Reforming the Korean Public Sector: The Use of the Performance Contracting System

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Introduction

This paper examines the mechanics of the performance contracting system used in the Korean state-owned enterprise(SOE) sector and studies the impact it had on the SOE performance. The performance contracting system, called 'the Managerial Performance Evaluation System (MPES)' in Korea, is designed to improve the principal-agent setting by formalizing the relationship between the government and government-invested enterprises(GIE) through performance contracts. Just prior to the implementation of the MPES, between 1980 and 1983, the GIE sector received government subsidies totaling 3,544 billion Won or US$4.7 billion.[1] Many accused the government of 'politicizing' operations of SOEs by imposing political objectives on managements. With mounting losses and public outcry concerning inefficient operation of SOEs, the government enacted the 'GIE Management Act' in 1984 in order to 'harden' the GIEs' budget constraint.[2]

The MPES is essentially a government control system where GIE's performance is evaluated based on a set of mutually agreed performance indicators. In order to implement and sustain GIE sector reform, while maintaining some control over the reform process, the government did the following:

- ministrial intervention in GIE's day-to-day management was replaced by a management- by-objective(MBO) type of regulation[3] where essentially GIE and the government enter into a performance contract. The evaluation criteria included both quantitative and qualitative indices covering a range of short term to long term managerial issues;
- managerial performance was linked to the pecuniary compensation structure in the form of annual bonus payments. An individual company's bonus payment was determined based on its relative standing among all GIEs;

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1) This figure uses the exchange rate at the end of 1982.

2) More specifically, the Act called for the simplification and reduction of external government interference with respect to budget, personnel, and procurement and thereby granted greater managerial autonomy for GIE managers.

3) This is similar to Drucker's theory (1954) on the management style for the private sector.

- the control over personnel policy, except for the appointment of outside directors, was left to individual GIEs.[4] In the past, government ministries and politicians influenced appointments of senior managers;
- each GIE was allowed to formulate its own budget based on common guidelines set by the government, which are consistent with its macro and industrial policies.[5] This eliminated burdensome regulations and the complex approval process;
- finally, a two-tier management structure was implemented. Boards of Directors (boards) were put in charge of formulating important corporate policies, while management committees were responsible for the execution of such policies. The two-tier management system allowed the boards to set important corporate policies in consultation with senior management. This took the government ministries out of the picture.[6]

Performance contracting systems have been adopted in a number of countries including France, New Zealand, Bangladesh, China, India, Korea, Pakistan, and Sri Lanka. In India, 140 SOEs at the federal level have signed memoranda of understanding with the government, ones similar to performance contracts (Kumar, 1993). In China, a 'contractual management' regime (Wei and Lian, 1993) governs 450,000 state and collective enterprises. In Pakistan, the profits of 33 industrial enterprises doubled from Rs.344 million in FY 1983 to Rs.684 million in FY 1986, while efficiency, measured in public profitability at constant prices, doubled in the first two years from 3.3 percent to 7 percent since the implementation of MPES. In Gambia, improvements in performance were reported in four out of six SOEs that signed performance contracts, while in Senegal (Berg, 1990) and Kenya (Nellis, 1989), the results were mixed. In China, despite false reporting and continued government interference, observers believe that the SOE sector has benefited from the system (Wang Xinzheng, 1992).

Increasingly, governments are forced to delay the sales of state monopolies and 'strategic' firms for either political or technical reasons. There are also heavy loss-making enterprises which are difficult to privatize without large government hand-outs. This is further complicated by the fact that many countries, often based on bureaucratic convenience,[7] have determined that 'the social cost of maintaining monopolistic and/or strategic industries in state hands' is lower that 'the

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4) In addition, promotions would be confined to internal candidates, rather than those from outside who often benefit from the pressure given by the supervising ministries.

5) The guideline has dual purposes: first, to coordinate the public sector capital investment and borrowing, which impacts its fiscal policy; and second, to provide GIEs with specific investment guidelines.

6) See Section 3 for details on how Boards of Directors, especially outside directors, can provide superior monitoring over management.

7) This implies that considerations to restructure SOE sectors were based on the political and bureaucratic convenience of maintaining government control over SOEs for various reasons, and not purely on the financial nor efficiency considerations.

social and political costs associated with a privatized but regulated monopoly structure.' This illustrates that governments often prefer 'internal' regulation of economies through direct state ownership rather than 'external' regulation of private monopolies through privatization of state assets. Numerous governments have found the state ownership of natural monopolies and strategic industries to be politically convenient (Galal et al., 1994). These necessitated governments to rely more on traditional and gradual means to cope with the deteriorating performance of SOEs. Performance contracting offered a viable solution.[8)]

Most nations, with the possible exceptions of former socialist nations and countries with severe internal and external deficits, can opt for a gradual approach to reform their SOE sectors rather than risk political fortunes on more radical privatization measures. When available reform options are either a gradual reform approach through performance contracts, partial privatization, and cash flow rights privatization or radical control-rights privatization, rational governments must weigh the expected economic and political costs associated with each option. These costs, in turn, depend on the likelihood of regulatory and management failures for each ownership option. In examining the gradual approach, Lipton and Sachs (1992), and Shleifer and Vishny (1994) argue that government-initiated conventional SOE reform measures often fall short of intended targets and often deteriorate the operational environment. They claim that conventional SOE reform approaches have been limited in effectiveness due to interest politics. Others, however, have advocated the gradualist approach to cushion the effect of introducing market forces on entities that have relied on government handouts (Trivedi, 1992; Nellis, 1989).

Our study is timely because few studies have examined the consequences of conventional SOE sector reform measures on SOE's operation.[9)] Thus, this paper concentrates on examining the impact of the 1984 GIE Act on the performance of GIEs. In terms of the organization of the paper, Section 2 examines the Korean SOE sector in general and how it grew over the years. In Section 3, we examine the institutional framework within which GIEs have been operating. Sections 4 and 5 analyze the Act's

8) See World Bank (1993) for details on the deteriorating performance of the SOE sector worldwide.

9) Among others, in a 1991 study on the cost improvements resulting from the MPES, Song found a 3 percent cost savings over the 1983 performance in 1984, a 4.1 percent savings in 1985, and a 5.4 percent saving in 1986. He, however, based his study of the system's success to its future applicability on a survey he conducted among SOE senior managers. In another study, Song (1992) failed to take into account other relevant endogenous and exogenous factors that might have influenced the workings of GIEs, such as GNP growth and the industry cycle. Furthermore, no serious statistical tests recognizing random factors have been conducted. Park's (1987) study which concluded MPES's postive impact on GIE performance also relied on descriptive data and case studies. Kim (1993) and Cho and Kim (1994) also used flawed methodology--they did not compare correctly the performance data from before and after the Act's implementation using statistical techniques that controlled for random factors and background 'noise.' In addition, Jones (1991), Mallon (1983), Nellis and Shirley (1989), Ramamurti (1986), and Trevedi (1990) all utilized case studies to convey their messages.

impact on the performance of GIEs using 'difference in means' tests and a regression technique.

The Korean SOE Sector

The SOE sector has served as an important stimulant to Korea's economic development.[10] In 1990, after rounds of restructuring and privatization,[11] the SOE sector generated 10.4 percent of the Korean economy's non-agricultural GDP, 8.9 percent of the total gross fixed capital formation, and employed over 370,000 workers, 1.5 percent of the total working population (EPB, 1992). Its budget, set at 6.2 trillion Won in 1991, was 140 percent larger than that of the central government.

Korean SOEs can be broadly divided into the following four categories based on the type of ownership structure they have and on how government control utilized: government enterprises (GEs), government-invested enterprises (GIEs), government-funded enterprises (GFEs), and subsidiaries of government-invested enterprises (SGIEs). GIEs are by far the most important of these categories.[12] With respect to government ownership, GEs are those SOEs with a 100 percent government equity holding, GIEs are SOEs with under 100 percent but over 50 percent government ownership, and GFEs are SOEs with less than 50 percent direct government shareholding. These definitions are somewhat deceptive because some GIEs and GFEs are fully owned by the government through cross shareholding by other GIEs, such as the Korea Development Bank (KDB). Distinctions among these four types of SOEs can be further made by the degree of the government's influence on the decision making process of SOEs. Government control is greatest in GEs and smallest in SGIEs.

As Figure 1 illustrates, the number of Korean SOEs, excluding local SOEs, has increased from 85 in 1983 to 124 in 1991, while employment increased by 31.2 percent during the same period. The expansion was most noticeable in GIEs and SGIEs. For instance, the budget of GIEs went up by over 250 percent during the same period. Although the number of GIEs has fallen from its peak of 25 in 1986 to 23 in 1991, GIE sector employment has increased by over 32 percent between 1983 and 1991. The SGIE sector has also grown rapidly; the number of SGIEs increased by 83 percent, with employment up by 116 percent and the budget up by over 260 percent during the same period. Despite its importance to the economy, the SOE sector has em-

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10) We intend to concentrate on 23 SOEs within the central government, although as of January 1993, there were 204 local GEs and 49 local GIEs.

11) The SOE sector has undergone several waves of privatization since 1968, when seven large SOEs were first privatized. As recent as January, 1994, the government has announced plans to privatize over 50 SOEs. However, many 'strategic' firms were excluded in these plans.

12) In 1992 alone, GIEs took up over 45 percent of the total SOE budget and employed over 54 percent of the total SOE labor force.

ployed around two percent of the total workforce since 1983, while the proportion of its budget to total GDP declined from 37.7 percent in 1983 to 29 percent in 1991.

〈Figure 1〉 The Korean SOE Sector (1983-1991)

	Number of firms			Employment			Budget in billion Won		
Year	1983	1986	1991	1983	1986	1991	1983	1986	1991
GEs	5	5	4	80,000	78,204	71,584	3,258.3	3,058.8	2,845.5
GIEs	24	25	23	128,000	134,729	170,824	12,029	13,019	34,398
GFEs	7	6	7	34,000	29,502	38,597	4,232.2	5,223.4	8,294
SGIEs	49	71	90	43,000	62,400	93,096	4,567.3	6,877.5	16,734
Total	85	107	124	285,000	304,835	374,101	24,086.8	28,179	62,272

Source: EPB (1993) Budget in billion Won.

Thoughout the 1980's, a steady flow of government contributions in the form of direct and indirect subsidies to SOEs was recorded. In 1992 alone, the government contribution, in the form of subsidies and equity participation in GIEs and GFEs, totaled 6.88 trillion Won, or US$8.7 billion. If the government contributions to loss making GEs are taken into account, the amount would be significantly larger.

In examining the role of the GIE sector and its relation to the state, the following factors require careful considerations:

- the availability of information under the **internal** regulation of SOEs through the MPES versus that required under the **external** regulation of privatized monopolies;
- the political and economic costs of regulatory failure associated with private and public ownership structures;
- the traditional government's role in the economy and the relative importance it places on industrial policies; and
- the changing SOE operational environment, largely caused by increased competition and changing technologies.

Considering these and because of the government's reliance on SOEs for various politico-economic reasons, the government found it convenient to maintain state ownership of key industries. It appears that these factors, as well as its unwillingness to relinquish its control of certain industries, have influenced the Korean government's decision to use a gradual approach to reform

the SOE sector. In other words, in devising strategies for reforming the SOE sector, policy makers chose only those options that would allow the continuation of their influence and control over key industries.

The Mechanics of the System

Prior to 1984, there were few differences among the four types of SOEs in terms of their relationship with the state. They were all subject to numerous administrative guidelines and regulations. The government control of SOEs was based on a 'negative' approach, a system designed to prevent managers deviating from government-imposed objectives through tightly controlling managers. Rather than relying on a high-powered incentive scheme, the government sought to control managers directly. This caused low-risk managerial practices.

With respect to GIEs, a variety of mechanisms controlled the decision making process, including the GIE Budget and Account Act, the GIE Administrative Act, the Board of Audit and Inspection Act,[13] the Procurement Fund Act, and the establishment acts of individual companies. Thus, supervising ministries and the Economic Planning Board (EPB) controlled virtually all aspects of GIEs' managerial activities. In addition, annual business plans and budgets required line-by-line approval from supervising ministries, the Ministry of Finance (MoF), and the EPB.

The new system sought to combine the management evaluation system with performance information system and incentive system. Critical to the system are choices of evaluation criteria and target levels (criterion value).[14] Benchmark indicators were selected based on the following criteria: measurability, controllability, and acceptability. Measurability relates to whether one can verify information submitted by GIEs, while controllability relates to selecting those that are within the evaluatee's control or for which the evaluatee can be held accountable. Acceptability refers to the user-friendliness of the system. Thus, it is important for both parties to come up with a mutually agreed set of indicators before the actual implementation of the system. Using these criteria, the government initially came up with 15 tailor-made quantitative and qualitative indicators for each GIE.

Quantitative criteria include public profitability, gross fixed capital formation, asset growth, capacity utilization rate, and partial productivity measures, such as labor productivity, cost containment, and unit cost changes. Public profit is defined as the net profit before depreciation, in-

13) Annual audits of GIEs were conducted by the supervising ministries and the Board of Audit and Inspection which were duplicative and time-consuming.

14) For instance, heavy emphasis on profitability would signal the commitment to the commercial aspects of operating SOEs.

terest, and taxes (Galal et al., 1994)[15]. Qualitative indicators[16] often assess non-quantifiable aspects of the firm's operation.[17] It is often said that the multiple goals set by governments tend to hamper the performance of SOEs (Tirole and Laffont, 1993; Ramamurti, 1986). To deal with the multiple managerial and organizational objectives, the system employed relative weights among different criteria in order to prioritize the goals SOEs were required to pursue.

In setting the target level, a seven year time-series regression was performed to forecast the trend. An evaluation interval is constructed for each indicator using standard errors. For instance, a realized score with more than two standard errors over the predicted value is considered an excellent grade. Categories of outstanding, fair, and below average are constructed for each criterion and receive corresponding points. The sum of these scores is added to derive the total score. By comparing the **relative performance** of GIEs, the bonus payment of each GIE is determined. It varies from a minimum of 100 percent to a maximum of 300 percent of an employee's monthly base income which contrasts the 50 to 200 percent range used prior to the 1984 Act.

In terms of organizational aspects, several quasi-government units were created to handle various aspects of the Act. The Management Evaluation Council (MEC) played an important role. The MEC was established to formulate standard operating procedures and the GIE budgets as well as to evaluate GIEs through the MPES.[18] An ad-hoc Management Performance Evaluation Task Force (APET) was also created to conduct an annual performance evaluation of each GIE. Note that public officials were excluded from the taskforce and only accountants, public sector experts from academia and research institutes were included to ensure the independence of the evaluation process.[19]

In addition to changes in the managerial incentive structure, a two-tier management structure was instituted where the Boards of Directors (boards) were responsible for making important corporate policy decisions while executive management teams were put in charge of implementing the board's decisions. The two-tier management system allowed the boards to make major corpo-

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15) It is also calculated as sales minus the cost of sales, which is the sum of labor, working capital, and other factor rentals, and intermediate materials.

16) The ability of GIEs to adapt to a changing environment was emphasized by selecting criteria related to the change readiness of firms. For instance, it include a criterion on the level of investments the management information system pursued.

17) An example is decentralized decision making of GIE procurement, which can be measured by the relative proportion of the budget appropriated at local offices versus the amount purchased by the central office.

18) Members of the MEC include ministers from the EPB, the Ministry of Finance (MoF), the Ministry of Industry, Trade, and Energy (MITE), and other supervisory ministries.

19) Under the system, the CEO of each GIE would report on the performance of the previous year by March 20 to the MEC, who would in turn pass it on to the APET. The APET had three months to review the reports and produce a draft proposal to the MEC.

rate decisions regarding pricing, investment, personnel, and financing. This took the government ministries out of the picture, thereby 'hardening' or 'formalizing' the relationship between the government and GIEs.

In corporate governance, an important function of the boards is to monitor the top manages and replace them when necessary. Because managers are not major stockholders, the task of representing stockholders falls upon boards (Berle and Means, 1932). The effectiveness of the boards has been the subject of theoretical and empirical studies. Some economists (Fama and Jensen, 1983) suggested that the boards execute this function effectively. Jensen (1986) also claimed that the internal control mechanism of corporations, which operate through the boards of directors, generally works well. But Mace (1971) found that boards do not do very much. Scherer (1990) also added that except in crisis situations, board members rubber-stamp management recommendations on new managerial appointments and other policies. In Korea, SOE boards, unlike private boards, neither make final corporate policies nor implement those policie s.[20] Although the current SOE board structure does have some flaws, the government found it important to separate the functional activities so that they would be able to concentrate on long-term planning and monitoring. The Act also specifies that outside directors appointed by government ministries be included on boards.

In terms of the composition, outside directors appointed to GIEs are often academics, SOE experts, and members of consumer rights groups. In 1987 alone, 92 out of the 196 directors appointed to GIE boards came from outside. Outside directors were more effective in monitoring the actions of management because they have a higher stake to maintain their reputation than inside directors. We examine whether the use of boards and outside directors has made any difference to the performance of GIEs by examining the causal relationship between corporate performance and board activities, such as the frequency of extraordinary meetings.

In theory, the Korean system might improve the economic efficiency of SOEs through the following:[21]

- first, policy-makers need to come to terms with evaluation criteria under which GIEs are evaluated. This, in turn, will redefine organizational and managerial objectives and thereby avoid problems associated with the unclear goal-setting process;
- second, linking managerial performance to the compensation scheme provides a high-powered incentive system;
- third, it facilitates understanding of the respective role of each player involved in the

20) The boards of the Korean private sector have similar features to those boards of the early to mid-20th century in western nations because they only consist of inside directors and were the ultimate decision-making and implementing body.

21) The Korean system takes less of a legalistic approach than that used in many other systems around the world.

process. This formalizes the relationship between governments and SOEs, and thereby 'depoliticizes' the process;

- lastly, the system facilitates the uniformity of goals among many government agencies because of transparent and measurable sets of indicators provided by the system.[22]

In order for the system to work, we believe that specific prerequisites are required. First, the system needs to be user-friendliness. The evaluation of a complex organization can be time-consuming and tends to be very technical, and systems should be designed with both SOE managers (evaluatees), and an independent task force, and bureaucrats (evaluators) in mind. Second, a support infrastructure must be in place. It should have proper accounting, inventory, and other management information control systems for effective evaluation, and, in addition, there must be competent managers to deal with these systems and experts who can implement the system. Third, those SOEs in serious financial trouble are unlikely to meet the extra challenges of new financial and production targets and they should be excluded. Fourth, the government commitment is perhaps the most important single ingredient for the success of the system, and therefore political support within the government or among political leaders must be secured.

In the next section, we examine the overall impact of the Act on the performance of GIEs in areas of their profitability, productivity, investment, and labor policy. We also test whether the total government subsidies, in the form of cash and capital injection, as well as loans to GIEs, changed at all as a result of the Act. Finally, we examine the changing relationship between GIEs and the government to see if the Act played any role in formalizing the relationship.

Performance Analysis

In this section, we utilize various statistical techniques to measure the impact of the Act. We examine the change in pre- and post-Act evaluation scores, subsidy level, and other key economic indicators. The data comes from the Korea Development Institute (KDI)'s SOE Research Unit. The GDP deflator is used to convert nominal into real values, discounting the general price effects. Also, note that in our 'difference in means' tests and econometric work, we only use those GIEs that have existed since 1982. This eliminates four GIEs: Korea Telecommunication Corporation, Korea Gas Corporation, Korea Tobacco and Ginseng Corporation, and the Agricultural and Fishery Marketing Board.

22) In the past, relevant ministries and agencies each attempted to influence the outcome of regulatory interaction. The use of the system was supposed to settle the question on regulatory governance structures before the regulation was implemented.

Overall Performance

In terms of scores, given a standardized target level of 87.5 out of a maximum 100, average scores have all been above 90 points since 1984, as illustrated in Figure 2. This suggests that the targets might have been set too softly. Also, scores were centered around 90 points, with only 2 points separating most firms in any given year. As a result, most GIE employees received annual bonus payments averaging 260 percent, with a range between 200 to 290 percent. Very few GIEs were penalized for poor performance. In fact, only one or two received bonus payments of less than 200 percent in any given year. It is apparent that employees were virtually guaranteed a minimum 200 percent bonus, a 100 percent increase over the statutory minimum.

〈Figure 2〉 GIE Incentive Bonus System (Units in percentage) and GIE Deficits (Mil. Won)

Scores	Bonus (percent)	Number of firms								
		1984	1985	1986	1987	1988	1989	1990	1991	1992
95-100	300	0	0	0	0	1	0	0	0	0
90-94	250-290	18	15	20	15	13	13	12	11	12
85-89	200-240	5	9	4	8	10	11	10	12	10
80-84	150-190	2	1	1	1	2	2	1	0	1
75-79	100-140	0	0	0	0	0	0	0	0	0
Average Bonus	(percent)	250	250	280	270	260	255	260	260	265
Average Score		90.4	90.2	90.3	90.4	90.2	90.3	90.0	89.6	90.2
Std.Dev.		.83	.89	.85	.86	.79	.85	.87	.86	.92

Source: EPB (1985-1993), Annual GIE Evaluation Reports. Std. Dev. denotes standard deviation.
Note: The GIE average refers to the average score of 22 GIEs. Bonus payment is in basic monthly percentage terms.

Both the number of GIEs with deficits and the size of total deficits have both decreased since the introduction of the Act. In 1983 alone, five GIEs lost a total of 36 billion Won. The number went down to one GIE with a loss of 0.5 billion Won in 1984. In 1986, there were no reported deficits in the GIE sector. Figure 3 provides important information on the level of government direct and indirect financial support.[23] Although the total level of supports went down

23) In addition to direct subsidies that cover the operating deficits, we need to examine indirect subsidies

in the years immediately following the enactment of the 1984 Act, it began to rise again in 1987. Even discounting one-time large equity injections in 1987 and 1992, the total level of financial support did not decline, suggesting that the government has not change its soft budget constraints since the Act. One noticeable change relates to the increased use of debt financing rather than government subsidies. It increased over 100 percent during this period, while average subsidies to GIEs increased marginally over the same period. The use of loans can harden GIEs' budget constraints only if conditions attached to the loans are strict and enforceable.[24] Because the bankruptcy of GIEs is highly unlikely with the government as an owner, there seems to be little difference between the two subsidy options.

〈Figure3 〉 The Extent of Government Support in GIEs (1980-92) (Unit in current Bil.Won)

	1980	1981	1983	1984	1985	1987	1988	1990	1992
Gov't contribution in Equity	299.8	344.4	213.9	84.7	109.7	1475	163	580.3	1342
Subsidies	620	745.7	852	627.2	601.9	775.2	691.6	1097	773.8
Loan	131.3	142.9	194.1	132.7	215.9	216.1	227.8	345.6	604.2
Total	1,051	1,233	1,260	844.6	927.5	2,467	1,032	1,046	2,720

Source: KDI (1991), and EPB (1988)

In Figure 4, the GIE sector was divided into sub-sectors in order to aid our understanding of performance changes associated with the Act, and also in order to take industry characteristics into consideration. We grouped the GIE sector into financial, construction, manufacturing, energy, and service firms and recorded each group's net profits in current terms.[25]

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which include capital injections, loans, and subsidies from the state-controlled banking sector.

24) This is unlikely to be the case if managers realize that few penalties are attached to loans. Furthermore, it is highly unlikely that they will go bankrupt because of their inability to pay back loans to the government.

25) Korea Development Bank (KDB), Small and Medium Industry Bank, Citizens National Bank, and Korea Housing Bank are in the banking sector (4). Manufacturing firms (3) include Korea Mint Corporation, Korea General Chemical Industry Company, and National Textbook Company, while energy and telecommunication firms (4) include Korea Electric Power Corporation (KEPCO), Korea Coal Corporation, Korea Telecommunication Corporation, Korea Mining Promotion Corporation. Service oriented firms (4) include Korea Petroleum Development Corporation, and Korea Trade Promotion Corporation, Korea National Tourism Corporation, and Labor Welfare Corporation, while construction firms (3) included Korea Highway Corporation, Korea National Housing Corporation, and Korea Land Development Corporation.

〈Figure 4〉 The Operating Profits of GIEs in Billion Won(1980-1990)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Financing	70.8	68.6	-15.3	-13.9	17.1	44.1	35.1	58.2	134.0	131	99.6
Construction	41.2	47.1	53.2	92	97.5	191	149	235	432	404	844
Manufacturing	3.6	4.9	5.5	4.9	10.6	12.5	41.6	41.9	88.2	165	241
Energy	185	181	318.2	337.4	413.6	489	558.2	717	1282.3	1108	934.1
Service	3.7	3.5	0	-.6	12.4	4.0	7.7	5.4	10.8	11.1	15.8
Avg. operation profits/sales	2.9	5.4	4.5	4.4	5.4	5.8	6.1	6.6	6.4	5.6	6.4

Source: Kim (1993)

All five groups reported increases in operating profits over the previous GIE management regime (1980-83). Noticeably, the manufacturing, energy and telecommunications, and construction sectors saw their current profits go up by over 500 percent on average, while the banking sector experienced the smallest increase. A similar phenomenon was detected when profitability was measured as the ratio of operating profits to capital in current terms. Finally, the average ratio of total cost to sales for the pre-Act period was higher than that of the post-Act period, with the mean falling from 75.9 percent to 73.1 percent, implying that some cost savings had occurred. This does not take price increases into consideration. In terms of operating profits per sales, there was a 1.7 percentage swing in favor of the post-Act period.

Statistical Tests

We tested whether there were any statistical differences in the performance of GIEs between the pre-and post-Act periods.[26] Profitability measures, including gross profit margin, return on assets, return on equity, and partial factor productivity measures, such as sales per employee and gross profits per employee, were used to examine whether the Act is related to changes in the economic efficiency of GIEs. Other areas, including the capital-labor intensity of their operation, new capital investment over sales (capint), and labor hiring policies, measured as total employment (totlab) are examined to determine the Act's impact on the operation of GIEs.

26) We used financial and economic data from 1977 to 1983 for the pre-Act period and similar data from 1985 to 1991 for the post-Act period. Data for 1984 were omitted because 1984 was a transition period.

Our hypothesis is that the 1984 Act improved the performance of GIEs by conferring more managerial autonomy and by linking managerial performance to bonuses. Under the hypothesis, all of the aforementioned indicators should have improved since the implementation of the Act. More specifically, profitability and productivity measures should have improved due to increased incentives to reduce cost. With the increasing emphasis on fixed capital formation and the de-emphasis on labor intensive operations, the balance of inputs between capital and labor should have changed in favor of capital. We used the capital intensity ratio to test this hypothesis. In terms of inputs, we also tested whether the Act improved labor hiring practices using information on labor unit cost and employment growth. We also examined whether the level of government subsidies, in the form of loans and capital and cash infusions, changed over the period. This test is of special importance because it reveals the extent to which the government hardened the budget constraint.[27] The standardized test statistic Z, which for samples of at least ten observations follows a standard normal distribution, is utilized and, more specifically, the **difference in means** test technique is used to examine the propositions.[28] The economic indicators we measured and tested are as follow:

〈Figure 5〉 Summary of variables and testable hypothesis

Variables	Definition	Hypothesis
Gropro	Gross profit margin (gross profits/sales)	$gropro^A < gropro^B$
ROA	Return on asset (net profits/total assets)	$ROA^A < ROA^B$
ROE	Return on equity (net profits/total assets)	$ROE^A < ROE^B$
Labpros	Labor productivity (Sales/employees)	$labpros^A < labpros^B$
Labprog	Labor productivity (gross income/employees)	$labprog^A < labprog^B$
Capint	Capital intensity (capital investment/sales)	$capint^A < capint^B$
labcos	Unit labor cost (total wage bill/employees)	$labcos^A > labcos^B$
totlab	Total employment	$totlab^A > totlab^B$
subsy	Government subsidies per sales	$subsy^A > subsy^B$

Note that A and B in the last column represent pre- and post-Act period, respectively.

As Figure 6 indicates, although it appears that most economic indicators, other than **capint** and

27) This is particularly interesting because it reveals the relationship of the rise in employment to the "bribes" in the form of direct or indirect subsidies offered by the government and politicians.

28) See Matlack (1980) for details.

subsy, have increased from the pre-Act to the post-Act periods, the differences were not statistically significant at the conventional five percent level. For instance, the government's attempts to control labor costs were not successful. We see that the real unit labor cost actually went up and was significant at the five percent level. Changes in sales per employee (labpros) were significant at the ten percent level.

〈Figure 6〉 Overall Difference in Means between the Pre- and Post-Act period (1980-92)

	gropro	ROA	ROE	Labpros	Labprog	capint	Labcos	totlab	astlab	subsidy
Mean A	0.089	0.016	-0.080	0.807	0.073	2.352	11.01	5643	7.068	80.12
Mean B	0.136	0.0245	0.072	1.726	0.274	2.308	14.43	9849	11.40	81.44
Difference	0.047	0.008	0.152	0.919	0.201	-0.043	3.42	4206	4.336	-1.32
Z Value	0.601	0.675	1.157	1.659**b**	0.876	-0.028	4.53**a**	0.929	0.594	0.055
N	255	255	255	255	255	255	255	255	255	255

Note: A refers to the pre-Act period while B refers to the post-Act Period. **a** means it is significant at 5 percent while **b** means it is significant at 10 percent level. N stands for the number of data.

To examine the issue more thoroughly, we divided GIEs into the five industrial groups: banking, manufacturing, energy and telecommunications, services, and construction. We then tested the performance differences between the two periods. The result is shown in Figure 7. Overall, we did not find any consistent pattern of performance improvement for any sub-groups. Although manufacturing firms have shown improvements in labor productivity in terms of real sales, other measures did not indicate significant changes. The subsidies fell significantly only for the telecommunications and energy sectors. This is largely due to the firms' increasing reliance on debt financing during the period. Labor productivity in terms of sales improved in the manufacturing industries, but in terms of net income the change was not significant and was, in fact, in the opposite direction. Unit labor costs actually went up for most industries between the two periods.

Finally, we tested to see if the Act had different impacts among industries with different industry structures. Our hypothesis is that the performance would have improved more drastically for firms in monopoly sectors than those in competitive sectors because managerial slack tends to be larger in monopolistic industries as market forces are unlikely to encourage cost discipline.[29]

The sample was divided into competitive firms and monopolists, and similar categories of performance indicators were tested (Figure 8).[30] Competitive firms include the manufacturing

29) See Scherer (1990), pages 667-679, on X-inefficiencies and other monopoly induced wastes.
30) This is based on our observation of the existence and extent of alternative competition.

firms, except for the Korea Mint Corporation, the construction firms, and the banks excluding the KDB, Korea Coal Mining Corporation, and Korea Mining Promotion Corporation.

〈Figure 7〉 Difference in Means Test for Industry Groups

	gropro	ROA	ROE	Labpros	Labprog	capint	labcos	totlab	astlab	Subsidy
Mean A1	0.135	0.021	0.07	1.52	0.245	5.24	10.37	5464	19.67	164
Mean A2	-0.042	-0.003	0	0.351	0.021	0.23	10.03	13321	4.69	0.57
Mean A3	0.144	0.014	20.02	0.59	0.056	0.77	10.62	1786	3.04	62.72
Mean A4	0.058	0.032	0.102	0.405	0.017	1.84	12.34	4968	3.27	9.37
Mean A5	-0.015	0.005	-0.73	1.27	0.041	0.80	12.01	5625	2.77	140.6
Mean B1	0.183	0.044	0.097	2.863	0.232	5.04	14.31	9278	31.6	187
Mean B2	0.059	-0.004	0.0002	0.679	-0.005	3.69	13.26	22751	3.13	0
Mean B3	0.225	0.033	0.093	2.125	0.3	1.46	12.47	3913	7.70	20.74
Mean B4	0.051	0.021	0.099	0.721	0.02	3.37	14.01	10070	5.961	10.18
Mean B5	0.363	0.042	0.097	2.742	0.947	3.84	19.44	7249	15.8	194
Diff B1-A1	0.047	0.023	0.02	1.342	-0.013	-0.21	3.94	3813	11.9	23.3
Diff B2-A2	0.102	-0.001	0.0003	0.327	-0.026	3.27	3.23	9429	-1.56	-.57
Diff B3-A3	0.080	0.018	0.071	1.534	0.284	0.688	1.85	2126	4.66	-41.98
Diff B4-A4	-0.007	-0.01	-0.003	0.315	0.002	1.52	1.67	5101	2.68	.91
Diff B5-A5	0.378	0.037	0.832	1.471	0.905	3.035	7.43	1623	13.10	53.4
Z Value 1	0.485	1.055	0.498	0.76	-0.061	-0.03	1.96[a]	0.42	0.37	0.30
Z Value 2	0.504	-0.04	0.019	3.1[a]	-1.2	0.92	1.91b	0.36	-0.37	1.74[b]
Z Value 3	0.419	0.637	0.971	1.269	0.961	0.54	3.61[a]	0.81	1.19	-2.27[a]
Z Value 4	-0.116	-0.267	-0.005	0.49	0.159	0.45	1.147	1.40	0.86	0.24
Z Value 5	1.419	1.397	1.075	1.00	1.397	1.04	2.2[a]	0.241	1.4	0.712

Note: A refers to pre-Act period while B refers to post-Act Period. Numbers refer to industries. They are: 1=banking, 2=Manufacturing, 3=telecommunication and energy, 4=service and 5=construction. **a** was significant at the 5 percent level, **b** was significant at the 10 percent level.

As Figure 8 indicates, although we did find that monopolistic firms were responsive to the system, the differences were not statistically significant at the five percent level. We found that monopoly firms were more capital intensive and highly leveraged than those in the competitive

sector. Furthermore, monopolists were more successful in raising profits than were competitive ones. The level of subsidies, however, did not show any statistical significance at the 5 percent level in either sector, undermining the previous assumption on monopolistic waste.[31] We also find that the differences in unit labor cost between the periods were statistically significant, and that the increase was larger for monopolies than for competitive firms.

Another important discovery relates to the subsidiaries of GIEs (SGIEs). The number of SGIEs increased from 49 in 1983 to 90 in 1991. In addition, there was a noticeable change in the total budget allocated to SGIEs. Between 1986 and 1991, the budget went up from 6.88 trillion Won to 16.7 Trillion Won, an increase of over 150 percent in nominal terms. Because of the elaborate regulatory and control mechanism that oversaw GIEs, they instead expanded operations by setting up new subsidiaries. For instance, the Korea Telecommunication Corporation (KTC) set up subsidiaries to handle Mobile telecommunications and telephone directories, while KEPCO set up engineering, consulting, repairs, and pipeline companies as separate entities. By setting up these subsidiaries, GIEs create an additional information barrier to the state, making it harder for the government to intervene in their operation. Furthermore, because SGIEs were not subject to the MPES, clandestine operations often took place (EPB, 1994). Illegal political contributions and contract kick-backs were made through these units due to lax government control. Sensing the need for reform, the government announced the privatization of 50 SGIEs through private placements and public auctions in 1994

〈Figure 8〉 Difference in Means for Monopolists versus Competitive GIEs

	Gropro	ROA	ROE	Labpros	Labprog	capint	labcos	totlab	astlab	subsidy
Mean A1	0.103	0.019	0.044	0.812	0.112	1.956	11.01	5693	8.59	84.99
Mean A2	0.003	0.004	-0.33	0.89	0.026	1.76	14.03	5702	3.84	77.46
Mean B1	0.15	0.031	0.06	1.658	0.151	1.255	14.11	9644.3	7.65	97.69
Mean B2	0.20	0.022	0.091	1.80	0.482	4.50	18.05	9874.3	12.6	73.32
Diff B1-A1	0.049	0.01	0.018	0.846	0.039	-0.70	3.1	3950.5	-0.94	12.7
Diff B2-A2	0.19	0.018	0.427	0.90	0.455	2.73	4.02	4171.6	8.838	-4.14
Z Value 1	0.34	0.28	0.249	0.872	0.221	-0.241	**1.985[a]**	0.428	-0.061	0.308
Z Value 2	1.42	1.26	1.54	1.208	1.279	**1.655[b]**	**2.245[a]**	1.37	**2.02[a]**	0.1404

Note: A refers to the pre-Act period while B refers to post-Act Period. Number 1 and 2 distinguishes between competitive and monopolistic sectors, respectively. **a** was significant at the 5 percent level, while **b** was significant at the 10 percent level.

31) See Harberger (1954), Leibenstein (1969), Scherer (1979 and 1990), and Siegfried and Sweneey (1983).

Regression Analysis

We conducted a regression analysis to test the effectiveness of the 1984 Act on the economic efficiency of GIEs.[32] We also tested changes in the capital intensity, labor growth, and government subsidy levels. Our regression work utilized the explanatory variables used in Scherer's model (1990) and a number of SOE sector specific, industry specific, and firm specific variables. The variable **Post84**, which distinguishes between the pre- and post-Act periods, is used to gauge the impact of the Act.[33] Controlling for variables correlated with the performance of GIEs, if the Act had any effects, the variable **Post84** should be positive in cases of profitability and labor productivity and negative in subsidy levels and labor growth.

Another important variable we tested was the impact of monitoring by Boards of Directors. Given the absence of capital market monitoring and product market competition for most SOEs and the inefficiency of government monitoring, the monitoring by boards was important in controlling the actions of senior management. To measure this impact, we used a variable called **boards**, which is the number of extraordinary board meetings taken place. This indicates the activity level of the board in a given year for a given GIE.[34] We used the number of extraordinary meetings instead of regular meetings, as the former better approximates the activity level of the board than does the number of scheduled board meetings.

The regression models we tested were:

- To measure profitability, we used **gropro** (gross profit margin)[35] as the dependent variable. We used variables that were broadly consistent with the weight of evidence from previous studies of the profitability determinants (Scherer, 1990; and Weiss, 1990). We included the capital intensity of operations (total asset per employee **(capint2)**), interest rate **(intrt)**[36], total assets **(logtotast)**, the number of extraordinary board meetings that took place in a given year **(boards)**, GNP growth **(Gnpgro)**, import penetration into the domestic market (import over domestic consumption **(Import)**), the level of government subsidies (total subsidies over total assets **(subsy)**), industry dummies, and **post84** as explanatory variables. The inclusion of capital intensity, interest rate, import level, and total asset (as a proxy for the size of firms) to explain variations in profit margin are well documented by the existing literature (Caves. 1975; Scherer, 1990). GNP growth rate was used as a proxy for

32) For a summary of statistics, refer to the previous section.

33) The dummy variable takes a value of 1 for post-Act period and 0 for pre-Act period.

34) Our data on the frequency of board meetings consists of the total number of board meetings and paper meetings. Paper meetings are for agendas that require rubber-stamping from directors, including amendments to issues previously discussed. Thus, our proxy for the number of extraordinary board meetings is the total number of board meetings minus paper meetings.

35) Gross profit is defined as the sales minus the cost of sales. It does not include financial costs or extraordinary income or loss.

36) We used domestic prime lending rates.

product growth, since we did not have product specific growth rates, and expected a positive impact on the dependent variable. The government subsidy level variable, used in a lagged form to eliminate possible simultaneity problems, was included to see whether subsidies were linked to operational handouts rather than to capital projects, as claimed by the government. The number of board meetings was used to gauge the effect of the board monitoring on the performance of senior management, and it should be positive. Also, note that since industry concentration indices were not available from all industries during the relevant period, industry dummies were instead used as proxies for industry concentration. Finally, we took the natural log of proxies used to measure firm sizes, including total sales and total assets, in order to eliminate the effect of outliners.

- To measure labor productivity, defined in terms of real sales per employee **(labpros)**, we used total assets **(logtoast)**, interest rates, GNP growth,[37] subsidy level **(subsy2)**, the frequency of board meetings, the volume of import to consumption **(Import)**,[38] industry dummies, and post84 as independent variables. Total assets in natural log form were again used as proxies for firm size and should be positive. We tested whether government subsidy level (total subsidies over sales), a lagged variable, had a positive impact on labor productivity. Other independent variables are ones that are frequently used in the literature in examining productivity of firms or industry. We would expect import penetration and firm size to have positive impacts on labor productivity, and interest rate a negative impact.
- The dependent variable, **capint1**, (total capital over employees), the level of capital intensity among GIEs, was also tested by incorporating gross profitability, interest rate, the government subsidy per sales, the frequency of board meetings, industry dummies, and **post84** as explanatory variables. The test was based on the government's assertion that the Act helped management to concentrate on long term capital projects by formalizing the relationship between the state and GIEs, and therefore removing the opportunistic expropriation of investments by politicians and bureaucrats (Laffont and Tirole (1993)). Profitability should affect capital intensity positively, as GIEs can better afford and can, with less procedural haggle, invest in capital projects with internally generated funds. A lagged variable on government subsidies and interest rates are likely to have positive and negative effects on investment decisions, respectively.
- Explanatory variables for the regression on real unit labor cost included sales, capital intensity (total capital over sales), interest rate, government subsidy per sales, gross profitability, unemployment rate, the frequency of extraordinary board meetings, industry dummies, and **Post84**. Sales figures were used here as a proxy for firm size and should have a positive impact, while gross profitability and subsidy level, both in lagged form because

37) Instead of real sales growth, we used GNP growth to avoid simultaneity problems with the dependent variable.

38) Total volume of imports.

of delayed effects, were included because of their likely positive impact on the unit labor cost. The unemployment rate in the economy, also a lagged variable to eliminate a possible simultaneity problem, should have a negative impact on the labor cost. We also tested a hypothesis that more active boards check the growth of labor costs. The regression on labor costs represents a critical test of the system's effectiveness, as the government placed a heavy emphasis on containing the rising labor costs both in terms of unit costs and the growth of the number of employees.

- The dependent variable, employment growth **(empgro)**, was tested using capital intensity, GNP growth, sales, subsidy rate, the frequency of board meetings, industry dummies, and **Post84** as independent variables. Sales figures are included as proxies for firm size, while subsidy is included to test if politicians were successful in increasing the labor force above the optimal level.
- The dependent variable, total subsidy over asset **(subsy2)**, was tested using gross profitability, capital intensity, interest rate, the frequency of board meetings, **Post84**, and industry dummies as independent variables. Our hypothesis is that the level of government subsidies is positively influenced by the profitability of operations, while the ratio of total capital per employee, the borrowing cost of capital, and board monitoring should be negative. Other industry specific factors such as industry dummies and the period under which one operates, either pre-1984 Act or post-1984 Act period were also included.

The profitability and other dependent variables were estimated using the ordinary least squares (OLS) method. The results are reported in Figure 9. For gross profit margin **(gropro)**, we found that the interest rate (negative), subsidy level (positive) and boards (positive) variables were all significant at the five percent level. The fact that the monitoring level of boards was positively correlated with profitability was consistent with Fama and Jensen's assertion regarding the board's monitoring role (1980). GIE Boards met as often as 25 times a year to decide on major policy issues.[39] The statistical significance of the board variable is likely to originate from the government's reliance on boards due to the absence of other discipline devices such as product market competition and capital market monitoring. The increased power authorized to outside directors also played a key role as they comprised nearly a half of all appointed directors in GIEs. Because of their semi-independent status and limited terms,[40] GIE boards were free to pursue goals to maximize economic efficiency rather than political and social objectives.

In addition, because GIEs are heavily leveraged with bonds, often 300 to 400 percent of the common equity, the profitability of GIEs was dependent on the cost of capital. This is par-

39) Like in Japanese firms (Caves and Uekusa (1976)), boards in Korean private firms played less significant roles than their counterparts in western countries. This is because in the Korean firms, majority owners still play a significant role in the management of the firm.

40) Outside directors did not have to convince the government to remain on the board after their initial term ended.

ticularly evident as the state was replacing direct subsidies with loans provided by the state-controlled banking sector. As mentioned earlier, debt financing is essentially the same as direct subsidies unless strict enforcement of default and timely repayment schedules are kept. We also found that the capital intensity of firms was negatively associated with profitability and was statistically significant at the ten percent level, while the size of the firm was not significant even at the ten percent level. More importantly, we find the variable **Post84** was not significant even at the ten percent level.

Examining the regression on labor productivity, we found firm size, subsidy level, and the frequency of board meetings were significant at the five percent level. The larger the size of the firm, the larger the state subsidy, and the more frequently boards met, the higher the productivity of labor. A possible reason that the size of firm is positively related to labor productivity could be that larger firms include state monopolies, such as KT and KEPCO which have both natural and unnatural barriers to entry that led to higher profit margins. This assumes that the changes in the numerator of the labor profitability ratio, defined in real sales over employees, outweighed the changes in the denominator. One surprising result was that the government subsidy level was positively correlated labor productivity. We had expected the soft budget constraints to have a negative impact on the economic efficiency of the firm in question. One possible explanation is that a portion of the previous year's subsidies was used to improve labor productivity by investing in training and capital programs. Once again the variable **Post84** was not significant, even at the ten percent level.

Examining the regression on the capital intensity of firms (total capital over sales), the gross profit margin, the frequency of board meetings and industry dummies with the exception of the service industry, were significant at the five percent level. The variable **Post84** was not significant at all. It is surprising that the level of government subsidies, again a lagged variable, was not even significant at the ten percent level. This observation, combined with the fact that the subsidy variable **(subsy)** was significant in the regression on **gropro**, leads us to believe that subsidies most likely were used for operational uses, such as to finance increased employment rather than for long-term investments. We also examined to see if the Act had made any impact on employment levels by examining the relationship between the level of subsidies and the level of GIE sector employment.

Analyzing the regression on unit labor costs **(labcos)**, we found that firm size **(sales)**, the frequency of board meetings, and all of industry dummies were statistically significant at the five percent level. In addition, subsidy level was significant at the ten percent level. The size of firms is likely to be significant because labor unions tend to be well organized and militant in large firms such as KT and KEPCO. More importantly, we found that **Post84** variable was positive and significant at the five percent level, suggesting that instead of curbing the growth of the total wage bill, it actually encouraged increases during this period. This is consistent with the observation that (Figure 3) the base bonus level went up by anywhere between 50 to 100 percent.[41]

Inspecting the regression on employment growth **(empgro)**, the capital intensity (total capital over sales), the subsidy level, the frequency of board meetings, and all of the industry dummies were all significant at the five percent level, while **Post84** was not. Because the capital intensity variable was positively related to employment growth, additional capital did not displace workers but increased the employment level. More importantly, the subsidy level was positively correlated with the employment level, suggesting the likelihood that politicians bribed managers to increase employment, as claimed by Shleifer and Vishny (1994). Controlling for the possible simultaneity problem through the use of a predetermined variable, the finding was significant because despite the government's assertion that the subsidies were used to fund capital projects subsidies were used instead to increase employment. This reflects the influence of politicians over the appropriation of subsidies to GIEs, and their interest in increasing employment in GIEs to solidify the support of their constituency.

Conversely, the **boards** was positively related to the employment growth variable, which contradicts the earlier evidence on the boards' efficient control over profitability. A possible explanation is that inside and outside directors colluded to increase the employment level because of pressure from influential politicians and government assistance. A spurious relationship, however, cannot be ruled out.

In addition, we did not find significant decline in the level of government subsidies offered to GIEs as a result of the Act. This again is related to the credibility issue. The reform efforts made by the state should have been followed by efforts to harden the GIEs' budget constraints. This could be interpreted as a case where the conventional management reform measure was limited by interest party politics and by the opportunistic behavior of bureaucrats and politicians.

In another test, we employed dummies for each year between 1977 and 1990 to examine the yearly effect associated with the Act on the performance of firms. We looked for a consistent pattern among the year variable, and whether the Act had any effect on performance. We found no consistent pattern. In particular, we did not detect a sudden change in the size of the coefficient representing 1984, when the system was first implemented.

In summary, we found no significant evidence that the 1984 Act affected changes to the relevant performance indices after controlling other variables that influence those matters. The government also failed to contain labor costs and furthermore there was a high degree of correlation between subsidies and the level of employment. Note that due to lack of data, especially R&D expenditures, there exists a possibility for an omitted variable bias.[42] In addition, more comprehensive tests of the effectiveness of boards require information on the activity level of outside directors, which we lacked.

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41) Note that bonus payments were part of the labor cost.

42) Since the purpose of the regression analysis is to control for relevant variables in testing the impact of the 1984 Act, omitted variable bias that are not correlated to the variable are unlikely to present bias to the results.

〈Figure 9〉 Regression Results

Indepen-dent Variables	Definition	Dependent Variables: gropro (gross profits/ sales)	labpros (real sales per employee)	capint (total capital /asset)	labcos (unit labor cost)	Empgro (labor growth)	subsy1 (subsidy/ sales)
capint1	Total asset/sales				-.00003 (-.623)	-3.6 [a] (-2.01)	
capint2	total asset/employees	-1.09[b] (-1.75)					.00001 (.935)
logsales	Log of real sales in Bil.Won				.0188[a] (8.81)	-4.31 (-.0015)	
logtotast	log of total asset in Bil. Won	68.27 (.383)	.51[a] (7.09)				
Unemp	Unemploy-ment rate				-.478 (-.834)		
subsy1	subsidy/sales			243.2 (.935)	-.964[b] (1.742)	32207[a] (5.58)	
subsy2	subsidy/ assets	6734.6[a] (3.852)	.402[a] (2.869)				
intrt	Interest rate (Savings)	-73.62[a] (-2.02)	-.0021 (-.11)	-7.9 (-1.55)	.021 (.251)		.001 (1.0)
Gnpgro	GNP Growth rate	-22.51 (-.531)	-.0025 (-.00)			-45.34 (-.34)	
import	Import /GNP	2.30 (.414)	.00015 (.499)				
Gropro	gross profits/ sales			-.0196 [a] (-2.06)	.024[a] (2.521)		.000008[a] (3.82)
boards	Frequency of board meetings	500.6[a] (8.708)	.0031 (-1.03)	23.38[a] (2.50)	-.298[a] (-2.12)	1341[a] (7.21)	-1.06[a] (-4.66)
ind1	Banking Ind.	1613 (.770)	-3.96[a] (-3.25)	289.5[a] (2.46)	11.79[a] (4.15)	4846[a] (3.245)	-.028[b] (1.65)
ind2	Manufacturing Industry	1758.3 (.931)	-1.92[b] (-1.65)	476.5[a] (3.92)	12.02 [a] (4.363)	4198[a] (2.544)	-.045 (-1.41)
ind3	Telecomm-unicat ion and energy	3574 (1.62)	-3.067[a] (-2.7)	329.6[a] (2.76)	12.20[a] (4.30)	1447[a] (10.4)	-.016 (-.487)
ind4	Service Ind.	1511 (.697)	-2.64[a] (-2.279)	215.8[b] (1.77)	13.69[a] (4.91)	2970[a] (1.86)	-.036 (-1.139)
ind5	Construction Ind.	1566 (0.684)	-3.63[a] (-3.0)	441[a] (3.66)	13.48[a] (4.75)	3336[a] (1.98)	-.041 (-1.24)
Post84	Dummy:1 for post-Act, 0 otherwise	63.47 (0.151)	.172 (.77)	56.57 (.94)	2.59[a] (2.60)	1069 (.94)	.013 (.911)
Adjusted R^2		.414	.199	.124	.337	.460	.113
N		245	245	245	245	245	245

Note that t-statistics are in parenthesis. **a** was significant at 5 percent. **b** was significant at 10 percent. Note that Capint1 and capint2 are used separately for regressions to avoid having the same denominator as the dependent variable. Same applies to subsy1 and subsy2.

Conclusions

In examining the impact of the 1984 Act, we found that it made little impact on the performance of GIEs, and that it in fact failed to contain employment growth and unit labor costs. In particular, we found that employment growth was highly correlated to the level of subsidies, suggesting that subsidies were used to bribe managers to increase employment. Despite increases in productivity and profitability during the period examined, we did not find any evidence that would support the hypothesis that the 1984 Act played a major role. It also appears that monopolistic firms benefited more from the system than competitive firms. An interesting result is the active role boards played in GIEs in monitoring senior managements. Despite the relatively minimal role that boards played in the private sector, we found that they influenced the performance of GIEs in a variety of areas.

The most serious problem presented by the System is that it was enabled to prevent ad-hoc interventions by the state. The most damaging criticism of the system is that the signaling effect of the system was not sufficient enough to counteract the conventional problems of the SOE sector. With continuing ties to the government, SOE managers did not take the imposition of 'hard budget constraints' and the threat of the government action credibly. It proves that radical reforms must be complemented with conventional reforms which suggests the importance of the privatization program in the SOE sector reform process.

A possible area of conflict concerns the controllable aspect versus the uncontrollable aspect of indicators from the management perspective. Although the government-controlled price and investment decisions, managers were evaluated in these areas that were beyond their control. Vague wording of the Act, especially with regard to managerial autonomy,[43] is another problematic area.[44] Regulatory capture is likely to be a key issue in the future as long as GIEs can outman the evaluation task force. Although accounting information was fairly reliable,[45] information on qualitative criteria needs to be more thoroughly tested. Because incentive bonus payments did not vary significantly, managers also learned that they had little financial incentive to strive for better results as their marginal effort to improve financial performance probably would not be matched

43) Because of its strategic importance to the economy and large capital expenditure program, real managerial autonomy was not granted and KEPCO continued to be tightly controlled like a governmental enterprise. Through survey studies, Kim (1993) found that most GIE managers were disgruntled with the system, lacking autonomy on budgeting (66.2 percent) and personnel (37.4 percent), and issues regulated by activities of board of directors (60.8 percent).

44) The Act stated that "the operational autonomy of invested enterprises is guaranteed in order to establish self-regulatory management and responsible managerial structure." This has left for the government to decide how it defines the managerial autonomy of GIEs.

45) It would have gone through audits by major accounting firms and ad-hoc audits by the Board of Inspection and Audits.

by marginal benefits from it. Another real issue concerns the lack of individual performance measures to deal with the free-rider problem. Most GIEs did not implement periodic assessment of individual managers.

Does this mean that conventional reform measures initiated by the state have no place in improving the SOE sector, and that only radical measure of privatization should be used? What does this imply in terms of state natural monopolies where privatization is likely to take a long time to implement? We believe that the key to sustainable performance improvements in the SOE sector is similar to that facing the private sector[46]: change management, corporate adaptability, and the principal-agent problem. In addition to these, we need to deal with managerial accountability and the potential conflicts arising from the pursuit of both social and political objectives.[47]

Despite its lackluster performance in Korea, we feel that the greater trust and de facto autonomy that may ensue as a result of implementing the MPES will enable each party to focus on the resolution of issues that are within their control. It will also reduce uncertainty and instability in the planning stages for SOEs. In this respect, the 1984 Act provided the government with a transitional tool to stabilize the sector and enabled it to proceed to the next stage of the reform process with SOEs, namely rationalization and privatization activities.[48] In this sense, the 1984 Act essentially bought the government some time, albeit at some economic costs.

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46) In addition, the private sector is undergoing constant changes through competition in the marketplace in the form of new entrants and new technologies. The same should apply to the public sector, which ought to undergo continuous changes.

47) Note that SOE sectors are particularly susceptible to performance degeneration when faced with little competition and government soft-budget constraint. Accompanied by broad governmental reforms in areas of regulatory fine-tuning and other areas in need of changes and enterprise or management specific reforms, the systematic evaluation of SOEs can provide a framework of managerial accountability and cost containment.

48) Rationalization of SOE sector includes stream-lining businesses and selling off assets.

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