

The Influence of State Ownership on the Economic Performance of Korean Public Companies

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Abstract: The property rights and agency cost theory of enterprises suggests that public ownership should perform less efficiently and profitably than private ownership. However, the existing empirical evidence provides weak support for this hypothesis. Numerous studies of Western capital markets and Chinese state enterprises have examined the relationship between ownership structure and performance. Agency theory suggests that when owners do not manage a firm themselves, a conflict of interest arises between the owners (principals) and managers (agents). Researchers have argued that government ownership is inferior to private ownership in competitive markets because it prioritizes social and political goals over value maximization, hiring decisions are often based on political influence rather than ability, and higher transaction costs are involved. This study investigated the influence of two factors, listing on the Korea Exchange and degree of state ownership, on performance using annual data for 51 companies in Korea for 1999-2009. We found that, on average, performance (measured by productivity, profitability, and efficiency) was positively influenced by public listing and negatively influenced by the degree of state ownership.

Keywords: state-owned enterprise, performance, ownership, privatization

INTRODUCTION

No matter how a state-owned enterprise (SOE) is defined, we know what it is. It might not be necessary to emphasize the importance of SOEs in an economy, as these

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companies—such as Korea Electric Power Corporation (KEPCO), Korea Land Housing Corporation, Incheon International Airport Corporation, and Korea Water Resources Corporation—have clearly played vital roles. The proportion of SOEs in an economy is often estimated as the budget ratio of SOEs to government, the ratio of value-added to GDP, or SOE employment as a proportion of the total working-age population.

According to Yoon (1998), an SOE, like other companies, produces and sells goods and services in a market under the government's control as an owner. The comparison of these companies in different countries is somewhat difficult, because there are no absolute criteria for SOE status in terms of ownership structure, assets, or employment. To address this, international organizations such as the Organization for Economic Cooperation and Development (OECD) have tried to collect data on the economic value of SOEs.

Privatization of SOEs is another broad issue. There has been great controversy about the role of an SOE. Some have argued that the problem of market failure should be addressed in SOEs, taking their inefficient management into consideration. Others have argued that SOEs should be privatized and the issue of market failure should be solved by regulations, taxation, or subsidies. Still others, while not calling for 100 percent privatization, have argued that SOEs should reveal the extent of government subsidization in order to ensure fair competition and transparency, and that governance should be improved.

Without substantive verification, hypotheses of privatization remain theoretical. The theoretical conflict about privatization calls sufficient empirical evidence. The impacts of privatization of SOEs appear to be diverse, as no one theory or hypothesis explains all of them. It is generally accepted that an SOE has not only a market-related but also a social purpose. However, whether the inefficiency brought by market failure outweighs the problem of accountability and transparency of state ownership (so-called government failure) is not a theoretical but an empirical problem. Abusive insider transactions are frequently reported as one of the most serious breaches of good corporate governance around the world. Such transactions are used by controlling shareholders or other company insiders as a mechanism for extracting private benefits at the cost of other shareholders. To this end, the OECD principles recommend full disclosure of insider transactions whether or not they have been executed at arm's length principle. It is difficult to identify when parties to a transaction are effectively related when both are controlled by the state. This is particularly the case in countries where state ownership is pervasive, such as China.

The Korean government has planned and implemented privatization programs several times since the 1980s in order to bring more competition and transparency to SOEs. In 1997, the government enacted the Law on Structural Improvement in

Management and Privatization of State-Owned Enterprises with a clear privatization plan for SOEs. However, this has been challenged by the fact that the implementation plan did not correspond to the intent of the law, which was to enhance efficiency and autonomy in management and improve performance.

The Korean privatization program has had both successes and failures. Before 1990, KEPCO started to sell its share, and there were other moves toward privatization in manufacturing, transportation including airlines, banks, the stock exchange, and Pohang Steel Corporation (POSCO). Despite a major privatization effort in 1993, only 22 out of 58 companies actually sold their shares. In 1998, the privatization program led by the Planning and Budget Commission achieved complete privatization of POSCO, Korea Heavy Industries Corporation, Korea Chemical Corporation, Korea Technology Banking Corporation, and National Textbook Corporation and phased privatization of Korea Telecom Corporation, Korea Tobacco and Ginseng Corporation, Korea Oil Pipeline Corporation, KEPCO, Korea Gas Corporation (KOGAS), and Korea District Heating Corporation. Among these, KEPCO, KOGAS, and Korea District Heating Corporation, as market-type SOEs, have remained subject to governance control and management performance evaluation by the government according to the Act on the Management of Public Institutions. In recent years, privatization of Korea Railroad Corporation, Incheon International Airport Corporation, Korea Housing Guarantee Co., Korea Airport Corporation, Busan Port Authority, and Incheon Port Authority has been hotly debated in the National Assembly.

Researchers have argued that government ownership is inferior to private ownership in competitive markets because it prioritizes social and political goals over value maximization, hiring decisions are often based on political influence rather than ability, and higher transaction costs are involved.

This study analyzed the influence of state ownership on the performance of Korean SOEs. It investigated whether market governance resulting from listing on the Korea Exchange institution is an efficient way to improve performance. In addition to the type of ownership, it also examined the extent to which the degree of government ownership affected performance. If it can be established that different forms of ownership produce different results, it would be possible to design more efficient forms of governance than uniform control by the government.

The next section of this article reviews the economic theories and empirical evidence on the efficiency and productivity of public and private enterprises. This is followed by analysis of the influence of governance structure on performance—in other words, productivity, profitability, and efficiency—using data from 51 firms for 1999-2009. Finally, conclusions, discussion, and policy implications are presented.

LITERATURE REVIEW

Theoretical Framework

Market failure, because of its strong competitive environment assumption is one of the most important sources of government intervention to the market. It is clearly unreasonable to use profitability measures as evidence of allocative efficiency or inefficiency in contexts where there are natural monopoly characteristics or other serious market failures. In competitive markets, however, profitability measures can be used as indicators of allocative efficiency because normatively appropriate deviations from profit maximization will be minimal. For these reasons, it would be hard to make a direct comparison between SOEs and private companies.

The sociopolitical goals of SOEs tend to be ignored in many comparative empirical analyses. The lower profits do not necessarily represent higher costs and technical inefficiencies but rather social outputs such as lower-priced provision of public utilities and universal services. This argument is difficult to refute to the extent that the posited social benefits are external to the SOE and, consequently, extremely difficult to measure. Even if one believes there are external benefits, it is useful to examine profitability differences between private companies (PCs), SOEs, and mixed enterprises (MEs)¹ in order to get a handle on their regulated price (Yarrow and Jasinski, 1996).²

Williamson (2002) showed that transaction costs of organizing transactions in market (M) and hierarchies (H) is a function of asset specificity (k). The bureaucratic burdens of hierarchy place it at an initial disadvantage ($k = 0$), but the cost differences between markets M (k) and hierarchy H (k) narrow as asset specificity builds up, and they eventually reverse as the need for cooperative adaptation becomes greater ($k > 0$). Provision can further be made for the hybrid mode of organization X (k), in which hybrids are viewed as market-preserving credible contracting modes that possess adaptive attributes located between classical markets and hierarchies.

When the social benefits of SOEs are improperly estimated, the benefits are internal to the SOE in the form of higher wage levels and perquisites or higher aggregate SOE employment. Such social benefits are a form of producer surplus, as illustrated by

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1. Mixed enterprises are semi private and semi public companies such as their partial shares are sold to the private sector.
 2. OECD recommends leveling the playing field between SOEs and private companies, so lowering prices for provision of public utilities or other public services should be subsidized by the government with separate accounting for commercial and noncommercial activities for the purpose of transparency.

Boardman and Vining(1989) very clearly.

Another source of potential inefficiency is explained by the principal-agent model. The relationship between government leaders who make policies and appoint the chief executive officers of the SOEs, and the populace whose welfare depends at least partly upon what government does, might be understood through this model. The underlying theme of most of the rent-seeking analysis is based on the firm's attempts to escape the invisible hand of the market and to redirect policy proposals for its own advantage. Whereas traditional neoclassical welfare economics assumes government to be an exogenous force, trying to do good, neoclassical political economists argue that government is at least partially endogenous and the policies it institutes will reflect vested interests in society (Colander, 1984).

Empirical Evidence

Boardman and Vining (1989) found that the empirical evidence for the property rights theory of the firm showed that SOEs perform less efficiently and less profitably than private enterprises. This model was estimated using the 500 largest manufacturing and mining corporations in the world outside the United States as compiled by *Fortune* magazine in 1983. The result suggests that MEs and SOEs are significantly less profitable and efficient than PCs. It also suggests that partial privatization, where there is no substantial difference in performance between SOEs and MEs, may not be the best strategy for improving performance.

Vining and Boardman (1992) estimated the effect of ownership type on performance, using data on the 500 largest nonfinancial corporations in Canada. The results showed that PCs have higher profitability and efficiency than MEs, with SOEs consistently lower than MEs. In this model, the effects of competition and ownership type were used as independent variables. The result showed that ownership type had a negative effect on performance independently of competition. Vining and Boardman explained that the adverse relationship between ownership type and performance resulted from a high transaction cost.

Numerous studies conducted in Western capital markets have examined the relationship between firms' ownership structure and performance, and several studies have done the same for China. China began a process of corporatization and partial privatization of former SOEs at the start of its economic reform. However, it is hard to define these companies as completely private; not only are the majority of shares still held by the Chinese government, but state ownership also exists through reciprocal holding shares, even though disregarding shadow control by the party.

In recent years, an increasing number of studies have examined the influence of

ownership structure and governance on the productivity, profitability, and efficiency of Chinese SOEs and evaluated economic reform. Zuobao et al. (2002) classified various ownership types and examined the correlation between ownership structure and performance. They found that the profitability of SOEs was significantly lower than that of other ownership structures. Collectively owned enterprises (owned by local governments) are more profitable and productive than SOEs, possibly because of more efficient management under closer monitoring and harder budget constraints. Little improvement in the performance of MEs (partially privatized firms) has been observed, possibly due to government interference and distortion.

Jefferson et al. (2003) analyzed the changes in ownership type and profitability in 22,000 large and medium-size Chinese enterprises using panel data from 1994 to 1999. During this period, state ownership of Chinese MEs declined from two-thirds to one-half, and research and development rapidly increased, possibly due to the reform of the ownership structure. The results also showed that SOEs had lower productivity levels than all other ownership categories.

Different results were found by Sun and Tong (2003), who analyzed all companies listed on the Shanghai and Shenzhen stock exchanges for 1994-1997 and found a statistically significant positive influence of state ownership on performance up to a certain level. They found an inverted-U-shaped relationship between government ownership and firm performance: Initially, public ownership and control enhances transparency and accountability in a developing economy like China's. But after a certain threshold, this effect no longer occurs, and increasing government control can lead to lower productivity.

Gunasekagrage and Hu (2007) investigated the influence of the degree of state ownership on performance using annual data for 1,034 companies listed on China's two stock exchanges for 2000-2004. They found that, on average, the firms' performance was negatively affected by state ownership. However, this negative relationship was significant only at high levels of government ownership and control.

Table 1 summarizes the empirical evidence, primarily from North America, on the relative performance of SOEs and PCs. Taken as a whole, these findings suggest an edge for the private sector over the public sector, but the results vary considerably across sectors. In sectors where there is some evidence of superior public efficiency—electricity and water—there is limited competition or the PCs are highly regulated. Evidence of the greater efficiency of PCs appears to be in the delivery of services where governments' subcontracts to the private sector and their monitoring costs—for example, for refuse collection, fire protection, and non-rail transit—are relatively low.

Table 1. Empirical Findings on Relative Efficiency of State and Private Ownership

| Sector | State-owned enterprises more efficient | No difference or ambiguous results | Private companies more efficient |
|--------------------|---|---|--|
| Electric utilities | Meyer (1975) Neuberg (1977) Pescatrice & Trapani (1980) | Atkinson & Halvorsen (1986) Fare et al. (1985) Junker (1975) Mann (1970) Spann (1977) | De Alessi (1974, 1977) Moore (1970) Peltzman (1971) Shepherd (1996) |
| Refuse | Pier et al. (1974) | Collins & Downes (1977) Hirsch (1965) Kemper & Quigley (1977) | Edwards & Stevens (1978) Kitchen (1976) Pommerehne & Frey (1977) Savas (1977) Stevens (1978) |
| Water | Bruggink (1982) Mann & Mikesell (1971) | Feigenbaum & Teeple (1983) | Crain & Zardkoohi (1978, 1980) Hausman (1976) Morgan (1977) |
| Health services | | Becker & Sloan (1985) | Bays (1979) Bishop (1980) Clarkson (1972) Frech (1976, 1980) Frech & Ginsburg (1981) Lindsay (1976) Rushing (1974) Schlesinger & Dorwart (1984) Wilson & Jadlow (1982) |
| Airlines | | Forsyth & Hocking (1980) Jordan (1982) Morrison (1981) | Davies (1971, 1977) |
| Railroads | | Caves & Christensen (1980) Caves et al. (1982) | |
| Finance | | Lewin (1982) | Davies (1981) |
| Fire service | | | Ahlbrecht (1973) |
| Nonrail transit | | | McGuire & Van Cott (1984) Palmer et al. (1983) Pashigian (1976) |

Source: Adapted from Boardman & Vining (1989).

Empirical Analysis

Public companies are established with a public purpose, but at the same time they are corporations. Therefore, the evaluation of their performance needs to consider both profitability and public welfare. This study, however, used profitability, productivity, and efficiency as performance measurements, since its primary objective was to examine

the effect of listed/unlisted status and degree of government ownership on management performance. Public institutions that are listed or have small public shares—like private companies—are expected to be more profit-seeking than those that are not listed or have large public shares. The purpose of this study was not to estimate the effect of ownership structure on the whole performance of public companies, so defining the public interest of different public companies and making assumptions about the effect of ownership structure on public interest are not necessary.

Data

The study focused on public companies, established by the corporation law or a special law, with direct investment by the national government or related entities such as local government and public institutions. Due to difficulties analyzing financial information and ownership structures, we narrowed the list from 286 institutions designated according to the Act on the Management of Public Institutions in 2010 to 51 institutions and used panel data on ownership structure and financial statements for 1999-2009.

The 51 institutions comprise 18 SOEs, 4 quasigovernmental organizations, and 29 non-classified public institutions.³ SOEs and quasigovernmental organizations are usually former government-invested companies in accordance with the Framework Act on the Management of Government-Invested Companies, and most of the other public companies are subsidiaries of SOEs.

Variables

Using management performance of institutions as an indicator, we examined productivity, profitability, and efficiency. Table 2 shows variables for each indicator used for dependent variables.

Ownership structure of institutions invested in by government and government-related organizations and their listed/unlisted status were the independent variables in this study. Listed/unlisted status was represented by dummy variable (DL), with 1 for listed. Of the 51 public companies, the listed ones are KEPCO (1999-2009), KOGAS

3. The Act on the Management of Public Institutions requires the Minister of Strategy and Finance to designate a legal entity as a public institution if it meets certain investment and ownership criteria. Public institutions are further categorized as SOEs, quasigovernmental institutions, or non-classified public institutions. SOEs and quasigovernmental institutions have at least 50 staff members; SOEs are those for which self-generating revenue equals or exceeds half of total revenues.

Table 2. Management Performance Indicators and Variables

| Indicator | Variable (abbreviation) |
|---------------|----------------------------|
| Productivity | Value added (VA) |
| | Labor productivity (LVA) |
| | Capital productivity (CVA) |
| Profitability | Return on equity (ROE) |
| | Return on assets (ROA) |
| | Return on sales (ROS) |
| Efficiency | Labor efficiency (LSA) |
| | Capital efficiency (CSA) |

Notes: VA was calculated as the sum of labor cost, benefit package cost, depreciation cost, and income from continuing operations before taxes. Especially for the manufacturing industries, the individual accounts in the annual manufacturing statement were also regarded as a part of VA. The number of employees for LVA was the number of current workers including temporary positions. In order to make calculations easier, current tangible assets were regarded as the capital for CVA. LSA was measured as sales per capita. CSA was measured as sales per unit of tangible assets. Relatively simple variables were used for efficiency.

(1999-2009), Grand Korea Leisure (2009), Korea Plant Service & Engineering Corporation (2007-2009), KEPCO Engineering & Construction Company (2009), and Kangwonland (2001-2009).

For ownership structure (degree of government ownership), we used two variables. Government share (GS) considered only the government’s share, and gross government share (GGS) considered the sum of the shares of government and government-related organizations.

To control other factors affecting an institution’s management performance, we used a natural logarithm of total assets (SIZE) as control variable for the size of institutions. History (AGE), type (TYPE), and leverage ratio (LEV) were also included. A yearly dummy variable (DY) was used to control annual external effects, with 1 for transformed year’s data, and 0 otherwise.

Models

First, we specified the following regression to verify the relationship between listed/unlisted status and management performance.⁴

4. For this model,

$$LA_{it} : \text{value added}; LVA_{it} : \text{labor productivity} \left(\frac{\text{value added}}{\text{employees}} \right); CVA_{it} : \text{capital productivity}$$

Model (L)

$$\text{Performance}_{it} = \beta_0 + \beta_1 \text{DL}_{it} + \beta_2 \text{Size}_{it} + \beta_3 \text{Type}_{it} + \beta_4 \text{Age}_{it} + \beta_5 \text{LEV}_{it} + \beta_6 \text{DY}_{kt} + \varepsilon_{it}$$

- $\text{Productivity}_{it} = \beta_0 + \beta_1 \text{DL}_{it} + \beta_2 \text{Size}_{it} + \beta_3 \text{Type}_{it} + \beta_4 \text{Age}_{it} + \beta_5 \text{Size}_{it} + \beta_6 \text{LEV}_{it} + \beta_6 \text{DY}_{kt} + \varepsilon_{it}$
- Productivity indicators: $\text{VA}_{it} : \text{Model(L 1-1)}$, $\text{LVA}_{it} : \text{Model(L1-2)}$, $\text{RVA}_{it} : \text{Model(L1-3)}$
- $\text{Profitability}_{it} = \beta_0 + \beta_1 \text{DL}_{it} + \beta_2 \text{Size}_{it} + \beta_3 \text{Type}_{it} + \beta_4 \text{Age}_{it} + \beta_5 \text{Size}_{it} + \beta_6 \text{LEV}_{it} + \beta_6 \text{DY}_{kt} + \varepsilon_{it}$
- Profitability indicators: $\text{ROE}_{it} : \text{Model(L2-1)}$, $\text{ROA}_{it} : \text{Model(L2-2)}$, $\text{ROS}_{it} : \text{Model(L2-3)}$
- $\text{Efficiency}_{it} = \beta_0 + \beta_1 \text{DL}_{it} + \beta_2 \text{Size}_{it} + \beta_3 \text{Type}_{it} + \beta_4 \text{Age}_{it} + \beta_5 \text{Size}_{it} + \beta_6 \text{LEV}_{it} + \beta_6 \text{DY}_{kt} + \varepsilon_{it}$
- Efficiency indicators: $\text{LSA}_{it} : \text{Model(L3-1)}$, $\text{CSA}_{it} : \text{Model(L3-2)}$

Next, we used the following regressions with two main independent variables, GS and GGS, in order to verify the relationship between the degree of government ownership and management performance.

Model (GS)

$$\text{Performance}_{it} = \beta_0 + \beta_1 \text{GS}_{it} + \beta_2 \text{Size}_{it} + \beta_3 \text{Type}_{it} + \beta_4 \text{Age}_{it} + \beta_5 \text{LEV}_{it} + \beta_6 \text{DY}_{kt} + \varepsilon_{it}$$

Model (GGS)

$$\text{Performance}_{it} = \beta_0 + \beta_1 \text{GGS}_{it} + \beta_2 \text{Size}_{it} + \beta_3 \text{Type}_{it} + \beta_4 \text{Age}_{it} + \beta_5 \text{LEV}_{it} + \beta_6 \text{DY}_{kt} + \varepsilon_{it}$$

We performed an empirical test with this model, using pooled OLS analysis. Since the model is based on panel data for 51 companies for 11 years, a panel data analysis was needed to consider each organization's characteristics. However, the main independent variables, listed/unlisted status and government ownership share, were in

$$\left(\frac{\text{value added}}{\text{tangible assets}} \right); \text{ROE}_{it} : \text{return on equity} \left(\frac{\text{net profit}}{\text{equity}} \right); \text{ROA}_{it} : \text{return on assets}$$

$$\left(\frac{\text{net profit}}{\text{assets}} \right); \text{ROS}_{it} : \text{return on sales} \left(\frac{\text{net profit}}{\text{sales}} \right); \text{LSA}_{it} : \text{labor efficiency}$$

$$\left(\frac{\text{gross sales}}{\text{employees}} \right); \text{CSA}_{it} : \text{ca} \left(\frac{\text{gross sales}}{\text{tangible assets}} \right); \text{DL}_{it} : \text{listed dummy}; \text{size}_{it} : \text{log total assets};$$

$$\text{LEV}_{it} : \text{leverage ratio} \left(\frac{\text{liability}}{\text{assets}} \right); \text{DY}_{it} : \text{year dummy}.$$

most cases identical for 11 years. Therefore, we considered the fixed effect of time by controlling the time effect with a year dummy variable.

Results

Table 3 shows descriptive statistics for 51 institutions for 11 years. The standard deviation for GGS is smaller than that for GS. This means that when we examine the effect of GGS on government-invested institutions, there is little difference among SOEs, quasi-governmental institutions, and other public institutions. For many quasi-governmental institutions and other public institutions, GS has nearly no effect, but GGS has more than 50 percent effect.

The means of ROE, ROA, and ROS are 18 percent, 3 percent, and 1 percent, respectively. The competitive conditions of industry and market are not considered in the mean of ROS, which is the average of 51 companies. Therefore, we cannot simply say that for ROS a mean of 1 percent is low. Moreover, we should not make a simple comparison or evaluation on ROA, because it largely depends on the industry sector and competitive conditions (such as monopoly supply or demand), especially for public companies. This applies to all the productivity indicators.

Table 3. Variable Means and Standard Deviations

| Variable | Number | Mean | Standard deviation |
|----------|--------|-----------|--------------------|
| DL | 463 | 0.08 | 0.27 |
| GS | 463 | 40.14 | 44.71 |
| GGS | 463 | 92.34 | 18.06 |
| VA | 463 | 36,076.25 | 102,960.80 |
| LVA | 461 | 11.61 | 14.27 |
| CVA | 463 | 5.77 | 40.06 |
| ROE | 463 | 18 | 3.70 |
| ROA | 463 | 3 | 0.13 |
| ROS | 460 | 1 | 0.41 |
| LSA | 460 | 55.50 | 80.65 |
| CSA | 461 | 1.02 | 1.44 |
| AGE | 463 | 21.94 | 15.91 |
| SIZE | 463 | 27.02 | 2.78 |

Management Performance in Relation to Listed/Unlisted Status

Table 4 shows the results of the regression of the relationship between listed/unlisted status and management performance. Listed status has a positive influence on management performance measured by VA, LVA, ROA, LSA, and CSA. All five of these measures are significant at the 1 percent level. In particular, we think uncontrolled industry sector and market competitive conditions are the critical reasons for the insignificant results on the productivity measure. This affects the productivity measure more than any other measures, a finding confirmed by Boardman and Vining (1989).

Table 4. Regression Results for Effect of Listed/Unlisted Status

| | Productivity | | | Profitability | | | Efficiency | |
|----------------|-----------------------------|---------------------|---------------------|-----------------|----------------------|---------------------|-----------------------|--------------------|
| | (L 1-1) VA | (L 1-2) LVA | (L 1-3) CVA | (L 2-1) ROE | (L 2-2) ROA | (L 2-3) ROS | (L 4-1) LSA | (L 4-2) CSA |
| DL | 165,746.4 (15,125.6***) | 8.58 (2.16***) | 6.52 (6.87) | 0.11 (0.66) | 0.067 (0.02***) | 0.07 (0.07) | 93.26 (11.40***) | 0.72 (0.18***) |
| TYPE | -25,920.31 (10,728.22**) | -2.67 (1.53) | 2.53 (4.87) | 0.55 (0.47) | -0.045 (0.01**) | -0.07 (0.05) | 14.82 (8.08*) | -0.19 (0.12) |
| SIZE | 13,381.01 (1,746.43***) | 2.68 (0.25***) | -3.79 (0.79***) | -0.08 (0.07) | -0.003 (0.002) | 0.016 (0.008**) | 12.42 (1.32***) | -0.33 (0.02***) |
| LEV | 858.61 (12,158.48) | 0.09 (1.75) | 25.29 (5.53) | 0.30 (0.53) | -0.12 (0.01***) | -0.215 (0.05***) | 1.16 (0.14***) | |
| AGE | 326.416 (287.26) | -0.14 (0.04***) | -0.10 (0.13) | 0.001 (0.01) | 0.0008 (0.0003**) | 0.002 (0.001*) | -1.25 (0.21***) | -0.0009 (0.003) |
| Constant | 348,431.1 (8,067.12***) | -55.12 (6.93***) | 94.30 (21.86***) | 1.67 (2.1) | 0.19 (0.06***) | -0.3 (0.23) | -275.20 (36.51***) | 9.81 (0.57***) |
| DY | Included | Included | Included | Included | Included | Included | Included | Included |
| N | 463 | 461 | 463 | 463 | 463 | 460 | 460 | 461 |
| R ² | 0.36 | 0.31 | 0.12 | 0.32 | 0.17 | 0.06 | 0.38 | 0.53 |

* statistically significant at the 10 percent level

** statistically significant at the 5 percent level

*** statistically significant at the 1 percent level

Management Performance in Relation to Government Share

Table 5 shows the results of the regression of the relationship between GS and management performance. GS has a negative influence on management performance measured by VA, LVA, CVA, LSA, and CSA. Except for CVA, all are significant at the 1 percent level.

Table 5. Regression Results for Effect of Government Share

| | Productivity | | | Profitability | | | Efficiency | |
|----------------|------------------------------|----------------------|---------------------|--------------------|-----------------------|----------------------|-----------------------|----------------------|
| | (GS 1-1) VA | (GS1-2) LVA | (GS1-3) CVA | (GS2-1) ROE | (GS2-2) ROA | (GS2-3) ROS | (GS4-1) LSA | (GS4-2) CSA |
| GS | -879.37 (132.73***) | -0.069 (0.017***) | -0.08 (0.05*) | -0.0065 (0.005) | -0.0001 (0.0001) | 0.000035 (0.0005) | -0.505 (0.096***) | -0.006 (0.001***) |
| TYPE | 15,925.86 (13,374.77) | 0.71 (1.78) | 6.53 (5.65) | 0.89 (0.54) | -0.039 (0.017**) | -0.077 (0.059) | 38.86 (9.77***) | 0.103 (0.14) |
| SIZE | 17,487.52 (1,827.013***) | 2.89 (0.24***) | -3.64 (0.77***) | -0.082 (0.075) | -0.039 (0.017*) | 0.018 (0.008**) | 14.73 (1.34***) | -0.322 (0.02***) |
| LEV | -1,471.953 (13,060.92) | 0.09 (1.75) | 25.27 (5.52***) | 0.31 (0.53) | -0.12 (0.017***) | -0.21 (0.058***) | 38.86 (9.62***) | 0.0039 (0.0036) |
| AGE | 075.341 (322.7243**) | -0.091 (0.042**) | -0.42 (0.13) | 0.006 (0.01) | 0.00098 (0.0004**) | 0.0025 (0.0014*) | -0.828 (0.23***) | -0.0009 (0.003) |
| Constant | -436,610.7 (50,767.79***) | -59.34 (6.81***) | 91.39 (21.45***) | 1.688 (2.08) | 0.15 (0.066**) | (-0.36) (0.22) | -324.75 (37.35***) | 9.46 (0.56***) |
| DY | Included | Included | Included | Included | Included | Included | Included | Included |
| N | 463 | 461 | 463 | 463 | 463 | 460 | 460 | 461 |
| R ² | 0.26 | 0.31 | 0.12 | 0.03 | 0.15 | 0.06 | 0.35 | 0.53 |

* statistically significant at the 10 percent level

** statistically significant at the 5 percent level

*** statistically significant at the 1 percent level

Management Performance in Relation to Gross Government Share

Table 6 shows the results of the regression of the relationship between GGS and management performance. GGS has a negative influence on management performance measured by VA, LVA, and LSA. All are significant at the 1 percent level.

Table 6. Regression Results for Effect of Gross Government Share

| | Productivity | | | Profitability | | | Efficiency | |
|----------------|------------------------------|----------------------|---------------------|--------------------|----------------------|---------------------|-----------------------|---------------------|
| | (GGS 1-1) VA | (GGS1-2) LVA | (GGS1-3) CVA | (GGS2-1) ROE | (GGS2-2) ROA | (GGS2-3) ROS | (GGS4-1) LSA | (GGS4-2) CSA |
| GGS | -1,586.36 (34.98***) | -0.146 (0.031***) | -0.02 (0.099) | -0.008 (0.0096) | -0.0003 (0.0003) | -0.00015 (0.001) | -0.87 (0.173***) | -0.0014 (0.0026) |
| TYPE | -22,099.97 (11,552.54*) | -2.208 (1.53) | 2.53 (4.90) | 0.592 (0.47) | -0.045 (0.015***) | -0.074 (0.051) | 16.69 (8.46**) | -0.19 (0.13) |
| SIZE | 17,479.47 (1,823.901***) | 2.89 (0.243***) | -3.62 (0.77***) | -0.08 (0.075) | -0.0014 (0.0023) | 0.018 (0.008**) | 14.81 (1.34***) | -0.32 (0.02***) |
| LEV | 8,664.58 (13,160.59) | 0.9101 (1.75) | 25.29 (5.58***) | 0.359 (0.54) | -0.12 (0.017***) | -0.21 (0.058***) | 43.80 (9.72***) | 1.14 (0.14**) |
| AGE | 217.49 (309.87) | -0.16 (0.041***) | -0.104 (0.13) | 0.0003 (0.012) | 0.0008 (0.0004) | 0.0025 (0.001*) | -1.31 (0.22***) | -0.0007 (0.003) |
| Constant | -296,581.5 (55,365.6 ***) | -46.54 (7.37***) | 93.03 (23.49***) | 2.37 (2.27) | 0.189 (0.072***) | -0.345 (0.247) | -249.45 (40.82***) | 9.52 (0.62***) |
| DY | Included | Included | Included | Included | Included | Included | Included | Included |
| N | 463 | 461 | 463 | 463 | 463 | 460 | 460 | 461 |
| R ² | 0.26 | 0.32 | 0.12 | 0.03 | 0.15 | 0.03 | 0.36 | 0.51 |

* statistically significant at the 10 percent level

** statistically significant at the 5 percent level

*** statistically significant at the 1 percent level

DISCUSSION AND CONCLUSION

This study analyzed the influence of the listing on the Korea Exchange and the degree of state ownership on the performance of Korean government-invested companies. The results provide statistically significant evidence that the performance of listed companies is substantially better than that of unlisted companies and that a lower degree of government ownership has a more positive effect on management performance, with other variables such as companies' type, size, age, and leverage ratio being controlled.

Earlier studies with data from North America and Chinese companies indicated that partial privatization, in which a government retains some percentage of equity, may not be a good strategy for improving performance, because few joint ownership enterprises perform better than SOEs and they often perform worse. However, this study suggests that the deadweight loss can be reduced when companies are listed because of shareholders' monitoring. It also shows that listing companies loosens the rigidity of bureaucracy, enabling them to perform better, as Williamson (2002) also

found.

The Korean government plans to increase management autonomy of government-invested companies and undertake partial privatization while retaining some equity in order to improve management performance and reform governance. The results of this study support this strategy.

Our analysis model was limited in that it did not directly address the social (non-commercial) objectives of SOEs. We also did not account fairly on the industry variable, and therefore we had to deal with KOGAS, KEPCO, and Kangwonland in the same model. However, the companies in our data set mainly deal with commercial activities, and we utilized the type of company as a control variable.

A useful future study could be a stocktaking of national approaches to obliging SOEs to undertake noncommercial objectives. Such obligations, methods of accounting for and covering their cost, and the transparency and disclosure to which they are subject could be among the topics. Another analytic study could focus on the challenges arising for government-ownership agencies in reconciling commercial objectives and a mounting number of noncommercial objectives for SOEs—such as public service, corporate social responsibility, and industrial policy objectives. Mechanisms for ensuring continued accountability of SOE managers when they are instructed to pursue multiple (and perhaps conflicting) objectives need to be developed.

Improving the disclosure of information is another critical part of wider SOE reform and essential for improved competitiveness. International good practice suggests that SOEs should report on financial stakes and disclose their annual reports, audit reports, and earning statements to the public in a timely manner. In this regard, Korean government support as part of Knowledge Sharing Program Southeast Asian countries and Central and South American countries to build their own accountability measure.

Korea privatized some SOEs under the Kim Dae Joong government, which is expected to have a huge impact on the economy. Privatization gets priority when profitability is higher, losses are larger, or the debt ratio is higher (Park & Park, 2010). The higher industrial share and goods and services consumed mainly by lower-income people, the priority of privatization is supposed to be low. Given these considerations, in the present situation, further privatization of SOEs will not be easy. However, the policy implication of our analysis is quite clear. Whenever market failure exists, SOEs are not necessarily needed. Privatization would be a very good alternative to reduce the inefficiency of SOEs, and its success depends upon the effectiveness of regulations and the provision of a competitive environment.

The economic value added size of Korean SOEs is not high compared to those in other countries. The discussion about privatization must be considered as part of a complex political and economic policy agenda that cannot be explained by economic

efficiency alone. Korea must take into consideration not only domestic issues but also large-scale asset sales that involve international financial transactions; therefore, an economic analysis focused on profitability and productivity has significant limitations. Nevertheless, we hope this impact analysis of privatization will help provide a sound foundation for future evidence-based privatization policy and strategy.

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