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2012 Modularization of Korea's Development Experience:

Public-Private Partnerships: Lessons from Korea on Institutional Arrangements and Performance

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MINISTRY OF STRATEGY AND FINANCE

KDI Korea Development Institute

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Public–Private Partnerships: Lessons from Korea on Institutional Arrangements and Performance

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Preface

The study of Korea's economic and social transformation offers a unique opportunity to better understand the factors that drive development. Within one generation, Korea has transformed itself from a poor agrarian society to a modern industrial nation, a feat never seen before. What makes Korea's experience so unique is that its rapid economic development was relatively broad-based, meaning that the fruits of Korea's rapid growth were shared by many. The challenge of course is unlocking the secrets behind Korea's rapid and broad-based development, which can offer invaluable insights and lessons and knowledge that can be shared with the rest of the international community.

Recognizing this, the Korean Ministry of Strategy and Finance (MOSF) and the Korea Development Institute (KDI) launched the Knowledge Sharing Program (KSP) in 2004 to share Korea's development experience and to assist its developing country partners. The body of work presented in this volume is part of a greater initiative launched in 2010 to systematically research and document Korea's development experience and to deliver standardized content as case studies. The goal of this undertaking is to offer a deeper and wider understanding of Korea's development experience with the hope that Korea's past can offer lessons for developing countries in search of sustainable and broad-based development. This is a continuation of a multi-year undertaking to study and document Korea's development experience, and it builds on the 40 case studies completed in 2011. Here, we present 41 new studies that explore various development-oriented themes such as industrialization, energy, human resource development, government administration, Information and Communication Technology (ICT), agricultural development, land development, and environment.

In presenting these new studies, I would like to take this opportunity to express my gratitude to all those involved in this great undertaking. It was through their hard work and commitment that made this possible. Foremost, I would like to thank the Ministry of Strategy and Finance for their encouragement and full support of this project. I especially would like to thank the KSP Executive Committee, composed of related ministries/departments, and the various Korean research institutes, for their involvement and the invaluable role they played in bringing this project together. I would also like to thank all the former public officials and senior practitioners for lending their time, keen insights and expertise in preparation of the case studies.

Indeed, the successful completion of the case studies was made possible by the dedication of the researchers from the public sector and academia involved in conducting the studies, which I believe will go a long way in advancing knowledge on not only Korea's own development but also development in general. Lastly, I would like to express my gratitude to Professor Joon-Kyung Kim and Professor Dong-Young Kim for his stewardship of this enterprise, and to the Development Research Team for their hard work and dedication in successfully managing and completing this project.

As always, the views and opinions expressed by the authors in the body of work presented here do not necessary represent those of the KDI School of Public Policy and Management.

May 2013

Joohoon Kim

Acting President

KDI School of Public Policy and Management

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Summary

There exists no standard definition of what constitutes a public-private partnership. The OECD (2008) defines a public-private partnership as: an agreement between the government and one or more private partners, according to which the private partners deliver the service in such a manner that the service delivery objectives of the government are aligned with the profit objectives of the private partners, and where the effectiveness of the alignment depends on a sufficient transfer of risk to the private partners. The United Kingdom defines a public-private partnership as "arrangements typified by joint working between the public and private sectors. In their broadest sense they can cover all types of collaboration across the private-public sector interface involving collaborative working together and risk sharing to deliver policies, services and infrastructure." (HM Treasury, 2008). The most common type of PPP in the United Kingdom is the Private Finance Initiative, which describes an arrangement where the public sector purchases services from the private sector under long-term contracts.

Korea defines a public-private partnership project in the Korean Act on Private Participation in Infrastructure as: a project to build and permeate infrastructure such as road, port, railway, school and environmental facilities–which have traditionally been constructed and run by government funding–with private capital, thus tapping the creativity and efficiency of the private sector. PPP was first introduced in Korea with the enactment of the Act on Promotion of Private Capital Investment in Social Overhead Capital in 1994. The act was amended by the Act on Private Participation in Infrastructure in December 1998, further spurring private investment in many social overhead capital (SOC) projects. In another amendment in 2005, a service-type contract, called a build–transfer–lease (BTL), project, was introduced, in addition to the existing user fee-type contract, called a build–

transfer–operate (BTO) project. The scope and opportunities for participants in PPP projects have been diversified and expanded ever since.

The PPP market in Korea has grown and developed into a stable and highly profitable financial market, thanks to the government's systematic support and management to vitalize the PPP program over the past decade. This effort has solidified the PPP market's position as a new mode of raising funds to make up for insufficient government funding. The private sector's interest is rising in the government's policy to reinvigorate PPP financing, as part of the latter's efforts to improve its promoting strategy of PPPs. As of the end of 2011, almost 600 PPP projects were under way. Out of those, about 150 BTO and 250 BTL projects have been completed and are in operation. Recently, there has been growing demand in Korea to set up a sound fiscal management system for PPP projects. PPP investment has long been treated separately from publicly financed investment, and has not been under the direct accounting and regulation of government expenditure. In this aspect, there are a number of issues specific to PPPs, such as determining the government subsidy between the competent authority and the private concessionaire, contracting future payment obligations for 10 to 20 years, determining whether or not the PPP assets are recognized as assets on the government's balance sheet, and forecasting future expected or contingent government revenues. There is a need to develop a fiscal guideline to define the proper level of private sector participation, and the investment portion against the budget and suggested criteria for project selection. One method being considered is linking the PPP implementation and investment plans to the government budget plan in the medium-term expenditure framework.

This study seeks to explain the institutional arrangements and reform efforts of the Korean government for developing and managing public-private partnership programs in the last decade, and to find performance and lessons learned to further improve value for money in the government sector. Several parts of the report, in particular chapters of 2 and 4, are based on an earlier study of the authors, *Public Private Partnership Infrastructure Projects: Case Studies from the Republic of Korea*, published by the Asian Development Bank (2011). The authors have updated new points of PPP institutional reforms and performance since the ADB report. At the same time, the study delivers two new chapters, analyzing key success factors and lessons learned at chapter 5 and 6 as well.

Chapter 2 of this volume will describe the details of institutional settings for public–private partnerships in Korea. Topics discussed include the legal framework for PPPs, decision-making organizations, procurement schemes, government support for land expropriation, financial and tax incentives, concession termination conditions, public-private partnership project dispute mediation committee, and training and education program for capacity building.

In Chapter 3, the trends and current status of PPP program implementation are summarized as of 2011. An alternative PPP approach, the BTL method, which was introduced in 2005, is explained. A total of 595PPP projects, with 199 BTO and 396 BTL projects, have been announced and undertaken as of the end of 2011. This paper calculates and estimates the number of projects—either the national or local, solicited or unsolicited—and the government fiscal commitment to those projects. Contingent liabilities from the minimum revenue guarantee (MRG) will be addressed as well.

Chapter 4 examines some evidence of cost savings and efficiency gains from PPP projects. Prior to this study, there was little research done on the performance of PPP projects in Korea. This chapter evaluates the economic efficiency of private investment projects through microeconomic empirical analysis. Furthermore, this chapter provides additional evidence of the contribution of PPPs to the national economy. An analysis is conducted to find evidence of PPP effects on economic growth and social welfare in Korea.

Chapter 5 analyzes the major driving forces for success in Korean PPP performance, and derives lessons learned. Based on the lessons learned from the PPP reform in the last decade, seven factors that facilitated successful reform in PPPs will be highlighted.

Chapter 6 provides lessons from PPP experiences in Korea and, seeks to answer the question, "Is PPP a good route?," identifying challenges for successful PPP implementation and management in the future.

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Chapter 1

Institutions of Korean Public–Private Partnerships

1. Background in Chronology
2. Legal Framework
3. Organization of Decision Process
4. Procurement Schemes
5. Government Support
6. Risk Sharing Mechanisms
7. Concession Termination
8. Public Private Partnership Project Dispute Mediation Committee
9. Training and Education Program

Institutions of Korean Public–Private Partnerships

1. Background in Chronology

Following decades of rapid economic growth, the Republic of Korea found itself at the beginning of the 1990s with a serious shortage of infrastructure facilities, such as roads, railways, seaports, and airports. Compared to the high rate of economic growth, the rate of infrastructure investment had been decreasing in the 1980s in particular, which drove a lot of traffic bottlenecks in many regions, and high traffic congestion costs in roads, railways, and seaports. The government, judging there would be limits to its ability to fund the needed construction of infrastructure facilities, had come to feel the need to induce private sector participation in infrastructure investment, as an alternative means of replenishing infrastructure. The government began to push for public–private partnership (PPP) projects in earnest with the August 1994 enactment of the Act on Promotion of Private Capital Investment in Social Overhead Capital.

Because of the financial crisis that hit the Republic of Korea in late 1997, however, the promotion of PPP projects fell into a slump. So the government made an across-the-board amendment, called the Act on Private Participation in Infrastructure, in December 1998, which called for, among other things, reinvigorating PPPs through various government policy supports, including the minimum revenue guarantee (MRG) program. The government modified this law again in January 2005, expanding the range of facilities covered from economic infrastructure—such as transportation facilities like roads, railways, seaports, and environmental facilities—to social infrastructure, such as schools, military residences, housing and welfare facilities for the aged, and cultural facilities. It introduced the build–transfer–lease (BTL) method in addition to the existing build–transfer–operate (BTO) method, expanding the scope of participation in PPP financing and diversifying

opportunities. In October 2009, the MRG program ended, and was replaced by the support measure of compensa¬tion of base (raw) cost, under which the government shares investment risks within the limit of the government's cost, if the project was conducted as a public project.

Chronologically, the changes in the nation's PPP project characteristics can be roughly divided into four periods, as shown in <Table 1-1>.

Phase I covers the period from the 1960s to August 1994, during which the nation sporadically conducted PPP projects based on individual laws that applied to road and port projects.

Phase II covers the period from the enactment of the Act on Promotion of Private Capital Investment in Social Overhead Capital in August 1994 to December 1998, just before its comprehensive revision in the Act on Private Participation in Infrastructure. During this period, the government set clear criteria on concession periods, user fees, and government support, as well as more clearly specified project implementation processes. Despite these changes designed to encourage private investment, private investment sharply declined due to the financial crisis that hit the nation in late 1997.The amount of actual PPP activity during this period remained quite sluggish. From the viewpoint of policy makers, the immediate aftermath of the financial crisis was a period when they badly needed expanded private investment into social infrastructure, to stimulate the economy and foreign direct investment to upgrade the Republic of Korea's sovereign credit rating to overcome the financial crisis. During this period, there was an even greater need to reinvigorate PPP projects. The government therefore took steps to make a wide range of systematic improvements, including the enactment of the Act on Private Participation in Infrastructure in December 1998.

Phase III spans the period from early 1999 to 2004, during which time the government introduced various support systems to reinvigorate private investment projects, including the MRG program. The government attempted to solve various problems that had been continuously raised in the course of promoting PPPs. Such measures included removing artificial divisions of facilities eligible for PPP support; diversifying project promotion patterns into solicited and unsolicited projects; requiring feasibility and appropriateness studies for the selection of projects; establishing the Private Infrastructure Investment Center of Korea(PICKO); improving the Korea Infrastructure Credit Guarantee Fund (ICGF) system; establishing and operating an infrastructure fund; and granting buyout rights.

Finally, Phase IV covers the period from the introduction of the BTL method in January 2005, during which time the government revised the Act on Private Participation in Infrastructure, expanding the categories of PPP projects from economic production facilities

to social and residential facilities. Also, it diversified the PPP implementation methods, such as implementing the BTL method for solicited projects. PICKO was merged into the Korea Development Institute, establishing Public and Private Infrastructure Investment Management Center (PIMAC), as a result of the amendment in 2005.

Table 1-1 | Chronological Changes and Characteristics of Public–Private Partnership Financing in the Republic of Korea

	Period	Characteristics
Phase I	1968-1994	• Sporadic promotion of public-private partnership (PPP) projects based on individual laws (Road Act, Port Act, etc.)
Phase II	1994-1998	• The Republic of Korea began to induce private capital to build infrastructure facilities through systematic procedures with enactment of the Act on Promotion of Private Capital Investment in Social Overhead Capital • Implementation remained sluggish due to immature PPP conditions government's failure to play the proper roles, and excessive regulations due to fear of controversies over preferential treatment • Formulation of policy package for inducing private participation, across-the-board legal revision through the Act on Private Participation in Infrastructure
Phase III	1999-2004	• Positive government support and division of role for revitalizing private investment • Reinvigoration of private sector's investment and project participation
Phase IV	2005-Present	• Revision of the Act on Private Participation in Infrastructure • Inclusion of nine residential infrastructure facilities in the scope of PPP projects and the introduction of the build-transfer-lease formula as a new method • Introduction of mandatory feasibility study for unsolicited projects (costing ₩200 billion or more) • Revitalization of infrastructure fund through public subscription • Abolition of minimum revenue guarantee and introduction of government compensation of base (raw) cost

Source: PPP Act and Enforcement Decree of Korea

2. Legal Framework

2.1. Hierarchy of Legal Framework

The legal framework of the PPP system in the Republic of Korea was first put in place in 1994, with the enactment of the Act on Promotion of Private Capital Investment in Social Overhead Capital. Overall revision of the act by the Act on Private Participation in Infrastructure (PPP Act) took place in December 1998 following the 1997 financial crisis. The revision strengthened risk-sharing mechanisms such as the MRG, buyout rights, and sharing of foreign exchange risk. The government's willingness to share more of the project risks contributed to encouraging the private sector's participation in infrastructure development.

The PPP Act was amended again in 2005. This revision introduced the BTL method and expanded eligible facilities to include social infrastructure, such as educational, cultural, welfare, environmental, and defense facilities. In addition, the act established a specialized agency for PPP projects called PIMAC, part of the Korea Development Institute (KDI), to provide technical assistance to the Ministry of Strategy and Finance (MOSF) and procurement authorities.

The PPP Act and the PPP Enforcement Decree are the principal components of the legal framework for PPP projects. It clearly defines eligible infrastructure types, procurement types, procurement processes, the roles of the public and private parties, and policy supports, among others. As a special act, the PPP Act takes priority over other acts. The act exempts PPP projects from strict government regulation in the area of national property management, and allows a special purpose company (SPC) to play the role of competent authority.

The hierarchy of the legal arrangements for PPPs is

- PPP Act,
- PPP Enforcement Decree,
- PPP Basic Plan, and
- PPP Implementation Guidelines.

Under the PPP Act, the PPP Basic Plan and PPP Implementation Guidelines together address, in detail, policy directions, procurement steps, and government support. The PPP Act directs the MOSF and PIMAC to issue the PPP Basic Plan. The Basic Plan provides PPP policy directions, project implementation procedures, financing and refinancing options, risk allocation mechanisms, payment schemes for government subsidies, and documentation

instruction. PIMAC developed the PPP Implementation Guidelines to improve transparency and objectivity in PPP implementation. Some examples include guidelines for the following: VFM test, request for proposal (RFP) preparation, standard output specification by facility, tender evaluation, standard concession agreement, and refinancing. The Basic Plan and PPP Implementation Guidelines are updated to reflect other relevant legal and regulatory changes and market conditions. Continuous development of the act and related regulations demonstrates a strong commitment on the part of the government to strengthen private sector's confidence in the PPP program.

2.2. Authorization and Permission under Other Laws

When large-scale infrastructure projects, such as roads, railways, and ports are implemented, the PPP project company must obtain various authorizations and permissions from relevant public authorities, for example, authorization for change of land usage and occupation of roads for construction. It is time-consuming and costly for the project company to obtain all the necessary authorizations and permissions.

To reduce time and cost for authorization and permissions, and to facilitate implementation procedures of PPP projects, the PPP Act stipulates that, if the competent authority has issued the public notice of a Detailed Engineering and Design Plan for Implementation (DEDPI), the authorizations and permissions prescribed in the laws concerning the relevant PPP project, and other related laws, are considered granted. In addition, the issuance of the DEDPI fulfills public announcement requirements under any related laws.

The competent authority acquires authorization and permissions associated with the PPP project after consultations with the related administrative agencies, concerning the compatibility of the project with other laws; the competent authority then indicates when it intends to grant approval or modification of the DEDPI submitted by the project company.

This stipulation of authorization and permission under other laws in the PPP Act has been one of the critical factors for promoting PPP projects, by streamlining the implementation procedures.

3. Organization of Decision Process

3.1. Ministry of Strategy and Finance and Public–Private Partnership Review Committee

Major players in the PPP program include the MOSF and the concerned line ministries. The MOSF is responsible for implementing the PPP Act, PPP Enforcement Decree, and the PPP Basic Plan. The MOSF is responsible for preparing the draft budget for PPPs as well. An important issue concerning the interplay amongst the MOSF and the line ministries is that of fiscal discipline. The MOSF plays a central role in budgeting, as well as in preparing and implementing PPP investment plans. Often the main budgeting decisions are made in bilateral negotiations between the MOSF and the line ministry.

Given that PPPs involve both the government and the private sector, and that the line ministries are the initial contact points, different opinions based on each party's interest are brought up on some issues. The MOSF has the task of reconciling these opinions, and it often takes time to reach an agreement among the parties. Therefore, the MOSF exercises tight control on public expenditures during the implementation stage. Ministries are required to spend within the limits set in the quarterly budget implementation plan. When deemed necessary, the MOSF is able to postpone or block part of PPP project expenditures.

Under the PPP Act, the PPP Review Committee (PRC) is organized and managed by the MOSF. The PRC considers the matters concerning the establishment of major PPP policies and key decisions, in the process of implementing large-scale PPP projects.

The committee is composed of the minister of finance and strategy (chair), vice ministers of line ministries in charge of implementing PPP projects, and private sector experts with knowledge and experience in PPP projects.

The main responsibilities of the PRC are to deliberate on

- establishment of major PPP policies,
- establishment and modification of the PPP Basic Plan,
- designation and cancellation of a large PPP project (total project cost of ₩200 billion or above),
- formulation and modification of the RFP for a large PPP project,
- designation of a concessionaire of a large PPP project,
- implementation of supplementary projects,
- disposition for public interests,

- comprehensive evaluation on PPP projects, and
- other matters that the MOSF proposes for the active promotion of PPPs.

3.2. Establishment of a Public–Private Partnership Unit: Public and Private Infrastructure Investment Management Center (PIMAC)

To provide comprehensive and professional support for the implementation of PPP projects, the PIMAC was established under the revision of the PPP Act in 2005. As a result, the Private Infrastructure Investment Center of Korea (the predecessor to PIMAC), established in 1999 within the Korea Research Institute for Human Settlements, was reorganized and merged with the Public Investment Management Center into PIMAC, which was established as an affiliated organization of the KDI, a government-funded economic research institution.

The mission and roles of PIMAC are prescribed in the PPP Enforcement Decree. These include supporting the MOSF in the formulation of the PPP Basic Plan; supporting the competent authorities and ministries in the procurement process, such as the assessment of feasibility and VFM for potential PPP projects, formulation of the RFP, designation of the concessionaire, evaluation of project proposals by private companies, negotiation with potential concessionaire, etc.; promoting foreign investment in PPP projects through consultation services and other related activities; and developing and operating capacity-building programs for public sector practitioners.

Besides the technical assistance described above, PIMAC conducts policy research related to PPP programs and provides policy advice to the MOSF and procuring ministries. It also develops guidelines for efficient and consistent implementation of PPP projects.

PIMAC offers training and education programs for public officers from procuring authorities on a regular basis. Training programs and seminars aim to deliver professional skills and knowledge through lectures, and to provide public officials with opportunities for sharing practical experience. Also, PIMAC provides training programs for public officers from developing countries. PIMAC hosts the Asia PPP Practitioners Network Training Program, in collaboration with World Bank and Asia Development Bank. It also offers training courses tailored for specific needs and interests of developing country.

PIMAC contributes to the success of the PPP program in the Republic of Korea, by effectively achieving its objective as a PPP unit in assisting the public and private sectors and promoting infrastructure projects.[1]

4. Procurement Schemes

4.1. Eligible Facility Types

Under the PPP Act, 48 infrastructure facility types in 15 sectors are eligible for PPP procurement. By listing eligible facility types in the PPP Act, the government aims to induce private capital to invest in the sectors where additional investment is needed for the benefit of the public. Some argue, however, that the listing of eligible facility types may restrict the flexible and innovative application of PPP procurement for new types of facilities. These critics recommend modification of the act for more comprehensive application.

Table 1-2 | Eligible Infrastructure Facility Types by Sector (as of October 2012)

Sector	Facility Type
Road(4)	Roads and ancillary facilities, parking facilities, intelligent transport systems and transfer centers, bicycle facilities
Rail(3)	Railways, railway facilities, urban railways
Port(3)	Port facilities, fishing port facilities, eligible facilities for new port construction
Airport(1)	Airport facilities
Water resources(3)	Multipurpose dams, river-affiliated ancillary structures, waterworks
Communications(5)	Telecommunication facilities, information communication systems, information superhighway, Geographic information systems, ubiquitous urban infrastructure
Energy(4)	Electric source facilities, gas supply facilities, collective energy facilities, renewable energy facilities
Environment(5)	sewage and sewage treatment facilities, waste treatment facilities, public livestock treatment facilities, wastewater treatment facilities, recycling facilities
Logistics(2)	Distribution complexes and cargo terminals, passenger terminals

1. A. Sanghi, A. Sundakov, and D. Hankison. 2007. Designing and Using Public–Private Partnership Units in Infrastructure. *Gridlines* (newsletter of the Public–Private Infrastructure Advisory Facility). September. pp. 1–5.

Sector	Facility Type
Culture and tourism(8)	Tourist sites or complexes, youth training facilities, public and/or professional sports facilities, libraries, museums and art galleries, international conference facilities, cultural facilities, urban parks
Education(2)	Pre-school and school facilities, science museums
National defense(1)	Military residential facilities and training/welfare/sports facilities
Housing(1)	Public rental housing
Welfare(4)	Senior homes and welfare medical facilities and facilities for remarried seniors, public health and medical facilities, child care facilities, welfare facilities for the disabled
Forestry(2)	Natural recreational resorts, arboretums

Source: PPP Act and Enforcement Decree of Korea

4.2. Procurement Methods

Eligible procurement methods are divided into BTO and BTL, depending on the structure of the PPP project. Other procurement methods, such as build–operate–transfer (BOT) and build–own–operate (BOO) are applicable as well.

Build–transfer–operate method. Ownership of the infrastructure facilities is transferred to the government upon completion of construction, and the concessionaire is granted the right to operate them and gain a return on investment (ROI). Since the concessionaire recovers its investment cost directly from user fees, commercial viability is a key element for implementing BTO projects on the part of the concessionaire. Most of the BTO projects are transport facilities such as roads, railways, and seaports.[2]

Build–transfer–lease method. Ownership of the infrastructure facilities is transferred to the government upon completion of construction, and the concessionaire is granted the right to operate them and receive government payments (lease payment plus operational cost), based on operational performance (e.g., availability, service quality) for a specified period of time. The BTL method is used for those facilities where the concessionaire has difficulty recovering its investment cost through user fees. Facilities eligible for BTL projects mainly consist of social infrastructure, such as schools, welfare facilities, environmental facilities, and military residence, among others.

2. In Korea, a modality of Build-transfer-operate (BTO) is preferred to the modality of Build-operate-transfer (BOT). This is because most Koreans have less willingness and reluctance to accept private ownership on public goods, especially in the period of operation and maintenance. Therefore, the Korean BTO requests a transfer of the PPP property ownership in advance, before the operation period. However, in practice, BTO in Korea has almost the same procurement patterns and schemes as those of BOTs in other countries.

Build–operate–transfer method. The concessionaire assumes ownership of the infrastructure facilities for a specified period of time after completion of construction. Ownership is transferred to the government upon termination of the concession period.

Build–own–operate method. The concessionaire owns and operates the infrastructure facilities upon completion of construction.

Other methods are also used by the competent authority in RFPs for PPP projects and by the private sector in project proposals. Some examples of alternative methods include build–lease–transfer, rehabilitate–operate–transfer, rehabilitate–own–operate, and rehabilitate–transfer–lease[3] The government expects more rehabilitation projects as increasing number of infrastructure facilities become obsolete and need reinvestment. In case of solicited projects, procuring authorities can initiate a new method combining BTO and BTL when they announce RFPs.

4.3. Procurement Initiation

PPP projects are categorized into solicited and unsolicited, depending on who initiates the project.

Solicited project. The competent authority—central or local government—identifies a potential PPP project and solicits proposals from the private sector.

Unsolicited project. The private sector identifies a potential PPP project and requests designation of the project as a PPP from the competent authority. The concessionaire is selected under a competitive bidding process, although the initial proponent may obtain extra points in the bid evaluation.

Solicited projects have not attracted much intention from the competent authority because it takes considerable time and costs to initiate a PPP project, whereas unsolicited projects have been actively sought and implemented because the private sector assumes associated costs and risks. The government has recently made efforts to promote more

3. Build–lease–transfer: Upon completion of construction of the infrastructure facilities, the concessionaire leases the facilities to others for a period of time, and upon termination of the lease, transfers ownership to the central or local government.

   Rehabilitate–operate–transfer: Upon rehabilitation of the existing infrastructure facilities owned by the central or the local government, the concessionaire is granted the right to operate the facilities for a specified period of time.

   Rehabilitate–own–operate: Upon rehabilitation of the existing infrastructure facilities, the concessionaire owns and operates the facilities.

   Rehabilitate–transfer–lease: Upon rehabilitation of the existing infrastructure facilities, the ownership is reverted to the central or the local government, and the concessionaire is granted the right to manage and operate the facilities for a specified period of time to lease the facilities to others for use and to make a profit.

solicited projects, since they can be implemented in line with the overall government infrastructure investment plan and priorities, unlike unsolicited ones. In other to facilitate a procuring process for solicited projects, the government reduced the official procuring process from three steps (preliminary feasibility study by PIMACVFM test by procuring authority Review of VFM test by PIMAC) to one step. VFM determine what tests can be conducted by PIMAC during the preliminary feasibility study stage, prerequisite for public investment projects with budget support. In addition, new risk sharing mechanism can be applied to all solicited projects, and procuring authorities are encouraged to initiate solicited projects in developing RFPs supported by PIMAC.[4]

4.4. Establishment of a Special Purpose Company

Private sector participants who intend to implement a PPP project establish a project company, a legal entity that acts as the concessionaire once the PPP contract is awarded. In general, construction companies, financial investors, and professional operators form an SPC for the associated PPP project.

In many cases, a project proponent is not yet incorporated as a company when it submits a project proposal. In such a case, the proponent must include a corporate establishment plan in the project proposal and, when designated as a potential concessionaire, must establish a company that is to conduct the designated PPP project, before applying for approval of the DEDPI to the competent authority.

The SPC is prohibited from engaging in businesses other than those permitted by the competent authority at the time of its designation as the PPP concessionaire, except for insignificant businesses approved by the competent authority. The financing arranged by the SPC (or the concessionaire) should consist of equity and debt. To maintain the financial stability of the construction project, a minimum equity ratio of 25% or more is required during construction. If an equity investment by a financial institution exceeds 50% of total equity, the required minimum level of equity ratio can be lowered to 20%. During the operational period, a minimum equity ratio of 10% is required.

4.5. Implementation of Supplementary Project

The competent authority may allow the concessionaire to implement a supplementary project prescribed in the PPP Act, when it deems it necessary for the concessionaire to secure ROI or to promote normal operation of the PPP project. Facility types eligible for

4. A preliminary feasibility study (PFS) is a scheme of feasibility study in Korea, which is requested at an earlier stage of the main feasibility study on every infrastructure projects if the estimated total project cost is above 500 million Korean Won. The PFS is mandated by the Korean National Finance Act.

supplementary projects include housing construction, site development, urban development, industrial complex development, tourism-related businesses, and cultural facilities. In the case of BTL projects, supplementary projects can be profit-yielding, in order to reduce government payments or subsidies to the concessionaire, and contribute to normal operation, as well as maximize utilization of the main infrastructure facility.

A supplementary project involves building additional facilities to the main infrastructure facilities in an adjacent area of the project site. This is distinct from an ancillary project in which the concessionaire uses the main infrastructure facilities to increase the efficiency of the facilities, and receive a return on part of the investment.

There are some requirements to be met for the implementation of supplementary projects. First, the cost of the supplementary project cannot exceed the total private project cost of the main infrastructure facilities. Second, the supplementary project must increase the economic benefit to the public and improve the feasibility of the main project. Third, it must maximize the effectiveness of facilities, increase benefits for the users, and be implemented in the vicinity of the main project site. On the other hand, a supplementary project is not allowed in the following cases: where it results in a sizable government investment in other related infrastructure sectors, where the investment scale of the supplementary project is much greater than the investment scale of the main project, and where it does not comply with other government policies.

A concessionaire is allowed to propose a supplementary project after obtaining the approval for the Detailed Engineering and Design Plan for Implementation (DEDPI), including operational phase. The rationale for introducing related provisions to the PPP Law is to ease the government's financial burden such as MRG supports by expanding revenue sources of project companies for PPP projects in operation.

4.6. Maintenance and Operational Right

In the case of BTO and BTL projects, a concessionaire is granted the rights to manage and operate infrastructure facilities, and to collect user fees for a specified period of time, when the competent authority confirms the completion of construction. When a concessionaire has been granted management and operational rights, it is required to register with the competent authority. Management and operational rights are considered property rights, and the provisions of the Law of Realty in the Civil Act concerning real estate are applicable. A concessionaire with management and operational rights is responsible for the proper maintenance and management of the infrastructure facilities during the operational period.

4.7. Disposition for Public Interest

Under special circumstances stipulated in the PPP Act, "the competent authority may revoke or change an order or disposition made under the PPP Act, such as suspending or altering the associated infrastructure facilities construction; ordering the facilities to be remodeled, altered, moved, removed, or recovered to the original state; or taking any other necessary measures against the concessionaire judged necessary by the competent authority. If the measures taken by the competent authority cause any loss to the concessionaire, the competent authority is required to provide compensation for the loss after consulting with the concessionaire."

4.8. National Project versus Local Project

In the case of large PPP projects with total project cost of ₩200 billion or more (₩100 billion or more for BTL projects), the PRC is required to review the project before it can be designated a PPP. These large projects are classified as national projects, and administered by the MOSF throughout the procurement process—designation of the PPP project, announcement of the RFP, and designation of a concessionaire—and during the operational period. Other than those projects classified as national projects, the competent authority, in most cases the local government, administers the project, which is designated as a local project.

The national projects, mainly transport projects, make up a large share of the costs for PPPs. Most of the local projects involve small facilities, such as environmental facilities (sewage or waste treatment facilities), local roads, parking lots, and tourist facilities, among others.

5. Government Support

To vitalize the infrastructure markets for PPP projects, the government promulgates various kinds of policies that can facilitate infrastructure financing. More specifically, the government can provide administrative support for land expropriation to facilitate the land acquisition process, financial supports such as construction subsidies and compensation for bid costs, and financial and tax incentives. Also, in order to share project risk with the private sector, the government has developed risk sharing mechanisms, such as compensation for base (raw) cost, infrastructure credit guarantees via the ICGF, and early termination payment [Figure 1-1].

Figure 1-1 | Government Supports and Risk Sharing Mechanisms for Public–Private Partnership Projects

Types	Construction Period	Operating Period
Subsidy	(1) Construction Subsidy	(2) Compensation for base (raw) cost
Guarantee system	(3) Infrastructure credit guarantee via Infrastructure Credit Guarantee Fund	
Tax incentives	(4) Special taxation, corporate tax, local tax, exception from charge	
Early termination	(5) Guidelines for early termination	

Source: Basic Plan for PPP

5.1. Government Support for Land Expropriation

5.1.1. Land Expropriation Rights

To facilitate PPP implementation, the PPP Act grants land expropriation rights to the concessionaire. The concessionaire may entrust the competent authority, such as the local government, with the execution of the land purchase, compensation for loss, and resettlement of residents, among others.

5.1.2. Process of Land Expropriation

The overall process relating to land acquisition or expropriation for public works, such as infrastructure facilities and public buildings, is prescribed by the Land Acquisition Act. Unless a special provision is provided in the PPP Act or the related laws, the procedures under the Land Acquisition Act apply to the expropriation or use of the land needed for the implementation of PPP projects.

Under the Land Acquisition Act, land acquisition is carried out by the concessionaire or project company, who has the expertise associated with the public works project. Although land acquisition by consultation is desirable and must be sought in the first place, the land can be expropriated for public use when consultation is not feasible. After the plan for public facilities is approved, the concessionaire prepares a list of land compensation or expropriation that defines the land needed for the project such as its condition and scope

of related parties. Then, the concessionaire announces a compensation plan and notifies the existing landowners, interested parties, and local governments. The concessionaire then estimates the compensation amount. After consultation with the landowners and interested parties, the concessionaire enters into a compensation contract with the landowners and interested parties.

In cases where land expropriation is involved, the concessionaire requests the Ministry of Land, Transport and Maritime Affairs for Authorization of the Project, which is an official step to determine whether the land and related property are appropriate objects for expropriation. The ministry conducts consultations with relevant public authorities and collects opinions from the concerned Land Tribunal and interested parties before deciding whether to grant Authorization of the Project. After the Authorization of the Project is granted, the concessionaire prepares a list of land compensation or expropriation, announces the plan to compensate the landowners and notifies the owners, estimates the compensation amount, and consults with related parties.

In cases where consultation cannot be conducted or concluded within one year after the announcement of Authorization of the Project, the concessionaire may request a Decision of Expropriation from the concerned Land Tribunal. The tribunal considers the request by the concessionaire after publicly announcing its contents and collecting opinions from related parties. When the Decision of Expropriation is issued in the form of written documents by the tribunal, the concessionaire is required to compensate the landowners according to the ruling. To facilitate the process, the concessionaire may entrust the tasks of land compensation and resettlement of local residents to the relevant public organizations that have experience and expertise in such tasks.[5] In the case of PPP project implementation, the PPP Act stipulates that Authorization of the Project and the public announcement of the authorization are considered granted when the DEDPI of the PPP project is publicly announced. In addition, a request for Decision of Expropriation may be made within the implementation period of the project as determined by the DEDPI. The PPP Act also allows the concessionaire to entrust the competent authority or the concerned local government with the tasks of land purchase, compensation for loss, resettlement of local residents, and other matters concerning the expropriation and use of land. The PPP Enforcement Decree requires that detailed contents, terms, and fees for entrustment arrangements should be determined in a contract between the concessionaire and the relevant authorities.

Generally, it is inefficient for the concessionaire to acquire land in its own name, and then transfer ownership to the competent authority afterwards; it is often more effective

5. These organizations include local governments, the Korea Land Corporation, the Korea National, Housing Corporation, the Korea Expressway Corporation, the Korea Water Resources Corporation, the Korea Rural Community and Agriculture Corporation, and local public corporations.

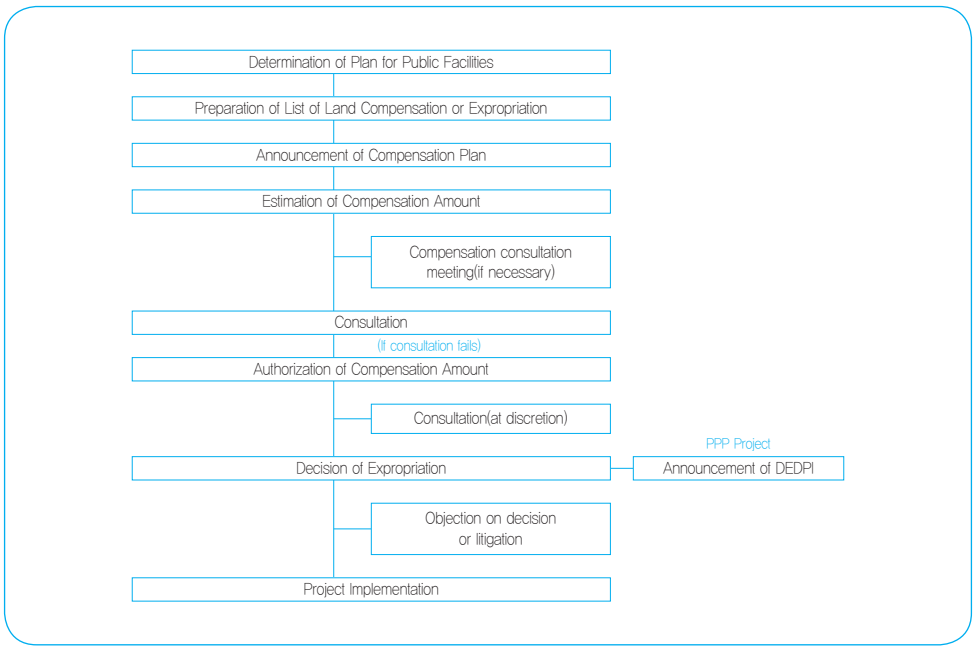
for the competent authority to acquire land directly in the initial stages. In addition, it is difficult for the concessionaire to conduct the expropriation process. It entails a lengthy process involving consultations with key stakeholders, such as local residents and related authorities. Therefore, in practice, competent authorities often carry out land purchases, compensation, and related tasks in place of concessionaires for most PPP projects.

In the case of land belonging to the national or local government located in an area designated for a PPP project, a concessionaire consults with the related administrative agency about the use of land. Government-held land cannot be sold for purposes other than for the PPP project, after the date of RFP announcement.

Notwithstanding the related provisions of the State Properties Act and the Local Finance Act, national or public property may be sold to the concessionaire through a negotiated contract. In addition, the competent authority may allow the concessionaire to use and benefit from national or public property without charge, from the date of public notice of the DEDPI until the date of confirmation of construction completion. In the case of revertible facilities constructed under BTO, BTL, or BOT schemes, the national or public property may be used without charge until the end of the concession period. Furthermore, where necessary, the competent authority may purchase land located in an area designated for a PPP project, and let the concessionaire use the land and benefit from it free of charge from the date of the public notice of the DEDPI, until the date of confirmation of construction completion. In the case of revertible facilities, use of land for free may apply until the end of concession period.

In many PPP projects, the entire or part of the land acquisition costs are compensated by the competent authority; the exception is for a few highly profitable projects.

Figure 1-2 | Land Acquisition Process for Public Facilities



Source: Ministry of Construction (2003), Manual on the Land Acquisition Act for Public Works and Compensation

5.2. Construction Subsidy

According to the PPP Act, the government may grant a construction subsidy to the concessionaire, if it is required to maintain the user fee at an affordable level <Table 1-3>. The timing of the subsidy is determined in the course of the concession agreement, and depends on the equity investment plan of the concessionaire. The subsidy is distributed annually or quarterly, and cannot be concentrated in a certain year. The timing of the distribution reflects the completion level of the project and the schedule and scope of equity investment.

The amount of subsidy is determined in each individual concession agreement. When notifying about a project, the government first discloses an approximate ratio of the construction cost that it is willing to subsidize. The exact ratio of subsidy to construction cost is determined through consultation and is stipulated in the concession agreement. As a result, each project ends up with a different amount of subsidy. Table 4 shows the average level of construction subsidy by sector.

If the ratio of subsidy to construction cost is stipulated by the PPP Act or PPP Enforcement Guidelines, that ratio is included in the government's public notification. If not, the ratio is not included. The government has set a subsidy guideline for road projects of between 20%

and 30% of the total project cost. It has set a subsidy guideline for railway projects of up to 50% of total project cost. The ratio of subsidy to construction cost for environmental projects is stipulated by law and, therefore, included in the government's public notification.[6]

Generally speaking, national BTO projects are eligible for a larger subsidy than local projects, because the project costs are higher and the ratio of subsidy to project cost is also set higher.

Table 1-3 | Financial-Support Related Articles in Public–Private Partnership Act

	Contents
Act	Article 53 (Financial Support) If it is necessary for the efficient implementation of construction projects of revertible facilities, the State or a local government may grant a subsidy or extend a long-term loan to the concessionaire, only where prescribed by Presidential Decree.
Enforcement Decree	Article 37 (Financial Support) (1) The State or a local government may grant any subsidy or long-term loan to the concessionaire during the construction or operation period of facility within budgetary limits after deliberation by the Deliberation Committee, in any case of the following subparagraphs under the provisions of Article 53 of the Act: Provided, That where such subsidy or long-term loan is granted from the budget of a local government, or the project concerned is conducted by one of a local government to which a subsidy of less than 30 billion won is provided by the State, deliberation by the Deliberation Committee shall not be required: 1. Where it is inevitable to prevent dissolution of the corporation; 2. Where it is inevitable to maintain the user fees at an appropriate level; 3. Where inducement of private capital is difficult due to decrease in the profitability of the project as a result of a considerable expenditure disbursed as compensation for the land acquisition; 4. Where the actual operational profit (referring to the amount obtained by multiplying the user fees by the demand for the facility concerned) falls considerably short of the estimated operational profit under the concession agreement, to such an extent that the operation of the facility is difficult; 5. Where it is difficult to actively conduct the public-private partnership project without a long-term loan or subsidy prior to conducting projects, the profitability of which is low, but which can considerably reduce the construction period or the cost of construction of other projects when conducted together with other public-private partnership projects.

Source: PPP Act and Enforcement Decree of Korea

6. The ratios for the Busan–Gimhae Light Rail Pilot Project and Seoul Hanam Light Rail Pilot Project were specified in the government public disclosure as up to 40% of total project cost and up to 50% of the central government subsidy.

Table 1-4 | Average Level of Construction Subsidy by Sector

(Unit: % of total construction cost)

Facility Type	Road	Port	Environment Facility
Level of Subsidy	19.7%	22.2%	64.7%

Source: Internal data from the Ministry of Strategy and Finance

5.3. Tax Incentives and Relaxation of Regulations

To facilitate infrastructure financing, the government provides tax incentives that are stipulated in the PPP Act. Details of the tax incentives are also included in the PPP Basic Plan in four categories: (i) special taxation, (ii) corporate tax, (iii) local tax, and (iv) exceptions from charges.

PPP Act Article 57 (Reduction and Exemption of Tax): The State or local governments may reduce or exempt the taxes to promote private investment under the conditions as prescribed by the Restriction of Special Taxation Act and the Local Tax Act.

Exceptions from charges and taxes. The central government or a local government may exempt a project taxes fully or partially in accordance with Articles 56 and 57 of the Act, the Farmland Act, the Management of Mountainous Districts Act, the Restriction of Special Taxation Act, the Local Tax Act, the Corporate Tax Act, and other relevant Acts and subordinate statutes.

Relaxation of Finance-Related Regulation, etc. The central government, a local government, or a related supervisory agency may recognize exceptions to the application of the finance-related regulations in accordance with the Monopoly Regulation and Fair Trade Act, the Insurance Business Act, the Securities and Exchange Act, the Banking Act, and the Acts and subordinate statutes relevant to financial holding companies.

5.4. Compensation for Bid Costs

In order to maximize the creativity and efficiency of the private sector by promoting competitive bidding, the competent authority compensates unsuccessful bidders for some of the bidding costs. The competent authority compensates bid costs based on the basic design cost provided by the government guidelines up to i) 35% of the basic design cost, if there are only one unsuccessful bidder, ii) Maximum 40/100 of the basic design cost, which

shall be subtracted by 10/100 according to the order of ranking, if there are more than two unsuccessful bidders, and iii) if there are three or more unsuccessful bidders, the competent authority may decide the number of bidders eligible for the payment. Compensation for bid costs is not provided when the competent authority presents basic design documents, or an unsuccessful bidder earns less than a certain level(60-80) at bid evaluation.

6. Risk Sharing Mechanisms

6.1. Minimum Revenue Guarantee and Redemption of Excess Revenue

In addition to the construction subsidy, the government provided an operational revenue subsidy through the MRG and redemption agreement, up until the revision of the PPP Basic Plan in October 2009. Basically, the MRG system is a method for private participants and the government to share the revenue forecast risks. The higher the MRG level (or the narrower the guarantee and redemption band), the more the risk is transferred to the government from private participants. The MRG and redemption agreement have a two-part structure. In the agreement, upper and lower revenue limits are set. If the operational revenue falls short of the lower limit, the government makes up the difference between the lower limit and the actual revenue. If, on the other hand, the revenue exceeds the upper limit, the government redeems the difference—which means that it receives the excess—between the upper limit and the actual revenue.

For projects initiated from 1995 to 2003, the government guaranteed 90% the projected revenue set in the concession agreement for a period of 20 years, and for projects initiated from 2004 to 2005, 70%–90% of the projected revenue was guaranteed for 15 years. With the system revised in 2006, the government guaranteed 65%–75% of the projected revenue for 10 years only for solicited projects <Table 1-5>. Solicited projects are projects that competent authorities determine are needed for the public benefit, whereas unsolicited projects are proposed by private companies and reviewed by competent authorities before being designated as PPP projects.

For the MRG program, which was repealed in 2009, private participants were supposed to include the MRG condition that they wanted in their project proposals. The proposed MRG condition was one of the important evaluation criteria. As the competition in PPP projects increased, more projects were being pursued without MRG clauses.

Table 1-5 | Coverage—Minimum Revenue Guarantee and Redemption of Excess Revenue

(Unit: % of projected revenue in concession agreement)

		1995-2003	2004-2005			2006		2009
Guarantee Period (years)		1-20	1-5	6-10	11-15	1-5	6-10	None
Solicited Project	Guarantee	90	90	80	70	75	65	
	Redemption	110	110	120	130	125	135	
Unsolicited Project	Guarantee	80	80	70	60	None		
	Redemption	120	120	130	140			
Condition		-	MRG is nullified for projects that earn less than 50% of projected revenue.					

Source: Basic Plan for PPP

Each competent authority was responsible for calculating MRG payments or redemption amounts, securing financial resources to cover MRG payments, and paying to or collecting from the project company. The MRG payments came from the competent authority's PPP project budget. The authority needed to consult with the MOSF to secure the necessary funds. The data necessary for calculating the MRG payment or redemption amount were to be directly reviewed by the competent authority or PIMAC (when requested), before consulting with the project company. For local projects, the MRG payment came from the local government's budget.

6.2. New Risk-Sharing Structure Replacing the Minimum Revenue Guarantee Payment

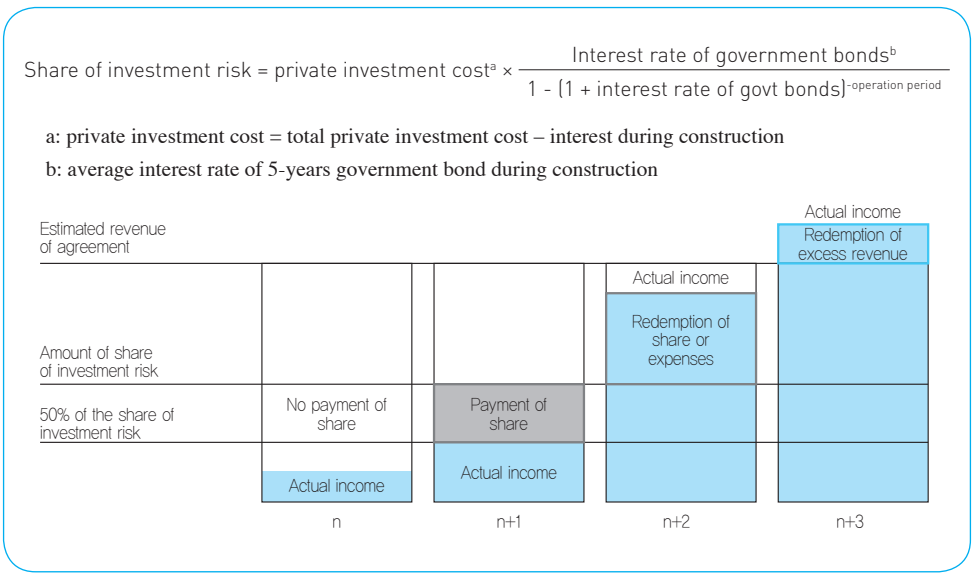
The credit crunch that hit the global financial market in 2008 has had an adverse impact on the PPP market in the Republic of Korea. The government has failed to reach financial closure on a number of pipeline projects, and there has been a decline in initiating new PPP projects.

In response, government support measures to mitigate the impact were introduced in August 2009, with a subsequent revision in the Basic Plan in October 2009. To improve the project structure, a new risk-sharing structure was developed, under which the government shares investment risk with the private company by compensating the base (raw) cost of the project, calculated as the sum of private investment cost and the interest rate of government bonds. Projects covered by the new structure are government solicited projects with significant public benefits. The MRG payment provided support for private participant's minimum revenue as projected in the concession agreement; the newly adopted policy compensates for the private participant's base cost. While the former encouraged private

participation but caused moral hazard because of the unreasonably low risks to the private participant, the latter decreases the investment risk for private participants and enhances their motivation to make profit. Concurrent with the introduction of the new risk-sharing structure, the MRG system ended.

In the new risk-sharing structure, the government assumes a portion of investment risk. This risk is limited to what the government's costs would have been in the case of a public-financed project. The government payment is made for the amount of shortfall in the actual operational revenue compared to the share of investment risks by the government. When the actual operational revenue exceeds the share of investment risks, government subsidies are redeemed on the basis of and within the limit of the amount previously paid. On the part of the private participant, subsidies are provided only when the actual operational revenue surpasses 50% of share of investment risk. [Figure 1-3] shows the mechanism under which this structure operates.

Figure 1-3 | Mechanism of Risk-Sharing Structure



n: operation period in concession agreement

Source: Basic Plan for PPP

6.3. Infrastructure Credit Guarantee Fund

Since 1994, the Infrastructure Credit Guarantee Fund (ICGF) has provided credit guarantees to concessionaires who want to obtain loans from financial institutions for PPP

projects. According to Article 30 of the PPP Act, the ICGF is managed by the Korea Credit Guarantee Fund. The ICGF consists of annual government subsidies, guarantee fees, and investment returns. When the project guaranteed by the ICGF defaults, the ICGF subrogates on behalf of the project company. Additional government contribution can be granted if the funds are insufficient.

The limit of the credit guarantee per concessionaire is ₩300 billion. The guarantee fee will have a maximum annual fee rate of 1.5%. <Table 1-6> below lists and describes the types of guarantees.

Table 1-6 | Types of Infrastructure Credit Guarantee Fund Guarantees

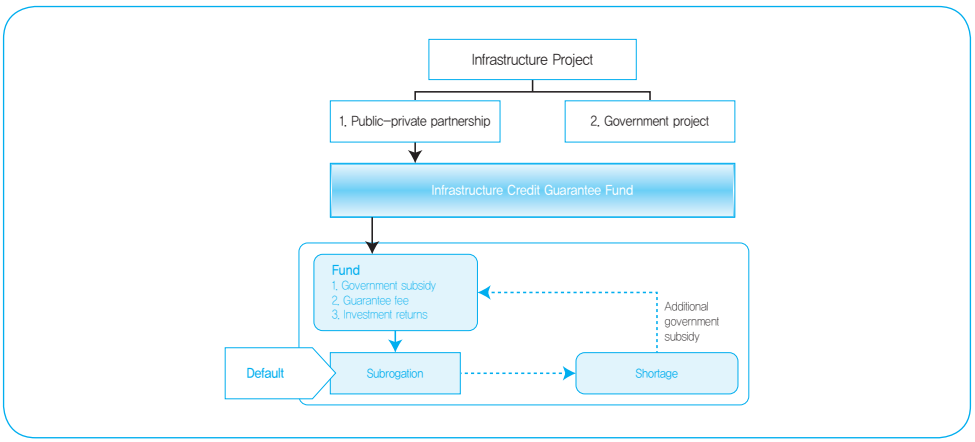
Kinds		Coverage of Garantee	Guarantee Fee Rates
Guarantee for Infrastructure loans	Guarantee for facillity loans	Guarantee for the concessionaire's borrowing loans for construction	0.2~1.3%[1]
	Guarantee for operation fund loans	Guarantee for borrowing loans for a deficiency in the operating fund during the operation period	
	Guarantee for vridge loans	Guarantee for borrowing loans temporarily necessary for the costs incurred until the completion of a project before receiving payments from the competent authority	
	Guarantee for refinancing	Guarantee for refinancing outstanding high-rate loans with a new low-rate loan or social overhead capital (SOC) bonds	
Guarantee for infrastructure bonds		Guarantee for social overhead capital bonds issued by a concessionaire for raising a fund necessary for the implementation of a project	
Guarantee for advance private investment loans		Guarantee for monetary obligations that a concessionaire who made advance investment[2] owes to a financial institution when it borrows a loan	0.2% (Fixed rate)

Note: 1) The guarantee fee rate shall vary depending upon guarantee risk, the credit rating of the corporation, and the purpose of the loan

2) It refers to a person who was awarded government projects and performs construction ahead of schedule, and whom the Minister of Strategy and Finance recognizes as a person who needs the guarantee

Source: Basic Plan for PPP

Figure 1-4 | Operating Process of the Infrastructure Credit Guarantee Fund



Source: Basic Plan for PPP

6.4. Buyout Right

According to the Article 59 of the PPP Act, the concessionaire of a revertible infrastructure facility may request the government to purchase the project, including supplementary projects, if the concessionaire is unable to build or manage and operate the facility due to inevitable circumstances determined by the Enforcement Decree, including natural disasters or force majeure.

Table 1-7 | Recognition of Buyout Right

PPP Enforcement Decree Article 39 (Grounds for Recognition of Buyout Right)
The concessionaire of a revertible facility may request the State or local government to buyout the relevant facility (including supplementary facilities) under the provisions of Article 59 of the Act in the following cases: 1. Natural disasters, war, and other cases of force majeure by which construction is suspended for six months or longer or the total project cost increases by not less than 50 percent; 2. Natural disasters, war, and other cases of force majeure by which the operation of the facility is suspended for six months or longer, or where the repair cost or reconstruction costs exceed 50 percent of the total project cost originally planned; 3. Where the construction or operation of the facility has been suspended for six months or longer because the State or a local government has failed to perform its duty under the concession agreement for a year or longer after receiving the notification of the cause for the performance of its duties, or where the duties are simply not performed without any justifiable ground; 4. Where a cause determined by the concession agreement occurs, as the competent authority deems it reasonable to recognize the buyout right of the concessionaire.

Source: PPP Act and Enforcement Decree of Korea

6.5. Early Termination Payment

The possibility of compensation on early termination is a critical risk-mitigating factor for private participants. In fact, it enables the project company to fund debts at attractive rates. When the concessionaire cannot maintain the facility for various reasons, it may request the government to terminate the concession agreement and pay the predefined early termination payment. When this happens, the government takes over the right to operate the infrastructure facilities. The method of calculating the amount of payment and reasons for termination are stipulated in the concession agreement.

7. Concession Termination

7.1. Procedures and Reasons for Early Termination

The PPP project company or the special purpose company (SPC) can ask the central or local government to buy out the project if the construction, management, or operation of the facility becomes impossible due to certain reasons (default by a concessionaire or the government, political force majeure, or nonpolitical force majeure).

Default by concessionaire: <Table 1-8> shows provisions of a concession agreement detailing actions by the concessionaire that would place it in default. Actions by the concessionaire that would lead to default include faulty construction, bankruptcy, and breach of contract.

Default by government. <Table 1-9> shows provisions of a concession agreement detailing actions by the government that would place it in default. Actions by the government that would lead to default include failure by the government to meet financial or other obligations, policy changes, or actions that are against the interest of the project company.

Default by force majeure. For a typical concession agreement, the term force majeure means any circumstance or event out of the parties' control that materially affects a party's ability to perform its obligations under the agreement and that cannot be reasonably foreseen and overcome by the party. <Table 1-10> provides excerpts of political and nonpolitical force majeure provisions in a typical concession agreement.

Table 1-8 | Excerpts from a Concession Agreement on Concessionaire Actions Leading to Default

Type	Contents
Reasons for default by the concessionaire	(i) subject to any extension of the periods for achievement of Completion of the relevant Phase of the Works specified in Article 13 (Construction) granted pursuant to Articles 32 (Relief Events) and/or 33 (Force Majeure): (a) the Concessionaire has failed to commence the construction of the relevant Phase of the Works within 3 months of the Implementation Plan approval date for that Phase; (b) the Works are in a condition such that the Certificate of Completion cannot be issued on or before the date falling 9 months after the Contractual Completion Date for the relevant Phase has not been achieved such that the cumulative liquidated damages described in Article 13.3 exceed 10% of the Total Project Cost; or (c) failure to enter into the Refinancing Agreements such that a required portion of the Construction Financing Agreements can be refinanced within 30 months of the Phase 2 Completion Date; (ii) other than as provided in Articles 32 (Relief Events) or Article 33 (Force Majeure), the Concessionaire ceases or substantially Ceases to design and/or construct the Works in each case for a Continuous period of 120 day; (iii) other than due to any worker's strike, etc. which is inevitable, the Concessionaire ceases or substantially ceases to operate the railway for more than 5 consecutive days without reasonable justification; (iv) an order being made or a resolution being passed for the liquidation, bankruptcy, dissolution or appointment of a receiver of the Concessionaire (other than for the purposes of a merger of the Concessionaire on terms approved in advance by the Government in writing); (v) the Concessionaire fails to pay any amount payable by it under this Agreement within 60 day from the due date for payment; (vi) failure by the Concessionaire to submit an Implementation Plan for approval within the time periods (including the extended period) as approved in accordance with Article 8; (vii) any material breach of Law or this Agreement or of administrative measures or orders in accordance with the Private Investment Act and/or its Enforcement Decree by the Concessionaire; or (viii) the Concessionaire fails to input at least 80% of the Committed Investment amount in accordance with the Appendix 2 (Committed Investment Input Schedule) for 4 months or move.

Source: Ministry of Land, Transport and Maritime Affairs. 2001. Concession Agreement of Incheon International Airport Railway. Incheon International Airport Railway Co. Seoul

Table 1-9 | Excerpts from a Concession Agreement on Government Actions Leading to Default

Type	Contents
Reasons for default by the government	(i) The government fails to pay with 4 (four) months and 15 days from the due date the Capital Subsidy to be paid in accordance with Appendix 3; (ii) The Government fails to pay, when due and payable within the date specified in Article 26.5.6, the other support payments other than Capital Subsidy pursuant to Appendix 3 within 60 days from due date; (iii) Any failure by the Government of its obligations to provide Vacant Possession of any portion of the Site and the related rights of access and egress to the Concessionaire within 4 months of the time periods referred to in Article 7.1 (Vacant Possession); (iv) Any failure by the Government to notify the Concessionaire of its approval or rejection of the relevant Implementation Plan within three months after the time periods for approval specified in Article 8.1; (v) Any failure to issue a Permit within three months of it becoming a Relief Event under 32.1.1 (iii), thereby having a material effect on the Project; (vi) Any material breach of any other provision of this Agreement by the Government; (vii) Expropriation or nationalization of all or a material part of the Project assets or shares of the Concessionaire by the Government of a Relevant Authority; (viii) It is or will become unlawful for the Government to perform or comply with one or more of its obligations under this Agreement and such unlawfulness is material, or an such obligation is not, or ceases to be, legal, valid, binding and enforceable, or (ix) Any additional measures required relating to Obstacles on, above and under the ground delays the Work for over 6 months and which is not due to the fault of the Concessionaire provided that the Concessionaire has fulfilled its obligation relating to the Obstacles which the Government requests the Concessionaire to deal with after the approval of the Implementation Plan of Phase 2.

Source: Ministry of Land, Transport and Maritime Affairs. 2001. Concession Agreement of Incheon International Airport Railway. Incheon International Airport Railway Co. Seoul

Table 1-10 | Excerpts from a Concession Agreement on Force Majeure

Type	Contents
Nonpolitical force majeure	(i) Acts of God, explosion, fire, or meteorite; (ii) Air crash, failure or stoppage of transport of the major item(s) for the project due to nonpolitical cause; (iii) National or industry-wide strike due to nonpolitical cause; (iv) Drastic deterioration of economic condition, causing failure or Financial Close; or (v) Other events similar to the abovementioned events.
Political force majeure	(vi) Acts of war (whether declared or undeclared), riot, civil commotion, terrorism, or embargo (vii) Air crash, failure or stoppage of transport of the major item(s) for the project due to political cause; (viii) National or industry-wide strike due to political cause; (ix) Nuclear waste, chemical, or radioactive contamination; (x) The expropriation confiscation, or nationalization of all or part of the railway by any relevant authority during national emergency, war, or any other reason; or (xi) Other events similar to the abovementioned events

Source: Ministry of Land, Transport and Maritime Affairs. 2001. Concession Agreement of Incheon International Airport Railway. Incheon International Airport Railway Co. Seoul

7.2. Calculation Guidelines for Early Termination Payment

The termination payment system was introduced in 2000 and calculation methods have evolved reflecting the market conditions and government policy directions.

<Table 1-11> and <Table 1-12> show the current guidelines for calculating the early termination payment for BTO and BTL projects. The guidelines indicate that the termination payment is different for the construction period versus the operational period. In the case of a BTO project, the calculation of termination payment during the construction period is based on the already incorporated private investment amount and the opportunity cost, if applicable; the termination payment during the operating period is based on the weighted average of depreciated value of the already incorporated private investment amount and the present value of the project (weight varies depending upon the cause of the default). In the case of a BTL project, the calculation of termination payment during the construction period is based on net private investment (private investment cost minus construction period interest) already invested, provided that the compensation amounts are calculated separately, depending on the reason of default. The calculation of termination payment during the operating period is based on the present value of the lease fee over the remaining period of the lease term and calculated separately depending on the reason of default.

Table 1-11 | Calculation Guidelines for Early Termination Payment for Build–Transfer–Operate Projects, as of October 2012

Category	Construction phase	Operation Phase
Default by concessionaire	Private fund already invested[1]	Depreciated value of the already invested private investment fund applying straight-line method[4]
Nonpolitical force Majeure	Private fund already invested ×[1+Standard borrowing interestrate[2]] (A)	Weighted average of the sum of the depreciated value as described above and the present value of the future expected cash flow[5] calculated based on the performance record[6]
Political force Majeure	Private fund already invested ×[1+(A+B)/2]	
Default by government	Private fund already invested ×[1+Nominal rate of return[3] (B)]	

Note: 1) Subtract the interest during construction from the total private project cost

2) Add 2% to a value calculated by applying a weighted average to the average current yield of government bonds (maturing in five years) per year during the construction period according to the ratio of the accumulated amount of the private fund invested as of the end of each year

3) Reflect the historical consumer price inflation rate during the construction period in the real rate of return for the calculation

4) Determine the amount based on the balance of private fund already invested after depreciating it by the straight line method stipulated in the concession agreement, but exclude interest payable of subordinated debts and the shareholder's equity if the concessionaire is liable for termination. The principal of subordinated debts can be included in calculating termination payment only in case where actual operating revenue exceeds 50% of the projected operating revenue in the concession agreement

* Do not reflect price fluctuations during a period between the last day of construction and the date of termination separately

5) Vary the amount calculated by discounting the constant expected return based on the historical value at the time of termination with the constant rate of return depending upon whose fault is the cause of termination in accordance with stipulations of the concession agreement

6) [Carrying amount×(1 - Ratio of remaining operation period)]+[Present value of expected return×(Ratio of remaining operation period)]

7) If the concessionaire possesses any cash equivalent at the time of termination due to terms and conditions for loans, the cash equivalent shall be deducted from compensation on termination

8) If the compensation on termination due to any cause other than the concessionaire's fault during the operation period is smaller than the compensation on termination due to the concessionaire's fault, the compensation on termination due to any cause other than the concessionaire's fault shall be applied

Source: Basic Plan for PPP

Table 1-12 | Calculation Guidelines for Early Termination Payment for Build–Transfer–Lease Projects, as of October 2012

Category	Construction phase	Operation Phase
Default by concessionaire	Private investment cost put in up to the time of termination)–(Paid-in Capital at the time of termination)	(The present value of lease payment of the remaining period that is discounted by rate of return applied at the time of termination)–(Paid-in Capital) = C
Nonpolitical force majeure	[Private investment put in at the time of termination] × [1 + A]	C+(D–C) × 1/3
Political force majeure	[Private investment put in at the time of termination] × [1 +(A+ B)/2]	C+(D–C) × 2/3
Default by government	Private investment put in at the time of termination × [1 + B]	The present value of lease payment of the remaining period that is discounted by rate of return applied at the time of termination = D

A = [government bond interest rate] determined in the concession agreement

B = [government bond interest rate + premium] determined in the concession agreement

C&D = [government bond interest rate + premium] applied when calculating lease payment at the time of termination

Source: Basic Plan for PPP

7.3. A Few Cases of Early Termination So Far

Until now, there have been just two early termination cases in the Republic of Korea. One project was terminated due to the public's opinion that it was inappropriate to build a toll road. The government was held liable for this early termination, and the termination payment was paid out in installments over a 3-years period. The other project was terminated due to the cancellation of the main project that this project supported. The termination payment amount was determined by negotiations between the project company and the government.

8. Public Private Partnership Project Dispute Mediation Committee

Contracting parties – a competent authority and a project company- should make full efforts to formulate a concession agreement that is clear in sharing risk and responsibilities and collaborate to resolve issues that may arise in the implementation process of the project. There can be some cases, however, where contracting parties fail to reach an agreement in

dispute. As the number of complex issues and disputes that need to be mediated by the third party increases, the government established the PPP Project Dispute Mediation Committee ("Dispute Mediation Committee") under the direct jurisdiction of the Minister of Strategy and Finance by revising the PPP Act and Enforcement Decree in 2011.

The Dispute Mediation Committee is comprised of no more than nine members, including one chairperson, the members who represent the Government, those who represent the concessionaire, and those who represent the public interest. The Dispute Mediation Committee examines and mediates disputes concerning the specific PPP projects upon a request of one of the contracting parties. The Dispute Mediation Committee shall examine a case and prepare a proposed mediation within 90 days [7] from the date it has received a request. Upon receiving a proposal for mediation, each party shall notify the Committee of whether to accept the proposal within 15 days. As of October 2012, three requests have been received for mediation.

The Dispute Mediation Committee is expected to play an important role in dealing with an increasing number of dispute cases. It has limitations, however, in that its proposals for mediation do not have the legal force to enforce.

9. Training and Education Program

PPP is a system by which the government provides infrastructure facilities and decides the level of services through concession agreements with the private sector, which takes a leading role in building and operating those facilities. A PPP has a complicated and difficult project structure, in which the financing factor, i.e., the raising and repaying of funds, is involved and the public and private sectors share risks through a concession agreement based on the concept of prior decision. One of the most important elements in implementing PPP projects is correct perception and wide-ranging knowledge about the various elements—including the PPP system itself, demand forecast, civil engineering, financing, accounting, and laws—on the part of decision makers and working-level officials involved.

The PPP Act mandates that PIMAC provide training and education programs and lays down the regulations on "developing and operating educational programs with respect to the implementation of PPP projects" in Article 20, Clause 8, of its enforcement decrees on the duty of PIMAC. Training and education courses are provided for working-group officials and decision makers in both public and private sectors.

7. The handling period may be extended by the resolution of the Dispute Mediation Committee within the limit of 60 days if any unavoidable cause exists.

PIMAC is currently providing training and education courses on PPP projects mainly for interested government officials. It conducted 39 domestic training programs since 2006 including eleven basic courses, fourteen in-depth or professional courses. The number of participants varies by contents of the programs ranging from less than 10 to more than 400.

Meanwhile, as the PPP program became increasingly more active in the Republic of Korea, a number of foreign countries wanted to study it as their benchmarking model through PIMAC. PIMAC developed training and education programs on the overall PPP system at the request of government officials in some foreign countries. Also, PIMAC hosted an annual Asia PPP Practitioners Network Training Program – five day coursework and field trip - in collaboration with World Bank and Asia Development Bank since 2010. Over 30 officials and practitioners from 13 development countries and development institutions participated in 2010, and the number of participants increased to about 40 in 2011.

Chapter 2

Trends of Public–Private Partnerships Projects

1. Build–Transfer–Operate Projects
2. Build–Transfer–Lease Projects
3. Private Financing through Infrastructure Bond and Fund
4. Selected Major Public–Private Partnership Projects in the Republic of Korea

Trends of Public–Private Partnerships Projects

1. Build–Transfer–Operate Projects

1.1. General Trend

In 1995 when public–private partnership (PPP) projects were first introduced in the Republic of Korea, ₩400 million was invested in PPP projects (mostly build–transfer–operate (BTO) projects), which was just 0.5% of the public investment in social overhead capital (SOC). However, from 1995 to 2010, ₩26.5 trillion was invested in PPP (national BTO projects and railway BTL projects) which was more than 10% of public investment in SOC annually. [Figure 2-1] displays the proportion of PPP investment to public investment in SOC from 2001 to 2010.

Figure 2-1 | Percentage of Annual Public–Private Partnership to Public Investment in Social Overhead Capital

Note: PPP Investment amount = National BTO projects + Railway BTL projects
Source: Internal data from the Ministry of Strategy and Finance

As of September 2010, 199 BTO projects were in various stages after concession agreements were signed: 145 in operation, 32 under construction, and 22 in preparation for construction. The 199 projects by sectors are: 77 roads, 8 railways, 17 port facilities, 67 environmental facilities, 6 logistics projects, and 24 other construction projects, including parking lots and cultural and tourism projects. Among them, 89 are national projects and 110 are local projects.

Table 2-1 | Number of Build–Transfer–Operate Projects by Sector and Implementation Phase, as of 2010

Category		Total	Road	Port	Rail	Logistics	Environment	Others
National Projects	In Operation	55	16	13	4	3	5	14
	Under Construction	22	9	3	4	1	5	0
	Preparing Construction	12	8	1	0	1	2	0
	Sub Total	89	33	17	8	5	12	14

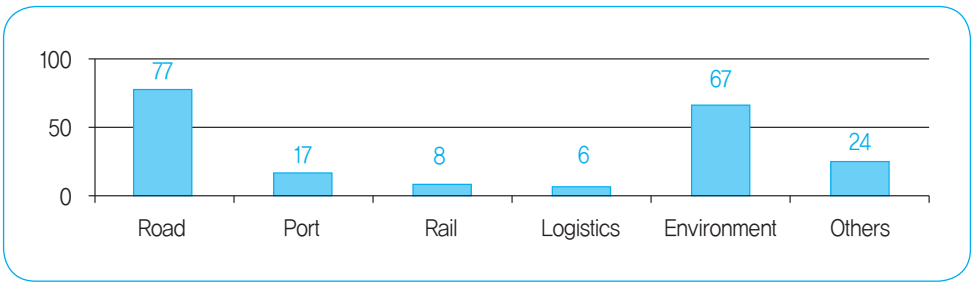
Category		Total	Road	Port	Rail	Logistics	Environment	Others
Local Projects	In Operation	90	36				48	6
	Under Construction	10	1				5	4
	Preparing Construction	10	7			1	2	
	Sub Total	110	44	0	0	1	55	10
Total	In Operation	145	52	13	4	3	53	20
	Under Construction	32	10	3	4	1	10	4
	Preparing Construction	22	15	1	0	2	4	0
	Total	199	77	17	8	6	67	24

Source: Internal data from the Ministry of Strategy and Finance

1.2. Investment Amount and Fiscal Subsidy

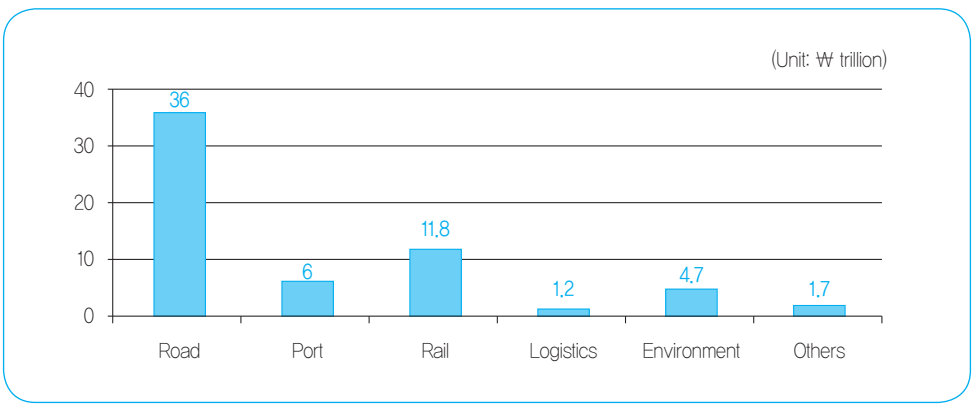
The 199 BTO projects of which concession agreements were signed as of December 2010 involved a total investment cost of ₩61.4 trillion. By sector [Figure 2-2], there are 77 road construction projects involving a total investment cost of ₩36 trillion, taking up 58.6% of the total investment cost. There are 8 railway projects with total investment cost of ₩11.8 trillion, which is 19.2% of the total, and 17 port projects that require an investment of ₩6 trillion, taking up 9.8% of the total investment cost. There are 67 environment projects with an investment cost of ₩4.7 trillion, making up about 7.7% of the total investment cost. There are also five projects in logistics with an investment cost of ₩1.2 trillion, which is just 2.0% of the total investment cost. Additionally, there are 24 projects in various other sectors, including airport, parking lot, and tourism projects, with an investment cost of ₩1.7 trillion, which is 2.8% of the total investment cost.

Figure 2-2 | Number of Build–Transfer–Operate Projects by Sector



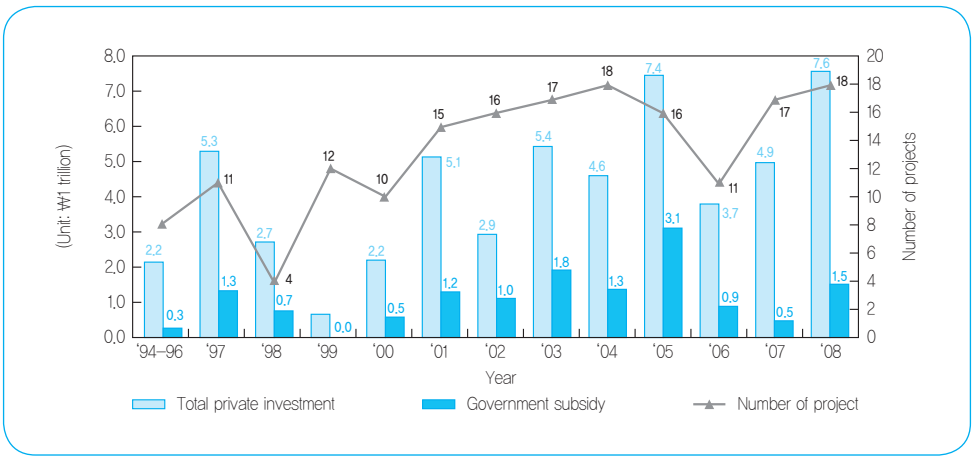
Source: Internal data from the Ministry of Strategy and Finance

Figure 2-3 | Invest Amount of Build–Transfer–Operate Projects by Sector



Source: Internal data from the Ministry of Strategy and Finance

Figure 2-4 | Total Investment Cost and Government Subsidy of Signed Build–Transfer–Operate Projects By Year



Note: The amounts are not the actual investment in the corresponding year but are the sum of total investment costs of signed agreements in each year

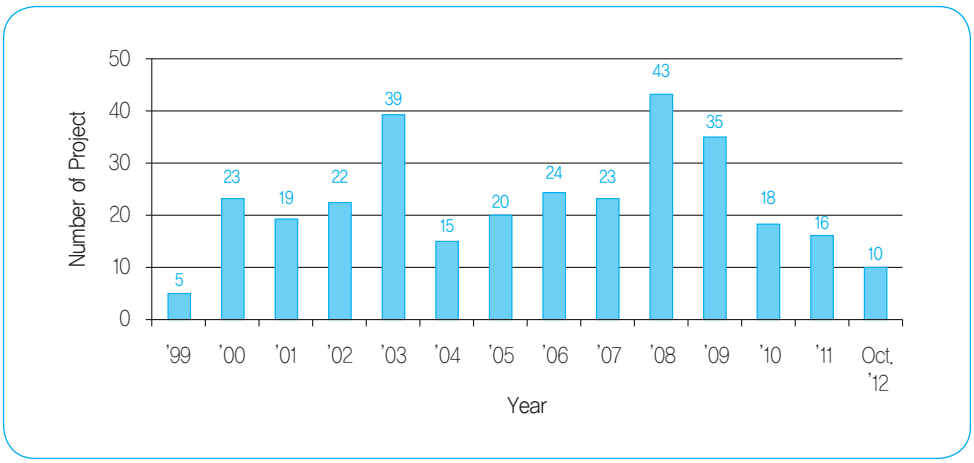
Source: Internal data from the Ministry of Strategy and Finance

In 1997, concession agreements on private investments of ₩5.3 trillion were signed for 11 projects with a total government subsidy of ₩1.3 trillion. The total investment decreased in 1998 and 1990. In 2000, investment gradually started to grow, with the highest levels reached in 2005 and 2008. In 2005, concession agreements for 16 projects with private investment of ₩7.4 trillion and government subsidy of ₩3.1 trillion were signed, while, in 2008, concession agreements for 17 projects with private investment of ₩7.5 trillion and government subsidy of ₩1.5 trillion were signed.

1.3. Solicited versus Unsolicited Projects

In the Republic of Korea, PPP procurement is initiated as either a solicited or unsolicited project. A solicited project is one where the competent authority identifies a PPP project and announces a RFP. For an unsolicited project, a private company submits a project proposal, and then the competent authority examines and designates it as a PPP project. As of October 2012, 312 unsolicited projects have been proposed as PPP projects. In 1999, the first year unsolicited proposals were allowed by the PPP Act, five unsolicited projects were proposed as BTO projects. In 2003, 39 unsolicited projects were proposed; in 2005–2007, the number of unsolicited projects fell considerably to 20–24 per year. The number increased again in 35-43 in 2008-2009, but fell to 16-18 per year in 2010-2011 [Figure 2-5].

Figure 2-5 | Number of Unsolicited Build–Transfer–Operate Projects Proposed By Year

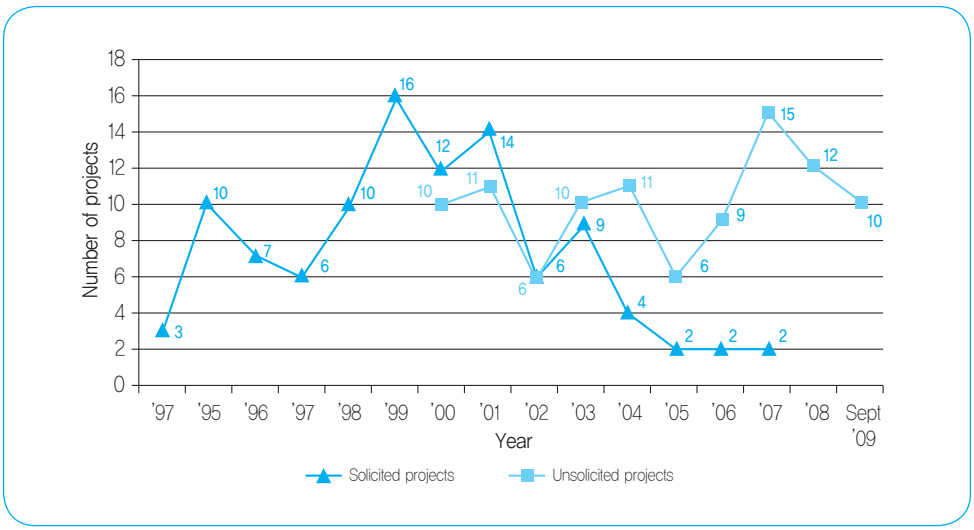


Source: Internal data from KDI PIMAC

In the case of solicited projects, since 1994, 103 projects have been proposed by the central and local governments. The number of solicited projects gradually increased—from 3 in 1994 to 10 in 1995 and 16 in 1999. Then, the number declined sharply: 6 in 2002, 4 in 2004, and 2 in 2007. Compared annually [Figure 2-6], it can be seen that the number of unsolicited projects surpassed that of solicited projects in 2003. In other words, from 2003, there have been considerably more unsolicited than solicited BTO projects.

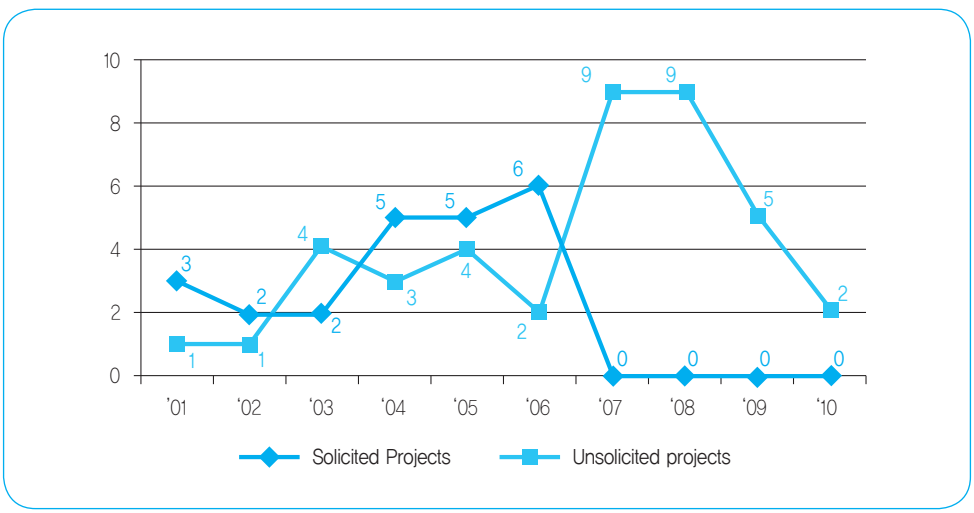
[Figure 2-7] shows solicited and unsolicited BTO projects managed by the central government by the year of the concession agreement. The number of contract awards of unsolicited projects peaked at 9 projects in 2007-2008 and fell in 2009 to 5. Because the number of solicited projects that were announced was small, there was no contract awarded of solicited projects since 2007-2010.

Figure 2-6 | Number of Solicited and Unsolicited Build–Transfer–Operate Projects Announced By Year



Source: Internal data from the Ministry of Strategy and Finance

Figure 2-7 | Number of Solicited and Unsolicited Build–Transfer–Operate Projects awarded By Year



Note: The number includes BTO projects managed by the central governments

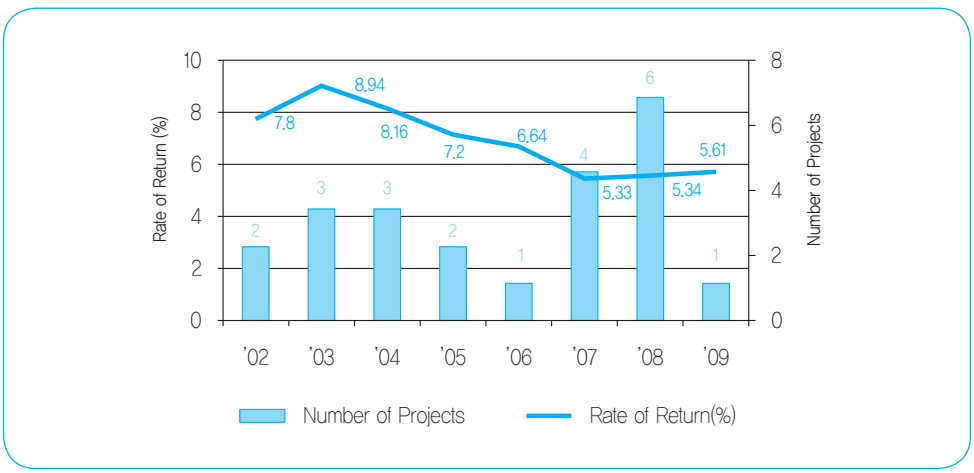
Source: Internal data from the Ministry of Strategy and Finance

1.4. Rate of Return

Rate of return for BTO projects is defined by the internal rate of return (IRR), which is the discount rate that makes the present value of cash inflow equal to outflow (net present value =0). Rate of return of the project is determined through negotiations through a competitive bidding process and negotiations between the concessionaire and the government.

The rate of return for road projects peaked at 2003 and gradually declined until 2007. The level of the rate of return for road projects was stabilized around 5.3-5.6% in recent years due to market conditions and increased competition, etc.

Figure 2-8 | Rate of Return for Signed Build–Transfer–Operate Road Construction Projects



Source: Internal data from the Ministry of Strategy and Finance

1.5. Minimum Revenue Guarantee

For promoting BTO projects, the government provided subsidies during the construction phase and also subsidized operation through the minimum revenue guarantee (MRG) program until 2006, when the MRG system ended only for unsolicited projects. Different from other fiscal supports, such as the fixed amount of construction subsidies, the MRG created higher fiscal risks for the government because it was harder to estimate the costs and benefits. The government guaranteed private investors a certain percentage of expected revenue for a project. If revenue fell below the guaranteed level, the government filled the gap. In return, the government had the right to redeem revenue above a certain revenue level based on projected revenue.

Until 2010, about ₩1,659.5 billion were paid to PPP projects as MRG. Though the MRG system for unsolicited projects ended in 2006, the government is required to pay the subsidies for the projects agreed to before the system ended. Early projects started operation but many of them generated actual demands far less than expected as stipulated in the concession agreements. As a result, large amounts of government payments have been made in MRG subsidies annually. <Table 2-2> shows the number of projects with MRG payments and the total amount paid per year. As more projects move into the operational phase, the MRG subsidy amount is expected to increase.

Table 2-2 | Total Amount of Minimum Revenue Guarantee Subsidies for National Projects in Operation By Year

(Unit: ₩ billion)

Year	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10
Number of projects	1	1	2	4	3	4	6	7	12	15
Amount incurred	59.1	68.3	135.7	140.3	105.1	147.6	263.7	360.5	403.3	431.4
Amount paid	-	59.1	-	204.0	118.9	126.5	113.9	292.1	365.8	379.2

Source: Internal data from the Ministry of Strategy and Finance

<Table 2-3> shows some examples of MRG payment that are actually being subsidized in accordance with the MRG program. It shows the different levels of operational risk shared between concessionaire and the government in national projects. It can be seen from the table that in many of the BTO projects, the government bore more risk than the concessionaire. The actual government payment for MRG has significantly increased in recent years.

The MRG program played a critical role in promoting PPP projects by mitigating projects risk in the early stages of the PPP system. As some of the early projects started operation and triggered MRG subsidies, however, there has been increasing criticism about the program, although it was abolished in 2006. One of the criticisms of the MRG system was that the government took on most of the project risks, but provided unreasonable high returns to the private participants. Higher MRG levels imply more risk is transferred from the private participants to the government. As the MRG level becomes higher, the returns provided to private participants should be lower. In the early era of PPP projects, the returns to BTO projects were very high despite the high MRG level provided by the government. In fact, private participants received very attractive government guaranteed returns from their PPP investments, which exceeded the yield of the 5-years Treasury bond by 5%–8%.

Another criticism of the MRG system was that it discourages the project company from trying to maximize revenue, the so-called moral hazard problem. The worst case of the moral hazard problem arose in projects where the main user of the facility was the project company. Port projects are typical cases. Private port operators are susceptible to an extreme moral hazard if they are eligible for MRG subsidies and do not need to work to increase port traffic.

The MRG system has been a financial burden to the government. The revenue risk imposed on the government has been realized and has put considerable pressure on the national budget. Various efforts are being initiated by the government to mitigate the burden from its MRG commitments. One of most direct efforts is to consult with the project company and develop plans to increase revenue. Other efforts include sharing refinancing gain. When the project company refinances, the government shares 50 percent of the refinancing gains and uses it to lower the level of MRG.[8] In practice, the actual gain for the government varies depending upon the methods used for measuring the gain.

Table 2-3 | Minimum Revenue Guarantee—Actual Subsidy Paid in 7 National Projects

Project Name (guarantee level, guaranteed period)		'01	'02	'03	'04	'05	'06	'07	'08	'09	'10
Incheon International Airport Expressway (80%, 20 yrs)	Actual/projected traffic volume	47.0%	44.6%	41.5%	40.8%	52.8%	52.3%	52.1%	46.8%	42.5%	57.5%
	MRG subsidy (W billion)	59.1	68.3	95.3	100.9	66	71	76.3	90	95	69
Cheonan-Nonsan Expressway (82%, 20 yrs)	Actual/projected traffic volume			47.1%	52.4%	54.7%	55.9%	58.2%	55.7%	57.4%	58.1%
	MRG subsidy (W billion)			40.4	38.6	39	40.4	39	47.2	50.2	48.4
Daegu-Busan Expressway (77%, 20 yrs)	Actual/projected traffic volume						56.2%	61.5%	56.0%	55.3%	55.8%
	MRG subsidy (W billion)						33.7	33.1	47.8	57.6	56.7
Seoul Outer Beltway 1 (90%, 20 yrs)	Actual/projected traffic volume						1.6	1.8	0.8	0.9	1.0
	MRG subsidy (W billion)						(4.8)	(16.8)	6.3	14.4	41.6

8. 70 (private) : 30 (public) rule is applied to those projects without revenue guarantee provisions.

Project Name (guarantee level, guaranteed period)		'01	'02	'03	'04	'05	'06	'07	'08	'09	'10
Mokpo New Outport 1-1 (79/77%, 20 yrs)	Actual/projected traffic volume				51%	79.4%	31.8%	27.9%	12.9%	24.6%	24.0%
	MRG subsidy (W billion)				0.8	0.0	2.5	5.2	7.4	4.3	4.8
Mokpo New Outport 1-2 (79/77%, 20 yrs)	Actual/projected traffic volume				81.4%	81.6%	62.4%	51.1%	17.2%	25.7%	30.4%
	MRG subsidy (W billion)				0.0	0.1	0.0	0.7	2.6	1.2	1.2
Incheon International Airport Railway (65/58/46%, 30 yrs)	Actual/projected traffic volume							6.4%	7.3%	8.1%	11.1%
	MRG subsidy (W billion)							109.3	159.2	129.6	130.1

Source: Internal data from the Ministry of Strategy and Finance

Table 2-4 | The Level of Minimum Revenue Guarantee Before and After Refinancing

Project Name	Procuring Ministry	MRG level			
		Term	Before refinancing	After refinancing	Year of Change
Incheon International Airport Expressway	MLTM	20 yrs	90%	80%	'03.12
Cheonan-Nonsan Expressway	MLTM	20 yrs	90%	82%	'05.5
Daegu-Busan Expressway	MLTM	20 yrs	90%	77%	'08.5
Mokpo New Outport 1-1	MLTM	20 yrs	90%	79.43% ('16), 77.43% ('24)	'09.6
Mokpo New Outport 1-2	MLTM	20 yrs	80%	79.43% ('16), 77.43% ('24)	'09.6
Incheon International Airport Railway	MLTM	20 yrs	90%	65% (10), 58% (10), 46% (10)	'09.11

Source: Internal data from the Ministry of Strategy and Finance

2. Build–Transfer–Lease Projects

As discussed above regarding a BTO project, a private sector participant builds infrastructure, transfers ownership to the government, and recoups the investment by operating the facilities. Under this method, a private sector participant typically assumes the risk of operating the facilities. The government amended the PPP Act in 2005, expanding the scope of PPPs from economic infrastructure such as transport facilities to a wider range of social infrastructure, including educational, welfare, and cultural facilities. The BTL method is mainly used for such social infrastructure projects. For a BTL project, a private sector participant builds the infrastructure and receives facility lease fees from a government agency for an agreed period of time in order to recoup the investment.

As of December 2011, a total of 396 BTL projects were signed, with a total investment cost amounting to ₩23.6 trillion. The BTL projects include: 255 in operation, 121 under construction, and 20 preparing for construction. The 396 BTL projects include 181 primary and middle schools, 86 environmental sewage facilities, 65 military residential facilities, and 3 railways.

Table 2-5 | Number of Signed Build–Transfer–Lease Projects and Total Private Investment Cost, as of September 2011

Project Phase		Total	Primary/ Middle Schools	Sewage Systems	Railway	Military Residential Facilities	Dorms of Nat'l Univ.	Others
In Operation	Number of Projects	255	162	31		19	15	28
	Total Private Investment Cost (W trillion)	10.9	6.1	1.9		1.2	0.9	0.7
Under Construction	Number of Projects	121	19	49	3	36	1	13
	Total Private Investment Cost (W trillion)	11.2	1	3.9	2.6	2.6	0.4	0.8

Project Phase		Total	Primary/ Middle Schools	Sewage Systems	Railway	Military Residential Facilities	Dorms of Nat'l Univ.	Others
Preparing Construction	Number of Projects	20		6		10		4
	Total Private Investment Cost (W trillion)	1.4		0.4		0.9		0.1
Total	Number of Projects	396	181	86	3	65	16	45
	Total Private Investment Cost (W trillion)	23.6	7.1	6.2	2.6	4.8	1.3	1.5

Source: Internal data from the Ministry of Strategy and Finance

3. Private Financing through Infrastructure Bond and Fund

3.1. Infrastructure Bond

An infrastructure bond is a bond issued by financial institutions in relation to PPP projects. A separate tax rate of 14% is applied to the interest revenue from bonds with 15 years' maturity or more, according to Article 29 of the Restriction of Special Taxation Act (extended through 31 December 2012).

Utilization of the infrastructure bonds has been low despite the benefits provided to investors. The reasons for the low utilization of these bonds include the unique characteristics of the infrastructure projects in which funds need to be provided in a sequential manner corresponding to the progress of construction and future equity sales that require consent from debt providers.

Because infrastructure projects have different financing requirements depending on the project's completion rate, funds need to be withdrawn over several periods. Financing with a bond issuance would either result in several issuances according to the funding needs or a large one-time issuance and holding of idle money. There was one project in which infrastructure bonds, underwritten by the Korea Development Bank, were structured so that the bonds were issued at different times according to the completion schedule. According to

this example, using infrastructure bonds to raise funds in accordance with the construction schedule does not pose a serious obstacle. However, most managing banks that fund PPP projects do not have the underwriting ability that the Korea Development Bank has. Therefore, issuing infrastructure bonds has not been a typical way to raise debt financing for commercial banks.

PPP projects typically involve refinancing once the construction is completed. Refinancing a project requires the approval of interested parties. If only one bank is involved as a lender, consent would be gained much easier than in the case when bonds are issued to several parties. Moreover, due to the nature of bonds, the issuers cannot always predict who the buyers would be. Therefore, it would be convenient to include a clause at the time of bond issuance requiring the bondholder to consent to future refinancing of the project.

Table 2-6 | Examples of Infrastructure Bonds

	Incheon Intl. Airport Cogeneration Plant	New Daegu-Busan Expressway	Busan-Changwon Expressway	Cheonan-Nonsan Expressway[1]
Type	Infrastructure bond	Infrastructure bond	ABS[1]	ABS[1]
Amount of issuance	₩ 100 billion	₩ 500 billion	₩ 130 billion	₩ 730 billion
Date of issuance	1995.5	2004.6~2005.9 (4 times)	2012. 6	2001.2
Maturity	10 years	7 years 9 month~17years	22 years	5, 6, 7, 8, 10, 15 years

Note: ABS issued for the Busan-Changwon Expressway and Cheonan-Nonsan Expressway were not infrastructure bonds regulated in the PPP Act

Source: Internal data from the Ministry of Strategy and Finance

3.2. Infrastructure Fund

The infrastructure fund is a vehicle that indirectly invests money collected from many private investors in PPP projects. This vehicle is established and operated according to Article 41 to Article 44 of the PPP Act. The infrastructure fund is a kind of mutual fund that invests in infrastructure PPP projects. Because it is a special purpose mutual fund, it is subject to the Act on Business of Operating Indirect Investment Assets, unless the PPP Act directs otherwise. The PPP Act supports infrastructure funds by exempting them from compliance with the Fair Trade Act. This allows the infrastructure funds to hold more than what the Fair Trade Committee allows (listed corporation: 30%; non-listed corporation: 50%).

Types of infrastructure funds can be either a private equity fund financed by less than 30 investors or a public fund financed by public offering. There is one public fund and the rest is private equity funds. <Table 2-7> shows examples of the infrastructure funds.

Table 2-7 | Examples of Infrastructure Funds (as of November 2010)

	Date of Establishment	Fund Duration	Net Capital[1]	Promised amount of Investment[2]
Fund A	1999.12	20 years	₩ 48 billion	₩ 48 billion
Fund B	2005.5	20 years	₩ 376.8 billion	₩ 1,018.4 billion
Fund C	2006.10	25 years	₩ 412 billion	₩ 624 billion
Fund D	2006.12	30 years	₩ 144 billion	₩ 464.7 billion
Fund E	2006.12	25 years	₩ 146 billion	₩ 195.6 billion
Fund F	2006.6	20 years	₩ 225.7 billion	₩ 452.3 billion
Fund G	2006.1	15 years	₩ 880.3 billion	₩ 1,055.4 billion
Fund H	2002.12	-	₩ 1,671 billion	₩ 1,784.3 billion
Fund I	2006.8	15 years	₩ 1146.7 billion	₩ 347.5 billion
Fund J	2006.12	20 years	₩ 237 billion	₩ 261.7 billion

Note: 1) Net Capital after subtracting recovered investment amount
2) As of 2009.12.31

Source: Internal data from the Ministry of Strategy and Finance

Table 2-8 | Infrastructure Fund for PPP Projects

Category	Number of Project	Total Project Cost (W bn)	Amount of Fund Investment (W bn)	Amount of Fund Investment/ Total Project Cost (%)
Road	15	9,001	1,235	13.7%
Culture/Tourism	1	153	13	8.5%
Railway	2	1,122	40	3.6%
Port	3	747	74	9.9%
Environment	2	228	16	6.8%
Total	23	11249.622	1377.548	12.2%

Source: Internal data from KDI PIMAC

4. Selected Major Public–Private Partnership Projects in the Republic of Korea

4.1. Incheon International Airport Expressway

Incheon International Airport Expressway is the build–transfer–operate (BTO) toll road No. 1, which was built in accordance with the Act on Promotion of Private Capital Investment in Social Overhead Capital enacted in 1994. It originally started as a government-financed project but was shifted to a BTO project later to help ease fiscal burdens on the government and incorporate the private sector's creativity and efficiency. A consortium of 11 construction companies signed a concession agreement with the government to start construction in 1995. Since its completion in 2000, the expressway has undergone a refinancing process, and now all equity holders are financial institutions.

- Total project cost: ₩1,334 billion
- Capital structure: equity/debt/construction subsidy = 25%/59%/16%
- Length: 40.2 kilometers, 8 lanes
- Competent authority: Ministry of Land, Transport and Maritime Affairs
- Construction period: November 1995–November 2000
- Operational period: 30 years
- Minimum revenue guarantee: 80%, 20 years
- Current phase: in operation

4.2. Seoul Beltway Northern Section

Seoul Beltway is a BTO project that was undertaken to help ease rapidly deteriorating traffic congestion in the Seoul capital area as well as to cope with additional traffic demand resulting from the construction of Seoul's new satellite towns. Out of the total 127-kilometer beltway, the southern section started its construction financed by the government in 1988 and opened to traffic in 1999. The northern section started its design as a PPP project in 1995, and was completed in 2006 and 2008 on a phased basis. Now, the road has come to have the function of a "ring road", which connects major satellite towns on the outskirts of Seoul. This project included minimum revenue guarantee (MRG) provisions in its concession agreement, but as the actual demand hovered around 130% of expected demand since completion, the government received revenues in excess of 110% of the initially projected amount since 2006. The government is using the revenues to lower tolls.

- Total project cost: ₩1,471 billion
- Capital structure: equity/debt/construction subsidy = 23%/51%/25%
- Length: 36.3 kilometers, 8 lanes (Total Length: 128 kilometers)
- Competent authority: Ministry of Land, Transport, and Maritime Affairs
- Construction period: June 2001–June 2008
- Operational period: 30 years
- Minimum revenue guarantee: 90%/110%, 20 years
- Current phase: in operation

4.3. Busan New Port Phase 1

The Busan New Port Phase 1 project aims to expand deficient harbor facilities at existing ports in Busan and establish a logistics hub in Northeast Asia. Out of the total 30 berths (9.95 kilometers) planned, the first phase of nine berths have been allocated to BTO projects, with the first three completed in 2006 (Phase 1-1), and the remaining six completed in 2009. Aside from construction subsidies, the government has provided financial support for the construction of basic harbor facilities, access transport facilities (roads and railroads), and basic infrastructure facilities in the hinterland industrial area. In addition to equity holdings by large Korean contractors, such as Samsung, Hanjin, Kumho, and Daewoo, and financial institutions, DP World, a global port developer and operator, holds a 25% equity stake in the port's operation.

- Total project cost: ₩1,648 billion
- Capital structure: equity/debt/construction subsidy = 20%/55%/25%
- Work scope: 9 berth (50,000 tons), 3.2 kilometers
- Competent authority: Ministry of Land, Transport, and Maritime Affairs
- Construction period: 2001–2009
- Operational period: 50 years
- Minimum revenue guarantee: None
- Current phase: in operation

4.4. Metropolitan Landfill Gas Power Plant

The Metropolitan Landfill Gas Power Plant is a BTO project to construct and operate a power plant that generates electricity by utilizing land refill gas in the metropolitan area. The gas was simply burnt up before, but now the plant can process it to use as an energy resource. This project is expected to not only prevent and control bad odor in the neighboring areas and create added values economically, but also contribute to Korea's fulfillment of its obligation to reduce greenhouse gas emissions in accordance with the international conventions on climate change.

- Total project cost: ₩77.2 billion
- Capital structure: equity/debt = 25%/75%
- Work scope: 50-megawatt power plant and ancillary equipment
- Competent authority: Ministry of Environment
- Construction period: March 2004–June 2006
- Operational period: 11 years
- Minimum revenue guarantee: 90%, 11 years
- Current phase: in operation

4.5. Chungju Military Apartment Housing

The investment into the worn-out Chungju military barracks was delayed due to insufficient government funds, but the modernization of these facilities picked up once a build–transfer–lease (BTL) project was begun. The barracks were dedicated in March 2007, the first such project ever to be built and operated using the BTL method in the Republic of Korea. To help reinvigorate the regional economy, regional construction companies were allowed to take up to 40% in the construction project. A total of 200 families moved into the 12 apartment buildings, and more than 95% of residents showed a level satisfaction in a survey.

- Total project cost: ₩18.6 billion
- Work scope: 200 military apartments and convenience facilities
- Competent authority: Ministry of Defense
- Construction period: September 2005–March 2007
- Operational period: 20 years
- Current phase: in operation

4.6. Ulsan National Institute of Science and Technology

While most college facilities built using the BTL method are part of existing college complexes, such as dormitories and student centers, the Ulsan National Institute of Science and Technology was the first case of an entire campus construction project that used the BTL method. This campus has been designed as a smart, state-of-the art, environmentally friendly, and digitized campus. It completed the first phase of construction and opened in February 2009. The BTL project company is not only responsible for facility maintenance, management, repair, cleaning, and safety, but also for operating dormitories, gymnasium, shops, parking lots, etc.

- Total project cost: approximately ₩250 billion
- Work scope: site is 1,028,200 square meters; total floor area is 153,691 square meters (educational, administrative and ancillary buildings, dormitories and residential buildings, etc.)
- Competent authority: Ministry of Education, Science, and Technology
- Construction period: 2007–2010 (1st Phase 2007–2009)
- Operational period: 20 years
- Current phase: under construction

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Chapter 3

Performance of Public–Private Partnerships: Evidence of Efficiency Gains and Contribution to the National Economy

Performance of Public–Private Partnerships: Evidence of Efficiency Gains and Contribution to the National Economy

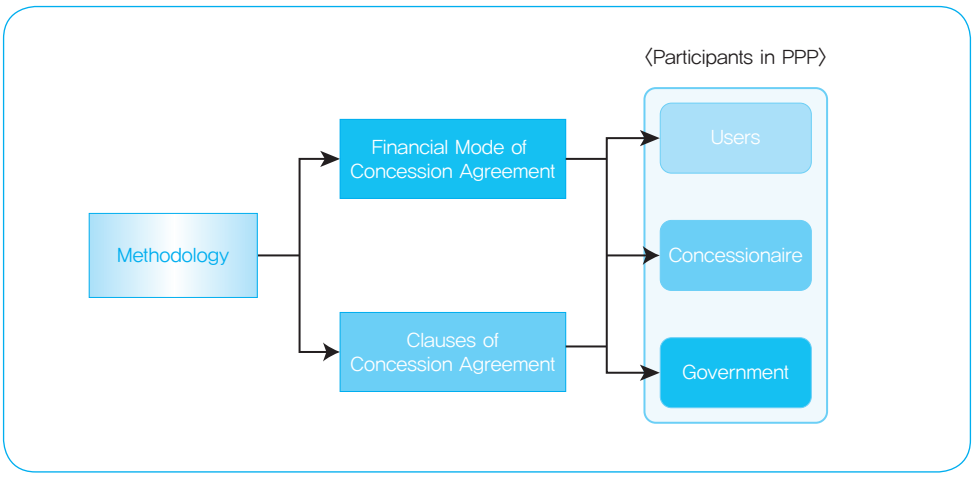
With the expansion of investment in BTO and BTL projects in Korea, there is increasing need for performance evaluations of PPP investments that have taken place. There has been little research done on the performance of PPP projects in Korea. This chapter, most of which is a summary of chapters 6 and 7 of the author's book, *Public-Private Partnership Infrastructure Projects: Case Studies from the Republic of Korea (ADB, 2011)*, is intended to evaluate the economic efficiency of PPP projects in the Republic of Korea through empirical analysis. The chapter will identify areas that need improvement in various policies designed to stimulate PPP projects in the early stages.

The chapter mainly analyzes BTO projects that were carried out. Efficiency will be examined through changes in the PPP projects, as well as documents and financial data, such as concession agreements, toll collection, and rate of return.

1. Methodology

This study analyzes the efficiency of PPP projects from the perspectives of three parties: users, concessionaires, and the government. First, the risks that each party takes are examined; the study will assess whether the risk-sharing scheme has been appropriate. Also, the concession agreements and financial models of past PPP projects will be analyzed to review whether gradual improvements have been made in the efficiency of concession agreements, toll rates, and rate of return. In other words, by understanding the changing trend in interest, risk, returns, and costs, the study aims to determine if the efficiency of PPP projects is improving. Using financial models and clauses of PPP concession agreements, we analyze the efficiency of participants in PPP projects [Figure 3-1] and <Table 3-1>.

Figure 3-1 | Methodology for Analysis of Public–Private Partnership Project Efficiency



Source: Kim, Jay-Hyung et al. (2011)

Table 3-1 | Perspectives of Parties to a Public–Private Partnership: Users, Concessionaires, and the Government

	Financial Model	Clauses of Concession Agreement
Users	- Comparison of user fees	- Role of government to protect public interest
Concessionaire	- Competition in the bidding process - Fair return for risks of build–transfer–operate project	- Risk and return to concessionaires: insurance, termination payment, prohibition of alternatives, support of government
Government	- Present value of government subsidy	- Risk: quality control risk, fluctuation risk of government subsidy

Source: Kim, Jay-Hyung et al. (2011)

1.1. Perspective of Users

From the users' perspective, the efficiency of PPP projects can be examined by analyzing the user fees (tolls on roads constructed by private investment, railway fares, etc.) through a financial model and also by reviewing the renegotiation issues of concession agreements. When people use PPP projects, they pay user fees for facilities; for example, tolls for roads

and fares for railways. Comparative analyses of the user fees of government projects and PPP projects are conducted in this study. Based on the accumulated experience with PPP projects, the study examines whether the gap between the user fees for government projects and PPP projects are gradually narrowing.

For the welfare of the users of PPP projects, the government usually permits renegotiation of concession agreements. This study examines the clauses in concession agreements that are related to renegotiation to analyze to what extent the government could protect the interests of facility users.

1.2. Perspective of Concessionaire

One of the most important factors for efficient implementation of PPP projects is sufficient competition among bidders. From the perspective of concessionaires, the study examines whether there were adequate levels of competition and also, in accordance with the intensity of competition, it aims to analyze government subsidies and the returns to concessionaires in comparison to the risks that they take. In cases of efficiently implemented PPP projects, concessionaires gain a fair level of returns that compensate for the risks. The analysis aims to examine whether the expected concessionaires' rate of return is adequate in comparison with the risks. Since estimation of the adequate rate of return for PPP projects is required for this process, the research methodology in PIMAC's 2006 Study on the Optimum Rate of Return in Various BTO Projects is employed for the estimation of various sectors, including roads, railways, and ports.

Lastly, the clauses in concession agreements that are related to the risks and rate of return to concessionaires are examined. In other words, clauses on imputation, insurance, termination payment, and the government's support for efficient implementation of PPP projects are analyzed.

1.3. Perspective of Government

As reflected in the VFM test, PPP projects need to bring some kind of efficiency gains in comparison with traditional public projects. In public projects, the government funds all of the project cost and collects the user fee over a long period of time that roughly corresponds to the concession period. In PPP projects, on the other hand, the government provides a subsidy to a private company. One way to evaluate the efficiency of PPP projects is to compare the actual costs of the PPP projects and comparable public projects. This study aims to conduct a comparative analysis of the government's costs provided to public projects and PPP projects.

Also to check whether the government is effectively controlling its risk, clauses in concession agreements concerning delay, quality control, and MRG payment risk will be examined.

2. Financial Analysis of Concession Agreement

This section will look at risks that stakeholders take for PPP projects and examine whether such risks are shared appropriately and whether the return on risk is fair. It will also analyze the economic efficiency of private investment projects by comparing tolls and by comparing the government subsidy provided to PPP projects and public projects. Fair rate of return for PPP projects will be estimated to determine whether the financial terms in concession agreements were adequately negotiated between the government and project companies.

2.1. Perspective of Users

User fees for roads. Based on the calculation methodology of the Korea Highway Corporation, which is a public company, the tolls for PPP project roads are converted into those for government-financed roads to compare the two types of projects. The results are shown in <Table 3-2> and [Figure 3-2]. The difference in user fees between government-financed and PPP road projects have decreased over time.

Table 3-2 | User Fees for Roads: Government-Financed vs. Public–Private–Partnership Projects

Status / Project			Distance (kilometer)	Real Rate of Return (%)	Govt. Financed Tolls[1] (A) (₩)	PPP Tolls (B) (₩)	Ratio (B/A)	Date of Contract Award
In Operation	1	A - expressway	40.2	9.7	2,800	7,100	2.54	27 October 1995
	2	B - beltway	4.29	9.34	1,100	1,000	0.91	28 February 1997
	3	C - expressway	80.96	9.24	4,100	8,000	1.95	3 April 1997
	4	D - expressway	82.05	9.83	4,200	8,900	2.12	17 March 1998
	5	E - tunnel	2.96	8.03	1,000	2,000	2.00	May 1998
	6	F - expressway	36.3	9.52	2,600	4,300	1.65	14 December 2000

Status / Project			Distance (kilometer)	Real Rate of Return (%)	Govt. Financed Tolls[1] (A) (₩)	PPP Tolls (B) (₩)	Ratio (B/A)	Date of Contract Award
Under Construction	7	G - bridge	1.84	9.2	1,000	1,000	1.00	17 June 2002
	8	H - expressway	12.4	8.48	1,500	1,400	0.93	27 June 2002
	9	I - expressway	14.27	8.28	1,600	3,100	1.94	22 December 2003
	10	J - bridge	1.7	8	900	2,500	2.78	19 March 2004
	11	K - expressway	61.4	8	3,800	6,300	1.66	19 March 2004
	12	L - expressway	22.9	7.01	1,800	1,900	1.06	10 January 2005
	13	M - expressway	38.5	7.04	2,700	3,000	1.11	10 January 2005

Note: 1) The level of tolls of PPP projects are converted into those of government-financed roads based on the standard toll calculation formula

Source: Public and Private Infrastructure Investment Management Center

Figure 3-2 | Ratio of Public–Private–Partnership Toll Level to Government-Financed Toll Level

Source: Public and Private Infrastructure Investment Management Center

User fees for railways. The difference in user fees between government-financed projects and PPP projects for railways is examined by comparing the level of passage fares. The results are shown in <Table 3-3> and [Figure 3-3]. As in road projects, the difference in user fees between government-financed and PPP projects has decreased over time.

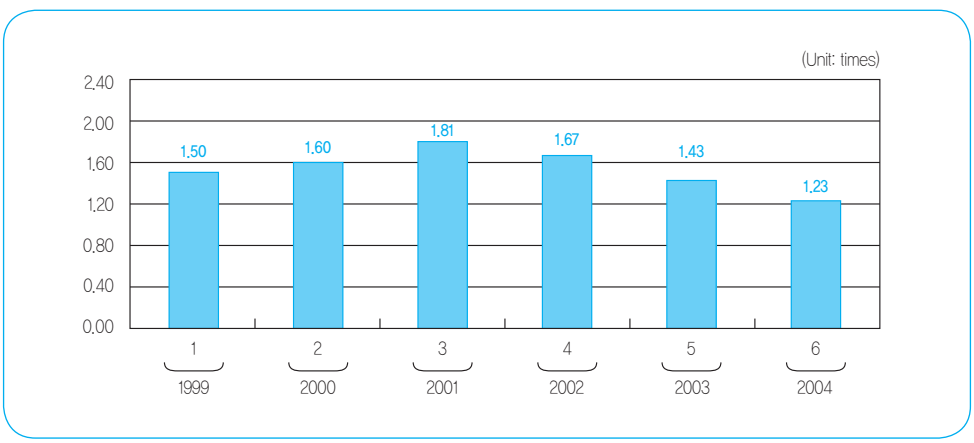
Table 3-3 | User Fees for Railways: Government-Financed vs. Public–Private–Partnership Projects

			Date of Agreement	Public Railways (A) (₩)	PPP Railways (B) (₩)	Ratio (B/A)
In Operation	1	A - railways	1999	500	750	1.50
Under Construction	2	B - LRT	7 January 2000	600	962	1.60
	3	C - LRT	31 December 2001	600	1,086	1.81
	4	D - railways	1 May 2002	600	1,000	1.67
	5	E - railways	2 January 2003	700	1,000	1.43
	6	F - LRT	1 September 2004	800	981	1.23

LRT = light railway transit

Source: Public and Private Infrastructure Investment Management Center

Figure 3-3 | Ratio of User Fees of Public–Private–Partnership Railways to Government-Financed Railways



Source: Public and Private Infrastructure Investment Management Center

2.2. Perspective of Concessionaire

Promoting competition among private participants bidding for PPP projects is one of the key elements in enhancing efficiency. <Table 3-4> and <Table 3-5> show the number of bidders on PPP projects from 1995 to 2007 by year and sector. Surprisingly, 70% of the projects had a single bidder. Moreover, there was no significant difference between the number of bidders for solicited and unsolicited projects. One possible reason for the insufficient competition was the high cost of submitting proposals. Private participants seemed reluctant to bid for projects unless they had a good chance to win. This lack of adequate competition implies that there is much room for improvement in the efficiency of PPP projects. Nonetheless, one promising development is that the number of bidders increased over time. Although the number of bidders is still not sufficient, the trend implies that the lack of competition is being mitigated over time.

Table 3-4 | Number of Bidders on Public–Private–Partnership Projects by Year

Year	Number of Bidders					Percentage			
	1	2	3	4	Total	1	2	3	4
1995	1				1	100.0			
1997	2	1			3	66.7	33.3		
1998	1	1			2	50.0			
1999	5	1			6	83.3			
2000	7				7	100.0			
2001	6	4			10	60.0	40.0		
2002	4	1		2	7	57.1	14.3		
2003	5	3	1	1	10	50.0	30.0		
2004	1				1	100.0			
2005	7	1	1		9	77.8	11.1		
2006	1			1	2	50.0	0.0		50.0
2007	3				3	100.0	0.0		
Under Negotiation	5	1	2		8	62.5	12.5	25.0	
Total	48	13	4	4	69	69.6	18.8	5.8	5.8

Source: Public and Private Infrastructure Investment Management Center. *Project Progress Reports*

Table 3-5 | Number of Bidders on Public–Private–Partnership Projects by Sector

Type	Sector	Number of Bidders					Total
		1	2	3	4	Subtotal	
Solicited Project	Road	9	1		1	11	42
	Seaport	9	2		2	13	
	Railway	3	4			7	
	Logistics	2	1			3	
	Airport	6		1		7	
	Environment		1			1	
	Subtotal	29	9	1	3		
Unsolicited Project	Road	8	2	1	1	12	27
	Seaport	3		1		4	
	Railway	2		1		3	
	Logistics	1	1			2	
	Airport						
	Environment	5	1			6	
	Subtotal	19	4	3	1		
Total	Number of Bidders	48	13	4	4	69	
	Ratio (%)	69.57	18.84	5.80	5.80	100	

Source: Public and Private Infrastructure Investment Management Center. *Project Progress Reports*

One way to measure the efficiency of PPP projects is to examine the appropriateness of returns to private participants in comparison with the risks that they take. The risks of infrastructure projects depend on (i) the nature of the projects and (ii) the level of risk transfer from government to the private company. During the life of the projects, various kinds of risks arise, such as construction, operational (cost and revenue), financial, and political risks. The level of risk transfer from the government to the private company depends upon the conditions for the MRG and government redemption. Provisions for early termination also affect the level of risk transfer.

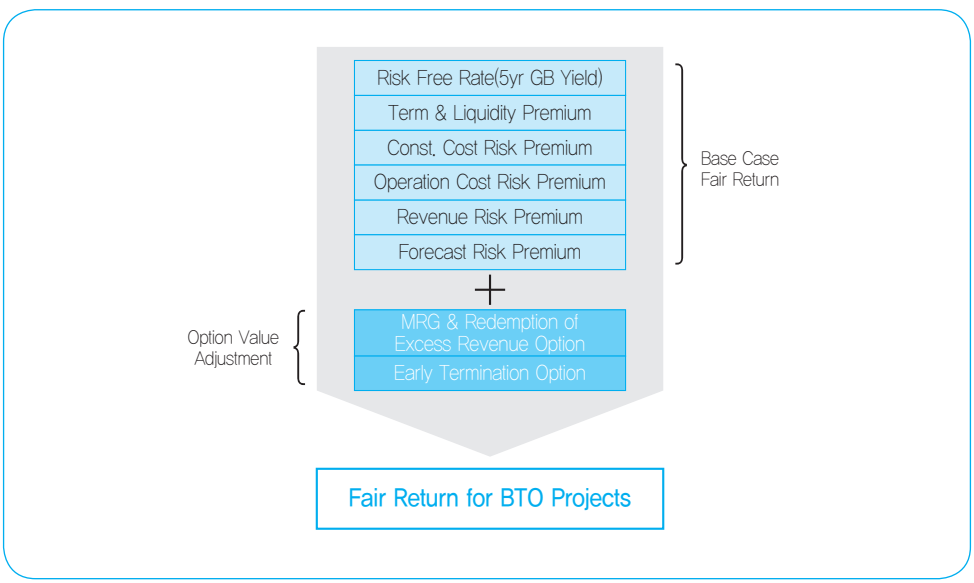
In theory, only non-diversifiable systematic risks are compensated in efficient markets. Therefore, to estimate the appropriate return for PPP projects, it is necessary to measure the systematic risks of the project. An example of systematic risk is the fluctuation in construction costs or revenues due to the business cycle. Among diversifiable risks, there are risks that are theoretically diversifiable but practically difficult to diversify. Among them is the risk of demand forecasting (or demand risk). Forecasting revenue from a project

several years ahead carries a large margin of error. In fact, this demand forecasting risk is the most serious risk because (i) the amount of risk is huge and (ii) it is practically difficult to diversify. Therefore, ignoring the demand forecast risk may result in unrealistically low returns for the private participants. For systematic risk, the capital asset pricing model is used to estimate fair return, and for hard-to-diversify risk, the cost on risk capital approach is used.

The fair return also depends upon the contractual agreement between the private participants and the government. A high level of MRG means less risk transfer from the government to private participants. Therefore, the higher the MRG level is, the lower the fair returns should be. The possibility of early termination also implies an option for private participants and the government. The appropriate return should reflect these provisions in the concession agreement.

Estimation of the appropriate return can be broken down into two steps: (i) estimation of the base case fair return (BCFR) and (ii) adjustment for option values such as MRG or redemption right of the government. As described in [Figure 3-4], the BCFR consists of (i) term premium and liquidity premium, (ii) construction cost risks, (iii) operational cost risks, (iv) revenue risk premium, and (v) forecast risk premium. Option value adjustment reflects MRG and redemption and early termination conditions in the concession agreement.

Figure 3-4 | Fair Return for Risks of Build–Transfer–Operate Project



Source: Public and Private Infrastructure Investment Management Center (2006)

2.2.1. Step 1: Base Case Fair Return Estimation

The BCFR can be approximated by adding premiums for liquidity risk, construction and operating cost risk, and demand forecasting risk to a risk-free rate. Thirty-year maturity government bond yield would be a good candidate for a risk-free rate because the life of projects is often 30 years. However, because the Republic of Korea does not have a government bond of such an extended maturity domestically, we use as a proxy the sum of the 5-year maturity government bond yield and a 1% term and liquidity premium. The fair return for systematic risk during the construction and operational period is estimated by the capital asset pricing model.[9]

To estimate the construction risk premium, revenue-controlled asset beta of construction companies is used. The revenue is controlled to separate the risk related to revenue fluctuations of the construction companies, as construction risks are cost overrun risks during the construction period. During the operational period, risks can be categorized into revenue risk and operating cost risk. To estimate revenue risk, the approach of Irwin is used.[10] Irwin estimated the fair return by using the capital asset pricing model approach and the data on the fluctuation of the toll revenue and the Korea Composite Stock Price Index return.

Private participants take the risk of operating cost overruns during the operational period. Estimated operational cost may change during the operational period of 30 years or more. Like demand forecasting risk, operating cost overrun risk is difficult to hedge especially because the effect extends over long periods. Fair return for individual risks that are hard to hedge can be estimated through the risk capital approach. Like the revenue-controlled asset beta of construction companies, revenue-controlled asset beta of operating companies is estimated, and then the required capital for absorbing cost shocks is estimated. The shock was assumed to last 10 years and the required return on risk capital for a 95% level cost shock was regarded as a fair return for operational cost overrun risk. Construction cost risk, operational cost risk, and revenue risk premium is estimated as 0.71% in total.

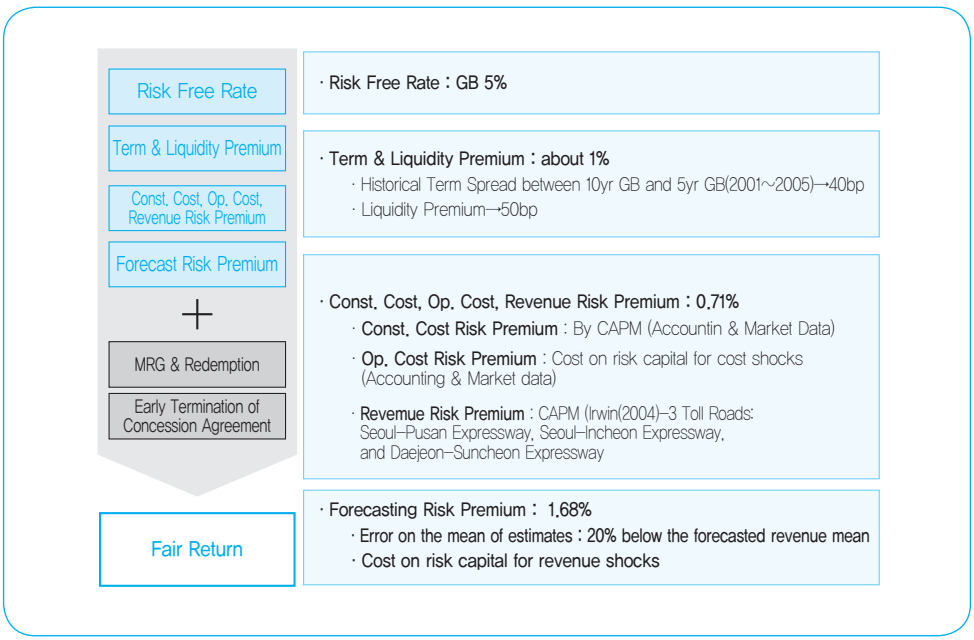
Demand forecasting risk can be defined as the risk of revenue falling below the forecast level. It is a different notion from revenue risk in that demand forecasting risk is the risk of the mean of revenues falling short of the forecast mean, whereas the revenue risk is the risk of volatility in revenues over time. Fair return for demand forecasting risk is estimated by the risk capital approach. Because it is difficult to estimate the 95% or 99% level of demand

9. Public and Private Infrastructure Investment Management Center. 2006. A Study on Fair Return for PPP Projects. Seoul.

10. T. Irwin. 2004. Measuring and Valuing the Risks Created by Revenue and Exchange-Rate Guarantee in Korea. In Developing Practice for Korea's PPI Market: With a Focus on PSC. Korea Research Institute for Human Settlement.

forecast error, the yearly revenue standard deviation of 10% employed by Irwin was used as a proxy for standard deviation of error distribution. The risk capital was estimated at the 99% confidence level. Using the data from one of the projects, the premium for demand forecasting risk is estimated as 1.68%. The estimation results are summarized in [Figure 3-5].

Figure 3-5 | Fair Return for Risks of Build–Transfer–Operate Road Sector Project



CAPM = capital asset pricing model, Const. = construction, GB = government bond, MRG = minimum revenue guarantee, Op. = operation

Source: Public and Private Infrastructure Investment Management Center (2006)

2.2.2. Step 2: Option Value Adjustment

In PPP projects, the government and private participants have options such as MRG and redemption or early termination. According to finance theory, we can interpret MRG as a private participants' put option on toll revenue, and early termination as a put option on the project. Likewise, we can interpret the government's redemption right as a call option on toll revenue and early termination as a call option on the project. While the conditions of options on MRG and early termination can be different depending on the project, we estimate a fair value by adopting the standard definitions of MRG and early termination in the PPP Act.

The simplest way to estimate the values of MRG and redemption is to use the Black-Scholes option pricing model expressed in Equation 1.[11] As input data to the Black-Scholes model, data from one BTO road project is used. For S in Equation 1, initial revenue of the project is used. For X, the guaranteed revenue is used, and, for σ, annual volatility of revenue is used. As a risk free rate, the five-year government bond yield plus liquidity premium of 1% is used. The MRG and redemption band is described in [Figure 3-6].

Equation 1 | Black-Scholes Option Pricing Model

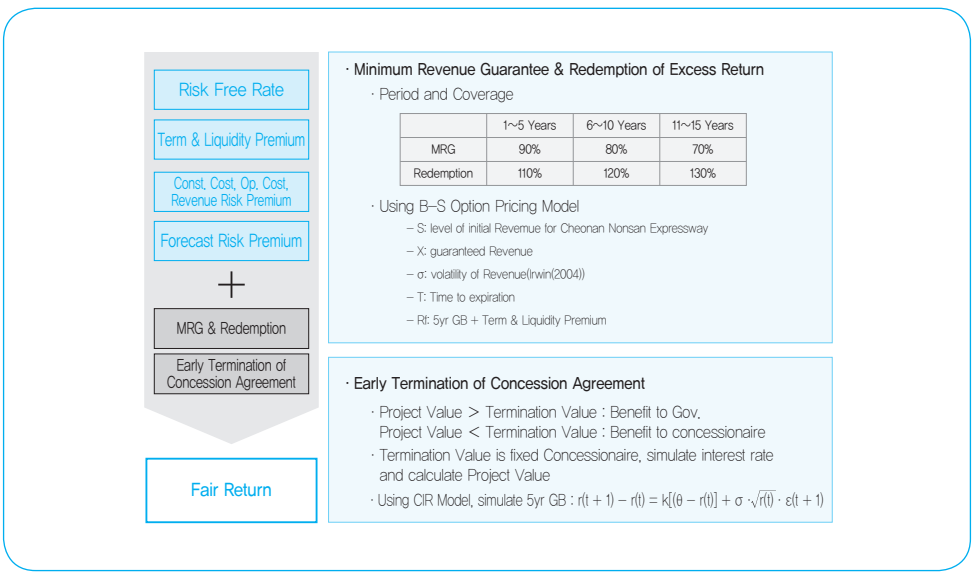
$$c = SN(d_1) - Xe^{-rT}N(d_2)$$

$$p = Xe^{-rT}N(-d_2) - SN(-d_1)$$

$$d_1 = \frac{\ln(S/X) + (r + \sigma^2/2)\cdot T}{\sigma\sqrt{T}}$$

$$d_2 = \frac{\ln(S/X) + (r - \sigma^2/2)\cdot T}{\sigma\sqrt{T}} = d_1 - \sigma\sqrt{T}$$

Figure 3-6 | Option Value—Minimum Revenue Guarantee and Redemption of Excess Revenue



Source: Public and Private Infrastructure Investment Management Center (2006)

11. Public and Private Infrastructure Investment Management Center. 2006. A Study on Fair Return for PPP Projects. Seoul.

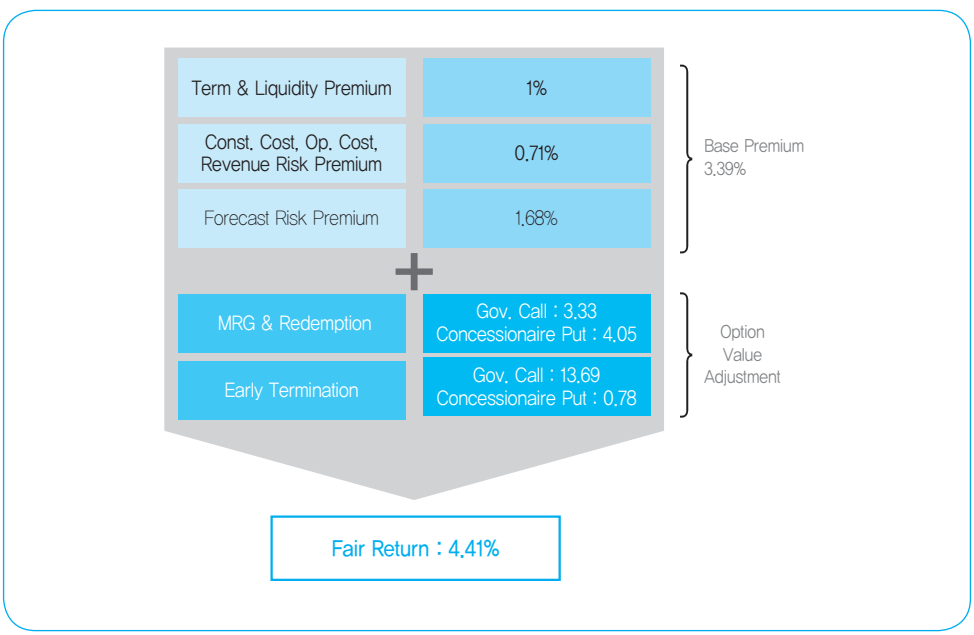
According to the PPP Basic Plan, both the government and private participants can request early termination and claim a subsequent termination fee at any point during the project if the counterpart can be imputed. Even though the situation can be more complicated with such legal issues as the imputed parties' intention, we tried to estimate the value of early termination by assuming that early termination is possible as stipulated in the plan. From a financial point of view, it is beneficial for the government to terminate early if the project value is larger than the termination payment. On the other hand, if the termination payment is larger than the project value, it is beneficial for the private participant to terminate early.

Whereas the termination payment is determined by a formula in the concession agreement, the project value varies as the interest rates and revenues fluctuate. For simplicity, revenues are assumed to be maintained at a specific level. So, we simulate the interest rates for the five-year government bonds by using the Cox-Ingersoll-Ross model and generate a project value (Equation 2). Results are summarized in [Figure 3-7].

Equation 2 | Cox-Ingersoll-Ross Model

$$r(t+1) - r(t) = \kappa[\theta - r(t)] + \sigma \cdot \sqrt{r(t)} \cdot \varepsilon(t+1)$$

Figure 3-7 | Results of Build-Transfer-Operate Return for Road Project



Source: Public and Private Infrastructure Investment Management Center (2006)

It is well known that demand forecasts are generally upward-biased for infrastructure projects in Korea, as well as in other countries. If demand forecasts are biased, the value of options would change. The fair return value provided above is based on the assumption of unbiased demand forecasts. The fair return adjusted for the demand forecast bias is shown in <Table 3-6>.

Table 3-6 | Impact of Forecast Bias

Sector	Actual Mean/Forecasted Mean	Premium
Roads	100	4.41
	90	4.12
	80	3.82
	70	3.49
	60	3.11
	50	2.69

Source: Public and Private Infrastructure Investment Management Center (2006)

Applying the same methodologies to other projects, fair returns are estimated. The contractual returns to private participants are shown in <Table 3-7> in comparison with the five-year government bond yield and the estimated fair return. The premiums against the five-year government bond yield range between 7.4%–11.14%; against the fair return, they range between 2.43%–5.60% (average 3.6%). <Table 3-7> and [Figure 3-8] show that the premiums over the five-year Korean Treasury bond have declined over time. This implies that the PPP environment for private participants has become more competitive over time.

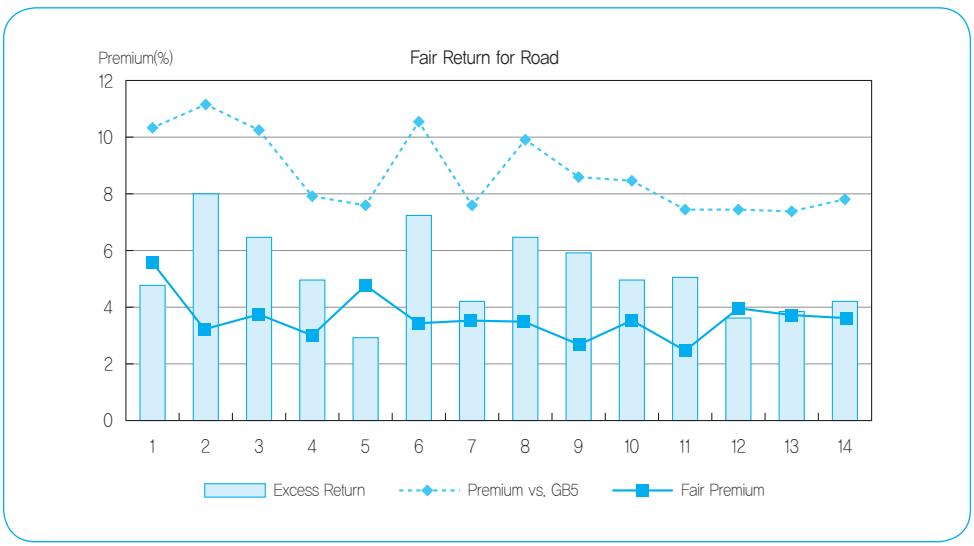
Table 3-7 | Results of Fair Return for Build–Transfer–Operate Road Projects

Project		Concession Agreement				Results	
		Real	Nominal	GB5	Premium Against 5yr KTB	Fair Premium	Excess Return
1	A - expressway	9.70	15.19	4.88	10.31	5.6	4.71
2	B - expressway	9.34	14.81	3.67	11.14	3.18	7.96
3	C - expressway	9.24	14.7	4.47	10.23	3.8	6.43
4	D - expressway	9.83	14.85	4.29	7.93	3.04	4.89
5	E – tunnel	8.03	12.35	4.77	7.58	4.74	2.84
6	F – bridge	9.20	14.66	4.19	10.47	3.32	7.15

Project		Concession Agreement				Results	
		Real	Nominal	GB5	Premium Against 5yr KTB	Fair Premium	Excess Return
7	G - expressway	8.48	13.9	6.33	7.57	3.46	4.11
8	H - expressway	8.857	14.3	4.41	9.89	3.5	6.39
9	I - expressway	8.28	13.69	5.13	8.56	2.69	5.87
10	J – bridge	8.20	13.61	5.16	8.45	3.57	4.88
11	K – bridge	8.00	12.32	4.88	7.44	2.43	5.01
12	L - expressway	8.00	12.32	4.88	7.44	3.82	3.62
13	M - expressway	7.01	11.29	3.89	7.4	3.63	3.77
14	N - expressway	7.04	11.7	3.89	7.81	3.61	4.2

Source: Public and Private Infrastructure Investment Management Center (2006)

Figure 3-8 | Results of Fair Return for Roads



Source: Public and Private Infrastructure Investment Management Center (2006)

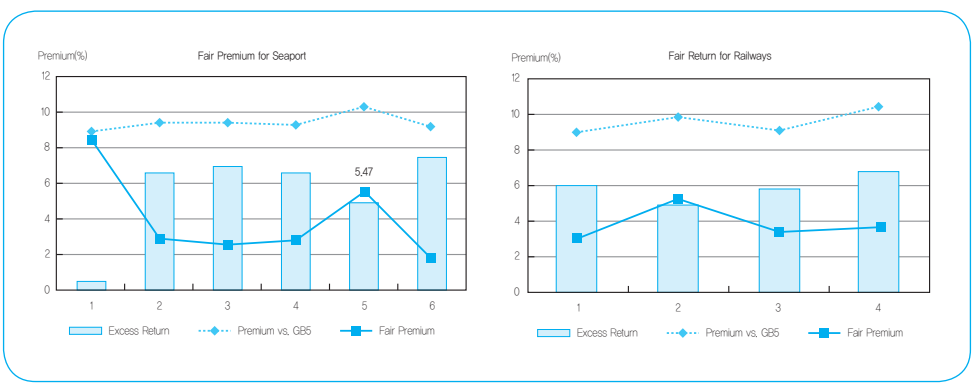
The premiums for railways and port projects are also estimated and shown in <Table 3-8>. The premiums against the five-year government bond yield for railways are 5.01%–9.83%; against the estimated fair return, they are 3.04%–5.06%. The premiums for ports against the five-year government bond yield are 4.33%–9.43%; against the estimated fair return, they are 1.78%–8.51% [Figure 3-8].

Table 3-8 | Results of Fair Return for Railways and Ports

Project			Concession Agreement				Results	
			Real	Nominal	GB5	Premium Against 5yr KTB	Fair Premium	Excess Return
Railways	1	A – LRT	9.10	14.56	5.57	8.99	3.04	5.94
	2	B – LRT	8.86	14.30	4.47	9.83	5.06	4.77
	3	C – railways	8.00	13.40	4.29	9.11	3.3	5.81
	4	D – railways	8.90	14.35	3.89	10.46	3.63	6.82
Port	1	E – port	8.90	14.35	5.43	8.92	8.51	0.41
	2	F – port	8.87	14.31	4.88	9.43	2.89	6.54
	3	G – port	8.57	14.00	4.58	9.42	2.52	6.9
	4	H – port	8.45	13.87	4.58	9.29	2.74	6.55
	5	I – port	8.30	14.35	3.97	10.38	5.47	4.91
	6	J - port	8.17	13.58	4.39	9.19	1.78	7.41

Source: Public and Private Infrastructure Investment Management Center (2006)

Figure 3-9 | Fair Return for Railways and Seaports



Source: Public and Private Infrastructure Investment Management Center (2006)

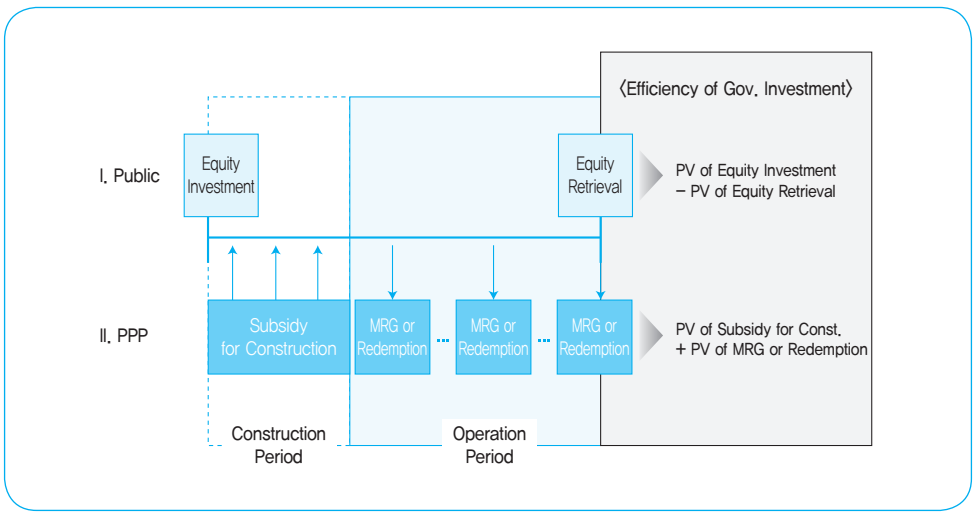
2.3. Perspective of Government

All the issues in PPP projects are directly or indirectly related to the government. The most directly related issue is the government subsidy, which is injected into PPP projects during the construction period. To examine its efficiency, the government subsidy for PPP

projects will be compared with the subsidy for government-financed public projects carried out by government-owned corporations such as the Korea Highway Corporation. Two road project cases will be examined.

The cash flows from government-financed public projects are (i) investment at the beginning of the project and (ii) retrieval of the principal at the end of the project. The cash flows from PPP projects are (i) construction subsidy during the construction period and (ii) MRG or redemption of excess revenue during the operational period. The concession period for PPP projects and the retrieval period for public projects are assumed to be the same, 30 years. The cash flows are described in [Figure 3-10].

Figure 3-10 | Cash Flows of Government Subsidy for Government-Financed Project and Public–Private–Partnership Project



Source: Public and Private Infrastructure Investment Management Center (2006)

The government subsidy comparison results for road project A are shown in <Table 3-9>. There was no construction subsidy for this project. The level of actual revenue from tolls in this project must be 80% or higher than projected revenue for the government to begin redemption. When the level is at least 80%, the government can begin redemption without having to offer a subsidy, thereby reaping profits. If the level of actual revenue from tolls falls below 66.25% of forecast revenue, it would be more efficient for the government to carry out a government-financed project. If the level of actual revenue to forecast revenue is at least 66.25%, it would be more efficient to carry out a PPP project.

Table 3-9 | Comparison of Government Subsidy in Project A

(Unit: ₩ billion)

		Actual Revenue/Forecast Revenue						
		50%	60%	66.25%	70%	80%	90%	100%
PV (Govt. Subsidy)	Public	565						
	PPP	1,232	821	565	411	0	-67	-168
Difference		667	256	0	-154	-565	-632	-733

Source: Public and Private Infrastructure Investment Management Center (2006)

Results from project B are shown in <Table 3-10>. Unlike project A, this project had a construction subsidy from the government. In this project, redemption begins when the level of actual revenue from tolls is 82% or higher of forecast revenue. Given that the construction subsidy worth ₩408.2 billion was injected in an early period, however, the government can begin redemption without generating a subsidy when the level is at least 103%. If the level of actual revenue from tolls falls to less than 75.20% of forecast revenue, it would be more efficient to carry out the project in the form of a government-financed project.

Table 3-10 | Comparison of Government Subsidy in Project B

(Unit: ₩ billion)

		Actual Revenue/Forecast Revenue							
		50%	70%	75.20%	82%	100%	102%	103%	110%
PV (Gov. Subsidy)	Public	5.937							
	PPP	13,116	7,418	5,937	3,999	2,381	2,906	-766	-416
Difference		7,179	1,480	0	-1,939	-3,556	-3,031	-6,703	-6,353

Source: Public and Private Infrastructure Investment Management Center (2006)

3. Analysis of Concession Agreement Clauses

3.1. Perspective of Users

The role of the government in protecting the interests of the public has been included in the PPP Basic Plan as shown in <Table 3-11> and <Table 3-12>. The government's role

in promoting the public interest was not specified in early agreements, however. Clauses outlining that role were added later, and PPP projects changed direction to take into account the public interest, as well as the interests of the government and private participants.

Table 3-11 | Government Role in Protecting the Interests of the Public

	Guidelines for Public–Private Infrastructure Projects
Government roles in protecting public interest	- Authority of supervising department to change concessionaire or to halt or make necessary changes in projects (2000) - Authority of supervising department to adjust user fees and management and operation schemes in negotiation with the concessionaire (2000) - Principle of using the government's refinancing gains to lower user fees (2004)

Source: Public and Private Infrastructure Investment Management Center (2006)

Table 3-12 | Case Study of Interests of the Public in Concession Agreement

Evolution: Increasing Government's role for public interests
• 1995 (Incheon Airport Highway, Cheonan-Nonsan Highway): None • 1998 (Deagu-Busan Highway): [Article 3] If expansion of the road is inevitable due to traffic volume, government may initiate the expansion project. - New Daegu-Busan Expressway (1998) • 2002 (Busan-Kimhae LRT): [Article 76] Authority of the central or local government to intervene the projects for the interests of the public according to the SOC act 45, 46, and 47

Source: Public and Private Infrastructure Investment Management Center (2006)

3.2. Perspective of Concessionaire

<Table 3-13> shows the clauses relating to risks and returns for concessionaires. In early concession agreements for PPP projects, the definition of risk remained vague. As projects were carried out, agreements improved over time to define risk more specifically and set out actions to address risk so that projects could be carried out more efficiently. Concessionaires also made efforts to categorize types of risk based on default cases and utilize insurance programs to mitigate the risks of projects <Table 3-14>.

Table 3-13 | Guidelines: Risks and Returns for Concessionaire

	Guidelines for Public–Private Infrastructure Projects
Risk Mitigation	Classification of risks: Obligated by government, by concessionaire, or force majeure Principles of risk control and sharing: (i) insurance, (ii) sharing, (iii) clarification of the obligor
Payment for Early Termination	Abstract level (2000): "May request for early termination payment in case ..." Elaboration (2003): Differentiation of payment - (i) authority default, (ii) concessionaire default, (iii) non-political force majeure, (iv) political force majeure Differentiation of payment – (i) construction, (ii) operation Further elaboration (2004): Introduction of the concept of "fair cost of capital"
Government Support	Simplification of the negotiation process for concession agreements (2004)

Note: Years in parentheses indicate the years the guidelines were introduced

Source: Public and Private Infrastructure Investment Management Center (2006)

Table 3-14 | Case Study of Risks and Returns for Concessionaire: Risk Mitigation

Early stage (1995) Dedaration of the prinaiple	Elaboration Specification of the types of risks
• [Article 6] Risk Taking ("Concessionaire must perform with his/her own risk and cost...) • [Article 23] Insurance ("Concessionaire must be insured...)	• [Article 6] Risk Taking: ① List of special provisions for concessionaire to be non-obligated ② List of insurances for concessionaire to be required to purchase • [Article 48] Rules of risk sharing: ① Clarification of the types of risks that the concessionaire assumes ② Concessionaire/Government, Insurance, division of risks through negotiation

Source: Articles from XX Project

PPP projects can be terminated early for various reasons. Concessionaires are compensated for estimated future profits at the time of termination or suspension of the project. Defaults are categorized into four types: (i) default by concessionaire, (ii) default by government, (iii) political force majeure, and (iv) non-political force majeure. Depending

on the type of default, the amount of government termination payment varies. In 2004, the government revised the termination guidelines and set new provisions on termination payment <Table 3-15>. With the revision, the burden of payment on the government was eased across various categories. The revision also refers to data on toll revenue so as to take a more realistic approach to increase the efficiency of projects.

Table 3-15 | Guideline for Early Termination Payment in Build–Transfer –Operate Projects

Early Stage (1995)	Elaboration (2004)		
	Category	**Construction Period**	**Operating Period**
• Government must compensate the proper amount of the project by consultation. • Government covers senior debt.	**Default by Concessionaire**	Incurred private investment amount	Depreciated value of the amount on the left
	Default by Government	Incorporated private investment amount × [1 + current IRR(B)]	Weighted average of 1) the sum of the depreciated value of the amount on the left & 2) present value of the project for the remaining operating period
	Non-political force majeure	Incurred private investment amount × [1 + standard debt interest rate (A)]	Same as above
	Political force majeure	Incorporated private investment amount × [1 + (A + B/2)]	Same as above

Source: Basic Plan for PPP

3.3. Perspective of Government

The government supervises and controls PPP projects through concession agreements. By carrying out infrastructure projects as PPPs, the government transfers some of the risks to private participants. Yet, the burden of quality control of the project is in the hands of the government, which also shares some of the demand risk through MRGs. <Table 3-16> shows the evolution of clauses about quality control and MRGs. In early projects, quality control covered the construction period, management responsibilities, inspection of partial

completion, and completion inspections. In the recent New Boondang Railway project, quality control deals specifically with quality assurance, management plans, and ISO 9001 and 14001 standards <Table 3-17>.

Table 3-16 | Evolution of Government Risk on Quality Control and Minimum Revenue Guarantee in the Annual Plan Guideline: Risks for Government

	Annual Plan for Public–Private Infrastructure Projects
Quality Control	Specification of indemnities for delay in construction (1994) Specification of the rights of the authority to control the quality of projects including construction and operation (2003)
Minimum Revenue Guarantee (MRG)	Guarantee period and coverage for MRG decreased over time

Note: Years in parentheses indicate the years the Annual Plan was amended
Source: Basic Plan for PPP

Table 3-17 | Case Study of Government Risk on Quality Control: New Boondang Railway

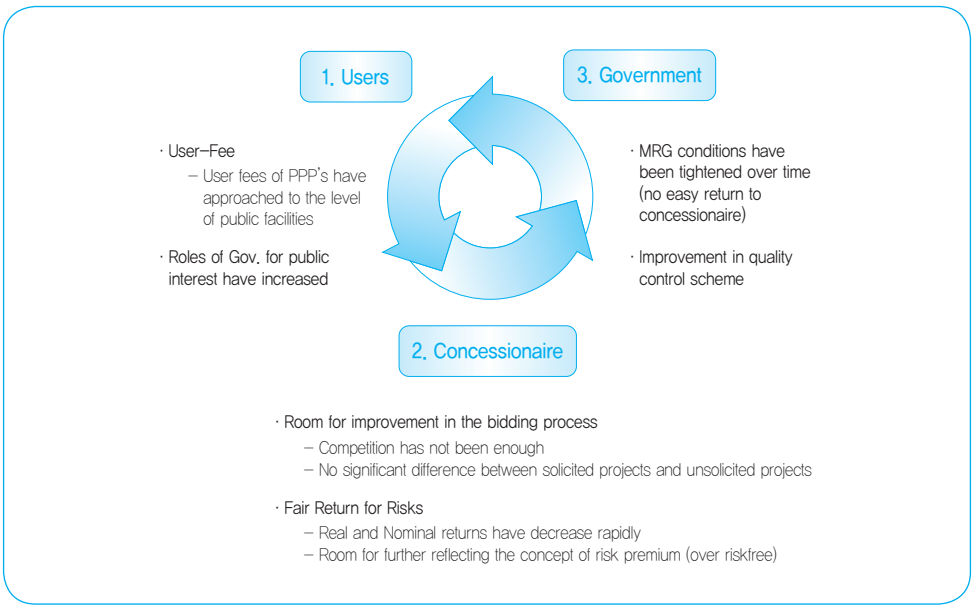
Early Stage (1999-Incheon Expressway)	2005-New Boondang Railway
• Indemnities for delay in construction	• [Article 19] Quality Control Program Establishment: the concessionaire shall prepare and implement a quality assurance plan with defined procedures. - Write as specific as possible such as KSA, ISO 9001, ISO 14001, etc.

Source: Articles from XX Project

4. Wrap-up: Cost Savings and Efficiency Gain

This chapter looked into the stakeholder risks in PPP projects, risk sharing, return on risk, and changes to risk mitigation over time by analyzing financial models and clauses of concession agreements. It also examined the efficiency of concession agreements, the level of tolls, and profitability of public private investment projects over the past few years.

Figure 3-11 | Conclusion of Concession Agreement



Source: Public and Private Infrastructure Investment Management Center (2006)

4.1. Perspective of Users

From the perspective of users, efficiency can be divided into (i) analysis of the level of user fees (tolls and passage fares of PPP roads and railways) based on financial models and (ii) renegotiation issues involving concession agreements. Users pay fees such as tolls for roads and passage fares for railways while they are using public–private investment facilities usually at higher levels than those of government-financed facilities. By comparing and analyzing the level of user fees between government-financed and public–private investment projects, this chapter examined whether the difference in user fees between government and public–private projects has decreased over time, based on accumulated experience with PPP projects. The results of the comparison found that the difference in user fees between government and public–private projects has steadily decreased in proportion to accumulated experience in PPP projects.

When drafting concession agreements, the government usually keeps the possibilities of renegotiations open so as to promote the welfare of the public, who are users of the public–private invested infrastructure facilities. To examine the extent to which the government protects the interests of users, this section looked at renegotiation-related clauses of concession agreements. The results of the analysis suggest that the government's role in protecting the public interest has increased over time.

4.2. Perspective of Concessionaire

For PPP projects to be carried out efficiently, one of the most important issues is promoting competition among private participants bidding for a project. Therefore, the paper examined whether there was enough competition among private participants and analyzed government subsidies, given the level of competition and return on risk for private participants.

In the past, there was not enough competition among private participants. Some 70% of PPP projects involved a sole bidder, with about 30% having more than one bidder. The level of competition was examined based on the two types of projects: (i) solicited and (ii) unsolicited. What is noteworthy is that there is no significant difference in the level of competition between solicited and unsolicited projects. With solicited projects, the problem of asymmetric information among private participants is less serious compared to unsolicited projects. Therefore, more competition would be expected. Real data, however, indicates that there is no significant difference in the level of competition between the two types of projects and that many solicited projects have involved a sole bidder. The results suggest that solicited projects may have been carried out less efficiently. Project data by year, however, shows that the number of bidders has increased over time, indicating that projects have become more efficient.

When PPP projects are carried out efficiently, private participants reap profits within the range of compensation for the risks they take. This paper examined whether the estimated rate of return of PPP projects is appropriate given the risks of the projects. To do this, an appropriate rate of return of PPP projects was estimated. The chapter adopted the research methodology used by PIMAC in Fair Rate of Return of BTO Projects based on Types of Projects and estimated the rates in various sectors, including roads, railways, and seaports.

Results of estimated rates of return of private investment projects showed that the real rate of return stands at 6%–9%, and nominal rate of return at 11%–14%. The premium against the five-year government bond yield was 6%–9%. Results of estimation on appropriate rates of return, which account for different types of risk and agreement terms across road, railway, and seaport projects, showed that most projects were guaranteed with high rates of return. The appropriate level of premium varies depending on individual projects, but it was 2%–4% against the five-year government bond yield on average. The rate of return for private participants that joined PPP projects was much higher than the level of the risk they took for the projects. The good news is that the premium rate of return against the five-year government bond yield has decreased in the road area, which indicates improved efficiency of public–private investment road projects.

This chapter also looked at clauses on default caused by private participants, insurance, and termination payment to see the risk and profit-related clauses included in concession agreements. By specifying insurance to cover construction periods, operational periods, and defaults, concession agreements mitigate the risk of projects for both private participants and the government. By setting out a specific plan to cope with risk, such as allocation principles of risk, projects have become more efficient. By revising policies, such as termination payment, the government has mitigated its burden. By adding competition prevention clauses, it has also taken measures to mitigate the risk of such projects. By specifying clauses on risks and profits for private participants in infrastructure concession agreements, projects have been improved to ease the burden on stakeholders.

4.3. Perspective of Government

Most issues with PPP projects are related to the government directly or indirectly. The most directly related issue is the government subsidy, which is injected into both government-financed and private-investment projects. Two cases were studied. According to results of analysis on Project A, if the level of actual revenue from tolls falls to less than 66.25% of forecast revenue, it will be more efficient to carry out a government-financed project. If the level is at least 66.25%, it will be more efficient to carry out a public–private investment project. Results also showed that the level of actual revenue from tolls in this project must be 80% or higher than forecast revenue, at which point the government begins redemption. When the level is at least 80%, the government can begin redemption without having to offer a subsidy, reaping profits thereby. In Project B, if the level of actual revenue from tolls falls to less than 75.20% of forecast revenue, it will be more efficient to carry out a government-financed project. The government can begin redemption without generating a subsidy when the actual revenue level is at least 103% of the forecast level.

This chapter also examined the risk to the government by looking at concession agreement clauses on (i) quality control and (ii) changes in government subsidy (that is, MRG) so as to see whether the risk to the government is effectively controlled. Quality assurance guidelines referring to global standards such as ISO were absent in early agreements, but they were increasingly included over time as PPP projects were carried out. The revision of the MRG program has also mitigated the risk of government subsidy against the risk of private-sector demand.

Results of a review of concession agreements showed that the risks for stakeholders in PPP projects are now more specifically defined, allocated, and processed through revisions and supplementary actions. This suggests that stakeholders in PPP projects now consult with each other and make compromises so as to manage public–private investment projects more efficiently.

4.4. A Conclusion

The analysis in this chapter showed that PPP projects in the Republic of Korea have become more efficient from the perspectives of users, concessionaires, and the government. The key results include (i) user fees of PPP facilities have approached those of public facilities over time, (ii) the return to private participants relative to the risks they bear has become tighter thanks to increased competition in the bidding process, and (iii) the MRG level provided by the government has decreased over time. The improved efficiency of PPP projects in the Republic of Korea has been reflected in concession agreements. Overall, concession agreements have developed in the direction of better protecting the interests of users and reducing the uncertainty for private participants as well as the government.

5. Public–Private–Partnership Contribution to Economic Growth

The Government of the Republic of Korea concentrated a considerable part of its fiscal spending on replenishing SOC over several decades, but recently it turned toward encouraging private investment in social infrastructure, as the nation's economic growth increased the needs for spending in other sectors, including public welfare.

The government introduced PPP projects with the Act on Promotion of Private Capital Investment in Social Overhead Capital in 1994, but their performance fell short of expectations because of institutional inadequacy, lack of experience, and the 1997–1998 financial crisis. To reinvigorate private investment, the government introduced a series of supplementary policies, such as providing construction subsidies and MRGs and credit guarantees, through the revised Act on Private Participation in Infrastructure in 1998. In 2005, the government introduced the BTL scheme in addition to the existing BTO formula to expand PPP projects, and included social infrastructure facilities in educational, cultural, and welfare areas as targets.

Thanks to these measures to revitalize private investment, the portion of infrastructure construction through PPP projects has been expanding since the late 1990s. Out of total construction investment, the portion of fiscal investment by government agencies fell from 46.6% in 2000 to 30.8% in 2008, while that of private investment through PPP projects rose from 1.7% to 5.1% over the same period. In terms of the value of completed projects, the growth rate of fiscal investment by government agencies since 2000 stood at a mere 2.0%, while that of private investment through PPP projects soared to 25.9%.

Table 3-18 | Investment Ratio in Construction Sector

(Unit: %)

Year	Fiscal Investment by Government Agencies	Private Investment	PPP Investment
2000	46.6	51.4	1.7
2001	44.3	53.5	1.8
2002	36.6	59.9	2.6
2003	34.8	62.0	2.5
2004	32.8	64.0	2.8
2005	30.4	66.1	3.3
2006	29.8	67.0	3.1
2007	30.3	65.7	3.9
2008	30.8	63.9	5.1
Average	35.1	61.5	3.0

Note: PPP investment indicates private investment through PPP projects, while private investment indicates investment through private sector projects

Source: Statistics Korea

Table 3-19 | Trend of the Value of Completed Projects

(Unit: %)

Year	Total	Fiscal Investment by Government Agencies	Private Investment	PPP Investment
2000	-3.1	-5.6	-1.5	29.7
2001	10.0	4.4	14.6	16.0
2002	11.2	-8.1	24.5	59.9
2003	16.6	10.7	20.6	13.9
2004	11.1	4.9	14.8	23.6
2005	4.1	-3.7	7.5	20.6
2006	2.6	0.6	4.0	-2.7
2007	6.6	8.4	4.5	33.2
2008	4.7	6.5	1.7	38.6
Average	7.1	2.0	10.1	25.9

Note: 1) PPP investment indicates private investment through PPP projects, while private investment indicates investment through private sector projects

2) Based on nominal price

Source: Statistics Korea

Private investment through PPP projects is concentrated in the SOC sector, especially on road construction, which accounted for up to 50% of the total from 2000 to 2008. The portion of PPP investment in the construction sector continues to rise, accounting for nearly 40% of total private-sector investment in 2008. Most of the PPP SOC investment is concentrated in the transportation sector such as roads, ports, and railways.

Road construction through PPP projects contributes to tax revenues, as the government imposes a 10% value-added tax on sales from toll income, as well as a corporate tax on private concessionaires. As of 2008, tax revenue from 12 road projects amounted to about ₩66 billion, which breaks down into an estimated ₩48.1 billion in value added tax and ₩18 billion in corporate tax.

Table 3-20 | Ratio of Public–Private–Partnership Investment by Type

(Unit: %)

Year	Construction	Social Overhead Capital	Road	Airport/ Seaport	Railway	Waterworks
2000	8.5	90.7	88.5	2.2	0.0	0.0
2001	2.6	97.4	27.7	23.9	38.6	3.9
2002	9.0	91.0	65.1	0.5	15.6	9.6
2003	1.6	98.4	59.8	6.2	24.2	6.3
2004	18.3	81.7	31.4	19.1	26.4	2.9
2005	11.1	88.9	46.3	7.3	23.3	7.0
2006	19.1	80.7	55.3	5.1	9.7	7.8
2007	22.3	77.7	40.6	8.5	16.2	10.2
2008	37.8	62.2	35.3	0.5	10.6	11.8
Average	14.5	85.4	50.0	8.1	18.3	6.6

Note: Based on the value of orders received
Source: Statistics Korea

Table 3-21 | Status of Tax Revenue in Public–Private–Partnership Road Projects

(Unit: ₩ billion)

Tax	2001	2002	2003	2004	2005	2006	2007	2008
Value Added Tax (Sales 10%)	6.9	9.9	17.0	19.9	22.4	34.9	43.0	48.1
Corporate Tax	-	-	-	2.3	2.5	17.5	18.9	18.0
Total	6.9	9.9	17.0	19.9	22.4	34.8	43.1	66.0

Source: Ministry of Strategy and Finance

Despite such expansion in private investment through PPPs, it is not easy to measure and present private investment's contribution to economic growth. According to a study by Rhee and Lee, [12] the promotion of PPP projects results in a decline in fiscal investment by the government and therefore does not have a significant effect on total investment. Rhee and Lee analyzed the macroeconomic impacts of PPP investment. Using the Private Participation in Infrastructure database compiled by the World Bank, they examined the relationship between PPP projects and economic growth. They found that SOC and total investment had a positive impact on economic growth, but PPP investment did not have a significant relationship with economic growth. Using the monthly time series data of value of construction investment in the Republic of Korea, they also found that an increase in PPP investment was associated with a decrease in public investment in both the short-run and the long-run, while it was associated with an increase in private investment in the short-run only. This result supports the crowding out effect of PPPs on public investment, whereas PPP investment stimulates private investment. They concluded that the potential crowding out effect of PPPs on public investment did not necessarily mean that PPP projects played no role in the provision of SOC. If it were not for PPP projects, SOC investment could have decreased significantly in the Republic of Korea. Moreover, as PPP projects in the Republic of Korea are still in the infancy stage, a fair evaluation of their impact on the Korean economy has to wait until more experience is gained.

Based on the promotion of PPP projects in the Republic of Korea, it is clear that the private sector's investment portion of SOC construction grew faster in comparison with that of fiscal investment by the government. Campos, Estache, Martin, and Trujillo (Macroeconomic Effects of Private Sector Participation in Infrastructure, 2003) analyzed positive data and presented their findings that there was a negative correlation between PPP projects and the government's fiscal investment in the case of transportation facilities. Even taking dynamic long-term effects into account, the promotion of PPP projects was seen to replace fiscal investment, but its effects on stimulating private investment proved to be temporary.

Without the promotion of PPP projects, SOC investment was expected to have fallen remarkably. Since the financial crisis of 1997–98, the surge in fiscal demand, which was due to rising unemployment and swelling costs for financial restructuring, has resulted in a serious shortage of financial resources for SOC investment. It was against this backdrop that the government worked out a policy package on reinvigorating private investment

12. C-Y Rhee and L. Hangyong. 2007. Public-Private Partnerships in Infrastructure and Macroeconomy: The Experience of Korea. In J-H Kim, ed. Performance Evaluation and Best Practice of Public-Private Partnerships.
Seoul: Korea Development Institute.

through PPP projects as a means of maintaining investment in SOC construction. In other words, the promotion of PPP projects may not have increased SOC investment much but contributed to maintaining its level.

Also, the promotion of PPP projects has helped to ease constraints on the government's financial resources, enabling it to secure resources for sectors other than SOC construction, which also requires government spending. The promotion of PPP projects has helped the aggregate total of SOC annual investment to remain largely unchanged; there has been little problem replenishing existing public infrastructure facilities. Accordingly, the government has been able to secure resources to match the decline in fiscal investment. This means the promotion of PPP projects has helped ease the government's budget constraints and enabled it to put fiscal resources into other sectors according to government priorities.

The following is a macroeconomic analysis of the ripple effects that the promotion of PPP projects could have on the economy assuming the projects supplement insufficient fiscal investment. The macroeconomic model is a quarterly model based on the assumption that the central government's spending temporarily increases by the same amount each quarter of a specific year.

The government expenditure can be divided into ordinary expenditure and capital expenditure, each of which has somewhat different macroeconomic ripple effects. It would be appropriate to regard as capital expenditure the private capital resulting from the promotion of PPP projects centered on SOC. Thanks to the promotion of PPP projects, it has become possible to put private capital into SOC, and, if this is regarded as capital expenditure, it had the effect of expanding the economy by an estimated 0.198% in 2008.

The multiplier of the government expenditure is estimated to be about 0.25 (an analysis of the effects of the supplementary budget for 2008 by using the macroeconomic model, August 2008, Korea Development Institute (KDI)). The outcome was estimated on the basis of private investment executed, which turned out to have effects not only in the year of execution but also in the following two years, albeit on a negligible level.

As of 2008, an increase of ₩1 trillion in capital expenditure was estimated to have the effect of expanding GDP by 0.02% in the year of execution and 0.01% in the following year. In the fourth and fifth year of execution, it is estimated to have the effect of shrinking GDP by 0.003% and 0.005%, respectively. Of course, the analysis of effects using macroeconomic models can lead to different outcomes depending on the method of estimation.

Table 3-22 | Estimation of Growth Impact of Public–Private–Partnerships using the Korea Development Institute Macroeconomic Model

(Unit: ₩ billion)

Year	GDP (nominal)	PPP Investment	Growth Impact (%)
2001	651,420	1,150	0.035
2002	720,540	1,300	0.052
2003	767,110	1,330	0.048
2004	826,890	2,250	0.060
2005	865,240	3,450	0.094
2006	908,740	4,670	0.127
2007	975,010	6,170	0.154
2008	977,790	8,050	0.198

Source: Statistics Korea; Ministry of Strategy and Finance

6. Public–Private–Partnership Contribution to Social Welfare

To estimate the PPP contribution to social welfare, this study analyzed 14 privately built roads in operation as of the end of 2008. PPP investment in the road sector from 2000 to 2008 was estimated to exceed ₩10 trillion. It is clear that private investment through PPPs has helped the timely completion and operation of the road projects in comparison with road construction built by the government alone. Considering that the Ministry of Land, Transportation and Maritime Affairs allocated an annual average of ₩7.85 trillion to road-related projects from 2000 to 2008, the PPP projects are thought to have advanced the completion of privately built roads by more than a year.

For the convenience of analysis, the study estimated the benefit from the roads as the welfare effect, which might have been lost had the completion and operation of the 14 PPP roads now in operation been delayed by years. Starting from the base year of 2006, the study analyzed the benefits and costs under the respective scenarios of the roads opening in 2006, 2008, and so forth. The study used as basic data the National Origin/Destination Database and Network in 2006 established and distributed by the Korea Transport Database in 2008. This study selected 14 PPP roads in operation as of the end of 2006 as the projects for analysis.

By regarding delays in the opening 14 PPP roads as their non-implementation alternative, the study estimated the benefits in 30 years following the presumed opening year of 2006.

By setting 2008 and 2010 as the delayed opening years, it also analyzed changes in the welfare benefits when their openings are delayed every two years. The following table shows the contents of 14 PPP road projects.

Table 3-23 | Outline of 14 Public–Private–Partnership Road Projects

Project Name	Competent Authority	Total Investment Cost (W billion)	Operation Period (years)	Minimum Revenue Guarantee (years/%)	Construction Start	Construction Completion
Gwangju Second Beltway Phase 1	Gwangju	294.8	28	28 (85%)	1997.06.24	2000.11.29
Daegu-Busan Expressway	MLTM	2,475.7	30	20 (77%)	2001.02.12	2006.02.11
Mt. Woomyeon Tunnel	Seoul	179.1	30	30 (85%)	1999.08.24	2003.12.31
Incheon International Airport Expressway	MLTM	1,744.0	30	20 (80%)	1995.11.29	2000.11.21
Cheonan-Nonsan Expressway	MLTM	1,595.3	30	20 (82%)	1997.12.26	2002.12.23
Daejeon-Gapcheon Urban Expressway	Daejeon	181.8	27.4	Under negotiation	2001.12.20	2004.07.31
Gwangju Second Beltway Phase 3-1	Gwangju	186.6	30	30 (90%)	2002.04.16	2004.10.15
Mt. Manwol Tunnel	Incheon	144.1	30	30 (90%)	2000.12.18	2005.07.29
Mt. Moonhak Tunnel	Incheon	70.3	20	20 (90%)	1996.11.12	2002.03.31
Mt. Cheolma Tunnel	Incheon	94.6	30	30 (90%)	2001.01.18	2004.07.09

Project Name	Competent Authority	Total Investment Cost (W billion)	Operation Period (years)	Minimum Revenue Guarantee (years/%)	Construction Start	Construction Completion
Baekyang Tunnel	Busan	89.3	25	25 (90%)	1993.06.00	1998.01.08
Beoman Road	Daegu	235.7	24	20 (79.8%)	1997.10.22	2002.09.01
Sujeong Tunnel	Busan	128.0	25	25 (90%)	1997.11.00	2001.12.31
Ehwaryeong Tunnel	MLTM	84.6	Busan Regional Construction Management Administration takes over the operation and management right in 2007			1998.10.00

MLTM = Ministry of Land, Transport, and Maritime Affairs

Table 3-24 | Results of Cost/Benefit Analysis of Public–Private–Partnership Roads for 30 Years

(Unit: ₩ billion)

	Constant Value		Current Value		Net Present Value
	Total Investment Cost	Total Benefit	Total Investment Cost	Total Benefit	
Start Service in 2006	7,503.9	57,704.2	10,901.6	28,191.4	17,289.8
Start Service in 2008	7,503.9	59,051.4	9,794.6	25,629.2	15,834.6
Start Service in 2010	7,503.9	59,794.6	8,800.0	22,789.0	13,989.1

Source: Internal data from PIMAC

Table 3-25 | Benefits of 14 Public–Private–Partnership Roads from Service Delay

(Unit: ₩ billion)

	Benefits from 2-years Service Delay	Benefits from 4-years Service Delay
Start Service in 2006	- 1,455.1	- 3,300.7
Start Service in 2008	- 1,845.6	

Source: Internal data from PIMAC

As a result of the analysis, presuming that the 14 PPP roads had succeeded in early materialization of benefits by opening two years in advance of publicly built roads, the PPP projects were estimated to produce benefits worth about ₩1.45 trillion. Assuming they were opened in 2008, the early realization of benefits from the promotion of privately built roads was estimated to be worth ₩1.85 trillion. Assuming they were opened in 2006, or 4 years ahead of schedule, the benefits were estimated to be worth about ₩3.3 trillion. Assuming they were opened in 2006, or three years ahead of schedule, the benefits were estimated to be worth about ₩2.47 trillion.

Table 3-26 | Welfare Effect: Early Realization of Benefits from 14 Public–Private –Partnership Roads Projects

(Unit: ₩ billion)

	1-year Service Delay	2-year Service Delay	3-year Service Delay
Start Service in 2006	623.3	1,455.1	2,471.9

Source: Internal data from PIMAC

7. Public–Private–Partnership Contribution to Better Value for Money: Several Experiments

In conducting a VFM test, the government pushes for PPP projects only when it judges that the fiscal burdens from the projects are smaller than burdens from government-funded projects; the basic criteria for such judgment is VFM. Accordingly, the promotion of PPP projects produces the effect of easing fiscal burdens in addition to replacing government-funded projects. This study conducted experiments to measure the results of the quantitative VFM figures for the targeted PPP projects and presented their presumed effects on reducing fiscal burdens.

7.1. Experiment 1: Value for Money Enhancement Presumably Estimated in 66 Build–Transfer–Operate Projects

There have been about 100 unsolicited BTO projects since the formal VFM test scheme was introduced in 2005. PIMAC judges whether to push for PPP projects based on VFM figures produced by VFM tests of the private proposals and VFM figures for the PFI alternative presented by its research team. By conducting VFM tests on 66 projects out of the 100 projects proposed from 2005 to 2009, the VFM was calculated at ₩891 billion,

while the VFM for the PFI alternative was calculated at ₩1,548 billion.[13] Such a number can be interpreted to mean that private proposals presented ways of saving ₩891 billion in the government budget, and the VFM tests presumably presented alternative means of saving an additional ₩671 billion.

Table 3-27 | Experiment 1: Presumed Value for Money Increase/Decrease in 66 Build–Transfer–Operate Projects

(Unit: ₩ billion)

Year	VFM Test Result on Private Finance Initiative[a]	VFM Test Result on Private Finance Initiative Alternative[b]	Increase/Decrease of VFM
Subtotal of 2005	-30.622	58.81	89.432 (△)
Subtotal of 2006	506.279	789.9	287.821 (△)
Subtotal of 2007	58.4	212.7	164.5 (△)
Subtotal of 2008	357.279	486.566	129.287 (△)
Total	891.336	1,547.976	671.04

VFM = value for money

[a] VFM test result on private finance initiative submitted by private sector

[b] VFM test result on PFI alternative calculated by adjusting costs of Public and Private Infrastructure Investment Management Center research team

Source: VFM test reports prepared by the Public and Private Infrastructure Investment Management Center

7.2. Experiment 2: Value for Money Enhancement Realized in 11 Build–Transfer–Operate Concession Agreements

Among the projects implemented after conducting VFM tests, the calculation of the ex-post VFM for those projects for which concession agreements have been signed shows that the projects have had the effect of reducing fiscal burdens.

As the end of 2008, a total of 12 BTO projects had concluded concession agreements after conducting VFM tests, but the ex-post VFM was calculated on only 11 of them, as there were no financial models for one project at the time of the signing of the agreement.

The difference between the ex-ante VFM and ex-post VFM figures shows an additional VFM increase of 16.32%. The total of the preliminary ex-ante VFM for the 11 projects amounted to ₩38.8 billion, and the signing of concession agreements produced an additional VFM worth ₩142.5 billion, pushing up the estimated total of the VFM to VFM to ₩181.3 billion.

13. Most of the 44 projects not included in the calculation are those of rejected projects in the VFM tests.

Table 3-28 | Experiment 2: Realized Value for Money Increase in 11 Build–Transfer–Operate Concession Agreements

(Unit: %)

Project Name	VFM (ex-ante)	VFM (ex-post)	Difference
Mungyeong Daily Waste Incinerating Facility	13.00	14.84	1.84
Pocheon Resource Recovery Facilities	5.52	26.15	20.63
Ulsan Wastewater Treatment Facilities	3.40	10.44	7.04
Ulsan Resource Treatment Facilities	9.87	17.96	8.09
Ulsan GulhwaGangdong Wastewater Treatment Facilities	-1.64	1.09	2.73
Pohang Jangryang Wastewater Treatment Facilities	-3.58	19.84	23.41
Changwon-Busan Road	48.30	45.73	-2.57
Inje Auto Theme Park	41.62	50.51	8.89
Gimpo Sewage Pipes	3.26	30.79	27.53
Seosuwon-Uiwang Road	57.48	96.39	38.91
Yangju (Doha-Deokgye) Road	13.02	17.28	4.26
Total	4.44	20.76	16.32

VFM = value for money

Source: VFM test reports prepared by the Public and Private Infrastructure Investment Management Center

7.3. Experiment 3: Value for Money Enhancement Realized in 30 Build–Transfer–Lease Concession Agreements

The 30 BTL projects subject for evaluation underwent a VFM test before being implemented and analyzed for the VFM. The PFI compared with the public sector comparator (PSC) for conducting a VFM test in the BTL projects were presumed ex-ante; however, their final ex-post effect on reducing the government's fiscal burdens could be measured by comparing the PSC with the government's payment fixed in the concession agreement.

To calculate the final ex-post effect of the VFM on reducing the government's fiscal burden, the study conducted an ex-post VFM test based on the PSC and the payment the government was supposed to make to each project according to its concession agreement. The ex-post VFM test was conducted on 30 BTL projects. The examination of changes in the VFM through the ex-post VFM test shows that the ex-post VFM was larger than the preliminary VFM in the case of military residence facilities managed by the Ministry

of National Defense and sewage disposal plant facilities managed by the Ministry of Environment. In the case of school facilities managed by the Ministry of Education, Science, and Technology, however, the ex-post VFM was revealed to be less in comparison with the initial ex-ante VFM.

Table 3-29 | Experiment 3: Realized Value for Money Increases in 30 Build–Transfer–Lease Concession Agreements

(Unit: ₩ billion)

Project	PSC	PFI1) (ex-ante)	PFI2) (ex-post)	VFM (ex-ante)[a]		VFM (ex-post)[b]		Decrease/Increase of VFM (ex-post)-(ex-ante)	
				Amount	Ratio	Amount	Ratio	Amount	Ratio
Military Residential Facilities	18.2	17.2	15.9	1.0	5.5%	2.3	12.0%	1.3	7.0%
School Facilities	498.9	483.7	496.7	15.1	3.0%	2.2	0.0%	(13.0)	-3.0%
Sewage Pipes	1,020.9	947.4	855.3	73.5	7.2%	165.6	16.0%	92.1	9.0%
Total	1,538.0	1,448.3	1,367.9	89.6	5.8%	170.1	11.1%	80.4	5.2%

PFI = private finance initiative, PSC = public sector comparator, VFM = value for money

[a] Assumed PFI is calculated from VFM test

[b] Actual PFI is estimated based on government payment determined in concession agreement

Source: VFM test reports prepared by the Public and Private Infrastructure Investment Management Center

As the ex-post VFM has been analyzed to be nonexistent in the case of school facilities, an additional analysis has been conducted by dividing ex-post VFM into two parts as presumed project cost and operational cost. As shown in the following table, although total project cost was estimated to be smaller in the concession agreement than in the PSC, the operational cost increased more in the concession agreement than in the PSC, causing the overall VFM to decrease.

Table 3-30 | Comparison of Total Project Cost and Operating Cost in 12 School Projects

(Unit: ₩ billion)

Unitary Project	PSC		VFM Test of PFI		Concession Agreement		Cost Comparison of VFM Test of PFI and Concession Agreement	
	Total Project Cost	Operation Cost	Total Project Cost	Operation Cost	Private Investment Cost	Operation Cost	Increase/ Decrease of Project Cost	Increase/ Decrease of Operation Cost
○○ Elementary School and Others (0 Schools)	40.3	13.5	33.7	13.2	32.1	15.0	-4.8%	13.3%
○○ and Others (0 Schools)	65.8	12.5	54.0	15.5	48.5	18.8	-10.2%	20.8%
○○ Elementary School and Others (0 Schools)	55.4	9.6	45.5	11.7	44.1	15.2	-3.1%	29.8%
○○ Middle School and Others (0 Schools)	36.2	6.7	29.7	9.4	28.0	11.9	-5.8%	26.5%
○○ High School and Others (0 Schools)	56.1	30.5	45.8	29.5	45.9	29.0	0.3%	-1.7%
○○ High School and Others (0 Schools)	42.5	10.6	34.8	10.8	34.1	17.9	-2.0%	65.8%
○○ Elementary School and Others (0 Schools)	51.6	15.8	42.3	16.1	40.1	25.4	-5.3%	57.4%
○○ High School and Others (0 Schools)	32.6	10.8	27.1	10.6	23.7	13.9	-12.4%	31.8%
○○ Elementary School and Others (0 Schools)	29.3	10.2	24.4	10.0	21.3	13.0	-12.7%	30.0%
○○ Elementary School and Others (0 Schools)	61.5	12.3	50.3	12.4	41.2	24.2	-18.1%	95.6%
○○ Elementary School and Others (0 Schools)	33.6	6.3	27.5	7.1	27.6	15.8	0.2%	123.7%
○○ Elementary School and Others (0 Schools)	55.0	8.2	44.6	82.0	38.1	15.6	-14.6%	-81.0%
Total	559.9	147.0	459.7	228.3	424.7	215.7	-7.6%	-5.5%

PFI = private finance initiative, PSC = public sector comparator, VFM = value for money

Source: VFM test reports prepared by the Public and Private Infrastructure Investment Management Center

The results revealed that total project costs in both the PSC and the PFI in the stage of the VFM test for educational facilities were estimated at appropriate levels, considering that recent fiscal projects were calculated by using the data from newly built schools. Also, it is interpreted that PFI project cost were agreed at lower levels than those presumed in the stage of the VFM test, thanks to competition and other elements in the bidding process. The operational cost, however, was judged to be underestimated, as it was calculated on the basis of the existing government-built schools' spending on operational cost in the stage of the VFM test, without clearly setting the outcome and quality of the operation.

As a result of comparing and analyzing the outcome quality (as stipulated in the document on the level of required outcome) during the operational period of agreed projects, major reasons for the underestimation of operational costs in the stage of the VFM test are shown in the following table.

Table 3-31 | Major Reasons of Underestimation of Operational Cost in 12 School Projects

Cost	Description
Operation and Management Cost	- Labor cost - Number of employees in SPC, sanitation workers - Increase of outsourcing cost for facility and sanitary management - Increase of inspection cost for facility safety management - Insurance rate increase for school facilities and disaster victims - Increase of office operational cost and workers welfare cost
Maintenance and Repair Cost	- Changes of maintenance and repair cost in items and life cycles - Changes of materials - Changes of item adjustment in maintenance and repair cost

Note: 1) PSC and PFI are calculated from VFM Test
2) PSC is attained from recalculating operational cost based on required service output in concession agreement, and actual PFI is estimated based on government payment determined in concession agreement
Source: Public and Private Infrastructure Investment Management Center

As the operational cost calculated in the PSC in the stage of the VFM test was judged to be somewhat underestimated, the study re-estimated the operational cost in the PSC that fits the outcome quality (as stipulated in the document on the level of required outcome) during the operational period of agreed projects and re-analyzed the VFM to determine the exact effect on reducing the government's fiscal burden. The effect on reducing the government's fiscal burden (VFM) by re-estimating the operational cost as seen in the following table, was estimated to be bigger. In the case of 12 school projects, there were difficulties estimating the VFM in the PSC due to difficulties in securing basic materials and analysis data for conducting the VFM test in the early stage of implementing BTL projects, but the adjustment now shows that the ex-post VFM increased.

Table 3-32 | Ex-post Value for Money Based on Re-estimation of Operational Cost in 12 School Projects

(Unit: ₩ billion/%)

Unitary Project of School Facilities	Ex-ante[a]				Ex-post[b]				Increase/ Decrease	
	PSC	PFI	VFM value	VFM ratio	PSC	PFI	VFM value	VFM ratio	VFM value	VFM ratio
OO Elementary School and others (0 schools) newly built	47.1	45.4	1.7	3.6%	44.8	35.5	9.3	20.8%	7.6	447.9%
OO School and others (0 schools) newly or extension built	53.4	51.4	2.0	3.8%	58.0	52.9	5.2	8.9%	3.1	152.7%
OO Elementary School and others (0 schools) renovation or extension built	46.1	43.6	2.5	5.4%	48.8	47.1	1.7	3.5%	(0.8)	-31.1%
OO Middle School and others (0 schools) newly or extension built	29.3	28.7	0.6	2.0%	32.9	31.2	1.7	5.3%	1.1	191.5%
OO School and others (0 schools) newly built	58.0	54.8	3.2	5.5%	58.7	55.2	3.5	6.0%	0.3	10.6%
OO High School and others (0 schools) newly built or renovation	35.8	35.1	0.7	1.9%	40.2	40.6	-0.4	-1.0%	(1.1)	-161.1%
OO Elementary School and others (0 schools) newly built	45.0	44.2	0.8	1.7%	50.7	49.2	1.5	3.0%	0.7	98.1%
OO High School and others (0 schools) newly built	28.8	28.5	0.3	1.0%	31.6	28.9	2.7	8.6%	2.4	800.1%
OO Elementary School and others (0 schools) newly built	26.1	25.9	0.2	0.8%	28.8	26.0	2.8	9.8%	2.6	1304.2%
OO Elementary School and others (0 schools) newly or extension built	50.8	49.8	1.0	2.0%	56.8	50.8	6.1	10.7%	5.1	508.3%
OO Elementary School and others (0 schools) newly or extension built	27.5	27.4	0.1	0.4%	32.6	33.0	-0.4	-1.4%	(0.6)	-485.3%
OO Elementary School and others (0 schools) newly built	51.0	49.0	2.0	3.9%	51.0	46.4	4.6	8.9%	2.6	127.8%
Total	498.9	483.7	15.1	3.0%	535.0	496.7	38.3	7.2%	23.2	153.3%

PFI = private finance initiative, PSC = public sector comparator, VFM = value for money

[a] Assumed PFI is calculated from VFM test

[b] Actual PFI is estimated based on government payment determined in concession agreement

Source: VFM test reports prepared by the Public and Private Infrastructure Investment Management Center

2012 Modularization of Korea's Development Experience
Public–Private Partnerships: Lessons from Korea
on Institutional Arrangements and Performance

Chapter 4

Key Success Factors and Lessons Learned

1. Demand for Better VFM through PPP after the Economic Crisis
2. Leading Role of the Korean Finance Ministry
3. A Unified Framework of PPP and Traditional Procurement
4. Role of a Dedicated PPP Unit: PIMAC
5. Providing Standard Guidelines and Manuals for the Analysis
6. A Safeguard Limit for PPP Fiscal Commitment
7. Tightening PPP Procurement and Implementation

Key Success Factors and Lessons Learned

1. Demand for Better VFM through PPP after the Economic Crisis

Ever since Korea's first Five-Year Economic Development Plan was unveiled in 1962, the country has had a long history of framing public investment as a tool for economic development. Under the unbalanced economic development strategy and authoritarian planning culture that then prevailed, the government concentrated its available capital in providing and expanding infrastructure, such as highways, railroads, harbors, and airports. The priority of investment projects was set according to its contribution to economic development, rather than by regional equity or convenience of users. A few authoritative decision-makers prioritized projects, and public participation and inclusion of various values were limited. As a result, policy analysis of each project was mainly limited to physical design or for minimizing construction costs. This implies that the demand for policy analysis was very low during this period of intensive economic development in Korea, between the early 1960s and the late 1990s.

When major national-level infrastructure projects were completed, however, public investment problems were framed in a more complex way. People paid more attention to various problems such as land use, housing, job creation, regional equity, and environmental impact. Goals of public investment became better-specified and multiple groups established their own priorities. The weakening of the central government's political leadership brought out conflicts among interest groups. Local governments, which had been totally under the

control of the central government, began to make their own regional development plans [14] in the 1990s. Thus, national economic development could no longer be the dominant factor for judging the value of public investment.

Korea's economic crisis, which coincided with the period of the Asian Financial Crisis in 1997, changed the situation rapidly. Before the crisis, the national debt as a percentage of GDP was under 10%. However, the ratio continuously increased after 1997, and reached 26% in 2004. Such a significant increase of national debt was mainly due to the expansion of government expenditures, rather than to a decrease in revenue. The public's trust in the government plummeted, and a strong demand for administrative reform could no longer be ignored by politicians and bureaucrats. The opportunity was present for policy reforms to take on an expanded role in the public investment decision process. PPP was considered as one of the reform measures to obtain better value for money in the government and public sector. PPP was reviewed and regarded as a tool to enhance efficiency in the public infrastructure investment.

2. Leading Role of the Korean Finance Ministry

Budget allocation in Korea usually involves bargaining between the budgeting ministry and line ministries. In the past, line ministries had ownership of the feasibility study, providing only selective information to procure more funds. The MOSF, on the other hand, used it to cut project budgets, although not always on a reasonable basis. Korean PPPs implementation process, initiated by the MOSF, not by the line ministries, partly mitigated the information asymmetry between the MOSF and line ministries, which in turn led to better decision-making. MOSF is responsible for the final decision of a project appraisal and allocating the budget, while the line ministries and agencies are responsible for identifying, designing, and prioritizing projects, while also forecasting their effects.

The MOSF can produce its own information more reliably than ever before. Based on clear ownership and rich information according to the Korean PPP Act, the MOSF is equipped with more bargaining power, and therefore can make better informed decisions. The PPP decision making process has contributed to the establishment of a public inquiry process at line ministries and lower-tier governments. The performance of these schemes has disseminated into other areas, and contributed to much more widespread public deliberation.

14. For instance, major research institutes of local governments were launched since the 1990s-Seoul Development Institute (1992), Busan Development Institute (1992), Kyeonggi Development Institute (1994) and Incheon Development Institute (1995).

A starting point of strategic screening and planning guides for PPPs should be designed and announced by the government. Some broad strategic guidance for conventional public investment is often an important way to anchor government decisions and to guide sector-level decision makers. Such guidance may be derived from a national plan or other medium to long term strategic document that establishes economy-wide development priorities at the highest decision-making levels. Most countries do not explicitly provide any strategic guidance for PPP project selection. A national plan or other medium to long term strategic document in those countries does not include PPPs in economy-wide development priorities in general. Therefore, most PPPs in various countries are practically chosen without any integrated strategic guidance clarifying cost and benefit sides of both conventional and PPP procurements. They are chosen in a few selected sectors of infrastructure investment, with a process of politically-driven decision making. Although most governments declare that PPPs are taken only when the PPP procurement is forecasted to obtain a better value for money in comparison with the conventional procurement, they are not ready to establish institutional tools to screen and plan all candidate PPPs.

In the Korean case, however, institutional arrangement for strategic PPP screening and planning from an initial stage of the procurement has been clearly established at the very beginning stage. In the government regulation such as in PPP Act, PPP Decrees, and PPP Basic Plan and Guidelines, a high level general policy statement on why the government considers PPPs to be a potentially cost-effective way of public procurement, what sectors and types of PPPs it favors, the basic criteria it will use to decide between a PPP and a conventional public investment, and the processes it will follow in PPPs, were clearly declared. The law may define eligible infrastructure types, procurement types, procurement processes, the role of the public and private parties, and policy supports.

By listing eligible facility types in the PPP law, the MOSF aimed to induce private capital to invest in the sectors where additional investment is needed for the benefit of the public. Some may argue that the listing of eligible facility types may restrict the flexible and innovative application of PPP procurement for new types of facilities. However, these critics overlook the importance of an initiation of the project in PPP cases. Without any explicit law or regulation, no PPP project can be practically initiated and chosen. In effect, a certain level of restriction to prescribe the scope of eligible PPPs by the Korean MOSF may help actively initiate PPPs in the public as well as in the private: the restriction in a narrowly-defined sector of candidate PPPs may encourage both the public and the private to compare which mode is better between a public sector comparator or a private finance initiative.

3. A Unified Framework of PPP and Traditional Procurement

The choice, either a conventional procurement (CP) or a PPP, implies that the preferred method creates the most value for money. Value for money should be the driving force behind any project appraisal. However, in practice the choice is not always as simple. In many countries and in most practical cases, the value for money objective in project appraisal is very often ignored, and, particularly, the choice between CP and PPP may be skewed by factors other than VFM. Some factors skew choice towards CP, while others skew it towards PPPs. Conventional procurement is the most common procurement mode for a long time, and still constitutes the default mode of procurement. In most countries, CPs are taken by the default modes without any careful value for money comparisons with PPP modes. Though CP mode will probably remain the most common procurement mode, it does not need to remain the default mode (see OECD, 2010b; pg. 29-38).[15]

Unfortunately, however, most countries still do not have clear criteria to identify how projects get to be either PPP candidates or CP candidates. In the early stages of project development, for example, PPP projects have often been driven by political initiative. There are not many projects in the pipeline in many countries, and, as such, PPP projects are considered as exceptional cases where no traditional gateway screening which is normally required for government's large investment projects is applicable. It is important, therefore, to provide fiscal regulation for project assessment with the same methods applied to CP, because a PPP is one of the procurement options and possibly needs government financial commitment in the form of payment, guarantee, subsidy, etc., as well, in later stages of the project life-cycle.

Countries which have a long history of PPP implementation have made some efforts to establish a unified framework for project appraisal. In the UK and Australia, most PPP projects have been service-contract types which generate long-term government commitment, and there needs to establish the same level of project appraisal and screening process comparable to the one in CPs. The Green Book of the UK Government's guidance on appraisal and evaluation provides a framework for how to appraise at ex-ante and evaluate at ex-post procurement projects of central government agencies. After justifying action and setting objectives, the government should appraise the options to help develop a value for money solution that meets the objectives of government action. Private finance initiative (PFI) can be one of several possible options to efficiently meet government objectives. PFI should be pursued where it delivers value for money compared to traditional procurement

15. OECD recommendation seems to highlight traditional procurement mode not to remain the default mode. OECD, "How to Attain Value for Money: Comparing PPP and Traditional Infrastructure Public Procurement", OECD Working Paper, 2010.

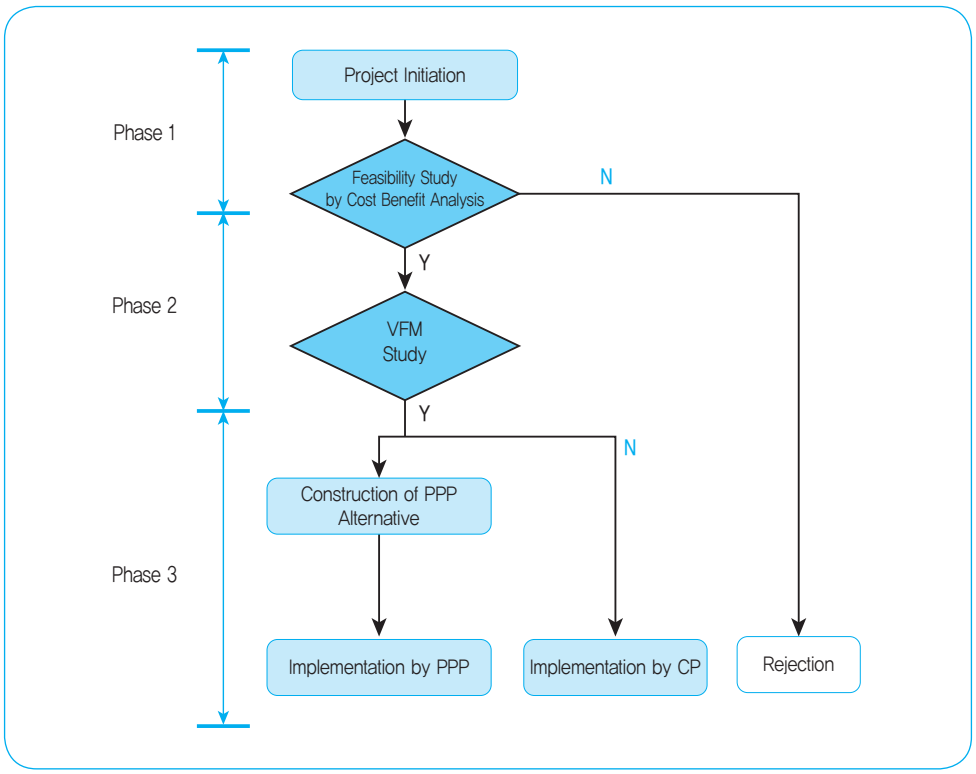
methods and not be selected to secure a balance sheet treatment. Decision to PFI is assessed within the process of identifying options and appraisals prescribed in the Green Book.[16] The budget rule of the Australian state government of New South Wales makes the government first decide whether the investment in a specific project is necessary ("decision to invest") through analytical methods such as cost-benefit analysis, then to decide procurement option ("method of financing") through VFM analysis, etc. In this context, the government considers a PPP option when special conditions are met such as: it belongs to an agency's capital expenditure priorities; its capital costs are already budgeted; and it generates VFM compared to traditional procurement options, etc. This process can prevent the government from pursuing PPPs from other motives than VFM.[17]

In order to remove bias on procurement options and objectively focus on VFM, the Korean government established a unified framework for project appraisal early in the procurement process, so that a procurement option test such as cost benefit analysis and VFM analysis are performed for a potential investment project. A standard procurement option test is composed of three phases. First phase is a feasibility study which should be conducted to determine whether or not to invest. The cost benefit analysis is conducted to assess feasibility of the project from a national economy perspective. Conducting the feasibility study not only assesses whether or not to proceed with the project, but also pushes the procuring authority to work on project preparation in advance. If the potential process turns out to be feasible, then, at the second phase, a VFM assessment should be performed to decide on procurement options: traditional procurement versus PPP. Basically, government costs and project output of the public sector comparator (PSC) is compared against that of PPP to assess whether the PPP achieves better VFM. The VFM assessment provides a quantitative VFM level and a justification for the decision on procurement option. It also encourages the project appraiser to consider risks early in the project life-cycle, and address risk transfer options in the bidding process. If PPP does not have VFM, the project is implemented by the traditional method. At the final phase, a best practice of PPP or CP alternative is formulated and suggested. [Figure 4-1] shows the overall process of the unified framework for project appraisals in Korea.

16. HM Treasury, *The Green Book*, London: The Stationery Office, 2010.

17. New South Wales Government, *Working with Government: Guidelines for Privately Financed Projects.* New South Wales, 2006.

Figure 4-1 | A Unified Framework for Project Appraisal



Source: Internal data from PIMAC

4. Role of a Dedicated PPP Unit: PIMAC

Some level of review for the quality of the PPP projects is important. This quality control can be performed by i) an external agency (a research agency, NGO, university, etc.); ii) by central agency oversight over line ministries, and agencies that design and appraise their projects or programs; or iii) by a special committee established by the oversight central ministry or agency that consists of various stakeholders of especially important and technically complex projects. Establishing an independent body serves as a buffer for political pressure and other undue influences throughout the project cycle.

Since 1999, most major investment projects with total costs exceeding 50 billion Won (50 US million dollars) have been subjected to analysis through the preliminary feasibility study (PFS), when line ministries or local governments request funds from the Ministry of Strategy and Finance. The requirements for PFS have grown over time, and PFS is required

not only for public investment projects, but also other projects, including cultural projects or national R&D projects. [18]

One surprising result is that an independent review by the Public and Private Investment Management Center (PIMAC) at the Korea Development Institute (KDI), with some help from policy analysts, makes judgments on project desirability, and their explicitly quantified judgments are respected in most government decision-making. After performing the PPP guidelines to help the Ministry of Strategy and Finance, PIMAC and policy analysts explicitly report their independent judgments to the budget agency, the Korean National Assembly, and the public. The public recognition of PIMAC on PPP work has also been notable.

This is partly explained by the long tradition of KDI which, since 1971, has served as a leading think-tank for the Korean government for socio-economic policies. If KDI's policy analysis merely played a symbolic role, or there were some disincentives for politicians and bureaucrats to utilize analyses, such an independent judgment of the PIMAC could not be possible.

5. Providing Standard Guidelines and Manuals for the Analysis

There are three pillars of PPP appraisal or evaluation: objectivity, consistency and transparency. In order to improve the objectivity of the evaluation, and secure consistency among projects, KDI has developed standard evaluation guidelines and manuals. PPP value for money guidelines contain detailed descriptions of methodology and procedures for VFM test and implementation.

The guidelines stipulate applying the same methodology and using the same or similar datasets for different projects within the same sector. For example, KT_DB (Korea Transport Database) should be used for all the road and railroad projects, for consistency in evaluation results. These guidelines are being revised continuously through academic research.

KDI's standard guidelines and manuals triggered research on evaluation methodologies as well. While conducting the PPP VFM study, for example, a series of evaluation issues were raised over its guidelines. PIMAC at KDI has been the hub of the research on these issues. Research results were incorporated into the revisions for the guidelines. The guidelines also triggered the establishment of evaluation guidelines in line ministries. The MLTM, MOST,

18. The Korean National Assembly also passed the National Finance Law in 2006 which supports PFS by providing stronger legal grounds.

other central ministries, some local governments and the public enterprises have developed their own evaluation guidelines, for which the benchmark was the guideline.

6. A Safeguard Limit for PPP Fiscal Commitment

It is essential that the process of appraising and selecting public investment projects is linked in an appropriate way to the budget cycle even though the project evaluation cycle may run along a different timetable. There is clearly a two way relationship between the budget cycle and the project selection cycle. The key to efficient investment is both good decisions in choice of investments, and active management of the asset portfolio and a budgetary process that ensures recurrent funding to operate and maintain existing assets.

The growing interest around the world in PPPs has increased the need for clear rules for budgeting and accounting. Transparency is a key element in budgeting and good governance, and, therefore, the IMF (2006) and OECD (2012) address that budget documentation should transparently disclose all information possible regarding the costs and contingent liabilities of the PPP. The information should include what and when the government will pay, and full details of guarantees and contingent liabilities. The payment stream from government under the PPP contract should be highlighted, particularly if it is back loaded.

IMF (2006) recommends giving high priority to the institutional framework for PPPs – including disclosure requirements and, when appropriate, ceilings on government payments. Following the financial crisis in 1998, the Brazilian government imposed high tax rates, aiming at creating a budget surplus and promoting fiscal soundness. As a result of such efforts, the fiscal surplus amounted to 4.5% of GDP in 2005 compared to a fiscal deficit of over 1% of GDP in 1997. The Brazilian government cut spending on investment in infrastructure so as to promote fiscal soundness. Investment in infrastructure fell from around 5.2% of GDP in the 1980s to 2.3% in the 2000s; this cut in infrastructure spending became an obstacle to boosting economic growth. To address this problem, the government increased direct government investment based on cost-effectiveness analyses it conducted in cooperation with international organizations such as the IMF and overhauled the law to approve concession-type PPP projects so as to lure private capital. The Brazilian government set a safeguard ceiling, the upper limit of the local governments' financial commitment to PPP projects, of up to 1% of the government revenue. It also adopted a series of strict fiscal rules such as the central government's authority to withdraw support for a PPP project if the local government fails to comply with the standard on public financing.

Box 4-1 | International Monetary Fund's Comprehensive Disclosure Requirements for Public–Private Partnerships

According to the International Monetary Fund's requirements, information on public–private partnerships (PPPs) should be disclosed in budget documents and end-year financial reports. In countries with significant PPP programs, disclosure could be in the form of a statement on PPPs. In addition to an outline of the objectives of the current and planned PPP program, and the capital value of PPP projects that are at an advanced stage of bidding, for each PPP project or group of similar projects, information should be provided on:

- Future payment obligations for the following periods: 1–5 years; 5–10 years; 10–20 years; over 20 years.
- Significant terms of the project(s) that may affect the amount, timing, and certainty of future cash flows, valued to the extent feasible (e.g., contingent liabilities, the period of a concession, the basis upon which renegotiation is determined).
- The nature and extent of rights to use specified assets (e.g. quantity, time period, or amount as appropriate), obligations to provide or rights to expect provision of services, arrangements to receive specified assets at the end of the concession period, and renewal and termination options.
- Whether the PPP assets (or any part thereof) are recognized as assets on the government's balance sheet, and how the project affects the reported fiscal balance and public debt.
- Whether the PPP assets (or any part thereof) are recognized as assets either on the balance sheet of any special purpose vehicle, or in the private partner's financial statements.[a]
- Any preferential financing for PPPs provided through government on-lending or via public financial institutions.
- Future expected or contingent government revenue, such as lease receipts, revenue or profit-sharing arrangements, or concession fees.
- Any project financing or off-balance sheet elements such as contingent liabilities provided by entities owned or controlled by the government.
- Signed PPP contracts should be made publicly available. Within-year fiscal reports should indicate major new contracts that have a short-term fiscal impact.

a The suggested disclosure of the private partner's accounting treatment has been made by David Heald. 2003. Value for Money Tests and Accounting Treatment in PFI Schemes. Accounting, Auditing, and Accountability Journal. 16 (3). pg. 342–371. While there is no question of enforcing symmetrical accounting treatment by the government and private partner, any lack of symmetry may point to areas worthy of scrutiny, especially if no part of the PPP asset is on either balance sheet.

Source: David Heald. 2003. Value for Money Tests and Accounting Treatment in PFI Schemes. Accounting, Auditing, and Accountability Journal

The Korean government examined and adopted the idea of a ceiling on the total governmental disbursement for PPP projects in 2008, while, except for a Brazilian case of local government, no country regulates the upper limit of governmental payments for PPPs by law or as part of a regulatory system. The total number of PPP projects in the Republic of Korea has reached almost 650, and adoption of so many PPP projects further puts pressure on fiscal stability and flexibility. It was recommended that the government set a safeguard limit for effectively managing fiscal commitment to PPPs. Based on the practice of the UK government in early 2000[19], it is assumed that if Korea maintained either a government payment ceiling for PPPs of 2% of the national budget expenditure or PPP investment at 10%–15% of total public investment and managed the commitment in the medium and long term, this would ease the fiscal pressure when it comes to public financing of PPP projects.[20]

In order to practically monitor and implement a safeguard ceiling on government PPP project financing, the following questions should also be examined and answered in each country: who evaluates the ceiling?; when and how often is the ceiling evaluated?; is the ceiling mandatory or merely a guideline?; how would PPP commitments affect fiscal stability and public debt?; and how should the ceiling be reported to the National Assembly and should the ceiling be subject to the Assembly's approval?

7. Tightening PPP Procurement and Implementation

The procurement process for a PPP project after a stage of project appraisal is generally different from the one for a traditional procurement project. The Korean government should constantly interact with the private sector which provides innovative ideas and solutions for project implementation. There are chances that project details are modified compared to the initial plans drafted by the government in an earlier stage, therefore the government should make sure that the project feasibility and the VFM are not impaired over the procurement process.

In PPPs, VFM outcomes are contingent on effective management over concession terms. Poor contract management with a private partner can result in higher cost, wasted resources,

19. There were no specific guidelines or upper limits in the UK, which controls an aggregate amount of annual government payment related to PPP (or PFI) projects. A series of government documents and data in early 2000, however, that annual government payments for PFI have been maintained at about 2% of the total annual government budget. The annual 2% rate is repeatedly seen in many government documents. The UK government also controls the total amount of PFI projects based on a standard, such as the capital budget. PFI accounts for 10%–15% of total public investment. The UK government says that these rules help prevent PFI-related government payments from impairing fiscal soundness. See HM treasury (2004, 2006).

20. See the Chapter 6 of Jay-Hyung Kim, ed., Performance Evaluation and Best Practice of Public-Private Partnerships. Seoul: Korea Development Institute, 2007.

impaired performance and public concern, hence PPPs require careful oversight and regular audits. After the ex-ante project appraisal stage, therefore, a competitive bidding process is essential to ensure the VFM and optimal risk transfer to the private sector. Tender documents should be formulated based on the results of project appraisal so that minimum requirements to realize project feasibility and the VFM are satisfied. The competent authority, either a central or a local government, forms an evaluation team with external experts. Generally, the evaluation is conducted in two ways: evaluation of pre-qualification and evaluation of technical and financial/price elements. One preferred bidder is selected for negotiation based on the result of the evaluation, and the second preferred bidder is invited to negotiate only when the negotiation with the first preferred bidder is failed. In EU rules, otherwise, competitive dialog is conducted where the procuring agency negotiates with more than one bidder simultaneously in order to take advantage of various ideas and proposals from multiple bidders. In Korea, the final PPP contract terms and conditions resulted from negotiation with the private sector should be made in a way that ex-ante VFM is not negatively affected. It is desirable to assess ex-post VFM after contract award and construction completion to compare with ex-ante VFM and to ensure that VFM is actually realized.

In practice, there can often be some changes of project cost in the course of procurement process. In this cost over-run case, re-assessment of feasibility is sometimes needed to re-check changes in project contents or business environment. The re-assessment study of feasibility (RSF) is recommended to review unnecessary cost increase by re-affirming the feasibility of the project under implementation and scrutinizing the adequacy of the cost increase. In Korea, for instance, according to the National Finance Act, the RSF is mandatorily requested on a project where an increase of the total project cost is by more than 20 percent of the one at the previous phase of the project. The re-assessment team makes an overall assessment including a judgment on whether or not to continue the project and if the cost increase is adequate. Normally, the re-assessment of feasibility focuses on the ways to decrease costs by cutting down project costs or sizes and suggest alternative solutions. [21] Re-assessment of demand forecast can be carried out as well in order to verify the adequacy of demand forecast conducted in the past with the latest available information. Since large infrastructure projects take a long time for procurement and implementation, it is important to re-assess demand forecast in order to minimize forecasting errors and enhance efficiency in public spending.

21. Mandatory re-assessment study of feasibility (RSF) in Korea has proved to be very effective in discouraging unnecessary cost increases by spending ministries and agencies. They are more likely to quit requesting higher cost increases (more than 20 percent than before) than to let the projects be re-assessed.

Since most of the PPP procurement and implementation process is led by the competent authority which normally has little experiences and expertise in PPP, it is efficient and effective to develop standard implementation guidelines for PPPs. Detailed guidelines include guidelines for formulation of request for proposals, model concession agreements, guidelines for output specifications, etc. Implementation guidelines provide both public procurers and private companies with a basic understanding and clarity on how an individual PPP project is developed and procured, which reduce project risks and uncertainty. It will also be important to provide public officers in charge of implementing and managing PPP projects with capacity building and training programs to educate them on how to develop and procure PPP projects.[22]

22. Public officers in every country are acquainted with traditional procurement policy and projects, but not to the PPP ones. Therefore, PPP capacity building and training programs are strongly recommended.

2012 Modularization of Korea's Development Experience
Public–Private Partnerships: Lessons from Korea
on Institutional Arrangements and Performance

Chapter 5

Concluding Remark: Is PPP a Good Route?

Concluding Remark: Is PPP a Good Route?

It is argued that the basic completion review of a PPP project should apply to all projects in a systematic way. It comprises an examination by a responsible agency or line ministry on whether the project was completed within the original (and amended) budget and time frame, and whether the outputs were delivered as specified. As a supplement to this basic element, a supreme audit institution, the Korean Board of Audit and Inspection, should periodically conduct a compliance audit of a sample of investment projects. Good practice suggests that the project design should build in the evaluation criteria and that learning from such ex post evaluations is used to improve future project design and implementation.

Unfortunately, the evaluation of PPP projects is extremely difficult in theory and practice, both because of the conceptual slipperiness and the large number of disciplines involved – economics, accounting, law, political science, engineering, and so on – that need to be brought together and reconciled (Allen, 2011). Many important technical areas, such as developing an international accounting standard for PPPs and an appropriate legal framework, have not been fully resolved. Assessing the counterfactual to a PPP – the relative cost of public and private finance - is not a simple matter. Hodge (2010; pg.93) explained why different reviewers often see the same results differently. Evaluation has also proved difficult in practice because of the inherently political nature of the decision-making process, which acts as a distorting lens.

One way to evaluate PPPs in Korea, nonetheless, is to explicitly trace out evidence of cost savings and efficiency gain as well as evidence of PPP contribution to the national economy. First, in a microeconomic point of view, the efficiency of PPP projects should be analyzed from the perspectives of three interested parties: users, concessionaires, and the government. The risks that each party takes are examined whether the risk-sharing scheme

has been appropriate. Also, the concession agreements and financial models of past PPP projects is analyzed to review whether gradual improvements, compared to the cases of conventional procurements, have been made in the efficiency of concession agreements, toll rates, and rate of return. By understanding the changing trend in interest, risk, returns, and costs, the study should aim to determine if the efficiency of PPP projects is improving.

Second, from a macroeconomic point of view, the PPP contribution to the national economy should be analyzed. The promotion of PPP projects is expected to have ripple effects on the national economy through three channels: economic growth resulting from the inflow of private capital; increased social welfare resulting from the timely delivery of social services and the early realization of social benefits; and reduction in the government's fiscal burdens through better VFM. Despite such expansion in private investment through PPPs, it is not easy to measure and present private investment's contribution to economic growth.

There exist a lot of documents which critically argued the performance of Korean PPP market and projects. The arguments are mostly highlighting on: hindering effective selection of PPP projects, undermining efficient use of limited public resources, creating unnecessary fiscal risks due to a lack of rules for controlling contingent liabilities such as the minimum revenue guarantee (MRG), among others. However, the arguments are often based on a partial anecdote or evidence. There exists little comprehensive study, considering both a microeconomic and a macroeconomic point of view all together. In the results of chapter 3 and 4 of the book, some evidence of efficiency gains and improved value for money are found. And a partial evidence of macroeconomic contribution of PPP investments are also found, at least in late 1990s and early 2000s after the financial crisis.[23] The negative points on the performance of Korea PPP market and projects should further be analyzed systematically in the future. Although the UK and Australia already produced substantial evidence of better VFM in some senses, empirical tests of the VFM of PPP projects are not conclusive: the real VFM performance of PPPs remains empirically open in most countries.[24]

Related to the mixed evaluation results and real VFM performance, it is important to recognize that, in most countries, PPPs have proven popular for many bad reasons as well

23. According to a study by Rhee and Lee, the promotion of PPP projects results in a decline in fiscal investment by the government, implying the crowding out effect of PPPs on public investment, and therefore does not have a significant effect on total investment. Rhee, Changyong and Lee Hangyong, Public-Private Partnerships in Infrastructure and Macroeconomy: The Experience of Korea, in Jay-Hyung Kim, ed. Performance Evaluation and Best Practice of Public-Private Partnerships. Seoul: Korea Development Institute, 2007.

24. Irwin (2012) even argues that the benefits of PPPs may be illusory. See Irwin (2012), "Accounting Devices and Fiscal Illusions", IMF Staff Discussion Note, March 2012.

as good. According to Boardman and Vining (2010; pg. 162-164), governments like PPPs because they postpone government cash outlays, allow the cost of the projects to be placed off budget, improve government net cash flow, reduce the transparency of government finances, transfer risks to the private sector, and reduce exposure to political risk. Even in the UK, the main motive for encouraging public finance initiatives was to reduce or minimize the budget deficit, and in the US to pay later (and sometimes considerably more).

Whether the PPP is a good route in Korea is not clear at the moment: the evaluation on PPPs should be more rigorously handled in a comprehensive framework of analysis with a broader scope of perspectives from microeconomic to macroeconomic points of view. Multidisciplinary approaches and comparative studies, combining PPPs and the conventional procurement, are strongly recommended. PPPs may continue to be used in many countries, and they are likely to become one major form of delivering infrastructure projects in the future, but not the dominant one. It is worthwhile to note the UK Treasury's comment that such projects constitute a small, but important part of the government's strategy to deliver high quality public services (Hodge et al., 2010; pg. 596). Even if it is not clear whether the PPP is a good route, it is clear that the conventional public investment should no longer be regarded as a default mode without any careful VFM comparison with PPP modes. Accumulation of PPP performances, good as well as bad in transparency, accountability and VFM, will certainly provide lessons learned for searching a better VFM mode and partly compensate for the cost of PPP initiations.

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