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Research Paper 15-12
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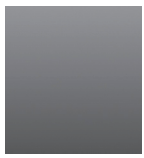


# Preface

This study analyzes the roles that public institutions that perform the functions of investigation and verification should establish within the ever-changing structure of the national economy. Since the beginning of industrialization in the 1970s, the functions of investigation and verification have been overseen by the state to control market order, and public institutions have been granted monopolistic powers to promote the public interest. As the market economy grew during the 1980s and 1990s, the monopolistic powers held by public institutions started changing steadily to a competitive market system. Due to this progress, important questions have arisen, such as whether the tasks of inspection and verification function properly, whether the speed of market opening should be accelerated, and how public institutions' public functions should be determined. Regarding such questions, this study analyzes eight inspection and verification institutions that execute their duties under a competitive market system and organize tasks for future development.

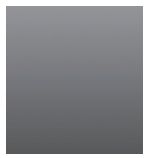
In fields that have adopted competition, there have been questions about the quality of private sector inspections, and such fields are subject to blind spots. Even so, a large proportion of inspectional work is handled privately, which has the favorable effect of reducing the workload of government and public organizations. Because it is not realistic to reduce civilian market participation, public institutions need to assume the role of a judge to restore market order.

The following policy issues have been identified. First, public institutions should gradually shift to a role in managing the market order, and should lead

the market through intensified research and development, greater education for private-owned organizations, and more strict penalties for improper inspections. Second, regarding such goals, there should be an emphasis on public interest in management assessment for these public institutions. There is also the need for suggesting the organization's direction through strengthening indicators for leading the market. Third, there should be efforts for a drastic opening in the scope of business, and the sharing of information for assuring neutrality in competition. Finally, it is recommended that the management system as a balance preservation institute be redesigned to apply more precise accounting standards. Such suggestions are expected to become major policy issues regarding public institutions.

Finally, it is hoped that this study will act as the basis for policies for the functional reestablishment of public organizations whose purposes are inspection and verification, and provide a theoretical trigger for redefining the roles of the market and government. The content of this report consists of the personal opinions of the authors, and does not represent the official views of the research institute.

December 2015,
Korea Institute of Public Finance
President Park, Hyung-soo



# Abstract and Implications

When the Five-Year Economic Development Plan was first formed in 1962, the private sector was not ready to lead economic expansion, so the government led development instead. In this process, public enterprises, instead of the government, acted as vanguards of social overhead capital, supplying and securing resources that were necessary for economic growth. Throughout the 1970s and 1990s, various public institutions were established, continuing the state-led development. Public organizations tasked with inspection and verification that were founded during this period, monopolized business in certain fields. The functions of inspection and verification, which are directly connected to the protection of the nation's people and property, arose during the Japanese colonial era's industrialization process, either through the government's lead or spontaneously, and the market was initially dominated by the private sector. After the market became unstable under the control private businesses, around the 1970s, the government collectivized inspection and verification businesses, and, in most cases, the work of these businesses was monopolized by public institutions. Afterward, throughout the 1980s and 1990s, the monopolized market was opened to civilians due to numerous factors, and today many areas of inspection and verification feature competition between private and public divisions.

The necessity of examining the role of reestablishment in public organizations has been suggested repeatedly, because such institutes fulfilled their original goals as the national economy developed, and there is an emerging desire to alter their role. The appropriateness of direct market participation and

reconsideration of the position of inspection and verification institutions that are competing with private businesses should also be considered. The state intervened in inspection and verification organizations because of disruption in the market, so it is best to evaluate this issue from the perspective of the allocation of roles to the market and government in the area of national development. The division of roles can be classified into four steps, according to the level of national development. In the first step, the government directly carries out all tasks relating to the public interest; in the second step, public institutes take over as substitutes for the government, monopolizing business. In the third step, the market, once monopolized by public organizations, is opened to the private sector, and a competitive system is forged. In the fourth level, the government organization forfeits its role as a participant, and the market completely overtakes its functions. Most of the inspection and verification businesses in Korea are in the third level. If a larger proportion of the market is led privately, and the market functions without problems, the direct participation of institutions in the market can be reduced. However, if the market does not function properly, a return to the second stage can be considered. Whether the market is functioning as intended is an important criterion of judgment, but factors such as the possibility of regression should also be considered. Consequently, this report will examine the achievements of market and public organizations since the implementation of the competitive system, and discuss the direction that public institutes should move in market participation, along with the reestablishment of their roles.

In this report, the effect of the introduction of competition has been examined from two aspects: 1) the achievements and efficiency of public institutions and 2) the achievements of the entire inspection and verification market. The results of the public institutes of inspection and verification are evaluated through trends in the means of management and safety indexes, along with changes in customer satisfaction. The organizations' average scores in safety indexes have tended to increase continuously, so it can be concluded that these institutes are supporting management regarding safety measurement indexes. Customer satisfaction has also consistently risen in inspection and verification organizations that have adopted competition over the course of this investigation, but those who did not adopt competition show a trend in declining customer

satisfaction after an initial increase.

The market's achievements have been examined in two ways. First, recognizing that institutions of inspection and verification are related to safety management for the most part, time series changes in safety indexes have been identified. For example, the indexes concerning the Korea Gas Safety Corporation and the market for gas safety management are statistics regarding explosion accidents. To accurately identify the effects of the adoption of the competitive system, the organizations that implemented competition and those who did not should be compared for the periods before and after the introduction; however, the time of adoption was mainly in the 1990s, and, as a result, respective statistics could not be obtained. Accordingly, this report could unfortunately only examine respective accident trends after the year 2000. To compensate for the limitations of quantitative data, interviews with inspection and verification institutes and private business associations that compete with them have been collected, to analyze the effects of competition in the market qualitatively.

Because time series trends differ for each type of accident, it is difficult to identify the variability of casualties resulting from the private sector's participation in the market. In the qualitative analysis, elements that threaten safety are identified in two principal ways. First, where there is excessive competition among people in fields that are open to private businesses, price wars and competitions to attract customers have arisen rather than competitions to improve service quality, resulting in poor inspections and reduced quality. Second, because private businesses are reluctant to pursue activities that do not produce revenue, remote areas such as distant islands and mountainous regions may not receive inspection services from such businesses. For example, the Korea Electrical Safety Corporation performs 4.6% of all the tasks of electrical safety management agencies, but in the outback, where private ventures are not common, 65% of the work is this corporation's responsibility.

With the arrival of competition, there have been improvements in safety and customer satisfaction for public corporations that conduct inspection and verification, while private businesses have experienced the problems of poor quality and errors in inspection. In light of results, a monopoly of public institutes in the inspection and verification market is an obvious alternative. Even so, the private sector conducts a substantial portion of inspections, and it is difficult

to deny that private businesses have a beneficial effect in reducing the burden of the government and public businesses. In addition, because private businesses and workers have already invested in inspection facilities and the acquisition of related skills, a return to the prior system is not realistic. Instead, to establish market order, public institutions should avoid direct involvement, and they should instead assume the role of supervising private businesses. From the perspective of manpower, technical skills, and the importance of the task, having a public institution take exclusive control or jointly supervise would be much more effective than the current system of supervision by local autonomous entities. For this reason, public institutions should be provided with the functions of qualified management, technology and research, and education, which are needed to lead the market. To ensure that institutions are dedicated to their roles in the public interest, indexes of safety and public interestedness within management assessments should be weighted more heavily. Additionally, there must be stronger supervision of the quality of inspections conducted by private businesses, and there should be harsher consequences for inadequate inspections.

As long as inspection and verification institutes participate directly perform inspections, they must ensure that competitive neutrality is preserved. Under open market conditions, there have been no recorded cases of intentional targeting of private businesses' market entry or deliberate discrimination. However, public institutions have an unofficial superiority resulting from their access to information about businesses, and their ties to related government ministries. This, of course, is a side-effect that occurs when public institutions carry out work of a public nature; however, the use of such superiority to gain dominance in a field where there is competition from the private sector should be avoided, and there be supervision from competent government ministries.

Most of the institutions are balance preservation institutes, and, as public entities, to ensure that they do not lose their public functions by pursuing revenue, they are subsidized by the government. However, to private businesses, this can be portrayed as an element that restricts fair competition; for this reason, in addition to this practice that prevents the loss of public functions, there must be precise methods of monitoring, so that subsidies do not become a privilege. Because most of the institutes receive government support in the form of contributions, there is a need for implementation of strict budget management

and corresponding rules. In addition, because there are apparently no common features of balance preservation institutes, standards for selection should be established to evaluate targets for inclusion or exclusion. In numerous cases, even though, according to relevant guidelines, state-earned surpluses that exceed legal capital should be reflected as income, as long as there are no reasons for doing otherwise, such rules were not followed. Consequently, the existence of settlement surplus processing regulations for each institution should be examined, and measures for taking care of excessive reserves should be implemented. Finally, for organizations to effectively operate and allocate budgets, work efficiency measurement indexes in management assessments should be replaced with business performance efficiency measures.

# I

# Introduction

## 1 Research background

In the process of developing the national economy, the relationship between the state and the market changes with the development level of industries. When the Five-Year Economic Development Plan of 1962 was created, there was no market formation, and economic development was carried out by the government. This development led to the rapid creation of public enterprises in the 1970s. In the 1990s the superiority of national institutions persisted with the rise of various public institutions.

The inspection and verification functions performed by public institutes were crucial, because they controlled the market and adjusted its effects within the development process. There has been a trend, however, toward expanding the involvement of the private sector in the field of inspection and verification, aided by the evolution of technology, market growth, and the evolution of private corporations. Accordingly, this research will evaluate the effects of market participation by private businesses on inspection and verification, drawing implications regarding policies to define the tasks of the market and the government in the future.

Regarding role distribution between the market and the state, it is necessary to go through four steps in the development progress. In the first step, the nation monopolizes the public interest and undertakes all relevant functions. If the market grows thereafter, these functions are gradually handed over to private businesses, but that does not happen immediately. In the second

step, public institutions with monopolistic power are established, and they carry out the work. In the third step, institutions open the market and adopt a competitive system. If the market develops beyond that point, the fourth step is achieved, and all functions are transferred to the market. Upon arrival at the third stage, if problems are prevalent and the market does not provide benefits, a return to the second stage can be considered. Reviewing the functions of inspection and verification in Korea, the market sector involving those functions is in the second stage, where public institutions are granted a monopoly, or the third step, where there is competition within the market. This market sector is at a crucial point in determining whether to return to the second stage or advance to the fourth.

Through the perspectives noted above, this research analyzes the role distribution system regarding the functions of inspection and verification, which are needed to assure safety, to reevaluate the role that public institutions should play. The traditional view is that direct intervention by public institutions is needed in fields that address market failures such as safety management. On the other side of the spectrum, it is argued that through economic development, market maturity, and technological advances, the private sector can be gradually induced to participate in the areas of inspection and verification to promote competition, thereby enhancing both national safety and the efficiency of public institutions. To address such theoretical debates, this work aims to examine the circumstances that have been created in Korea, identifying their effects and meanings.

## 2 Main contents and structure of research

The process of transition to private sector competition from an initial public monopoly can be divided into various dimensions, and a large number of variables are involved. The issues to be covered in this report will be introduced and arranged into dimensions based on the reasons and conditions for the adoption of competition, process, and effects.

### A. Background of the adoption of competition

A variety of factors caused the rise of private participation in a field that was controlled by public institutions. This report examines three main factors that facilitated the implementation of the competitive system: the birth and growth of the private sector, casualties created by public institutes' monopoly, and the international trend.

First, if, within the field of inspection and verification, workers in similar industries, retired civil servants of relevant operations, public institute employees, and scholars supply relevant manpower and technology while lobbying for market freedom through interest groups, the speed of market opening will be accelerated.

Second, if smooth, efficient provision of services is impossible due to monopolization of the inspection and verification industry, the speed and range of market opening could be increased due to the increased dissatisfaction of those who demand services.

Finally, over the course of 1994's globalization and 1997's financial crisis, Korea's economy has changed in reaction to global trends. Accordingly, international trends' pressure to open the market may play a major role in private participation.

### B. Process of the adoption of competition

Diverse conflicts can occur in the process of implementing competition. First, market opening speed and methods will be examined to determine whether they are gradual and complete, and their factors will be analyzed. Next, even if competition is introduced gradually, public institutions have superior statuses as agents of the government, and so the issue of whether competition-restrictive elements exist, even under implementation of an open system, will be considered. Third, according to Wilson's Politics of Regulation, where profit and loss are condensed in a certain group, the Interest Group Theory comes into effect, and conflicts surface. Because the opening of the market is implemented through amendments of the law, it will be examined whether fierce conflict and opposition between the public and private sectors occur during the amendment process. Finally, whether the movement to an open market is reversible will be examined.

Once a market sector is opened to the private sector and participation occurs, it is difficult to return to a state of monopoly. If this phenomenon is viewed from the perspective of market share, the share of the private sector increases continuously.

**C. Effect of adopting competition**

This study aims to identify the effects of adopting competition, and to make policy proposals for the reconstruction of the inspection and verification roles of public institutes. Accordingly, the outcomes of implementation will be anticipated and confirmed through case analysis.

First, the private sector must secure profits. If the rate of incongruity is high under strict criteria, other institutions will be sought. If this is viewed from the perspective of approval or clearance rates, it will be determined whether the rate of approval is high in the private sector. Second, the implementation of competition will raise the quality of service offered by public organizations. Because such institutes are aimed at serving the public, customer satisfaction is expected to rise. Third, it is difficult to calculate the effects that may occur regarding the overall national enhancement in safety management ability. If manpower is increased through private participation, and the entire industry's capability is strengthened through technological development, service quality elevation, and so forth, competence in safety management will reach new heights. However, if competition develops into a price war, there could be deterioration in inspection quality, ultimately producing results worse than those of a centralized authoritarian inspection and verification system.

**D. Research constitution**

In the second chapter, through theoretical considerations of market failure and government failure relating to safety, theoretical points regarding the re-creation of roles for both the public and private sectors will be organized. The third chapter will discuss the main characteristics and types of inspection and verification institutes. The circumstances surrounding the implementation of competition in the inspection and verification sector will be covered in the

fifth chapter. The sixth chapter will analyze the effects of the adoption of the system. Finally, in the seventh chapter, by reorganizing the conflicts found through analysis and debate, future policy alternatives will be explored.

# Ⅱ

# Theoretical Background of Functional Reorganization in the Government and Public Institutes

## 1 Theoretical background of the inspection and verification functions and government intervention

### A. Market failure due to externalities

Public institutions have operated a considerable proportion of Korea's economy, and the fact that public institutions, including state-owned companies, have contributed greatly to economic development cannot be denied. The cause for such institutions' deep involvement in the national economy can be found in Korea's political history and the characteristics of industrial policies, such as the Plan for Economic Development. Although public institutions have been the subject of reform through privatization, rationalization, normalization, and so forth, for every new government, the fact that they retain influence and importance in the national economy can be explained by the macroeconomic factor of market failure.

According to mainstream economic theories, the total amount of social welfare, which is comprised of consumer surplus and producer surplus, is maximized at the point of market equilibrium, where the supply and demand curves meet. Economists of classical liberalism consider the perfectly competitive market, which has no interference by the government, as the ideal, and they trust the completeness of the market. They have faith that the equilibrium point

reaps the most efficient results and distribution of resources; however, it can be seen historically that this is not always the case. When a perfectly competitive market fails to efficiently distribute resources, it is referred to as "market failure." Such failures imply that market principles that follow the rule of supply and demand can, in fact, fail to maximize social welfare by distributing resources inefficiently.

Market failure occurs when there is a gap between private benefits and social benefits (and private costs and social costs), and when the market does not properly regulate supply and demand. It is manifested in the forms of imperfect competition, natural monopoly and oligopoly, public goods, information asymmetry, merit goods, and absent markets.

The theoretical existence of market failure does not mandate the direct performance of functions by the public sector, like the government and public institutions, but most cases do involve such performance. Public institutions in the field of inspection and verification carry out work directly because of externalities, which constitute one of the many classes of market failure. Externalities force benefits or losses onto others, as an unintentional byproduct of a certain individual or company's economic activity, but the recipients of externalities are not compensated for their losses. In the task of inspection and verification, costs in execution are inevitable, and private businesses have a strong incentive to minimize their expenditures. In the process of minimizing expenses, if costs are reduced below a certain level, there is a high probability that poor inspections will occur (because procedures will be omitted, for example), and, in the worst case, poor inspections can lead to safety accidents like the Sewol Ferry Disaster. The likelihood of an inspector paying the price for an accident that results from an insufficient inspection is very low. Consequently, there is a high possibility that private businesses will not voluntarily restrict poor inspections, which create damaging externalities. Market failure can arise through inspection and verification service quality that fails to meet society's requirements and, as a result, there is a basis for the government and public institutions to participate directly in the market.

### B. Necessity of executing industrial policies

Jin Park, Kyoungsun Heo, and Sungbong Cho (2013, pp. 49–50), find a need for market intervention by the government and public institutions in the necessity of carrying out industrial policies. They argue that, during the early stages of national economic development, private businesses naturally participate in the market; because it is hard for such businesses to grow on their own, there is a need for public institutions to steer economic development and growth. They assert that during the Japanese colonial period and the Korean War, there was no choice but to rely on public institutes and government ministries to recover the demolished social overhead capital.

The government's industrial policy exists in active forms such as fostering core industries and protecting weaker ones, but also in methods of assistance, like resolving complaints and demands in the industrial world, and eradicating uncertainties and dangers.[1] In the process of economic development, the government's methods of assistance can decline; however, if the market is unable to provide such functions, public institutions can act in place of the government and fulfill necessary roles in the market.[2] In such a case, the government or institutions play an important role in maintaining social order, which cannot be maintained by the market itself.

## 2 Reasons for Government Failure in Inspection and Verification Functions

The government has established itself in the market, and has expanded its role to rectify and compensate for social problems and market failure. However, the government, as a bureaucratic organization, has inherent inefficiencies, restrictions, and failures in system policies that can act as

1) Jin Park, Kyoungsun Heo, and Sungbong Cho, 2013, p. 54.
2) Ibid, p. 54.

impediments in solving problems, and can make situations even worse. In other words, government failure can result from efforts to correct market failure. Jaeho Yeom, Yeongdae Kim, and Hyojin Kwon (2007, pp. 5–6) explain the three reasons for government failure. First, because the government is established by voting, it is possible to implement a policy that represents the preferences of the majority; however, it is difficult to address the diverse demands of the minority. Next, inefficiency in government bureaucracy is also an important factor in government failure. An overreliance on regulations, moral hazards of government officials, and wasteful government expenditures are notorious examples of bureaucratic inefficiency. Finally, because the expenses and effects of government activities are not easily measured, wasteful expenditures can occur. Particularly, as exposed in the preliminary feasibility study methodology, the measurement of effects can be manipulated. Furthermore, they identify the policy side effects that result from the phenomenon of maximizing budgets, inaccuracy in future foresight, and so forth, as reasons for government failure.

The study referenced above analyzes the possibility of government failure and its causes; however, public institutions are similar to the government, in that they are both bureaucratic organizations, and it is therefore contemplated that the shortcomings that are evident in the government could be shared by public institutions. In conclusion, the factors of government failure are also the factors of public institutions' failure. Additionally, public institutions are faced with issues such as owner-agent issues and soft budget constraints that create inefficiency, and as with market failure, public institutions can fall short of supplying efficient services.

## 3 Theoretical Concerns of the Reestablishment of Governmental and Public Institutional Functions

### A. Theoretical concerns of the reestablishment of governmental functions

The most significant theories supporting the reform of public institutions, including their privatization, are the New Public Management Theory and

Governance Theory. New Public Management, which is a theory that combines free market ideology with neo-managerialism, is a governmental reform and management theory with the purpose of overcoming the limits of traditional bureaucracy.[3] The main point is to adopt private enterprises' productivity and their performance-based management method into public institutions that are criticized for their lack of responsibility and efficiency. While the government controlled everything in traditional bureaucracy, New Public Management asks the government to play the role of a supervisor that guides the direction of public institutions and also to be a judge.[4]

New Public Management is criticized for neglecting fundamental differences between private enterprises and public institutions and for excessively transplanting the former's advantages into the latter; the Governance Theory has begun to be presented as an alternative.[5] While New Public Management proposes raising government efficiency through the application of market principles, the Governance Theory suggests that the government, in the role of the manager, should integrate and mediate the interactions between various members of society, such as political and social organizations, non-governmental organizations, and civil society, in addition to the enterprises that are traditional participants in the market sector.[6] Although, at a detailed level, the two theories present the government's role differently according to a disparity in perspective of national governance, both limit government's direct market participation: the former as a supervisor and judge, and the latter as a manager.

### B. Theoretical concerns regarding the reestablishment of inspection and verification public institution functions

Based on New Public Management, which attempts to supplement

3) Jongsoo Lee, Youngjin Yoon and others, 2005, p. 172. Jaeho Yeom, Yeongdae Kim, Hyojin Kwon, 2007, p. 8 recitation.

4) Jaeho Yeom, Yeongdae Kim, Hyojin Kwon, 2007, pp. 9-10.

5) Jaeun Choi, Jeongsu Park, 2014, p. 3.

6) Jaeho Yeom, Yeongdae Kim, Hyojin Kwon, 2007, p. 13.

government failure, as well as other theories, the inspection and verification sector that once maintained a monopoly system of public institutions for safety reasons has begun to adopt the competition system for reasons including reduction of manpower and budget, increase in efficiency, speed in administrative work, and improvement in the service sector.

However, Jin Park, Kyoungsun Heo, and Sungbong Cho (2013, p. 102) further claim that inspection and verification public institutions should reject direct market participation, and instead focus on the function of market supervision. According to the same research, such institutions' market participation is achieved for the public purpose of holding the private enterprise operator (market) in check, addressing the asymmetric information between the enterprise operator and the government, and providing supervision. Because profits result from the performance of inspection services, obtaining the minimum supply of service by the market is not a problem worth considering, and the research asserts that public institutions must solve market failures like information asymmetry and the fall in service quality through the function of supervision, instead of participating directly in the market. This research result supports the position of not allowing public institutions to participate in competitive activities in the market.

It is necessary, however, to analyze the market, where public institutions carry out functions related to inspection and verification, in a detailed and comprehensive manner. As a result of this analysis, the proposal of new functions and roles for public institutions is also needed, considering the circumstances after withdrawal, rather than merely proposing that, “Withdrawal will be carried out when competing with private enterprises.”

# Ⅲ

# Main Characteristics of Inspection and Verification Institutions[7)]

## 1 Foundation period and background

Most inspection and verification institutions were founded after the rise of industrialization in the late 1970s. Industry-related institutions were established first, and then territory- and traffic-related institutions followed. Some institutions, including the Infrastructure Safety Management Corporation, were established after a severe accident related to civil engineering occurred in South Korea in 1994. This example demonstrates that national security-related institutions developed as a temporary solution when accidents happened, and not through a systematic approach.

## 2 Field execution function

The function of inspection and verification institutions is execution, not policy making. Accordingly, there is a need for field operations and a network

7) This chapter reports on the present condition of eight public institutions, which is the subject of analysis in this paper. If there is no particular citation, please be aware that this chapter was written by referring to Public Institution ALIO (All Public Information in One) System (date of research: 6/5/ 2015) and the "2014 Guide on the present condition of public institutions (Korea Institute of Public Finance, 2014)."

of branch offices. The role of managing field functions and adjusting the functions of the overall system is very important. Because public institutions perform tasks on a national level, the central head office and branch offices must be combined and managed as one institution. On the other hand, private enterprises' unit institutions become individual institutions in individual districts. Such unity and cohesiveness lead to private enterprises' efficiency. Inspection and verification institutions pose an important question concerning efficient management, because they must be managed while being dispersed nationwide.

## 3 Function of face-to-face service

Inspection and verification institutions have the function of performing tasks in the field, and not of making policy decisions. Accordingly, residents' level of satisfaction in evaluation is crucial. In addition, it is possible to compare their methods with other private task performance methods. A direct satisfaction comparison includes not only comparison of similar types of public institutions, but also a comparison to private services, such as the service received in a department store. Inspection and verification functions are evaluated not only on their technological superiority, institutional professionalism, and institutional neutrality, but also on their quality of service. In other words, even if the functions of inspection and verification institutions are an extension of governmental authority, their evaluation is connected to service quality.

## 4 Balance preservation institutes

Inspection and verification functions represent an instance of public institutions being charged with a task that the nation is supposed to perform, under a negotiated contract. Because public institutions perform legal tasks, their expenses are absorbed by the nation. Thus, they demonstrate a balance preservative characteristic, as they try to manage the gap between earnings and expenses.

This type of balance preservative institution does have positive aspects because it fulfills public interest, but it can create a moral hazard. Such public institutions have no incentive to cut expenses, because the nation absorbs them. Additionally, it has no incentive to raise earnings, because the support fund it receives decreases when earnings are made. Consequently, balance preservative institutions require strict accounting management.

# Ⅳ

# Major countries' present level of market participation in the fields of inspection and verification

## 1 Vehicle inspection field

The United States' car inspection policy consists of vehicle safety inspection and vehicle emission inspection, which is similar to Korea's policy.[8] The state government decides the details of periodic motor inspections in the United States, a policy that has been implemented since the 1920s in an autonomous manner.[9] Upon examining the vehicle safety inspection and vehicle emission inspection of the United States, it is noticeable that it is a perfectly competitive system where the actual inspection is done by private businesses that follow the inspection policies selected by each state government.

In Japan, under the Road Transport Vehicle Act, the owner of a car can only operate his or her car after receiving an inspection of safety performance and environmental effects, which is performed by the minister of the Ministry of Land, Infrastructure, and Transport, and being given a valid test certificate.[10] Authority over the inspection task is held by the Ministry of Land, Infrastructure, and Transport, and three main agents deal with these operations: Ministry of Land, Infrastructure, and Transport branch offices, private maintenance licensees

8) Jingeuk Kim, Juchan Kim, Minjeong Chu, 2011, p. 128.
9) Jiseon Lee and others, 2013, p. 43.
10) Jaehoon Sul, Jonghyun Kim, 1998, p. 15.

of designated cars, and the Light Motor Vehicle Inspection Organization. Japan's car inspection system is similar that of Korea in both inspection categories and inspection period. The two systems are also similar in the features of market participation, because the public sector and the business operators of private enterprises participate in the market together.

Germany's Periodic Technical Inspection is managed by private interests. Large inspection and certification enterprises like TÜV and Dekra, which operate globally, and franchise enterprises registered by numerous small inspection companies participate in the market. However, Germany's system has experienced the problems that can arise when entrusting such tasks solely to the private sector, such as inefficiency due to private monopoly, excessive competition, and inspection shortcomings. The problems have been solved by bestowing the private sector with responsibility and transparency through regulation and instruction, rather than by business collectivization via the government or public institutions.

Belgium's car inspection market is an oligopoly market led by a few private enterprises, and is harshly regulated by the government. Although it is an oligopoly and each business operator is guaranteed a monopolistic position regionally, its business profit rates are restricted, and it is required to contribute greatly to the public interest.

In Europe, there are various nations, and the main inspection agents differ. Ireland is implementing a policy in which the government monopolizes inspection. One can only receive inspection service at the "National Car Test Center." The inspection markets of France, Denmark, Great Britain, and the Netherlands display the characteristics of a perfectly competitive market. In France and Denmark, other businesses, like inspection and maintenance, are completely separated, and in Great Britain and the Netherlands, inspection and maintenance are both managed by private business operators. Although some differences in the form of competition exist, most nations in Europe maintain a private-led car inspection market.

## 2 Power safety management

The institutions that supervise inspection related to power safety in the United States are the state and local governments. Because the United States is a federal nation based on local self-government, regulations differ in each state; accordingly, electric power facilities' safety management varies among each state, as well. Inspection and safety management of electric supply equipment, however, is usually conducted under the responsibility and authority of electric power companies. Because the culture of punitive damages is ubiquitous, economic loss due to accidents caused by the carelessness of safety management is considerable, and the business environment incentivizes electric power companies to do their best regarding safety management.

Japan's power safety policy is based on the Electricity Enterprises Act. The main characteristics of the power safety policy under this Act implemented in 2000 are a transition from the national management of electrical equipment to private control and the opening of the inspection market. The before-use inspections and regular inspections of electrical equipment that used to be enforced by law were abolished, and independent inspection by electric operators was introduced. The main agent in charge of inspection was limited to nonprofit foundations under the previous civil law, but private corporate bodies can now participate in the market, as well. A safety management review system has been adopted under which the public sector is in charge of safety assurance, instead of opening that task to private interests.

In Germany, authority and responsibility concerning the inspection and safety management of electric power facilities are fully assigned to the individuals or institutions that own the facilities. Because it is possible for owners to delegate authority to professionals that have an appropriate qualification, though, the inspection is conducted by private inspectors. In France's electrical safety management system, no law or policy specifies electrical safety managers or safety management agents, so responsibility concerning electrical safety belongs to the owner of the equipment.

## 3 Gas safety management

In the United States, the main agent managing gas safety is the gas licensee. Each gas licensee performs tasks related to the management and maintenance of gas facilities using its own standard, and also autonomously develops and manages education and test programs for related workers. The licensee provides autonomous safety criteria for individuals and companies constructing gas facilities, and is in charge of the construction, which it supervises by being near the site where the facility is being built. Regarding plumbing, while the gas licensee carries out autonomous inspection, the inspection result is supposed to be reported to the federal government.

Japan's gas inspection system shifted from a system led by the public sector to a competitive system in which the market became open to ordinary people. Previously, legal inspection, like gas facilities' completion inspection, regular inspection, container test, and particular equipment inspection, was carried out only by public institutions such as the prefecture branches, High-Pressure Gas Safety Institute, designated inspection institutions, and container inspection offices. Only nonprofit foundations could be appointed as designated inspection institutions. As private enterprises gained technical skills, however, their fairness and ability were acknowledged, and they were then permitted to be designated as inspection institutions, forming a competitive system between the public and private sectors.

Great Britain's gas safety inspection system is one in which the insurance company and the gas supplying licensee autonomously manage safety. It is an autonomous safety management system led by private sector. In the case of plants, safety inspection is performed by the inspection institution designated by the high-pressure gas manufacturer or by the user's employee, which, in this case, can be characterized as an autonomous inspection. Regarding the gas container inspection, there is no legal responsibility for inspection during the period of usage, but autonomous inspection, or inspection by the institution designated by the manufacturer, is conducted in most cases.

## 4 Real estate appraisal

Real estate appraisal in the United States developed as a private sector process without government intervention, but not in a consistent manner between the federal and state governments. Initially, there was no form of government intervention, as demonstrated by the lack of public institutions, and the private appraiser led the market. Problems resulting from private appraisals were handled by government intervention toward the appraisal industry (for example, changing from a state license to a national certification system).

A real estate appraiser in Japan must register with the Ministry of Land, Infrastructure, Transport and Tourism after passing the test of national qualification and completing practical training in an institution like an office of a certified public appraiser. A real estate appraiser performs the tasks of appraising and evaluating real estate, and organizing conferences related to it. After acquiring the qualification of an appraiser, one can work in the appraisal sector of a general company or start a private business in a nonprofit foundation like the Japan Association of Real Estate Appraisers, Japan Real Estate Institute, Japan Compensation Consultant Association, or Land Research Institute. Because real estate appraisers are all in the private sector, it seems that, even in Japan, cases in which the government or public institutions directly perform appraisal tasks are quite rare.

Great Britain applies a certified public appraiser policy centered on specialized private institutions. Chartered Surveyors (CS) belong to the Royal Institution of Chartered Surveyors (RICS) and appraisers belong to the Incorporated Society of Valuers and Auctioneers (ISVA); both perform tasks related to evaluation, and must comply with the appraiser qualification requirements of the institutions to which they belong. Germany's appraisal policy is led by the private sector, without intervention by the government. While there is no formal regulation by the government defining the qualifications of an appraiser in Germany, there are requirements presented by the Chamber of Commerce and Industry and by the mortgage lending valuer certification institute that validates appraisers.

## 5 Cadastral survey

Japan's cadastral survey is divided into two main categories: cadastral surveys for cadastral reexamination and general cadastral tasks for registration. The former is controlled by the Land Economy and Construction Industries Bureau within the Ministry of Land, Infrastructure, Traffic and Tourism, in abidance with the National Land Survey Law. The latter is controlled by registry offices affiliated with the Ministry of Justice, under the Real Property Registration Act. However, the institutions that are in charge of the actual tasks are the cities, towns, and villages, which are first-line local authorities. When carrying out cadastral surveys in a city, town, or village, public officials investigate and measure each land sector's owner and boundary, but other criteria, such as land surveying and computation of area, are measured by private general surveyors.

France's cadastral survey system is a mixed form of the national direct management system and the private competition system. For cadastral surveys in numerical cadastral regions, when private enterprises directly perform the tasks of division, boundary restoration, and present condition measurement, public officials in cadastral offices carry out the inspection measurement of the survey result.

Germany's cadastre system is notable because each region has developed its own system. In Brandenberg, located in the state of Sachen, a system is employed in which the public officials of regional cadastre offices directly carry out the basic cadastral survey of measuring the control point, private surveyors perform other measurements, and the results are inspected by public officials. On the other hand, in the state of Bayern, because there is no particular qualification system for private surveyors, every measurement is directly carried out by the state government.

## 6 Facility safety management

In the United States, the federal and state governments establish

appropriate policies related to facilities. In the federal government, departments exist for each type of facility, and the relevant departments establish policies of facility safety and maintenance management. Typically, the Department of Transportation is responsible for the safety management of facilities such as highways, infrastructure (e.g., roads and bridges), railroads, and ducts. The Infrastructure Bureau carries out the tasks of inspection and safety evaluation of infrastructure facilities, including roads and bridges throughout the United States. The Federal Railroad Administration of the Ministry of Transportation takes controls every aspect of railroad safety under the Railroad Safety Act, including the tasks of inspecting and recording railroad-related facilities.

In Japan, the Ministry of Construction, a part of the Central Department, provides safety inspection criteria for infrastructures such as roads, bridges, and railroads, and the responsible managers of each facility (roads, for example) carry out the actual management. For example, in the case of common state roads, each region's Construction Bureau affiliated public corporation offices and local offices are responsible for maintenance management.

In Great Britain, it is common for managing units of facilities to entrust safety management and maintenance tasks to private enterprises. This explains why regional offices of the Highway Agency delegate the task of safety inspection of highway-related facilities (e.g., roads, tunnels, and so forth) to private enterprises.

## 7 Shipping inspection

The American Bureau of Shipping, which is a non-profit organization in the United States, is an institution that carries out shipping inspections, on behalf of the U.S. federal government. Although its legal position is not as a public enterprise, it is an enterprise that has long performed national shipping inspection in the United States. The American Bureau of Shipping also inspects foreign shipping on behalf of governments in foreign countries, including Norway. Just as the American Bureau of Shipping plays an active role abroad, numerous foreign shipping enterprises compete in the American market.

In Japan's shipping inspection market, Japanese national institutions and foreign shipping associations compete for various inspection and certification tasks. Since 2013, Nippon Kaiji Kyokai (NK) has conducted a certification service for maritime education training institutions and the greenhouse gas emissions of ships. Japan Craft Inspection Organization (JCI) typically inspects small ships, and it is in charge of tasks like inspecting shipping safety and checking for harmful gas emissions, under the Ships Safety Act. Hakuyohin Kentei Kyokai (HK) primarily performs certification-related activities for ship equipment and real estate related to shipping, in addition to small ships.

In the U.K., the country in which shipping inspection originated, inspection began when insurance companies needed to rate ships for the calculation of marine insurance charges. Private corporations have, accordingly, been in charge of shipping inspection, and this has led to the creation of global shipping companies like Lloyd. Lloyd still competes with foreign shipping associates, performing shipping inspections of bodies of ships, engines, electrical installations, marine stores, and more.

## 8 Industry certification

The industrial product test certification policy of the United States puts the private sector in charge, with the government approving private certification institutions. If the confirmation of information and communication or food and drug products fails, a certification mark is issued by government-assigned, nationally recognized testing laboratories (NRTLs) in the domain of general industrial products, while a mandatory certification policy is implemented in important domains where consumer injury is more severe. Approximately 660 products, including computer, monitors, home appliances, and gas equipment, designated by the Ministry of Labor-affiliated Occupational Safety and Health Act (OSHA), are forbidden from being distributed without certification marks from the appropriate NRTL, and 18 private institutions, including UL, CSA, TÜV, and ISTNA, are currently assigned as NRTLs.

Japan is attempting to change its test certification policy environment

from a centralized system led by the government to a decentralized system of private autonomy. Japan earlier adopted a system in which the government is in charge of direct certification. The Japanese Industrial Standards (JIS) system and the Japanese Agricultural Standard (JAS) system, which are the most common industrial standard certification systems, have maintained the government's monopolistic certification system for over 50 years, and have shifted the main agent of certification to the private sector beginning in 2005 for JIS and 2006 for JAS. The central government that transferred the actual certification function to the private sector is now focused on establishing standards, assigning certification institutions, and regulating the certification market.

Regarding the certification policy and certification marks in European nations, each nation developed and implemented a unique system and mark, until the Conformité Européenne (CE) mark system, which introduced a unified mark, emerged after the integration of the European Union, in which unification of standard and certification processes occurred, to improve trade. Unlike this unification of the certification mark system, certification institutions in Europe are fully operated by the private sector, just as before the integration of the European Union. These institutions compete across Europe, beyond their native countries.

## 9 Implications

In the performance of inspection and verification in the United States, Japan, and Europe, tasks are usually performed by the licensees of private enterprises, and the involvement of the public sector is minuscule. In the United States, licensees of private enterprises conduct inspection performance in almost every domain. One unique aspect of this arrangement is that the supplying licensee manages gas and electrical safety for profit, rather than due to the existence of special management systems concerning gas and electrical safety. Among the three geographic areas, Japan has had the most cases of government performance of inspection tasks. However, since the 1990s and 2000s, most

inspection tasks have been transferred to private enterprises. Additionally, because direct inspection by the government is limited to special inspection tasks in each domain, there is not much direct competition with the private sector. Because Europe includes many countries, cases do exist in which the government carries out direct inspections, but inspection is primarily performed by licensees of private enterprises in most industry domains and nations. This practice seems to have originated in the tradition in which private associates were in charge of their industry's safety, early in the modern industrialization period.

〈Table IV-1〉 **Main executional agent of inspection and verification tasks in each region**

| Domain | Main performing agent of inspection tasks | | |
|---|---|---|---|
| | United States | Japan | Europe |
| Car inspection | private inspection licensee | government, private licensee | government, private licensee |
| Electrical safety management | private electricity supplier | nonprofit foundation, private licensee | private licensee |
| Gas safety management | private gas supplier | government, private licensee | private licensee |
| Real estate appraisal | private appraiser | private appraiser | private appraiser |
| Cadastral survey | – | government, private surveyor | government, private surveyor |
| government, private surveyor | – | government | government, private surveyor |
| Facility safety management | private shipping enterprise | private licensee | private licensee |
| Industry certification | private certification enterprise | private certification enterprise | private certification enterprise |

Source: Organized by the authors based on the content of a literature investigation

# V

# Competitive System of Inspection and Verification Markets[11)]

## 1 Background for Adopting the Competitive System

### A. Automobile inspection

The automobile inspection system in Korea has existed since the adoption of cars during the Japanese colonization era. Inspection was run by inspectors employed by automobile associations, and inefficiencies such as perfunctory inspections occurred because of a lack of regulation by the government until the end of the 1970s. In response, the government nationalized the inspection business, establishing a public corporation in 1981 to monopolize regular automobile inspection service. As inspection needs subsided due to the gradual reduction of regular inspections performed by private mechanics, mechanics associations' demands for protection of business rights and income grew stronger. At the same time, as the number of registered automobiles surged dramatically, the inspection infrastructure and the competence of the public corporation came under pressure. As a result, since 1996, if private businessmen obtain a specified size of inspector staff and facilities, they are permitted to execute regular automobile inspections.

11) This page is based on interviews with eight inspection and verification public institutions. The interview questions are attached in the appendix.

### B. Cadastral survey

The cadastral survey was modernized after the land survey project, and the forest survey project was enacted during the Japanese colonization. As infrastructure increases rendered surveys too burdensome to be performed solely by public servants, private interests were enabled to participate in the survey market. Service failings remained common, despite the private interests' participation in the market, and customers' complaints increased due to inconsistent methods of work processing and commissions among the private mechanics. As a result, the predecessor of the Korea Land and Geospatial InformatiX Corporation was founded in 1977, maintaining an exclusive agency system. The exclusive agency system, however, was targeted by a constitutional complaint that alleging that it violated the free and fair right to choose jobs of the surveyors and corporate bodies that possessed cadastral skill qualifications. According to a constitutional nonconformity verdict in 2002, the cadastral law was revised to open a portion of the work to private interests beginning in 2003.

### C. Facility safety diagnosis

National disasters, such as the collapse of Seongsudaegyo Bridge and Sampoong Department Store, highlighted the importance of safety management. As a result, the "Special Act on Safety Control for Public Structures" (also known as "Special Act on the Safety Control of Public Structures " in Korean, and referred to as the "Special Structure Act" hereafter) has been passed, and, accordingly, a public corporation has been established for protecting civilians' life and assets by ensuring facilities' safety.

After the establishment of the public corporation, the safety of major facilities was to be exclusively scrutinized and diagnosed by the corporation. According to the plan to gradually transfer the corporation's exclusive facilities to private businesses five years after the corporation's establishment; however, the exclusive facilities were reduced beginning in 1999.

### D. Electrical safety management

The electrical safety management system has been implemented to minimize corporate production failures caused by electrical accidents, such as blackouts in 1961, and the employment of technicians has become mandatory, depending on the scale of electrical facilities. Problems such as the illegal lending of licenses due to lack of electrical safety managers began to emerge, however, and the agency management system was introduced in 1973 to resolve the problems. The Korea Electrical Safety Corporation (KESC) was also established as an initiative of the agency system.

To avoid flooding the market with small enterprises as a result of premature private sector development, private agencies were restricted to perform tasks within 50% of what the managers of Korea Electrical Safety Corporation perform. Consequently, the KESC had a near monopoly, and the regulation was largely criticized by private businesses, who argued that it disrupted the growth of the private agency market. At the same time, private agencies were expanded to agency businesses beginning in January 1996 as a result of the liberalization policy of the Sixth Republic, which eliminated the gap between KESC and private interests while implementing a competitive system.

### E. Real estate appraisal and assessment

The Korea Appraisal Board (KAB) was established as a result of the emergence of the public concept of land ownership, which was caused by a rapid increase in land prices in the late 1980s. To support the public concept of land ownership, an index of real estate transactions and public land value was necessary under circumstances where unitary public land values and real estate speculation were rampant.

At the time, the business was trisected into KAB, many public appraisal boards, and real estate appraisers' offices. In fact, according to the Government Finance Agency Law, appraisal and assessment businesses were exclusively handled by KAB. Because the legal requirements to establish an appraisal and assessment corporation included at least 100 qualifiers, it remained practically impossible to establish a competing corporation. In 1989, the Public

Announcement of Land Price Act was passed, greatly reducing the requirements for registering an appraisal and assessment office. Fifteen appraisers applied (seven in rural areas), and the competitive system began.

**F. Gas safety management**

It was in the 1970s, when LPG began to be supplied, that the concept of gas safety management was first introduced in Korea. An explosion at Daeyeonggak Hotel, which left many casualties, highlighted the need for gas safety. In 1974, the High-Pressure Gas Safety Institute, which is the predecessor of the Gas Safety Corporation, was established under the Industrial Advancement Administration. After the establishment, public corporations exclusively handled all gas safety matters until the mid-1990s; as the subject facilities increased, and due to pressure to open the market to the private sector, the law was revised in 1994, opening some tasks to private businesses.

**G. Vessel appraisal and related businesses**

Shipping appraisal in Korea officially started in 1960 when the Korean Register of Shipping (KRS) was established with permission from the Ministry of Maritime Affairs. After the establishment, ships intended for exportation were assessed under the KRS, which kept close ties with the government by installing ship assessment agencies. Because issuing assessments for the estimation of ship insurance is the major task for shipping registrations, large vessels were targeted as the major assessment subjects. Consequently, many small vessels were left behind in an examination blind spot; hence, the Korea Fishing Vessel Association was established as an appraisal board, under the Fisheries Act of 1977. The Korea Ship Technology Authority also competed with private authorities in the examination of water leisure crafts. The public corporation initially monopolized these two businesses, but in response to the requests of private authorities established by retired public servants who formerly managed and supervised these businesses, the market was opened.

## H. Industrial technology certification

Before the late 1990s, test certification was thought of as a governmental regulation of corporations; accordingly, it was carried out in a quasi-governmental institution form. The Korea Testing Laboratory (KTL), which began as the Korea Fine Instruments Center in 1966, was a public institution that executed test certification tasks. After the International Monetary Fund (IMF), the government became unable to lead every industry, and, as citizens' demands for safety and quality increased, standardization and test certification functions were turned over to private entities, forming a test certification market. As the test certification market began to take shape, many private institutions participated in the market, leading to a genuine implementation of the market competition system in the mid-2000s.

## I. Conclusions

The competition system's implementation, including the admission of private interests into the market, occurred mostly in the 1990s. This timing shows that the change was related to Korea's economic, constitutional change. In this period, because the government-led economic development strategy no longer held power, Korea's overall economy began to support a policy change to privatization and a market-led economic system. This process occurred at the time when a policy shift took place regarding the maturity of the market economy. Second, it is the period in which local self-government was introduced (in 1992, after the 6.29 declaration of 1987). In other words, democratization urged the opening of the private market.

## 2 Individual market structure and the present condition of competition

### A. Vehicle inspection

For the automobile inspection business conducted by the Korea Transportation Safety Authority, 1,684 private designated inspection corporations participate in the market and compete with the public corporation, according to 2014 data. Private inspectors' market share has also steeply increased since the market was opened, growing to 69% by 2014.

〈Table V-1〉 **Automobile inspection market share trends of private inspection enterprises**

(Units of measurement: number, vehicles, %)

| | '97 | '98 | '99 | '13 | '14 |
|---|---|---|---|---|---|
| Number of Public Enterprises | 375 | 685 | 938 | 1,601 | 1,684 |
| Number of Inspected Automobiles | 731,891 | 2,372,984 | 3,215,845 | 6,792,641 | 6,869,554 |
| Market Share (%) | 14.2 | 43.0 | 58.6 | 69.1 | 69.0 |

Source: Submitted by the Korea Transportation Safety Authority (5/2015).

### B. Cadastral survey

Since 2004, the Korea Land and Geospatial InformatiX Corporation (LX) has competed with 158 private enterprises for businesses including cadastral confirmation surveying and cadastral surveys.

The market size of the cadastral survey in 2014 was 4,672 hundred million won, according to the sales standards, divided mostly into the cadastral survey for detail mapping market, which was exclusively controlled by LX, and the numerical cadastral survey market, which is also open to private interests. The latter has a market size of about 20%. Cadastral survey order rates for private businesses have expanded from 25.3% in 2009 to 44.7% in 2015.

〈Table V-2〉 **Cadastral survey market share trends**

| Year | Total Work Amount | Market Exclusively Controlled by the Public Corporation (cadastral survey for detail mapping) | | Private Open Market (numerical cadastral survey) | |
|---|---|---|---|---|---|
| | Cost (Hundred Million Won) | Cost (Hundred Million Won) | Proportion (%) | Cost (Hundred Million Won) | Proportion (%) |
| 2009 | 4,462 | 3,584 | 80.3 | 878 | 19.7 |
| 2010 | 4,457 | 3,438 | 77.1 | 1,019 | 22.9 |
| 2011 | 4,863 | 3,569 | 73.4 | 1,294 | 26.6 |
| 2012 | 4,876 | 3,472 | 71.2 | 1,404 | 28.8 |
| 2013 | 4,568 | 3,660 | 80.1 | 908 | 19.9 |
| 2014 | 4,672 | 3,654 | 78.2 | 1,018 | 21.8 |

Source: LX internal data (submitted 6/2015).

〈Table V-3〉 **Cadastral confirmation survey and market share trends**

| Year | Total Work Amount | Korea Land and Geospatial InformatiX Corporation | | Private Cadastral Survey Enterprise | |
|---|---|---|---|---|---|
| | Cost (Hundred Million Won) | Cost (Hundred Million Won) | Proportion (%) | Cost (Hundred Million Won) | Proportion (%) |
| 2009 | 673 | 503 | 74.7 | 170 | 25.3 |
| 2010 | 818 | 544 | 66.5 | 274 | 33.4 |
| 2011 | 993 | 732 | 73.7 | 261 | 26.3 |
| 2012 | 1,131 | 798 | 70.6 | 333 | 29.4 |
| 2013 | 659 | 398 | 60.4 | 261 | 39.6 |
| 2014 | 731 | 404 | 55.2 | 327 | 44.7 |

Source: LX internal data (submitted 5/2015).

The business size is determined by the government's real estate policy changes and the current condition of the promotion of the SOC business, due to the characteristics of cadastral confirmation surveys executed in urban development. Because market expansion is difficult for private entrepreneurs,

private interests are performing only a part of the business originally done by the public corporation, without expanding into the entire cadastral survey market. As cadastral confirmation surveys have been executed, it is believed that the area in which private entrepreneurs can enact cadastral surveys is around 3% of the country's entire land area, with their sales making up 7% of total cadastral survey sales.

**C. Facility safety diagnosis**

The facility safety diagnosis business is a market where both the Korea Infrastructure Safety & Technology Corporation (KISTEC) and private facility safety diagnosis businesses participate. The subjects of this business are class 1 infrastructures that can be classified as bridges, tunnels, dams, rivers, harbors, water works and buildings. A safety diagnosis must be carried out ten years after a class 1 infrastructure is built, and, according to the previously diagnosed ranking, the diagnosis must be made at least once every 4–6 years.

KISTEC is exclusively in charge of diagnosing 152 facilities from among the class 1 infrastructures, according to the 2015 standards. These particular facilities either require delicate technology or are special facilities in which it is specified that a public corporation should conduct a precise safety diagnosis. All of the management agents are in the public area, including the central government and the local government. When the public corporation was first introduced, exclusively diagnosed facilities were limited to 510, and that number has continuously decreased. Every year, facilities to be transitioned from exclusive diagnosis to diagnosis by private interests are identified through a schematic design study. Even though nearly 20.4% of class 1 infrastructures were exclusively diagnosed facilities in 1999, only 2.0% were so designated in 2015.

The class 1 facilities that are excluded from safety diagnosis by the public corporation are diagnosed by private businesses. Hence, both public and private entities participate in the safety diagnosis market for class 1 infrastructures; because each diagnosis is executed exclusively, though, the market lacks a directly competitive structure regarding the price or quality of service. Facilities, nce exclusively diagnosed by public corporations, were gradually handed

〈Table V-4〉 **Reduction adjustment trends of facility safety public corporations' facilities under exclusive oversight**

| Classification | 1999 | 2001 | 2003 | 2010 | 2012 | 2015 |
|---|---|---|---|---|---|---|
| Inspection Subject Facility (A) | 2,496 | 3,269 | 3,883 | 6,211 | 6,968 | 7,600 |
| Facilities Under Exclusive Charge of Public Corporations (B) | 510 | 300 | 235 | 212 | 191 | 152 |
| B/A | 20.4% | 9.2% | 6.1% | 3.4% | 2.7% | 2.0% |

Source: LX internal data (submitted 5/2015).

over to private interests according to the private businesses' technology development, transfer requests, and judgments made in the political and social atmosphere.

As charges decreased due to competition from private interests, there were instances in which management agents, such as local governments, asked public corporations to decrease their prices for diagnosing exclusively served facilities. Regarding commissions, therefore, it appears that there are, to some extent, effects of indirect competition.

According to an interview with the KISTEC, 784 private enterprises are involved in the competition in 2015, and the entire market size is believed to be around 350 billion won. The market is polarized; it has been reported that 130 businesses among the safety diagnostic specialized institutions have no orders, with the top 22 enterprises taking more than 50% of the orders in 2012.

### D. Electrical safety management

Among all the business activities that the Korea Electrical Safety Corporation (KESC) performs, the ones in which the KESC is involved in the market alongside private interests are the safety management agency business activities. Currently, 892 private enterprises participate in the market, with an average of 11.2 inspectors in each business. Consequently, small enterprises are the majority.

Before competition under equal conditions began, public corporations held a market share of around 60%; after the opening of the market, that share quickly decreased. The market share of public corporations in 2015 is 4.6%, which is still the highest share of any single institution, making public corporations a leader in the market. The steep decline in market share is believed to be due to saturation of the market, which makes it difficult for private businesses to enter. In addition, price competition between private companies made it difficult for public corporations to compete for another reason. The privatization of public institutions, and the policy that seeks to limit government's invasion of private areas, seem to be a significant factor in the market share decline.

**E. Real estate appraisal and assessment**

As the Korea Appraisal Board (KAB) has long competed with private inspectors in the appraisal and assessment market, market share has steadily decreased. As a result of the Privatization Plan of Public Bodies of 2008, private inspection markets have gradually been ceded to private interests since 2009. Consequently, the appraisal and assessment market share has decreased from 48.9% in 1992 to 7.7% in April of 2015. The businesses that the state, local government, and public institutions control, and the ones in which the government invests financially, include limited tasks of evaluation. On April 9, 2015, in a compromise with private associations, the government agreed to withdraw completely from the appraisal and assessment field, thereby ending competition between the public and private sectors. KAB plans to focus on executing public tasks that require judgmental functions, including market management of appraisal and assessment, and maintenance of order through such tasks as appraisal and assessment validity investigations and reward assessment investigations.

**F. Shipping appraisal business**

The Korea Ship Technology Authority is involved in markets including shipping safety examination, shipping amendment construction supervision,

safety inspection for water leisure crafts, and fishing areas and fishing boat safety examination, along with private enterprises and authorities.

The fact that the public corporations and ship classification associations both take part in the market, however, does not mean there is competition. Although the public corporation may execute classification surveys, most ship owners who need shipping appraisals contact the Korea Register of Shipping (KRS). Even in the business world, it is recognized as normal for the public corporation to examine small vessels, while classification associations examine large vessels.

**G. Gas safety management**

The Gas Safety Corporation is formally competing with private interests in the fields of gas facility and cylinder inspection. The competing businesses can be seen as facility and cylinder examinations, but, according to the competitors, there exist various competing businesses. There are two competing counterparts: professional inspection institutions and public inspection institutions. Within professional inspection institutions, competition could exist in three business areas, including specified facility re-examinations, high-pressure steel gas cylinder re-examinations, and LPG cylinder re-examinations. In fact, though, as public corporations have pulled out of these business areas, competition is not taking place. Within public inspection institutions, there is competition for four business areas, including refrigerator examinations, refrigerator manufacturing equipment regular inspections, regular examinations for facilities of specified gas usage, and LPG vending shop autonomous inspection agencies and LPG charging shop autonomous inspection agencies.

The regular inspection businesses of gas-using facilities, in which public and private authorized inspection institutions compete, has a market share of 7:3 for inspection income, and 6:4 for the inspection record.

**H. Industrial technology certification**

The test certification business, as a field of inspection and verification, is a market in which public institutions do not participate in specified fields

of test certification like gas safety and automobile inspection. The major inspection subjects include home appliances, medical apparatus, stage sets, accessory facilities for the industry, industrial measuring equipment, elevator parts, and items inside ships. The test certification business differs depending on whether the inspection subject's demand area is domestic or foreign. For each demand area, there are court systems and private systems, which are divided into mandatory test certification and voluntary test certification. According to the categorizing plan, there are eight certification areas, and the Korea Testing Laboratory competes with private interests while mostly performing certification business for the court system and autonomously running a certification system of its own.

The Korea Testing Laboratory's market share differs greatly by business field, and is, therefore, difficult to summarize. While the Laboratory is a public institution that performs work in the general area of industry test certifications, it also competes with other public institutions in specific fields, and, therefore, it is very difficult to determine the overall market share of this public institution. For each field, the proportion of work performed by private businesses differs. According to the Laboratory, the private interests' market share is vulnerable, and companies with fewer than 50 employees make up 92% of the 2000 domestic institutions. Consequentially, the market is characterized as an oligopolistic market governed by public institutions and major private institutions.

## I. Conclusion and implications

To summarize each market's conditions, the overall features of the change in the inspection and verification market can be stated as follows. First, although, among the eight business fields, both public institutions and private entrepreneurs participate simultaneously, competition comes in various shapes, ranging from an institutionally limited shape to an activated shape. This range results from the market and both internal and external features. The second characteristic of the market conditions is that most of the public corporations' market shares are declining. When markets are open to private interests, there tends to be a sharp decline, with public institutions' market share falling to a very low point

in most cases. When public corporations and the private sector participate in a business area at the same time, the Korea Transportation Safety Authority has the highest share rate (i.e., 30%), while most public corporations have a single-digit rate, like that of the Korea Electrical Safety Corporation. For the overall cadastral survey business, the private interests' share is low, but in open business fields, private shares are rapidly increasing.

## 3 Current conditions for competitive neutrality and analysis of affecting factors

### A. Competitive neutrality

Competitive neutrality is a term suggested by the OECD public enterprise guidelines, implying a condition where no economic subject that is participating in the market obtains an advantage over the competition.[12] Most public enterprises, from an OECD perspective, are already competing with private enterprises, or are performing in an industrial field that enables future competition. This kind of market is called a mixed market by the OECD.[13] Until now, the government has favored public enterprises over private ones, and has given them discriminatory privileges, because the government controls them, thereby distorting market prices by artificially decreasing public enterprises' production costs. As a result, the government has created an inefficient distribution of resources and waste, which damaged the market's efficiency.[14] Competitive neutrality seeks to remove privileges that are discriminatorily bestowed on public enterprises and institutions that compete with private interests, to prevent competition distortion and to achieve market efficiency. It holds that the government must not give superior privileges to the public enterprises they own, over private enterprises, through their legal and

12) OECD, 2012, p. 17.
13) Ibid, 2012, p. 17.
14) Hanjun Park, 2011, p. 80.

financial authority.[15)]

**B. Factors relating to barriers to entry**

Even when a public institution and a private business operator participate in the market at the same time, legal and institutional barriers can prevent private enterprises from participating in all submarkets, as in the measuring business of sea areas (among the facility safety rating businesses) and the cadastral survey business. This occurs as the result of an emphasis on national primary facilities and the protection of public assets (in this case, the cadastral record) over market vitalization and the improvement of business efficiency through opening the private sector.

In industries where private businesses can legally enter without limitation, there are no strict requirements for the private business operators to obtain business licenses. The factors that support barriers to entry are gradually alleviated after a market opens. Within the field of appraisal and assessment, in the aspect of the scale of the appraiser, the requirement for establishing a corporate body has lowered.

**C. The level and determination system of charges**

The commission system of most Korean public institutions is the cost recovery system, and public institutions in the field of inspection and verification follow this method. Although most public institutions have to comply with scheduled charges, facility safety rating institutions set prices based on fixed standards, but can revise charges by contract with an ordering organization; there is no obligation to abide by the scheduled charges. The public corporation has an exclusive right to inspect exclusive facilities, but the ordering organization may request a reduction of inspection fees by referring to examples of the private sector.

The method of determining the commission level of a private business

15) OECD, 2012, p. 18.

operator can be classified as either autonomy or compliance with an official commission; most have autonomy. Both private and public institutions must comply with the official charges only for appraisal and assessment fees and cadastral survey fees. For many fees, such as automobile inspection charges and electricity safety inspection charges, private business operators have autonomy. Even when they have autonomy, the influence of the public institution charges on the private sector is great; private sector companies refer to public commission charges. The autonomy of the private sector is guaranteed. Even without autonomy, though, because there is no discrimination between the private and public sector, no official disadvantage for the private sector exists regarding the level and determination system of charges.

**D. Restricting factors of operating activities**

There are few official restricting factors on businesses after they are permitted to enter the market. The case in which the workload of private corporation inspectors was limited to 50% of that of public corporation inspectors during the early stages of the electricity safety inspection business may be referenced, but that limit was later retracted.

Instead of official restricting factors, there are unofficial and unobtrusive factors that prevent the private sector from competing on equal grounds with public institutions. This is the result of government ownership of public institutions. Specifically, public institutions help the government with the establishment and enforcement of policies regarding the relevant business and market, and inevitably have influence due to their technological specialty and labor force. In addition, although the local government has regulation and guidance rights regarding private corporations in certain inspection and verification markets, the public institutions support them with manpower and professionalism.

Because public institutions carry out profit-making businesses in the public interest, competitive neutrality can be damaged. The exclusive right and access to information that institutions are granted for the public interest can be used by the institution to acquire superiority over profit-making businesses. Public institutions led the market by carrying out profit-making businesses and

relevant public businesses, and identify the fact that they are supporting their competitors, private business operators, as the real factor damaging competitive neutrality.

### E. Characteristics of the competitive neutrality of inspection and verification business

Departing from the discussion of OECD, we can organize the characteristics of competitive neutrality in inspection and verification businesses as below. First, because it has been over 30 years since the inspection and verification business was opened to the private sector, there are not many cases in which private entities are officially limited from entering the market. Consequently, the market share of the private sector is increasing and maintaining a high level in most industries. This growth is the result of the effort of the private sector to open the market and the views of society about the function and role of public institutions. Due to the policy interest in public contribution, cases in which market participation is partially limited exist, although they are few.

Second, although official limiting factors of competitive neutrality have mostly been eliminated, unofficial factors are still left. Specifically, public institutions can use rights that were bestowed upon them to reach public contributing goals for profit-making businesses instead.

Third, not only the private sector, but also public institutions must compete in environments that are not neutral. Public institutions carry out profit-making businesses and public interest businesses at the same time, and there are many cases in which the competitor, the private sector, is the beneficiary of the public interest work.

## 4 Balance preservation measures

### A. Significance of analysis

Because the income of public institutions is the burden of the citizens, it cannot be set high, and therefore becomes a deficit factor in the institution's financial balance. On the other hand, because the state eventually bears the cost of public institutions, there is not much incentive for them to reduce costs. For this reason, there is a need for stricter accounting management for inspection and verification institutions, as a balance preservation measure. We must examine the budget support method of inspection and verification institutions that are considered balance preservation institutes and, through this, understand the core issues.

### B. Result of analysis

#### 1) Corporate income (consignment income) trends

If we look at the annual corporate income of each institution, due to the income increase of national research businesses, the corporation income of the Korea Testing Laboratory increased every year by an average of 10%, while the other institutions (i.e., Korean Transportation Safety Authority and Korea

〈Table V-5〉 **Present condition of institution's corporate income by year**

(Unit of measurement: million won, %)

| | 2011 | 2012 | 2013 | 2014 | 2015 | Rate of increase |
|---|---|---|---|---|---|---|
| Korean Transportation Safety Authority | 278,707 | 235,032 | 270,639 | 235,784 | 212,091 | −7% |
| Korea Ship Safety Technology Authority | 12,187 | 11,676 | 11,735 | 12,463 | 12,357 | 0.3% |
| Korea Infrastructure Safety and Technology Corporation | 27,105 | 21,371 | 32,351 | 25,600 | 25,687 | −1.3% |
| Korea Testing Laboratory | 88,409 | 97,540 | 111,176 | 127,408 | 133,644 | 10.9% |
| Korea Gas Safety Corporation | 79,735 | 85,942 | 90,190 | 95,050 | 89,478 | 2.9% |

Source: Quarterly report published by each institution. Date of search: 6/5/2015. (Source: Public institution ALIO system).

Infrastructure Safety and Technology Corporation) showed no change or decreased. The Korea Testing Laboratory is the only institution showing a 10% increase in corporate income every year. This shows that an institution that has to form its budget using the balance preservation method adjusts the accumulation of corporate income during the forming process and connects it to the decrease of government net support funding.

**2) Structure of expenditure**

As a result of analyzing the labor costs of institutions, all five institutions increased every year. Among the institutions, the Korea Testing Laboratory showed the highest increase (i.e., 10% every year), and the Korean Transportation Safety Authority showed an increase of 5% every year. Among the institutions, the Korean Transportation Safety Authority had the highest labor cost (86,395 one million won) and the Korea Ship Safety Technology Authority had the lowest labor cost (18,855 million won).

Regarding the operating expense status of institutions, the Korean Transportation Safety Authority and Korea Infrastructure Safety and Technology Corporation had the highest increasing rate (11%). In addition, the operating expense of these two institutions was the highest. Note that the operating expenses

〈Table V-6〉 **Present conditions of institutions' labor cost by year**

(Unit of measurement: million won, %)

| | 2011 | 2012 | 2013 | 2014 | 2015 | Rate of increase |
|---|---|---|---|---|---|---|
| Korean Transportation Safety Authority | 69,972 | 75,677 | 80,414 | 86,134 | 86,395 | 5% |
| Korea Ship Safety Technology Authority | 15,900 | 16,678 | 17,518 | 17,085 | 18,855 | 4.4% |
| Korea Infrastructure Safety and Technology Corporation | 13,500 | 15,011 | 15,467 | 19,196 | 20,493 | 11% |
| Korea Testing Laboratory | 29,416 | 32,173 | 31,824 | 34,491 | 43,002 | 10.0% |
| Korea Gas Safety Corporation | 54,142 | 61,826 | 62,878 | 71,127 | 72,260 | 7.5% |

Source: Quarterly report published by each institution. Date of search: 6/5/2015. (Source: Public institution ALIO system).

〈Table V-7〉 **Present conditions of institutions' operating expense by year**

(Unit of measurement: million won, %)

| | 2011 | 2012 | 2013 | 2014 | 2015 | 증가율 |
|---|---|---|---|---|---|---|
| Korean Transportation Safety Authority | 16,731 | 20,415 | 25,436 | 26,480 | 24,972 | 11% |
| Korea Ship Safety Technology Authority | 4,072 | 3,813 | 4,168 | 4,016 | 989 | −29.8% |
| Korea Infrastructure Safety and Technology Corporation | 13,500 | 15,011 | 15,467 | 19,196 | 20,493 | 11% |
| Korea Testing Laboratory | 1,703 | 1,742 | 1,819 | 1,677 | 1,905 | 2.8% |
| Korea Gas Safety Corporation | 9,374 | 10,395 | 11,228 | 13,570 | 6,968 | −7.1% |

Source: Quarterly report announced by each institution. Date of search: 6/5/2015. (Source: Public institution ALIO system).

of the Korea Ship Safety Technology Authority and Korea Gas Safety Corporation rose from 2011 to 2014, but decreased substantially in the 2015 budget.

Because an institution's representative expenditures, such as labor costs and operating expenses, are preserved in the budget through balance preservation processes, the structural problem of a decreasing incentive for reduction of costs is raised.

### 3) Proportion of government net support funds compared to total income

If the annual government net support fund of institutions is compared, all institutions except the Korea Testing Laboratory increased every year, and the Korea Ship Safety Technology Authority had an increasing rate of 8% per year. In the case of the Korea Testing Laboratory, government net support funds decreased considerably from 1,959 million won in 2014 to 950 million won in 2015.

Next, the supporting format and budget allocation of an institution's government net support fund is as shown below. As for the supporting forms, all institutions except the Korea Ship Safety Technology Authority are being supported in the form of donation. The Korea Ship Safety Technology Authority is using subsidies for labor costs. Other institutions are using donations for business costs and diverse criteria.

〈Table V-8〉 **Present conditions of institutions' government net support fund by year**

(Unit of measurement: million won, %)

| Institution (proportion out of total income) | 2011 | 2012 | 2013 | 2014 | 2015 | Rate of increase |
|---|---|---|---|---|---|---|
| Korean Transportation Safety Authority | 60,630 (16.2) | 60,841 (18.4) | 64,813 (17.7) | 58,448 (17.4) | 58,404 (20.1) | –0.9% |
| Korea Ship Safety Technology Authority | 9,888 (44.3) | 10,263 (46.2) | 10,562 (46.8) | 11,004 (46.5) | 13,337 (51.6) | 7.8% |
| Korea Infrastructure Safety and Technology Corporation | 8,833 (23.5) | 9,259 (22.8) | 9,764 (21.2) | 10,134 (15.5) | 10,303 (19.3) | 3.9% |
| Korea Testing Laboratory | 9,392 (9.4%) | 6,269 (5.9%) | 4,796 (4.0%) | 1,959 (1.96%) | 950 (0.64%) | –43.6% |
| Korea Gas Safety Corporation | 40,082 (33%) | 28,612 (24%) | 35,115 (21.5%) | 43,789 (30.9%) | 48,128 (34.5%) | 4.7% |

Source: Quarterly report announced by each institution. Date of search: 6/5/2015. (Source: Public institution ALIO system).

〈Table V-9〉 **Present conditions of institutions' budget formation of government net support fund by year**

| Institution | Supporting form | Budget allocation |
|---|---|---|
| Korean Transportation Safety Authority | Contribution | Korean Transportation Safety Authority contribution project, car pressure container reexamination installation equipment construction project, automobile safety inspection facility equipment construction project, dispersed and spent by 13 enterprises |
| Korea Ship Safety Technology Authority | Subsidy | Labor cost |
| Korea Infrastructure Safety and Technology Corporation | Contribution | Contribution1) |
| Korea Testing Laboratory | Contribution | Payroll costs, research expenses, Project cost, Infrastructur construction expenses, operating cost, moving cost |
| Korea Gas Safety Corporation | Contribution | Contribution and investment |

Note: Details of donation are unknown because the institutions did not provide it.

Source: Accounting audit report of each institution (2011–2015). Date of search: 6/5/2015. (Source: Public institution ALIO system, as announced by each institution).

### 4) Scale of voluntary reserve

In an analysis of the earned surplus and voluntary reserve status of each institution,[16] from 2010 to 2014, the maximum was an increasing rate of 23% every year, and the minimum was a constant increase of 1%. In addition, although the Korea Ship Safety Technology Authority had no regulations, it has been called on to save reserve funds for securing government office buildings, with its finances used to establish new office buildings.[17] One can avoid budget returns or use them for some purpose other than the original motive through saving in voluntary reserves.

〈Table V-10〉 **Present conditions of institutions' earned surplus and voluntary reserve by year**

(Unit of measurement: million won, %)

| | End of 2010 | End of 2011 | End of 2012 | End of 2013 | End of 2014 | Rate of increase |
|---|---|---|---|---|---|---|
| Korean Transportation Safety Authority | 217,603,385 | 222,891,906 | 229,149,030 | 235,110,746 | 226,508,579 | 1.0% |
| – voluntary reserve | 208,529,715 | 216,103,384 | 222,681,906 | 224,736,594 | 228,145,551 | 2.3% |
| Korea Ship Safety Technology Authority | 4,467,018 | 6,913,887 | 13,969,467 | 7,789,901 | 8,485,363 | 17.4% |
| – voluntary reserve | – | 1,000,000 | 1,557,680 | 5,833,924 | 6,080,868 | 82.5% |
| Korea Infrastructure Safety and Technology Corporation | 6,932,677 | 9,334,282 | 11,082,899 | 13,063,123 | 13,473,445 | 18.1% |
| – voluntary reserve | 4,460,167 | 5,450,167 | 9,334,282 | 10,709,281 | 11,834,282 | 27.6% |
| Korea Testing Laboratory | 59,610,979 | 67,927,808 | 11,082,899 | 85,875,388 | 91,248,382 | 11.2% |
| – voluntary reserve | 1,947,189 | 1,543,090 | 1,734,853 | 1,777,256 | 1,499,016 | –6.3% |
| Korea Gas Safety Corporation | (7,001,668) | (12,527,024) | (16,930,139) | 13,894,653 | 16,186,047 | 23.3% |

Source: Accounting audit report of each institution (2011–2015). Date of search: 6/5/2015. (Source: Public institution ALIO system, as announced by each institution).

16) Because the Korea Gas Safety Corporation had a net deficit, it could not save reserves.

17) National Assembly Budget Office, 2013, p. 50.

# VI

# Analysis of the effects of introducing competition systems into inspection and verification institutions

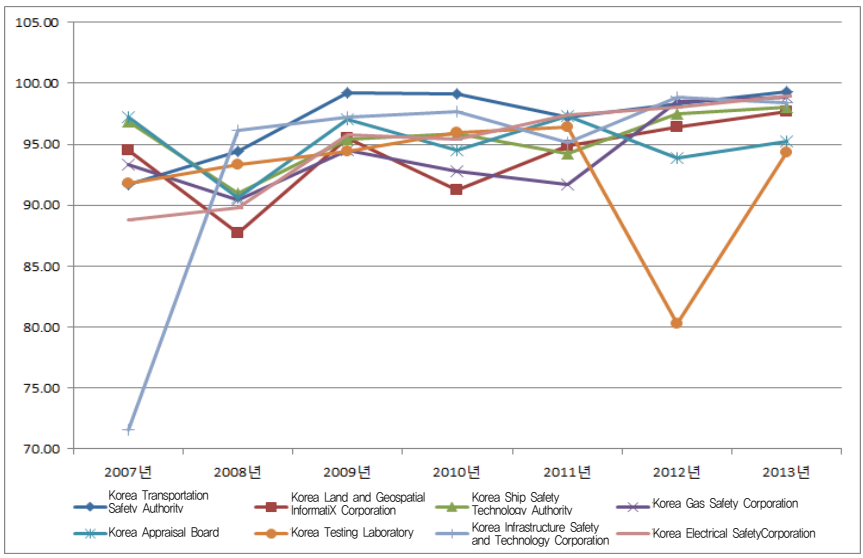
## 1 Performance changes of public institutions after introduction of competition

### A. Analysis of management result assessments

To measure the performance of public institutions after the introduction of competition, measurement indexes that are used for management assessment have been analyzed. The subjects of analysis are the measurement indexes of the 2007–2013 management assessments of inspection and verification institutions. After analyzing the goal for each index and measurement index formula, they have been divided into safety (publicness) and profitability (efficiency) indexes. Based on this division, cross-sectional analysis between institutions and time-series analysis within institutions have been conducted. With the primary functions of inspection and verification institutions as the standard, they have been further classified into inspection, verification institutions regarding safety and inspection, and verification institutions regarding property rights. The Korea Infrastructure Safety and Technology Corporation, Korea Gas Safety Corporation, Korea Electrical Safety Corporation, Korea Ship Safety Technology Authority, and Korean Transportation Safety Authority are included in inspection and verification institutions regarding safety. The Korea Land and Geospatial InformatiX Corporation, Korea Testing Laboratory, and Korea

Appraisal Board are included in inspection and verification organizations regarding property rights. The average score (goal average) of safety related indexes for all inspection and verification institutions have been analyzed. The relative score of each index relating to the average score can be calculated by dividing each index by the weighted value of the measurement index goal percentage. Because the number of safety related indexes differs by institution and year, the influence of each index score on the goal average could be different, and deviations of the annual goal average of each institution are considerable.

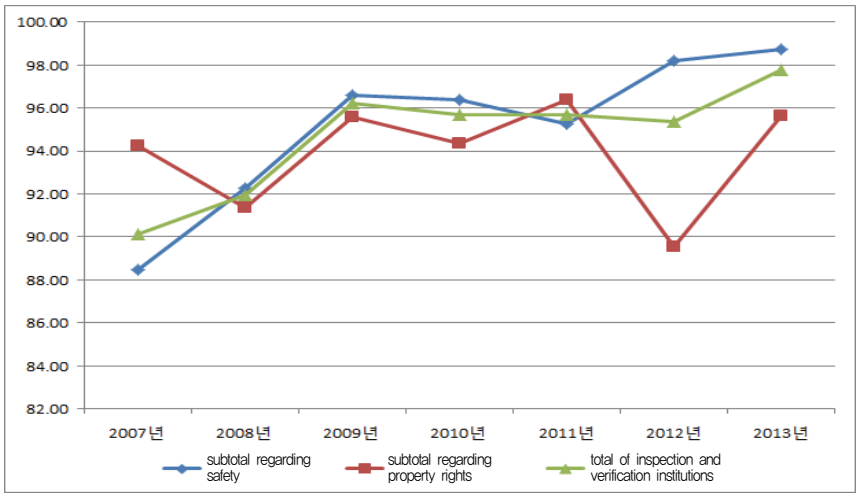
[Figure VI-1] **Trends in average index score of inspection and verification institution safety (publicness)**




Source: Compilation of 2007-2013 management performance evaluation reports, organized by the authors.

While the average score of the safety index of inspection and verification institutions regarding safety is on the rise, the average score of inspection and verification institutions regarding property rights fluctuates each year. This indicates that inspection and verification institutions are reinforcing the management of safety related performance measurement indexes.

[Figure VI-2] **Trends in average scores of safety (publicness) index in inspection and verification institutions regarding safety or property rights**

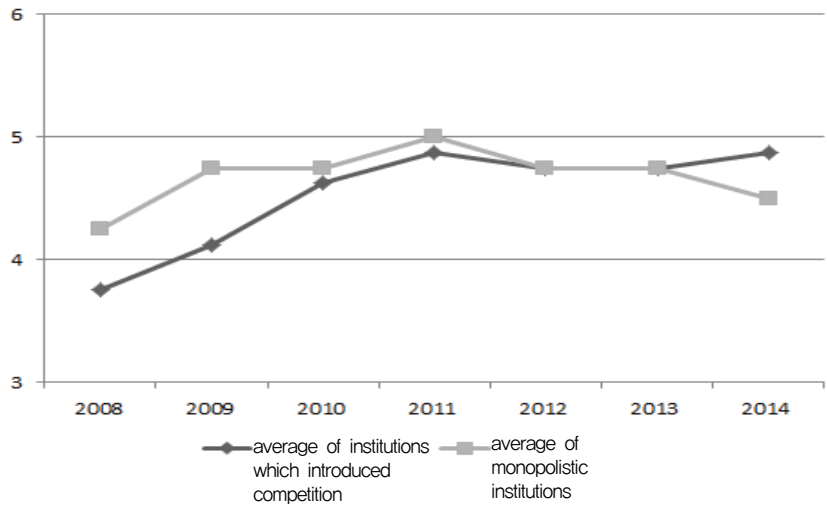



Source: Compilation of 2007-2013 management performance evaluation reports, organized by the authors.

### B. Analysis of customer satisfaction results

The customer satisfaction of public inspection and verification institutions that introduced competition has been steadily rising since 2008. On the other hand, until 2011, monopolistic enterprises showed better performance than institutions that introduced competition; subs, but their performance then dropped, and is showing a level of 0.375 points lower than the average of competitive institutions in 2014. The proportion of institutions which received the highest score (5 points) is 87.5% for institutions which introduced competition, which is higher than the 50% score of monopolistic enterprises. While monopolistic enterprises hit their highest point in 2011 and are dropping, institutions that introduced competition are maintaining a steady level.

[Figure VI-3] **Change in customer satisfaction of adopted competition or monopolistic inspection and verification public institutions**




Source: Organized by the authors, referring to the Public institution ALIO system. Date of search: 6/5/2015.

### C. Conclusion

An examination of the performance of public institutions after introducing competition revealed that there are positive effects in the aspects of safety and service quality (customer satisfaction). The trends of strengthening safety are particularly positive. Because competition between private business operators usually leads to price competition, though, it is probable that safety will become worse. On the contrary, because public institutions do not have autonomy to set charges, they have no choice but to raise their inspection quality to compete with private business operators.

Service quality as measured by customer satisfaction is showing a gradual increase, and an important factor for such phenomenon is competition with some private sectors. This was verified through interviews with public institutions. Unlike in the past, the Land and Geospatial InformatiX Corporation is complying with the determined time limit for offering cadastral service, is not processing

in clusters after considering the profitability of measuring requests of highlands and islands, and is reacting immediately.

## 2 Change in market's performance after introducing competition

### A. Assessment of the performance of safety management

#### 1) Automobile inspection

In the assessment of the performance of safety management in the field of automobile inspection, one problem is the low inspection quality of private business operators. Through surveys of actual conditions by competent ministry and local governments, cases of insufficient inspection in the private sector have been repeatedly exposed. In addition, the low inspection unsuitability rate of private business operators compared to that of the Korea Transportation Safety Authority is often problematic.

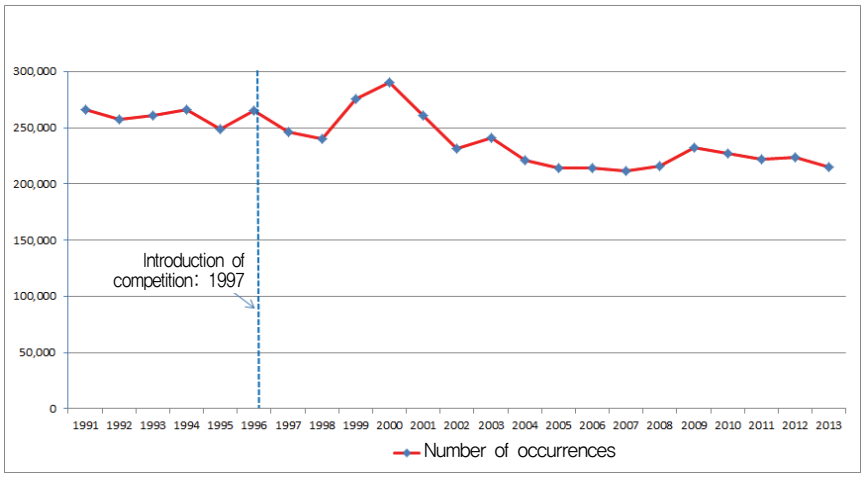
Suspicion about the inspection quality of private business operators is also shown in the non-compliance rate comparison with the Korea Transportation Safety Authority. According to the Korea Transportation Safety Authority, the 2014 unsuitability rate of public corporations was 19.4%, higher than the 12.1% of private business operators. Regarding this difference, private business operators claim that they take measures in advance to address inappropriate items of inspection through pre-checks. However, pre-checks are illegal in public corporations, and, according to the information system operated by public corporations called VIMS, there are almost no cases in which pre-checks are performed. The low-quality inspection unsuitability rate of private designated maintenance businesses was identified as a problem in the parliamentary inspection of the administration, and a solution is being sought.[18)]

If the trends of road traffic accidents are examined to check the relation between problematic cases regarding safety management and accident

18) Land Infrastructure and Transport Committee of the National Assembly of Korea, 2014, p. 48.

occurrence, we can examine the tendency of gradual decrease. Comparing before and after 1997, which is when the competition system was introduced to the automobile inspection business, the number of accidents has slightly decreased overall.

[Figure VI-4] **Road traffic accident trends**




Source: Written by author referring to the Disaster Almanac.

### 2) Facility safety inspection

According to the Korea Infrastructure Safety & Technology Corporation, after introducing a competition system with the private sector, low-price booking because of dumping or excessive competition from the enforcement of lowest bidding has increased the number of insufficient inspections and diagnoses.[19] Because inspection and diagnosis with optimal manpower inputs and regulations is impossible, at times, in the presence of low price bidding, it is inevitable that insufficient inspection and diagnosis will occur. At the 2014 parliamentary

19) Korea Infrastructure Safety and Technology Corporation inside data. (Submitted: 5/2015).

inspection of the administration, reinforcement of the management of poor private inspection businesses was requested, as was an effort to identify measures to solve the problem of inspection becoming worthless due to low-price bidding.[20] The inappropriateness rate (proportion of inappropriate inspections out of the total) has been gradually decreasing in the past five years.

〈Table VI-1〉 **Corporation's Safety Test Evaluation Results in the Private Sector**

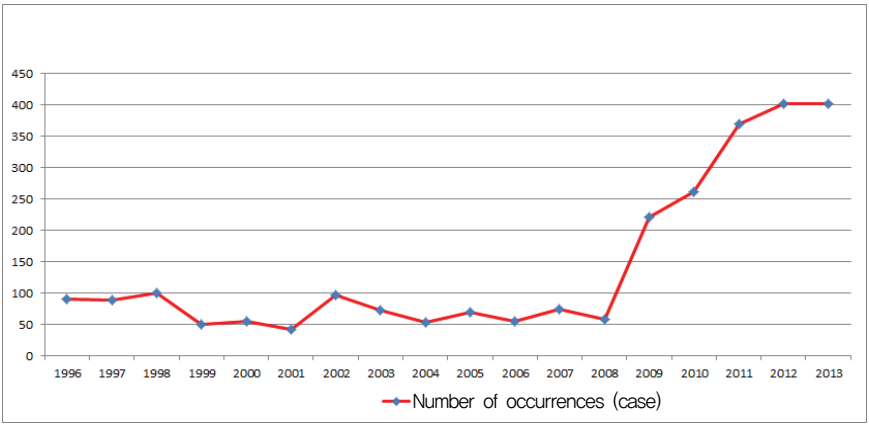
| Category | | Number registered (A) | Cases Evaluated | | | | Rate of Disqualification (C/B) |
|---|---|---|---|---|---|---|---|
| | | | Evaluation (B) | Qualified | Disqualified (C) | | |
| | | | | | Rectified | Poor | |
| Through Safety Diagnosis | Total | 4,503 | 2,256 | 2,090 | 149 | 17 | 7.4 |
| | 2010 | 794 | 313 | 262 | 48 | 3 | 16.3 |
| | 2011 | 843 | 427 | 385 | 38 | 4 | 9.8 |
| | 2012 | 676 | 393 | 366 | 20 | 7 | 6.9 |
| | 2013 | 852 | 542 | 522 | 19 | 1 | 3.7 |
| | 2014 | 1,338 | 581 | 555 | 24 | 2 | 4.5 |

Source: Korea Infrastructure Safety and Technology Corporation Inside Data. (Submitted: 5/2015).

The Disaster Almanac defines collapse accidents as "accidents where loss of life and property occurred due to collapse of various structures (e.g., buildings, bridges, pedestrian overpasses, and so forth) and factories, which were caused by construction defects (e.g., decrepit, weakened foundations; careless maintenance; improper safety actions; and so forth)."[21] Based on the trends from 1996 to 2008, there was a minor decrease or, more strictly, maintenance. It seems that no negative effect is resulting from the participation of the private sector. The skyrocketing value since 2008 is a remarkable change. This resulted from a revision of the Special Law about Structure Safety Maintenance in September 2008, which gave managers of facilities the obligation to report collapse accidents over a certain scale. The fluctuation has stabilized.

20) Land Infrastructure and Transport Committee of the National Assembly of Korea, 2015, pp. 266–267.
21) Ministry of Public Safety and Security, 2013, p. 14.

[Figure VI-5] **Collapse accident trends**




Source: Created referring to the Disaster Almanac (2000-2013).

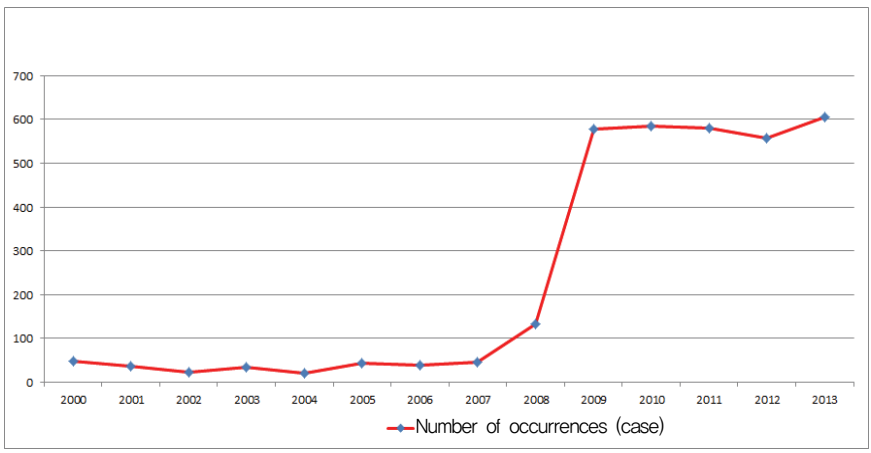
### 3) Electrical safety management

In electrical safety management agency businesses, security problems caused by excessive competition in the civil sector are becoming more apparent. Since the opening of the market, there have been numerous cases in which electrical safety management became poor, through incidents such as the execution of only those tasks corresponding to low charges through expedient contracts, due to overheated competition. In the 2014 parliamentary inspection of the administration, it was noted that management service quality is degrading due to private agents' dumping, and it was requested that a system be established that can manage and supervise civil safety managers.[22] As private enterprises that stress business profitability, such corporations avoid conducting safety management in unprofitable regions like remote mountain areas or distant islands, and such areas become blind spots where safety management problems can occur. Because the ultimate goal of electrical safety management is to prevent disasters

22) Trade, Industry and Energy Committee, 2014, p. 115.

caused by electricity, electrocution accidents can be regarded as one indicator of its success. Examining the trend since 2000 in available statistics, the electrocution accident level remained consistent until 2007. The number suddenly increased in 2008 and 2009, and then re-stabilized; this is because of the revision of the Electricity Enterprises Act, which requires the reporting of electric accidents; those that were not previously reported could now be identified.

[Figure VI-6] **Electric shock accident trends**




Data: Created referring to the Disaster Almanac (2000-2013).

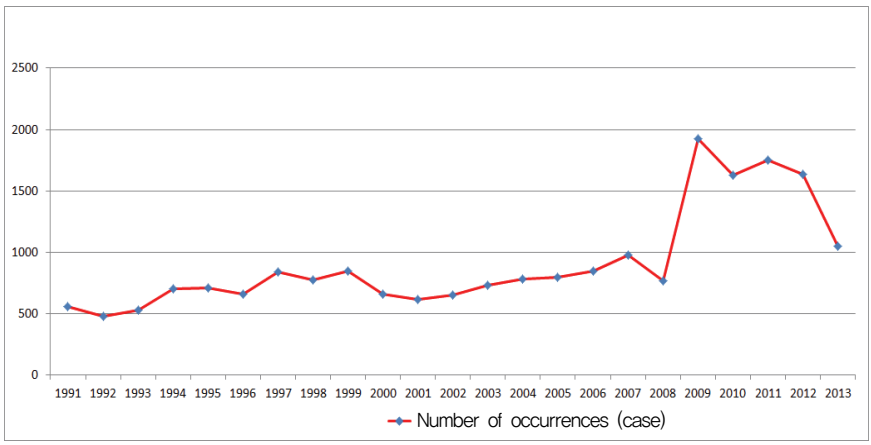
#### 4) Ship inspection and related business

The responsibility of private follow-up services is inferior compared to that of public corporations, due to the sustainability of supervisor agents in the field of construction inspection businesses, where the Korea Ship Safety Technology Authority competes with private corporations. Although there is neither any empirical evidence about the supervising quality of private and public nor that about follow-up service responsibility, it is believed that there could be safety problems in the performance of private-owned businesses.

The private associations are working only in regions that are profitable in the field of safety inspection of water leisure equipment, fishing areas, and fishing boats, so those regions with low inspection rates remain private blind spots.

Examining the marine accident trends from 1996 to 2008, the number of outbreaks can be summarized as maintaining or slightly increasing. Though decreasing by a small margin after skyrocketing in 2009, the trend still shows a higher frequency compared to cases before 2008.

[Figure VI-7] **Marine accident trends**



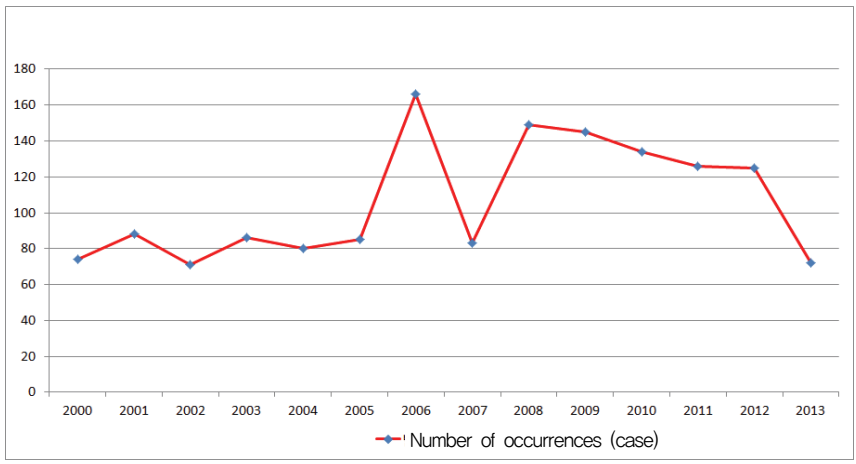

Source: Created referring to the Disaster Almanac (2000-2013).

### 5) Gas safety management

The number of gas accidents has fluctuated greatly since 2005. Considering this fact, it is difficult to conclude that negligent gas accidents have retained predictable safety after the adoption of competition.

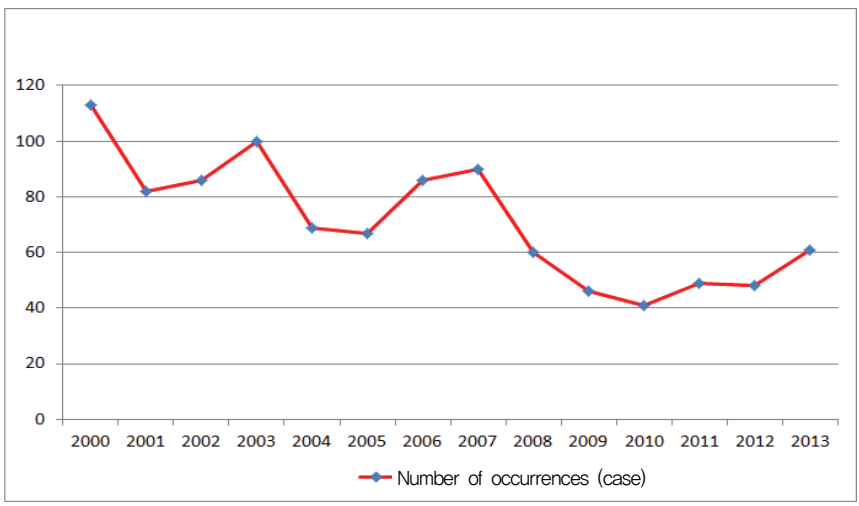
Unlike the trend for gas accidents, the trend for explosion accidents is showing a reduction in the long term, despite some short-term fluctuations.

[Figure VI-8] **Gas accidents status**




Source: Created referring to the Disaster Almanac (2000-2013).

[Figure VI-9] **Explosion accidents status**




Source: Created referring to the Disaster Almanac (2000-2013).

## B. Quality evaluation of services

### 1) Cadastral survey

The features of the cadastration enterprises that focus on profitability can be identified by the current conditions for registered enterprises by region; 148 of the registered enterprises (i.e., 93.7% of them) are crowded into highly marketable city areas and urban-rural complex cities, creating problems for less marketable regions like farming and fishing villages, remote areas, and remote islands that cannot benefit from universal services.

〈Table VI-2〉 **Distribution status of public corporation offices and private enterprises by regional features (2014)**

| Section | Number of corporation offices | Proportion (%) | Number of enterprises | Proportion (%) |
|---|---|---|---|---|
| City | 40 | 22.7 | 83 | 52.5 |
| Urban–rural complex | 61 | 34.7 | 65 | 41.2 |
| Country | 73 | 41.5 | 10 | 6.3 |
| Island | 2 | 11.4 | 0 | 0 |
| Total | 176 | 100 | 158 | 100 |

Source: Korea Land and Geospatial InformatiX Corporation Inside Data. (Submission: 5/2015).

The activation of the industry was promoted by adoption of the competitive system, in the belief that it would boost private enterprises' competence and increase the number of new enterprises; in 2014, though, the top 25 enterprises among 158 claimed 66.7% (i.e., 21.8 billion won) of the total orders in the open market, causing the harmful effects of oligopoly.

〈Table VI-3〉 **Cadastral survey business order value distribution (2014)**

(Unit of measurement: million won, %)

| Order value | Top 5 | | Top 6-10 | | Top 11-25 | | Registered enterprise |
|---|---|---|---|---|---|---|---|
| | Sum | Proportion | Sum | Proportion | Sum | Proportion | |
| 35,162 | 8,747 | 24.9 | 5,671 | 16.1 | 8,428 | 24.0 | 158 |

Source: Korea Land and Geospatial InformatiX Corporation Inside Data. (Submission: 5/2015).

### 2) Real estate appraisal

The adoption of competition by the appraisal and evaluation sector was expected to bring the benefits of the general competitive market, such as increased efficiency, improved service standards, and reduced prices. Enterprises have tried to improve appraisal service quality (e.g., by specifying the calculation basis for price setting and the specification and diversification of evaluation standards and techniques).

Assigning evaluation to the private sector, however, which has little incentive to pursue public benefits, gives rise to the problem of reliability. The issue of appraiser corruption was identified in 2008 inspections of government offices, and the Anti-Corruption and Civil Rights Commission has made suggestions to improve the system with improved transparency of evaluation. In 2010, the Board of Audit and Inspection examined the entire assessment regarding poor compensation evaluations.

In addition, there are concerns with the Korea Association of Property Appraisers, which is a private business association performing public tasks like appraisal validity investigations; the effectiveness of the verification function might be diminished. In the private market, the appraisal business operator recommendation system adopted by landowners to reflect the preference of customers will likely cause excessive rewards, because landowners could choose appraisers that will support their interests formed through prior investigations or connections.

### C. Conclusion

First, private business owners tend to focus on profitable inspection objects, and this generates geographic blind spots in safety management. Remote areas like highlands and distant islands are currently served by public institutions. Although the share of the Korea Electrical Safety Corporation in electric safety management agency business is only 4.9%, the fact that it is in charge of 65% of business in remote areas demonstrates this problem.

Second, one of the reasons why competition between private companies does not necessarily lead to improvement in safety management ability or consumer benefits is the emergence of oligopolies among private enterprises in some businesses. The extent of private business oligopoly is quite low in cases where the number of inspection objects is large and the regional distribution is relatively even, but fields like facility safety and cadastral survey experience intensified problems of oligopoly when the market is small and the regional distribution is disproportionate.

Third, private enterprises in the inspection and verification market are too small compared to the public institutions, and this tends to weaken the accountability of private businesses after inspection. Business closures due to small scale occasionally occur, and it can be difficult to hold failed businesses accountable for accidents caused by their poor inspections. In the shipping appraisal business, there are reported cases in which an inspection team was temporarily organized and then disbanded after the inspection.

# VII

# Policy Implications

## 1 Role redefinition of market and government

### A. Assigning order managing functions to the market

The most significant goal of determining the form of public and private market participation is to secure the self-purification capacity of the market. In other words, order has to be established so that the private sector can perform its function properly. Taking into account the accomplishments of public institutions after opening the market, it is reasonable to consider setting a market in order by sustaining or encouraging direct participation. However, it is difficult to ensure that the accomplishments of public institutions will be maintained under those conditions. As a practical matter, considering facility investment and the occupational stability of workers in markets where private businesses have entered and settled, reversing the market opening would be enormously difficult. A more realistic approach would be to have public institutions transfer direct inspection businesses to the private sector, and then grant the public institutions supervisory functions.

### B. Strengthening the role of leading the market

The public institutions must possess market leading functions. The first function is to manage qualified businesspeople. Through this function, public institutions block unqualified businesses from flooding the market. This prevents

the choice error resulting from consumers' information imbalance. Second, the educational function to provide the latest technology needs to be enhanced. This will improve the ability of private business people who inspect and verify. Third, boosting technological development as an extension of the educational function could be extremely significant for market growth. Even though the market pursues financial interests, developing new technology and standards must be the role of the public.

**C. Toughening penalties for poor inspection**

Obeying the relevant regulations that secure safety is extremely important. However, the results of the Ministry of Land, Infrastructure, and Transport reports show that private enterprises that seek profit are motivated to cut down the time and cost of inspection, and these cutbacks occasionally lead to insufficient inspections. To secure safety, there is a need to consider the immediate expulsion of an appraiser who causes at least one problem, as a stronger enforcement measure.

## 2 Strengthening the management system for inducing performance of the public function

As stated previously, inspection and verification institutions need to concentrate on the business of the public interest, such as supervision, the judging function, and the market leading function, instead of performing as a player in fields already controlled by private enterprises. Management policy must allow these institutions to focus on public functions. The importance of the public benefit index, instead of profitability, needs to be high enough in management evaluation that public institutions can focus on performing public duties without considering the burden of profitability.

## 3 Enhancing competition neutrality

Despite the opening of markets to private enterprises, some factors restrict such enterprises' fair market participation. As shown above, official restrictive factors such as fee charging and competition disturbing factors after entrance seem to be insignificant. However, there are informal benefits that public institutions receive as agents of the government. For example, they have exclusive information about relevant businesses, and can use this information in competition with private enterprises. Using this advantage, the public institution holds a dominant position in public relations and marketing. If utilizing information obtained from performing public tasks, not from competitive business, is necessary to improve safety, then the public institution should use that information; it should reject, however, uses of information that damage competition neutrality, and make such information public when legally permissible, so that private enterprises can use it, too.

## 4 Reconstruction of the management system as a balance preservation institute[23]

### A. Strict budget and settlement management and preparation of complementary regulations for donation-allotted institutions

The government is supports four out of five institutions, as mentioned previously, with a form of donations. In the case of donations, people do not adjust their accounts afterward, unlike in the case of subsidies, and instead of having the balance after adjustment forwarded, it is reflected in the next year's self-revenue. The institutions with excessive surpluses each year might see such results by reducing expenses, but there is reason to ask whether their government budgets have been fabricated, because they are tempted to maximize their budgets

23) This is relevant to measures for securing overall competition neutrality.

as quasi-government agencies. Accordingly, there should be regulations that strictly control budget and settlement, to prevent excessive budget formation being used for other purposes, and requiring funds to be returned when necessary.

**B. Selection standards created for balance preservation institutes**

There are no stipulated regulations about selection standards for balance preservation institutes, and it is difficult to find consistent common factors in the institutions themselves. The government should prepare a selection standard so it can determine which institutions should be added or excluded annually; by continuously monitoring the selected institutions, it must seek measures that efficiently support the institutions with budgets suitable for their characteristics.

**C. Seeking ways to prevent arbitrary reservation of settled account surplus**

To prevent each institution's settled account surplus from being reserved arbitrarily without any specific purpose, without being reflected in the revenue of the next year, the existence of an institution's settled account surplus management regulations needs to be confirmed, and proper measures must ensure that the reservation amount is proper and essential.

# VIII

# Conclusion

A public institution is founded to perform certain functions in the process of national economic development. Therefore, it is necessary to establish new statuses and create new functions as the national economy develops. In this context, examining the changing trend of public institutions that inspect and verify to determine the future direction, is a very meaningful task, which defines the role of public institutions in the national economy.

The inspection and verification function that began with the emergence of the market economy in the 1960s was at first performed by the market, but was transferred to public institutions in the 1970s and 1980s. Subsequently, it has been either assigned to private enterprises or taken the form of competition between private and public institutions since the 1990s. Now it is time to determine whether it should be transferred to public institutions for the encouragement of public benefits, or whether it should be further assigned to private businesses.

This research has analyzed the market structure of eight inspection and verification institutions where the competition system was adopted, and the accomplishments of the public institutions within it. It is most important that the system guarantees peoples' safety. If the inspection and verification functions are assigned to private institutions, their tendency to pursue profitability might decrease the inspection and verification quality, threatening safety. Meanwhile, there is concern that the monopoly of public institutions will lead to bureaupathology.

Several implications were deducted through this analysis. First, it is

difficult to conclude that safety is well managed currently when private institutions enter the market. As shown in several analyses, the number of negligent accidents is uncomfortably high. It is essential to complement the market function and manage it. Second, the effort to secure public oversight to guarantee safety is needed. For this, the public institutions must manage regulations, develop technologies through the R&D function, and enhance the instructing function toward private companies instead of competing with them; a redefinition of the public institution's role is needed.

Third, the public institution should not settle for a monopolistic status. An effort to alleviate excessive competition-restricting and confining factors for private institutions, as compared to public institutions, needs to be adopted based on the concept of competition neutrality. Fourth, in the same context, the balance preservation institute function assigned to the public institution should not be a contrivance that guarantees its exclusive right. Fifth, there should be factors that secure public benefits more in the case of public institutions. To achieve this objective, such public interest factors need to be reinforced in public institution management evaluations.

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## Abstract

# An Analysis on the Effects of Transition from Monopolistic to Competitive market for the Functional Re-establishment of Inspection Public Institutions

Wonhee Lee · Sejeong Ha

In the beginning of the industrialization in the late 1960s in Korea, the government established public institutions or SOEs to let them carry out the functions of the markets before the markets were formed and functioned as normal. The 'inspection-type' institutions also came into existence in the same context. In the 1980s and 1990s, as the number of objects of the inspections had increased substantially along with the economic development and at the same time the potential private sectors had grown by themselves, the inspection and verification markets opened also to the private sectors and the competition between the public institutions and private firms has been established. It has been an important research question whether the safety-inspection capability is obtained well at the national level, whether the inspection markets need to be open more to private participants and how the functions of the public institutions should be established in the market.

This study examines the performances of the 8 inspection-type public institutions and the related markets and suggests policy recommendations. The performances of the markets are measured by looking at the related safety-accidents and also qualitatively examined through the FGI with the related public institutions and private associations. A change in the performances of the institutions due to the introduction is expected to be reflected in the Management Performance Evaluation and the Customer Satisfaction results.

It is hard to make any conclusions from the trends in the various safety-accidents. However, it was found from the FGI that the participation of private firms in the market resulted in the excessive price competition among themselves and, therefore, a fall in the quality of inspection services. Furthermore, the private participants seldom covered geographical and business areas of little profits. In contrast, the public institutions which were exposed to the competition with the private counterparts showed a better performance over time.

Though the public institutions showed a good performance while their private counterparts not, the monopolization of the markets by the public institutions is not a realistic policy option. It is first because the inspection markets are too big to be covered by the institutions only and because the private participants have made substantial investments in

terms of physical and human capitals. It is rather necessary to endow the institutions with a function of monitoring and refereeing.

From the analysis as above, specific policy recommendations are suggested as follows. Firstly, the public institutions should focus on the functions of monitoring and refereeing rather that of a players, such as R&D, education against private firms in the related market, monitoring of the quality of the inspections performed by private firms, etc. Secondly, the Management Performance Evaluation should be operated in a way to make the institutions concentrate on the monitoring and refereeing functions. Thirdly, to protect the competitive neutrality in the related markets, the institutions should not take advantage of their superior position or assets. Finally, clearer accounting rules need to be applied to the institutions of which expenditures that exceed the revenues are paid by the government.