enterprises, have been heavily studied upon by many researchers. The most important issue to be addressed in the context of CPSEs is the efficacy of disinvestment policy in improving the performance of these enterprises. Many researchers such as Ahuja and Majumdar (1998), Majumdar (1998), and Gupta (2005) have examined profitability of these enterprises. Most of these results find that disinvestment has had a modest positive effect on firm profitability due to the monitoring role of the stock market and regulatory requirements of the Stock Exchange Board of India (SEBI).

However, there are not many studies focusing on SLPEs. This is mainly due to lack of data. Most studies have analysed the performance of SLPEs for particular states. Naidu (2005) analyses the sectoral performance of SLPEs in Andhra Pradesh for the period 1998–99 to 2004–05. The study asserts the need for better financial restructuring, careful review of capital expenditure, timely implementation of projects and accountability for better SLPE performance. Jacob (2005) analyzes industrial disputes in Kerala for all SLPEs, by focusing on the causes of disputes, grievance redressal arrangements and more importantly, the political affiliation of workers and unions. The study emphasizes the role of management attitude to success of labor management participation schemes. Kareem (2011) discuss the relevance of planning in the performance of SLPEs in Kerala from 2008–2011. The study stipulates that a change in the state government in 2006 brought about a significant transformation of policies for the revival of SLPEs. Out of the 44 SLPEs, only 12 were making profits in 2005–06. This rose to 32 (out of 37 due to mergers and take overs) in 2009–10. Jhavar (2010) analyses various aspects of industrial sickness and restructuring of SLPEs in Karnataka. The study emphasizes on the role of intelligent strategies and initiatives, dynamic leadership and sustained effort for successful restructuring. De (2014) analyses the performance of SLPEs in West Bengal for the period 2004–05 to 2010–11 and finds that the number of loss making SLPEs outweighed the number of profit making ones throughout the period of analysis. The study stresses the need for better management, professionalism and accountability for improving SLPE performance.

Although limited, some studies have focused on the performance of all SLPEs in India. Nagaraj (1991) documents the long term trends in the performance of public sector from 1960–61 to 1989–90. The study combines central and state level public sector enterprises as the Non Departmental Enterprises (NDE). The study asserts on the reversal in the eighties of the poor performance recorded by the public sector (including the NDE) in the sixties and seventies. Sankar et al (1990) investigate the factors that influence positive rate of return in SLPEs. Segregating firms according to the industry structure, the study iterates the positive association of profitability with risk. It



concludes that electrical industries experience high risk and hence demand technology upgradation and competitive market prices for profits. Similarly, low profitable industries as cement, sugar and textile have a higher scope of consistent performance. Sankar et al (1989) record the poor financial and managerial performance of SLPEs in India since the fifties and suggest remedial measures. They discuss a three stage action plan-improving operational aspects in the short run, restructuring organizational setup in the medium run and improvement of strategic management in the long run. Mishra and Kiranmai (2006) provide an overview of the performance of SLPEs between 1991–92 and 2002–03. The study reports that "...instead of earning a 10 per cent rate of return, these enterprises registered a compound annual growth of 17.36 per cent in their net losses." The study emphasized on the need for disinvestment and privatization as fiscal pressures for accelerating the performance.

The current study attempts to contribute to the last strand of literature. The novel feature that the study recognizes and controls for is the importance of external factors in shaping firm performance. Specifically, the study aims to examine the effect of certain political factors on the profitability of SLPEs in India. This has never been attempted in the past for SLPEs and may have important policy implications.

### 3. POLITICAL FACTORS AND PROFITS OF SLPEs

SLPEs are owned by governments of respective states. Elected by the citizens, the governments further appoint managers and board members for each SLPE. Unlike private enterprises that focus on the divergence of objectives faced by the owners and the managers, the public firms have an additional agent between the managers and the owners (the citizens)- the government. Specifically, the citizens (principal) elect the government (agent 1) that appoints managers (agent 2) to run these enterprises. This typical principal-double agent structure of public enterprises makes these firms more susceptible to moral hazard problems and management inefficiencies. Thus performance of these enterprises becomes very susceptible to external factors as compared to their private counterparts. As a result the business environment in which these operate becomes significant in shaping up their profitability and performance.

The business environment comprises of the state specific economic policies and political factors that influence the industrial sector. However, the influence of these external factors is more important in SLPEs than private enterprises mostly due to the double agent structure. Recognizing the critical role of external factors in the profitability of enterprises, the study focuses on three important political factors that shape the business environment in which these SLPEs operate.

#### 3.1. *Ideology of the state*

Theoretically, it is a long established fact that left wing governments promote redistributive policies more than their right wing counterparts which signals that governments inclined more towards the right side of the ideological spectrum will have policies that are relatively more beneficial to the industrial sector. This stems from the main ideology of right wing parties in favor of market based solutions. And thus, in

theory, one may expect that industry as a sector would benefit more if the government party is right wing. Right wing parties will interfere less in the affairs of the SOEs which would enable these enterprises to respond to market signals in a more focused manner. In contrast, left wing governments would focus more on the socialist objective of these enterprises. Thus, profits of state owned enterprises will be better if these enterprises are located in states that are more right wing. Empirical investigation indicates similar results. Allers et al. (2001) find that left wing parties place a higher tax burden as opposed to the right wing ones. Comola (2009) finds that on an average right wing governments support export in certain industries more than the left wing governments.

This has been observed in CPSEs as well. Jain (2017) reports that according to the Board of Restructuring Public Sector Enterprises (BRPSE), that recommends CPSEs for closure or winding up to the Bureau for Industrial and Financial Reconstruction (BIFR), 47% of West Bengal (run by Trinamul Congress (TMC) which is a left wing party) CPSEs were recommended for closure in 2014. This was much higher than Maharashtra (13%), Karnataka (24%) and Uttar Pradesh (27%) which were run by Shiv Sena (right-centre), Indian National Congress (centre) and Samajwadi Party (right-centre) parties respectively. This indicates that PSEs located in left wing states have a considerable higher closure rate as opposed to right wing states.

Hence, the study hypothesizes that profitability of an SLPE operating in a right wing state will be better than that in a left wing state.

### 3.2. *Political alignment between the Centre and the states*

The federal structure in India has modified tremendously in the last two decades. The main reasons are attributed to increasing number and power of regional parties, decline of INC rule in India and the rise of a coalition era in Indian politics. With regional and state parties gaining adequate attention in mainstream national politics, their role in policy formulation has also deepened.

Jain (2017) reports that despite the rise in the importance of state parties in India, the Centre still holds a higher position in taking decisions related to transfers to state funds, borrowings by different states and grants to be disbursed between states. These decisions will be influenced by the centre state dynamics- favorable if the Centre party is running certain state governments too. Consequently, these decisions have direct repercussions on the policies devised by the state governments. If the state is run by a party not similar to that of the Centre and does not get enough funds or grants from the Centre, it may design policies that may adversely affect all (including industrial) sectors.

In a survey done by the Centre for the Study of Developing Societies (CSDS) sixty percent of the voters stated that having the same party at the Centre and the state leads to better developmental outcomes.<sup>1</sup> Further, eminent leaders of the two most important national parties in India-Indian National Congress (INC) and Bharatiya Janata Party (BJP)

<sup>1</sup> <http://indianexpress.com/article/politics/behind-verdict-most-voters-want-same-party-in-centre-and-state/>



have supported same government in centre and state for better coordination and cooperation in policy outcomes.<sup>2</sup> These excerpts from media reports signal the relevance of centre-state relations in India. Hence, we hypothesize that profitability of SLPEs will be higher if the enterprises are located in states that are politically aligned with the Centre.

### 3.3. Election cycle

Just before elections, governments may have a strong incentive to interfere within SLPE matters. SOEs can be used as mechanisms to support government pet projects or distort local markets as a way to benefit incumbent politicians (Shleifer and Vishny, 1994). Dinc (2005) finds that during election years public sector banks lend more than private banks in emerging economies. Similarly, Carvalho (2014) finds that governments expand employment during elections and use state owned banks to provide firms with favorable lending conditions. Moita and Paiva (2013) show that prices in regulated industries tend to follow the election cycles as well. Hence, it can be said that the relationship of profits of state owned enterprises will be driven by the high degree of political influence in the last two years of every incumbent government which must be seen as a systematic effort for the incumbent governments to increase their votebank. The government can artificially keep the prices of products lower in last two years so that the general public gets satisfied. This reduction in price may lead to a detrimental or enhancing impact on profits (depending on the elasticity of demand). Thus, the effect of election cycle on profits is an empirical exercise specific to the Indian SLPE exercise.

## 4. DATA AND VARIABLES

The studied dataset has been created by compiling information on internal and external factors that affect profitability of SLPEs. The data spans a period of three years, specifically, financial years 2007 to 2009.<sup>3</sup>

### 4.1. Financial data

In 2012, the Department of Public Enterprises, under the jurisdiction of the Ministry of Heavy Enterprises and Public Enterprises, published a comprehensive survey on state level public enterprises for the three year period (2007–2009). With a total of 849 operational SLPEs, the National Survey compiled information from online data submitted by 625 enterprises. The study reports financial data on profits, turnover, capital, labor, centre loans, assets, sales and so on. The study uses profit after tax and other derived indicators to capture profitability of SLPEs.

There is a plethora of studies that discuss the relevance of using profitability to capture performance of state owned enterprises (Majumdar, 1998; Ahuja and Majumdar, 1998). These studies argue that since these enterprises have a multidimensional objective function with profits only being a part of it, any measure of profitability may not be

<sup>2</sup> BJP: <http://indianexpress.com/article/elections-2016/india/india-news-india/assam-assembly-elections-2016-party-learnt-from-bihar-alliances-worked-in-assam-2811465/>  
INC: <http://timesofindia.indiatimes.com/india/It-is-good-to-have-govts-of-same-party-in-Centre-state-Rahul/articleshow/4386083.cms>

<sup>3</sup> Financial years in India start from April of the current year and end on March of the following year.



suitable to gauge performance. These studies focus on technical efficiency or total factor productivity. Technical efficiency, estimated by stochastic frontier analysis or data envelopment analysis, is defined as the maximum output that can be produced given a certain amount of inputs. Total factor productivity, estimated by Solow residual, is defined as the portion of growth of output that is unexplained by growth of inputs. While both these variables are better suited than profitability to capture performance of state owned enterprises, the aim of the current study is more focused. Instead of capturing or comparing performance of SLPEs in different states of India, the study focuses on profitability. The main rationale of the study is to examine how profitability of these enterprises is affected due to the multidimensional role that SLPEs cater to. Hence, the current study examines profitability of these enterprises.

The study also employs state loans, firm size, subsidies by governments, capital stock and employee strength as other variables. This is combined with state level political and economic factors collected from various sources.

#### 4.2. *State specific political variables*

The study uses three variables to capture external political factors in the state.

**Ideology score:** I use ideology of the state to capture if the state is right or left wing. In order to construct the ideology indices for the state and the central government, I rely on Chhibber and Nooruddin (2004) and Dash and Raja (2014), who have coded ideology scores of all national and major regional parties in India based on the parties' objectives, past prescribed policies and actions. For the few remaining regional parties, I collected the relevant information from the parties' websites and media reports. The studies define the ideological stand as integer values from one to five, where right is coded 1, right-center 2, center 3, left-center 4 and left 5. These scores are reflective of past actions, party manifestos, reactions to policies undertaken by different governments in India. Next, by identifying the party that had won the most recent Vidhan Sabha (state-level) elections I get the state government's ideology during the year. The study converts this ideology scale into a right dummy variable that takes the value 1 if the ideology score are 1 and 2.

**Political alignment:** During 2007–2009 INC was in power at the Centre. The study uses a dummy variable, named political alignment that takes a unit value only if the state is run by INC in the given year. The data on the outcomes of state-level elections in India is collected from the Election Commission of India website.

**Election cycle:** The study uses a dummy variable to capture the period in which political influence within an SOE is systematically higher than rest of the years. A dummy variable, named election cycle is used that takes a unit value if the year in question is the last two years of the current government.

#### 4.3. *State specific economic variables*

The study takes account of various economic factors that affect the industrial environment at the state level. First of all the study captures road connectivity in a state which is defined as the ratio of total length of roads in the state to the total area covered by the state. It helps in explaining how well the state is connected. Similarly, to capture

Table 1. Comparison of CPSEs and SLPEs in India

	CPSEs			SLPEs		
	2007	2008	2009	2007	2008	2009
Number of enterprises	217	213	217	589	614	624
Employee size (Lakhs)	15.45	15.34	14.91	14.13	15.31	15.21
Investment (Crores)	455409	513532	580784	329079	454471	518209
Turnover (Crores)	1081925	1271521	1244805	239453	317316	366814
Net profit/loss (Crores)	79809	83867	92203	865	-17866	-13227
Source: Public Enterprise Survey, 2009 and 2007						

regular electricity supply, the study uses total electricity generated in a particular state normalized with respect to the total population of the state. To gauge the business and industrial conditions in a particular state, the study uses credit availability, which is the ratio of the total industrial credit in a state to the state domestic product. To capture labor market rigidities, the study uses the ratio of total man days lost in a state due to strikes and lockouts to the total workforce in a state. Further since low tax rates are lucrative and beneficial for profits, we use the ratio of total excise duty collected to the gross state domestic product of the state.

This data is collected from Reserve Bank of India website, CMIE reports, Ministry of Statistics and Program Implementation and other state-level documents. Finally, the study uses information on the industry type to control for overall industry effects. The final dataset is constructed by compiling firm specific financial variables with state specific political and socio-economic variables. Thus the final dataset has both internal and external factors that shape performance of enterprises.

## 5. DESCRIPTIVE STATISTICS

To give a better sense of the size and coverage of SLPEs, it is imperative to compare them with the enterprises owned by the Centre, CPSEs. Table 1 compares the enterprises owned by the two wings on certain parameters.

As Table 1 suggests with comparable aggregate employment and investments across CPSEs and SLPEs, there exists a huge gap between the turnover and profitability of the two sectors. Thus, Table 1 iterates the significance of addressing the issue of profitability for SLPEs. The study includes 625 firms for the analysis. We winsorize the data at 95% on total assets and profitability to do away with outliers. This leaves us with 589 SLPEs. These SLPEs were located in several states. Of all the states, Kerala (53), Karnataka (52), West Bengal (52), Tamil Nadu (49) were the top states with highest number of SLPEs. In contrast, Arunachal Pradesh (1), Nagaland (1), Andaman and Nicobar Islands (1) and Mizoram (0) had the minimum number of SLPEs.<sup>4</sup>

The top five states according to total profits earned in 2009–10 are presented in Table 2.

However, the average profits of SLPEs were highest in Orissa followed by Gujarat

<sup>4</sup> All SLPEs had been closed down in Mizoram before the period of analysis



Table 2. Top five states according to total profits earned

State Name	Total Profitability (in lakhs)	Share in total
Gujarat	57968	6.68%
Kerala	42256	4.87%
Madhya Pradesh	10117	1.17%
Tripura	1920	0.22%
Goa	1867	0.22%

Source: National Survey of State Public Sector Enterprises, 2009–10

Table 3. State level elections between during the period of analysis

Year	States that had elections
2007	Goa, Gujarat, Himachal Pradesh, Manipur, Punjab, Uttarakhand, Uttar Pradesh
2008	Chhattisgarh, New Delhi, Jammu and Kashmir, Karnataka, Madhya Pradesh, Meghalaya, Mizoram, Nagaland, Rajasthan, Tripura
2009	Andhra Pradesh, Arunachal Pradesh, Haryana, Jharkhand, Maharashtra, Orissa, Sikkim

Source: Election Commission of India

Table 4. Average profitability of SLPEs according to state ideologies

Ideology score	Mean Profit	Number of enterprises
1	131.23	465
2	154.55	183
3	-2214.25	745
4	-8351.93	131
5	-60.53	315

Note: Ideology score of 1 denotes a right wing party and 5 denotes a left wing party. Average profits is calculated as the average profits for all SLPEs in that category. It is in Rs. Lakhs.

Source: Calculated from the dataset.

where as New Delhi and Uttar Pradesh recorded highest average losses in SLPEs.

### 5.1. State specific political factors

To construct the political variables, the study needs to recognize the different elections that were held in India between April, 2007 and March 2010. At the Centre, United Progressive Alliance (UPA) –I led by Indian National Congress (INC) was in power till 2009. In the last year, UPA-II led by INC again came into power. However, the various state level Vidhan Sabha elections that took place in India during the analysis are presented in Table 3:

Table 3 suggests that twenty three states had elections coinciding with the period of the study. This provides variation in the state level political factors not just across states but also over time.

To emphasize the influence of state specific political factors on the net profits of SLPEs we present a set of tables (Tables 4–7).

Table 4 shows that the average profitability of enterprises roughly falls as one moves from a right wing state to a left wing state. To test the robustness of the ideology scores,

Table 5. Average profitability of SLPEs according to right dummy variable (method 2)

Right	Mean Profit	Number of enterprises
0	-2319.72	1191
1	137.82	648

Note: Ideology score of 1 denotes a right wing party and 0 denotes a left wing party. Average profit is calculated as the average profits for all SLPEs in that category. It is in Rs. Lakhs. The average profits of the scores is statistically different at 1% significance level.

Source: Calculated from the dataset.

Table 6. Average profitability according to political alignment

Same Party	Mean Profit	Number of enterprises
1	-935.89	1094
0	-2214.57	745

Note: Same party is a dummy variable that takes the value 1 if the party at the centre and the state is same. Average profits is calculated as the average profit for all SLPEs in that category. It is in Rs. Lakhs. The difference in average profit is significant at 5% for "same party" variable.

Source: Calculated from the dataset.

Table 7. Average profitability according to election cycle

Election cycle	Mean Profit	Number of enterprises
1	-1699.03	788
0	-1269.99	1051

Note: Election cycle is a dummy variable that takes the value 1 if the state government is in the last two years of its term. Average profits is calculated as the average profit for all SLPEs in that category. It is in Rs. Lakhs. The difference in average profit is insignificant.

Source: Calculated from the dataset.

we redefine the ideology scale as right (ideology scores 1 and 2), a dummy variable. The average profitability according to this classification has been depicted in Table 5.

Table 5 clearly denotes average profitability declining with movement from the right end to the left end of the ideology spectrum. In Table 6, I present average profitability according to political alignment between the centre and state governments.

Table 6 iterates the fact that average profitability of SLPEs is slightly higher if they operate in a state that is run by the same party that runs the centre. Finally, Table 7 presents the average profitability according to election cycle and find that average profits is higher for enterprises if the state government is in the last two years of its term.

As a robustness check for the political variables, Table 8 presents the mean differences for certain firm specific variables by segmenting SLPEs into loss making firm year observations and "non-loss" making firm year observations. It is seen that the loss making SLPEs have a significantly higher number of employees and get significantly higher subsidies from the state governments.

These factors suggest that profitability of SOEs is an issue that demands attention.



Table 8. Firm specific factors for loss making category versus the rest

Categories	Loss making	Rest of the observations	Difference
No.of firm-years	606	1233	
No. of employees	3257	2054	1201***
Capital employed	53366.04	61521.42	-8155.38
Subsidies received	7629.38	3361.43	4267.95***
Contributions to state	3072.94	4273.29	-1200.35

Note: Loss making column indicates firmyear observations for which net profits is less than zero.

\*\*\* indicates significance at 1% level.

Source: Calculated from the dataset.

## 6. ECONOMETRIC METHODOLOGY

To analyse determinants of profits we start with a fixed effects regression.

$$y_{it} = \alpha_k + \beta_t + \delta_s + \gamma x_{it} + \eta z_{st} + \varepsilon_{ij} \quad (1)$$

In equation (1),  $y_{it}$  is the profit of the  $i$ th SLPE in the  $t$ th year. Here  $x_{it}$  is the firm specific internal factors and  $z_{st}$  is the set of variables consisting of external political and socio-economic factors at the state level.  $\alpha_k$ ,  $\beta_t$  and  $\delta_s$  are the industry, year and geographical dummies in the fixed effects specification. These dummy variables help to control any unobserved heterogeneity over time and at the industry and state level. Further, to capture the conditional effect of political variables on economic factors we use an interaction term between one of the political and economic variables. Specifically, we test the interaction between political variables and subsidies given by the state governments to SLPEs. It is expected that the effect of subsidies given by the state to enterprises will be influenced by political factors.

The current study uses four different model specifications by using a logarithmic transformation and standardization technique of firm specific variables. Models I and II use logarithmic transformation where as Models III and IV use the standardization approach. The standardization formula used is the difference of the existing value with the minimum value normalized to the range in that group. All firm specific variables are transformed by the respective rules to maintain consistency. In Models I and III, I include the ideology variable as defined by Dash and Raja (2012) where the ideology variables range from 1 to 5. On the other hand Models II and IV condenses the ideology scale to a dummy variable, "right" that takes value 1 whenever the ideology scores are 1 and 2.

### 6.1. Propensity score matching

In order to re-affirm the relevance of external political factors in profitability of SLPEs, the study employs propensity score matching methods to compare profits across SLPEs located in (i) left and right wing states and (ii) states that are politically aligned with the centre and those that are not.<sup>5</sup>

<sup>5</sup> Propensity score matching cannot be done for election cycles since the variable will be a deterministic variable.

Propensity score matching is better than regression methodology for various reasons. First of all, unlike multiple regression methods, it is a non parametric method and hence we do not impose any specific functional form on the underlying data. Further, propensity score method saves degrees of freedom as multiple covariates can be converted into the propensity score and thus avoids the problem of over parameterization. Although both techniques essentially provide similar results the essence and channel is different. Hence, as a robustness exercise, the current study uses matching methods to validate the main results of the regression models. However, since the ideology scale used for the purpose of this study is a number from 1–5, we convert this into a dummy variable. We use a variable “Right” that takes the value 1 if the ideology score is 1 or 2. Propensity score matching is implemented by estimating a probit model where the dependent variable is “Right”. Selection of SLPEs in the right states is captured as a function of firm specific, industry and state specific factors. We include time dummies to capture unobserved year effects.

$$p_i = \alpha_i + \beta x_i + \eta z_s + \varepsilon_{ii} \quad (2)$$

Based on the propensity scores obtained from equation (2), SLPEs in the left states are matched with that in the right ones. Matching on firm and industry specific attributes ensures that the SLPEs are similar to each other in these aspects. Then final step is to capture the average treatment effect in profitability for the matched sample between the right and left wing state enterprises. So, any difference in profitability can then be attributed to political ideology of the state.

To capture the effect of political alignment between both levels of the government on profitability we use propensity score matching method with a modified dependent variable. In this context the dependent variable is the dummy variable “political alignment” that takes the value 1 if the enterprise is located in a state that is run by the same party that runs the centre.

## 7. RESULTS

### 7.1. Fixed effects Regression

To understand the effect of external (state specific) political factors on the profitability of SLPEs, an industry level fixed effects regression is run. The results of the regressions have been compiled in Table 9.

Table 9 presents results from four models examining the effects of various factors on the profitability of SLPEs. The main difference between the models is in the way the firm specific factors are modeled. This has been discussed in detail in the previous section.

As Table 9 denotes, profitability of SLPEs is determined by a combination of internal and external factors. Among political external factors, ideology of the state, political alignment and election cycles influence profitability. Specifically, profitability of an SLPE is higher if it is operating in a state that is right wing. The main rationale being the favorable industrial reforms and policies undertaken by these governments have a direct effect on profit improvement. Secondly, profitability is higher if a firm is operating in a



Table 9. Determinants of profitability of SLPEs

Profit	Model I	Model II	Model III	Model IV
State level Political Factors				
Ideology of the state	-0.174*** (0.033)	0.635*** (0.103)	-0.014*** (0.003)	0.050*** (0.009)
Political alignment	0.193*** (0.061)	0.509*** (0.092)	0.015*** (0.005)	0.040*** (0.008)
Last two years of the term	1.727*** (0.570)	1.699*** (0.568)	0.199*** (0.049)	0.195*** (0.049)
State level Economic Factors				
Road density	0.113*** (0.030)	0.112*** (0.027)	0.010*** (0.002)	0.009*** (0.002)
Industrial credit availability	0.173*** (0.058)	0.204*** (0.057)	0.016*** (0.005)	0.018*** (0.005)
Electricity tariff difference	-0.088 (0.140)	0.046 (0.145)	-0.012 (0.012)	-0.002 (0.013)
Labor market rigidity	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Excise duty	-0.916*** (0.196)	-0.829*** (0.196)	-0.075*** (0.017)	-0.069*** (0.017)
Firm specific factors				
Capital employed	0.726*** (0.073)	0.720*** (0.073)	0.027 (0.043)	0.028 (0.043)
Employee size	-0.005 (0.010)	-0.003 (0.010)	-0.201*** (0.031)	-0.200*** (0.031)
Subsidy from the government	-0.276*** (0.041)	-0.275*** (0.040)	-0.457*** (0.056)	-0.460*** (0.056)
Contribution to state exchequer	-0.519*** (0.053)	-0.528*** (0.052)	-0.187*** (0.049)	-0.190*** (0.049)
Political and Economic interaction				
Subsidy* Election cycle	-0.215*** (0.070)	-0.212*** (0.070)	-0.025*** (0.006)	-0.024** (0.006)
Other controls				
Industry dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Geographical dummies	Yes	Yes	Yes	Yes
No. of observations	1839	1839	1839	1839
R squared	0.187	0.191	0.139	0.142

Note: The table presents results of an industry fixed effects regression of factors affecting profitability of SLPEs. Model I and II are logarithmic transformation of financial variables. Models III and IV are standardized values of financial variables. Model I and III defines ideology as the scale defined by Dash and Raja (2012)- spreading from 1 to 5 where 1 denotes right and 5 denotes left. Models II and IV define ideology as a dummy variable, "right" that takes the value 1 if the state is a right wing state. Standard errors are reported within parentheses. \*, \*\* and \*\*\* indicate significance at 10%, 5% and 1% respectively.

state that is run by the same party that is in power at the centre. With same parties at the centre and the state, it may lead to grants, aids and borrowings in the favor of the states (Singh and Vashishtha (2004)). This leads to an easier fiscal situation to deal with for those states and in the absence of any financial distress, all sectors (including industrial) perform well thus leading to higher profitability of all SLPEs in those states. Finally, profitability is higher if the enterprises are in states that have the last two years of the current governments' terms. This does not suggest that profits are being over reported but a possible explanation may be the reduction in price leads to greater expansions in outputs leading to increased profits.

State specific socio-economic factors also shape the industrial environment of these SLPEs. Better connectivity of state roads, abundant credit availability and low tax rates make the industrial environment favorable for SLPEs. This leads to higher profitability. Focusing on firm specific factors, it is observed that more capital, less employee size, low subsidies and loans from the state governments lead to higher profitability.

Further, to test the conditional effect of subsidies by political cycle the study uses an interaction term between subsidies and election cycle. The results indicate a negative and significant effect across all the models. This suggests that the effect of the subsidies given by the state governments on profitability is stronger in the first three years of the term. This indicates that efficacy of any economic factor is strongly conditioned by the political situation. The models discussed in Table 9 have controlled for unobserved effects- yearly, industry wise and geographical area.

## 7.2. *Propensity score matching*

### 7.2.1. *Ideology of the state*

The study involves matching SLPEs in states that are left and right wing. The matching is done on the basis of a combination of firm specific factors and selected external variables (industry and year effects). Table 10 depicts that the mean tests of these co-variables is statistically insignificant for the matched sample, indicating that the treatment and control groups are similar.

The distribution of the propensity scores for the sample before and after matching have been presented in Figures 1 and 2. Figure 1 shows that after matching the probability of an SLPE to operate in a right wing state is the same as that in a non-right wing state. A similar interpretation can be done for SLPEs in "politically aligned" states (Figure 2).

The final results of the propensity score matching exercise has been presented in Table 11.

Table 11 indicates that the effect of ideology and political alignment at both levels on profitability of SLPEs is as hypothesized. If an SLPE is located in a state that is right wing, it leads to higher profitability, after controlling for all other effects. Similarly, an SLPE has a higher profitability if it is located in a state that is run by the party that is in power at the Centre too.



Table 10. Covariates before and after the matching exercise

	Model I		Model II	
	Before	After	Before	After
Capital employed	2.24**	1.57	2.24**	0.72
Employee size	-1.63*	-1.53	2.01**	-0.83*
Subsidy	1.80*	1.60	1.90*	-0.72
Contribution to state	1.96**	1.55	1.87*	0.73
Contribution to centre	-1.22	-1.22	1.88*	0.79
Control factors				
Industry dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
No. of observations	1761	1303	1761	789

Note: The table denotes the mean difference tests before and after matching for all covariates used. In Model I, the dependent variable is "right". In Model II, the dependent variable is "political alignment". The table presents the t statistic obtained for each variable. \*, \*\*, \*\*\* indicate significance at 10%, 5% and 1% respectively.

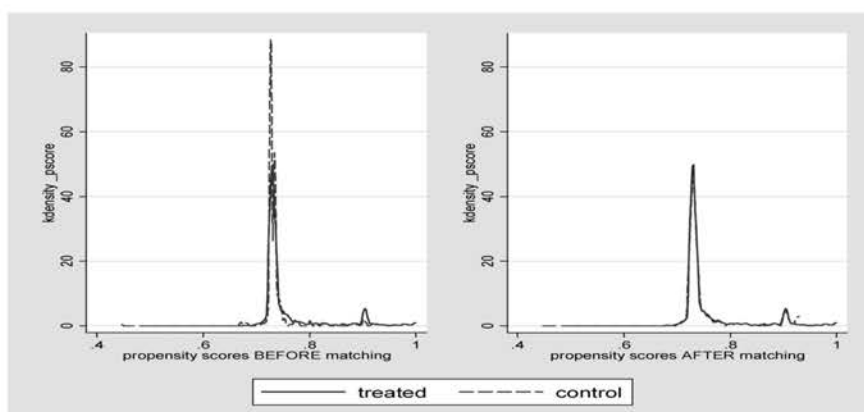


Figure 1. Propensity score distribution for "right" and "non-right" states

## 8. CONCLUSION

The study examines profitability in state owned enterprises with a unique dataset generated by compiling SLPE financial data with state level economic and political factors. The issue of profitability is widely discussed in the area of public sector enterprises in India. Given the multidimensional social objectives that these enterprises cater to, there is a chance that these firms may incur operational hindrances and hence lose on profits.

The current study takes a different take on this issue by including the influence of external factors in shaping up profits of these enterprises- specifically focusing on political factors. The study establishes the effect of state ideology and same party at both levels of the government has a strong bearing on profitability of SLPEs. Examining the interaction of political factors with economic variables, the results indicate that the

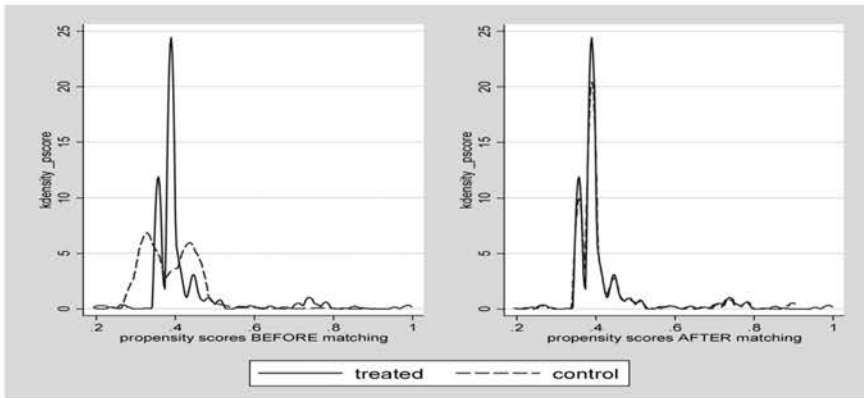


Figure 2. Propensity score distribution for “politically aligned” and “politically unaligned” states

Table 11. Average treatment effect of political variables on profitability of SLPEs

	Model I	Model II
Profitability (average treatment effect)	0.015***	0.010*

Note: The table presents the average treatment effect of external political factors on the profitability of SLPEs after matching. Models I indicates the effect according to “right” ideology. Model II indicates the effect according to same party effect. The values indicate the average treatment effect. \*\*\*, \*\* and \* indicate significance at 1, 5 and 10% respectively.

effect of loans given by the centre on profitability have a higher effect if the enterprises are located in the state run by the same party.

The study indicates that profitability of state owned enterprises is not restricted to firm specific internal factors. Given the typical double agent issue raising concerns of moral hazard issues, external factors may play a critical role in profit generation of these enterprises. The current study, with the help of standard econometric tools, establishes how political factors can influence profitability of these enterprises.

There are some caveats in the analysis. The unavailability of data for later years does not allow extending the study beyond 2009–10. The propensity score matching approach requires a strong assumption for causal inference- matching has been done on observables and there are no unobservables that may influence the propensity scores.

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