

Policy Recommendations on the Sustainable Debt Management of Public Institutions in Korea

December 2014

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I

Introduction

1 Background

Korean society began paying close attention to the debts of public institutions following controversy over the financing of large-scale governmental projects. At the time, public institutions assigned to carry out a governmental project were ordered to shoulder part of the costs, which raised concerns over the agencies' mounting debt burden and deteriorating financial stability. From 2008 to 2013, the total debt of public institutions had already increased by about 80%, which is a high increase compared to the 56% increase in government debt and 41% in household debt over the same period. By the end of 2013, public institutions had a larger debt than the government's in real terms, amounting to 523.2 trillion won, or 8% more than the government's. In addition, some public institutions' operating profits were not high enough to offset the rising interests on the debts, thereby increasing their debt burden. Such a large debt accumulation will have a negative impact on the government's financial health because the government is responsible for any default, as a shareholder of the public institutions, should they fail to repay their debt. The debt problem is therefore highly likely to have adverse effects on the national economy and Korea's credit rating.

Recognizing the seriousness of this situation, the government has been implementing a strong debt reduction plan to enhance the financial stability of public institutions. From early 2014, the government carried out asset sales,

management efficiency practices, and business liquidations with the primary aim of reducing the debt-to-equity ratio of these organizations from 220% to 200% by 2017. However, such measures do not amount to a debt management plan or vision. Absent such a plan, there is still a possibility that the agencies' debts could increase to the point of being out of control. To prevent an uncontrollable debt situation, there needs to be a long-term and fundamental plan for properly managing these agencies' debts.

2 Research objectives and structure

Previous studies on public institutions' debts have all pointed out that the agencies ran up debts while conducting government policy projects. Regulation of utility tariffs, excessively generous welfare policies, and management inefficiency were also cited as the causes of debt. The measures suggested for reducing debt were separating the accounting of government policy projects from that of public institution projects, streamlining the functions public institutions serve, liquidating businesses, reviewing expenses and increasing utility tariffs accordingly, and reviewing and revising welfare policy. This study examines such conclusions of studies on public institutions' debts using a new methodology, and investigates the causes and effects of debt. The study also suggests more specific and effective measures for managing debt.

This study can contribute to the development of a debt management policy for public institutions as follows. First, this study provides a correlation analysis of the causes of debt and their impact. By reviewing whether the causes of debts pointed out in previous studies have statistically significant effects on public institutions, the study seeks to resolve current controversies over the causes by providing and analyzing empirical evidence. Second, the study carries out in-depth analyses of what causes each agency to accumulate its debt. A few public institutions that have run up huge debts and had a considerable impact on the national economy were specifically studied to spotlight the causes of their debts and uncover other causes not captured in quantitative analysis. The agencies in question are also examined to see how effective the current debt-reducing measures are on them.

The study is conducted as follows. Chapter II presents previous studies and several reports to introduce the size, characteristics, and risks of the debts of public institutions. It then discusses current government policy designed to reduce and manage these debts. Chapter III examines data on public institutions in an empirical analysis on the relationships between the causes of debts, the debt increase rate, and the debt ratio, with the aim of suggesting policy implications and alternatives. Chapter IV presents an in-depth analysis on major public institutions' debts to investigate how the causes of debts affect the agencies. Chapter V summarizes the results of this study and makes policy suggestions for the sustainable management of public institutions' debts.

II

Current Debt Status of Public Institutions

1 Current debt status of public institutions

A. Size of debts in public institutions

As of the end of 2013, public institutions in Korea had run up debts of 523.5 trillion won, up 25.2 trillion won from 2012. An increase in assets of some agencies lowered the debt ratio by 3.5% (Ministry of Strategy and Finance, 2014). The debt of public institutions was 108.4% that of the government debt, up from 103.6% in 2012. Such high agency debts are known to have adverse effects on the nation's credit rating (Department of Budget Policy

〈Table II-1〉 Debts of public institutions

(Unit: KRW 1 trillion)

Classification	2009	2010	Year-on -year increase	2011	Year-on -year increase	2012	Year-on -year increase	2013	Year-on -year increase
Public corporations	238.7	292.0	53.3	328.7	36.7	353.2	24.5	374.2	21.0
Quasi-public institutions	90.4	98.0	7.6	122.3	24.3	134.8	12.5	138.5	3.8
Other public institutions	9.4	8.9	-0.5	9.7	0.9	10.1	0.3	10.5	0.5

Source: Ministry of Strategy and Finance (2014)

in National Assembly, 2014a). This debt problem, as pointed out in the parliamentary inspection of the state administration by the National Assembly, was what prompted the government to establish its public institution debt normalization plan.

B. Risks posed by debts of public institutions

<Table II-1> shows the increasing amounts of debts of public institutions from 2009 to 2013. Heavy debts do not necessarily mean a serious risk. It is the debt ratio, the dependence on loans, the interest coverage ratio, the capacity for repaying the principal, and the capacity for paying interests—not the absolute size of debts alone—that indicate whether an agency can manage its debt in the long term.

The most well-known index for determining the severity of a public institution's debt is the debt ratio. It is a ratio of borrowed capital to equity capital, which is based on the assumption that there is a higher risk of an agency's bankruptcy if it has borrowed more capital than its equity capital. The Korean government maintains—albeit without any theoretical or empirical support—that any level of debt with a debt ratio of 200% or more warrants actions for debt control. As of the end of 2013, the average debt ratio of public institutions stood at 220%, while the ratio of Korean Land and Housing Corporation, KORAIL, and Korea Rail Network Authority exceeded 400%.

The dependence on loans is the proportion of loans to total assets. Loans refer to liabilities that incur interest costs, such as short- and long-term borrowings and corporate bonds. The dependence on loans can be also viewed as an index to measure the burden of interest payment because this dependence is focused on interest-incurring loans among various types of debts. Normally, if the dependence on loans of an agency exceeds 30%, it means the agency's finances are in trouble. In one study, the dependence index for 10 public institutions¹⁾ that ran up heavy debts was higher than 30%, averaging 50% (Huh et al., 2013).

1) Korea Land and Housing Corporation, KEPCO, KOGAS, KNOC, Korea Expressway Corporation, Korea Rail Network Authority, KORAIL, K-water, Korea Resources Corporation and Korea Coal Corporation

The capacity for repaying the principal is evaluated by the ratio of loans to the EBITDA (earnings before interest, taxes, depreciation and amortization), and this refers to how much loan debt an agency is able to pay back in cash earned from its business activities. Usually, when the loans are 7.5 times larger than the EBITDA, it means that the loans are so large that the agency is unlikely to be able to pay back the principal. Nine out of the 10 major agencies in Korea had such high ratios (Huh et al., 2013).

It is impossible to make a direct comparison between public institutions and private institutions in terms of financial soundness using these indices alone. However, we can infer that if private institutions had similarly high debts, they would typically default on debts. By continuing to run up massive debts as they are doing now, public institutions increasingly expose the government to the risk of contingent liabilities, thereby increasing the tax burden on citizens and compromising the prospects of a sustainable national economy.

2 Current debt reduction plan of public institutions

The pledges the current President of Korea made during her electoral campaign did not include a specific plan to deal with public institution debt. However, the Commission on Presidential Transition (CPT) did suggest introducing a separate accounting system, conducting preliminary feasibility test before launching new government projects, and introducing an in-depth post-evaluation system to address the agency debt problem, as described in the 136th assignment of the list of 140 issues of the new administration's policy agenda (CPT, 2013). The problem of public institutions' debts became a major public issue in 2013, when a parliamentary inspection of state administration pointed out excessive debts and overly generous welfare benefits provided by public institutions. That was also when the government realized how much debt public institutions were accumulating. On December 11, 2013, the Ministry of Strategy and Finance announced its Public institution Debt Normalization Plan to reduce public institutions' debts and prevent reckless management. On December 31, 2013, the plan was given authorization of the National Assembly via the 16th Public institutions Management Committee Meeting.

To comply with the plan's measures, 38 agencies whose excessive debts made them a priority submitted debt control plans. These agencies were required to reduce their debt increases by 39.5 trillion won by 2017 than the level suggested by the mid- and long-term financial management plan of 2013. As <Table II-2> shows, the mid- and long-term financial management plan of 2013 assumed that 18 public institutions would run up 85.4 trillion won of debts by 2017. However, if the plan works, their debt increases would only amount to 45.9 trillion won—39.5 trillion won less than estimated. Under the plan, the debt ratio should decrease from 286% to 267%. It is expected that the debt ratio over the same period for all other public institutions will decrease to 200% from 210% (Ministry of Strategy and Finance, 2014).

<Table II-2> Expected debt ratios of public institutions by 2017

(Units: KRW 1 trillion, %)

	41 public institutions	18 agencies under special supervision (required to make additional debt cuts)	23 public institutions (Mid- and long-term financial plan)
Debts (A)	534	458	76
Capital (B)	270	171	99
Debt ratio (A/B)	197	267	76

Source: Press release from the Ministry of Strategy and Finance (February 2, 2014)

As <Table II-3> indicates, public institutions subject to special debt supervision submitted plans to coordinate their business, sell their assets, pursue management efficiency, and increase profits. Most debt cuts are to be made by coordinating business plans, contracting the proposed scopes or delaying the commencement of the projects. Asset sales are to have the second largest effect on the reduction of the debts. Most of the actions in the debt reduction plan are short-term and temporary, such as business coordination or asset sales, while more long-term and fundamental steps such as enhancing management efficiency and profit increases are to reduce the debts only marginally. The result is that measures to keep public institutions' finance healthy are not suitable for managing debts over the long term.

<Table II-3> Public institutions' own proposed measures to reduce debts

Category	Business coordination	Asset sales	Management efficiency	Profit increase	Others	Total
Voluntary debt cuts	17.5 trillion won (44.3%)	7.4 trillion won (18.7%)	3.3 trillion won (8.4%)	3.3 trillion won (8.4%)	8.0 trillion won (20.2%)	39.5 trillion won (100%)

Source: Press release of the Ministry of Strategy and Finance (February 2, 2014)

The National Assembly, the Board of Audit and Inspection, and academic circles have pointed out that the largest increases in debt resulted from carrying out government projects, lowering utility tariffs, and implementing reckless overseas projects. They have also raised doubts about whether public institutions alone can reduce their debts effectively without the government's help. There was no systematic, pan-governmental debt reduction plan established in such a way that those most responsible for the causes of debts would take the greatest responsibility for debt management. This means that the public institutions had to take full responsibility for their own debt management, even though other governmental actors had actually been responsible for causing the debt. The fact that these agencies were forced to sell off their assets to reduce their debts is evidence in point. The current debt reduction efforts are thus rife with risks for repercussions, as the government's unilateral debt control guideline could encourage public institutions to make debt cuts merely to placate administrators, by selling off their assets and prerogatives at much lower values than necessary, thus facilitating indirect privatization as a result. Excessive debt cuts can seriously undermine the roles and functions of public corporations that are indispensable to the sustainable development of the national economy (Oh, 2014).

As <Table II-4> shows, the Normalization Plan compelled the major public institutions to concentrate most of their debt cuts in 2014, the year in which the interim evaluation by the government was scheduled, thus merely postponing the end results to be achieved by 2017 according to the five-year mid- to long-term financial plan of 2013. Based on the figures, the government appears to be successfully lowering the debt increase rate of public institutions, but it is still doubtful whether this rate of debt reduction would be sustainable.

〈Table II-4〉 Public institutions' own year-to-year plan for reducing debts

(Unit: KRW 100 million)

	2013	2014	2015	2016	2017	Total
Business coordination	5,552	25,608	38,048	50,249	67,746	187,203
Asset sales	1,836	23,814	38,905	2,921	14,400	81,876
Management efficiency	1,003	11,828	10,989	12,779	11,329	47,929
Profit increase	0	22,471	2,524	-476	15,475	39,993
Capital increase	1,604	439	12,058	1,208	1,285	16,594
Other	42,963	24,373	-77,617	8,017	23,916	21,652
Total	52,958	108,533	24,907	74,699	134,151	395,247

The government's announcement of future measures have also raised doubts over the genuineness of the government's commitment to debt control. The new economic team on the Cabinet, established in July 2014, announced a scheme whereby public institutions had to ensure that corporate bonds account for 60% or less of their debts to begin with, and then that percentage would have to be decreased by 1% every year starting from 2015 (Ministry of Strategy and Finance, 2014). If this scheme goes as planned, the maximum percentage of corporate bonds in public institutions' debts would be 55% by 2019. The government then plans to invest money generated by the reduction, plus 5 trillion won generated by the appreciation of the Korean currency following debt reduction, to assist people's livelihood and public safety. As this plan relies mostly on asset sales to reduce debts, it was criticized and the government was blamed for failing to reform public institutions or failing to come up with a debt reduction plan that encouraged innovation. The government was also criticized for appearing to discourage the reform of public institutions with the plan, which was one of the government's key economic pledges, even before the reform had a chance to show tangible results.

3 Conclusion

The National Assembly, the Board of Audit and Inspection, and previous studies all attribute public institutions' debts to government projects, public utility tariffs, and management inefficiency caused by overly complex governance. Scholars and civic groups, who have raised doubts about the government's measures to keep public institutions financially healthy, agree with Oh (2014) that the public now has little trust in public institutions. As Khoza and Adams (2007) argue, the governance of relations between government and public institutions and the internal governance structure of public institutions should be improved to ensure efficient financial management. Also, it is important to establish and manage a debt reduction plan customized to public institutions. Equally important prerequisites are the introduction of a separate accounting system, enhanced transparency, and the accountability of public institutions' accounting and financial management. If government projects are the primary cause of public institutions' debts, then institutional strategies are needed, such as establishing consistent principles of conducting a project, of sharing financial responsibilities for projects assigned or commissioned to public institutions, of carrying out preliminary feasibility studies, and of ensuring an in-depth follow-up evaluation. By also introducing a performance agreement, the competent authorities and public institutions would be obliged to share the responsibility of managing debts.

The two primary goals of the government's measures to keep public institutions' finances healthy are voluntary reductions of debt and the prevention of reckless management. Regardless of whether the government or public institutions were responsible for the debt, the agencies asked to voluntarily reduce their debts will be the ones with the heaviest debts or highest debt ratio. The term "reckless management" is primarily used by the Board of Audit Inspection, the National Assembly, and in journalism, and it does not have a clear legal and academic definition. In the case of the government's measures, reckless management would refer to acts such as selfishness of public-sector employees, wastes in budget spending, professional negligence, and corruption. Touting this concept therefore tends to attribute the inefficiency and mounting debts of public institutions to moral hazard at these agencies. However, as Oh (2014) points

out, lowering the fringe benefits and rewards for public institution employees to would not necessarily lead to a significant reduction in the absolute size of such debts. He also indicates that cutting benefits implies a political intention of blaming employees for debts and holding them responsible. The relationship between the ends—i.e., debt reduction and the elimination of reckless management—and the means proposed by the Normalization Plan therefore appears to be weak at best. If the government were to reduce the debts of public institutions by comparing and readjusting the remunerations and fringe benefits for public institution employees, the government would first need to compare and analyze the levels of remunerations and benefits for government employees across industry, age groups, occupation groups, sex and other such factors, and decide on the appropriate levels of remunerations and fringe benefits.

III

Analysis of Causes of Debts in Public institutions

1 Background

Contrary to the popular belief, the public sector is ridden with mounting debts not primarily or solely because of reckless management, but also due to the very nature of pursuing and increasing the public good. Public institutions exist to foster key national industries and respond to the demand for public goods. The key national industries are equipment industries that require enormous initial capital investment but do not guarantee much return on those investments in the future. This lack of investment prospect is why private-sector businesses avoid investing in such industries. Public institutions are therefore needed to make the initial investments, foster relevant industries, and lower entry barriers to allow private companies to participate in the industries later. With regard to public goods, certain amounts of electricity, city gas, water, housing, and transportation are required in our daily lives no matter how expensive they are. The public institutions exist to provide access to such public goods at a reasonable price regardless of a person's income level or ability to pay.

In theory, as they carry out deficit-prone projects on behalf of the government, public institutions' initial investments and operating need not lead to debt. In reality, however, the government that commissions these agencies to run such projects fails to provide the entire amounts of capital necessary. The government instead guarantees public institutions a business monopoly or an operating license for a business generating high profits to provide cross subsidies for enterprises that benefit the public good. Sometimes, however, the

government can direct public institutions to conduct policy projects that even such cross subsidies are not enough to offset.

Public institutions' debts are not only incurred due to a lack of government support in providing public services and goods. Public institutions are supposed to have more in common with private companies, in contrast to the government, and must consider economic feasibility and profitability before they conduct business. In the meantime, however, public institutions may attempt to expand their business and secure greater budgets and influence over the market to an excessive extent by citing the public nature of their projects.

Enterprises and the public are consumers that are unlikely to be interested in public institutions' financial status or the economic feasibility of businesses the agencies pursue. In addition, the government cannot raise public utility tariffs, such as electricity or city gas, by too much partly because of pressure from the public and enterprises to keep them low. Therefore, it is inappropriate to demand that the government, public institutions and enterprises, or the public alone be responsible for all deficits and debts. Instead, the most responsible party should be asked to contribute more to paying the debts.

2 Literature review

The Ministry of Strategy and Finance (2013a) states that investments in expansion of social infrastructure, policies for enhancing the financial security of livelihood for ordinary people, minimum raises in tariffs and risk management costs—such as the management of insolvent savings banks—are causes of the debt increase in public institutions. Park (2013) agrees with this assessment, specifying that support for savings banks, cheap public utility services, public energy institutions' mid- and long-term investments in facilities, the Bogeumjari Housing Project, and the Four-River Refurbishment Project are all causes of the debt increase. Kim Young-shin (2012) compares the debt size of the public institutions to that of the privatized public institutions and suggests that agencies' debts increased because the government controls public institutions both directly and indirectly, undermining their management independence and encouraging moral hazard. Kim (2013) points out that the complex governance structure of

public institutions is another reason for the debt increase. Huh et al. (2013) suggest policy projects, the regulation of utility tariffs, and the institutions' inefficiency are the causes of debt increase. Jung (2013) points to policy projects, large initial investments, a business structure that makes it difficult to generate immediate profits, and low productivity as the causes, while Kim Chan-su (2012) points to investments under policies, regulation of utility tariffs, and a two-fold governance structure. The National Assembly Budget Office (2013) argues that public energy institutions' aggressive development and investments in overseas resources, together with a low occupancy rate in LH's housing development projects, increased their inventory assets. As a result, liquidity deteriorates and short-term debts could not be repaid. Jung (2012) also blames the absence of effective external governance over public institutions.

Oh (2014) cites the Board of Audit and Inspection's audit report on financial and work structure management of public institutions (2013) to argue that the debts of nine key public institutions, including LH and KEPCO, increased by 106.3 trillion won from 2007 to 2011, as shown in <Table III-1>. He also examines causes of the debt increase by business category and argues that the central government is responsible for 47 percent of such debt increase, by commissioning policy projects, regulating utility tariffs, and launching excessive overseas projects. The People's Solidarity for Participatory Democracy (2014) divides these debts into social debts incurred while providing public services and policy debts accumulated when the public institutions conducted projects on behalf of the government.

<Table III-1> **Causes of increasing debts in the nine most indebted public institutions (2007-2011)**

	Policy projects	Regulation of utility tariffs	Overseas projects	Their own business	Total
Debts	43,0 trillion	17,1 trillion	12,8 trillion	33,4 trillion	106,3 trillion
Proportion	41%	16%	12%	31%	100%

Source: Board of Audit and Inspection (2013), re-arranged by Oh (2014)

3 Subjects of analysis

Our statistical analysis of public institution debts involved the data on 30 public institutions (including market-type and quasi-market type ones alike) and 24 quasi-public institutions (commissioned to conduct government projects) accumulated over three years, 2011 through 2013. Our variables were measured in diverse ways, using the data from the performance plans of competent authorities, management plans of public institutions, the web system disclosing management information on public institutions (Alio), and the Korea institution of Public Finance.

4 Causes of public institution debts

In this section, we discuss how each cause of debt is related to each debt to suggest a testable hypothesis. The debt increase rate and the total amount of debt, resulting from accumulation of debts over a long run, are used as major variables. The total amount of debt, however, varies from agency to agency depending on its size. For a better comparison, therefore, we may need to resort to measuring debt as a ratio to the given agency's capital or value of assets. We use the debt-to-total-asset ratio as some agencies have impaired capital.

We use two different measures or variables of debt because each causes debt in a different way. Compared with the total amount of debt, a short-term debt increase rate is likely to be more subject to external environmental variables at a given moment in time. From the start of the Lee Myung-bak administration, numerous policy projects were conducted by public institutions. It is highly likely that the agencies' debts have increased while conducting these projects because there has not been sufficient government support. Therefore, the debt increase rate can tell us how implementing policy projects affects debt increases. In particular, regulation of utility tariffs appears to be closely related to the recent rise in the debt increase rate because the previous Lee administration tried hard to keep prices low and regulated utility tariffs strictly accordingly.

The debt-to-asset ratio is related not only to policy projects but even more to external environmental variables such as the business environment, but

also to internal ones, including management practices and decisions. This is because a public institution's total amount of debt, accumulated over many years, is more likely to reflect its deteriorating profitability caused by inefficient business practices.

How each variable is related to and affects an increase in debt varies depending on whether the debt belongs to a public institution or a quasi-public institution. The government's policy projects and the regulation of utility tariffs are closely related to the debts of public institutions, while continuous management inefficiency such as overly generous welfare benefits are the main reasons for an increase in quasi-public institutions' debts. Considering this difference, we made a distinction between public institutions and quasi-public institutions in examining the causes of debts.

A. Implementation of government policy projects

As discussed earlier, when a public institution is commissioned to do a government policy project without much financial support for it, the agency's debts will increase. For example, large-scale government projects of the previous administration were funded by public institutions commissioned to do the projects. To fund the projects, the agencies used private loans or funds. It logically follows that the more government projects a public institution carries out, the more rapidly and significantly its debts will increase. The projects were concentrated in the 4 to 5 years when the Lee administration was in power, which means that the debt increase has more to do with the debt increase rate than the debt-to-asset ratio. Because the government policy projects were conducted mainly by public corporations during this period, there is a clearer correlation found between the number of the policy projects and the debt increase of public corporations than with those of quasi-public institutions.

B. Regulation of utility tariffs

Most utility businesses in Korea are still the purview of public institutions. It is widely acknowledged that the government limits the utility tariffs that public institutions could charge. When it comes to discussing how utility tariffs are

regulated, the cost recovery ratio is quoted. The cost recovery ratio varies from agency to agency, but none of public corporations at any rate has a cost recovery ratio of 100% or higher. Some may argue that public institutions themselves have failed to maximize the efficiency of their operating costs, and the seemingly low cost recovery ratios are in appearance only. Nevertheless, the prevailing opinion is that utility tariffs in Korea fall below the cost. As a result, if a public service continues to be provided, the difference in the cost and the tariffs will increase and eventually the debts of the service provider will increase. This means that public institutions that provide utility services are more likely to have larger debts and a higher debt increase rate compared with other public institutions. Given that the Lee administration strictly regulated tariffs, there is a higher correlation between the agencies' debts and the debt increase rate rather than with the debt-to-asset ratio.

C. Management inefficiency

Public institutions lack the incentives to conduct their business as efficiently as possible to maximize profits. This lack of incentives affects their business activities and in turn lowers their profitability and increases their debts. Inefficient practices that are not easily noticeable—such as providing overly generous wages and welfare benefits, making reckless investment decisions, and making wasteful spending decisions—are part of the agencies' business operation. The complacency and apathy of public institution employees, for which they are commonly criticized, may explain such practices but are impossible to quantify. Assuming that the lax atmosphere at public institutions are behind the excessive increases in employee remunerations and fringe benefits, we test whether the cost of wages and fringe benefits at public institutions bears any correlations to the relative amount of public institutions' debts and their increase rates.

5 Definitions of variables

A. Debt variable

As discussed in the previous section, the debt increase rate and the debt-to-asset ratio are used as variables to represent the severity of public institutions' debts. To examine the causes of the debts that increased significantly during the Lee administration, we measure the rate at which the debt of public institutions increased between 2009, when the Lee administration came to power, and the current analysis year.

B. Explanatory variables

The explanatory variables we use in this analysis are: (1) whether the given public institutions have handled government policy projects, (2) whether the utility tariffs have been regulated, and (3) whether the management practices of public institutions have been inefficient, as reflected by the increases in the cost of wages and benefits for employees. To measure the autonomy of public institutions, we also use three proxy variables: (1) the rate of consistency of government projects between public institutions and the central government departments; (2) the ratio of each agency's total revenue to the net amount of government subsidies, as an indicator of financial autonomy; and (3) the backgrounds of the heads of public institutions, as an indicator of autonomy over matters of personnel and human resources management.

To determine the consistency of strategic projects, handled by both public institutions and the central government departments, we performed a content analysis.²⁾ The contents analyzed were the strategic tasks as expressed in public institutions' management goals and plans, on the one hand, and the performance

2) Researchers of KIPF's Research Center for Public institutions compared each public institution's management target plans for 3 years with the competent authorities' projects. If the plans and the projects matched or the public institutions were described as an entity leading the project, a match was made. Examples are included in the appendix

targets and management tasks as expressed in central government departments' performance plans, on the other. Then, to test consistency, we measured the ratio of public institutions' strategic tasks that were identical or consistent with the performance targets or management tasks of central government departments. Our method is not a scientific test, strictly speaking. But this content analysis can help us determine the veracity of popular belief regarding how involved public institutions are in the implementation of key government and policy projects. The average values of the consistency are listed in <Table III-2> by public institution type, industry, and year.

Quasi-public institutions show a higher consistency rate than do public institutions for 3 years. This shows that quasi-public institutions were commissioned to conduct government policy projects rather than carry out their own projects. As shown in the table, the energy sector had a higher strategic project consistency rate than the others because the agencies conducted numerous government policy projects according to government policies in conjunction with the government was involved in infrastructure projects.

The strategic project consistency rate for public institutions, the social overhead capital (SOC) industry, and the energy industry peaked in 2012 and slightly decreased in 2013 because the new Park Geun-hye administration highlighted the issue of public institutions' debt and thus began to commission them with fewer policy projects. The quasi-governments then began to perform more government projects, since they were under less pressure from the debt problem and conducted more government policy projects to help the government keep its campaign promises. This observation appears to confirm the popular belief regarding public institutions' involvement in government projects and the resulting increase in their debts.

The ratio of fiscal support to public institutions' total revenue was calculated by using the ratio of government support to the given agency's budget, as disclosed on Alio. As public institutions conduct more and more of government projects, they receive more government support, in the forms of capital contributions and subsidies. Finally, the background of the person that heads a public institution also matters because, when the head is a former politician or a government official, he or she will likely have difficult time distancing him- or herself from the government's political influence and will more likely

〈Table III-2〉 Strategic project consistency rate by public institution type, industry and year

(Unit: %)

Classification	2011	2012	2013	Average
Total	19.8	23.7	26.2	23.2
Type of an agency				
Public institution	16.6	22.9	20.6	20.0
Quasi-public institution	21.3	24.2	30.1	25.2
Industry				
SOC	22.5	31.4	27.4	27.1
Energy	18.2	19.6	17.3	18.4
Other	19.9	22.8	29.1	23.9

Source: Compiled by the authors, on the basis of the data presented in this section

opt for carrying out policy projects. We used a dummy variable to break down the agency heads' backgrounds into politicians, government officials, and others.

A dummy variable was also used for the regulation of utility tariffs. Public institutions are involved in supplying gas, railways, electricity, roads, and water services, as designated by the Ministry of Strategy and Finance's taskforce team. A dummy variable of one (1) was thus used with regard to public institutions in these five areas. Another variable used was the inefficient management of the public institutions, a cause the government has been highlighting recently. Inefficient management was measured by using the cost of employee benefit per capita. The more benefits a public institution provides for its employees, the less efficient the agency is likely to be.

The management characteristics of the agencies, government policy projects, and the regulation of utility tariffs are useful in identifying several causes of agency debt. First, we examined how the so-called “parachute appointments,” which decide who will head public institutions, affects the debts. The power of appointment is often a means by which the government controls public institutions. When the head of a public institution is appointed for political reasons, governance autonomy of the agency is reduced, and the agency might

take achieving the government's policy goals more seriously than maintaining its financial stability. When this is the case, it is likely that the agency's debts will increase. However, when the head is on good terms with a politician or can exert political influence, the agency might also be able to receive more support from the government, which helps the agency reduce its debts. It is not easy to forecast clearly whether a person appointed as the head of an agency will positively or negatively affect the agency. We have to rely on empirical judgment. Because we used limited data in this study, we have to look at all relevant factors.

When the government provides a public institution with financial support, the agency is less pressured to fund a government project itself, and therefore the agency's debts or the debt increase rate may begin to decrease. This holds true, however, only if public institutions can decide the scales of the projects they handle irrespective of the amounts of government support they receive. As this is not the case in reality, that financial support from the government would be proportionally correlated to the debt-to-asset ratio and the debt increase rate. An increase in the net profit during the term is expected to reduce debt, and therefore, return on sales (ROS) would be inversely correlated to debts. Finally, the types and functions of public institutions may also matter. As most government projects handled by public institutions were concentrated in the areas of SOC development and energy under the Lee administration, we thus divided public institution types into SOC, energy, and other and examined the correlation of each to increases in debts.

C. Summary statistics

The upper part of <Table III-3> shows the basic statistics concerning the debt-to-asset ratio and the lower part, those concerning the debt increase rate. The table also shows basic statistics of variables representing causes of debt that were used to examine correlations between causes and debts. The results of a basic statistical analysis suggest that public institutions conduct 23% of government projects and rely on the government for 23% of the total revenue on average. According to the table, more than half of the agencies' heads (58%)

were former politicians or government officials. Thus the issue of who is appointed to head public institutions cannot be freed from the recent controversy over the alleged ties of vested interests between the government and public institutions. Five of the agencies were utility service providers and the per-capita welfare benefit cost on average was somewhere between 7.7 million and 7.9 million won a year.

〈Table III-3〉 Basic statistical analysis

Variable	Average	Standard deviation	Minimum value	Maximum value
Debt-to-asset ratio (N=141)				
Debt-to-asset ratio (debts/assets)	0.557	0.370	0.0264	2.1843
Explanatory variable				
Strategic project consistency rate	0.236	0.182	0	0.75
Regulation of utility tariffs (TFT for utility service)	0.106	0.309	0	1
Per capita welfare benefit costs (1,000 won)	7,737.779	6,834.248	255.05	4,6348.34
ROS (net income during the term/sales, %)	3.490	21.022	-84.9	160.89
Ratio of the government financial support to total revenue (Net government support/total revenue, %)	25.734	33.012	0	100
Background of the agency's head				
Politician	0.043	0.203	0	1
Government official	0.504	0.502	0	1
Others	0.454	0.500	0	1
Type of the industry				
SOC	0.284	0.452	0	1
Energy	0.262	0.442	0	1
Others	0.454	0.500	0	1

〈Table III-3〉 Continued

Variable	Average	Standard deviation	Minimum value	Maximum value
Debt increase rate (N=134)				
Debt increase rate (Compared to 2009, %)	80.740	158,246	-96.370	903.180
Explanatory variable				
Strategic project consistency rate	0,224	0,177	0,000	0,750
Regulation of utility tariffs (TFT for utility service)	0,112	0,316	0	1
Per capita welfare benefit costs (1,000 won)	7,994,648	6,894,266	842,840	46,348,340
ROS (net income during the term/sales, %)	3,441	21,543	-84,900	160,890
Ratio of the government financial support to the total revenue (Net government support/total revenue, %)	23,231	31,723	0	100
Background of the agency's head				
Politician	0,045	0,208	0	1
Government official	0,507	0,502	0	1
Others	0,448	0,499	0	1
Type of the industry				
SOC	0,299	0,459	0	1
Energy	0,276	0,449	0	1
Others	0,425	0,496	0	1

D. Empirical analysis

A correlation analysis³⁾ was conducted to examine, statistically, whether public institutions' debts are correlated to the chosen key explanatory variables. For this analysis, all samples were examined and then divided into samples of public institutions and of quasi-public institutions. The correlation between the debt variables and the explanatory variables for each type of public institutions is shown in <Table III-4>. The results of an analysis of all samples showed variables that have a significant correlation with the debt ratio, and these are the ratio of the government financial support to total revenue, welfare benefit costs, the ROS, the SOC industry, and the energy industry. According to the results, only the regulation of utility tariffs, among the causes of the debts, has a statistically significant correlation with the debt increase rate.

Next we come to the results of a sample analysis on public institutions. There was a correlation found between the debt ratio, on the one hand, and the ratio of government financial support to the total revenue or the ROS, on the other. The energy and other industries' variables also had a correlation with the debt ratio. There was a correlation found between the debt increase rate, on the one hand, and the strategic project consistency rate, regulation of tariffs, and other industries, on the other. Finally, results of the sample analysis on quasi-public institutions showed that their debt ratio has a positive correlation with the ratio of government financial support to the total revenue to within a significance of 5%, and it has a negative correlation with ROS to within a 1% significance. The debt increase rate has a negative correlation with the ratio of government financial support to total revenue and has a positive correlation with welfare benefit costs to within 1% significance.

The results of a correlation analysis of types of debts can be interpreted as follows: the debt-to-asset ratio of all agencies has a positive correlation with

3) The results of the correlation analysis are the same as those of a regression analysis. To correctly examine the relationships between the causes and debts of public institutions, a regression analysis should be conducted. However, only a correlation analysis was conducted due to error of measurement, a small sample size, and endogenous problems. In future studies, a regression analysis including control variables needs to be carried out to examine the issue in depth

the ratio of government financial support to total revenue within a 5% significance. The higher the ratio of government financial support to total revenue, the more likely debts will increase as the agency conducts more government policy projects. The higher the ratio of government financial support to total revenue, the more an agency conducts government policy projects. This in turn means increased debt, which can increase the debt-to-asset ratio. When the agencies were divided into public institutions and quasi-public institutions for examination, the ratio of government financial support to total revenue affected the public institutions more than the quasi-public institutions. The public institutions had a correlation with the ratio within a significance of 1%, while the quasi-public institutions did not have a significant correlation with the ratio. This result shows that a majority of quasi-public institutions were commissioned to conduct government policy projects and there was little difference in the number of government projects that each quasi-public institution carried out. However, because there is a big difference in the number of government projects that each public institution conducts, there was a clear correlation found between the number of government projects that each public institution conducts and the debts.

Unlike the ratio of government financial support to total revenue, the strategic project consistency rate which was expected to have a close correlation with the number of government policy projects a public institution handles, turned out to be not so significant a factor of the debt-to-asset ratio in all types of public institutions. The reason for this is that the consistency rate greatly increased after 2009, and so this variable has more to do with the debt increase rate over a short term than with the long-term fixed debt-to-asset ratio. In this study, the strategic project consistency rate was used as a proxy variable for the implementation of government policy projects. According to our analysis, the rate is more closely related to the debt increase after 2009 than to the debt ratio. However, the variable of government support has a statistical significance of 5%, which means the government policy projects are related to public institution debts to some extent.

Public institutions whose tariffs are regulated by the government have a lower debt-to-asset ratio compared to other agencies. The utility tariffs were strictly regulated by the previous government and the strict regulation was likely

to have had a short-term impact on these agencies' debt increases and contributed only marginally to the increasing total amount of debt. Unlike our expectation, the per capita welfare benefit costs did not have a significant correlation with the debt-to-asset ratio of either public institutions or quasi-public institutions. The ROS had a negative correlation with the debt-to-asset ratio at 1% significance for all agencies, public institutions, and quasi-public institutions, which indicates net income decreases debts.

Our analysis showed that the energy industry increased the debts of the entire public sector and also of public corporations. However, the energy industry did not increase the debts of quasi-public institutions. This suggests analysis results of all agencies' debts were significantly affected by the analysis results of public institutions' debts. This is because energy was a key area in which public institutions played a notably increased role under the Lee administration.

<Table III-4> shows analysis results of the debt increase rate since 2009. The strategic project consistency rate did not have statistical significance for all agencies' debts but had a statistically significant correlation with public institutions' debt increase rate, with a coefficient value of 5%. In contrast, there was no significant correlation between the debt increase rate and the strategic project consistency rate of quasi-public institutions. This is because while quasi-public institutions handled numerous government projects, there was no abrupt increase in the number of government projects they handled akin to the case of public institutions.

Regulation of utility tariffs had a correlation with all agencies' debts with a statistical significance of 10%. Public institutions are the ones whose tariffs are regulated. We conducted a separate analysis on these institutions and the analysis results showed that their statistical significance level was 1% higher than for others. Their coefficient value was positive, and this means that their debt increase rate is higher than it is for other institutions. Public institutions whose tariffs are regulated by the government have less autonomy in deciding tariffs and their profits decline, which leads to debt accumulation while funding new business development and operations. This result stands in contrast to the debt-to-asset ratio that has no statistical significant correlation with the regulation of tariffs. There could be many reasons for this contrast. One of the main reasons is that the previous government strictly regulated utility tariffs. As a result, the

〈Table III-4〉 Analysis of correlations between variables

Type of an agency		All		Public institutions		Quasi-public institutions	
		Debt ratio	Debt increase rate	Debt ratio	Debt increase rate	Debt ratio	Debt increase rate
Explanatory variables	Strategic project consistency rate	-0.0094	0.0416	0.0511	0.2606**	-0.1195	-0.1601
		0.9122	0.6331	0.6610	0.023	0.3432	0.2300
	Ratio of the government financial support to the total revenue	0.1904**	-0.0408	0.3381***	0.1636	0.2724	-0.2193*
		0.0237	0.6401	0.0028	0.1579	0.0281**	0.0981
	Background of the head (Politician)	-0.1321	-0.0855	-0.1518	-0.1546	-0.0951	-0.033
		0.1183	0.3261	0.1905	0.1823	0.4511	0.8059
	Background of the head (Government official)	0.0481	0.0205	0.1610	0.2167*	-0.0949	-0.1091
		0.5714	0.8144	0.1648	0.0601	0.4523	0.4149
	Background of the head (Others)	0.0053	0.0150	-0.0939	-0.1488	0.1278	0.1214
		0.9503	0.8637	0.4197	0.1994	0.3102	0.3639
	Regulation of utility tariffs	0.0715	0.1518*	0.1175	0.3876***	.	.
		0.3997	0.0799	0.3122	0.0005	.	.
	Welfare benefit costs	-0.1722**	0.0690	-0.1608	-0.0653	-0.2022	0.3874***
		0.0411	0.4283	0.1653	0.5752	0.1062	0.0027
	ROS	-0.4576***	0.0105	-0.5089***	-0.093	-0.4152***	0.1723
		0.0000	0.9043	0.0000	0.4242	0.0006	0.1959
	Type of an industry (SOC)	-0.2104**	-0.0916	-0.2553	0.0549	-0.1248	-0.1860
		0.0123	0.2927	0.0261	0.6376	0.3219	0.1621
	Type of an industry (Energy)	0.2214***	-0.0137	0.4298***	0.1346	-0.1532	-0.0726
		0.0083	0.8756	0.0001	0.2463	0.2231	0.5882
	Type of an industry (Others)	-0.0051	0.0971	-0.2440**	-0.2571**	0.1929	0.207
		0.9518	0.2644	0.0337	0.0249	0.1236	0.1189

Note: The upper row of each variable indicates the correlation coefficients and the lower, the p-values, i.e., *** p<0.01, **p<0.05, *p<0.1

regulation of utility tariffs has a closer correlation with the debt increase rate than the total amount of debt. These results suggest that government projects and regulation of utility tariffs are related to the debt increase of public institutions after 2009, as previous studies and the media argue.

According to our analysis, per capita welfare benefit costs had a correlation with the debt increase rate of quasi-public institutions of 1% significance. Welfare benefit costs did not significantly affect the debt increase of all agencies or public institutions. However, a comparison of coefficient values showed that quasi-public institutions' debts were more greatly affected by welfare benefit costs. This shows that the debt increase rate of quasi-public institutions is affected by internal factors, such as management inefficiency, more than by external variables, including the implementation of government policy projects.

Heads of agencies who are former government officials had a correlation with the debt increase rate of 10% significance probably because such individuals tend to carry out more government policy projects. These heads have connections with the government, making it difficult for them to reject implementing government projects and prompting them to rely on debt to finance the projects.

6 Policy implications

Statistical analysis of the causes of public institutions' debts has implications for new policies on debt management. Previous studies have cited public institutions' implementation of government policy projects, regulation of utility tariffs, and management inefficiency as causes of debt. This study shows these causes have a statistically significant correlation with the debt ratio and the debt increase rate. Another important policy implication is that the causes of debt vary depending on the characteristics of debt. The debt ratio has more to do with general causes than causes occurring at a particular time. Therefore, the debt ratio is more related to internal causes such as management inefficiency than changes in the external environment. The debt increase rate compared with 2009 can be useful for examining the causes of debt affected by the external environment at a particular time. These study results can help public institution policy makers design policies that separate internal causes of debt from the debt

increase caused by external environmental changes at a particular time.

Finally, another important policy implication is that the cause of debts varies depending on the type of public institution. This study shows that the welfare benefit costs of public institutions have affected their debt ratio and that after 2009 the implementation of government policy projects has affected their debt increase rate. Welfare benefit costs are an internal management variable. The higher the costs, the more inefficient the institutions' are at management. This implies that the costs are likely to increase the debt ratio regardless of time-dependent changes in the external environment. The implementation of government policy projects is related to the debt increase rate after 2009, when the new government at the time compelled public institutions to carry out numerous government policy projects. A number of public institutions ran up debts while conducting these government projects instead of attending to their own business. However, the implementation of government policy projects did not affect the quasi-public institutions' debt ratio and debt increase rate after 2009. Their debt increase rate was affected instead by welfare benefit costs. Thus, unlike public institutions, the main cause of the debt increase for the quasi-public institutions under the Lee administration was welfare benefit costs. These results suggest that policymakers need to use different policy tools to deal with quasi-public institutions' debts than those with public institutions' debts.

IV

In-depth Analysis by Cause of Debt

1 Management inefficiency: Example of KORAIL

A. Business operation of KORAIL

KORAIL's financial debt ratio in 2005 was 90.4%, then from 2006 to 2012 it was around 80%, and as of the end of 2013 it was 84.9%. Its short-term financial debt ratio fell to around 10% from 26% in 2005 and increased again to 22.8% in 2013. In 2010, KORAIL changed its accounting standards from K-GAAP to K-IFRS. According to the new standards, their debts increased by 476.6 billion won. When consolidated accounting standards were applied, the agency's debts including its subsidiaries amounted to 2.489 trillion won. Compared with 2012, KORAIL's debts increased by 3.3 trillion won (or 22.8%) in 2013. Also in 2013, its debt ratio increased by 128% to 372%, up from 244% in 2012.

The increase in the current financial debt was mainly attributed to the cancellation of the Yongsan Development Project. Due to the cancellation, KORAIL ran up 2.2 trillion won of short-term debts to return land costs. The agency also borrowed 760 billion won for operating funds and ran up another debt of 190 billion won for the Yongsan Soil Pollution Purification Project. Furthermore, bonds related to land sales that the agency expected to receive became uncollectable once the Yongsan Development Project was cancelled, which reduced the agency's assets by 2.4 trillion won. Thus, the 4.7 trillion

won that KORAIL earned from land sales was deducted from its capital, and as a result, its debts increased further (Huh et al.).

KORAIL has had deficits in its operating profits since its launch and its operating profits have been lower than the interest it had to pay. The agency's operating loss had steadily decreased from 737.4 billion won in 2008 to 32.4 billion won in 2013, but this was still not enough to boost its ability to repay the interest. The interest increased from 282.4 billion won in 2008 to 565.8 billion won in 2013, since the agency had taken out loans to acquire Incheon International Airport Corporation in 2009 and to fund the deficit that was accumulating every year from its transportation business.

B. Nature and causes of KORAIL's debts

KORAIL's business is divided into transportation, consignment, operation of Incheon International Airport Corporation, and diversification. For the past 6 years, the transportation business has generated the highest debts of 7.1 trillion won. In 2013 alone, the debts increased by 3 trillion won. During the same period, the consignment business and operation of the Incheon Airport Railway generated 80.5 billion won and 1.3 trillion won of debts respectively, and the debts increased by 26.3 billion won and 10.1 billion won respectively in 2013. The reason for KORAIL's continuous operating loss has been the increase in debts (Department of Budget Policy in National Assembly, 2014).

〈Table IV-1〉 Nature and causes of KORAIL's debts

(Unit: KRW 1 trillion)

Nature of the debts	Government policy project		Agencies' management	
Cause of business	Operation of high-speed railway	4.5	Operating loss	4.7
	Acquisition of Airport Railway	1.2	Investment	3.5
	Change of the accounting policy	2.9	Others	0.8
Total		8.6		9.0

Source: Summary of KORAIL's internal data (October, 2014)

〈Table IV-2〉 Increase in financial debts by business of KORAIL

(Unit: KRW 100 million)

Business	2008	2009	2010	2011	2012	Total
Transportation	9,478	4,485	9,684	7,049	10,120	40,816
Consignment	688	-583	435	-458	460	542
Acquisition of Incheon Airport Railway	-	12,057	562	354	101	13,074
Revenue-making business and incidental business	-971	-1,276	-1,283	-1,764	-1,471	-6,765
Subtotal	9,195	14,683	9,398	5,181	9,210	47,667

Source: Huh Kyoung-sun et al. (2013)

Analysis on KORAIL's increased financial debts for the past 5 years showed that its transportation business accounted for most of the debt increase.

In 2005, the Railroad Office was renamed KORAIL Corporation. After that, the corporation earned profits from the high-speed railroad, KTX. However, railway fares were frozen from July 2007 to December 2011, and as a result, there was no increase in the profits. The corporation's profits started to grow again after 2012, when it raised its fares.

KORAIL argues that its profits are deteriorating because the tariffs it charges are not high enough to recover the costs—as is the case with KEPCO, the Korea Express Corporation, the Korea Gas Corporation, and K-water. The

〈Table IV-3〉 Profits of each transportation business of KORAIL

(Unit: KRW 100 million)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	Yearly increase
High-speed railway	8,376	9,048	10,149	10,458	10,183	11,387	13,844	15,056	16,054	8.5%
Railroad	5,480	5,217	5,013	4,964	4,668	4,773	4,797	5,005	5,052	-1.0%
Metrorail	4,662	4,667	5,176	5,951	5,482	5,651	5,977	6,762	7,218	5.6%
Freight	3,118	3,195	3,524	3,845	3,241	3,294	3,471	3,537	3,565	1.7%

Source: Huh Kyoung-sun (2013)

cost recovery ratios for all of the corporation's transportation business types are below 100, except for KTX. The government argues the actual cost recovery ratio is higher than what public institutions claim, based on data verified by an external accounting firm for an appropriate cost recovery ratio, as shown in <Table IV-4>. However, KORAIL argues that the cost recovery ratio for rail fares should be higher than what the government suggests. This indicates that the issue of the cost recovery ratio for the railway service is more serious than for other public services. In addition, the increase in rail fares among public utility tariffs did not catch up with the increase in prices, which is another reason for the corporation's deteriorating profits (Park Jung-soo, 2013).

Labor costs, part of the fixed costs, make up 47.5% of KORAIL's cost structure. To reduce its operating loss, the labor costs need to be decreased through a more efficient use of labor.

<Table IV-4> Cost recovery ratio by tariff business

(Unit: %)

Tariff business	Road	Water resources	City gas	Electricity	Railroad
The agency's number	84.0	84.0	87.0	87.3	84.8
The government's number	137.5	110.0	103.6	94.0	78.3

Note: As of 2011

Source: Each agency and Anjin Accounting Firm (quoted from Seoul Daily's editorial of October 25 in 2013)

<Table IV-5> Cost structure of KORAIL

(Units: KRW 100 million, %)

	Labor	Repair and maintenance	Depreciation	Power	Railroad use	Other costs	Total
Amount	22,164	4,002	4,051	5,085	7,176	4,163	46,641
(Proportion)	(47.5)	(8.6)	(8.7)	(10.9)	(15.4)	(8.9)	(100)

Note: As of 2012

Source: Board of Audit and Inspection (2014a)

C. Debt reduction, a plan for, and the results of reckless management improvement

The Board of Audit and Inspection recommends that KORAIL cut the operating loss generated by its transportation businesses by reducing labor costs through more efficiently utilizing its labor, including crew and station employees, and adding flexibility to its HR operation. The board also recommends that the corporation avoid reckless management and making investments that are not necessary or urgent.

The Ministry of Strategy and Finance classified and released data on the debts of 12 public institutions⁴⁾ that contributed the most to increased debt out of all public institutions for the past 5 years. It classified the debts by cause and nature and suggested 3 methods for the public institutions to reduce debts⁵⁾: 1) public institutions need to provide plans to reduce debts by their own efforts; 2) the government should provide a policy package to reduce debts, assuming the public institutions also make efforts for debt reduction; and 3) public institutions need to confirm that the debt reduction plan is properly executed through management reviews. The ministry also announced that it will designate 20 public institutions⁶⁾ that are highly likely to engage in reckless management and put them under special supervision (Press release from the Ministry of Strategy and Finance, Dec. 31, 2013). These agencies will be also subject to an interim review for reckless management (Press release from the Ministry of Strategy and Finance, Dec. 31, 2013).

4) LH, K-water, the Korea Expressway Corporation, the Korea Rail Network, KEPCO (including subsidiaries such as KHNP), KOGAS, KNOC, the Korea Resources Corporation, the Korea Coal Corporation, KDFC, and KOSAF

5) The government provides a guideline that requires public institutions to seek all measures, such as business coordination, asset sales, cost saving, and revenue maximization, to reduce their debts or improve their financial structure. Ministry of Strategy and Finance (December 31, 2013) Quoted from *Management Guidelines for Debt Reduction Plans of Public institutions*

6) KRA, Incheon Airport, KHGC, Busan Port Authority, KOMSCO, KOBACO, KDHC, KRX, KSD, KINS, KSURE, the Korea Agro-fisheries & Food Trade Corporation, KOSCOM, the export-import Bank of Korea, Kangwon Land, the Korea Gas Technology Corporation, KEPCO E&C, Pusan National University Hospital, KIC, and Grand Korea Leisure

〈Table IV-6〉 Plan to reduce the debts of KORAIL

(Unit: KRW 100 million)

Mid- and long-term financial management plan + financial forecast under the plan for additional reduction							
Financial metrics	2012	2013	2014	2015	2016	2017	Variation
Asset	201,853	219,761	192,559	186,212	206,120	198,510	-3,342
Debt	143,209	174,456	155,239	138,434	144,699	137,829	-5,380
(Financial debt)	119,702	150,249	131,895	116,387	123,688	117,716	-1,986
Debt ratio (%)	244.2	385.1	416.0	289.7	235.6	227.1	-241.9
Net profit during the term	-28,202	-52,559	-2,876	5,368	-4,778	-3,897	24,305
Interest coverage ratio	-0.4	-0.1	-0.3	-0.1	-0.1	0.2	0.6
Mid- and long-term financial management plan + financial forecast under the plan for additional reduction (when tariff raise is assumed)							
Asset	201,853	219,761	192,564	186,215	206,125	198,512	-3,340
Debt	143,209	174,456	155,009	136,826	141,081	131,414	-11,795
(Financial debt)	119,702	150,249	131,665	114,779	120,070	111,301	-8,401
Debt ratio (%)	244.2	385.1	412.8	277.0	216.9	195.9	-48.3
Net profit during the term	-28,202	-52,559	-2,641	6,744	-2,766	-1,104	-27,098
Interest coverage ratio	-0.4	-0.1	-0.2	-0.2	0.4	0.8	1.2

Source: Summary of KORAIL's data (October, 2014)

KORAIL submitted a mid- and long-term financial plan with debt reduction measures to the government in early 2014. Under the financial plan, the corporation aims to reduce its debt ratio to 227.1% and interest coverage ratio to 0.2 by 2017. However, in the *Management Guidelines for Debt Reduction Plans of Public institutions*, the government allowed public institutions to use their own data to forecast oil prices and foreign exchange rates, when designing debt reduction plans, but did not allow them to include the raising of tariffs in their plans. According to data, KORAIL estimated that based on an assumption that tariffs will increase by 2.5 % annually, the corporation's debt ratio will be 195.9% and its time interest earned ratio will be 0.8 by 2017.

KORAIL established a plan to sell its assets as a short-term solution, and it devised a plan for management efficiency and profit generation as a mid- and long-term measure, in preparation for an interim evaluation in 2014.

〈Table IV-7〉 Plan to reduce the debts of KORAIL by reduction measures

(Unit: KRW 100 million)

	Mid- and long-term financial plan	Plan for additional reduction	Plan for accumulated reduction	2013	2014		2015	2016	2017
					1-8	9-12			
Asset sales	47,831	24,466	72,297	0	367.6	31,190	18,428.4	2,044	20,267
Management efficiency	2,643	5,885	8,528	1,302	403	537	1,234	2,195	2,857
Profit generation	6,443	△1,359	5,084	△118	144	233	397	2,196	2,232
Others	5,656	△12,033	△6,377	4,600	△889	△2,677	△7,134	416	△693
Total	62,573	16,959	79,532	5,784	25.6	29,283	12,925.4	6,851	24,663

Source: KORAIL (2014a)

The corporation's per capita welfare benefit costs are 1.559 million won, which is 28.1% of the average welfare benefit costs of 5.554 million won, and its welfare benefit costs have been on the rise. So, KORAIL announced that it would carry out activities to reduce these costs (KORAIL Corporation, 2014b).

To reduce public institutions' accumulated debts and prevent reckless management, the government established “A plan to Keep Public institutions' Finance Healthy” and 38 public institutions under special supervision devised their own plans for regaining financial health. These agencies' performances in debt reduction and ceasing reckless management were subject to an interim evaluation to be completed by the end of the 3rd quarter of 2014 (Press

〈Table IV-8〉 Reduction in KORAIL's per capita welfare benefit costs

(Unit: KRW 1,000)

Evaluation index		2013	2014	2015	2016	2017
Per capita welfare benefit costs	Settlement of accounting period	1,559	1,542	1,542	1,542	1,534
	Guideline	1,459	1,443	1,443	1,443	1,443

Note: Actual in 2013 and targets in 2014, 2015, 2016 and 2017.

Source: KORAIL (2014b)

<Table IV-9> Interim evaluation results of debt reduction in the public institutions under special supervision

(Unit: KRW 100 million, %)

	Business coordination	Asset sales	Management efficiency etc.	Total
Plan (A)	84,559	10,767	105,601	200,927
Actual (B)	103,290	11,987	128,476	243,753
Ratio (B/A)	121.3	122.2	111.3	121.7

release from Ministry of Strategy and Finance on Dec. 31, 2013). According to the ministry's public release of the evaluation results, 18 agencies under special supervision reduced their debts by a total of 24.4 trillion won—4.3 trillion won more than its plan, as shown in <Table IV-9>—and 16 out of the remaining 18 agencies⁷⁾ met their targets, with only 2 agencies failing to meet their targets.

With regard to reckless management, the interim evaluation results showed that 36 out of the 38 public institutions under special supervision achieved their goals only 2 remaining agencies failed. Per capita welfare benefit costs of the 38 supervised agencies were reduced by 1.23 million won on average, from 4.27 million won in 2013 to 3.04 million won in 2014 (Press release from the Ministry of Strategy and Finance, on Oct. 30, 2014).⁸⁾ Per capita welfare benefit costs of the top 5 supervised agencies were cut by 5.45 million won or 57.9% on average, from 9.42 million won in 2013 to 3.97 million won in 2014. Per capita welfare benefit costs of the top 5 supervised agencies were cut 2.35 million won, from 6.07 million won in 2013 to 3.72 million won in 2014. KORAIL reduced its per capita welfare benefit costs by 17,000 won, from 1.559 million won in 2013 to 1.542 million won in 2014. The corporation failed

7) Public institutions under special supervision are KOGAS, Korea Expressway Corporation, KNOC, K-water, KEPCO, KORAIL, LH, Korea Coal Corporation, Korea Resources Corporation, Korea East-West Power, Korea Westpower, Korea Midland Power, KOSEP, KOSPO, KHNP, KDFC, KOSAF and Korea Rail Network Authority

8) Ministry of Strategy and Finance said in its release of the interim evaluation results that reduction in welfare benefit costs of 38 public institutions under special supervision would reach 200 billion won in 2014

to meet the target on preventing reckless management, which required it not to include the bonus of operational performance in estimating its average wage, but on October 27, 2014 the corporation's labor and management agreed on how to improve its method of calculating its average wage.

D. Management inefficiency of KORAIL and solutions

The debt increase of KORAIL, since it was renamed in 2005, has been primarily attributed to increases in investments, operating losses, and the cancellation of the Yongsan Development Project (Board of Audit and Inspection, 2014 a; Department of Budget Policy in National Assembly, 2013). As the corporation started to use K-IFRS, debts of its subsidiaries were included in its overall debt. Purchase of new high-speed railroad cars and expenses to offset operating losses also contributed to increasing the corporation's debts (Huh et al., 2013). As the Board of Audit and Inspection (2014a) recently pointed out, labor costs accounted for 47.5% of the corporation's costs, which indicated that labor inefficiencies can potentially deteriorate its financial health.

Since the corporation was renamed, it has laid off 45000 employees in accordance with the Lee Myung-bak government's policy for advancement. Since that period, the corporation has employed 27,000. However, because the KTX will start operating departures from Suseo in 2016, some of its employees including locomotive engineers are going to be relocated there. The Board of Audit and Inspection (2014a) has also pointed out that after KORAIL became a corporation in 2005, it combined the fixed number of employees classified as Rank 6, the lowest Rank, with those classified as Rank 3, a higher rank. According to a special collective agreement, the corporation began a program that automatically promoted employees who had served in a rank for a certain period (5 years in Rank 6, 7 years in Rank 5 and 12 years in Rank 4) to the next rank. This promotion program has incurred 7.2 billion won in labor costs every year, and the corporation has failed to keep the number of employees allocated to each rank at a fixed amount and instead let numbers fluctuate, with the number of employees allocated to higher ranks such as Rank 3 and Rank 4 exceeding their number allocations. As a result, the corporation's labor costs exceeded the budget set by the government by 23 billion won.

〈Table IV-10〉 Yearly change in the number of employees

(Unit: number of persons)

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Fixed number of employees	31,480	31,480	32,092	31,482	27,255	27,456	27,456	27,866	27,981
Actual number of employees	28,723	30,499	31,679	30,910	30,586	29,958	29,479	28,967	27,930
Excessive number of employees	△2,757	△981	△414	△572	3,331	2,502	2,023	1,101	△51

Source: Board of Audit and Inspection (2014a)

When the Seoul Metropolitan Rapid Transit Corporation's labor cost is compared with that of other metropolitan rapid transit corporations, the Seoul Metro's labor cost is no higher. KORAIL falls into the same category of transportation as the Incheon International Airport Corporation, the Korea Airports Corporation, and the Korea Expressway Corporation, according to the standard industrial classification. But when KORAIL's labor cost is compared with the labor cost of each these other corporations, it is higher. However, the Incheon International Airport Corporation, the Korea Airports Corporation, and the Korea Expressway Corporation are mostly engaged in construction businesses. Given this circumstance, KORAIL's HR structure should be combined with that of Korea Rail Network Authority for a better comparison with these other corporations in the same industrial classification.

〈Table IV-11〉 Labor Costs Ratio of Metropolitan Rapid Transit

(Unit: KRW 100 million, %)

	KORAIL Corporation	Seoul Metro	SMRT	Busan Transportation Corporation	Daegu Metropolitan Transit Corporation	Daejeon Metropolitan Express Transit Corporation
Labor (a)	20,033	5,724	3,420	2,210	1,040	290
Sales (b)	43,049	10,761	6,104	3,777	1,423	439
Operating Cost (c)	46,560	12,050	8,179	4,912	2,652	995
Ratio (a/b)	46.5	53.2	56.0	57.5	73.1	66.1

Note: 1. As of 2012

2. According to K-IFRS

Source: Data from KORAIL (October, 2014)

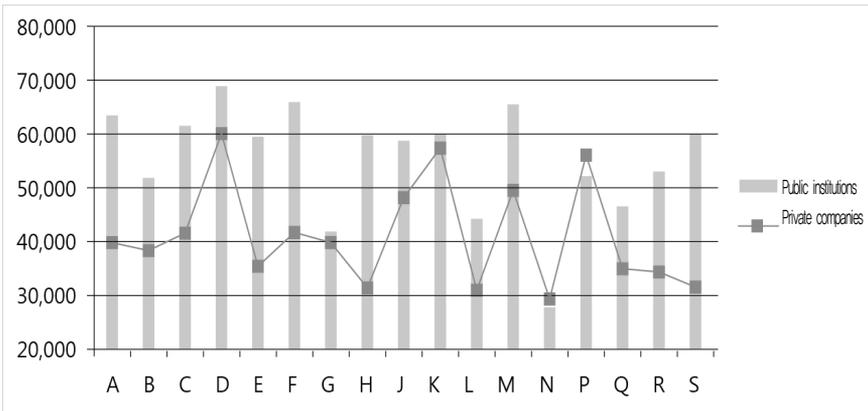
E. Conclusion

The results of KIPF's investigation of the nature and causes of debts accumulated by KORAIL are the same as the results from the investigation by the Department of Budget Policy in the National Assembly. The recent audit on KORAIL's management suggested that KORAIL has higher labor costs than other public institutions and its average wage is higher than that of private companies in the same industry in terms of age, educational background, and different types of jobs. Considering the high labor costs and wages, it is likely that KORAIL's labor production and management is being run inefficiently. It is difficult for KORAIL to boost labor production for the following reasons: it employs a relatively higher number of high school graduates and those in their 50s and older compared with other public institutions. It has a smaller wage gap among employees with different educational backgrounds. Employees that are not in management positions are paid via a seniority-based wage system.

According to the standard industrial classifications, KORAIL falls under a transportation industry category. The government's business performance evaluation of KORAIL showed that it is performing well compared with

[Figure IV-1] Average wage by industry between public institutions and private companies

(Unit: KRW 1,000)



Source: Ra Young-jae (2013)

the Incheon International Airport Corporation, the Korea Airports Corporation and the Korea Expressway Corporation that are in the same industrial category. As [Figure IV-1] shows in comparing the average wage of public institutions and private companies in the transportation industry, the average wage of public institutions (H) is higher than that of private companies. Research into the wage premium of public institutions in each industry also shows that the wage premium of public institutions in the transportation industry is higher than that of private companies. (Ra Young-jae, 2013).

It cannot be said that reckless management, such as providing overly generous welfare benefits, is a direct cause of the significant increase in KORAIL's debts. Its debt did not seem to increase greatly simply because of generous welfare benefits. Since the cost recovery ratios for passenger and freight transportation fares are under 100%, an increase in fares would change the corporation's profit structure. Whether the utility tariffs of public institutions in charge of electricity, city gas, roads, and water supply will be raised to reflect actual running costs will be an important factor in helping to forecast the long-term financial stability of these public institutions. Unlike other public institutions responsible for energy or SOC, most of KORAIL's employees are engaged in providing services to the public. Therefore, as Selden (2008) argues, KORAIL needs to apply strategic management to its human resources to improve its productivity and efficiency.

2 Implementation of government policy projects: K-water case study

A. Overview of government policy projects

Under the previous government, numerous governmental projects were conducted by public institutions and as a result, their debts increased dramatically and have been seen the main cause of increasing debt. Classic examples of such projects are the Bogeumjari Housing Project conducted by the Korea Land Corporation, an overseas resources development project carried out by KNOC,

and the Four-River Refurbishment and Ara Waterway projects of K-WATER. However, the government concluded that the significant increase in the public institution debts was attributable to inefficiency caused by reckless management. To resolve this issue, the government decided on reform measures including the establishment of the debt reduction plan.

In response to the government's attempt to reform them, the public institutions resisted and argued that they had run up debts while conducting government policy projects. Indeed, in support of the agencies' argument, the government owns large shares of public institutions and intervenes in the management through regulations on agency operations and management evaluation. In addition, the analysis of the actual proof, as described in Chapter III, shows that the strategic project consistency rate has a statistically significant correlation with the recent debt increase rate of public institutions. Therefore, to solve their debt problem, public institutions need to thoroughly examine how their debts increased while conducting government projects and introduce policy measures to reduce debt.

B. Issue of government policy projects' feasibility

Discussion on the implementing of government policy projects by public institutions has focused on public institutions' autonomy in theory and practice, specifically in relation to the extent of government control. The more a public institution is controlled by the government, the more likely it is to carry out government policy projects inefficiently rather than conduct its own projects and enhance its own business performance. In a study done by Verhost et al. (2004), the autonomy of a public institution is examined by looking into how much a representative government is engaged in the agency's operations. The study also examines the agency's policy, mediation, structural, financial, legal, and right to autonomy. Public institutions have to plan operational targets based on the requirements of competent authorities' policy projects, which reduces the agency's policy, mediation, and management autonomy. The sudden increase in public institutions' debts is a side effect of implementing government policy projects without the government's financial support and without autonomy in setting goals and business activities.

The Ministry of Strategy and Finance judged that the government's intervention in the business operation of public institutions undermined their operational performance. From 2010, it implemented a plan to increase the management autonomy of public institutions. As part of the plan, the ministry gave agencies autonomous control over human resources, organizational decisions, use of budgets, and the establishment of performance targets. In addition, the ministry switched to a management performance agreement that evaluated management performance every 3 years and included the evaluation of an agency's head to guarantee management autonomy. In the meantime, competent authorities of these public institutions continued to require the agencies to conduct policy projects designated as government assignments. The most critical issue regarding public institutions' implementation of policy projects is how many government projects a public institution is required to carry out.

Discussion on this autonomy issue has focused on both the pros and cons of government control over public institutions. The cons say competent authorities' or the government's control and intervention in public institutions should be reduced to enhance the agencies' autonomy and accountability for performance. Cons also argue that various government regulations and interventions should be avoided to encourage agencies to be more creative in their business activities. In contrast, the pros argue that monitoring of public institutions' inefficient management should be implemented to ensure public institutions maintain a sense of responsibility and pursue public good. They insist that government control can ensure that agencies pursue public good—the reason for their existence—and are accountable for inefficient business practices. They further argue that government control is necessary to prevent budget waste and associated moral hazard.

Since the time of the previous government, public institutions' debts have increased considerably through conducting policy projects. It is therefore a more convincing argument to say that the fundamental cause of debt would be eliminated if public institutions had autonomy and did not have to carry out government policy projects. However, it is inevitable that public institutions will have to conduct some policy projects in the pursuit of the public good. When public institutions conduct policy projects, inefficiency can occur, so government intervention and control is needed to a certain extent. However, when the

〈Table IV-12〉 Pros and cons of public institutions' higher autonomy

	Increased autonomy in the public institutions	Control of the public institutions
Argument	- Encourage agencies to enhance their business performance by decreasing government regulation and intervention	- Government control is necessary to a certain extent to ensure the agencies pursue public good and behave responsibly
Basis for the argument	- Debts increased by implementing government policies - Excellent business results of projects conducted by public institutions with increased management autonomy	- Implementation of policies recommended by the government is an important tool to guarantee public good - Prevention of public institutions' moral hazard caused by reckless management

government requires a public institution to conduct a government policy project that has nothing to do with the agency's main business, it impacts the agency's profitability, in which case the government needs to provide financial support.

In the next section, we examine a variety of government policy projects under the previous government that significantly increased public institutions' debts. The public institution taken as an example for in-depth analysis is K-water, which carried out the government's Four-River Refurbishment and Geyongin Canal construction projects. Based on the examination and analysis, we then suggest policy alternatives to reduce public institutions' debt accumulated through conducting policy projects.

C. Debts of public institutions performing major government policy projects

1) Current status of major government policy projects

A) Housing site and housing development projects

Public construction projects are examples of the major policy projects carried out by public institutions. In the case of rental housing projects, the Participatory government of former president Roh enacted the Act on the Special Measures for the Construction of National Rental Housing, etc. and announced its plan to provide 1.5 million long-term public rental houses. Later, the Lee

Myung-bak government passed the Act on the Construction of Bogeumjari Housing, etc. to verify types of public rental houses and build public rental houses in low-income areas near cities. The Korea Land & Housing Corporation was responsible for a range of innovative city development projects as well as the second-term new city development drawn up during the Roh Moo-hyun Administration. It was also in charge of creating land site and constructing infrastructure in Sejong City during the Lee Myung-bak government. Aside from some successes with housing welfare and city development projects for public interest, financial risk factors were incurred because of delayed recovery of investment funds due to low rental income and long-term city development, and so on. To address the debt issues of the Korea Land & Housing Corporation, 323 trillion won is expected to be invested by 2030. However, the government only plans to provide financial support up to 33.9 trillion won, possibly exacerbating the Korea Land & Housing Corporation's financial structure for the long term.⁹⁾

B) Overseas resources development projects

Along with public housing and land development projects, the Lee Myung-bak government conducted overseas resources development projects as a major policy agenda. It enacted the Overseas Resources Development Business Act to push forward overseas resources development proactively under the goal of promoting independent development of resources and aggressively searching for future energy sources. Most overseas resources development projects were carried out by public institutions under the Ministry of Knowledge Economy (Predecessor of the current Ministry of Trade, Industry and Energy), including the Korea Gas Corporation, the Korea National Oil Corporation, and the Korea Resources Corporation. The debts of the three agencies while Lee Myung-bak was president increased by 39.7 trillion won, as foreign currency debts were appropriated for most of the investment costs. A major problem is that the agencies' debts are non-performing debts with a low recovery rate despite the

9) Park Jin et al. (2012)

immense investment, and that burden is highly likely to be passed on to the public.

C) Stream and canal development project

Representative of the Lee Myung-bak government's major policy projects were the Four-River Refurbishment and the Gyeongin Ara Waterway projects, carried out by K-water. These were part of a large-scale governmental project, and K-water conducted them without enough support from the government, raising its debt by an astounding 12 trillion won over five years under Lee Myung-bak's government. Funds for the Four-River Refurbishment were procured by issuing bonds, and the Gyeongin Ara Water project was conducted with debts from the financial sector. Despite such enormous financial requirements, the government provided only interest costs for the Four-River Refurbishment project and agreed to redeem the principal once the project is completed, leaving K-water burdened with non-performing debts. The plan was to pay debts from the Gyeongin Ara Waterway project by selling logistics complexes in lots and gaining profits from shipping operations, but the possibility of financial recovery became remote because of very low performance.

2) Status of debt of governmental policy project executing agencies

A) Analysis on debts of major government policy executing agencies

The Korea Land & Housing Corporation, Korea Gas Corporation, Korea Resources Corporation, and K-water are major agencies that have carried out large government policy projects, such as public housing and land development projects, overseas resources development projects, and river development projects. However, their debt levels soared while they conducted projects, as <Table IV-13> shows. The Korea Land & Housing Corporation saw its debts skyrocket from 28.1 trillion won to 142.3 trillion won for a decade from 2004 to 2013. As a result, its debt ratio in 2008 surpassed 400%.

Carrying out overseas resources development projects over the past 10 years, the Korea Gas Corporation, Korea Resources Corporation and Korea National Oil Corporation also experienced significant increases in debt. However, unlike the Korea Land & Housing Corporation, their debt levels increased by

a large margin from 2008 onwards, after the Lee Myung-bak government came to power, which indicates that policy projects such as overseas resources development were the major culprit for debt increases. K-water, which handled the river development projects, maintained a very low debt level of 2 trillion won during the Roh Moo-hyun administration. But its debts began to rise

〈Table IV-13〉 **Debts of public institutions that performed major governmental policy projects**

(Units: KRW 1 trillion, %)

Policy project implementing agency	Variable	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Korea Land & Housing Corporation	Total amount of debt	28.1	34.4	50.4	66.9	85.8	109.2	125.5	130.6	138.1	142.3
	Debt ratio	231.5	249.8	332.5	382.9	440.6	524.5	559.3	461.2	468.0	466.0
	Debt increase rate	38.1	22.4	46.7	32.7	28.2	27.4	14.9	7.4	5.8	3.0
Korea Gas Corporation	Total amount of debt	6.9	8.0	8.7	8.7	17.9	17.8	19.0	28.0	32.3	34.7
	Debt ratio	213.2	237.9	248.1	227.9	438.0	344.3	358.6	347.7	385.4	388.8
	Debt increase rate	3.6	16.0	9.6	0.2	104.3	-0.5	6.9	25.4	15.3	7.7
Korea Resources Corporation	Total amount of debt	2,697	2,902	3,046	4,341	5,234	9,006	14,830	17,690	22,825	35,235
	Debt ratio	97.3	94.6	88.3	103.4	85.4	120.2	162.4	150.8	170.1	207.6
	Debt increase rate	-27.1	7.6	5.0	42.5	20.6	72.1	64.7	14.1	29.0	54.4
Korea National Oil Corporation	Total amount of debt	3.3	3.3	3.5	3.7	5.5	8.5	12.3	20.8	18.0	18.5
	Debt ratio	88.5	77.6	72.4	64.4	73.3	101.5	123.4	193.2	167.5	180.1
	Debt increase rate	3.8	-1.3	7.0	4.0	49.5	55.2	44.5	31.1	-13.5	3.0
K-water	Total amount of debt	1.9	1.8	1.7	1.6	2.0	3.0	8.0	12.6	13.8	14.0
	Debt ratio	21.8	19.5	18.1	16.0	19.6	29.1	75.6	116.0	122.6	120.6
	Debt increase rate	-10.0	-5.4	-3.9	-9.6	24.5	52.7	165.7	55.6	9.5	1.6

Note: K-GAAP is applied for 2004~2010 and K-IFRS is applied for years after 2011

Source: Huh Kyoung-sun et al., 2013, *Cause analysis on public institutions' debts is revised*

from 2008 as a consequence of the Four-River Refurbishment and Gyeongin canal development projects, and its debt ratio soared from 19.6% in 2008 to 123.6% in 2013, with its debts reaching 14 trillion won in 2013.

B) Analysis of debt risks of policy project executing agencies

<Table IV-14> below presents debt risk figures that show how the debts of public institutions that performed policy projects rapidly increased over a short period and how financial risks from increased debt have risen as well.

<Table IV-14> Analysis of debt risk of public institutions that execute major governmental policy projects

(Units: KRW 100 million, times)

Policy project implementing agency		2003	2004	2005	2006	2007	2008	2009	2010 (K)	2010 (I)	2011	2012
Korea Land & Housing Corporation	Operating profit	12,842	13,961	10,835	17,068	23,961	27,557	12,973	2,156	3,502	10,898	14,085
	Interest cost	4,799	3,258	3,521	4,565	8,151	8,228	9,849	4,769	4,769	2,078	3,194
	Interest coverage ratio	2.68	4.29	3.08	3.74	2.94	3.35	1.32	0.45	0.73	5.24	4.41
Korea Gas Corporation	Operating profit	6,180	6,175	4,748	5,404	6,335	6,356	7,940	8,315	10,477	10,232	12,667
	Interest cost	2,432	2,348	2,267	2,965	3,020	4,405	6,821	5,718	6,351	7,238	8,573
	Interest coverage ratio	2.54	2.63	2.09	1.82	2.10	1.44	1.16	1.45	1.65	1.41	1.48
Korea Resources Corporation	Operating profit	-6	-37	8	7	23	121	190	221	187	379	-317
	Interest cost	120	98	51	71	76	104	161	311	453	417	579
	Interest coverage ratio	-0.05	-0.38	0.16	0.09	0.31	1.17	1.18	0.71	0.41	0.91	-0.55
Korea National Oil Corporation	Operating profit	477	2,341	4,060	3,259	3,291	6,031	5,621	6,594	5,943	11,374	7,884
	Interest cost	128	171	151	156	146	326	1,208	1,947	3,166	4,110	4,810
	Interest coverage ratio	3.72	13.71	26.97	20.94	22.50	18.48	4.65	3.39	1.88	2.77	1.64
K-water	Operating profit	3,414	2,190	2,975	2,903	2,167	1,852	1,295	2,294	2,449	3,664	4,343
	Interest cost	336	448	289	238	227	248	331	902	902	2,516	3,399
	Interest coverage ratio	10.15	4.89	10.28	12.20	9.53	7.48	3.91	2.54	2.72	1.46	1.28

Source: Huh Kyoung-sun et al., 2013, *Cause analysis on public institutions' debts is revised*

The analysis of debt risk was done based on the interest coverage ratio, which is obtained when operating profit is divided by interest cost. Time series data on operating profits, interest costs, and the interest coverage ratio of five agencies that performed major governmental policy projects reveal that operating profits were consistent or slightly increased, while interest costs for debts rose and interest coverage ratio dropped, pushing debt risks upward.

C) Debt increase rate of policy projects conducted by each public institution

The above data show that debts, debt ratio, and interest costs have soared significantly and the interest coverage ratio has fallen, increasing financial risks in the five public institutions that carried out major policy projects during the term of the previous government. Most of the debts of the agencies, except for the Korea Gas Corporation, were incurred while they carried out policy related projects. As a result, their financial risk also increased. To analyze if governmental projects were responsible for the debt increases, <Table IV-15> shows the debt increase rates of the five public institutions by year over the terms of the previous governments.

<Table IV-15> Debt amount increased for each project by public institutions that perform major policy projects

(Unit: KRW 100 million)

			2008	2009	2010	2011	2012	2013	Total		
									Subtotal	Total	Ratio
Korea Gas Corporation	Policy project	Price non-regulation-overseas resources development	989	1,629	6,068	7,863	10,685	686	27,920	71,305	32.7%
		Natural gas supply - equity investment for overseas gas fields	-1,280	-781	-673	13,228	19,568	13,323	43,385		
	Others	Natural gas provision-domestic gas supply	78,441	3,175	27,512	21,758	8,036	7,121	146,043	146,608	67.3%
		Other overseas project	462	151	-3	-68	105	-81	565		
Subtotal			78,612	4,174	32,904	42,780	38,394	21,049	217,913		

〈Table IV-15〉 Continued

			2008	2009	2010	2011	2012	2013	Total			
									Subtotal	Total	Ratio	
Korea Resources Corporation	Policy project	Investment project	1,251	2,718	3,730	2,339	5,700	7,752	23,490		102%	
	Others	Loan business	689	21	1,770	-2,952	-	-	-472		-2%	
	Subtotal			1,940	2,739	5,500	-613	5,700	7,752	23,018		
Korea National Oil Corporation	Policy project	Oil development project – domestic	640	-29	-396	-763	262	-862	-1,148		99,868	109%
		Oil development project – overseas	10,054	30,438	27,881	26,262	329	6,050	101,016			
	Others	Private loan business	2,293	-1,424	-	-	-	-	869		-8307	-9%
		Stockpile project	-	-	-	-	-	-	-			
		Others – exchange rate effect	-	-	-1,763	902	-6,968	-1,348	-9,176			
Subtotal			12,987	28,985	25,723	26,401	-6,377	3,841	91,560			
K-water	Policy project	Gyeongin Ara Waterway	-	5,266	9,783	7,123	-1,796	-3,031	17,345		91,628	87.5%
		Four-River Refurbishment	-	1,175	30,723	31,456	8,011	2,918	74,283			
	Others	Water resource	1,306	-2,655	-3,688	-4,639	-4,423	-7,982	-22,081		12,984	13.5%
		Complexes	839	4,080	7,966	5,461	2,190	5,499	26,035			
		Profitable and incidental business	1,854	1,746	2,216	2,984	971	-741	9,030			
Subtotal			3,999	9,612	47,000	42,385	4,953	-3,337	104,612			
Korea Land & Housing Corporation	Policy project	Public housing(Bogeumjari)	13,505	18,693	39,905	42,880	34,663	4,349	153,995		511,046	89.4%
		Industrial complex, etc.	-6,620	1,070	14,714	9,975	8,865	5,204	33,208			
		Housing rental	41,543	46,685	622	12,510	38,027	14,716	154,103			
		Sejong+innovative city	19,960	6,489	13,001	237	-12,135	-4,941	22,611			
		New city+housing site	29,285	64,626	50,371	-3,692	2,511	4,028	147,129			
	Others	Others	44,127	61,685	-24,222	-8,373	-7,585	-5,674	59,958		59,958	11.6%
Subtotal			141,800	199,248	94,391	53,537	64,346	17,682	571,004			

Source: Huh Kyoung-sun et al., 2013.

D. In-depth analysis of debts from policy projects

If we look at the types of debts K-water incurred during the execution of governmental policy projects, financial debt was 11.5 trillion won and accounted for 82.0% of the total. The short-term financial debt ratio, which points to rapid liquidity risks in the short term, was relatively low at

〈Table IV-16〉 Analysis on debts of K-water

(Unit: KRW 100 million, %)

		2009	2010(K)	2010(I)1	2011	2012	2013
Total amount of debt (a)		29,956	79,607	80,854	125,809	137,779	139,985
Increase and decrease	Debt amount increased(b)	10,333	49,651	1,247	44,955	11,970	2,206
	Debt increase rate (b/previous year a)	52.7	165.7	1.6	55.6	9.5	1.6
Financial debts	Financial debts (c)	23,538	70,554	70,554	112,958	118,632	115,980
	Other debts	6,418	9,053	10,300	12,851	19,147	24,005
	Ratio of financial debts (c/a)	78.6	88.6	87.3	89.8	86.1	82.9
Long- and short-term financial debts	Short-term debts (d)	335	4,073	4,073	4,095	12,231	13,769
	Long-term debts	23,203	66,481	66,481	108,863	106,401	102,211
	Ratio of short-term financial debt(d/c)	1.4	5.8	5.8	3.6	10.3	11.9
Major index	Debt ratio (debt/capital)	29.1	75.6	76.6	116	122.6	120.6
	Debt dependency (financial debt/total asset)	17.7	38.2	37.8	48.2	47.4	45.3

Note: 1. As the accounting standards for public institutions has changed from K-GAAP (General Corporate Accounting Standards) to K-IFRS (Korean International Financial Reporting Standards), it is difficult to simply compare debt information from 2010 and 2011. To minimize distortion caused by this change in accounting standards, when comparing debt information from 2010 and 2011, debt information (total debt amount, status of financial debt, long and short-term financial debt, major index) was arrived at by dividing the one according to K-GAAP(2010[K]) into the other according to K-IFRS(2010[I])

- 1) The debt amount increase indicated in 2010(I) shows the difference (difference of debt amount based on revision of accounting standards) between the debt amount applied with K-GAAP for 2010 and the debt amount applied with K-IFRS. The debt increase rate is obtained by dividing the debt amount increase in 2010(1) (difference of debt amount based on revision of accounting standards) by the K-GAAP based debt (2010[K]) in 2010.

approximately 1.3 trillion won and accounted for 11.9% of the total debt. Most of the debt was long-term financial debt and stood at 10 trillion won out of the total 14 trillion won, taking up approximately 71% of total debt.

The major policy projects performed by K-water were the Four-River Refurbishment and Gyeongin Ara Waterway projects. In the case of the Four-River Refurbishment project, K-water provided 8 trillion won between 2009 and 2012 out of about 30 trillion won of project expenses for multipurpose dams, various reservoirs, dredging, and bank revetment projects. For the Gyeongin Ara Waterway project, 2.25 trillion won of project expenses were invested to construct a 19km navigation waterway between the Yellow Sea of Incheon and Haengju Bridge on the Han River, with lock gates and terminals in Incheon and Gimpo.

A significant problem with these projects was that the decision to go ahead with them was made arbitrarily by the government without considering management goals or financial circumstances. Even though K-water expressed a negative opinion about the projects' execution, the National Policy Adjustment Meeting decided to include K-water in their implementation. This is a gross violation of the independent management of a public institution. In particular, bonds were issued to provide 8 trillion won for the Four-River Refurbishment project, but the government's poor measures for financial support of debt meant that there was no clear way to redeem the principal aside from interest payments for financial debt.

Another problem was that little effort went into efficient project management and the enhancement of operation efficiency, since the project was decided by the government. K-water hired about 250 people to execute the Four-River Refurbishment project, and problems such as water pollution, few users taking advantage of the waterside facility, and unused dredged soil remained at the project's completion. In the case of the Gyeongin canal project, the implementation was inefficient in general, and the Board of Audit and Inspection has pointed out that project expenses were wasted in the construction of the navigation waterway. Even if such policy projects are implemented based on government direction, efficient management is required from the beginning.

There were also problems in evaluating K-water's Four-River Refurbishment and Gyeongin canal projects. After the projects were completed,

the Board of Audit and Inspection performed audits on them. As these audits were conducted during Lee Myung-bak Government era, they were shoddy and failed to pinpoint problems with the projects. Other follow-up evaluations based on public institution management evaluations reveal that K-water obtained a series of A's during the implementation of the projects, which means that an accurate evaluation was not done on the K-water projects.

E. Policy measures to manage debts from policy projects

The kinds of problems found in an in-depth analysis of K-water's policy project implementations similarly occurred in overseas resources development projects and housing development projects. To solve debt issues that arise during the implementation of policy projects, there should be a thorough implementation of separate accounting, strengthened preliminary feasibility of public institutions, an introduction of reasonable decision making system for policy projects, a scrupulous follow-up evaluation process, and public disclosure.

1) Implementation of separate accounting

One of the important ways of managing debt from policy projects is with a thorough implementation of separate accounting. Separate accounting and management of project expenses incurred by governmental projects would make it possible to clarify afterwards which party is responsible for debt during the execution of the projects. The project expenses for the Four-River Refurbishment and Gyeongin canal projects have been analyzed in-depth in case studies, and as both were managed with separate accounting systems, it ensured the cause of debt was identified relatively clearly. However, in the case of overseas resources projects, housing development projects, and other public institutions' policy projects, accounting for governmental projects and the agencies' own accounting were combined, making it difficult to identify the exact size of debt and how to manage it. If separate accounting is implemented to analyze size, effect, feasibility, budget, and results of policy projects accurately, it can be utilized to gain important data for project withdrawal or improvement in the future.

2) Effectiveness of feasibility research on policy projects

The next important measure for managing debt is implementing a thorough preliminary feasibility study of governmental policy projects. A problem with preliminary feasibility studies is that agencies without governmental financial support are exempt from doing them, and the exemption range¹⁰⁾ is too vague and broad even for projects that receive financial support from the government. As overseas resources development projects were performed under the recommendation of the government, they were exempt from preliminary feasibility studies by the relevant public institutions because the government provided no support. K-water's Four-River Refurbishment project is an example of a project that did not go through preliminary feasibility study, as the entire Four-River Refurbishment project, including K-water's part in it, was considered an urgent requirement in the same category as disaster prevention, restoration support, and securing facility safety. Therefore, it is necessary to ensure that policy projects that are carried out under the recommendation of the government are subjected to preliminary feasibility studies, even if government funding will not be proved for them. Specific criteria should also be applied to a comprehensive exemption scope.

3) PAYGO system for new policy projects

Adopting the PAYGO system has been discussed extensively the way to ensure financial health when a project that requires large-scale spending is conducted. The PAYGO system makes it mandatory to provide long-term financial estimations and methods to fund a project. The same system can be applied when public institutions conduct new policy projects. Although the National Policy Coordination Meeting reached an agreement on how to provide

10) Exemption is given to the following cases:

- (1) Projects requiring a preliminary feasibility study according to Article 38 of the National Finance Act among projects receiving government budget assistance
- (2) Projects requiring urgency, such as disaster prevention, restoration support, securing facility safety
- (3) Projects in which a minister in charge consults with the Minister of Strategy and Finance for approval in the case of a special situation concerning an agency

government support for interest and how to repay debts after a project has been completed, there were no legal grounds for this agreement, and therefore, legal disputes might occur in the future. To avoid this, the method of funding a project should be described in a regulation.

4) Independent decision-making body for policy projects and the scope of responsibilities

Public institutions' governance structure and the Enforcement Decree of the Act on the Management of Public institutions deprive the agencies of the political power to reject a government request to conduct a policy project. Requiring public institutions to carry out policy projects is the main culprit in reducing agencies' autonomy and making them financially unhealthy. One way to prevent such government impositions is to establish a committee consisting of competent authorities, public institutions, and external specialists that can allocate the tasks of government projects, decide which party will lead a project implementation, and agree on the extent to which the government and public institutions will be responsible.

5) Feasibility of plans, project evaluation, and release of evaluation results to the public

There should be a system which examines whether a policy project is being executed as planned. Specifically, the system would make it mandatory that a project on a certain scale be evaluated by a third party. An in-depth follow-up evaluation system also should be implemented for a public institution's project after it has been completed to analyze its implementation more systematically. The current business performance evaluation system only evaluates whether a public institution conducts a policy project as recommended by the government. There needs to be a new category in the system to examine the feasibility of government policy projects' plans, efficiency of their implementation, and whether the projects' goals were achieved. Ultimately, issues and results identified by these evaluations should be made public. A more informed public can then employ pressure to prevent unreasonable requests upon public institutions to carry out government projects and to ensure

agencies feel responsible for project performance.

3 Regulation of utility tariffs: the example of KOGAS

A. Financial status of public institutions that charge utility tariffs

1) Overview of public institutions that charge utility tariffs

All of the 5 public institutions that charge utility tariffs are public institutions, according to the classification of public institutions. Most of these agencies were established in the 1960s when Korea was in the early stages of industrialization and needed infrastructure for energy and transportation. Back then, the private sector was not able to make investments in large-scale SOC and naturally, the public sector was responsible to build infrastructure and provide public services. Since electricity, city gas, water and transportation are public goods, it was reasonable to argue that public institutions should provide them.

Under these circumstances, KEPCO and KOGAS were designated as public institutions according to Article 4 of Management Guidelines for Debt Reduction Plans of Public institutions, even though they were listed on the stock market. In a number of countries, entities providing electricity, city gas, water and railroads are privatized. In comparison, Korea only has a few privatized entities providing public goods. KEPCO and KOGAS have the highest degree of privatization among public institutions. Still, only 42.28% of KEPCO shares and 45.4% of KOGAS shares are owned by institutions or individuals other than the government and the public sector. Shares of the other 3 agencies are 100% owned by the government and the public sector. The organizational structure, HR issues, business and policy decisions of K-water, KORAIL, and the Korea Expressway Corporation, as well as the public portions of KEPCO and KOGAS, are controlled by the government according to Management Guidelines for Debt Reduction Plans of Public institutions. As a result, the decision on how much they charge the public for the utility services they provide is also controlled by the government.

2) Financial status of public institutions charging utility tariffs

The debts of public institutions that charge utility tariffs steadily increased from 93.8 trillion won in 2008 to 196.4 trillion won in 2013. There has been a surge in the debt increase rate of these agencies since 2008. The agencies' debt increase rate between 2005 and 2007 was 14.1% and it was 109.5% between 2008 and 2013. From 2008 onwards, all of these agencies debts increased at a huge rate.

All of these agencies are public institutions, have high sales, and are energy companies engaged in SOC activities. Their business scope is one of the largest among public institutions, thereby accounting for a large share of public institutions' total debt. As of 2013, all 5 agencies charging utility tariffs were in the top 10 list of agencies that ran up the highest debts. Three of them are in the top 5 of that list. As of 2013, KEPCO alone accounted for 19.9% of the public institutions' total debts and 37.5% of the total debts of all agencies charging utility tariffs.

The index cited most when the issue of public institutions' debts is discussed is the debt ratio, which is the ratio of total debt to total assets. All of the public institutions charging utility tariffs are meeting the government's debt ratio target, which is below 200%. However, many public institutions are exceeding the government target and some of them have a debt ratio that is so high that it is causing deep concern.

〈Table IV-17〉 Debt ratio of public institutions charging utility tariffs

(Unit: %)

Name	2008	2009	2010	2011	2012	2013
KEPCO	113.7	125.1	126.1	153.6	186.2	202.3
KOGAS	438.0	344.3	288.4	347.7	385.4	388.8
KORAIL	73.8	88.8	149.9	154.3	244.2	372.0
Korea Expressway Corporation	92.5	93.7	97.8	99.6	97.1	94.3
K-water	19.6	29.1	76.6	116.0	122.6	120.6
All public institutions charging tariffs	108.5	114.6	128.4	152.0	176.1	188.4

Source: System of publication of public institutions' business information (Alto)

The interest coverage ratio is a ratio of interest to operating profits, and it indicates how easily a company can pay interest on outstanding debts with its operating profits. As of 2013, the interest coverage ratio of all public institutions charging utility tariffs was 1.26, and they had an ability to meet their interest payment through their business operation (see <Table IV-18>). However, there is a large gap in terms of this ratio among agencies. The Korea Expressway Corporation's ratio is above 1.0, which is not high enough. K-water's interest coverage ratio is not at an inappropriate level for now, but the ratio has been decreasing significantly like other debt-related indexes since 2008. The ratios of KORAIL and KEPCO are way below 1.0 and importantly, KORAIL's ratio has been negative for 2 years in a row since 2012.

Credit rating agencies, such as S&P and Moody's, have lowered the ratings on these. From 2008 to 2010, public institution evaluated crediting ratings and government guarantee ratings were the same or differed only slightly. From 2011 onwards, government guarantee ratings have risen, while public institution evaluated credit ratings have plummeted. As a result, all of the public institutions in question ended up being unable to issue corporate bonds without a government guarantee.

<Table IV-18> Interest coverage ratio of the public institutions charging tariffs

(Unit: times)

Name	2008	2009	2010	2011	2012	2013
KEPCO	-2.13	0.91	1.10	-0.32	-0.27	0.52
KOGAS	1.44	1.16	1.53	1.41	1.48	1.78
KORAIL	-2.61	-2.03	1.84	1.60	-0.36	-0.06
Korea Expressway Corporation	1.03	1.06	1.09	1.09	1.21	1.03
K-water	6.89	3.91	2.93	2.37	1.27	1.42
All public institutions charging tariffs	-0.66	0.76	1.30	0.62	0.33	1.26

Source: System of publication of public institutions' business information (Alto)

B. Relation between regulation of utility tariffs and debts

It is very difficult to identify correctly what causes the debts of the public institutions that charge utility tariffs. The Board of Audit and Inspection attributed the causes of 9 public institutions' debt increases from 2007 to 2012 to the regulation of utility tariffs, policy projects, overseas projects, and the agencies' own businesses. For 5 out of the 9 agencies, the debt increase caused by the regulation of tariffs accounted for 33% of their total debt increase. Energy public institutions use a high share of commodities such as gas and soft coal when they provide public services. These institutions were the largest contributors to the debt increase out of all public institutions charging utility tariffs. Public institutions engaged in SOC businesses do not use raw materials in large quantities and their de

The cost recovery ratio can be used as a tool to measure how tariff regulations have affected the public institutions' debts. The cost recovery ratio is a ratio of all costs spent on providing public services to total profits generated by provision of those services. It is a gauge of how well profits have recouped the costs. According to each agency's data on public utility tariffs, their cost recovery ratios from 2008 to 2013 were way below 100% and most of the ratios declined in comparison with where they stood in 2008, as shown in <Table IV-20>. bts did not increase considerably by the tariff regulation.

<Table IV-19> Debt increase in the public institutions charging tariffs by cause

(Units: KRW 100 million, %)

Name	Tariff regulation	Policy projects	Overseas projects	Agencies' business	Total debt increase	Proportion of tariff regulation
KEPCO	80,024	–	14,472	59,326	153,822	52.0
KOGAS	57,525	–	19,603	50,771	127,899	45.0
KORAIL	15,617	12,928	–	9,911	38,456	40.6
Korea Expressway Corporation	12,949	36,500	–	18,589	68,038	19.0
K-water	4,643	85,525	–	12,828	120,996	4.5

Note: Debt increase from 2007 to 2012

Source: Data from Board of Audit and Inspection, "46 trillion won out of the public institutions' total debts of 106 trillion won is attributable to reckless management," Dong-a Ilbo on February 23, 2014.

We assumed the cost recovery ratio was 95% and 100%, higher than the actual ratio, in calculating the debts to find out how much the tariff regulation affected the debts. When the ratio is assumed to be 100%, the debts of the public institutions charging utility tariffs were 135.3 trillion won in 2012, or 74% of the actual debts of 196.4 trillion won. In other words, if the cost recovery ratio had been 100%, the accumulated debts would have been reduced by 25% over 4 years from 2009. If the cost recovery ratio had been 95%, the actual debts would have been reduced by 16.5%.

〈Table IV-20〉 Trends in the cost recovery ratio of public utility tariff

(Unit: %)

Name of the tariff	2008	2009	2010	2011	2012	2013
Electricity	77.7	91.5	90.2	87.3	88.4	97.9
Wholesale tariff of city gas	87.5	80.4	86.1	87.0	86.3	87.2
Railroad fare	68.7	72.1	76.2	84.8	90.3	—
Highway toll	76.4	75.8	82.0	84.0	81.4	81.0
Metropolitan water	82.2	81.4	84.5	84.9	87.4	84.5

Note: KORAIL did not release figures for 2013

Source: Each agency's home page

〈Table IV-21〉 Simulation for the total debts of public institutions charging utility tariffs when the cost recovery ratio is increased

(Units: KRW 100 million, %)

Name of the agency		2009	2010	2011	2012	2013
KEPCO	Debts when the cost recovery rate is 95%	446,464	637,567	720,822	807,527	860,962
	Ratio to the actual debts	86.2	88.3	87.2	84.9	82.7
	Debts when the cost recovery rate is 100%	425,791	598,002	659,581	721,896	747,916
	Ratio to the actual debts	82.2	82.8	79.8	75.9	71.9
KOGAS	Debts when the cost recovery rate is 95%	158,109	166,860	196,788	211,035	197,509
	Ratio to the actual debts	89.0	74.8	70.4	65.4	56.9
	Debts when the cost recovery rate is 100%	145,016	141,312	156,210	152,641	117,071
	Ratio to the actual debts	81.6	63.4	55.9	47.3	33.7

〈Table IV-21〉 Continued

Name of the agency		2009	2010	2011	2012	2013
KORAIL	Debts when the cost recovery rate is 95%	82,236	116,449	122,302	129,800	–
	Ratio to the actual debts	93.9	92.2	90.9	90.6	–
	Debts when the cost recovery rate is 100%	81,077	114,101	118,736	125,009	–
	Ratio to the actual debts	92.6	90.4	88.2	87.3	–
Korea Expressway Corporation	Debts when the cost recovery rate is 95%	210,980	224,998	229,537	231,540	231,794
	Ratio to the actual debts	96.6	94.8	93.3	91.3	89.3
	Debts when the cost recovery rate is 100%	209,041	221,201	223,890	223,847	222,002
	Ratio to the actual debts	95.7	93.2	91.0	88.3	85.5
K-water	Debts when the cost recovery rate is 95%	28,515	77,283	120,421	130,548	131,217
	Ratio to the actual debts	95.2	95.6	95.7	94.8	93.7
	Debts when the cost recovery rate is 100%	27,952	76,720	119,858	129,985	130,654
	Ratio to the actual debts	93.3	94.9	95.3	94.3	93.3
All public institutions charging utility tariffs	Debts when the cost recovery rate is 95%	926,304	1,223,157	1,389,871	1,510,450	–
	Ratio to the actual debts	89.8	88.0	86.2	83.5	–
	Debts when the cost recovery rate is 100%	888,878	1,151,334	1,278,275	1,353,378	–
	Ratio to the actual debts	86.2	82.8	79.3	74.9	–

Note: 1. KORAIL's data for 2013 is not included because the agency did not release that year's total costs and total profits

2. Since KORAIL's data on total costs and total profits in 2013 was not available, the figures of all public institutions charging utility tariffs in 2013 were not included

C. Causes of the tariff regulation

1) Lack of transparency in calculating costs

Tariffs are based on the recovery of total costs spent on providing public services, so public institutions calculate total costs and adjust tariffs accordingly. In theory, there could be obstacles to calculating the tariffs transparently and reliably. First, the public institutions can inflate the costs on purpose by using asymmetric access to the data for cost calculation. Public institutions do not try to maximize profits like private companies do, and they might be motivated

to report inflated costs to maintain or even expand their own organizations instead of serving the public interest.

In fact, the auditor's report on KOGAS made by the Board of Audit and Inspection in 2014 suggested there had been various errors in calculating costs from 2006 to 2013. The problems the audit pointed out were as follows: contributions that had nothing to do with the provision of city gas, recording expenses of the overseas projects department as city gas costs, and the incorrect calculation of depreciation and reasonable compensation on operating assets that are part of the city gas tariffs.

〈Table IV-22〉 Excessive calculation of wholesale tariffs for city gas

(Unit: KRW 100 million)

	2006 ~ 2009	2010	2011	2012	2013	Total
Contribution		72	77	93	107	349
Labor of overseas projects department	177	63	178	185	69	672
Excessive depreciation such as revaluation			2,281	2,166	1,284	5,731
Excessive calculation of compensation on operating assets	2	513	303	552	520	1,890
Total	179	648	2,839	2,996	1,980	8,642

Source: Board of Audit and Inspection (2014b)

Each public institution releases its total costs, breakdown of costs, total profits, sales and cost recovery ratio. But there was a difference between the cost recovery ratio the agencies released and the ratio arrived at by a private accounting firm for submission to the National Assembly. This difference was evidence that the public institutions were inflating costs.¹¹⁾ Differences in the method of calculating the cost causes differences in the ratio, which indicates

11) A *Seoul Daily editorial* stated that “improve public institutions' reckless management before raising the tariffs,” published on October 25, 2013.

〈Table IV-23〉 Cost recovery ratio of each public service's costs

	Electricity	City gas	Railroad	Road	Water
Each agency	87.3	87.0	84.8	84.0	84.0
Anjin Accounting Firm	94.0	103.6	78.3	137.5	110.0

Note: As of 2011

Source: Each agency, Anjin Accounting Firm (quoted from an editorial published in Seoul Daily on October 25, 2013)

that public institutions and other organizations have different views about costs.

Moreover, even if agencies do not inflate costs on purpose or with duplicitous motivation, the calculation standards they use might not be transparent enough and are applied in the agencies' favor. Total costs consist of reasonable costs and reasonable compensation on operating assets. The reasonable costs are calculated based on financial statements. The reasonable compensation on operating assets is calculated by multiplying the fare basis by the reasonable compensation on operating assets ratio. As the Budget Policy Department in National Assembly (2012) suggested, the reasonable compensation on operating assets varies depending on how the reasonable compensation on operating assets ratio is calculated. Also, there is still no agreed upon standard method for calculating the reasonable compensation on operating assets ratio (Kim Sung-tae, 2014).

2) Ineffective review commission

A plan for tariff change submitted to competent authorities is then submitted for consideration at the review commission. As the calculation procedure shows, the review commission is supposed to independently review whether the plan is appropriate or not. However, the commission has functional and organizational limitations, and lacks authority. As a result, it fails to serve as an independent body to contribute to the correct calculation of tariffs. The commission can only provide its opinion on whether it agrees to the plan for a tariff change submitted by the public institutions, but lacks the authority and resources to recommend a plan for tariffs by itself. It also does not have authority to force public institutions to accept its recommendations and does not even

have as much information on the tariffs as public institutions do. The way the review is conducted is therefore inappropriate for the provision of reasonable tariffs.

There is an organizational problem as well that creates conflicts of interest. The review commission's finance and HR are not independent from competent authorities and the public institutions. The commission's operating expenses are funded by the competent authorities and how active the commission can be is determined by how much it is financed. About half of the 15~25 members of the commission are appointed and these members are experts in various areas of the society. The remaining half, who are ex officio members, are high ranking officials of the related competent authorities and executive members of the public institutions. In addition, the chairman of the commission is usually a minister from one of the competent authorities. Due to these financial and HR arrangements, the commission is not able to provide independent opinions.

3) Political decision on public utility tariffs

The plan for tariff change reviewed by the review commission is subject to discussion between the Ministry of Strategy and Finance (MSF) and the competent authorities. According to Article 4.1 of the Enforcement Decree of the Price Stabilization Act, the competent authorities should discuss the plan with the MSF and the authorities' direct counterpart for price management in the MSF. The problem is that related laws and regulations dictate the need for discussion but do not clearly describe guiding principles or standards for the discussion. Therefore, whether the plan for tariff change is accepted or not depends on the discussion between the competent authorities and the MSF.

The competent authorities are concerned with proper functions and roles of related organizations and financial stability, while the MSF, which is responsible for price stability, is concerned with how the tariff change affects the price, and therefore, it views the tariff change as a tool to manage the price. When these two parties whose interests conflict with each other discuss the tariff change, without principles or standards, it is obvious that the tariff change is ultimately decided by government opinion and public opinions that affect the

government's decision.

As mentioned above, regulators control the tariffs based on public opinions or policies. There are also cases where the regulators ignore standards or principles of tariff calculation and use their own judgment arbitrarily to regulate tariffs. One example is railroad fares. KORAIL is restricted to suggesting changes to the upper price limit of railroad fares in a tariff change plan. In reality, discussion between the Ministry of Land, Infrastructure and Transport and the MSF is what determines the fares. The result is that fares have not been raised since 2008 due to regulation. Another example is cost of materials that decide the supply costs of natural gas. The supply and demand of natural gas depends on overseas situations and is influenced by the foreign exchange rate and international oil prices. Since the foreign exchange rate and international oil prices fluctuate, fares are determined by taking this into account, and a system that links the costs of materials to fares was implemented and was being reviewed every 2 months. The system has a set range of fluctuation of 3%. However, this working system was put on hold because of the government's policy regarding price stability. As these examples show, a political environment allows regulators to ignore principles and regulate fares even when there are clear and transparent calculation standards.

D. Policy responses to manage the debts accumulated by tariff regulation

1) Clear method to calculate costs

The new calculation standards for public utility tariffs were revised in 2013 and implemented in 2014. According to the new standards, the minister of the relevant competent authorities is required to define how to calculate the compensation rate of operating assets of borrowed capital and the compensation rate of operating assets of and equity capital. However, the calculation standards for railroad fares stipulate that the minister of MOLIT can decide the risk-free asset return, market risk premium, and danger coefficient that are used to determine the compensation rate for operating assets of equity capital by taking into account consumers' interest and the sustainability of the public service. But in this case, there are no clear definitions for consumers' interest and the

sustainability of the public service, thereby allowing the competent authorities and the public institutions to decide arbitrarily on the compensation rate of operating assets of equity capital. There needs to be clear guidelines on what methods the competent authorities can use to determine the tariffs instead of allowing their arbitrary interpretation of the standards to continue.

2) Cost review procedure

Transparent cost calculation is possible by adopting a transparent and clear tariff calculation procedure. However, not all procedures and standards can be fixed indefinitely. Procedures and standards are subject to revision and improvement, depending on situations that can achieve public good and profitability. Currently, there is no procedure in place to carefully review the plans for tariff increases submitted by public institutions. The Board of Audit and Inspection occasionally identifies cases of excessive tariff increases, but there is no long-term review procedure. The cases of excessive tariff increases are not found until the tariffs have already increased, which leads to the moral hazard of public institutions, poor management and supervision of competent authorities, and eventually a reduction of public trust. It is also difficult to take actions against excessive tariff increases after tariffs have been raised. Therefore, there needs to be a cost review procedure to prevent unreasonable tariff increases.

The new standards for public utility tariffs, released in 2014, provide an environment for reasonable cost reviews and tariff calculations by requiring clear standards for total cost calculations, financial statements dedicated to tariff calculation, and a tariff calculation report. The MSF is also operating a cost analysis team consisting of accountants and researchers as part of a pilot program. The analysis team reviewed the costs incurred in 2013 according to the new standards to determine whether the costs, including all expenses, were reasonably calculated. Further review is required to decide whether the current costs for public service are reasonable. To that end, a more comprehensive review procedure should be developed from the cost analysis team and carried out on a regular basis.

3) Calculation and compensation of uncompensated costs

The linkage system for costs of materials is part of the method for calculating city gas tariffs. The system was put on hold in 2008 because the foreign exchange rate fluctuated, the international oil prices surged, and the government wished to stabilize prices. Though the system was put on hold, uncompensated costs calculated according to the standards of the linkage system were supposed to be recognized as outstanding amounts. The outstanding amounts help to calculate the debts accumulated by tariff regulation. The argument that debts need to be reduced can be the rationale behind the easing of long-term and excessive tariff regulations and it can exert pressure on the regulators.

We need to consider taking advantage of the cost recovery rate in the same way the advantages of the price linkage system are used. Tariffs should be calculated according to clear standards and procedures and examined through accounting and analytic reviews to ensure they are high enough to compensate for costs. But when tariff regulation is inevitable for some reason, uncompensated costs should be treated as outstanding amounts and eventually compensated through direct payments or tariff increases when economic situations improve. If deficits and debts increased by tariff regulation are correctly calculated and publicized, the public would have a clear understanding of the costs incurred by tariff regulation and come to a consensus that the regulation should be eased and tariffs should be raised. More correct and reliable cost calculation methods should be introduced before uncompensated costs are calculated and compensated.

4) Standards and procedures for tariff regulation

Currently, tariff regulation is determined by the government's intentions. Most governments are affected by public opinions and approval ratings, and they are reluctant to raise prices. If regulators cannot ignore public expectations, a more realistic alternative is to establish reasonable tariff regulation standards and procedures and form an independent body to handle related issues. The review commission is not an independent body in organizational structure and in its use of operating expenses. It only reviews whether the plan for tariff

change is acceptable or not. So, there needs to be a body independent of the government and the body should set the rules for tariff regulation and oversee related issues.

5) Change of the tariff calculation method

The alternatives suggested above are effective only when the total cost compensation method, which allows for revision and change depending on circumstances, and the current calculation procedure are maintained. The current methods and procedures are not sustainable because direct regulation will continue to incur costs. If the government does not trust public institutions to change utility tariffs and tightens tariff regulation, public institutions will strongly complain about tighter regulation and become demotivated. In the long-term, an incentive program would be a good alternative to encourage agencies to voluntarily lower costs and charge reasonable tariffs without being asked to do so by supervision and review.



V

Conclusion

This study examined what many see as the primary causes of public institution debts and how these causes contribute to the size of debt. Regrettably, a separate accounting system is not in use. Yet even if we assume that a separate accounting system is in use, the study still suggests that accounting for government policy projects should be separate from public institutions' own businesses.

The study also explains a correlation between government policy projects and debts. Depending on the method to calculate debts and the type of a public institution, study results varied. But there was a correlation between proxy variables—such as implementation of government policy projects, tariff regulation, and welfare benefit costs—and debts, as previous studies have pointed out.

Another goal of this study was to examine the causes of debts in order to suggest policy alternatives. An investigation of management inefficiency through the example of KORAIL shows that inefficiency results from a large share of the agency's total costs going towards labor. Just because an agency's labor costs are high does not mean it will be inefficient. However, KORAIL's employees are paid a higher wage compared with those of the same age, educational background, and occupation in private companies. The main culprit for these higher wages is a salary class system that does not take job performance into account. Such a compensation system can predictably make it difficult to enhance labor productivity. Public institutions therefore need to manage their human resources strategically to improve their productivity and efficiency.

Specifically, they should consider adopting a promotion system and a salary system based on job performance.

By examining K-water, which has implemented large government policy projects, the following problems were identified. The government unilaterally decided policy projects and requested the public institution to carry them out without considering the agency's management goals or financial situation. When such projects were carried out, the agency did not make enough effort to increase efficiency in operating the projects because it had only been asked to implement them by the government. Apart from increased labor during the implementation of the projects, the agency created several more problems that remained at the completion of the projects, including water pollution, less use by the public, and the accumulation of unused dredging soil. These issues made people doubt whether the projects were conducted and managed as planned. Finally, there was a lack of auditing and evaluation to ensure the proper management and operation of these projects. The initial audit of the Four-River Refurbishment Project was conducted by the previous government, which had planned the project. But this audit had failed to detect problematic issues that were later pointed out. K-water even received a high grade for its business performance evaluation, which indicates that the government had failed to accurately and correctly identify and evaluate the agency's true state of management inefficiency.

To solve the above problems it is recommended that a number of steps be taken. First, a separate accounting system should be used for all projects that public institutions conduct. Second, pre-feasibility research should be implemented for all government policy projects. Third, the PAYGO system needs to be applied to all new public institution projects commissioned by the government. The PAYGO system will require the agencies to provide a plan to fund the projects. Fourth, a commission consisting of competent authorities, the MSF, the public institutions, and external experts should be established to prevent the government from making unilateral decisions regarding the implementation of government projects. The commission will define the roles of each entity, allocate jobs, and make reasonable decisions on how projects should be funded. Finally, the effectiveness of policy projects should be evaluated in the middle and after completion of the projects, and the evaluation results should be used to improve the operations of ongoing and future projects of

a similar nature.

Issues concerning tariff regulation were examined through the example of KOGAS. The examination showed that problems arose due to the following reasons. First, the method to calculate costs is not transparent, leaving only public institutions with the best access to information and data necessary for the cost calculation. As a result, it is not easy to discover whether agencies inflate costs on purpose to bring about an increase in tariffs. Second, the tariff review commission is the only external body engaged in the process of tariff calculation, but it is not independent from competent authorities in deciding the utilization of its human resources, organizational structure, budgets, and functions. Third, the government as regulator has too much discretion in the determining of tariffs.

This study also recommends the following policy alternatives. First, clearer methods for calculating costs and public utility tariffs should be introduced. New calculation standards for public utility tariffs were introduced in 2014 to replace existing standards. Still, some of the rules in the new standards lack the clarity to ensure the correct calculation of costs. Second, a cost review procedure should be adopted. Third, uncompensated costs justified by a thorough cost review need to be compensated. If standards that are objective and clear—such as those that link costs of materials to city gas tariffs—were applied to calculate the debts increased by tariff regulation, public institutions would be properly financially compensated in the future. Fourth, a tariff regulation body independent from the government and with independent discretion in its HR and financial management should be established. Tariffs should be regulated, but there needs to be a system to ensure that their regulation achieves both public good and profitability.

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