

2016. 12. 30(vol. 3)

# KIPF BRIEF

## Industrial Market Structure and Public Institutions of Major Countries

---

Heo, Kyoungsun Research Fellow



---

## Industrial Market Structure and Public Institutions of Major Countries

Heo, Kyoungsun Research Fellow (82-44-414-2241)

---

I . Background and Issues .....	02
II . Analysis and Results .....	03
III . Policy Recommendations .....	14



## I Background and Issues

- ● The debt of public institutions has exceeded the national debt since 2010, reaching 505.3 trillion won by the end of 2015. In this context, there is an urgent need for an integrated policy response.
  - In December 2013, the government introduced the normalization policy plan for reforming public institutions. The first objective of normalization is to reduce public debt and the second objective is to review the functions of public institutions.
  - The eighteen public institutions having largest debts in size and fast growth rate with have been appointed as the target for reducing debt.
    - LH, Korea Electric Power Corporation(including 6 subsidiaries which generates electricity power), Korea Gas Corporation, Korea Expressway Corporation, Korea National Oil Corporation, Korail, K-Water, KORES, Korea Coal Corporation, Korea Deposit Insurance Corporation, and Korea Student Aid Foundation are included.

〈Table I -1〉 Rankings of public institutions having largest debt  
(The table was last updated in 2015)

(Unit: Billion won,%)

Rank	The Name of the Institution	2014	2015	Increased Amount	Increased Ratio
1	Korea Land & Housing Corporation	1,378,808	1,341,885	△36,923	△2.7%
2	Korea Electric Power Corporation	1,088,833	1,073,149	△15,684	△1.4%
3	Korea Gas Corporation	370,476	323,284	△47,193	△12.7%
4	Korea Expressway Corporation	264,622	269,571	4,949	1.9%
5	Korea National Oil Corporation	185,196	190,096	4,900	2.6%
6	Korail	178,609	134,502	△44,107	△24.7%
7	Korea Water Resources Corporation	134,614	132,732	△1,883	△1.4%
8	Korea Resources Corporation	40,202	46,206	6,003	14.9%
9	Korea District Heating Corporation	31,084	31,222	137	0.4%
10	Incheon International Airport Corporation	22,089	28,622	6,533	29.6%

Source : Ministry of Finance of ROK. Press Release. 2016.4.29.

- This study focuses on the industrial sector of public institutions having concerns on debt by analyzing the industrial market structure of major countries, the status of public institutions participation, and the status and the effect of introducing competition. This study aims to provide public policy recommendations for managing public institutions.

## II Analysis and Results

### 1. Market Participation and Industrial Structure of Major Public Institutions

#### A. Rationale for Public Interventions on Market

- The basis of market intervention of the public sector
  - Correction of market failure: Public goods, externalities, imperfect competition, natural monopoly, information asymmetry.
  - Market formation and promoting strategic industries.
- The following table shows the market participation status of Korea's main public institutions.

〈Table II-1〉 Market Structure of Major Public Institutions in Korea

Industry Field	Relevant Public Institutions	Ownership structure	Industry and Function	Regulation	
				Competition Status	Price Regulation
Public Housing	Korea Land and Housing Corporation	Government 86.6%, Korea Finance Corporation 13.4%	Construction of public housing, construction and operation of public rental housing	Competition (Public enterprise, local government, local public enterprises, private enterprise)	Sale price and rent regulation
K-Water/ Waterworks	K-Water	Government 91.1%, Korea Finance Corporation 8.8%, Local Government 0.1%	Water supply Water resource management	Competition (Public Enterprise, quasi-government organization, local government)	Public Utility Fee Regulation
Highway construction and operation	Korea Expressway Corporation	Government 82.39%, The export-import Bank of Korea 13.03%, Korea Finance Corporation 3.67%	Construction, maintenance, operations of highways	Competition (Public enterprise, private enterprise)	Public Utility Fee Regulation
Railway construction and operation	Korea Rail Network		Construction of railways	Monopoly	
	Korail	Government 100%	Operation of railways	Introduction of competition (Public enterprise)	Public utility fee regulation
Electric Power Industry	6 power generation subsidiaries	Korea Electric Power Corporation 100%	Development	Competition (Public Enterprise, Private Enterprise)	
	Korea Electric Power Corporation	Korea Finance Corporation 29.94%, Government 21.17%, National Pension Service 3.58%	Transmission, distribution, and sales of electric power	Monopoly	Public utility fee regulation
Oil exploration and development	Korea National Oil Corporation	Government 100%	Oil reservation	Monopoly	
			Overseas resource development (Oil)	Competition (Private)	
Exploration, development and production of natural gas	Korea Gas Corporation	Government 26.86%, Korea Electric Power Corporation 24.46%	Supplying gas	Monopoly	Public utility fee regulation
			Overseas resource development (Gas)	Competition (Private)	

Industry Field	Relevant Public Institutions	Ownership structure	Industry and Function	Regulation	
				Competition Status	Price Regulation
Exploration and Development of Mineral Resource	Korea Resources Corporation	Government 99.8%, Korea Finance Corporation 0.2%	Overseas resource development (Mineral)	Competition (Private)	
Securing stable supply of coal resources	Korea Coal Corporation	Government 100%	Supplying coal	Competition (Private)	price regulation for power generation

Source : Heo, Kyongsun 2015, Research on Market Structure and Competition of SOEs in Major Countries

- Looking at the market and industrial structure in which major public institutions in Korea participate, there has been a considerable competition in the formerly monopolistic sectors. And recently, the public sector's financial soundness issues have encouraged private participation.
  - Introduced competition in the area of high-speed railway by establishing subsidiary SR of Korea Railroad Corporation.(Estimated Date:2016/12)
  - The government is promoting the listing of shares and competition as part of the energy state-owned enterprise function.
    - In June 2016, KEPCO expanded the privately owned market for electric power sales, which was virtually monopolized by KEPCO.
    - Announced plans to publicize shares of eight energy public institutions including power generation subsidiaries in mixed-ownership form.(The government maintains the stake of at least 51%).
- Currently, out of the 16 public institutions participating, there are only a handful of sectors that operate in monopolies.
  - KEPCO- transmission and distribution of electricity
  - KR Network- railroad construction
  - Korea National Oil Corporation- oil reservation
  - Korea Gas Corporation- supply and wholesale of gas

- ● Issues in public sector's market participation.
  - Issues in the financial soundness of state-owned enterprises.
    - Marginal cost lower than price/Rate regulation
    - Excessive quality and excessive supply
    - Problems of inefficiency
  - The increased financial burden

## 2. Market Structure and Competition Status of the Industries of Major Countries

- ● The following table shows the participation status of public institutions of major countries(the UK, France, Sweden, New Zealand, Japan, Germany). The most common areas where public institutions participate are railway operation and railway construction(6 countries), water resource development, land development and housing supply (5 countries), development and supply of oil, development and supply of gas, and water supply system (3 countries) respectively.
  - In the case of railway operation, it operates in the form of competition between state-owned enterprises or state-owned enterprises and private enterprises.
  - The dominant operation of state-owned enterprises or the government appears mainly for the railway construction.
- ● On the other hand, areas, where public institutions are less involved are development and supply of coal, overseas resource development(1 country), road construction and operation, and power services(2 countries).
- ● Countries with the highest participation of public institutions are France(9), Japan(8) and the UK(7).

〈Table II-2〉 Market Participation of public institutions by industries and by countries

	Industrial Sector	Similar domestic public institutions	UK	France	Sweden	New Zealand	Japan	Germany	Number of Countries of Market participation by state-owned enterprises
S O C i a l S e c t o r	Land development· housing supply	Korea Land and Housing Corporation	○	○	○	○	○	×	5
	Water supply system	K-Water	○	×	×	○	×	○	3
	Water resource development		○	○	○	○	○	×	5
	Road construction and operation	Korea Expressway Corporation	×	×	×	×	○	○	2
	Railway operation	Korail	○	○	○	○	○	○	6
	Railway construction	Korea Rail Network	○	○	○	○	○	○	6
E n e r g y S e c t o r	Power service (Development)	Korea Electric Power Corporation	×	○	○	×	×	×	2
	Development and supply of oil	Korea National Oil Corporation	○	○	×	×	○	×	3
	Oil reservation		×	○	×	×	○	○	3
	Development and supply of gas	Korea Gas Corporation	○	○	×	×	○	×	3
	Development and supply of coal	Korea Coal Corporation	×	×	×	○	×	×	1
	Overseas mineral resources development	KORES	×	○	×	×	×	×	1
Sectors in which the public enterprise have participated.			7	9	5	5	8	5	

Source : Heo, Kyongsun 2015, Research on Market Structure and Competition of SOEs in Major Countries



## 1) Public Housing

- ● The land and housing policies of developed countries were mainly the public intervention to solve the housing shortage after the World War II. As the rate of housing supply stabilized, it emphasizes to reduce the role of the public and to increase the role of the private.
- ● The public housing industry in major countries has traditionally been in the midst of housing shortages, where it publicly funded public housing for the poor. However, after the stabilization of the housing supply and the accumulation of ratio of the public rental housing, the policy trends are changing due to the management, operation, renovation, and urban regeneration.
- ● The method of supplying public housing is changing from the construction-oriented method through the financial input to the financial support such as supporting the demand and the operation cost.
  - The main policy outline is from the central government or the central state-owned enterprise, but the local autonomous entities carry the practice of supplying land and houses.
  - (The UK) The possession and management/operation of public rental housing have transferred from the public to the private or local governments.
    - Rates for public rental 31%(1981) -> 18%(2010)
  - (Japan) The institutions that provided housing in the past provided support for tasks that were difficult for the private sector to carry out, but limited to the role of supporting and coordinating private and local governments.
    - Public rental of 7% or the rise of the housing penetration rate reduced the role of the government in supplying new homes and housing development.
    - The central public institutions and local governments had the initiative=>Strengthened the role of local government and the private sector.

- (USA) Provides direct assistance, such as rent subsidy through housing vouchers instead of direct construction to provide extreme poverty self-help programs and direct support.
  - The public housing(PHA) directly built public rentals but turned into a housing voucher after '74.

## 2) Railway Construction and Operation

- The common areas where public institutions participate are railway operation and construction.
  - State-owned enterprises exclusively manage the railway operation only in Finland, while other countries manage it in a competitive market between state-owned enterprises or between state-owned enterprises and private enterprises.
  - EU countries have entered into a competitive market between countries rather than within their own through the EU directive.
  - In the case of railway construction, state-owned enterprises and government monopolize the operation.
- The comparison of structural reforms such as the separation and privatization of railways in each country is as follows.

〈Table II-3〉 Status of railway operation & construction after structural reform of major countries

		Sweden	UK	France	Japan
Privatization/ starting structural reform		1987	1997	1988	1987
Major organization		SJ(Operation) BV(Facility)	TOCs <sup>1</sup> (Operation) Railtrack(Facility)	SNCF(Operation) RFF(Facility)	JR
Ownership structure		Government-owned	Private sales	Government-owned	Government owned but some private sales
The influence of government decisions on the investment decisions		Low	Medium	High	Low
Price Regulation	Passenger	None	Limited to specific services	All services	All services
	Freight		None	None	Yes
Status of separation of railway infrastructure		Separated	Separated	Separated	The facility operator maintains and supervises the facility.
Facility management		BV	Outsourcing	Management of SNCF by RFF's consignment	JR

Source : European Conference of Ministers of Transport 1998

- ● Some European countries have opened up tracks to achieve a specific objective of the desire for European integration, but there are not many cases where the countries compete for the same route, and when it does, competition is usually limited to local routes.
  - In most countries, state-owned railways or state-owned enterprises operate exclusively long-haul passenger railways and competitive bidding is only allowed on some local routes.

1) Train operating companies

- The United Kingdom, Belgium, and Germany are using international trains on mutual routes, but this is an international agreement.
- State-owned enterprise operates all high-speed railways in Europe, including international trains.
  - TGV(France SNCF), ICE(Germany DB), AVE(Spain Renfe), Thalys(France SNCF + Belgium SNCB + Germany DB), EUROSTAR(France SNCF + the UK LCR + Belgium SNCB) etc.
- In Japan, a single operator operates arterial railways such as high-speed railways.
  - In Japan, six passenger transportation companies privatized the regional divisions and operated only each company's jurisdictions. And only some high-speed rails have joint operating agreements of the operators.

### 3) The Electric Power Industry

- The electric power industry is the generation, transmission, distribution, and sale to the general public. While the restructuring of the electric power industry has various terms such as privatization, an introduction to competition, and liberalization, generally the competitive production of electrical energy leads the industry to improvements in efficiency.
  - Although countries have different progress levels and meanings, countries that adopt and implement retail competition(sales sector), which means competition in the electric power industry, are the UK, France, the United States, and Japan.
    - Japan will implement liberalization of retail and power generation markets in April 2016 in respect of the Electricity System Reform.
    - Although France has introduced retail competition, it has also implemented other competition policies as it the introduced competition was ineffective.(As of 2014, the large-scale six companies accounted for 98% of the market share in the retail market.)

- Most countries have introduced wholesale competition(power generation sector). And for each country, transmission and distribution had different approaches to economies of scale and market failure due to the nature of network(net).

〈Table II-4〉 Comparison of the electric power industries in major countries

Division	Market structure				Whether the market is changing
	Competition (status of segmentation)		Consumer's choice	Public interest sector (status of independence)	
	Development	Sale		Transmission network	
UK	○	○	○ Full opening	○	○ (Retail expansion of regulatory agencies, Privatization of power generation sales)
France	×	○	○ Full opening	○	○ (Retail expansion)
USA	○	○	○	○	○ (Power generation sales, Independent power transmission, Retail expansion)
Japan	○ Geographic Segmentation	○ Interregional opening	○ Full opening	×	○ (Retail expansion)
South Korea	○	×	×	×	×

Source : Sonn, Yang-Hoon and Youngsan Kim, 2011, Restructuring Plan for Electricity Industry in Competition and Choice" p.6.  
Table 1 edited

- The initial reconstructing form of the international electric power industry that includes competition is different from latter form.
  - In the early stages, the restructuring carried out from the power generation sector to the sales sector such as vertical and horizontal separation of powers and the establishment of a wholesale market.
  - In the latter period, competition was introduced focusing on the retail market opening, while leaving the existing proprietary power company intact.
  - For the retail market to compete fairly, it is recommended to re-establish the wholesale market conditions and regulations related to the use of transmission forecasts.

#### 4) Oil Exploration and Development

- The oil industry structure of the major countries is composed of upstream (exploration·production), downstream(refinement·sale), and mid-sector(transportation) vertically integrated oil companies and sales-oriented companies, and competition is mostly with the private sector.
- Most of the major organizations of the petroleum business are in private sector.
- In the case of privatization abroad, the governments have moved state-owned enterprises and other assets to the private sector as the government's investment stabilizes the initial cost of input.

### III Policy Recommendations

- ● Participation in the public sector begins with the goals to correct market failure, find economies of scale, and foster strategic industries, however, the inefficiency of public institutions and fiscal burden of the government has introduced privatization and private investment.
- ● In the case of major countries, it was possible to find cases in which public institutions allowed privatization that performed exclusively or introducing competition by allowing entry of private enterprises.
  - After privatization, the institution had improved or shown improvement in the financial soundness. However, the rising cost of goods and service rates opposed privatization.
  - Government regulation has alleviated the problems of surging prices, but the problems associated with privatization continue to rise as an issue.
  - In addition to price/fee issues, difficulties in controlling and complaints about not providing sufficient public services have recently emerged in recent firms.
- ● The structure of the market in which public institutions take part in major countries is largely competitive. Most of the countries are selling their stocks and stakes to introduce efficient private sector while maintaining its unity.
- ● In the early days, the role of the state-owned enterprises was large for upbringing the undeveloped industry. However, its role has declined significantly.
  - The role of state-owned enterprises gradually decreases while the role of local governments and private enterprise increase as the industry matures and other market participants increase.
  - In areas of high initial risk costs, the privately owned enterprise is growing in importance after the market has stabilized.

- If the public institutions have achieved the purpose of market participation or no longer requires it, it may consider to dissolve or reduce the role of public institutions.
  - The organization and labor force of public institutions tend to expand continuously and even if the publicity goals decrease gradually, the state-owned enterprise has spread to other business fields.
- The need of public institutions requires a regular review. To this end, we need to investigate the changes in the market structure similar to major countries and utilize them as benchmarking.



## References

- 기획재정부 보도자료, 「2015년도 공공기관 경영정보 공사」, 2016.4.29, p.6
- 국토교통부, 『2015년 도로업무편람』, 2015.
- 김상문 외, 「유럽 수도산업의 구조변화」, 『저널 물 정책 · 경제』 제11권, 2008, pp.125-136.
- 박용덕, 『일본 석유 유통시장 변화 연구』, 에너지경제연구원, 2009.
- 서정규, 『주요국 가스 산업 경쟁도입 관련 쟁점 및 성과분석 연구』, 에너지경제연구원, 2007.
- 손양훈 · 김영산, 「경쟁과 선택 중심의 전력산업 구조개편방안」, 2011
- 이용상, 「영국과 일본의 철도민영화 비교 연구」, 『한국철도학회 논문집』 제11권 제1호, 2008.
- 진미윤, 「주택관련 해외 공공기관의 변화와 개혁」, 한국조세재정연구원 간담회 자료, 2014. 3.
- 허경선, 「공공기관 부채관리정책과 부채규모의 변동」, 『재정포럼』, 한국조세재정연구원, 2015. 8.
- 허경선, 『해외 주요국의 산업별 시장구조와 경쟁연구: 공공기관을 중심으로』, 한국조세재정연구원, 2015. 12.
- 환경부, 『2014 상수도 통계』, 2015.
- 국토교통통계누리, <http://stat.molit.go.kr/>
- European Conference of Ministers of Transport, 1998



---

## Industrial Market Structure and Public Institutions of Major Countries

2016. 12. 30(vol. 3)

---

- Publisher : Park, Hyung-Soo
  - Issued by : Korea Institute of Public Finance
  - Address : 336, Sicheong-daero, Sejong-si, Korea
  - Phone Number : 82-44-414-2503
  - Fax Number : 82-44-414-2509
  - Designs & Printing : AMIGO DESIGN
-

