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PUBLIC VERSUS PRIVATE OWNERSHIP AND PERFORMANCE OF INDIAN FIRMS

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ABSTRACT

Since 1991, the Government of India started the process of privatization which is based on the argument that private ownership establishes the market for corporate control by allowing the tradability of property rights and therefore improves the quality of management. In 2002 by introducing the Competition Act, the Government has provided full freedom to the private sector to expand and grow. At this background, the paper analyses the impact of public and private ownership on the performance of a firm by using the data of five different industrial categories for the period of ten year, 2006 to 2015. For this purpose, panel data regression (fixed and random effects) models have been applied. From this study, a mixture of evidences has been emerged regarding the impact of ownership structure on profitability. Out of five, in two industries, public sector firms are reported with significantly high profitability against their private counterparts. Private sector firms have significantly high profitability only in one industry. In the remaining two industries, ownership does not have any significant impact on the performance of a firm. Further, the impacts of other environmental factors viz. liquidity, debt financing, and management of the available resources have been analyzed on the profitability of firms.

Keywords: ownership, performance, panel data models.

1. Introduction

Till date, there is no consensus among the economists regarding the relationship between ownership structure and performance of a firm in theory as well in practice. As per property rights hypothesis (e.g. Alchain, 1965; de Alessi,1980), if there is a reasonably efficient market for corporate control, by purchasing shares on the market, an individual or a firm can quickly concentrate ownership and thereby wrest control of the target company from its incumbent management. This possibility gives rise to a potentially powerful incentive effect. If the performance of a particular management is poor the share price of the firm will drop and the returns from a takeover raid designed to introduce a new management team will increase. Hence,

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

the threat of replacement serves as a disciplining factor on incumbent managements. The potential of such shareholder rebellion is virtually absent in a public enterprise due to the non-tradability of its shares (Manne, 1965; Fama, 1980).

Against it, Grossman and Hart (1980) argued that the marketability of property rights does not, *per se*, correct the market failure arising from dispersed shareholdings. A small shareholder can neglect the consequences of his/her sell/hold decision on the outcome of a takeover and, if the bid is expected to succeed, will prefer to hold so as to participate in the profit gains accruing from the change in control. But, if enough shareholders behave in this way, the raid will in fact fail. Therefore, there is no possibility of market failure associated with dispersed shareholdings in case of government monitoring (Yarrow, 1985). In addition, the hierarchical arrangements in public sector enterprises can, in appropriate circumstances, lead to more efficient monitoring than capital markets (Williamson, 1975).

The public sector is often regarded as the engine of economic growth in the Indian context. It has played an important role in the economic development of India when the country was in the initial phase of development. The public sector has enabled the economy to develop a strong infrastructure and industrial base for the future economic growth, which is a primary condition of economic development. However, despite its enormous contribution to the economic development of the country, the public sector has to face a severe criticism due to its low profitability and under-utilization of capacity. In order to improve the performance of public sector enterprises by introducing the competition, the Government of India has adopted the policy of de-reservation and disinvestment as a part of economic reforms initiated in 1991, which is based on the belief that private ownership establishes the market for corporate control by allowing the tradability of property rights and therefore improves the quality of management. Further, in this sequence, the Government has classified the profit making public sector enterprises as Maharatnas, Navratnas and Miniratnas. These public sector undertakings have been delegated substantially enhanced autonomy and operational freedom. Against this background, the present study is an attempt to answer the above question in the light of most recent experience available in the Indian context.

2. Review of literature

In the Indian context, a majority of the empirical literature on the relative performance of public and private sectors belongs to the banking sector. Only a few attempts have been made in the non-banking sector where the public sector has a massive presence. A brief review of some important studies on this issue has been presented here.

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

Dholakia (1978) examined the relative performance of public and private manufacturing enterprises in India for the period 1960-61 to 1975-76. For this purpose, he used the criterion of total factor productivity growth rather than net profitability. The main conclusion which emerged from his analysis was that the performance of Indian public enterprises in the manufacturing sector during the period following 1960-61 can be regarded as quite remarkable, especially in relation to that of the corresponding private enterprises. Similarly, Gupta (1982) investigated the relative performance of public and private fertilizer firms in terms of total factor productivity (TFP) as well as productivities of labour, capital and raw materials for the period 1969-70 to 1976-77. He concluded that the performance of the public sector in relation to the private sector was improving over time. Further, Majumdar (1998) examined the differences in the performance between state-owned, mixed sector and private sector firms in India for the period 1973-1974 to 1988-1989, using DEA. He observed that for the entire Indian industrial sector, enterprises owned by the central and the governments of various states were found to be systematically less efficient than either mixed or private sector enterprises, while mixed sector enterprises were less efficient than those in the private sector. In a subsequent paper, Ahuja and Majumdar (1998) analyzed the determinants of performance of 68 Indian state-owned enterprises in the manufacturing sector for a period of five years: 1987 to 1991. They observed that the performance of public sector firms was significantly low as compared to their private counterparts. Using Data Envelopment Analysis, Mohan and Ray (2003) compared the performance of state owned enterprises with those of private sector firms in respect of technical efficiency. The comparison was made in eight different sectors over the period 1992 to 1999. Judging by average levels of technical efficiency, no conclusive evidence of superior performance on the part of private sector was found.

In India, all of the studies regarding the ownership structure and performance of a firm were conducted before 2002, when public sector was a dominant player in the Indian economy and the firms belonging to private sector was facing many restrictions as imposed by Monopolies and Restrictive Trade Practices (MRTP) Act, 1969. In order to promote and sustain competition in markets, the Government of India introduced the Competition Act in 2002 which replaced the MRTP Act. The Competition Act, 2002 provides enough freedom to the private sector firms to expand on the level playing field. After the introduction of this act, no study has been conducted regarding the ownership and performance issue. The present study tries to bridge this gap by comparing the performance of public and private sector firms for the period 2006 to 2015, when enough completion has been infused in the Indian economy.

3. Methodology

3.1 Sample

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

For the purpose of the present study, five industries viz. capital goods, fertilizers, metals & mining, oil & gas, power (distribution & generation); have been identified where both public and private sector firms have been operating. From each industry, a sample of ten firms producing approximately 50 percent or above of the respective industry has been selected.

3.2 Data & Variables

The study is based on secondary data and covers a period of ten years from 2006 to 2015. The detailed data on profit-loss accounts and balance sheets has been obtained from *Capitaline database* which provides the data regarding balance sheet and profit-loss account of Indian corporations.

Performance: performance is measured in terms of profitability. There are several ways to measure the profitability e.g. returns on sales, returns on total assets, and returns on equity. In order to measure the profitability, we have constructed the profitability index which is a composite index of all of the profitability ratios mentioned above:

$$Profitabilty\ index\ (PI) = \frac{1}{J}\sum p_j^i\ , \qquad 0 \leq PI \geq 1$$

$$and \quad p_j^i = \frac{P_j^i}{P_j^{max}} \qquad 0 \leq p_j^i \geq 1$$

where $P_j^i = jth$ profitability ratio of *ith* firm in the sample, and P_j^{max} = maximum value of *jth* profitability ratio observed in the sample or it represents the profitability ratio of the benchmark. Therefore p_j^i = 1 for the benchmark. Other firms in the sample are compared against this benchmark and for these firms, p_j^i, will be either 1 or less than 1. Therefore the profitability index may take any value between 0 and 1. A firm, for which the value of profitability index is equal to one, may be characterized as the firm with highest profitability in the sample.

Ownership: ownership is defined is as a dummy variable that is coded 0 to indicate state owned firm and 1 to indicate privately owned firm. A state owned (privately owned) firm is a firm in which majority of the shares (i.e. 51 percent shares) are under the government (private) ownership.

Control variables: In order to measure the precise effect of ownership on the profitability of a firm it is necessary to control the other variables which may affect its profitability. To a large extent, profitability of a firm depends on the financial decisions of its management regarding the liquidity, capital structure and management of its assets. Current ratio (i.e. current assets/current

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

liabilities) is taken as the measure of liquidity position or short term financial health of a firm. A poor liquidity position may hamper the short run supply of funds to the firm which may have a negative impact on its profitability. On the other hand, too high liquidity may harm the profitability of a firm since idle assets earn nothing. Debt-equity ratio (i.e. total debt/net worth) measures the extent to which a firm uses external funds (debt) in its capital structure and therefore indicates the long term financial health of a firm. If a firm earns more on investments with borrowed funds than its pays in interest, a low debt financing may also result in low profitability and vice versa. Moreover, a high debt financing may also reduce profits by increasing the risk of insolvency.

Further, in order to measure the managerial efficiency in utilizing the available resources three turnover ratios viz., inventory turnover ratio, debtors turnover ratio and total assets turnover ratio are selected. Inventory turnover ratio (i.e. sales/inventory) indicates the efficiency of a firm in producing and selling its product. The debtors turnover ratio (i.e. sales/debtors) indicates the speed with which debtors or accounts receivable are converted into cash each year. The higher the value of the debtors turnover, the more efficient is the management of credit. Further, the total assets turnover ratio (i.e. sales/total assets) measures how effectively a firm is managing its total assets. It is a single statistic measure that shows the extent of utilization of total assets, current assets and fixed assets as a group, therefore, it is preferred over the other assets turnover ratios. All of the three turnover ratios are expected to have positive impact on profitability.

3.3 Model

In order to measure the impact of ownership and various financial decisions regarding liquidity, debt financing and assets management; panel data models – fixed effects and random effects – have been used in the present study. Panel data models are most useful when controlling for time-invariant features of firms, which might be correlated with the explanatory variables in the model. Therefore, panel data models allow for the individual heterogeneity of the firms in the model.

In the present study, two types of panel data models fixed effects and random effects – have been used. The basic structure of the model can be explained as:

$$Y_{it} = \beta_0 + \sum_{j=1}^{5} \beta_j X_{jit} + \delta_2 D_{2i} + \alpha_i + u_{it}$$

$$i = 1, 2, \dots, N \quad and \quad t = 1, 2, \dots, T$$

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

where Y_{it} is profitability index of firm i in year t, D_{2i} is ownership dummy (assuming public sector as the base category) and Xs are other explanatory variables. If α_i (the individual heterogeneity) is correlated with any of the explanatory variables i.e. $Cov\ (X_{jit}, \alpha_i) = 0$, fixed effect estimation of the above model is appropriate. If $Cov\ (X_{jit}, \alpha_i) \neq 0$, then random effects model provides consistent estimates of βs.

Breusch & Pagan Test: The test is used to answer whether the firms in the sample are homogeneous or heterogeneous. The test is based on Lagrange multiplier:

$$LM = \frac{NT}{2(T-1)}\left[\frac{\sum_{i=1}^{N}[\sum_{t=1}^{T} e_{it}]^2}{\sum_{i=1}^{N}\sum_{t=1}^{T} e_{it}^2} - 1\right]^2$$

$$= \frac{NT}{2(T-1)}\left[\frac{\sum_{i=1}^{N}(T\bar{e}_i]^2}{\sum_{i=1}^{N}\sum_{t=1}^{T} e_{it}^2} - 1\right]^2$$

where e_{it} denotes OLS residuals on the pooled model. Under the null hypothesis ($H_0: \sigma_\alpha^2 = 0$), LM is distributed as chi-squared with one degree of freedom.

Hausman Test: The test is based on the idea that under the hypothesis of no correlation i.e. $Cov(X_{jit}, \alpha_i) \neq 0$, both OLS in the LSDV model and GLS are consistent; OLS is inefficient, whereas under the alternative, OLS is consistent, but GLS is not. Therefore, under the null hypothesis, the two estimates - fixed effects (FE) and random effects (RE) - should not differ substantially, and can be based on difference.

$$W = \chi^2[K-1] = [\beta_{FE} - \beta_{RE}]'\Psi^{-1}[\beta_{FE} - \beta_{RE}]$$

For Ψ, the estimated covariance matrices of the slope estimator in the LSDV model and the estimated matrix in the random effects model (excluding constant term) can be used. Under the null hypothesis, W has limiting chi-squared distribution with K-1 degrees of freedom.

4. Results

4.1 Selection of appropriate model

In order to answer the question about the selection of the appropriate model for the panel data set of each industry under consideration, we have used the Breusch-Pagan test and Hausman test. The results of the Breusch-Pagan test are demonstrated in Table 3.21. The table shows that the chi-square values calculated by Breusch-Pagan test are highly significant for all of the five

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

industries under study, which suggests the presence of individual heterogeneity in the model and therefore rejects the application of the pooled least squares.

Once the presence of individual heterogeneity in the model is established, the next question which arises before us is that between the fixed effects and random effects models which model is more appropriate to account for this individual heterogeneity. The question may be answered by Hausman test. The results of the Hausman test are reported in Table 2.The table shows that in case of four industries viz., capital goods, fertilizers, oil & gas, and power, the calculated chi-square values are less than the critical values. Therefore, the hypothesis that individual effects are uncorrelated with the other explanatory variables in the model, cannot be rejected as far as these four industries are concerned. However, in case of metals & mining industry the null hypothesis is rejected since the calculated chi-square value is far larger than the critical value. It suggests that the individual effects are correlated with the other regressors in the model and hence the fixed effects model is more suitable in the case of metals & mining industry.

Table 1: Selection of Appropriate Model: Breusch-Pagan Test

Industry	Chi-square	df	p-value	Individual effects
Capital goods	28.1521	1	0.00	Present
Fertilizers	21.0063	1	0.00	Present
Metals & mining	19.3235	1	0.00	Present
Oil & gas	121.097	1	0.00	Present
Power	37.9299	1	0.00	Present

Source: Authors' calculation

Table 2: Selection of Appropriate Model: Hausman Test

Industry	Chi-square	df	p-value	Selected model
Capital goods	5.20104	5	0.391841	Random effects
Fertilizers	0.417424	5	0.994836	Random effects
Metals & mining	37.8245	5	0.000	Fixed effects
Oil & gas	1.89724	5	0.863173	Random effects
Power	5.98609	5	0.307575	Random effects

Source: Authors' calculation

4.2 Findings and discussion

The results of random effects model for the five industries under consideration are reported in Table 3. In order to measure the impact of ownership on the profitability, government ownership

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

is used as the base category. Therefore, the differential intercept coefficients measure how much the mean profitability of private sector firms differs from the government owned firms. As indicated by Table 3, the differential intercept coefficient is statistically significant in case of three industries viz. capital goods, fertilizers, and power. In case of capital goods and power industry, the differential intercept coefficients bear negative sign which indicates that public sector firms are having significantly higher profitability as compared to their private counterparts in these two industries. In fertilizers industries, the ownership coefficients bears a positive sign which indicates that in fertilizers industry, public sector firms have significantly low profitability as compared to the privately owned firms. The low profitability of public sector firms in fertilizers industry is mainly attributed to the pricing policy of the government. Keeping in view the interest of the farmers, the prices of fertilizers are set below the production costs. Apart from this, obsolete technology, high prices of raw material and inordinate delay in payment of subsidy also adversely affect the profitability of these firms. The table shows that in case of capital goods and metals & mining industry, current assets ratio has a negative impact on the profitability of a firm and it is found statistically significant at 5 per cent level. A high current ratio could mean that a company has a lot of money tied up in non-productive assets, such as excess cash or marketable securities, or in inventory and therefore it negatively affects the profitability of a firm. Maintaining a certain level of current assets is necessary for a firm in order to meet its short term obligations, however, the existence of too high liquidity may impair its profitability. In case of other three industries, impact of liquidity on profitability is reported statistically insignificant. Similarly, debt-equity ratio is also negatively associated with the profitability and this association is found statistically significant only in case of two industries (i.e. capital goods and fertilizers). A high debt financing may reduce the profits of the firm in two ways: First, high debt financing increases the costs of the borrowed funds by increasing the risks. Second, if the interest cost of the borrowed funds is higher than the rate of returns on investments, a high debt financing may reduce the profits of the shareholders.

Table 3: Determinants of Profitability: Random Effects Model

Variables	Coefficients				
	Capital goods	Fertilizers	Metals & mining	Oil & gas	Power
Constant	0.638***	0.257*	0.279***	0.296**	0.444***
Ownership[#]	-0.183*	0.294**	-0.063	0.068	-0.189**
Current assets ratio	-0.099**	-0.0004	-0.019**	-0.002	-0.014
Debt equity ratio	-0.350***	-0.086**	-0.037	-0.002	-0.003
Inventory turnover ratio	0.005*	-0.015**	0.013***	-0.003	0.002**
Debtors turnover ratio	0.019	3.42E-06	-3.02E-07	0.001	0.002
Total assets turnover	0.019	0.107**	-0.012	0.004	0.095

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

ratio					
Cross-section random	0.132	0.190	0.095	0.243	0.139
Idiosyncratic random	0.136	0.183	0.115	0.139	0.133

Source: Authors' calculation

***, ** and * indicate statistical significance at 1%, 5% and 10% level respectively

[#] Public sector is used as base category for the ownership dummy.

The impact of inventory turnover ratio on profitability is found statistically significant in case of capital goods, fertilizers, metals & mining, and power industry. The inventory turnover ratio is expected to be positively related to the profitability since efficient management of inventories by a firm may increase its profits by reducing the cost of inventories. In case of capital goods, metals & mining, and power; it is positively associated with the profitability. However in case of fertilizers industry, the inventory turnover ratio has negative effect on profitability. It implies that in fertilizers industry, more profitable firms have less management of inventories. A thorough examination of inventory turnover ratio and profitability index in fertilizers industry reveals that the correlation between these two variables is negative in case of five firms out of ten. Among these five firms, three public sector firms have significantly low level of sales along with very low level of inventories and relatively high production costs. On the other hand, two private sector firms have low production cost, high level of sales along with very high level of inventories. Consequently, all of these factors result in a negative relation between the inventory turnover ratio and profitability index in case of the fertilizers industry. The impact of debtors turnover ratio on profitability is found statistically insignificant in case of all five industries. Further, only in case of fertilizers industry, total assets turnover ratio is reported to have a significant and positive impact on the profitability which reflects the fact that firms having efficient use of its assets in maximizing the sales will also maximize profits given the low production costs.

Table 4: Determinants of Profitability in Metals & Mining Industry: Fixed Effects Model

Independent variables	Coefficients
Ownership[#]	0.093
Current assets ratio	-0.008
Debt equity ratio	-0.060
Inventory turnover ratio	0.0064
Debtors turnover ratio	-1.98e-06
Total assets turnover ratio	0.069**
D_1	0.795***
D_2	0.082

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

D_3	0.266*
D_4	0.115**
D_5	0.084
D_6	0.318**
D_7	0.0781
D_8	0.267***
D_9	0.300**
D_{10}	-0.087

Source: Authors' calculation

The ownership coefficient is the difference of mean intercepts of public and private sector firms i.e. $\frac{1}{5}\sum_{i=1}^{5}\gamma_i D_i - \frac{1}{5}\sum_{i=6}^{10}\gamma_i D_i$

***, ** and * indicate statistical significance at 1%, 5% and 10% level respectively.

In case of metals & mining industry, the Hausman test (see Table 2) established that the unobservable individual effect correlated with the explanatory variables of the model and therefore suggests the fixed effects estimation of the coefficients. Since the fixed effects estimation eliminates the all time-invariant variables from the model, the impact of ownership on the profitability of a firm cannot be estimated directly. In order to measure the impact of ownership on the profitability, we have applied least square dummy variable (LSDV) model by introducing as many dummies as the number of the firms. In order to avoid the perfect multicollinearity, intercept is omitted from the model. The results of the fixed effects model are shown in table 4. The table exhibits that among the all explanatory variables (excluding individual dummies) only total assets turnover ratio is found a statistically significant explanatory variable which positively affects the profitability of the firms. In order to measure the impact of ownership on the profitability of a firm in metals & mining industry, we have grouped the individual intercepts coefficients into two categories and by taking the average of individual intercepts for each category, we have obtained the two mean intercepts: one for the public sector firms and other for the private sector firms. Further, using the independent samples t-test, it is verified whether there exists any substantial difference between these two mean intercepts. As shown in Table 4, the mean intercepts of the public sector firms as a group is greater than that of their private counterparts. However the difference is reported statistically insignificant. The random effects model, as indicated by Table 3, also reinforces the same conclusion as far as ownership is concerned.

5. Conclusion

In the light of recent experience, the paper analyzes the impact of ownership structure on profitability of a firm by using the panel data models. Profitability index is taken as the

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Volume:04, Issue:02 "February 2019"

dependent variable; whereas ownership, current ratio, debt-equity ratio, inventory turnover ratio, debtors turnover ratio, and total assets turnover ratio are selected as independent variables. As far as ownership is concerned, no strong evidence has been emerged regarding the impact of ownership on profitability. In case of fertilizers industry, private sector firms are reported significantly more profitable than government owned firms. Whereas in case of capital goods and power industries, publicly owned firms have higher profitability as compared to privately owned firms. In case of rest of two industries, the impact of ownership structure on the profitability of a firm is reported statistically insignificant. Therefore, it can be concluded that the ownership structure of a firm is not a significant determinant of its profitability. It reflects the fact that in the modern business world, the firm is a complex organization, characterized by the divorce of ownership and management. This gives discretion to the managers to pursue goals other than profit maximization. Therefore, irrespective of the public or private ownership, a firm is controlled by the managers. In both public and private sector firms, managers select such goals which maximize their own utility function rather than the utility function of the owners (Williamson, 1964). Factors that usually enter the managerial utility function are salaries, prestige, market share, job security, quiet life and so on. From this perspective public and private sector firms may be regarded as the same entity which implies that ownership structure is not directly related to the profit maximization motive. Moreover, the argument in favour of privatization based on the belief that private ownership establishes the market for corporate control by allowing the tradability of property rights and therefore improves the quality of management. However, for several reasons (e.g. information poverty, takeover regulations etc.), the link between the market for corporate control and enterprise performance in developing countries can be weak. It implies that public policy must address institutional factors- such as weak law enforcement, poor corporate governance and tardy bankruptcy procedures- that keep private sector from realizing its fullest potential before embarking on full-blooded privatization.

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ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

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