ORIGINAL PAPER

DOI: 10.26794/2587-5671-2021-25-6-29-39
JEL C23, L25, L33

State Ownership and Firm Performance: A Performance Evaluation of Disinvested Public Sector Enterprises

I. Chhabra[a] ✉, S. Gupta[b], V.K. Gupta[c]
[a, b] Amity University, Noida, India;
[c] Indian Institute of Management, Indore, Madhya Pradesh, India
[a] https://orcid.org/0000-0003-1029-8771; [b] https://orcid.org/0000-0001-9862-5612;
[c] https://orcid.org/0000-0001-6557-1697
✉ Corresponding author

ABSTRACT

The Indian government devised a flexible method to modify the performance of public sector firms through disinvestment in the 1990s to boost commercial strength and bridge the budget deficit. The disinvestment policy intends to reduce the government's involvement in the country's economic activities to encourage the private sector. The **research aim**s to empirically examine the financial and operating performance of thirty-two Central public sector enterprises (CPSEs) in India. Further, the paper intends to study the other firm factors that influence the performance parameters. The Wilcoxon signed-rank test and random panel regression model are the **methods** employed to analyze the data statistically. The **results** show that the profitability of disinvestment has not brought significantly much improvement post-privatization in PSEs. In contrast, the productivity of employees has improved. Dividend payout ratio and no. of employees have shown improvement after five years of disinvestment, and leverage has insignificantly declined. In addition, state ownership shows a significant negative relationship with the performance variables. It implies that higher the equity shareholding of the government (state ownership) in the CPSEs, would negatively hamper the performance of firms. On the other hand, GDP and firm size are positively affecting the profitability and productivity of employees. The study **concludes** that the government is required to bring down the equity shareholdings in CPSEs, directing more efforts towards strategic disinvestment. Government should choose strategic disinvestment rather than partial and small-scale disinvestment because neither will offer good results. The decline in leverage shows the availability of cheaper sources of finance. Furthermore, it has been suggested that government interference in operational and administrative functions should be given the least priority.

Keywords: panel data; firm performance; privatization; disinvestment of enterprises; profitability indicators; sources of funding; state ownership

For citation: **Chhabra I., Gupta S., Gupta V.K. State ownership and firm performance: A performance evaluation of disinvested public sector enterprises. *Finance: Theory and Practice.* 2021;25(6):29-39. DOI: 10.26794/2587-5671-2021-25-6-29-39**

ОРИГИНАЛЬНАЯ СТАТЬЯ

Государственная собственность и эффективность деятельности компании: оценка деятельности дезинвестированных предприятий государственного сектора

И. Чхабра[a] ✉, С. Гупта[b], В.К. Гупта[c]
[a, b] Университет Амити, Нойда, Индия;
[c] Индийский институт менеджмента, Индор, Мадхья-Прадеш, Индия
[a] https://orcid.org/0000-0003-1029-8771; [b] https://orcid.org/0000-0001-9862-5612;
[c] https://orcid.org/0000-0001-6557-1697
✉ Автор для корреспонденции

АННОТАЦИЯ

Правительство Индии в 1990-х гг. разработало универсальный метод влияния на эффективность деятельности государственных компаний путем дезинвестирования для улучшения их коммерческой составляющей и преодоления дефицита бюджета. Политика дезинвестирования направлена на сокращение доли государственного участия в экономике страны для стимулирования частного сектора. **Цель** исследования — эмпирическое изучение финансовых

и операционных показателей тридцати двух ключевых предприятий государственного сектора (CPSE) Индии. Также авторы предлагают изучить другие факторы, влияющие на показатели эффективности компаний. В качестве **методов** статистического анализа данных использованы критерий знаковых рангов Уилкоксона (Wilcoxon signed-rank test) и модель регрессии панельных данных (random panel regression model). **Результаты** исследования демонстрируют, что дезинвестирование предприятий не приводит к значительному изменению показателей прибыльности. Производительность труда сотрудников, напротив, повышается. Отмечено положительное влияние на коэффициент выплаты дивидендов и численность сотрудников после пяти лет дезинвестирования, при этом эффект левериджа снижается незначительно. Кроме того, можно говорить об отрицательной корреляции между государственной собственностью и показателями эффективности. Это означает, что увеличение доли государственного участия будет негативно влиять на результаты деятельности компаний. С другой стороны, ВВП и размер предприятия положительно влияют на его прибыльность, а также производительность труда сотрудников. В работе сделан **вывод** о том, что государству необходимо сократить долю участия в государственном секторе, направив больше усилий на стратегическое (активное) дезинвестирование. Государству следует придерживаться идеи стратегического дезинвестирования, а не частичного, поскольку последнее не принесет высоких результатов. Снижение левериджа свидетельствует о доступности более дешевых источников финансирования. Также авторы предлагают свести к минимуму вмешательство государства в операционную и административную деятельность компаний.
Ключевые слова: панельные данные; эффективность деятельности предприятия; приватизация; дезинвестирование предприятий; показатели прибыльности; источники финансирования; государственная собственность

Для цитирования: **Chhabra I., Gupta S., Gupta V.K. State ownership and firm performance: A performance evaluation of disinvested public sector enterprises. *Финансы: теория и практика.* 2021;25(6):29-39. DOI: 10.26794/2587-5671-2021-25-6-29-39**

INTRODUCTION

Central public sector enterprises (CPSEs) have played a critical role in helping India's economy grow after independence and in resolving the country's socio-economic challenges. Though, the performance of the public sector has always been criticized owing to their low profitability and capacity not being fully utilized. High mounting revenue expenditure left the government with no surplus to spend on the capital expenditure. From 1988–1989, the public sector suffered a total loss of 1906.51 crores [1]. Due to the microeconomic inefficiencies, periodic inflation and balance of payments imbalances led the government towards a grave position [2]. The government was forced to adopt new economic policies regarding PSEs to save the Indian economy from financial disaster caused by unconstrained expenditure, cumulative debt burden, unfavorable balance of payment, and underperformance.

Disinvestment was adopted as part of economic reforms aimed at improving the performance of government-owned businesses (PSEs), managing the fiscal deficit, promoting a market economy rather than a command economy, and stimulating international and local capital [3]. The Indian government adopted disinvestment as a means of resolving such a dire scenario. Disinvestment implies dilution of state equity shareholding in the firms. Privatization has become a significant global phenomenon, affecting both developed and developing countries. Under the current Indian disinvestment policy, partial and strategic disinvestment are followed. In the case of disinvestment through minority stake sales, i.e., partial disinvestment, the government transfers the shareholding up to 49 percent and remains the majority stakeholder. On the other hand, the government moves 50% or more of the shareholding and transfer of management control under strategic disinvestment. India has followed the path of partial disinvestment since 1992, several public sector enterprises have been disinvested, and some others privatized over the years [4].

From 2000 onwards, there has been a change in the disinvestment policy from passive disinvestment (partial disinvestment) to active disinvestment (strategic disinvestment). As of 2018, there are more than two hundred operational public sector enterprises [5, 6]. When there is a transition from public ownership to private ownership via disinvestment, it is crucial to study how the financial and operational performance of CPSEs is affected in this transition. However, most of the studies in the Indian context have focussed mainly on partially disinvested PSEs. This study adds to the literature by studying both partially and strategically disinvested PSEs for eighteen years through univariate and panel data analysis. The primary objective of the study is to compare the pre and post disinvestment performance of PSEs. The study further analyses the factors other than state ownership that impact the profitability and operating efficiency of PSES as shown in *Figure*.

The Wilcoxon signed-rank test shows how the disinvestment has not brought much significant change in the profitability parameters. In contrast, the productivity of employees has improved. Dividend payout ratio and no. of employees have shown improvement after five years of disinvestment, and leverage has insignificantly declined. The panel data analysis reveals that state ownership has a negative relationship with profitability and operating efficiency parameters. It confirms with the studies such as [6–8] that higher state ownership is detrimental to the organization's health.

On the other hand, the better economic growth of the country positively influences the performance of firms. Although, the leverage of CPSEs has reduced, which is a good indicator that there is less dependency of disinvested firms on government borrowings. Lower the leverage, better the financial and operating performance of the public sector enterprises. It is also shown that there is a positive impact of firm size measured by the log of total assets on the profitability and operating efficiency of the firms. This finding aligns with most past research findings, which claim that the largest privatized firms earn more profit due to economies of scale [8, 9].

For a better explanation, the study's framework has been divided into five portions, one of which being the current one. The second section contains a review of the literature. In section three, the research approach employed in the study is described. The findings and discussion are discussed in Section 4. Finally, in part five, the study's conclusion and recommendations are presented.

REVIEW OF PAST STUDIES

Many extensive studies have been undertaken worldwide to check the influence of Privatization on government-owned enterprises' financial and operational performance after Privatization, and the literature has produced mixed results.

Overall, India's privatization process was a series of policies designed to reduce the size of the state sector, increase the involvement of the private sector, and adhere to the logic of the market in making economic decisions [10]. When Privatization took on its present state, it may be traced back to the early 1980s, when several British public sector firms were sold off for profit. In the years that followed, France privatized many public sector enterprises (PSEs), including over 20 by the mid-1980s. Leading European economies, on the other hand, did not begin Privatization until the 1990 s [11].

A study investigated public, private, and mixed-owned enterprises' profitability and productivity measures [12]. The analysis concluded that the private sector outperformed the public sector after accounting for sector and country variations. The performance of state-owned enterprises and private entities was compared by using a sample of 23 comparable airlines of varying ownership categories for 1973–1983 [11]. The results found a significant relationship between ownership and productivity growth. Productivity growth rates were ambiguous in the short run but showed an increase of 0.05% in the long run. The Boardman-Vining analysis was enlarged to include 1139 firm-years from Fortune 500 companies during 20 years. According to the data, private companies are much more profitable than state-owned ones. They opine when there is a change in ownership from public to privately owned firms, it offers a variety of benefits to the organization [13].

Studies by researchers [5, 6, 8, 14] found that post-privatization firms' efficiency improved significantly. They argued that Privatization enhances a firm's efficiency by removing political interferences and redirecting its focus to the economic goal of optimizing returns over time. On the contrary, there are studies that state that Privatization does not have a significant impact on the firm's performance [5, 14–16]. They contended that the real issue in the public sector is not just of inefficiency, but pricing and collection of user fees; unless these issues are resolved, public sector performance is unlikely to improve.

The privatization process should not be taken for granted merely by changing the ownership; it should be followed by reforms in the capital sector and restructuring corporate laws and regulations [16].

The study investigated the economic effects of privatization and ownership transfer on the performance of 1184 Chinese firms [17]. They found that a combination of state and private ownership, i.e., partial privatization, is the best-performing ownership model for Chinese firms. Overall, the most appropriate choice for reforming SOEs is ownership transformation, which effectively increases performance and attracts private capital to state-owned enterprises. The impact of state ownership on efficiency was examined on a sample of 114 largest Russian companies [18]. The study considered the direct and indirect impact of state ownership separately. It was found that, there was no discernible link between profitability and performance qualities in these businesses. Increases

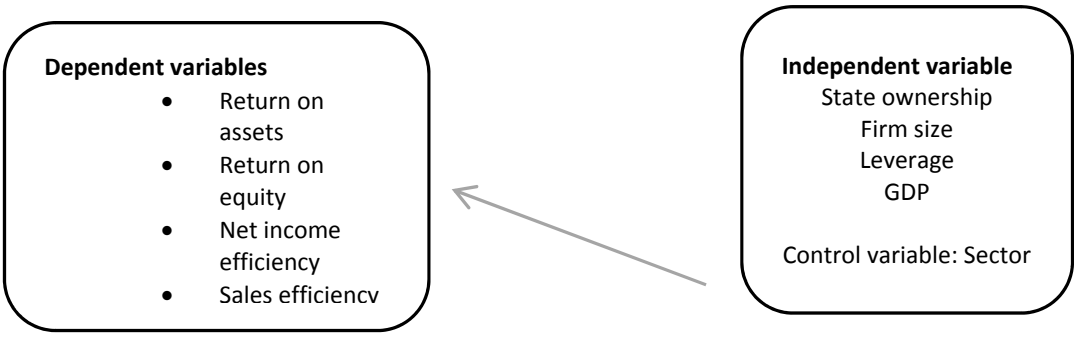

Fig. **Research framework used in the study relating to financial and operating performance variables and control variables for the disinvested PSEs**

Source: based on reviews of literature, a research framework developed by the authors.

in direct government ownership lead to decreased labour productivity and profitability, according to the study; the influence of indirect government ownership, on the other hand, appears to be more convoluted.

To investigate the relationship between ownership structure and performance for a sample of 1034 firms for 2000–2004. The results concluded that private block-holdings are beneficial to firm value. Further, the firms without or with low state participation, private block-holdings may hamper the firm value of such smaller firms [19]. In addition, a negative association is found between state ownership and corporate value, corporate increases when the government transfers more than 45 percent shares [20].

The mixed empirical results could be attributed to various model assumptions, firm performance metrics, time period and sample selection techniques. For example, studies [12, 15] have relied on OLS techniques and non-parametric tests to study financial performance. They used two-stage least-squares analysis to analyze balanced panel data [19]. In addition, all non-financial PLCs were considered in the study [8]. On the other hand, the study employed the fixed-effect panel model for the time period 2006–2014 [19].

They concluded that more significant degrees of government ownership have a more negative influence on performance in the competitive sector than lower levels [21]. Private firms, central public sector enterprises (CPSEs), and CPSEs with limited state shareholding outperform those with significant state shareholding.[1] The extent of government ownership is to blame for CPSEs' poor performance. Governance difficulties are particularly relevant in nations with insufficient investor protection, privatization boosts profitability, efficiency, and productivity [23].

Several studies have attempted to study the impact of Privatization on firm performance. However, the relationship between state ownership and performance is yet to be answered. State ownership is used as a proxy variable to represent the effect of Privatization [7, 8, 23, 24]. Studies done in the past have primarily focussed on studying the immediate impact of Privatization using non-parametric tests. Apart from this, other factors such as firm size, leverage, GDP and sector influence the performance of firms. Therefore, this study examines the financial and operating performance of disinvested firms in India, focusing on more than one and a half-decade periods.

RESEARCH METHODOLOGY

The disinvestment, on the other hand, began in 1992. Therefore, the study considers a sample of those disinvested PSEs that have got disinvested after 2000 since the period 2000 onwards marks the strategic disinvestment era. Forty-three non-financial PSEs have been disinvested. The sample size for this research was thirty-two PSEs. The twelve companies were excluded due to a lack of data and mergers. The period of the study is 2001–2018. The research is based on secondary information. The information was gathered from various sources, including capital line and the Department of Public Sector Enterprises website. The Panel data regression analysis is carried out using STATA 14. The study has adopted the following random panel regression model based on the Hausman test results (*Table 3*).

[1] Corporate governance of central public sector enterprises in India. 2010. URL: http://siteresources.worldbank.org/FINANCIALSECTOR/Resources/India_CG_Public_Sector_Enterprises.pdf

The author examines the financial performance over 11 years using various ratios. The year of disinvestment is set to zero, indicating that the year of disinvestment is not considered. Before and after disinvestment, the mean values of each CPSE for each variable ranged from (−5 to −1) to (+1 to +5). Wilcoxon signed-rank test has been applied to examine the financial performance of the divested firms based on five years before and after disinvestment. However, Wilcoxon signed-rank test does not capture the factors (such as GDP, size, risk, leverage, sector) that may influence the financial performance of firms. Fixed/random panel regression was applied to analyze data and affirm the results achieved through a non-parametric test.

$Perf_{it} = \alpha + \beta_1 stateownership_{it} + \beta_2$ Firm Specific $Variables_{it} + \varepsilon_{it}$

a = Intercept/Constant

b1, b2, b3, b4..... bn = slopes/coefficients of regression

X1, X2, X3, X4,.....Xn = Independent variables that influence the performance of the dependent variable

€n = Error terms or residuals having a normal distribution with a mean of 0 and constant variance of σ^2.

Variables

Dependent variables

Profitability

Return on assets: The return on assets (ROA) is a metric that evaluates the income earned by a company's assets. This metric measured how effectively the organization is leveraging its total assets to generate profits. It was computed by dividing EBIT by the firm's total assets [25].

Return on equity: It assesses how well the company manages the money it receives from shareholders. In other words, it reflects the company's profitability in terms of shareholder equity. It was computed by dividing earnings after taxes by shareholder's fund [26, 27].

Operating efficiency

Net income efficiency: It was computed as earnings after taxes divided by the number of employees [28].

Sales efficiency: It was computed as net sales divided by the number of employees. Excise duty, commission, rebates, and discounts are not included in net sales [6].

Independent variable

State ownership The percentage of state ownership owned by the government after disinvestment/privatization. Similarly, it was found that enterprises with less than 50% state ownership outperform others in terms of financial performance [17]. On the other hand, a high percentage of state ownership results in worse efficiency due to soft cover-age, debt elimination, and other factors [9]. The study plans to test this again in these situations, thus predicting a negative relationship between the variables of State and PER.

Firm size: It is thought that too large enterprises may not perform well due to corruption or difficulty controlling and operating PSEs. It is calculated as a logarithm of total assets [20].

Leverage: The amount of debt a company has an impact on its performance. Total debt/total equity is how it is determined [29, 30].

Economic growth: Gross domestic product (GDP) is considered to measure the impact of economic growth. The GDP impacts every part of the firm's production and business process, including material prices, labor costs, and sales [23]. As a result, it is postulated in this research model that economic expansion has a favorable impact on firm financial performance.

Control variable:

Sector: Dummy variable. 0 considered for the service sector and 1 for the manufacturing sector [31].

Table 1

VIF table

Variable	VIF	1/VIF
State ownership	1.01	0.9235
Firm size	1.07	0.9319
leverage	1.12	0.8817
Economic growth	1.32	0.7262
sector	1.05	0.8312
Mean	1.10	

Source: author's compilation, STATA 14 software.

FINDINGS AND DISCUSSION

Variance Inflation Factor has been calculated to check for multicollinearity (*Table 1*). VIF falls between 1.01 and 1.32, and the mean is 1.10. Since the VIF value is less than 10, there is no multicollinearity [32]. Finally, autocorrelation was

Table 2

Wilcoxon signed-rank test analysis: Pre and Post impact of disinvestment on profitability and operating efficiency

Performance Indicators	N	Mean (Median) Before Disinv.	Mean (Median) After Disinv.	Mean Change	Z statistics	Sig (Two-Tail)
Profitability						
Return on Assets	32	0.2412(0.2021)	0.2217(0.1951)	–.019(0.007)	–0.507	0.144
Return on Equity	32	0.1561 (0.1366)	0.1421(0.1235)	–.014(0.0131)	–0.633	0.527
Efficiency						
Net inco. Effic.	32	0.6623 (0.6323)	1.0521(0.9925)	0.3898(0.3602)	–1.011	0.001*
Sales Efficiency	32	0.7821 (0.7978)	1.5123 (1.012)	.7302(0.2142)	–1.202	0.003*
Payout						
Dividend Pay-out Ratio	32	20.311 (19.5231)	22.711 (21.3151)	2.4 (1.792)	–1.647	0.04**
Leverage						
Debt to equity ratio	32	0.0039 (0.0011)	0.0019 (0.0008)	–.002(0.0003)	–1.408	0.259
Employment						
Total no. of employees	32	14261 (8235)	11721 (6329)	–2540 (1906)	–2.062	0.029**

Source: author's compilation.

Note: *, ** and *** show significance at 1%, 5% and 10% levels respectively.

checked using Durbin-Watson. The Durbin-Watson test is used to determine the independence of error terms or residual autocorrelation. There appears to be autocorrelation of residuals in the established regression models because the calculated Durbin-Watson value (4.251) is greater than the necessary benchmark value (3.00).

To see if there was any heteroskedasticity in the data, the Wald test was used. The findings corroborated autocorrelation and heteroskedasticity. For this, **Robust panel regression results are shown** (*Tables 4 and 5*).

Several researchers have employed the OLS technique to measure the impact of state ownership/privatization on firm performance. However, this technique overlooks the problem of heterogeneity of the data. Therefore, the study employs an appropriate panel data regression model to address this issue (fixed effect panel or random effect panel).

The dynamic panel regression model provides robust standard error estimates and controls the heteroskedastic distortions [33]. Further, the panel data estimation is the best technique to capture the time and cross-sectional variance

Wilcoxon signed-rank test analysis

The Wilcoxon signed-rank test (shown in *Table 2*) shows that ROA and ROE have decreased after disinvestment. Before disinvestment, the mean (median) ROA and ROE were 0.2412 (0.2021) and 0.1561 (0.1366), respectively, while after disinvestment, they were 0.2217 (0.1951) and 0.1421 (0.1235). However, because the P-value is more than 0.10, the decline is statistically insignificant.

On the other hand, the mean (median) of net income productivity improves from 0.6623 (0.6323) to 1.0521 (0.9925) after five years of disinvestment with a p-value of 0.001. Similarly, Sales productivity appears to be improving, as the mean (median) value rises from 0.7821 (0.7978) to 1.5123 (1.012) after disinvestment, with a p-value of 0.03. In addition, the mean (median) dividend payout ratio of all firms increased from 20.311 (19.5231) to 22.711 (21.3151) after disinvestment, implying a 2.4-point increase in mean (median) (1.792). At the 1% level, this finding is deemed to be statistically significant.

Furthermore, with a p-value > 0.10, the mean (median) debt/equity ratio falls from 0.0039

Table 3

Hausman statistics

Dependent variables	χ2	P value	Appropriate Model
ROE	4.51	0.4731	Prob ⩽ χ2 Random effect panel model
ROA	2.72	0.2231	Prob ⩽ χ2 Random effect panel model
Sales efficiency	1.51	0.8187	Prob ⩽ χ2 Random effect panel model
Net income efficiency	1.22	0.3122	Prob ⩽ χ2 Random effect panel model

Source: author's calculation, STATA 14 software.

Table 4

Impact of state ownership on the profitability of disinvested PSEs

Variables	ROA (Model 1)			ROE (Model 2)		
	Coeffi.	Rbt S.E	P-value	Coefficients	Rbt. S.E	P-value
State	−1.011	0.001	0.002*	−0.721	0.003	0.013**
Firm size	0.212	0.646	0.022**	0.0021	0.0061	0.000*
Leverage	−3.22	0.086	0.000*	−2.175	0.132	0.121
GDP	1.79	0.021	0.021**	0.884	0.0211	0.111
sector	−0.436	0.052	0.251	−0.144	0.0612	0.091***
Adj.Rsquare(b/w)	0.6321			05825		
rho	0.6545			0.6223		

Source: author's calculation, STATA 14, Dependent variables, return on assets, and return on equity showing statistical significance at 1%, 5%, and 10% as *, **, and *** respectively.

Table 5

Impact of state ownership on the efficiency of disinvested PSEs

Variables	Net income efficiency (Model 3)			Sales efficiency (Model 4)		
	Coeffi.	Rbt S.E	P-value	Coefficients	Rbt. S.E	P-value
State	−0.012	0.012	0.001*	−0.035	0.0012	0.002*
Firm size	0.0221	0.0032	0.081***	0.053	0.0047	0.655
Leverage	−0.321	0.0010	0.001*	−.0109	0.0025	0.637
GDP	0.0812	0.030	0.121	.1861	0.045	0.000***
sector	−0.0035	0.0158	0.132	−.0241	0.0251	0.001*
Adjusted R-square	0.6045			0.5711		
Rho	0.6278			0.6023		

Source: author's calculation, STATA 14, Dependent variables, net income efficiency and sales efficiency showing statistical significance at 1%, 5%, and 10%.

(0.0011) before disinvestment to 0.0019 (0.0008) after disinvestment. The mean (median) of the total number of employees, on the other hand, fell from 14261 (8235) to 11721 (6329), a change of –0.2540. (0.1906). The finding is statistically significant.

Panel data regression results

The results of the GLS dynamic model to study the impact of state ownership and other variables are presented in this section. *Table 3* provides the chi-square statistics results, suggesting that the suitable model is the random effect model because the $\chi 2$ is insignificant in all four models. The firms' profitability is represented by the first two dependent variables, whereas sales efficiency and net income productivity are used to describe the efficiency per employee.

Table 4 represents the results for model 1 and model 2. The impact of state ownership and other variables on return on assets and equity has been empirically tested. The results indicate there is a negative impact of state ownership on the profitability parameters. Regarding the effect of state ownership, on return on assets, since the beta coefficient of state ownership is –1.011 and the P-value is equal to 0.001, less than 1 percent (P-value 0.001 < 0.01). It can be concluded that state ownership has brought a significant negative impact on firms' return on assets. In other terms, lower state ownership or a greater extent of disinvestment is better for profitability. Privatization involves dilution of state shareholding in the public sector enterprises. As the government loses its shares in the firm, the results indicate profitability improves.

Further, the study examines the impact of variables other than state ownership that influence the firms' profitability (*Table 4*). The firm-specific variable's effect has also been analyzed for the profitability of the firms. The firm size, leverage, and GDP of the firm significantly influence the return on assets of PSEs. The negative beta coefficient of leverage shows that one unit change in the leverage ratio leads to a –3.22 change in return o assets. Firm size measured by the log of total assets has a coefficient of 0.212, P-value is 0.022, less than 5 percent (P-value 0.022 < 0.05). In contrast, the country's economic growth positively affects the firms' return on assets, $\beta = 0.0812$ with p-value equals 0.021 (P < 0.05). The performance of the manufacturing sector is having an insignificant negative impact on the ROA of the PSEs.

State ownership and return on equity exhibit similar results as obtained in model 1. State ownership has a negative impact with $\beta = -0.721$, significant at 5 percent, and P-value equals 0.013 > 0.01. The negative impact of state ownership on ROE is validated by this negative impact as evidenced by beta value. Coming to the firm-specific variables, firm size is reported to impact return on equity positively. This finding aligns with most past research findings, which claim that the largest privatized firms earn more profit due to economies of scale. Firm size has a beta coefficient equal to 0.0021, significant at a confidence level of 99 percent (P-value < 0.001). GDP also positively influences the firms' return on equity, with $\beta = 0.884$, insignificant at 90 percent confidence level (P-value > 0.10). In contrast, leverage has a negative impact on ROE.

Table 5 reports the panel data regression results, showing the impact of state ownership on the productivity of the disinvested firms. Productivity has been measured with net income efficiency and sales efficiency — the results obtained in models 3 and 4 are similar report findings to models 1 and 2. There is a negative relationship between state ownership and net income efficiency. The P-value is 0.001, less than 1 percent, with a beta coefficient equal to –0.012. The negative coefficient and the significant P-value rejects the null hypothesis that state there is no significant impact of state ownership on the productivity of disinvested PSEs. The variables that significantly impact the net income productivity of disinvested public sector enterprises are size and leverage. The p-values are 0.081 (P < 0.10), 0.001 (P < 0.01), significant at a confidence interval of 90 percent and 99 percent, respectively. The beta coefficients of size and leverage are reported as $\beta = 0.0221$ and –0.321, respectively. Similarly, regression analysis shows a negative beta coefficient of state ownership to sales productivity. The β coefficient is –0.035 significant at 99 percent confidence interval (P-value < 0.01). Firm size, leverage, GDP, and sector also influence the sales productivity of the disinvested firms. The positive β coefficient shows a positive impact except for leverage, and the sector with β coefficients are –.0109 and –0.0241. The former is insignificant as P-value > 0.10 and the latter is significant with a P-value of 0.001.

CONCLUSIONS

Wilcoxon signed-rank test analysis reveals that disinvestment has not significantly improved ROA and ROE parameters even after five years of disinvestment. The fundamental reason for this is

because the Indian government has traditionally placed a high value on partial disinvestment. However, even though the strategy has switched from partial to strategic disinvestment, the process has been prolonged.

The results further show that the operational efficiency of disinvested PSEs has significantly improved. The improvement could probably be due to the reduction of employees. The government had introduced a voluntary retirement scheme for the employees.

Dividend payout ratio and no. of employees have shown improvement after five years of disinvestment, and leverage has insignificantly declined. The decline in leverage is because of the availability of a cheaper source of finance.

The results exhibit a negative relationship between state ownership and performance (ROA, ROE, net income efficiency, and sales efficiency parameters. The findings show that the higher the level of state ownership, the worse the performance of such disinvested PSEs. All agree that the smaller the state ownership, the better the performance of public businesses [8, 9, 24, 34]. Property rights and agency theory explain why there is a negative link between state ownership and firm performance. Higher state ownership would mean more engagement of state agents, which would negatively affect firm performance. State agents are more concerned with their interests than with the firm's performance. In addition, firm performance is hampered by increased bureaucratic control.

However, the change in ownership from public to private does not guarantee performance improvement. Other institutional changes must accompany it. The transition from public to private ownership impacts a company's performance by increasing its economic efficiency. However, ownership alone will not increase a company's success.

To ensure that CPSE performance improves as a result of changing ownership from public to private, public authorities must implement other reform measures such as increasing financial and managerial autonomy, executing performance contracts, listing on stock exchanges and implementing corporate governance principles among others [5].

REFERENCES

1. Prajapti Trivedi. What is India's privatization policy? *Economic and Political Weekly*. 1993;28(22):M71-M76. URL: https://tgpg-isb.org/sites/default/files/secy-pm/select-papers/1993–05-What_is_Indias_Privatisation_Policy.pdf
2. Chakrabarti A. B., Mondal A. Can commercialization through partial disinvestment improve the performance of state-owned enterprises? The case of Indian SOEs under reforms. *Journal of General Management*. 2017;43(1):5–14. DOI: 10.1177/0306307017719700
3. Chhabra I., Gupta S., Gupta V. K. A study of progress and changes on the disinvestment policy in India. *Indian Journal of Economics and Business*. 2019;18(1):27–40.
4. Mandiratta P., Bhalla G. S. Disinvestment in Indian central public sector enterprises: A performance improvement measure. *Journal of Economic and Administrative Sciences*. 2021;37(4):496–521. DOI: 10.1108/JEAS-02–2019–0023
5. Gakhar D. V., Phukon A. From welfare to wealth creation: A review of the literature on privatization of state-owned enterprises. *International Journal of Public Sector Management*. 2018;31(2):265–286. DOI: 10.1108/IJPSM-03–2017–0096
6. Ghosh S. Does divestment matter for firm performance? Evidence from the Indian experience. *Economic Systems*. 2008;32(4):372–388. DOI: 10.1016/j.ecosys.2008.03.002
7. Liu Y., Li X., Lahiri S. Determinants of privatization in China: The role of the presence of foreign firms. *China Economic Review*. 2016;41:196–221. DOI: 10.1016/j.chieco.2016.10.002.
8. Wei Z., Varela O. State equity ownership and firm market performance: Evidence from China's newly privatized firms. *Global Finance Journal*. 2003;14(1):65–82. DOI: 10.1016/S 1044–0283(03)00005-X
9. Sun Q., Tong W. H. S., Tong J. How does government ownership affect firm performance? Evidence from China's privatization experience. *Journal of Business Finance and Accounting*. 2002;29(1–2):1–27. DOI: 10.1111/1468–5957.00422
10. Jain P. K., Gupta S., Yadav S. S. Public sector enterprises in India: The impact of disinvestment and self obligation on financial performance. New Delhi: Springer-Verlag; 2014. 405 p.
11. Ehrlich I., Gallais-Hamonno G., Liu Z., Lutter R. Productivity growth and firm ownership: An empirical investigation. *Journal of Political Economy*. 1994;102(5):1006–1038.

12. Boardman A.E., Vining A.R. Ownership and performance in competitive environments: A comparison of the performance of private, mixed, and state-owned enterprises. *The Journal of Law & Economics*. 1989;32(1):1–33. DOI: 10.1086/467167
13. Mathur I., Banchuenvijit W. The effects of privatization on the performance of newly privatized firms in emerging markets. *Emerging Markets Review*. 2007;8(2):134–146. DOI: 10.1016/j.ememar.2006.12.002
14. Gupta N. Partial privatization and firm performance. *The Journal of Finance.* 2005;60(2):987–1015. DOI: 10.1111/j.1540–6261.2005.00753.x
15. Alipour M. Has privatization of state-owned enterprises in Iran led to improved performance? *International Journal of Commerce and Management*. 2013;23(4):281–305. DOI: 10.1108/IJCoMA-03–2012–0019
16. Nagaraj R. Disinvestment and privatization in India: Assessment and options. Asian Development Bank Policy Networking Project. 2005.
17. Liu G.S., Beirne J., Sun P. The performance impact of firm ownership transformation in China: Mixed ownership vs. fully privatised ownership. *Journal of Chinese Economic and Business Studies*. 2015;13(3):197–216. DOI: 10.1080/14765284.2015.1056476
18. Abramov A., Radygin A., Entov R., Chernova M. State ownership and efficiency characteristics. *Russian Journal of Economics*. 2017;3(2):129–157. DOI: 10.1016/j.ruje.2017.06.002
19. Hess K., Gunasekarage A., Hovey M. State-dominant and non-state-dominant ownership concentration and firm performance: Evidence from China. *International Journal of Managerial Finance*. 2010;6(4):264–289. DOI: 10.1108/17439131011074440
20. Anderson J.H., Lee Y., Murrell P. Competition and privatization amidst weak institutions: Evidence from Mongolia. *Economic Inquiry*. 2000;38(4):527–549.
21. Chhibber P., Majumdar S.K. State as investor and state as owner: Consequences for firm performance in India. *Economic Development and Cultural Change*. 1998;46(3):561–580. DOI: 10.1086/452358
22. Boubakri N., Cosset J.C., Fischer K., Guedhami O. Privatization and bank performance in developing countries. *Journal of Banking & Finance*. 2005;29(8–9):2015–2041. DOI: 10.1016/j.jbankfin.2005.03.003
23. Guedhami O., Pittman J.A., Saffar W. Auditor choice in privatized firms: Empirical evidence on the role of state and foreign owners. *Journal of Accounting and Economics*. 2009;48(2–3):151–171. DOI: 10.1016/j.jacceco.2009.08.003
24. Yu M. State ownership and firm performance: Empirical evidence from Chinese listed companies. *China Journal of Accounting Research*. 2013;6(2):75–87. DOI: 10.1016/j.cjar.2013.03.003
25. Tan Y., Tian X., Zhang X., Zhao H. The real effect of partial privatization on corporate innovation: Evidence from China's split share structure reform. *Journal of Corporate Finance*. 2020;64:101661. DOI: 10.1016/j.jcorpfin.2020.101661
26. Dewenter K.L., Malatesta P.H. State-owned and privately owned firms: An empirical analysis of profitability, leverage, and labor intensity. *American Economic Review*. 2001;91(1):320–334. DOI: 10.1257/aer.91.1.320
27. Chen G.M., Firth M., Rui M. Have China's enterprises reforms led to improved efficiency and profitability. *Emerging Market Review*. 2006;7(1):82–109. DOI: 10.1016/j.ememar.2005.05.003
28. Seema G., Jain P.K., Yadav S.S., Gupta V.K. Financial performance of disinvested central public sector enterprises in India: An empirical study on select dimensions. *Journal of Applied Finance & Banking*. 2011;1(4):57–106. URL: http://www.scienpress.com/upload/JAFB/Vol%201_4_3.pdf
29. Astami E.W., Tower G., Rusmin R., Neilson J. The effect of privatisation on performance of state-owned-enterprises in Indonesia. *Asian Review of Accounting*. 2010;18(1):5–19. DOI: 10.1108/13217341011045971
30. Chang S.C., Boontham W. Post-privatization speed of state ownership relinquishment: Determinants and influence on firm performance. *North American Journal of Economics and Finance*. 2017;41:82–96. DOI: 10.1016/j.najef.2017.04.001
31. Chhibber A., Gupta S. Public sector undertakings: Bharat's other Ratnas. *International Journal of Public Sector Management*. 2018;31(2):113–127. DOI: 10.1108/IJPSM-02–2017–0044
32. Field A. Discovering statistics using IBM SPSS statistics. London: SAGE Publications Ltd; 2013. 915 p.
33. Hoechle D. Robust standard errors for panel regressions with cross-sectional dependence. *The Stata Journal*. 2007;7(3):281–312. DOI: 10.1177/1536867X0700700301
34. Estrin S., Pelletier A. Privatization in developing countries: What are the lessons of recent experience? *The World Bank Research Observer*. 2018;33(1):65–102. DOI: 10.1093/wbro/lkx007

ABOUT THE AUTHORS / ИНФОРМАЦИЯ ОБ АВТОРАХ

Isha Chhabra — Pursuing PhD in finance, Research Scholar at Amity Business School, Amity University, Noida, Uttar Pradesh, India
Иша Чхабра — соискатель степени доктора экономических наук, научный сотрудник бизнес-школы Амити, Университет Амити, Нойда, Уттар-Прадеш, Индия
eshachabra11@gmail.com

Dr. Seema Gupta — PhD in finance, Professor, Amity College of Commerce and Finance, Noida, Uttar Pradesh, India
Сима Гупта — доктор экономических наук, профессор, Колледж торговли и финансов Амити, Нойда, Уттар-Прадеш, Индия
sgupta18@amity.edu

Vijay K. Gupta — PhD, Professor, Indian Institute of Management, Indore, Madhya Pradesh, India
Виджай Кумар Гупта — доктор экономических наук, профессор, Индийский институт менеджмента, Индор, Мадхья-Прадеш, Индия
vkgupta@iimidr.ac.in

Authors' declared contribution:
Chhabra I. — identified the problem, developed the framework, review of literature, collected data, performed analysis and wrote the conclusions.
Gupta S. — discussed the variables, techniques and research results.
Gupta V.K. — reviewed the paper and conclusion of the study.

Заявленный вклад авторов:
Chhabra I. — постановка проблемы, разработка концепции статьи, критический анализ литературы, сбор статистических данных, анализ данных и формирование выводов исследования.
Gupta S. — описание переменных, методов и результатов исследования.
Gupta V.K. — общее руководство, подтверждение выводов.

The article was submitted on 20.09.2021; revised on 07.10.2021 and accepted for publication on 17.10.2021.
The authors read and approved the final version of the manuscript.
Статья поступила в редакцию 20.09.2021; после рецензирования 07.10.2021; принята к публикации 17.10.2021.
Авторы прочитали и одобрили окончательный вариант рукописи.