

**CASE STUDY ON THE ECONOMIC CRISIS MANAGEMENT  
THROUGH PUBLIC CONSTRUCTION WORKS,  
EMPLOYED BY THE KOREAN GOVERNMENT  
- CASES OF THE CONSTRUCTION WORKS BUREAU OF  
PPS FROM FEBRUARY 2008 TO FEBRUARY 2010 AND  
THEIR OUTCOMES –**

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1. Introduction

This paper introduces how the Korean Government overcame the economic crisis the country was facing using public tender and contract of public construction works during the past two years, through analyzing exemplary cases. The total amount of the public construction works undertaken was estimated through PPS's records, and the current trend of medium and small sized construction works was estimated using statistical reports such as annual reports published by Construction Association of Korea and other research data. Additionally, the statistics used are validated against publications of public organizations including the Ministry of Strategy and Finance, Statistics Korea, Bank of Korea. Then it examined the effectiveness of the public procurement policy in assisting SMEs and local businesses.

The public procurement policy carried out by the Korea's public procurement authority is seen to have played its part in the recovery of the domestic economy through contributing to implementing an early intervention, facilitating growth potential, acquiring public trust.

## 2. Theoretical Background

### 2. 1. Budget Distribution Effect

Government spending creates visible benefits in resource distribution, in which the manufacturers are influenced to manufacture more, and the consumers are influenced to consume more. In result, this increase tends to expand more, consequently encouraging investment by companies. In addition, the distribution benefits of government expenses depend on who ultimately enjoy the benefit and who ultimately suffer the loss. Also, the benefits differ in short term and long term. The government spending program could also have benefits in the income distribution between the present and future generations (Dong Geun Kim, 1998)

### 2. 2. The Function of Budget

Budget is widely recognized to serve to achieve the distribution of resources and income, and economic stability and growth as the vehicle of fiscal operation. In the modern world, this function is applied as follows. When the price does not function sufficiently in the market as a vehicle of wealth distribution an appropriate budget policy should be implemented to adjust the situation. When the disparity in income distribution persists, the budget policy should introduce the appropriate remedies. Additionally, when the product price and employment rate fluctuate radically, the government intervene the demand and supply in order to adjust and stabilize the condition. These demonstrate the function of effectively carrying out the governmental fiscal policy.

### 2. 3. The Ways to Successful Fiscal Policy during an Economic Depression

Since the IMF crisis, the Korean economy has become bigger in size

with larger uncertainty. In 1997, as after requested IMF an emergency assistance, the Korean public believed that after recovering from the crisis, they must find solution to advance the national economy to the level of developed nation. 1) The public aspiration to reverse the situation to develop a strong nation became powerful from bitter experience of foreign currency crisis.

3. Report by the Construction Works Bureau of PPS, published in February 29<sup>th</sup>, 2008

### 3.1 The Introduction to the Construction Works Bureau

Number of Staff: Including the Director-General of the bureau, there are 128 staff working at 8 divisions.

Functions: the functions of the Construction Works Bureau are as follow. First, it establishes guidelines and operates policies regarding public construction-related bidding, contracting and managing contracts.

Second, it reviews contracting methods for new construction projects, carries out pre-qualification process and price research, calculates construction project price and evaluates rationales for direct-contract cases. Third, it plans, designs, and manages public construction as well as carries out post-construction management. Fourth, it supervises and evaluates the total project expenses of main government construction projects, and study the current market price. Last, it invest government properties and discovers investment targets.

### 3.2 Works of the Construction Works Bureau

Works carried out by the Construction Works Bureau can be categorized into four including contacting for construction works,

estimating the budget, reviewing the total project budget, and planning and managing construction and its site.

### 3.2.1. Contracting Construction Works

According to Article 15 of the Enforcement Regulation of the Procurement Project Act, the ordering organization shall request contacting service from PPS when the construction work valued at over 3 billion KWN for central governmental departments and at over 30 billion KWN for local governments.

#### 《Entire Construction Works Vs PPS's Construction Work》

(Unit: 0.1billion KWN)

Category	2001	2002	2003	2004	2005	2006	
Entire public & private construction works (A)	678,359	831,492	1,024,478	945,723	993,840	1,064,509	
Public sector(B)	298,871	308,534	322,165	337,645	318,255	290,023	
<b>PPS(C)</b>	<b>101,126</b>	<b>115,474</b>	<b>123,541</b>	<b>120,354</b>	<b>120,787</b>	<b>125,135</b>	
percentage	C/A	14.9%	13.9%	12.1%	12.7%	12.2%	11.8%
	C/B	33.8%	37.4%	38.3%	35.6%	38.0%	43.1%

Source) Construction Association of Korea

PPS has delegate construction works to its two entities: PPS's headquarters and its regional offices. The headquarters carried out the execution of all construction contracting methods, project price calculation, contracting processes undertaken by itself and PPS's regional offices.

The regional offices carry out posing public bid notices of regional project and contracting, eligibility test, contract management tasks of small price contracts. Some cases the headquarters performs technical review and price calculation of those constructions prescribed to be undertaken by regional offices.

The table below shows average contracting performance carried out both the headquarters and regional offices of PPS for the last three years. 76% of the total value of the entire construction project is undertaken by the headquarters of PPS and 24% by the regional offices. 10% of the total construction cases was performed by the headquarters and 90% by the regional offices.

《PPS's Construction Works》

(Unit: cases, 0.1billion KWN)

Category	2005		2006		2007	
	Cases	Value	Cases	Value	Cases	Value
Total	2,425	109,465(100%)	3,243	106,614(100%)	3,947	121,425(100%)
<b>Headquarters</b>	<b>355</b>	<b>70,423(64.3%)</b>	<b>238</b>	<b>73,304(68.8%)</b>	<b>396</b>	<b>92,732(76.4%)</b>
Seoul regional office	572	12,022(11.0%)	773	8,382(7.9%)	719	6,905(5.7%)
Other regional offices	1,498	27,020(24.7%)	2,232	24,928(23.3%)	2,832	21,788(17.9%)

### 3.2.2. Construction Price Calculation

The main principle applied by PPS in construction price calculation is as follows. For example, the total expenses for building a bridge with 100M width 20M height 10M size should be similar to other construction price for building a same bridge in the same year.

PPS carried out calculating construction projects ordered by all central government entities and project of local governments, estimated over 10 billion KWN. However, local government projects valued at less than 10 billion KWN can be undertaken by PPS on request.

The method of calculation is prescribed by price estimation guidelines of the Ministry of Strategy and Finance of the Korean government. PPS comply with them strictly. Contracting officers of PPS must not over or under estimate the price and when producing a estimated price that is dissimilar to the construction cost, must provide accurate rationales in the price research document.

Estimating total project cost can be divided into manufacturing cost and constructing cost calculations. The standards set by the Construction and Technology Institute is used, adding price of materials, labor, overheads, general management and profits etc.

This estimation process should be taken into consideration of contract amount, projection to serve contract, construction completion period, contract terms and conditions, etc.

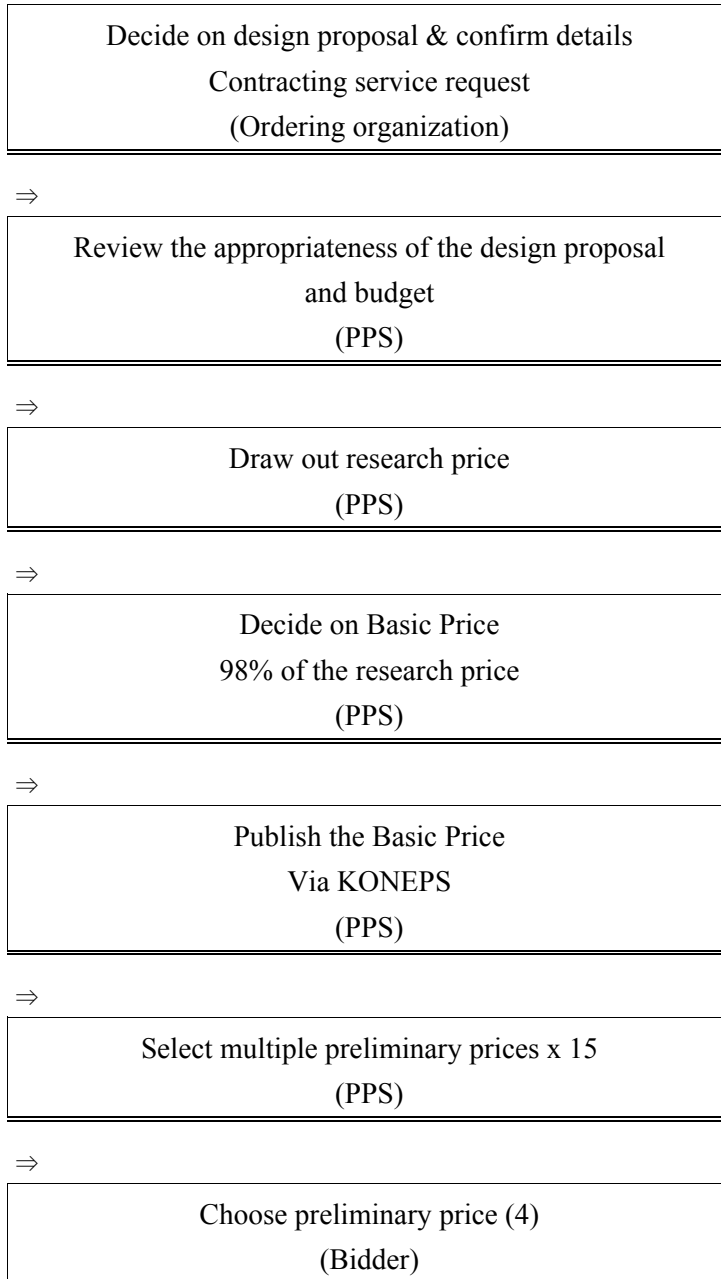
《Costs Saved through the PPS Cost Estimation》

(Unit: 0.1billion KWN)

Category	Designing cost	Cost estimation	Costs saved	Saving rate(%)
2003	120,148	112,303	7,845	6.5
2004	178,189	168,557	9,632	5.4
2005	112,485	104,687	7,798	6.9
2006	109,554	101,919	7,635	7.0
2007	96,902	92,039	4,863	5.0

**Construction Cost Estimation:** its complicated process is demonstrated in the flow chart below.

《The Process of PPS Construction Cost Estimation》



⇒

The average price of 4 most frequently chosen preliminary prices becomes the Projected Price

⇒

Select the successful bidder

### 3.2.3. The Total Project Cost Review

For the efficient management of the total cost of public construction cost, the Korean government published the “The Guidelines of Total Project Cost Management” in 1999 and PPS complies with it. The total project cost review legally assigned to PPS in December 2006.

The subject of the PPS review include civil engineering projects valued over 50 billion KWN and 20 billion general construction projects. In the reviewing process, the appropriateness of designing cost and other expenses proposed is reviewed, as well as design blueprint, specifications, etc are examined.

### 3.2.4. Construction Plan and Site Management

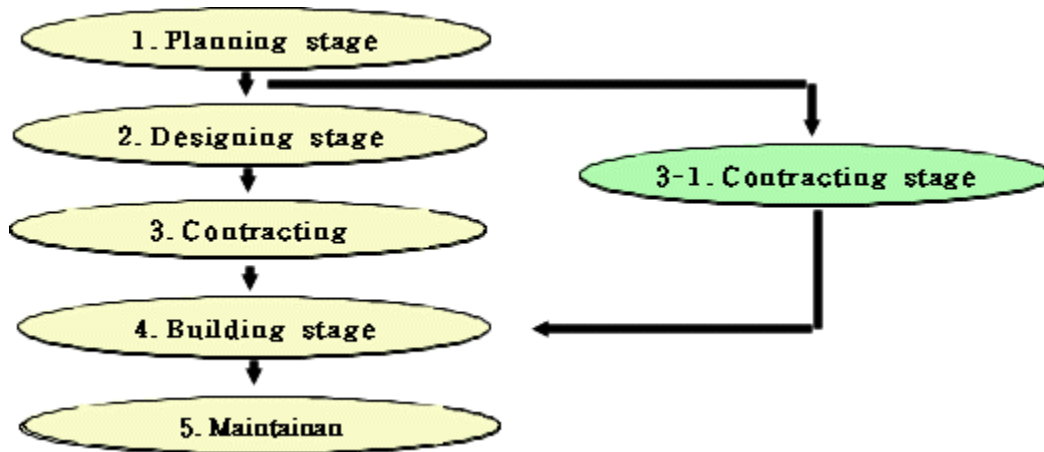
PPS provide construction designing and building management services for ordering organizations which lack expertise in construction works.

From 2004 PPS commenced the provision of customized services in the comprehensive scope in construction works. The comprehensive service refers to service that encompass entire process involved in carrying out a construction work including planning, designing, cost estimation, contracting, building, and post-building management and maintenance. Cases for the comprehensive service, requested by public organization continues to rise with 44% average annual increase: 22 cases in 2004 (387billion KWN)→ 30 cases in 2005 (525billion KWN)→ 36 cases in 2006 (607billion KWN)→ 43 cases



in 2007 (1111billion KWN)

《Public Construction Works Flowchart》



《Flowchart of PPS Contracting for Construction Works》

Receive contracting request for public construction → Review contracting method → Publish public bid notice → Conduct Prequalification (PQ) test → Site inspect → Conduct bidding → Undertake eligibility test and evaluate bidding prices → Select the successful bidder → Award contract → Commence construction
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### 3.2.5. The Main Policies of PPS's Construction Works Bureau

The policies of PPS's Construction Works Bureau executes policies related to contracting method, bidding types, methods of selecting successful bidders, and policies for socially disadvantages peoples. For example, in terms of contracting method, it is divided into open competitive bidding and single bidding, in which is a contract is awarded to single bidder.

### 3.3 2008 Project Direction of the Construction Works Bureau

The objective of the Construction Works Bureau for 2008 included to contribute to the quality of public construction works through advanced contracting service in the related area.

To achieve this, three specific goals are proposed including the improvement of the public construction policy, provision of variety construction services, and innovation of contracting process in order to improve the convenience and efficiency of the services.

#### 3.3.1. The Improvement of the Public Construction Policy

A. Establishment of standards for technical proposal of public construction works: In October 2007, technical proposal bidding and design proposal bidding system were introduced, strengthening the technical evaluation process.

B. The improvement system which would ensure the selection of competitive evaluation agencies.

C. Expansion of the list of eligible and competitive construction companies: it is introduced in order to facilitate the quality of direct contracting method.

D. The restructuring of the evaluation system for the Comprehensive Design and Building Bidding: previously every individual organization had different review and evaluation process, which were seen as complicated and incomprehensible to the public. Through this, transparency and fairness of the policy implementation processes were intended to be reinforced.

E. Estimation of the appropriate construction cost which diligently reflects the real market price.

F. The improvement of the guarantee system of public construction works: it is intended to upgrade the guarantee system to the level of advanced countries (100%).

G. The introduction of post-work evaluation system: The post-work

evaluation should be taken into consideration of the next bidding evaluation process of the same construction company, which would complement the previous one single evaluation of bidders, the PQ test.

### 3.3.2. Provision of diverse services for improving customer satisfaction

A. Customized services for individual customer organizations: individualized packaging of partial or whole range of construction services. The services include 8 types: the total solution, design-build service, design management service, cost estimation service, contracting service, and construction supervision service. Since most public entities lack professional workforce for construction projects, the customized services aims to provide services to such public entities tailored to their needs. The customized service also includes the provision of information on public construction project procedures and related materials for small to medium sized projects, so that the project owner entity may independently carry out such projects.

B. Saving budget through the coordination and management of the total project cost for public construction works: this process aims to improve the efficiency of the government's budget effectiveness through examining the soundness of the total project cost, taking into account price fluctuations, inflations, and the cost of similar projects in the past. This process applies to building construction projects of which the total cost exceed 20 billion Korean won, and civil engineering projects over 50 billion Korean won.

C. Preparation and propagation of work process manuals for design-build projects containing the work procedures, related licenses and certificates, guideline for operating the evaluation committee, and evaluation methods.

### 3.3.3. Improving the work process for higher work productivity and customer convenience

This goal focuses expanding the e-Construction Management System and spreading its use. e-Construction Management System (PMIS) is a system designed to assist decision making and efficient project site management through prompt information exchange between the project owner, PPS, and the construction company.

### 3.4. Mid-term performance check-up for 2008 business

During the first half of 2008, PPS laid foundation for systematic budget saving mechanism through continuous work process improvement, initiated diverse programs for improving the quality of public construction, and launched its customized services. Through these activities, PPS successfully met its 2008 budget saving goal of 10%.

#### 3.4.1. Process improvements for saving budget

In order to strengthen price competition, PPS initiated a restriction policy on the formation of joint ventures among the largest construction companies. For construction and civil engineering projects, the largest 10 companies are not allowed to form a joint venture among themselves (effective as of June 2008). This measure is expected to lower the contract award price, from the current 94% of the projected price. PPS also prepared the project cost estimation criteria for 16 construction types, which is disclosed to the public online to be used for reference by other public entities.

#### 3.4.2 Measures to improve the quality of public construction

A. Preparation of process guidelines by project types: the guidelines provide criteria on the awarding method by project purpose,

characteristics, difficult levels, etc.

B. Technical advice and construction assessment for PPS-managed construction projects: the assessment was conducted by 35 committee members from academia.

C. Development and expansion of e-Construction Management System (PMIS): PMIS was developed in 2007 and implemented at 45% of all public construction sites by mid 2008.

D. Contract price modifications on the bases of price changes: PPS provided contract price modification services for project owners on the basis of price changes. Service was provided for 1,702 individual cases in 2007, and 1,389 cases in the first half of 2008.

E. 10% of budget savings: President Lee Myung-Bak's Administration set the target of 10% of the government budget savings in 2008, so that the saved budget can be reallocated for economic stimulus and supporting the lower class citizens. The goal also aimed to realize a small and efficient government, reflecting the new Administration's philosophy. The government's 10 principles for budget saving are as follows: ① process improvement ② diversifying supply sources ③ promoting citizen participation ④ embracing market efficiency ⑤ strengthened rationality assessment ⑥ lowest cost principle ⑦ preventing project redundancy among ministries, local governments, etc. ⑧ priority modification ⑨ strengthened performance assessment ⑩ government's initiative in budget saving

### PPS's budget savings

(Unit: 100 million KW)

Business Area	Target (A)	Performance			Saving Rate (C/A)
		Budget (B)	Savings (C)	Savings (C/B)	
Total Project Cost Review	17,000	101,767	6,805	6.7%	40.0%
Cost review on local government projects	1,400	12,657	734	5.8%	52.4%
Market price criteria	7,000	50,546	2,609	5.2%	37.3%
Design-build projects	4,000	11,130	436	3.9%	10.9%
Lowest bid awarding	2,700				
Total	32,100	176,100	10,584	6.0%	33.0%

#### 4.1 PPS's Focal Plans for 2009

PPS set five goals for 2009 as follows:

- A. Raising the stock level of government reserve commodities
- B. Improving procurement and tendering framework for greater practical benefits for SMEs
- C. Further enhancement of procurement transparency
- D. Better management of government properties
- E. Support for Korean suppliers' participation in foreign government procurement. Of these, B and C were the initiatives undertaken by PPS's construction bureau.

##### 4.1.1. Supports for locally based businesses and SMEs

To deliver more practical benefits for locally based businesses and SMEs, PPS planned to adopt restricted competition methods among locally based construction companies for the Four Major Rivers Restoration Project. Also, PPS expanded its surrogate payment

program and advanced payment program to assist SMEs for their improved cash-flow. Lastly, PPS further expanded its Network-loan program, in which suppliers may receive loans from the banks participating in the program on the basis of their contracts with PPS.

#### 4.1.2. Further enhancement of procurement transparency

PPS plans to continue its efforts for enhancing transparency of its contracting process. To this end, PPS will continue to discuss ways to improve its process with the Procurement Policy Advisory Committee. At the same time, PPS will restructure its incentive policies with regard to contract awarding. For instance, PPS is currently looking into adopting extra points in tender evaluation for suppliers with high number of new employees and disabled employees. PPS will also provide procurement service fee discounts for public institutions that make advance payment.

#### 4.2. 2009 prospects

As of January, there were a number of expected difficulties in procurement environment.

##### 4.2.1. Economic prospect

The recession in the real economy was expected to persist in the first half of 2009. The Ministry of Strategy and Finance expected an economic growth of 3% in 2009.

##### 4.2.2. Directions in government finance

The government allocated 11.7 trillion Korean won in advance before the beginning of the fiscal year. For the first half of the fiscal year, the budget 173.6 trillion Korean won was allocated, amounting to 70% of the annual budget. Of this, 144 trillion won was to be executed in the first half of the year for economic stimulus.

#### 4.2.3. Prospects for international commodity prices

A rapid price fall was expected in 2009 due to the outflow of international hedge funds, and decreased demand from the global recession. The bottom price point was expected in the first half of the year, gradually recovering from then on.

#### 4.2.4. Procurement environment

The total government expenditure in 2009 increased to 284.5 trillion Korean won, a 10.6% increase from 2008. The budget for SOC projects increased 26% to amount to 24.7 trillion won. However, due to the increase of independent procurement by local governments, PPS's procurement volume was expected to grow only marginally.

#### 4.3. Major business plans in 2009

The strategic objectives for 2009 were to achieve budget savings and to stimulate the economy at the same time. For these objectives, PPS set 7 goals as follows: A. Support for economic recovery and job creation through early budget execution, B. Augmenting the support for SMEs and the lower class population, C. Hands-on management on government goods management, D. Advancement of procurement services to better reflect customers' needs and market trends, E. Green procurement and support for the government's Low-carbon Green Growth directive, F. Strengthening international cooperation in public procurement administration, G. Competition and performance oriented organizational management.

##### 4.3.1. Business plan of PPS's Public Construction Bureau for the First Half of 2009

To maximally utilize the effect of public construction projects on job



creation, Public Construction Bureau of PPS planned to execute 75% of the annual construction project budget during the first half of 2009.

Procurement Performance in the first half of 2008 and Plan for the first half of 2009

(Unit: trillion Korean won)

	2008			2009		
	Annual Total (A)	First Half Total (B)	Percentage (B/A)	Annual Target (C)	First Half Target (D)	Percentage (D/C)
Goods & Services	15	6.4	43.2%	16	10.4	65%
Construction	13.6	8.6	63.5%	13.8	10.4	75%
Total	28.6	15.2	52.8%	29.8	20.8	70%

In order to accelerate the budget execution, PPS further reduced the lead time for contracting. Contracting for long-term continuous construction projects and construction material procurement was completed in the first quarter, and projected procurement plan for 2009 was announced in one month's advance compared to the usual schedule. Tender preparation time has been reduced from 7-40 days to 5-10 days. The application of fast track procedures for large construction projects also increased from 50% in 2008 to 90% in 2009.

In order to promote public purchase of SME products, PPS expanded its policy for the separate purchase policy for construction materials, in which contracts for construction materials are tendered separately from the project contracts. This program is aimed to support the SMEs that supply construction materials, such as remicon and ascon. This program applied to 12 construction materials in 2008 and 33 in 2009.

As part of its green construction policy, PPS also implemented the energy conserving design criteria, which strengthened the energy

criteria that apply to design evaluation and bid price soundness assessment, with higher points allocated for energy-related new technology in pre-qualification (PQ) assessment.

#### 4.3.4. Business plan of PPS's Public Construction Bureau for the Second Half of 2009

The main objectives for the second half of 2009 were threefold. First was to reinforce the government's Four Major Rivers Restoration Project. Second was to eradicate collusion and lobbying. Last was to improve government contracting practices.

#### 4.3.5 Four Major Rivers Restoration Project

The Korean government's Four Major Rivers Restoration Project is jointly administered by the Ministry of Land, Transport and Maritime Affairs, Ministry of Environment, Ministry of Food, Agriculture, Forestry and Fisheries, and Ministry of Culture, Sports and Tourism. The project has five objectives.

A. Securing sufficient water resources (1.3 billion m<sup>3</sup>) through the construction of small-to-medium sized dams and augmentation of reservoirs.

B. Protection against floods through supplementing regosol and repairing aged levees and dams.

C. Construction of facilities for water treatment and the eduction of algal bloom for improving the source water to a BOD level below 3mg/L

D. Creating multi-purpose recreational complex along the rivers for the citizens

E. Creating better landscape along the rivers to serve as a cultural asset for the local communities

The project is estimated to cost approximately 17 trillion Korean won, and scheduled to be completed in 2012. The project is expected to reduce the damage from floods by 1.5 trillion won on annual average, as well as the average annual recovery cost of 2.4 trillion won.

Public Procurement is responsible for supporting the project with three objectives: green construction, budget waste prevention, and facilitation of project implementation.

#### 4.3.6 Improving the government contracting policies

There has been a criticism on the government contracting policies that it adversely influences the competitiveness of the construction industry, due to excessive price competition and insufficient differentiation in the evaluation process. Since the policy change for construction companies in 1999 which changed the previous licensing system to a registration system, the number of construction companies exponentially increased.

\* Number of construction companies in Korea: 4,360 (1998) → 12,712 (2008)

To improve the differentiation function of the evaluation process, PPS also changed its evaluation process to render greater importance on the technological factors.

## 5. Conclusion

For economic stimulus, the Korean government adopted the early budget execution program, undertook the Four Major Rivers Restoration project, and initiated green procurement policy to promote green industry. A significant portion of the government's

efforts was concentrated on public construction, as the job creation effect of construction industry tends to sustain longer compared to other industries. The large economic impact of construction industry is explained by the fact that it has characteristics of both manufacturing industry and service industry (Yung-Seong Yoon and Cheol-han Park, 2009). Public construction is also an important part of the government's green growth initiative, with its estimated production inducement effect of 66 trillion won, and employment inducement of 500,200.

It has been observed in the US and large EU economies that the production recession in construction industry led to the production recession in overall industries (Jae-ik Bin et al, 2009). In order to effectively implement the government's economic stimulus program, PPS exerted its efforts for accelerated execution of public construction projects since the beginning of 2008. Combined with other facilitation programs, this measure is considered to have effectively assisted Korea's economic recovery and attained potential growth after the crisis.

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