NUPI

[663] Paper

The Inferior Performance of State Owned Enterprises: Is it due to Ownership or Market Structure?

Eskil Goldeng
Leo A. Grünfeld
Gabriel R.G. Benito

No. 663 – 2004

Norwegian Institute of International Affairs
Norsk Utenrikspolitisk Institutt

Utgiver: NUPI

ISSN: 0800 - 0018

Besøksadresse: C.J. Hambrosplass 2d
Addresse: Postboks 8159 Dep.
0033 Oslo
Internett: www.nupi.no
E-post: pub@nupi.no
Fax: [+ 47] 22 36 21 82
Tel: [+ 47] 22 99 40 00

The Inferior Performance of State Owned Enterprises: Is it due to Ownership or Market Structure?

Eskil Goldeng
Norwegian School of Management BI, Elias Smiths vei 15, N-1302 Sandvika, Norway, eskil.goldeng@bi.no
Leo A. Grünfeld
NUPI, Department of International Economics
P.O. Box 8159 Dep., N-0033 Oslo, Norway, lag@nupi.no
Gabriel R.G. Benito
Department of International Economics and Management, Copenhagen Business School, DK-2000 Frederiksberg, Denmark, gb.int@cbs.dk

Keywords: Firm performance, state ownership, market structure

JEL classification: H42, L32, P17, P42

Acknowledgements: We thank Sjoerd Beugelsdijk and Camilla Jensen for helpful comments and suggestions on an earlier version of this manuscript. We also thank the Åbo EUNIP 2002 conference participants. The project has partly been financed through the «grenseløs verdiskapning» project.

[Abstract] We analyze differences in performance between private companies (PCs) and state owned enterprises (SOEs), with an emphasis on the effects of market structure. We use a panel covering all registered companies during the 1990s in Norway, a country where SOEs play an important role in regular markets. Return on assets as well as costs measures are used as measures of performance in models that investigate markets where SOEs and PCs actually compete with each other. Although market shares and concentration affect performance, ownership identity still explains most of the inferior performance among SOEs.

1. Introduction

Even though the dominant type of ownership in market-based societies is private ownership, cases of state ownership are easy to find. Active and deliberate liberalization and privatization policies, especially during the last two decades, have led to a considerable reduction in the number of state owned enterprises (SOEs) in most countries (see e.g. Sheshinski and López-Calva [2003]), but many companies remain state owned. There has been a long-standing debate on the merits – and problems – of government control over business enterprises. State ownership has been defended on the grounds of various types of market failure, and it has been regarded as an instrument for the attainment of non-economic goals such as the need for public control over natural resources, regional policy, employment or social issues etc (Grout and Stevens [2003]). The contrasting views are that state ownership is mainly used for ideological reasons, that it suits the interests of a ruling elite, or that it simply is retained due to institutional inertia. Also, if state ownership does increase the scope for deviations from profit-maximizing behaviour, the economic performance of SOEs is likely to suffer when compared to private companies (PCs).

Independent of one's particular point of view on the issue of state ownership versus private ownership, most scholars agree that a core question in the privatization debate is whether type of ownership has an effect on the performance of companies. Recent research on corporate governance suggests that ownership issues, such as the concentration and identity of owners, affect the performance of companies (Shleifer and Vishny [1997]; Thomsen and Pedersen, [2000]). In this paper, we focus on ownership identity. If certain ownership types consistently show superior economic performance relative to others, it seems reasonable to expect a move away from existing ownership arrangements towards the most efficient ones.

An agency theory perspective on state versus private ownership suggests that economic performance levels by and large are the result of the incentives, costs, and exposure to disciplinary (market) forces implied by the different ownership structures. An alternative view is provided by traditional reasoning in industrial economics, which suggests that economic performance is a result of the level of competition in a given market and the strategies followed by individual firms in that market. Whereas the former view would propose that government owned companies should be expected to display inferior performance because of inadequacies of that particular type of ownership, the latter view suggests that performance differences, if any, can largely be explained by differences in market structure.

Because previous studies on privatization have not paid sufficient attention to the various determinants of economic performance, it has been unclear whether and to what extent observed performance differences are driven by ownership or by market characteristics.[1] In their seminal contribution to the study of privatization, Vickers and Yarrow [1989, p.39] give the following comment on the existing empirical literature:

"Unfortunately, despite the large number of studies that have been conducted, the results of this empirical literature are less informative than

might be anticipated. In the first place, many studies focus almost exclusively upon the ownership variable and fail to take proper account of the effects on performance differences in market structure, regulation, and other relevant economic factors. In part, this is simply a consequence of data problems: the limited number of observations available renders it difficult to conduct complex multifactor analyses."

Boardman and Vining [1989] conduct one of the first systematic empirical studies of the difference of economic performance between SOEs and PCs. Their approach is motivated by the fact that earlier empirical studies have failed to adequately control for other relevant factors when investigating the ownership effects on performance. In particular, the link between competition and performance makes it crucial to include market structure measures when assessing the performance across different ownership categories. According to Boardman and Vining [1989], previous studies focus exclusively on heavily regulated companies and/or industries, or industries with the characteristics of monopolies or duopolies. As a result, the consequences of market conditions and regulation are virtually impossible to distinguish from the effect of different types of owners.

Recent surveys of available empirical evidence suggest that the findings of previous studies do not offer conclusive evidence of systematic performance differences between SOEs and PCs. Shirley and Walsh [2000] point out that among the 52 studies they survey, five indicate that SOEs outperform PCs. However, these studies are all based on analyses of monopoly firms in the utility sectors. In 32 of the 52 studies, PCs were better performers than SOEs. In the remaining 15 studies no clear performance differences were detected. As pointed out by Shirley and Walsh [2000] as well by Megginson and Netter [2001], the studies covered in their surveys display a substantial degree of heterogeneity with respect to methodology and choice of empirical context, which complicates comparisons between them. Also, they suffer from a range of design, measurement, and sampling problems; most studies have either selected only the largest companies in a particular area or region, or focus on companies belonging to one given industry. None of the studies cover what can be considered as the population of companies in a country.

In this paper, we utilize a comprehensive panel data set containing accounting information for all registered companies in Norway over the period 1990 to 1999. We explicitly model both the ownership and market structure effects on performance. The availability and quality of relevant data in Norway makes our choice of country highly relevant. Furthermore, the ownership composition in Norway is in itself particularly well suited for exploring the issue of state versus private ownership. Despite several examples of privatization and part-privatization during recent years, state ownership remains common in Norway. According to Roland *et al.* [2001] the value added share of SOEs in the business sectors in Norway is the highest of all EU and EEA-countries. In 1998, the share was 29%, up from 27% in 1991, which is approximately the double of what we find in Sweden and Greece, the nations ranked below Norway. In the EU, the average SOE share of value added was only 9%. The Norwegian pattern is partly related to the dominance of SOEs in the oil industry, but state ownership is

definitely present in many other sectors as well. This makes it especially appropriate to study the performance difference of SOEs and PCs in the Norwegian context, because we can expect to find a relatively large set of comparable companies that actually compete in the same market.

To simply compare the performance of all SOEs and PCs in a population of firms is likely to lead to flawed conclusions since most PCs do not compete with any SOEs in their respective markets, and *vice versa*. To deal with this problem, we conduct analyses were we impose various selection criteria to increase the likelihood that firms with different types of ownership actually compete in the same market. To our knowledge, no previous study has analysed the performance differences of different owner types based on a data set covering basically the full population of firms in a country, and examined such differences while checking for the presence of competition between firms.

We employ two alternative performance measures: return on assets (*ROA*) and cost share (*Cost*) measured in terms of operational costs as share of sales revenue. Using either measure our data indicate that the performance of SOEs is indeed inferior to that of PCs after controlling for the market structure. This finding is not sensitive to alternative selection criteria and is also highly robust when controlling for geographical and industrial characteristics that may serve as indicators for regional and industrial policy. Our study also shows that performance is positively related to the market share of companies as well as the market concentration. The latter is measured in terms of the Herfindahl index on NACE 5-digit level. Hence, we provide support for both the ownership identity and the market structure view on performance. We also test whether PC and SOEs react differently on a change in market concentration and market power. The results indicate that increased competition is less detrimental to SOE performance than to PC performance. Given the weaker overall performance of SOEs, this may seem surprising, but the results are in line with theoretical predictions based on principal agent models where competition serves as a disciplining device; the principal gains access to external information from competitors on how to run operations efficiently (see e.g. Nalebuff and Stiglitz [1983]).

The paper is organized as follows: We discuss the theoretical relationship between ownership and market structure in section 2. Section 3 describes the data set and discusses our choice of performance measures. In section 4 we present and discuss our model and results while section 5 concludes.

2. Ownership and performance differences: Theory

The vast majority of theoretical contributions to the study of performance and ownership identity explain the inferiority of SOEs based on incentive problems in the public sector. Even so, from the industrial economics literature we know that performance in terms of profits or, alternatively, returns on capital or rewards to shareholders, also is a function of the structure of the market. Stronger competition tends to drive down profits and the ability to reward the owners through dividends. Thus, an empirical analysis of the relationship between ownership identity and performance must take the existing market structures into consideration. Below, we first present a brief theoretical discussion of the links between ownership identity and performance primarily based on principal-agent theory. Then we introduce market structure as a disciplining force and discuss how this force may affect the performance of SOEs and private firms differently. Finally, we briefly discuss alternative motives for state ownership, and the consequence for the performance of SOEs.

2.1. Ownership identity and performance incentives

In the field of corporate governance, the relationship between ownership and performance is predominantly analyzed within the context of conflicting interests between owners and managers, and the "collective action" problems that arise when firm ownership is highly fragmented (Berle and Means [1932]; Baumol [1959]; Jensen and Meckling [1976]; Jensen [1986]; Rappaport [1986]). In addition to the composition and concentration of owners, the institutional identity of owners may play an equally important role with regard to performance (see for example Thomsen and Pedersen [2000]). In public economics, increasing attention is devoted to the factors that explain why performance may differ between SOEs and PCs (Stiglitz [1988]; Grout and Martin [2003]). Once again, the analysis is predominantly based on how different principal-agent configurations affect the incentives to perform.[2] Stiglitz [1988] distinguishes between two categories of incentives in his discussion of the incentives ramifications of public ownership:

Individual incentives: Whereas private owners are predominantly concerned about firm performance in terms of indicators such as return on their assets, equity, or investment, public owners often have alternative or multiple objectives. Even in the case where the only public objective is, say, return on assets, the ability of maximizing such returns is hampered due to incentive problems on the ownership side. Returns from a SOE are not passed on directly to the government representatives appointed to follow the company, but are channelled into a public budget that no specific individual can take advantage of as a principal. Hence, the incentives to closely scrutinize the actions and efforts of agents are vastly reduced in SOEs. Second, in most countries there are institutional rigidities that limit the ability of SOEs to correct for information asymmetries between principals and agents through incentive systems. For instance, the public sector is

locked into a pay structure that limits the ability to link management salaries, as well as workers' wages, to performance (efficiency wages). Third, in most industrialized countries job security has traditionally been stronger in the public sectors than in the private sector. This may attract workers with a strong preference for job security. With a reduced probability of getting fired, workers may put less effort into their jobs and hence have less incentive to perform well.

Organisational incentives: Markets – and especially the capital market – constantly monitor PCs. If PCs employ their resources inefficiently, the market may respond by withdrawing capital from the company, taking over the company and re-allocate its resources (internally or externally), or ultimately shutting the company down. As outlined in Megginson and Netter [2001], SOEs have softer budgets and are not directly subject to the disciplining laws of the capital markets. The question of whether to shut down a SOE is not decided by the market, but by politicians.[3]

2.2. Competition and the performance of PCs and SOEs

According to Stiglitz [1988] competition also sorts under what is termed organisational incentives. From standard Cournot oligopoly theory we know that as the number of firms increases in a market, the monopoly rent is competed away. Thus, even though a state owned firm is less efficient, e.g. due to individual incentive problems, its performance in terms of profits may be larger than a privately owned firm since it confronts less fierce competition. If less efficient SOEs compete with PC in a given market, one would expect that the SOEs would suffer the most from more intense competition. However, there is an additional aspect of competition that tends to be ignored. If a firm confronts principal-agent problems of the kind mentioned above, the emergence of competing firms will enable the principal to make comparisons with other firms and thus reveal some of the hidden information held by managers or workers. In that way, competition works as a disciplining mechanism for the organisation. This mechanism is discussed in Nalebuff and Stiglitz [1983] and later analyzed more thoroughly in Bertoletti and Poletti [1997]. Also, Demski and Sappington [1984] and Vickers [1995] show that the possibility of relative performance evaluations in a market changes the principal agent problem drastically in favour of the principal.

For simplicity, let us assume that privately owned firms are profit maximizing and that private principals have no problems with information asymmetries. In that case, privately owned firms will minimize costs regardless of the level of competition. Stronger competition will simply lead to reduced profits. Furthermore, let us accept, for the moment, that the incentive structure provides lower profits in the SOE. If the SOE operates in a market open for existence of other firms, stronger competition will on the one hand drive down profits, but will on the other hand contribute to more efficient production through the outlined information revelation mechanism. All other things equal, this means that stronger competition may be less detrimental to state owned firms than to privately owned firms. This

theoretical prediction is formally derived in Bertoletti and Poletti [1997], but they do not relate this problem directly to the question of ownership identity. Our empirical analysis of performance differences (see section IV) is specifically designed to take account of the interactions between ownership identity, market structure and performance.

2.3. Alternative reasons for weaker performance under state ownership

As mentioned above, there are several motives for state ownership that may directly affect performance. One of the most common examples relates to the supply of public goods where limited excludability contributes to lower profits. Another obvious example relates to the existence of natural monopolies where the government finds reason to produce the good itself at a socially optimal price level. In our empirical analysis we explicitly leave out public firms that are public goods providers and natural monopolies with regulated prices.

In Norway, several SOEs are established in specific areas to maintain a desired population settlement pattern. If transportation costs are high, or the access to skilled workers is limited, regional policies may contribute to reduced performance. In this study, we employ a large set of regional dummies in order to take account of possible regional policy effects on performance. Security policy has repeatedly been put forward as a reason for running SOEs that provide goods and services that are regarded as crucial in times of conflict. This applies not only to providers of equipment to the armed forces, but also for infrastructure services and agricultural products.

Finally, public control over natural resources is commonly seen as an argument for public ownership. For instance, the rent or profits related to extraction of natural resources such as oil are often high and it can be important for the government to keep as much of the rent on the hands of the state. Consequently, we exclude natural resource sectors with strong public control and supra-normal profits (i.e. the oil and natural gas sector and the electricity sector).

3. Methodology

3.1. Data

In this study, we use data from the Norwegian Register of Company Accounts (NRCA).[4] According to current accounting laws in Norway, commercial companies that are joint-stock companies or that have more than 4 employees or more than 5 million NOK in annual turnover, must hand in extensive information to the NRCA. Thus, in principle the NRCA database covers the full population of companies in Norway above a certain size. In 1999, a total of 130,000 companies were included in the NRCA. As far as we know, no other empirical study of performance differences between SOEs and PCs has been based on data covering the full population of firms in a country.

The dataset contains information on a large number of company characteristics.[5] An ownership variable identifies whether the majority owner of each firm is a private person, a public authority, another firm or a foreign owner.[6] The municipal location of a firm is identified, providing us with information on geographical location along several dimensions. The NACE industry classification code is given on a 5-digit level. This allows us to study industrial activities on a highly disaggregated level and helps us to ensure that competition in the market is specified at the correct level. The remaining variables are accounting items.

For several reasons, the full NRCA dataset must be reduced before conducting an econometric analysis. First, since we focus on the ultimate owner, we disregard companies that are organized as co-operative ventures or as groups, i.e. companies that have firms as their owners or that are a part of a holding company. Campbell *et al.* [1995] argue that many corporate parent companies systematically destroy value, which in turn will produce performance figures that are biased. Second, the banking and finance sectors report accounts in a way that is different from other sectors. These industries are usually omitted in studies that rely on accounting information for comparative purposes. Third, we further delimit our dataset by excluding natural resource extracting sectors and a wide selection of sectors where the presence of public sector regulations is strong. Health and social services provided through institutions is one example, theatrical services is another. In Appendix 2, we give an overview of the sectors that are included in the analysis of the year 1999 for the most restrictive models (see section IV). Finally, unexpected events in the operations of small firms usually have a higher impact on their performance than is the case for larger firms. Also, experience shows that reporting errors are much more common in firms with few employees. Consequently, we have set a lower size limit for the dataset at a minimum of 10 employees.

3.2. The reliability of registered accounting values

For accounting purposes, transactions are normally measured at their historical cost, the amount of cash or other resources exchanged for the assets or liabilities. Most accounting regimes, including the Norwegian, have chosen to ignore changes in values subsequent to acquisition. Thus, market value, exit value and repurchase value are seldom considered in financial reports. Historical costs have dominated accounting reports mainly because they are objective and verifiable. Compared to the alternatives, historical cost data are simple to obtain and easy to control. If inflation is moderate and the transactions are fairly recent, historical costs generally provide an objective proxy of the market value of the assets.

Against this background, companies and their performance are valued through their *accounting values*. The *differences* between registered *accounting value* and the *intrinsic/ market values* of the firm, define in effect a tax shelter. This implies that the accounting value ("book-value") of a company is often reported lower than the intrinsic value. In some cases the accounting value of a company will be set higher than the intrinsic value. Because accounts allow a degree of biased subjective judgment to influence

costs and revenues, it is possible to manipulate the bottom line. The motives can be to delay or soften a fall in profit, to maximize a crisis in order to create a larger room for improvement, or to create a favourable image of the company that persuades investors to provide financial support (Barney [1997]).[7]

Several scholars have suggested that accounting based adjustments and procedures remove the true economic information from internal accounts and annual reports (Solomon [1970]; Fisher and McGowan [1983]). Unfortunately, the critics of estimated accounting adjustments do not suggest any superior alternatives. We acknowledge that accounting based measures do not represent a perfectly objective assessment of true economic performance. However, none of the options are based on pure and objective figures. Consequently, in this study we stick to accounting values because they are available for all Norwegian companies. The accounting principles regulated by law are maintained through a well-educated network of auditors and public institutions. The *reliability* of accounting values should therefore be sufficient for our purpose.

3.3. The performance measures

This study does not intend to analyze performance in terms of *productivity* (see Boardman and Vining [1989] for a study focusing on productivity). Such a study would require fixed price data on the firm level, which are not available in the present setting. The choice of a performance measure is a complex subject. Barney [1997] discusses several measures of performance that might be appropriate when conducting strategic analyses of a firm. One is survival. The simple argument is that if the firm survives, it generates normal economic value. This measure is not suitable for the present study because SOEs rarely are exposed to the sanctions of disciplining market forces, which in turn lead to exit. Other measures of performance include stakeholder approaches, which focus on several dimensions of the activities of the company. Such approaches are useful if the idea is to investigate the success of SOEs in reaching multiple goals, but unfortunately it is difficult to operationalise relevant performance measures in such contexts.

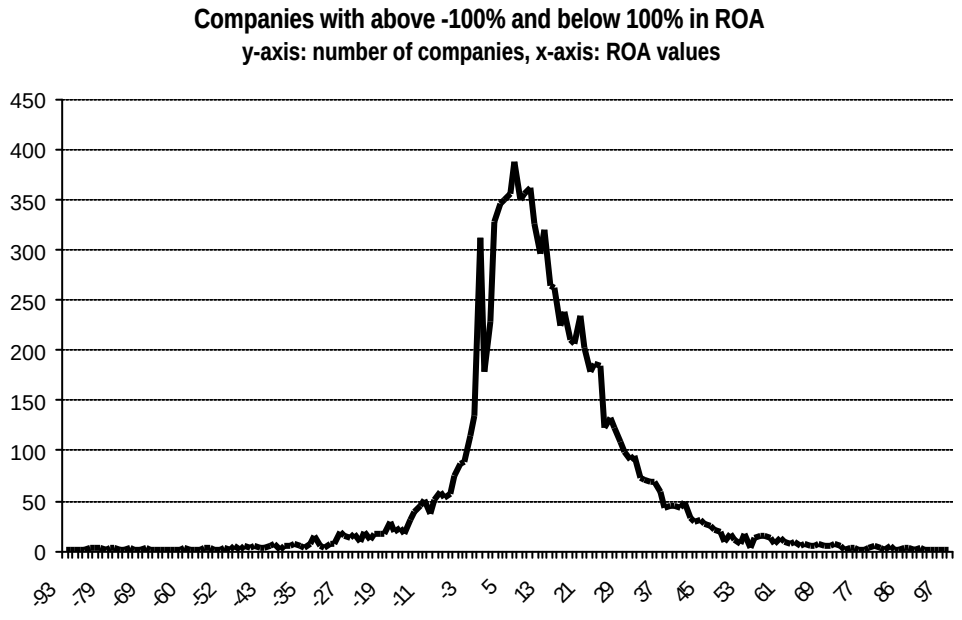
Since this study is grounded on corporate governance and industrial economics perspectives, it is reasonable to employ a performance measure that reflects the benefits for owners in terms of an economic profitability measure of the company. Hence, we chose to study performance in terms of return on assets (*ROA*), calculated as the ratio of the operating profit to the total assets of the firm.[8] By using *ROA*, we employ a performance measure that captures the performance differences between SOEs and PCs that will be affected both by managerial (operational and financial) slack and by market conditions.[9] Selling and Stickney [1989] examine *ROA* and its components profit margin and asset turnover for 22 different sectors of commerce from 1977 to 1986. They note that an infinite number of combinations of turnover and profit margin could lead to the same level of *ROA*. For example, real estate and grocery stores both had a *ROA* of around 6%, although their profit margins were 1.6% and 12.1% respectively. The explanation is simply that the grocery stores turn around their assets much faster than a real estate company. In fact, Selling and Stickney illustrate that

the profit margin is not sufficient as a cross-industry performance measure. Combined with asset turnover, the performance measure becomes more stable across industries. *ROA* is calculated as follows:

$$ROA_t = 100\left(\frac{RaFP_t + FC_t}{(TA_{t-1} + TA_t)/2}\right) \quad (1)$$

where t = time period, *RaFP* = Result after Financial Posts, *FC* = Financial Costs, and *TA* = Total Assets.[10] Due to extraordinary situations or dispositions, some companies will have extremely high or low *ROA*. Below we set a standard for what is obviously not normal "interest" on commercial engagements. If *ROA* is higher than 100% it follows that the profit of the company is at least equal to all its assets. This means that the company has doubled the value of its (average) assets during the last year. Similarly, a *ROA* of less than −100% means that the company has lost all its assets, financed by both equity and debt, in the course of the preceding year. Thus, we only allow firms with *ROA* within this range. The distribution of *ROA* for the year 1999 is depicted in Figure 1. The distribution of *ROA* among the companies is following a distribution close to the normal distribution.[11]

Figure 1: Distribution of ROA in 1999.



In addition to *ROA*, we present estimates based on an alternative cost based performance measure. Since the goals and purposes of SOEs often are complex and multifaceted, one may argue that focusing exclusively on return on assets is too simplistic or even that the measure lacks clear relevance for

many such firms. Operational costs as share of sales value (*Cost*) is a measure that deals more directly with the running of operations, and is possibly more consistent with measures of cost minimization. Results based on this alternative measure are presented in Appendix 1.

3.4. Explanatory variables

The main explanatory variable in this study is *ownership* identity. The variable is designed as a dummy variable taking the value of 0 if a company is an SOE and 1 if it is a PC. We use two alternative measures describing the market structure: The firm's *market share* is a firm specific variable, while the *Herfindahl* concentration index is a market specific variable. We calculate market shares and Herfindahl indexes on a 5-digit NACE-code level. In 1999, the database comprised activities in 577 different 5-digit sectors. Hence, the basis for calculating market shares and competition is highly detailed. According to Davies and Geroski [1997], sector specific concentration measures like the Herfindahl index do not vary much over time, while firm specific measures like the market share display more variation across time. Furthermore, sector specific measures tend to correlate strongly with industry dummies. Consequently, we run regressions with the two measures separately in order to identify possible differences. Performance may correlate with size due to economies of scale. Thus, a *size* variable measured in terms of total sales revenue is included. New companies often have an "incubation period" where performance is low, because attention is given to getting the enterprise on its feet. We take into account the effect of age on performance by including the variable *age*. A small number of the companies in the population are listed on the Oslo stock exchange (*public listing*). It is likely that the value of assets in these companies lies closer to the market value. Thus, we expect *ROA* to be lower among publicly listed firms. We control for this by including a public listing dummy. The location of companies can be an important factor explaining performance (see section II). In Norway, location effects are mainly expected to have an urban/rural dimension (*town*), a capital/not capital dimension (*Oslo*), and a North-South dimension (*Northern Norway*). We consider all three dimensions separately, which also serve to cancel out some of the effects of political goals regarding, *inter alia*, settlement and regional policies.

Different measures of performance vary systematically from industry to industry (see Venkatraman and Vasudevan [1986]). The nature and type of assets vary systematically by industries, and the valuation of these different assets will in turn affect various performance measures based on these assets. In addition, profit margins vary substantially between industries. Also, if SOEs predominantly exist in industries with strongly deviating performance patterns, this should be taken into account. In all our empirical models industry affiliation is controlled for at the NACE 2-digit level (containing approximately 50 sectors).

4. Empirical models and results

Our objective is to map how ownership identity affects performance when we take into consideration the structures of the markets where firms operate. In this context, it is important to design a model that ensures that firms actually compete with each other. Our baseline econometric model takes the following form:

$$
\begin{aligned}
ROA_{it} = a &+ b_1 ownership_{it} + b_2 marketshare_{it} + b_3 Herfindahl_{it} \\
&+ b_4 size_{it} + b_5 age_{it} + b_6 publiclisting_{it} \\
&+ \sum_{l=1}^{3} d_l location_{lit} + \sum_{k=1}^{K} g_k industry_{kit} + e_{it}, \\
&i \in N_h \subseteq N \quad t = [1990,1999]
\end{aligned}
\tag{2}
$$

where i is an index over firms. N is the full set of firms, while N_h (h=1,2) is the subset of firms that corresponds to the sector selection criteria described below. l is an index over location specific properties and k=1,..K is an index over industries defined at the 2-digit NACE level.

In 1999, SOEs were present in 72 out of the 577 NACE 5-digit sectors. An analysis of how competition affects performance based on all sectors could thus be severely distorted since a majority of the sectors do not have any state owned activity. To deal with this problem, we estimate three versions of (2) based on alternative sector selection criteria:

Selection criterion 1 (N_1) is the most restrictive and requires that the number of SOEs or PCs in a sector must at least represent 10% of the firms. This criterion reduces the total number NACE 5-digit sectors over the period 1990 to 1999 from 631 to 53, and reduces the number of observations from more than 70000 to about 2300. Table A3 in Appendix 2 gives an overview of which sectors we include under this criterion and the number of SOEs and PCs in each sector for the year 1999.

Selection criterion 2 (N_2) requires that a sector contains at least one SOE and two PCs. This criterion is considerably less restrictive as it allows 73 sectors and more than 20000 observations to enter the model.

Finally, we run regressions for the unrestricted sample (N) in order to check whether the results based on the models with selection deviate substantially from the results derived in a model that represents all firms.

Table 1 and 2 present summary statistics and cross-correlations for the unrestricted sample and the sample under selection criterion 1, respectively. A closer look at the cross-correlation tables reveals that there is no reason to expect large problems of multicollinearity. The only variables that correlate really highly are the two market structure variables *market share* and *Herfindahl*, but they never enter the same regression models.

Table 1: Summary statistics

	Number of obs	Mean	Std. Dev.	Min	Max
Full population					
ROA	74583	15,30	14,61	-100,00	100,00
Market share	74583	0,07	0,17	0,00	1,00
Herfindahl	74583	0,12	0,20	0,00	1,00
Size	74583	29558,24	146122,00	-30,00	13200000,00
Age	74583	12,58	13,65	0,00	138,00
Cost share	74583	0,96	1,18	0,00	10,00
Restricted sample according to criteria 1:					
ROA	2306	14,79	15,89	-71,17	98,18
Market share	2306	0,11	0,18	0,00	1,00
Herfindahl	2306	0,27	0,22	0,05	1,00
Size	2306	68235,87	461772,50	0,00	13200000,00
Age	2306	16,76	18,67	0,00	117,00
Cost share	2288	0,97	0,87	0,01	10,00

Table 2: Cross correlations

	ROA	Ownership	Market share	Herfindahl	Size	Age	Public listing	Town	Oslo
Full population									
ROA	1.000								
Ownership	0.109	1.000							
Market share	0.008	-0.012	1.000						
Herfindahl	-0.010	-0.018	0.767	1.000					
Size	-0.012	-0.075	0.224	0.142	1.000				
Age	-0.036	-0.046	0.119	0.102	0.106	1.000			
Public listing	0.016	0.043	0.034	0.019	0.035	0.072	1.000		
Town	-0.027	0.019	0.185	0.143	0.299	0.100	0.042	1.000	
Oslo	0.020	0.036	0.084	0.070	0.064	0.105	0.344	0.068	1.000
Northern Norway	-0.027	-0.056	-0.046	-0.047	-0.020	-0.031	-0.136	-0.025	-0.146
Restricted sample according to criteria 1:									
ROA	1.000								
Ownership	0.252	1.000							
Market share	0.001	-0.144	1.000						
Herfindahl	0.036	-0.042	0.340	1.000					
Size	-0.041	-0.140	0.386	0.201	1.000				
Age	-0.061	-0.201	0.101	0.066	0.010	1.000			
Public listing	-0.032	-0.081	0.160	0.095	0.091	0.031	1.000		
Town	-0.024	0.097	0.176	0.116	0.073	0.194	0.106	1.000	
Oslo	0.034	0.056	0.219	0.156	0.158	0.049	0.401	0.017	1.000
Northern Norway	-0.051	-0.171	-0.071	-0.050	-0.029	0.038	-0.094	0.026	-0.158

4.1. Results based on selection criterion 1

The estimates based on regression models under selection criterion 1 are reported in Table 3 as models 1A to 1D. Model 1A and 1B report OLS regression estimates for *ROA* using *market share* and *Herfindahl* respectively.[12] Since the OLS regressions report significant differences from one year to another (see the year dummies), we suspect that year specific coefficient estimates may vary significantly. In response to this, we estimate "average" models using the between estimator, which are reported in 1C and 1D. All models include industry dummies. Under the strict selection criterion 1, estimates are based on 2306 observations over the ten-year period, out of which 650 are SOEs.

In all four models, both the ownership identity and market structure variables are significant with expected signs. *ROA* in SOEs is approximately 10 percentage points below the *ROA* in PCs. From the lower part of Table 1, we know that the average *ROA* amounts to approximately 15%, thus SOE *ROA* is only a third of the PC *ROA*. The proceeding discussion will show that this finding is highly robust to alternative model specifications. There is therefore reason to claim that ownership identity has a surprisingly strong effect on *ROA*, even when market structure factors and other relevant factors are controlled for.

A larger market share contributes consistently to a higher *ROA*, implying that there is a positive effect on returns from a stronger monopoly rent. A 10 percentage point increase in the market share lifts *ROA* by somewhere between 0.4 and 0.8 percentage points. Similarly, a 10-percentage point increase in the market concentration rate (i.e. independent of the firm's market share) lifts ROA by almost 1 percentage point. This suggests that pricing power is stronger in more concentrated sectors, which contributes directly to an improved *ROA*. It is somewhat surprising that neither firm size nor firm age have significant impacts on *ROA* in the regressions using selection criterion 1, but in models 2 and 3 these variables become significant with expected signs. The dummy variable for *public listing* is also highly significant with an expected negative coefficient; publicly listed companies are compelled to report asset values closer to the market value. Finally, firms located in the capital region, have a higher *ROA*, while being located in Northern Norway contributes to lower *ROA*.

Table 3: Regression results: Models where SOEs and PCs compete

Selection criterion1:

	Model 1A OLS	Model 1B OLS	Model 1C BE	Model 1D BE
Ownership	9.21 ***	9.14 ***	10.46 ***	10.21 ***
	(0.84)	(0.83)	(1.60)	(1.58)
Market share	4.18 *		8.39 *	
	(2.25)		(4.47)	
Herfindahl		8.24 ***		10.72 ***
		(2.37)		(3.65)
Size	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Age	-0.01	-0.01	0.01	0.01
	(0.02)	(0.02)	(0.04)	(0.04)
Public listing	-6.36 **	-6.22 **	-7.22 *	-6.65 *
	(2.35)	(2.21)	(3.90)	(3.83)
Town	-0.70	-0.55	-0.36	-0.14
	(0.72)	(0.72)	(1.24)	(1.23)
Oslo	1.22	1.25	0.92	1.13
	(1.24)	(1.23)	(1.65)	(1.64)
Northern Norway	-0.61	-0.63	0.29	0.19
	(0.95)	(0.96)	(1.78)	(1.78)
1990	2.22	2.05		
	(1.66)	(1.66)		
1991	4.68 ***	4.62 ***		
	(1.28)	(1.27)		
1992	7.28 ***	7.24 ***		
	(1.50)	(1.49)		
1993	6.86 ***	7.08 ***		
	(1.50)	(1.50)		
1994	4.26 **	4.52 **		
	(1.63)	(1.63)		
1995	3.40 **	3.51 **		
	(1.48)	(1.48)		
1996	1.99	1.91		
	(1.35)	(1.34)		
1997	0.65	0.96		
	(1.40)	(1.41)		
1998	0.12	0.46		
	(1.16)	(1.17)		
Constant	5.88 ***	3.86 **	3.96	1.71
	(1.19)	(1.47)	(7.06)	(7.11)
Number of obs	2306	2306	2306	2306
Number of SOE obs	650	650	650	650
Number of firms			790	790
F(17, 21425)	11.84	12.62	2.73	2.91
Prob > F	0	0	0	0
R-squared	0.119	0.1238	0.097	0.1
Adj R-squared	0.1039	0.1087		
Root MSE	15.045	15.004		

Huber White sandwich heteroskedasticity consistent standard errors in parenthesis

*** = 0.01 sign. level ** = 0.05 sign. level * = 0.1 sign. level

4.2. Results based on selection criterion 2

By relaxing the sector selection according to criterion 2, the empirical results (see Table 4) are altered only marginally. There are then more than 20000 observations covering 5202 firms. The number of SOE observations is almost doubled compared to criterion 1. The *ownership* coefficients remain highly significant and stay in the range between 8 and 10. The market share coefficient has approximately the same size and significance level as those reported in Table 3, but the Herfindahl index is no longer significant. This may indicate that our selection criterion is too loosely defined, implying that models 1A – 1D are better suitable to analyse how market structures affect *ROA*. Although one should not put too much emphasis on the R^2 measure, the fact that R^2 is four times higher in the most restrictive model may also serve as an indicator of the most appropriate specification.

Size gains some explanatory power in models 2B and 2D, where the market size variable is left out, but the impact on *ROA* is negligible since the coefficients are close to zero. The variable *age* comes only out weakly significant when the model is estimated using the between estimator, which suggests that small variations in age do not have any major impact on *ROA*. The *public listing* and the *Oslo* variables are once again consistently significant with the expected signs, as is the *Northern Norway* dummy in models 2A and 2B.

4.3. A comparison with results based on the full population of firms

In Table 5, we report our findings based on all firms in our database as described in Section 3, i.e. regardless of whether SOEs and PCs are represented in the same sector or not. In fact, this unrestricted model provides the same predictions regarding the effect of ownership identity on *ROA*. From this, one may conclude that the inferior performance of SOEs is highly persistent and of a similar magnitude whether SOEs compete with PCs or not. In this way, our comparison with the unrestricted model gives additional support to the hypothesis that SOEs indeed struggle with performance problems that do not relate to the market structure *per se*. In other words, the comparison adds strength to the corporate governance perspective on the performance of SOEs.

The market share coefficients are once again significant, while the Herfindahl index either report insignificant or weakly significant with an unexpected sign. This finding strengthens once more the claim that models 1A to 1D are the best specifications for modelling the effect of market structure on firms' performance.

Table 4: Regression results: Models where SOEs and PCs compete

Selection criterion 2:

	Model 2A OLS	Model 2B OLS	Model 2C BE	Model 2D BE
Ownership	9.21 ***	8.93 ***	10.55 ***	10.09 ***
	(0.55)	(0.55)	(1.34)	(1.33)
Market share	8.40 ***		8.86 *	
	(2.27)		(4.58)	
Herfindahl		-1.01		-1.97
		(1.45)		(2.59)
Size	0.00	0.00 **	0.00	0.00 **
	(0.00)	(0.00)	(0.00)	(0.00)
Age	0.00	0.00	0.03 *	0.04 *
	(0.01)	(0.01)	(0.02)	(0.02)
Public listing	-7.65 ***	-6.73 ***	-12.31 ***	-11.52 ***
	(1.58)	(1.52)	(2.66)	(2.64)
Town	-0.25	-0.24	-0.18	-0.15
	(0.22)	(0.22)	(0.46)	(0.46)
Oslo	1.57 ***	1.64 ***	1.32 *	1.35 *
	(0.44)	(0.44)	(0.70)	(0.70)
Northern Norway	-0.55 *	-0.57 *	-0.67	-0.69
	(0.30)	(0.30)	(0.64)	(0.64)
1990	0.58	0.69		
	(0.57)	(0.57)		
1991	2.02 ***	2.12 ***		
	(0.51)	(0.51)		
1992	2.83 ***	2.89 ***		
	(0.51)	(0.51)		
1993	2.42 ***	2.46 ***		
	(0.47)	(0.47)		
1994	3.59 ***	3.62 ***		
	(0.46)	(0.46)		
1995	-0.14	-0.13 ***		
	(0.45)	(0.45)		
1996	-0.08	-0.08		
	(0.44)	(0.44)		
1997	1.30 ***	1.31 ***		
	(0.44)	(0.44)		
1998	1.13 **	1.12 **		
	(0.45)	(0.45)		
Constant	5.43 ***	5.79 ***	2.65	4.59
	(0.65)	(0.66)	(5.57)	(5.55)
Number of obs	21469	21469	21469	21469
Number of SOE obs	1139	1139	1139	1139
Number of firms			5202	5202
F(17, 21425)	28.21	28.04	5.8	5.71
Prob > F	0	0	0	0
R-squared	0.0299	0.0293	0.0368	0.0362
Adj R-squared	0.0279	0.0274		
Root MSE	15.321	15.326		

Huber White sandwich heteroskedasticity consistent standard errors in parenthesis

*** = 0.01 sign. level ** = 0.05 sign. level * = 0.1 sign. level

Table 5: Regression results: Full population models

	Model 3A OLS	Model 3B OLS	Model 3C BE	Model 3D BE
Ownership	8.46 ***	8.57 ***	8.34 ***	8.45 ***
	(0.43)	(0.43)	(0.86)	(0.86)
Market share	2.04 ***		1.63 **	
	(0.36)		(0.83)	
Herfindahl		-0.33		-1.30 *
		(0.35)		(0.73)
Size	0.00	0.00 ***	0.00	0.00 **
	(0.00)	(0.00)	(0.00)	(0.00)
Age	-0.03 ***	-0.03 ***	0.01	0.01
	(0.00)	(0.00)	(0.01)	(0.01)
Public listing	-5.01 ***	-4.68 **	-8.12 ***	-7.73 ***
	(0.75)	(0.74)	(1.33)	(1.33)
Town	0.04	0.05	0.04	0.05
	(0.11)	(0.11)	(0.25)	(0.25)
Oslo	0.43 **	0.49 **	0.39	0.47
	(0.20)	(0.20)	(0.37)	(0.37)
Northern Norway	-0.68 ***	-0.69 ***	-0.70 **	-0.72 **
	(0.16)	(0.16)	(0.36)	(0.36)
1990	-1.76 ***	-1.67 ***		
	(0.26)	(0.26)		
1991	0.30	0.36		
	(0.24)	(0.24)		
1992	1.58 ***	1.63 ***		
	(0.24)	(0.24)		
1993	1.54 ***	1.59 ***		
	(0.23)	(0.23)		
1994	1.80 ***	1.84 ***		
	(0.22)	(0.23)		
1995	-0.51 **	-0.48 **		
	(0.22)	(0.22)		
1996	-0.14	-0.11		
	(0.22)	(0.22)		
1997	0.75 ***	0.78 **		
	(0.22)	(0.22)		
1998	0.57 **	0.59 ***		
	(0.23)	(0.23)		
Constant	7.06 ***	7.06 ***	7.32 ***	7.49 ***
	(0.45)	(0.45)	(1.55)	(1.55)
Number of obs	74583	74595	74583	74595
Number of SOE obs	2849	2849	2849	2849
Number of firms			15167	15170
F(17, 21425)	55.73	54.96	8.21	8.16
Prob > F	0	0	0	0
R-squared	0.0281	0.0277	0.0316	0.0314
Adj R-squared	0.0272	0.0268		
Root MSE	14.408	14.412		

Huber White sandwich heteroskedasticity consistent standard errors in parenthesis
*** = 0.01 sign. level ** = 0.05 sign. level * = 0.1 sign. level

4.4. The interaction between ownership identity and market structure

As outlined in Section 2.2, one may argue that changes in competition affects SOEs and PCs differently, given that SOEs struggle with larger principal-agent problems than PCs. Based on traditional IO theory with heterogeneous firms, stronger competition will have a relatively stronger negative impact on profits and thus *ROA* for the weaker performers. However, if weak performance is due to principal-agent problems, the demonstration effect from new competitors may improve efficiency and contribute to improve *ROA*. In order to examine how changes in competition and market shares affect the performance of different owners, we estimate owner-specific firm fixed effects models based on the most restrictive sector selection criterion. In a firm fixed effects model, both the *public listing* variable and the location variables drop out since they display no variation over time and the information in the *age* variable is uninterpretable.[13] We are consequently left with a model where *ROA* is regressed on the market structure variables and size, only. It turns out that for PCs a drop in the market concentration index contributes to a significant reduction in *ROA*. Likewise, a fall in the market share also cuts *ROA*. However, this is not the case for SOEs. Firm specific variations in market shares have no significant impact on *ROA*, and more fierce competition is actually gainful for SOEs. Notice however that models 5A and 5B fail the *F*-test for the overall specification, which gives reason to question the validity of our results. Thus, we interpret these findings as weak evidence supporting the learning effect through stronger competition, which relates directly to the problems of corporate governance.

Table 6: Fixed effect estimates for ROA: Selection criteria 1

	Model 4A PC	Model 4B PC	Model 5A SOE	Model 5B SOE
Market share	28,78 ***		7,40	
	(7,91)		(8,29)	
Herfindahl		12,30 **		-1,57 **
		(4,79)		(5,35)
Size	0,00	0,00	0,00	0,00
	(0,00)	(0,00)	(0,00)	(0,00)
Constant	14,57 ***	13,75 ***	7,17 ***	8,72 ***
	(1,09)	(1,61)	(1,32)	(1,61)
sigma_u	16,20	16,22	12,81	12,62
sigma_e	11,91	11,95	10,91	10,92
rho	0,65	0,65	0,58	0,57
Number of obs	1656	1656	650	650
Number of firms	604	604	186	186
F(2,15353)	6,62	3,31	0,67	0,32
Prob>F	0,0014	0,037	0,5121	0,7294
R-sq within	0,01	0,006	0,003	0,001
F test all u_i=0	0	0	0	0

Huber White sandwich heteroskedasticity consistent standard errors in parenthesis
*** = 0.01 sign. level ** = 0.05 sign. level * = 0.1 sign. level

4.5. An alternative performance measure

The empirical results based on our alternative performance measure (*cost*) are presented in Tables A1 and A2 in Appendix 1. Here we only report results based on the between estimator, since the OLS results provide similar estimates.[14] The ownership coefficients are highly significant in all model specification and vary between –0.04 and –0.06. Since the population mean cost share is registered around 0.96, ownership identity (SOE or PC) will in many cases determine whether a firm runs with an operational surplus or deficit. The *Herfindahl* index (see Table A1) is significant and negative in the restricted models, indicating that market concentration affects our alternative performance measure in the same way as it affects *ROA*. Similarly, a higher *market share* contributes to reduce costs relative to sales revenue (see Table A2), while *size* and *age* have negligible effects on our cost performance measure in all models. We thus conclude that ownership identity affects the alternative performance measure in the same way as it affects *ROA*.

5. Conclusions

Performance must be regarded as a critical issue in any discussion of the pros and cons of privatization. If companies owned and operated by the state systematically generate weaker economic results than privately owned firms, the advocates of privatization seemingly get a strong card in their hands. As it is, most theoretical contributions to the study of performance and ownership identity maintain the inferiority of state enterprises based on incentive problems in the public sector. However, given the various non-economic goals that underlie the very existence of many state owned enterprises, the inferior economic performance of SOEs in general should not be surprising (Grout and Martin [2003]). A more relevant question relates to whether SOEs perform worse or better than comparable PCs.

There are two different views on this issue. The corporate governance literature focuses on ownership identity and suggests that SOEs have weaker incentives to perform since they are less exposed to the disciplining forces of markets. The industrial economics literature maintains that economic performance is a direct function of the market structure. Competition will drive down profits and the ability to reward the owners through dividends. If state owned enterprises and privately owned companies operate under market structures that are systematically different from each other, performance differences could well be attributable to such differences rather than some ownership identity effect. Thus, an empirical analysis of the relationship between ownership identity and performance must take the existing market structure into consideration.

In this paper, we have employed a comprehensive data set containing annual accounts information of Norwegian companies. Using return on assets as the measure of performance and carefully controlling for market structure and a range of factors that may have an impact on company performance, we find that the performance of SOEs is indeed inferior to that of PCs. However, the results also show that performance is consistently positively related to the market share of companies as well as the market

concentration. Hence, our findings provide support for both the ownership identity and the market structure explanations for performance differences. In addition, we explore the possible link between market structure and ownership identity, and our results provide some support to the idea that a weaker market power (measured in terms of the firm's market share) is less detrimental to SOE performance than to PC performance.

While we believe that this analysis represents an improvement over previous empirical studies, we acknowledge that further work should be done on the performance ramifications of public versus private enterprise.

First, the Norwegian setting of the study is a mixed blessing from a research perspective. On the one hand, it represents a particularly well-suited empirical context due to the relatively abundant co-existence of SOEs and PCs in many industries as well as to the high quality and comprehensiveness of available data. On the other hand, Norway is a small, peripheral, and rich country with deep-rooted social democratic norms and values of egalitarianism and a history of active welfare policies and state intervention in the business sector. Even though we think that our findings depict economic mechanisms of a rather general nature, similar studies in other settings are obviously needed to establish the generalisability of the findings.

Second, in this study we focus on two performance measures; *ROA* and costs. Both are highly appropriate in assessing the economic performance of companies, but inevitably they provide only a partial view. Describing a more complete picture of companies' performance would necessitate a richer set of measures, especially to take proper account of the non-economic goals of business enterprise. That, however, must be left to future research.

Notes

1. One important exception is Boardman and Vining [1989] who investigated both ownership identity and competition factors.

2. The identity of owners is important because different types of owners are likely to have different preferences with regard to issues like risk and time horizon and because they have different abilities and opportunities in using various mechanisms of governance such as monitoring and decision-making. The relative benefits and costs of ownership are therefore likely to vary depending on the type of owner.

3. On the other hand, and for other reasons, political authorities may also decide to shut down state owned firms that would have survived if they had been organised as privately owned firms.

4. The data have been registered by Dun & Bradstreet Norway.

5. Our data set contains the following variables over the period 1990-1999: Company identity number, name of the company, municipal location, year of establishment, NACE-code, number of employees, owner identity, turnover, cost of employees, operational profit/loss, financial costs, results after financial posts, total assets, equity value.

6. The NRCA data do not reveal whether the foreign owned and stock exchange listed companies are governed by persons, public authorities or firms. We therefore chose to exclude foreign owned companies in the empirical analysis.

7. In addition, the activation of goodwill in the accounts may increase the book value, resulting in a higher book value than intrinsic value. Depending on the nature of the activated goodwill, some can be marketed and thus be regarded in the intrinsic value (e.g. a brand), and some cannot (e.g. the culture of a firm). Goodwill, which has many components, is often activated in the context of a take-over price of businesses. Generally, a more dynamic market for businesses will tend to depolarise the book and intrinsic value.

8. Subsidies and other kinds of government financial support may distort the picture of *ROA* differences between SOEs and PCs. The effect of some of these schemes is captured in estimates of so-called Effective Rates of Assistance (ERA). A recent study by the Central Bureau of Statistics in Norway (Fæhn *et al.* [2001]) looked at a systematic sample of assistance arrangements. The study shows that some industries are more favoured than others. Our performance measure considers the profit margin before extraordinary accounting items, and most of the direct subsidies are included as extraordinary earnings in the accounts. Consequently, our performance measure will not be affected, in any significant way, by most subsidy schemes. Subsidies through the payroll tax do affect the profit margin directly, but such schemes are primarily related to geographical location, which we control for.

9. Return on equity (*ROE*) is an alternative a measure of performance and was used in the study of Thomsen and Pedersen [2000]. However, *ROE* is associated with some troublesome characteristics. First, it is a measure of profitability that is highly influenced by the debt/equity ratio. This introduces a gearing effect to *ROE* that can lead to an excessively large

variance, and thus display company performance differentials that are incorrect. In addition, *ROE* cannot be calculated for companies with negative equity, a problem that we face in approximately 20% of Norwegian companies.

10. This formula calculates *ROA* before taxes. For some companies we have no accounting information for *t*-1, and for those companies we use only total assets from period *t* in the denominator.

11. The deviant peak is due to a number of companies that have *ROA* equal to 0. A closer inspection of such companies reveals that only one of the 313 companies with 0 in *ROA* had no turnover; that particular company was in a sense a "sleeping" company. However, for the other 312 companies, it seems relevant to keep them in the sample, even though they are imposing a deviation from the normal distribution.

12. Notice that we cannot estimate fixed effects since the ownership variable hardly varies over time.

13. There is some variation in location specific variables as well as ownership identity over time, but this relates to extremely few cases.

14. Results based on OLS are available from the authors upon request.

References

Barney, J.,1997, *Gaining and Sustaining Competitive Advantage* (Addison-Wesley Reading, MA).

Bartoletti, P and Poletti, C., 1997, `X-inefficiency, Competition and Market Information´, *Journal of Industrial Economics*, 45(4), pp.359-375.

Baumol, W.,1959, *Business Behavior, Value and Growth*. (MacMillan, New York).

Berle, A. and Means, C., 1932. *The Modern Cooperation and Private Property*. (MacMillan, New York).

Boardman, A. and Vining, A., 1989, `Ownership of Performance in Competitive Environments: A Comparison of the Performance of Private, Mixed and State-Owned Enterprises´, *Journal of Law and Economics*, 32(1), pp.1-33.

Campbell, A., Goold, M. and Alexander, M., 1995, `Corporate Strategy - The Quest for Parenting Advantage´, *Harvard Business Review*, 74(4), pp.120-162.

Davies, S.W. and Geroski, P.A., 1997, `Changes in Concentration, Turbulence, and the Dynamics of Market Shares´, *Review of Economics and Statistics*, 79(3), pp.383-391.

Demski, J. S. and Sappington, D., 1984, `Optimal Incentive Contracts with Multiple Agents´, *Journal of Economic Theory*, 33, pp.152-171.

Fisher, F.M. and McGowan, J.J., 1983, `On the Misuse of Accounting Rates of Return to Infer Monopoly Profits´, *American Economic Review*, 73(1), pp.82-97.

Fæhn, T., Jørgensen, J.-A., Strøm, B., Åvitsland, T. and Drzwi, W., 2001,. Effektive satser for næringsstøtte 1998 (Effective Rates of Assistance 1998), Report no. 18 (Statistics Norway, Oslo).

Grout, P.A. and Martin, S., 2003, `The Assessment: Financing and Managing Public Services´, *Oxford Review of Economic Policy*, 19(2): 215-234.

Jensen, M.C.,1986, `Agency Cost of the Free Cash Flow, Corporate Finance and Takeovers´, *American Economic Review*, 76(2), pp.323-329.

Jensen, M.C. and Meckling, W.H., 1976, `Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure´, *Journal of Financial Economics*, 3(4), pp.305-360.

Laffont, J.J. and Tirole, J., 1993, *A Theory of Incentives in Procurement and Regulation* (MIT Press, Cambridge, MA).

Megginson, M. and Netter, J., 2001, `From State to Market: A Survey of Empirical Studies on Privatization´, *Journal of Economic Literature*, 39(2), pp.321-389.

Nalebuff, B. and Stiglitz, J. E., 1983, `Prizes and Incentives: Towards a General Theory of Compensation and Competition´, *Bell Journal of Economics*, 14(1), pp.21-43.

Rappaport, A., 1986, *Creating Shareholder Value: The New Standard for Business Performance* (The Free Press, New York).

Roland, K., Norman, V.D. and Reve, T., 2001, *Rikdommens problem (The Problem of Wealth)* (Universitetsforlaget, Oslo).

Selling, T. and Stickney, C., 1989, `The Effects of Business Environment and Strategy on a Firm's Rate of Return on Assets´, *Financial Analyst Journal*, 45(1), pp.43-52.

Sheshinski, E. and López-Calva, L. F., 2003, `Privatization and its Benefits: Theory and Evidence´, *CESifo Economic Studies*, 49(3), pp. 429-459.

Shirley, M. M. and Walsh, P., 2000, `Public versus Private Ownership: The Current State of the Debate´, Policy Research Working Papers (World Bank, Washington).

Shleifer, A. and Vishny, R.W., 1997, `A Survey of Corporate Governance´, *Journal of Finance*, 52(2), pp.737-783.

Solomon, E., 1970, `Alternative Rate of Return Concepts and their Implications for Utility Regulation´, *Bell Journal of Economics*, 1(2), pp. 65-81.

Stiglitz, J. E., 1988, *Economics of the Public Sector*, second edition (Norton & Company, London).

Stortingsmelding, 1997-98, `Eierskap i næringslivet´(Ownership in the Business Sector), Melding 40 (Nærings- og handelsdepartementet, Oslo).

Thomsen, S. and Pedersen, T., 2000, `Ownership Structure and Economic Performance in the Largest European Companies´, *Strategic Management Journal*, 21(6), pp.689-705.

Venkatraman, N. and Vasudevan, R., 1986, `Measurement of Business Performance in Strategic Research. A Comparison of Approaches´, *Academy of Management Review*, 11(4), pp.801-814.

Vickers, J., 1995, `Concepts of Competition´, *Oxford Economic Papers*, 47(1), pp.1-23.

Vickers, J. and Yarrow, G., 1989, *Privatization: An Economic Analysis* (The MIT Press, Cambridge, MA).

Vining, A. and Boardman, A., 1992, `Ownership versus Competition: Efficiency in Public Enterprise´, *Public Choice*, 73, pp.205-239.

Appendix 1

Table A1: Regressions with cost share as dependent variable
Herfindahl index as the market structure indicator

	Restr. criteria 1 BE	Restr. criteria 2 BE	Unrestricted BE
Ownership	-0.06 *	-0.04 *	-0.05 ***
	(0.03)	(0.02)	(0.01)
Herfindahl	-0.14 *	-0.09 **	0.02 *
	(0.07)	(0.04)	(0.01)
Size	0.00 **	0.00 ***	0.00 ***
	(0.00)	(0.00)	(0.00)
Age	0.00	0.00 **	0.00 ***
	(0.00)	(0.00)	(0.00)
Public listing	0.41 ***	0.31 ***	0.23 ***
	(0.08)	(0.04)	(0.02)
Town	-0.01	0.01	0.00
	(0.02)	(0.01)	(0.00)
Oslo	0.04	0.00	0.00
	(0.03)	(0.01)	(0.00)
Northern Norway	-0.03	0.00	0.01
	(0.04)	(0.01)	(0.00)
Constant	1.07 ***	1.77 ***	0.99 ***
	(0.13)	(0.08)	(0.02)
Number of obs	2285	21372	74297
Number of firms	781	5184	15115
F(17, 21425)	3.91	7.55	8.74
Prob > F	0	0	0
R-squared	0.135	0.0475	0.0337

Table A2: Regressions with cost share as dependent variable

Market share as the market structure indicator

	Restr. criteria 1 BE	Restr. criteria 2 BE	Unrestricted BE
Ownership	-0.06 *	-0.04 *	-0.04 ***
	(0.03)	(0.02)	(0.01)
Market share	-0.12	-0.20 **	-0.01 *
	(0.09)	(0.07)	(0.01)
Size	0.00 *	0.00 *	0.00 ***
	(0.00)	(0.00)	(0.00)
Age	0.00	0.00 *	0.00 ***
	(0.00)	(0.00)	(0.00)
Public listing	0.43 ***	0.32 ***	0.23 ***
	(0.08)	(0.04)	(0.02)
Town	-0.01	0.01	0.00
	(0.02)	(0.01)	(0.00)
Oslo	0.04	0.00	0.00
	(0.03)	(0.01)	(0.00)
Northern Norway	-0.03	0.00	0.01
	(0.04)	(0.01)	(0.00)
Constant	1.04 ***	1.73 ***	0.99 ***
	(0.13)	(0.08)	(0.02)
Number of obs	2285	21372	74279
Number of firms	781	5184	15115
F(17, 21425)	3.84	7.62	8.69
Prob > F	0	0	0
R-squared	0.134	0.048	0.0335

Appendix 2

Table A3: Sectors represented in Models 1A-1D (Year = 1999)

Activity	NACE-5 sector	# SOE	# PC
Wooden and fibre boards	20200	2	12
Wooden containers	20400	2	2
Other wooden products	20510	1	2
Metal wires	28730	1	2
Medical and surgical equipment	33100	1	6
Sports goods	36400	1	3
Electricity distribution	40102	8	2
Tram transport	60210	3	10
Buss transport	60211	8	7
Domestic coastal sea transport	61104	3	1
Transport hubs	63211	1	8
Parking lots and houses	63212	1	4
Tourist information services	63302	2	2
Telecommunication	64200	1	5
Real estate services	70100	9	78
Real estate development	70110	2	14
Real estate rental	70200	2	19
Database maintenance	72400	2	11
Architect services	74200	1	5
Consulting: product development	74405	1	9
Engineering education	80220	1	5
Rehabilitation	85114	1	9
Medical labs	85148	2	5
Veterinary services	85200	1	3
Social services, not institutions	85320	2	2
Sewage and sanitary services	90000	6	25
Cinema theatres	92130	1	2
Cultural activities, not theatre	92320	12	5
Other museums	92520	2	1
Natural reserves, recreational areas	92530	1	1
Sports arenas	92610	4	21
Cleaning services	93010	5	33

Notater | Papers | 2003 – 2004

2003

No. 646	Indra Øverland	Defusing a Ticking Bomb? Disentangling International Organisations in Samtskhe-Javakheti
Nr. 647	Per Botolf Maurseth	Norsk utenrikshandel, markedspotensial og handelshindre
Nr. 648	Jens Chr. Andvig	A Polanyi Perspective on Post-Communist Corruption
No. 649	Daniel Heradstveit David C. Pugh	The Rhetoric of Hegemony. How the extended definition of terrorism redefines international relations
No. 650	Jens Chr. Andvig	Corruption and fast change: Shifting modes of micro-coordination
Nr. 651	Leo A. Grünfeld	Eksport av tjenester og potensialet for økt verdiskapning i Norge: En empirisk kartlegging
Nr. 652	Hege Medin	Regionale og bilaterale handelsavtaler i Latin-Amerika. Konsekvenser for norsk eksport
Nr. 653	Arne Melchior	A Global Race for Free Trade Agreements. From the Most to the Least Favoured Nation Treatment?
No.654	Axel Borchgrevink Anníbal R. Rodrígues	Evaluation of Fadcanic's teacher training program in Nicaragua's Southern autonomous region of the Atlantic Coast
No. 655	Daniel Heradstveit G. Matthew Bonham	How the Axis of Evil Metaphor Changes Iranian Images of the USA
No.656	Axel Borchgrevink	Study of selected Fredskorpset exchange projects
No.657	Leo A. Grünfeld	The Intangible Globalization. Explaining the Patterns of International Trade and FDI in Services

2004

Nr. 658	Arne Melchior	EFTAs frihandelsavtaler: Betydning for Norge
No. 659	Pernille Rieker	EU Security Policy: Contrasting Rationalism and Social Constructivism
Nr. 660	Per Botolf Maurseth	Tollnedtrapping for industrivarer i WTO – Virkninger for Norge
No. 661	Bård Harstad	Uniform or Different Policies
No. 662	Bård Harstad	Majority Rules and Incentives. International voting affects domestic policies
No. 663	Eskil Goldeng Leo A. Grünfeld Gabriel R.G. Benito	The Inferior Performance of State Owned Enterprises: Is it due to Ownership or Market Structure?

NUPI

Publikasjoner fra **Norsk Utenrikspolitisk Institutt**

Internasjonal politikk Nr. 2- 2004

Skillet mellom hva som utgjør nasjonal og internasjonal politikk, er i stor grad i ferd med å bli visket ut. *IP* ønsker å være helt i front med å utforske denne dynamikken. 4 nummer i året.

Forord: Postsovjetiske ansikter *Birgitte Kjos Fonn* · **Tsjetsjenske separatister – mellom barken og veden** *Julie Wilhelmsen* · **Svalbard: russiske persepsjoner og politikkutforming** *Jørgen Holten Jørgensen* · **Russisk oljeindustri og Nordflåten – interessekonflikt eller strategisk partnerskap?** *Kristian Åtland* · *Aktuelt:* **Georgias roserevolusjon. Forhistorien og etterspillet** *Indra Øverland* · **Exodus fra Russland til Israel** *Hans-Wilhelm Steinfeld* · *Utenrikspolitisk utsyn:* **Norden och EU** *Paavo Lipponen*·*Bokspalte* · *Summaries*

Abonnementspriser kr 330 [Norge/Norden] kr 450 [utenfor Norden]
Enkelthefter kr 95 pr. hefte + porto/eksp.

Forum for Development Studies No. 2 - 2003

Forum bringer artikler (på engelsk) om bistandspolitikk, Nord-Sør-forhold og den tredje verden. To nummer i året.

Introduction · **Democratic Decentralisation and Poverty Reduction: Exploring the Linkages** *Trond Vedeld* · **Methodological Individualism and Rational Choice in Neoclassical Economics: A Review of Institutionalist Critique** *Darley Jose Kjosavik* · **National Capabilities and Economic Development: A Subjectivist View** *Tony Fu-Lai Yu*

Debates:
I. DEVELOPMENT RESEARCH CHALLENGES UNDER SHIFTING POLICIES
New Realities, New Strategies *Nina Gornitzka* · **Research Priority No. One: Fighting Poverty** *Asbjørn Løvbræk* · **The Critial Role of Development Research** *Desmond McNeill*
II. INTERDISCIPLINARITY: STILL A CHALLENGE IN DEVELOPMENT RESEARCH
Nina Gornitzka
III. THE MYTHOLOGY OF AID: CATCHWORDS, EMPTY PHRASES AND TAUTOLOGICAL REASONING
Henrik Secher Marcussen and Steen Bergendorff
IV. THE WDR 2004 ON MAKING SERVICES WORK FOR POOR PEOPLE
Application of the WDR 2004 Accountability Model to the HIV/AIDS and Development Agenda
Sigrun Møgedal · **Missing Perspectives: People and Gender** *Torild Skard*
V. THE PROS AND CONS OF SELF-RELIANCE: ERITREA'S RELATIONS WITH AID AGENCIES AND NGOS *Christine Smith-Simonsen* · **Book Review**

Abonnementspriser NOK 220 [i Norden] NOK 300 [utenfor Norden]
Enkelthefter NOK 120 + porto/eksp.

Nordisk Øst·forum Nr. 2- 2004

Nordisk Østforum er et kvartalstidsskrift som vektlegger politisk, økonomisk og kulturell utvikling i Øst-Europa og Sovjet unionens etterfølgerstater.

Forord · **Defenestrasjon – ein tsjekkisk politisk tradisjon?** *Elisabeth Bakke* · **Den polske venstrefløjssammenslutning SLD – fra partiføderation til et almindeligt politisk parti** *Søren Riishøj* · ***Blat* – mellom gaver og varer i Moldova** *Elisabeth L'orange Fürst* · **Iran i russisk sikkerhedspolitik: kærlighed eller fornuftsægteskab?** *Jakob Sørensen & Allan H. Larsen* · **Demokratiet og dets fiender: holdninger til demokrati i Baltikum** *Kjetil Duvold* · **Kulturmöten och kommunikation i svenskt-baltiskt utvecklingsarbete** *Tove Lindén* · *Velkommen til Internett* · *Bokomtaler* · *Nye bøker i Norden*

Abonnementspriser kr. 265 [studenter] kr. 330 [privatpersoner] kr. 450 [institusjoner]
Enkelthefter kr 115 pr. hefte + porto/eksp.

Hvor Hender Det?

Hvor Hender Det? (HHD) er et ukentlig nyhetsbrev som gir deg bakgrunn om internasjonale spørsmål i konsentrert og forenklet form. HHD er det du trenger for øyeblikkelig oppdatering, som en hjelp til å forklare inntrykk og se dem i sammenheng. I mange fag og sammenhenger har vi behov for kortfattet framstilling av konflikter og samarbeid, prosesser, utfordringer og utviklingstrekk i det internasjonale samfunnet. HHD ligger også på Internett. Godt over 100 artikler fra tidligere årganger innenfor en rekke emner er lagt ut i fulltekst. www.nupi.no/pub/hhd/hhdliste.htm.

Abonnementspriser kr. 260 pr skoleår [2002/2003] kr. 360 pr skoleår [utenfor Norge]
Klasseabonnement kr. 75 pr. ab. [min. 10 eks]

Norsk Utenrikspolitisk Institutt Postboks 8159 Dep. 0033 Oslo
Tel.: [+47] 22 99 40 00 | Fax: [+47] 22 36 18 97 | Internett: www.nupi.no | E-post: pub@nupi.no