

**Japanese Version of Private Finance Initiative and  
Future Prospects of the Market  
in the Construction Industry**

by

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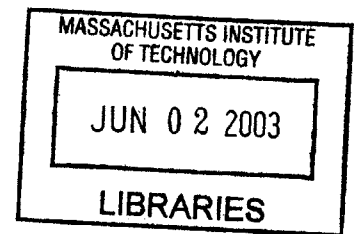
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## **ABSTRACT**

During the past decade in Japan, the sluggish economy has increased pressure on the nation's finance and had a negative impact on the public investment decision of the government. This has led to a reduced construction budget responding to the continuing slump with an expansion in public works investment. Since the end of World War II, the Japanese government has issued a huge amount of debt to finance public works. As a result, the total debt (the government bonds, loans payable, and government short term securities, or financing bills) added up to over 140% of GDP in 2002. To overcome the economic crisis, since June 2001, the Koizumi Cabinet has advanced wide-ranging structural reforms. Those include economic revitalization strategies, tax reform and reforms in major government expenditures expressed as a commitment to small government.

As a part of these reform policies, the government has focused on the Private Finance Initiative (PFI) in order to rebuild national and local government economy with the purpose of achieving better partnerships between public and private sectors. Since the PFI Law went into effect in September 1999 there were 98 PFI deals, including 9 services started, 21 contracts completed and 68 guidelines announced for projects in Japan by March 2002. The increased level of activity is expected to continue and the relationship between public and private sector must change to meet the complex and challenging market needs as the market grows in the future.

This thesis analyzes the current environment surrounding the Japanese PFI market and the current issues concerning basic components of the PFI such as "Value For Money" or risk transfer. This thesis also examines future possibilities for expanding the Japanese Version of PFI in the construction market and proposes possible areas for private financing including renewal works for aged infrastructure in the Japanese and overseas construction market.

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I am dedicating this thesis to my wonderful wife, Noriko and our unborn baby. Thank you for encouraging me to pursue my dreams and for supporting me along the way.

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May 2003



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# **Chapter 1. Introduction**

## **1.1. Private Finance in Japanese Construction Industry**

Japan is the world's second largest economy after the U.S., accounting for nearly one fifth of the world GDP and more than two thirds of the East Asian GDP. However, after the burst of the economic bubble there has been the desperate situation of failing banks and rising unemployment for Japanese economy. Structural reform started by the government in 2001 has proposed guiding principles of private financing for infrastructure.

Originally, development of infrastructure by private finance schemes was started in Japan in the 1980s. In those days, the government strongly hoped for the recovery of the Japanese economy by creating new private financing schemes for national land development. Privatization, the Third Sector and Contracting-out (what is called outsourcing) in Japan have been organized at the initiative of the national government, but the systems have hampered the full-fledged initiatives of private sectors.

In Japan, based on a successful example in the U.K., Private Finance Initiative Law was enforced in September 1999 and the first PFI application was started in March 2003. The government has expected immediate results by the PFI scheme, but it takes at least 20 years from the beginning of application. Moreover, in case PFI is applied in Japan, the previous U.K. system must be modified to adapt to the environment surrounding Japanese construction market.

In order to achieve an effective public-private partnership in an effort to promote greater decentralization, every public sector has to study its know-how and prepare for high future growth of the PFI market. The efforts have just started in Japan and they hold the key to the future of the local governments' economy.

## **1.2. Objective of the Thesis**

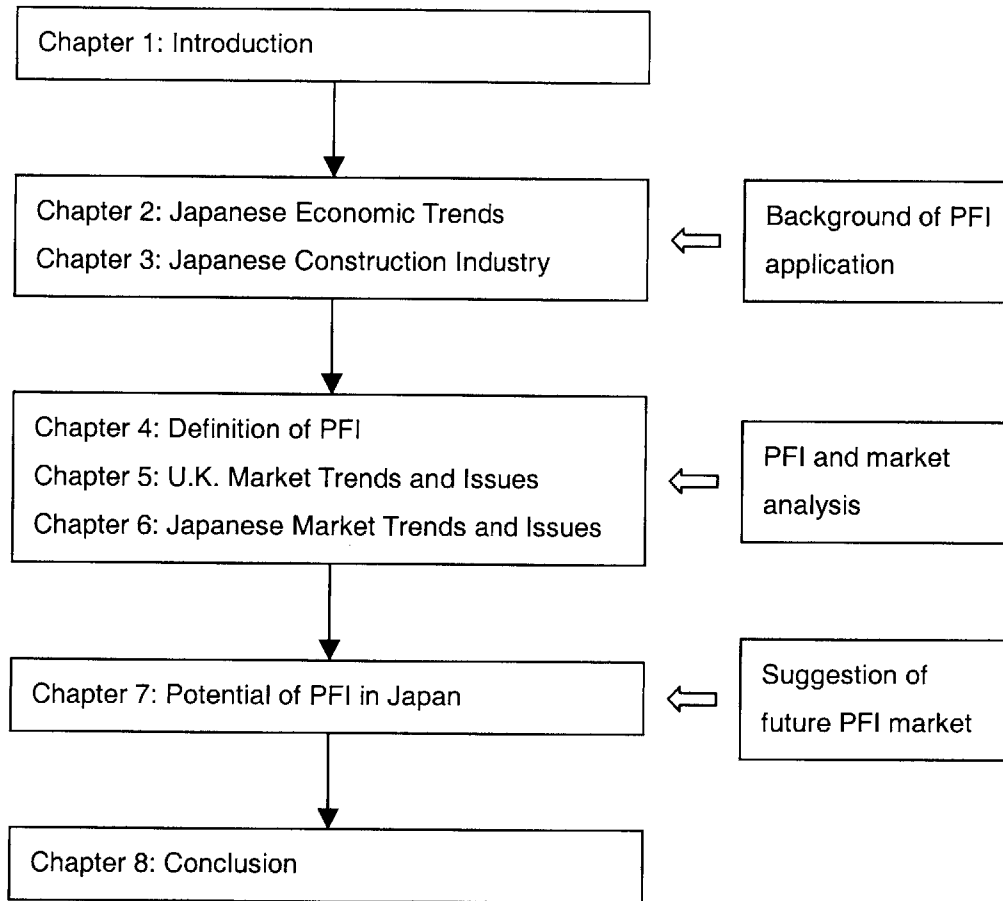
The implementation of PFI scheme has been just begun in Japan. Because the present PFI scheme in Japan is an exact counterpart of the U.K. version, there are many issues to consider for effective application of PFI and it still has a long way to adapt to the current environment in Japan. It is time to establish the Japanese version of PFI for the realization of self-sustaining economic growth.

The objectives of this thesis are to examine the issues of the previous private financing scheme in Japan and observe Japanese version of PFI through the analysis of Japanese financial circumstances. This thesis also describes the differences in application of PFI between Japan and U.K. by analyzing statistical data of both countries' PFI market. Finally, it proposes future potentials of the market.

## **1.3. Structure of the Thesis**

This thesis is divided into three parts. The first part from Chapter 2 to Chapter 3 examines the socioeconomic, political and economic environment in Japan and evaluates the major issues facing the Japanese economy and construction industry based on statistical data.

The second part from Chapter 4 to Chapter 6 initially explains the Private Finance Initiative (PFI) scheme with the purpose of infrastructure development, and then examines U.K. market trend and some issues that have developed since the government started PFI application in 1992 until now. This part also discusses with statistical data on the PFI market trend in Japan how this scheme can be introduced into the Japanese construction market and how it can be changed in the current market conditions. Finally, the last part, Chapter 7 suggests the future potential of PFI in Japan and Chapter 8 summarizes this thesis with some recommendations for future prospects of the PFI market in Japan.



**Figure 1-1 Structure of the Thesis**



## **Chapter 2. Japan's Economy Surrounding Construction Market**

Till the early 1990s, Japanese business style was the role model of the Asian economy, but after the burst of the economic bubble there has been the desperate situation of failing banks and rising unemployment for Japanese economy. The GNP of Japan is the second in the world and it is over ¥500 trillion. Economic growth rate was negative in 1998, but 1999 and 2000 turned slight positive. In this severe environment, the Japanese economy, including local economy, is still heavily depends on government bonds and this longstanding government policy seems difficult to change easily.

To overcome the economic crisis, the Koizumi Cabinet has advanced wide-ranging structural reforms since June 2001. Following this, in June 2002, the Cabinet adopted the “Basic Policies for Economic and Fiscal Policy Management and Structural Reform 2002” which includes economic revitalization strategies, tax reform and reforms in major government expenditures expressed as a commitment to “small government.” In the structural reforms, fiscal decentralization and movement toward a free market economy is also promoting to reduce fiscal deficits of the national and local governments.

This chapter overviews the current situation and problems of Japanese economy, especially excessive bond issue for public works. The data describes that the local economy has been increasingly dependent on the national government

expenditures such as public investments although a large amount of national bond had been already allocated to the rural areas for their public works. It explains that expanding the self-revenue resources of local governments, or replacing the amount of matching grants with the distribution of local transfer taxes is required to achieve more appropriate resource allocation. Finally, this chapter describes current environment surrounding construction industry by analyzing transition of existing stock in Japan and analyzes the main problems of Japan' s economy and public finance from the standpoint of how to deal with them in order to restore the Japanese economy.

## ***2.1. Introduction of Macroeconomic Overview***

The post-war development of the Japanese economy had brought about significant benefit and great expansion in all sorts of business fields with changing industrial structure. However, the Japanese economy has been struggling for the last decade since the burst of the bubble economy in the 1990s. During this period, the Japanese-style employment practice and corporate system that supported the post-war Japanese economy began to show cracks and Japanese people have increasingly begun to have gloomy future prospects for the economy and society. The economic recovery that began in the spring of 1999 proved to be short-lived and the economy has been deteriorating since the beginning of 2001. The future prospects for the Japanese economy has been increasingly uncertain as the global economy shows signs of slowing down further due to the large-scale terrorist attacks in the United States in September.

In order to cope with the economic stagnation in the 1990s, the government repeatedly implemented economic measures by expanding public investment and other government spending. As a result, budget deficits have substantially increased combined with a decline in tax revenues caused by slow growth and tax cuts. These measures, however, did not bring about a sustainable recovery of private demand and failed to shore up the stagnant economy. Japan's fiscal conditions are in a very severe state. Since the collapse of the bubble economy in the early 1990s, slow economic growth and tax cuts have reduced tax revenues, while government spending has expanded on frequent economic stimulus packages and rising social security costs. As a result, the general government budget deficit has continued expanding and reached the worst level among industrial countries.

## 2.2. Financial Circumstance of National Government

### 2.2.1. Current Financial Conditions

Figure 2-1 shows general government gross debt and financial balance as a percentage of GDP, as compared to those of industrial nations. General government budget deficits (as a percentage of GDP) have improved since the 1990s in all major industrial nations except Japan, and deteriorated substantially only in Japan.

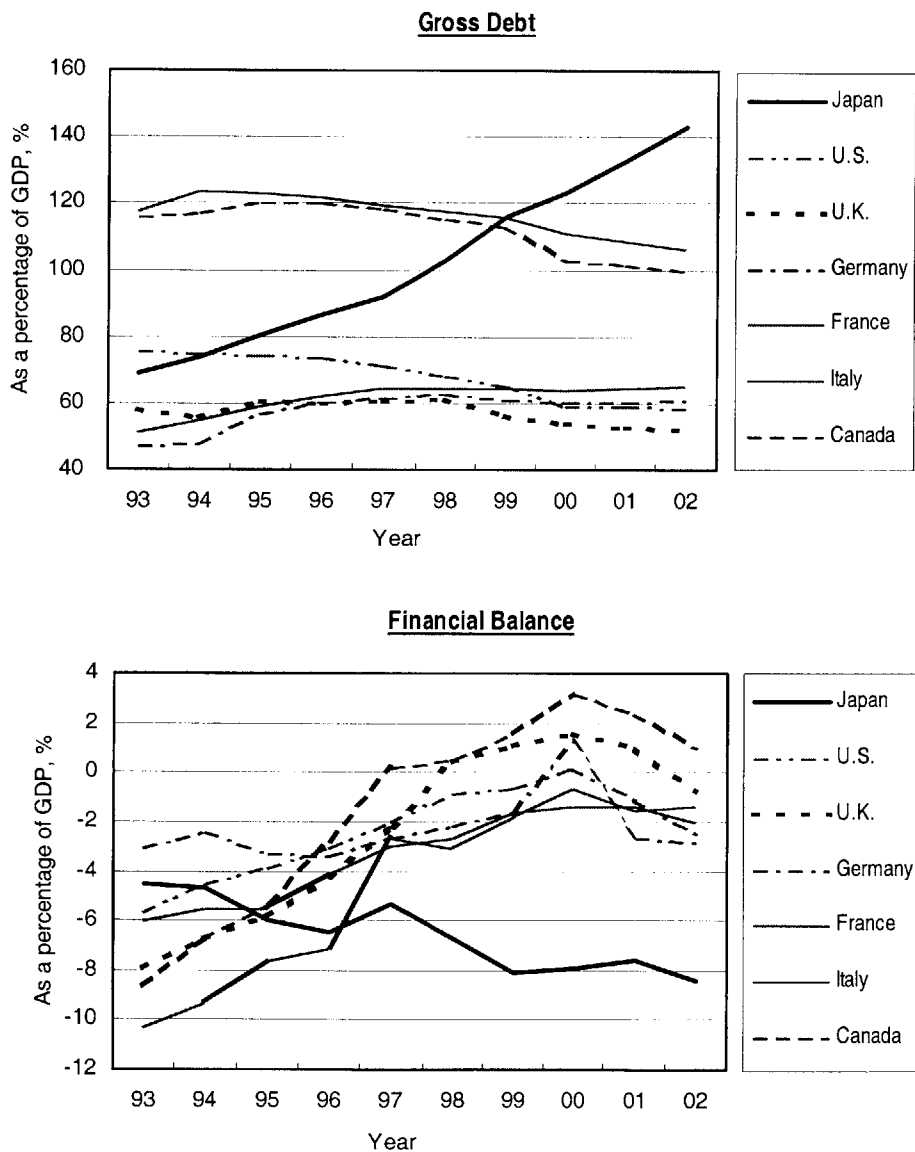
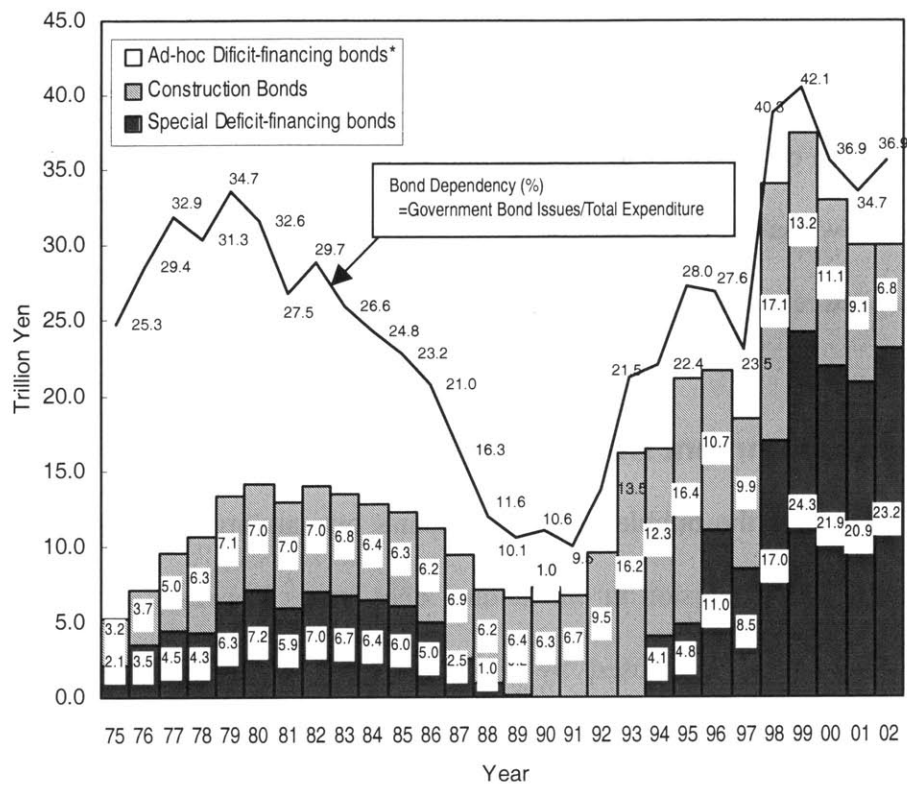


Figure 2-1 General Government Gross Debt and Financial Balance

Outstanding general government gross debts have leveled off or decreased since the latter half of the 1990s in all major industrial nations except Japan. Those in Japan alone have increased substantially. At the end of calendar year (CY) 2000, gross outstanding general government debts in Japan exceeded those in Italy and were the largest among major industrial nations. The figures show that massive budget deficits have remained in Japan as government spending has far exceeded revenues.

### **2.2.2. Cumulative Government Bond Issue**

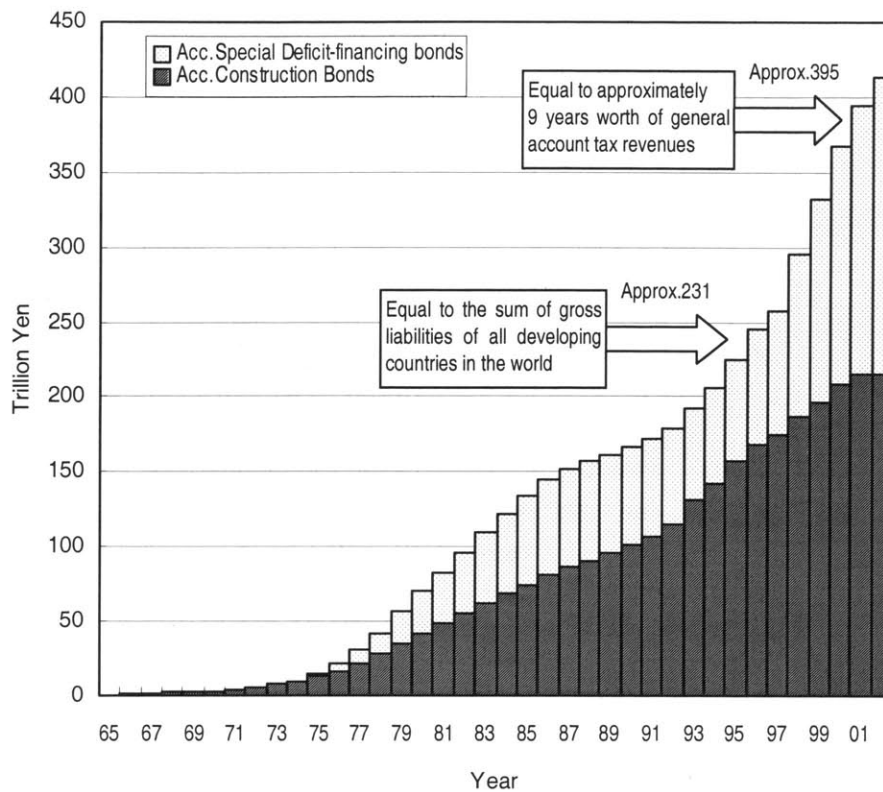
Since the collapse of the bubble economy, Japan's outstanding debt issues have been expanding considerably. The expansion in outstanding debt issues has resulted from slumping revenues and increasing spending caused by the prolonged economic weakness, frequent economic measures and increased social security costs. Figure 2-2 sets up the trends of annual government bond issues. Annual government bond issues for the national general account stood at ¥18.4 trillion in FY 1997 before rising far beyond ¥30 trillion from FY 1998 to 2000 on a settlement basis. It also shows the bond dependency ratio(=Total bond issue/Total expenditure) has remained at a high level after collapse of bubble economy.



\*Ad-hoc Deficit-financing bonds which should be redeemed by earmarked revenue

**Figure 2-2 Trends of Government Bond Issues**

Figure 2-3 shows the trends of accumulated government bonds outstanding. Because the national government's public investment has remained high in expenditure after increasing on frequent economic stimulus packages following the collapse of the bubble economy, accumulated bond outstanding was increased to an unprecedented level of ¥395 trillion in FY2001.



**Figure 2-3 Trends of Accumulated Government Bonds Outstanding**

### 2.2.3. Total Government Long-term Debt Amounting to 140% of GDP

Figure 2-4 shows Japan's GDP and its growth rate during the last decade (Figures after the year of 2002 are estimated). The budget deficit shown in Figure 2-5 has served to increase outstanding long-term debts including government securities. A Ministry of Finance report of 2001 says the outstanding long-term debts of the national and local governments expanded from \$242.4 billion (about 60% of GDP) at the end of FY 1992, to about \$540 billion (about 125%) at the end of FY 1999. Outstanding debts at the end of FY 2002 are estimated at about \$580 billion (about 140%).

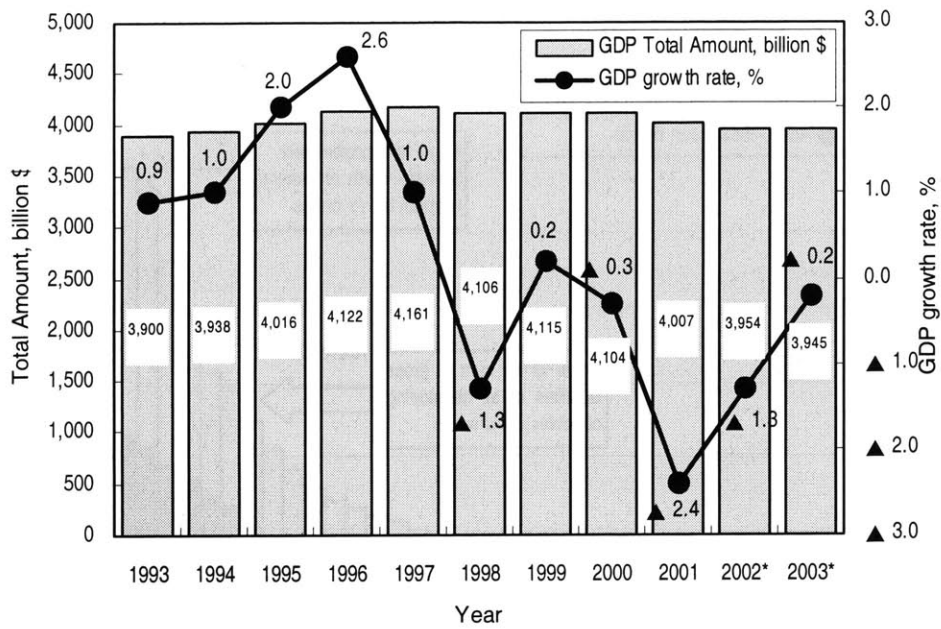


Figure 2-4 GDP and growth ratio of Japan

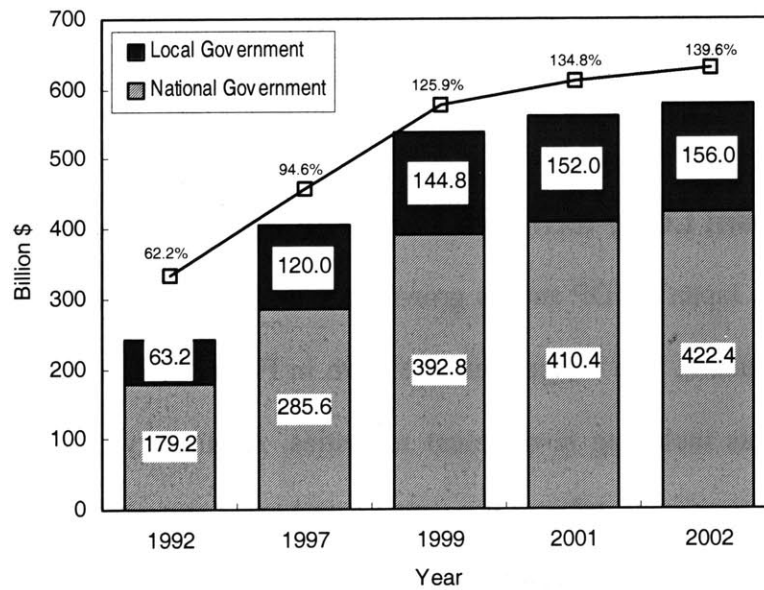


Figure 2-5 Long Term Debt Outstanding



## **2.3. Financial Circumstance of Local Government**

### **2.3.1. Deteriorating Local Public Finance**

There are some 3,300 local governments in Japan including prefectural and municipal ones. The financial conditions for many local governments have deteriorated since the latter half of the 1990s with their borrowings increasing. Present local public finance is in a state of crisis. During a prolonged economic stagnation after the collapse of the bubble economy, local government revenues have declined on tax cuts as well as falling tax revenues mainly from the two corporation taxes (corporation enterprise and inhabitants taxes). On the other hand, local governments have expanded spending due to their positive investigation in the national government's series of economic stimulus packages including additional public works. Local governments have thus had to increase their debt issues and dip into reserves for future financial demand including redemption of debt issues. The local budget balance (or real balance), which is the gap between revenues (including proceeds from local government bond issues) and spending (including debt-service costs) after adjustments for transfers of financial resources between years, has deteriorated rapidly, especially for metropolitan governments since the early 1990s<sup>1</sup>. Financial reconstruction has become a key challenge for them.

### **2.3.2. Cumulative Local Bond Issue**

During the prolonged economic slump in the latter half of the 1990s, local governments have expanded debt issues to cover their public works spending and permanent local tax cuts accompanying the national government's economic stimulus packages. As a result, the rate of dependence on debt issues, or debt issue proceeds' share of total revenues, expanded rapidly in

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<sup>1</sup> Source: Annual Report on Fiscal Statistics of Local Governments, Ministry of Public Management, Home Affairs, Posts and Telecommunications

and after FY 1994 and has remained in a high range of 12% to 15%. In FY 2001, the rate stood at 13.3%. The range is the highest in history with the exception of one period in the mid-1970s. As a result, outstanding local government bonds increased gradually from ¥52.2 trillion in FY 1990 to ¥125.6 trillion in FY 1999, a 2.4-fold jump. A redemption schedule for outstanding local government bonds indicates that redemptions will expand toward the FY 2002-2005 period with FY 2004 as a peak. Local governments will have to use the debt reduction fund (reserves for future local debt redemptions) and other resources to control debts from the med- and long-term viewpoint.

### **2.3.3. Revenue Bases of Local Governments**

From the viewpoint of local autonomy, it is desirable for local governments to raise financial resources for their administrative services by collecting tax from local citizens. In reality, however, large economic gaps exist among the some 3,300 local governments ranging from Tokyo with population of more than 11 million to Tokyo's Aogashima Village with only 200. In FY 1999, local tax revenues slipped below 20% of total revenues for half (23) of the prefectural governments and for some 60% (1,813) of the municipal governments. The revenue bases of local governments are thus vulnerable in general.

In Japan, local governments are mainly responsible for providing public services. For part of these services, the national government determines the mechanisms and standards to ensure uniform nationwide administrative services. It has also provided national treasury disbursement (including subsidies) and financial adjustments through the local allocation tax to secure financial resources for local administrative services so that any local government can implement systematic administrative management. This has allowed local governments with vulnerable revenue bases to provide almost the same administrative services as others.

## **2.4. Financial Implication between National Government and Local Governments**

### **2.4.1. Capital Spending as a Fiscal Stimulus Device**

Japan has had surges of national transfers to local governments in an effort to stimulate the macro economy. These have largely been unsuccessful. As nationally subsidized capital expenditures by local governments have risen, those expenditures that are not subsidized have decreased. This displacement, or crowding-out, effect has served to offset some of the stimulation effects of the counter cyclical policy. This has created problems because while the stimulus packages have been diluted in their impacts, they have still resulted in the government having large increases in debt that will be a burden on future budgets. According to the OECD, the decrease in unsubsidized public works spending by local units of ¥3.0 trillion from the financial year 1993 to 1998 easily overwhelmed the increase in subsidized public works in the same period<sup>2</sup>. The stimulating effects of the national capital investment program have also been questioned at a meso level because of their limited effects in the context of a changing economic structure where the inputs of public capital are seen as being of limited importance to the private sector.

### **2.4.2. Expanding Budget Size for National and Local Governments**

Local governments' annual spending increased from ¥78.4 trillion in FY 1990 to ¥101.6 trillion in FY 1999. The 1990s thus saw a 30% expansion. This is not only because the national government implemented a series of economic stimulus packages to increase public works amid a serious economic slump and a tax revenue slowdown, but also because local governments are

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<sup>2</sup> Organization for Economic Cooperation and Development, 2000

obliged under some laws to provide certain administrative services requiring spending that is out of their control. Unless such laws and relevant national policy measures are reviewed, local governments will have difficulties adapting their spending to changing tax revenues. Another factor behind the fast-increasing local government spending is the expansion of public works that has forced local governments to spend more on interest payments on and redemptions of local bonds and on maintenance and management of various facilities built under public works projects. Certain constraints thus exist on the spending-saving efforts of local governments. Therefore, a thorough review of national policies and expenditure must be coupled with local governments' spending-saving efforts.

The present systems have made it difficult for local governments to hold down spending. Eventually, both the national and local governments have been forced to expand spending and become plagued with budget deficits.

### **2.4.3. Financial Resource Management**

According to the current data, two-third of the total tax revenue are collected by the national government and one-third of the total government expenditure are conducted by local governments. An imbalance between the tax revenue and expenditure of the local governments shows that there exist the large transfers of financial resources from the national government to the local governments. Local governments receive these revenues so that a policy objective may be accomplished. That revenue has become essential for most of local governments, except a few that contain metropolitan areas in their jurisdiction. Though the revenues can be justified by some reasons such as fiscal equalization among local governments and the redistribution of income from higher-income taxpayers to those who by definition of their eligibility are lower-income, it is also true that they invariably influence the fiscal status of local governments.

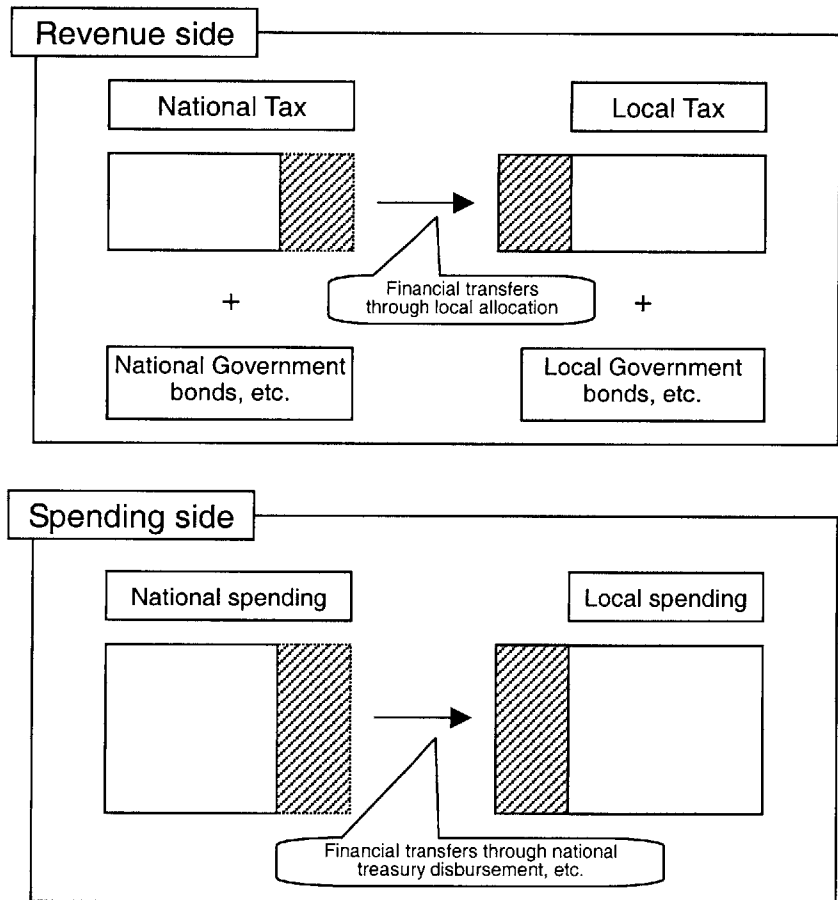
The national government provides funds for local governments mainly as a government subsidy and unspecified financial resources. The subsidy plays a main role of the central control over local governments. The financial resource transfers from the national government to local governments induce a gap between the benefit from local public services and local tax burdens of inhabitants. Appropriate resource allocation is achieved when the benefit of public service coincides with the burden. Thus, resource allocation may be distorted by the subsidy systems.

### **From Existing System to New System**

Financial resources transfers from the national government to local ones take place through national treasury disbursement (including subsidies), local allocation tax, special local allocation subsidies, local transferred tax and other systems (see Figure 2-6). In the FY 2001 Local Financial Plan, the national government's financial resources transfers to local governments amount to ¥34.9 trillion, accounting for 39.1% of total local government revenues (¥89.3 trillion). The national government has thus been involved in spending at local governments while securing financial resources for them. This system has played a great role in the provision of administrative services in Japan. However, some problems with the financial transfer system have become issues of controversy as below.

- (1) The system has allowed local governments and residents to feel less responsible for financial burdens and loosen their fiscal discipline. As a result, those who are responsible for growing budget deficits at local governments have remained unspecified.
- (2) The system has tended to discourage local governments from making independent decisions on their spending and revenues or from implementing measures that respond flexibly to the needs of local residents.

These problems for local governments could emerge for the national government that has issued massive bonds to finance economic stimulus measures.



**Figure 2-6 Financial Resource Transfer from National Government to Local Ones<sup>3</sup>**

<sup>3</sup> Sources include data from the Ministry of Public Management, Home Affairs, Posts and Telecommunications

## 2.5. Japan's Public Finance as Seen from Stock Data

**Table 2-1 Stock Data(FY1999) of Assets and Liabilities of Public Sector**

(in trillion yen)

	Public assets							
		General government				Public corporations		
		National government	Local government	Social security fund		Public financial corporations	Public non-financial corporations	
Total assets	2,274.2	891.3	220.9	434.5	235.9	1,382.9	1,214.7	168.2
Financial assets	1,646.9	406.1	113.2	58.9	233.9	1,240.8	1,213.8	27.1
Non-financial assets	627.9	485.2	107.7	375.5	2.0	142.0	0.9	141.1
Tangible fixed assets	425.8	326.7	82.2	243.1	1.4	99.1	0.7	98.4
Total liabilities	2,421.9	1,101.2	651.4	195.6	254.2	1,320.7	1,184.8	135.9
Outstanding public bonds	498.3	420.6	369.9	50.7	0.0	77.7	27.7	50.1
Retirement allowance	52.6	46.6	12.6	33.9	0.1	6.0	0.2	5.7
Pension liabilities	424.4	424.4	155.8	36.8	231.8	-	-	-
Net worth	-147.7	-209.9	-430.5	238.9	-18.3	62.2	29.9	32.3

Notes: 1.Estimates by Cabinet Office

2.Outstanding public bonds are the total of government bonds, municipal bonds, and securities of government-related corporations.

3.Total liabilities are based on the pension liabilities of case 3.

Table 2-1 indicates stock data at the end of FY 1999 as estimated by Cabinet Office. Assets for the whole of the public sector total ¥2,274 trillion (4.4 times as large as nominal GDP) including ¥1,647 trillion in financial assets and ¥628 trillion in non-financial assets. Among financial assets are ¥649 trillion in loans (39% of financial assets) including ¥553 trillion in loans provided by public financial corporations (33%). Cash and deposits account for ¥502 trillion (30%) including ¥437 trillion in deposits at the Ministry of Finance Trust Fund Bureau. Of non-financial assets, tangible fixed assets account for ¥426 trillion (68%), mostly in social infrastructure such as roads, water and sewage facilities, waste disposal facilities and others owned by local governments.

The public sector's liabilities aggregate ¥2,422 trillion. Their major components are public financial corporations' cash and deposit liabilities worth ¥791 trillion, outstanding government bonds worth ¥369 trillion and public financial corporations' borrowings worth ¥343 trillion. As a result, net assets as the gap between assets and liabilities come to a negative ¥148 trillion (amounting to 29% of nominal GDP).

### **2.5.1. National Government's Assets**

The national government's outstanding assets at the end of FY 1999 total ¥221 trillion, of which financial assets account for 51%. The national government's tangible fixed assets aggregate ¥82 trillion including roads, flood prevention facilities and air traffic facilities. Due to the final payment principle as adopted for the SNA<sup>4</sup> as discussed earlier, the sum is much smaller than tangible fixed assets of local governments. It is only one-third of the tangible fixed asset value for local governments. The national government's liabilities total ¥651 trillion, of which public pension liabilities account for ¥156 trillion and outstanding government bonds for ¥369 trillion.

### **2.5.2. Local Governments' Assets**

Local governments own massive tangible fixed assets and land accounts for a major part of their assets. Therefore, their outstanding assets total ¥435 trillion, two times more than the national government's. Local governments hold massive social infrastructure including roads, flood prevention facilities, school and social education facilities, water and sewage facilities and waste disposal facilities. On the other hand, local governments' liabilities aggregate ¥196 trillion,

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<sup>4</sup> System of National Accounts



amounting to only 30% of the national governments'. They include borrowings (¥73 trillion), local government bonds (¥51 trillion), pension liabilities (¥37 trillion) and retirement allowance liabilities (¥34 trillion). Local governments' net assets come to a positive ¥239 trillion.

### **2.5.3. Asset and Social Stock Formation in the 1990s**

#### **Asset Formation**

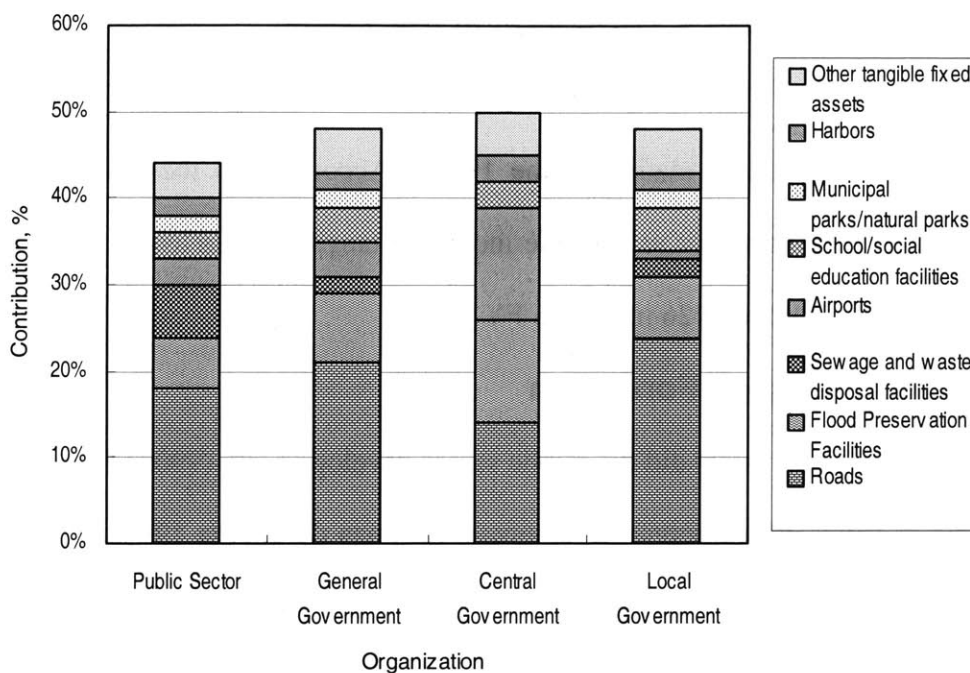
How much was asset formation in the 1990s? According to the SNA-adopted final payment principle, the public sector as a whole increased tangible fixed assets by ¥132 trillion from ¥294 trillion in FY 1990 to ¥426 trillion in FY 1999.

#### **Social Infrastructure Stock Formation**

What tangible fixed assets did the public sector develop in the 1990s? Figure 1-7 shows the characteristic of social infrastructure development in Japan during the 1990s. Contributing to a 44.9% increase in tangible fixed assets between FY 1990 and 1999 were roads (18.5%), flood prevention facilities (6.0%), sewage and waste disposal facilities (6.0%), airports (3.3%), school and social education facilities (3.1%), and municipal and natural parks (2.4%) in the contribution percentage order.

Shares of the increase (flow) in tangible fixed assets between FY 1990 and 1999 were 41.1% for roads, 7.4% for airports, 13.3% for sewage and waste disposal facilities, 13.3% for flood prevention facilities, and 6.9% for school and social education facilities. In contrast, shares of tangible fixed asset stock in FY 1990 were 29.8% for roads, 12.1% for flood prevention facilities, 10.3% sewage and waste disposal facilities, and 4.1% for airports. These asset categories' flow-base shares thus exceeded their respective stock-base shares. But school and social education facilities' share of total tangible fixed assets was 9.3%, larger than their flow-base share.

In tangible fixed asset development in the 1990s, roads, airports, sewage and waste disposal facilities, and flood prevention facilities scored relatively larger growth from their respective shares of total stock in FY 1990, while a rise in school and social education facilities was moderate.



Notes: Increases in social infrastructure between 1990 and 1999 and asset components contributions to the increases.

**Figure 2-7 Characteristics of Social Infrastructure Development in the 1990s<sup>5</sup>**

#### 2.5.4. Favorable relationship between the national and local governments

As discussed so far, Japan's national and local public finance has been in a severe situation and its improvement is urgently required. Various problems exist with administrative and financial relations between the national and local governments. An overhaul of systems connected with the relations between the national and local governments is required. Financial

<sup>5</sup> Source; Estimated by the Cabinet Office.

relations between the national and local governments contain a special feature. While local governments mainly provide administrative services to the people, the national government is involved in local government decisions through its regulations and subsidies and collects financial resources for distribution to local governments. This system devitalizes local governments to strive to independently promote regional development. Local governments tend to believe that it is rational for them to beg for financial resources from the national government. The system also leads inefficiency at the national government to cause inefficiency at local governments. Local governments have been allowed to implement even ineffective projects. Needs for administrative services by local governments are expected to steadily increase in infrastructure, health care, and environmental areas in Japan in the future, as the birthrate declines and the population ages and there is no high economic growth. Japan are now urgently required to develop a new system to efficiently utilize limited financial and human resources to meet new needs for administrative services.

Japan must seek its own approach within its cultural and political structure to devolving finance and responsibility to local governments and private entities that are held accountable for efficient use of resources through the interaction of public and market forces. The key to successful realignment is likely to be in clarifying the role of the national government in public works activities through three actions. Firstly, the national government has to allocate the resources wisely on sectors that yield high benefits to the overall economy, and review the present programs for development projects. Second, it has to establish new leadership roles in defining overall objectives and standards to be carried out at the local level. And third, it needs to strengthen the capacity of local authorities and the private sectors to implement efficient project selection and delivery.

## Chapter 3. Japanese Construction Industry Overview

Construction investment in Japan has continued to decline since FY 1997. It is estimated to hit ¥56.3 trillion for FY 2002, having fallen all the way to only 70% of its 1992 peak. With a decline in public works projects, construction investment will also inevitably decline over the next five years. Even over the mid- to long-term, negative factors such as fiscal difficulty and the aging and shrinking of the population will make it impossible to avoid further contraction.

Japanese public construction investment has been historically high level compared to the other developed countries. This is because public works projects were actively promoted in successive economic policies enacted to achieve economic recovery. As a result of expansion of public investment over several years under the economic slowdown, government fiscal conditions drastically worsened. In particular, local governments found themselves in a difficult spot, and though the national government had been promoting investment in public works to stimulate the economy, it eventually became unable to follow through on these projects. Actually, the number of independent local projects implemented by local governments with their own funds continued to decrease over several years, and public projects funded by the national government reached their limit. It has become difficult to rely on national government finances to sustain construction investment. The Koizumi government has identified public works structural reform as a high priority, but the underlying need for reform is a more fundamental and long term one.

This chapter first analyzes the historical and current trends in Japanese construction industry and the pattern of public works spending in Japan. Secondary this chapter discusses the issues of public investment for local infrastructure development at the initiative of national government. Finally this chapter describes the future prospects of construction market in Japan and discusses the importance of vitalization of private sector investment in the Japanese construction industry.

### 3.1. Long-term Trends in Japanese Construction Market

Figure 3-1 shows the amount of construction investment in Japan as the total of public and private sector investment since 1960. After World War II, construction investment in Japan had been drastically increased until 1973 and second wave has followed from 1985 to 1990 until the burst of the bubble economy. Historically, public sector investment has had a much lower rate of annual amount than private sector investment. Since the 1980s, Japanese government had responded to the continuing slump of private sector investment with an expansion in public works investment. This traditional Keynesian approach has been continued until today as an economic stimulus package with heavy emphasis on public works spending. According to the figure, both of public and private investment for construction has been decreasing since 1997 and it is likely to be in a gradual decline.

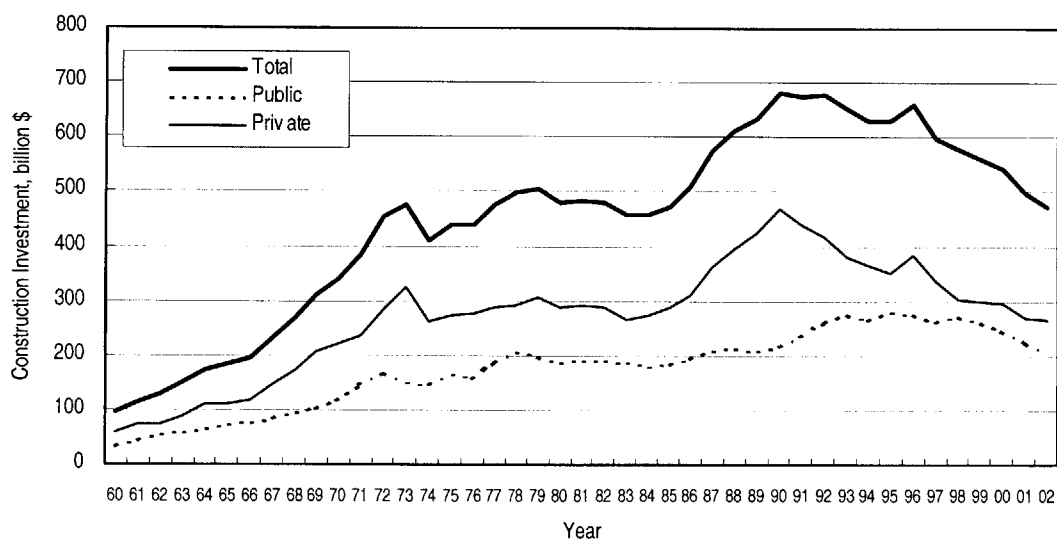
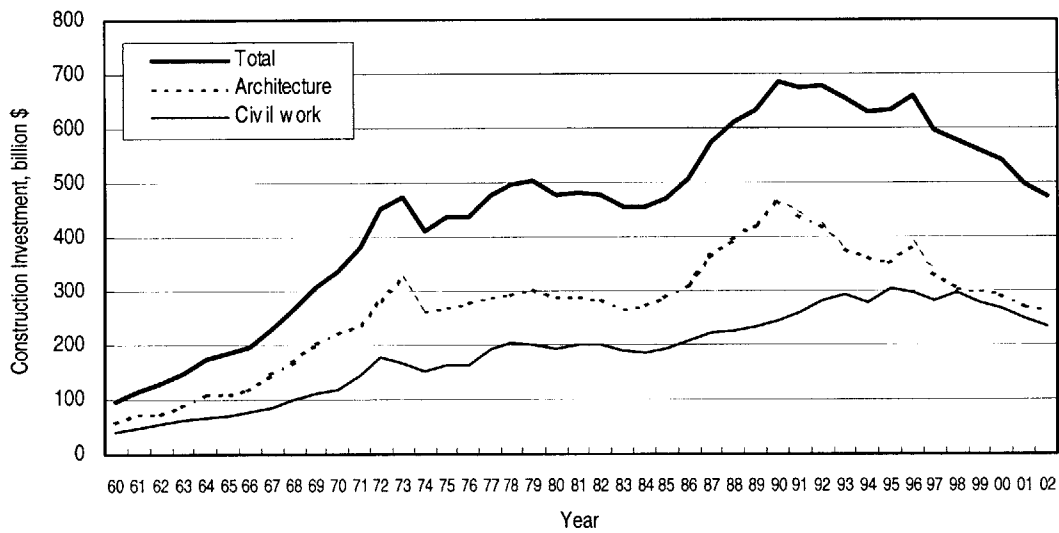


Figure 3-1 Construction Investment in Japan: Public/Private

Figure 3-2 shows the amount of construction investment in Japan as the total amount of investment for architecture (building) and civil works since 1960. In the latter half of the 1980s,

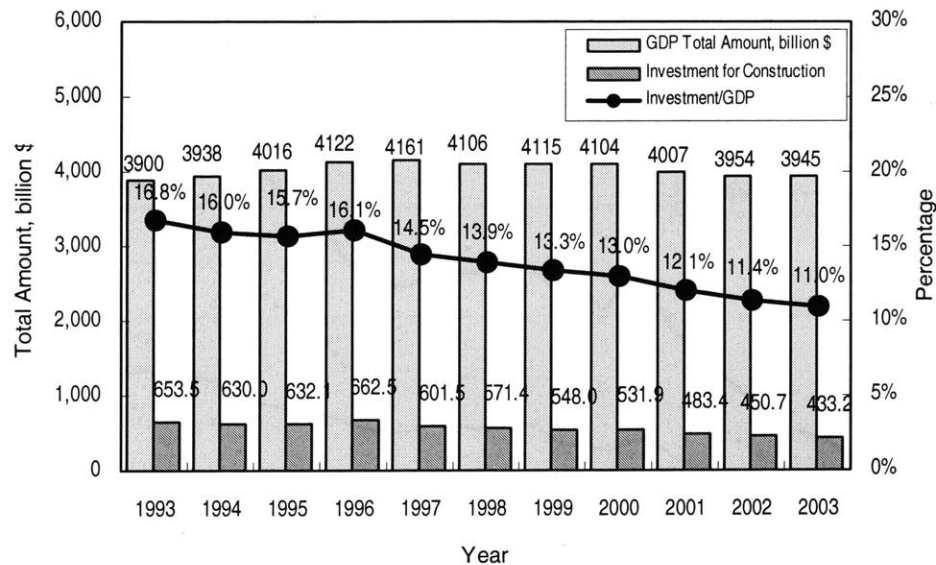
the market of architectural projects had grown at a high pace compared to civil works because of great bloom of private building construction market in the bubble era. After 1990, the market has followed a course of decline until today due to the burst of the bubble economy. On the contrary, the public investment for civil projects had steadily increased by issuing a huge amount of deficit bonds to finance public works projects and caught up the declining amount of architectural work in 1996. However, ever-worsening economy and enormously accumulated amount of bonds in 1997 has forced Japanese government to reduce the amount of public civil works. After 1997, in spite of the government trials of new stimulus measures in a supplementary budget by issuing the special bond, it didn't display effectiveness as a part of economic packages.



**Figure 3-2 Construction Investment in Japan: Civil/Architecture**

### 3.2. Construction Investment Trends in Recent Years

Construction investment in Japan has continued to decline since fiscal 1997. Figure 3-3 shows the trends of GDP and total investment for construction including public and private investment. It is estimated to settle at around \$450 billion for fiscal 2002, having fallen all the way to less than 70% of its 1993 peak of investment. Look at the percentage of budget allocations for construction investment as a portion of GDP. Since 1996, it is clear the ratios have downward tendency and the serious downdraft will be continued in 2003 based on the short-term forecast.



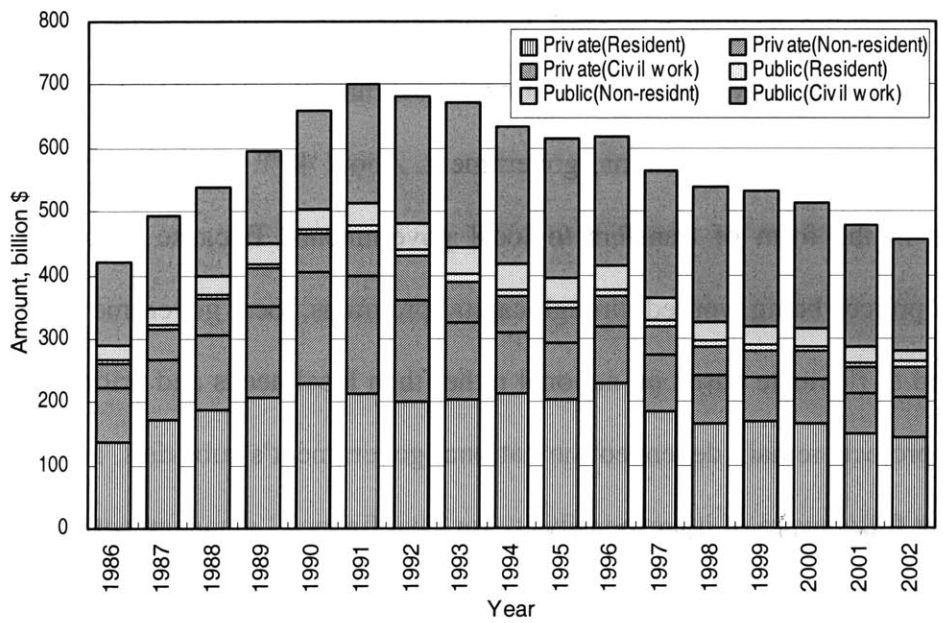
Notes: Construction investment values are calculated based on figures published by the Ministry of Land, Infrastructure and Transport up through fiscal 2001. Figures after fiscal 2002 are based on estimates issued by Research Institute of Construction and Economy. Fiscal year basis.

**Figure 3-3 GDP and Investment for Construction in Japan**

The Figure 3-4 shows the trends in total construction investment (nominal values) since fiscal year (FY) of 1986. Construction investment continued to expand after FY1986 until it reached \$701.7 billion in FY1991. After the bubble economy collapsed, investments declined but remained at about the \$600 billion level until FY1996. In FY1997, however, they dipped below



\$600 billion, and is likely to drop to \$450 billion in FY2002 as shown in above figure. Though private construction investment has been sluggish since the burst of the bubble economy, public construction investment has remained at fairly high levels. This is because public works projects were actively promoted in successive economic policies enacted to achieve economic recovery. Since public works projects thus propped up construction investment, which had shrunk as a result of major decreases in private construction, a rapid decline in overall construction investment was averted. The figure also says the investment amounts of every category have been decreasing gradually and the function to stimulate economy growth by increasing public works is no more working.

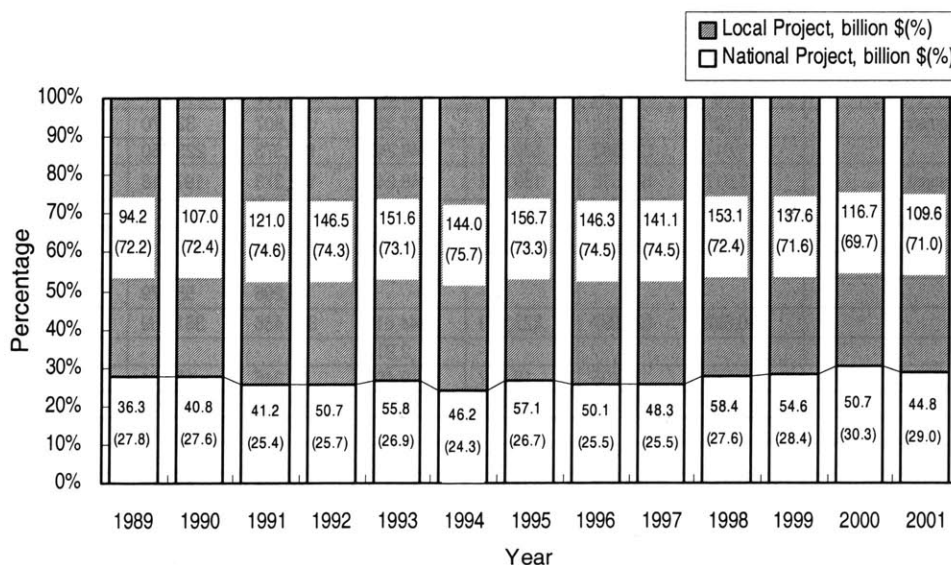


**Figure 3-4 Trends in Construction Investment (Nominal Values)**

As a result of ongoing dynamic fiscal investment over several years in an environment where the economic slowdown had produced a lack of financial resources, fiscal conditions drastically worsened. Local governments especially found themselves in a difficult spot, and though the national government had been promoting investment in public works projects to help improve the economic climate, it eventually became unable to follow through on these projects. Actually, the number of independent local projects implemented by local governments with their own funds continued to decrease over several years, and public projects funded by the national government reached their limit. It has become difficult to rely on national government finances to sustain construction investment. Figure 3-5 shows the amount and percentage of local and national project in total amount of public works. Local government spending is extremely important in Japan and has accounted for over 70% of government consumption and investment. However, because of the heavy reliance on national government aid, local governments are in many ways merely agents for the national government. About 40% of all national government expenditures are in the form of transfers to local governments. Because of counter-cyclical macro economic policies being worked through capital programs, local government expenditures and revenues tend to fluctuate based on national rather than local needs and priorities. Financial sources of most projects remain dependent on national government's subsidies, as a result, local government is not fully aware of its responsibility for own financial management and sometimes turn over the responsibility to the national government.

Japanese national government has long time controlled local governments' economy by adjusting the distribution of the subsidies in order to rectify such regional imbalances of revenue. Hence, local governments haven't been able to manage their administration without the promised subsidies from the national government. As the local government expenditures increase, the national government subsidies to them are increased. This has created problems because while

the stimulus packages have been diluted in their impacts, they have still resulted in the government having large increases in debt that will be a burden on future budgets. It has a long way for Japanese governments to reach the idea of “leave to local governments what can be done by local governments.” Besides, local bonds to pay for local infrastructure in Japan are not subject to market discipline. Of the local government bonds (including those of local public enterprises) some 60% are bought by public sector financial institutions through negotiation, 30% are negotiated with private banks, and only 10% are sold in the securities markets. In fact, local bonds are seen as quasi-national government bonds. As a result, local governments have virtually no autonomy in borrowing decisions and reduced reasons to take responsibility for their affairs and to practice fiscal discipline. Low levels of local contributions to projects together with a series of nationally mandated construction requirements make the capital items expensive and reduce the incentives of local officials to economize. With large central transfers, the public does not connect the pain of paying taxes and charges with the pleasure of consumption nor do they hold officials accountable to efficient use of funds.



**Figure 3-5 Public Investment to National and Local Project**

Table 3-1 provides a time series breakdown of public works expenditures in Japan. While there has been some increase in the amounts devoted to more productive sectors such as highways, seaports and airports, there has not been the structural shift. For example in U.S., although highway outlays went up in absolute terms, they fell as a proportion of the public works budget from 30.0% in 1980 to 29.6% in 2000. The expenditures in Japan on more socially oriented sectors such as housing, agriculture, forestry and fisheries also rose throughout the 1980s and 1990s. Although there was a slight diminution in their relative overall importance in the public works budget, this hardly represented a structural shift.

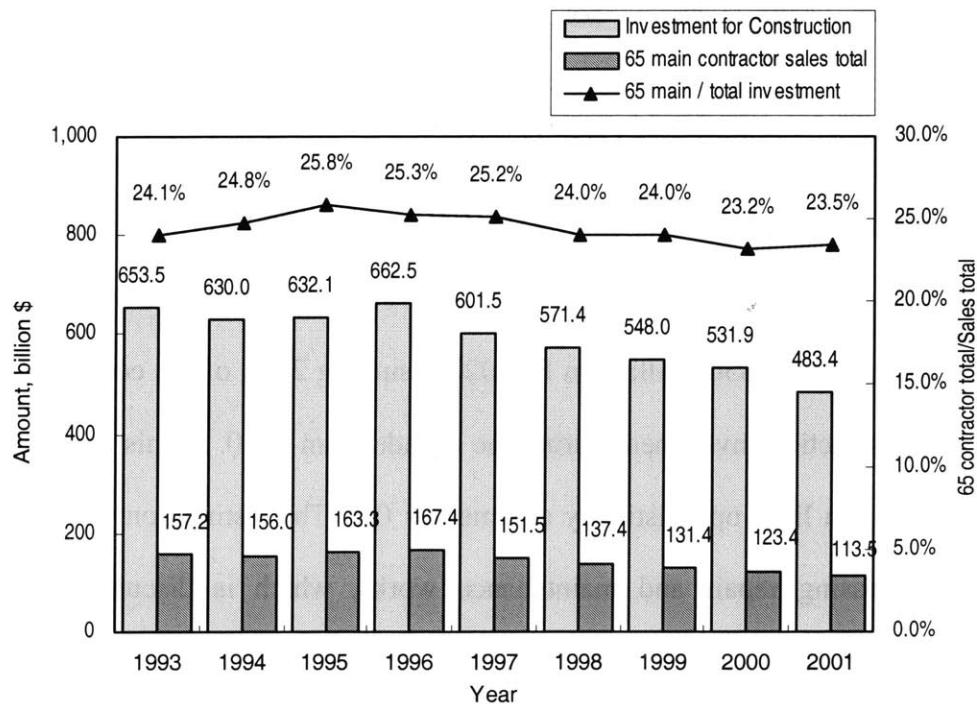
**Table 3-1 Public Expenditure in Japan<sup>1</sup>**

	1993	1994	1995	1996	1997	1998	1999	2000
Road improvement	1,910,806	1,826,000	2,176,876	2,262,402	2,494,703	2,685,023	2,684,337	2,776,674
Public transportation	9,841	9,000	8,659	17,163	81,923	100,812	91,963	117,500
Urban and main line railways	-	-	-	-	63,240	70,312	62,525	82,314
Bullet trains (Shinkansen)	-	-	7,100	16,607	18,683	30,500	29,438	35,186
Railway disaster prevention	9,841	9,000	1,559	556	-	-	-	-
Ports	266,869	257,318	313,378	353,155	326,105	363,822	337,537	353,301
Airports	97,420	92,740	102,479	108,668	122,808	141,434	143,937	170,595
Housing	754,323	757,721	844,109	895,621	1,053,623	1,161,288	1,016,130	1,073,812
Sewer	680,958	677,895	825,782	880,753	1,050,448	1,171,946	1,112,109	1,131,503
Afforestation and flood control	1,104,298	1,082,611	1,318,260	1,412,744	1,523,944	1,589,252	1,399,169	1,491,958
Flood control	861,710	842,550	1,029,595	1,106,216	1,193,496	1,274,362	1,112,108	1,200,571
Afforestation	161,908	161,325	195,666	208,346	223,577	201,444	184,021	187,404
Seacoasts	80,680	78,736	92,999	98,182	106,871	113,446	103,040	103,983
Agriculture & fisheries	1,081,848	1,061,765	1,242,338	1,323,331	1,412,939	1,479,553	1,312,043	1,324,077
Agriculture & farming community improvement	897,473	878,917	1,026,393	1,093,445	1,168,180	1,227,910	1,083,653	1,092,607
Fishery ports	164,055	161,790	190,673	202,553	214,952	219,473	198,390	200,923
Coastal fishing zone improvement	20,320	21,058	25,272	27,333	29,807	32,170	30,000	30,547
Forests	123,617	120,592	139,183	148,240	168,373	223,450	198,767	203,469
Forest conservation improvement	123,617	120,592	139,183	148,240	168,373	197,118	171,763	175,238
Forest environment improvement (a)	-	-	-	-	-	26,332	27,004	28,231
Other	325,100	321,998	406,924	442,002	551,912	633,564	621,666	715,139
Navigational aids	-	-	-	-	7,870	7,963	7,221	7,329
Urban district improvement	-	-	-	-	47,296	55,679	52,182	107,887
Environment and health	190,622	190,097	222,473	244,611	305,486	361,169	345,923	363,695
Small water supply systems	-	-	-	2,817	-	-	-	-
Industrial water	22,563	16,405	18,682	19,496	20,346	15,404	11,978	11,872
City parks	94,907	102,274	151,435	162,483	147,837	166,069	157,455	168,769
Natural parks (b)	-	-	-	-	8,948	11,642	12,935	17,586
Electricity for isolated islands	3,931	2,516	2,671	21	21	21	19	0
Adjustment expenses, etc.	13,077	10,706	11,663	12,574	14,108	15,617	33,953	38,001
General public works expenses total	6,355,080	6,207,640	7,377,988	7,817,029	8,813,828	9,550,144	8,917,658	9,358,028

Notes: (a) From 1997, reorganized as 'Forest conservation improvement' or 'Forest environment improvement' depending on the objective of forest improvement; accordingly, previous values represent the total of "afforestation projects" and "forest road projects"; (b) No category for city parks and natural parks for 1980, 1985, 1991 and 1992;

<sup>1</sup> Source: Fiscal Investigation Bureau (2000)

In Japanese construction industry, general contractors, over 5 millions of companies at present, had played a significant role in the land development since the 1960s. What is called, “big 5 general contractors” have their own project management know-how and innovative technology in the construction field. They sometimes take over the public sector’s responsibility particularly in local project. They order the public works to the bigger contractors in order to reduce potential risks and responsibilities by throwing them to the contractors with some margin of profit. Figure 3-6 shows the sales of Japanese 65 main contractors. Though the sales amount of major contractors is declining in the past decade, the percentage of sales to the total amount is still in high level. This tendency is likely to continue in the future. In this sense, on the one hand, the idea of “use private sector resources wherever possible” has been already carried out, but on the other hand, the idea of “leave to local governments what can be done by local governments” has not been realized in Japan so far. Management of excessive risks and responsibilities by private sectors creates waste of time and money in public works.

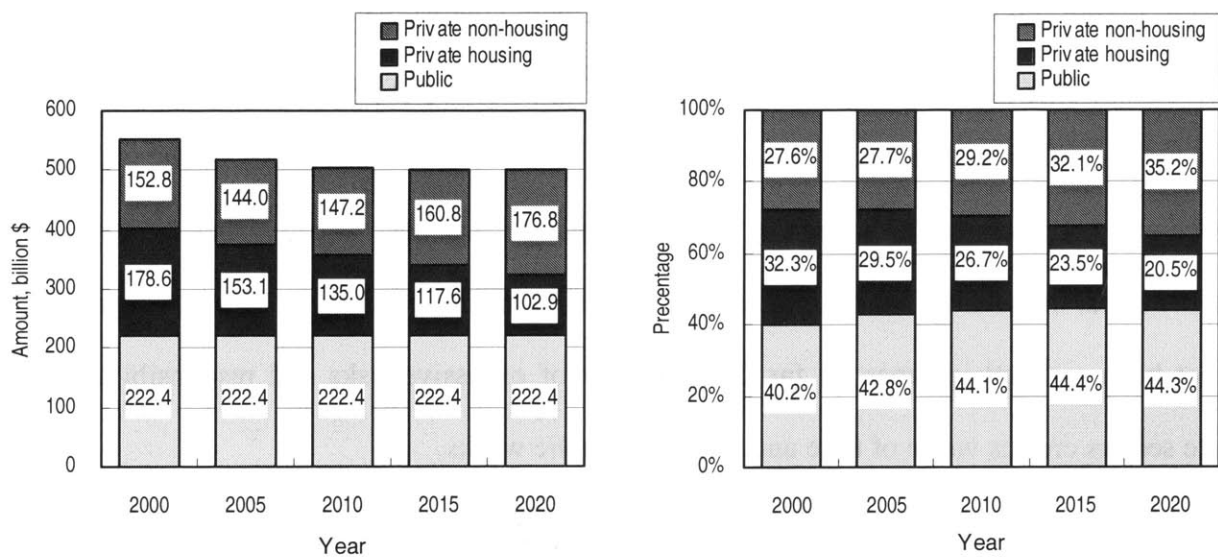


**Figure 3-6 Sales of Japanese 65 Main Contractors**

### 3.3. Future Forecast of Japanese Construction Market

#### 20-year forecast

Construction investment as a whole will decrease as investment in each sub-sector is scaled down. Figure 3-7 shows the every 5-year forecast of Japanese construction market until 2020<sup>2</sup>. Left figure shows the amount of each investment and right figure shows the percentage of each investment to the total investment amount.



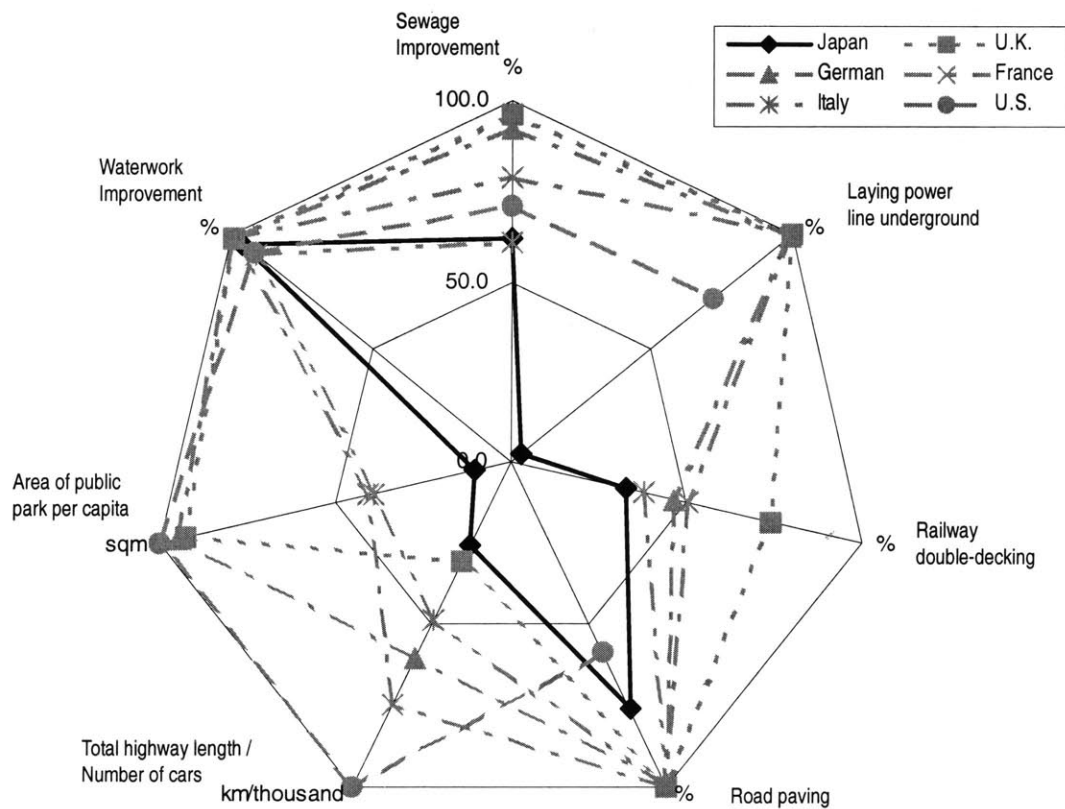
**Figure 3-7 20 Year Forecast of Japanese Construction Market**

The market size will shrink from \$554 billion in FY2000 to \$505 billion in FY2010 assuming 2.0% of the economic growth and 0% growth of construction investment during the decade. It is also estimated \$502 billion in FY2020 assuming 2.5% of the economic growth and 0% growth of construction investment during the decade from 2010. In this case, the growth of public investment is a little optimistically assumed as 0%. This estimation doesn't include the cumulatively increasing repair and maintenance works, which is discussed in Chapter 7. Accordingly, actual number is likely to be lower than the case.

<sup>2</sup> Source: Research Institute of Construction and Economy

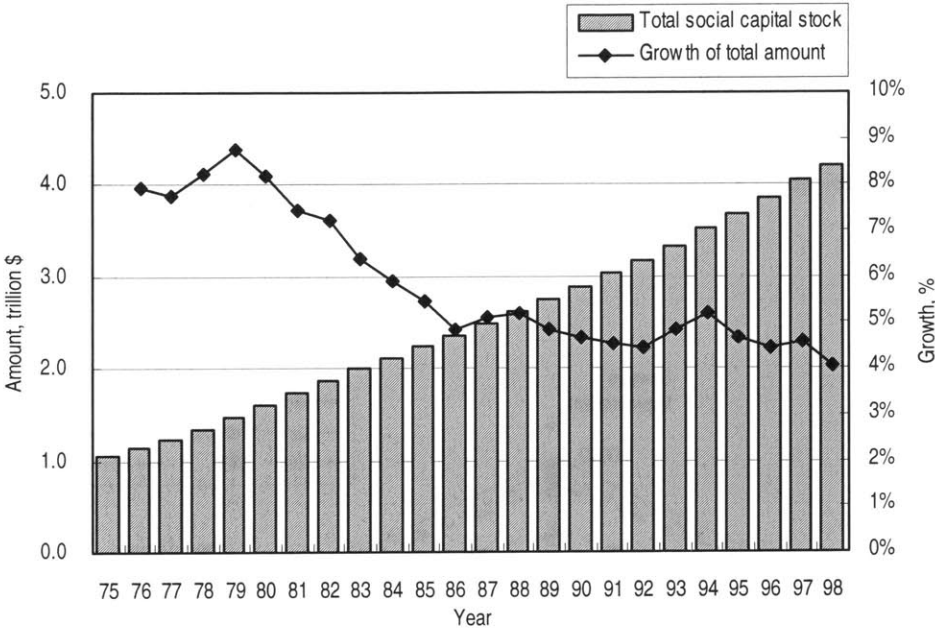
## Infrastructure Development and Asset Management in Japan

Figure 3-8 shows the current status of infrastructure development in major countries. Infrastructure development in Japan has not reached to the world-class standard. In particular, not only development of transportation infrastructure including highway network and railway double-decking, but also development of environment-related projects including laying work of power lines and building of public parks is woefully behind major countries in the world. On the other hand, Japan is facing issue of social stock management in the near future. Enormous amount of social capital stocks constructed during post-war high-growth period of the Japanese economy.



**Figure 3-8 Infrastructure in Major Countries**

Figure 3-9 shows accumulated amount of social capital stock and its growth rate in Japan. Most of the infrastructure stock constructed from the 1960s to the 1980s are expiring its service life. They need maintenance or reconstruction for safety reasons. The total cost for continuing maintenance, repairing or reconstruction of those accumulated social stocks will become huge amount.



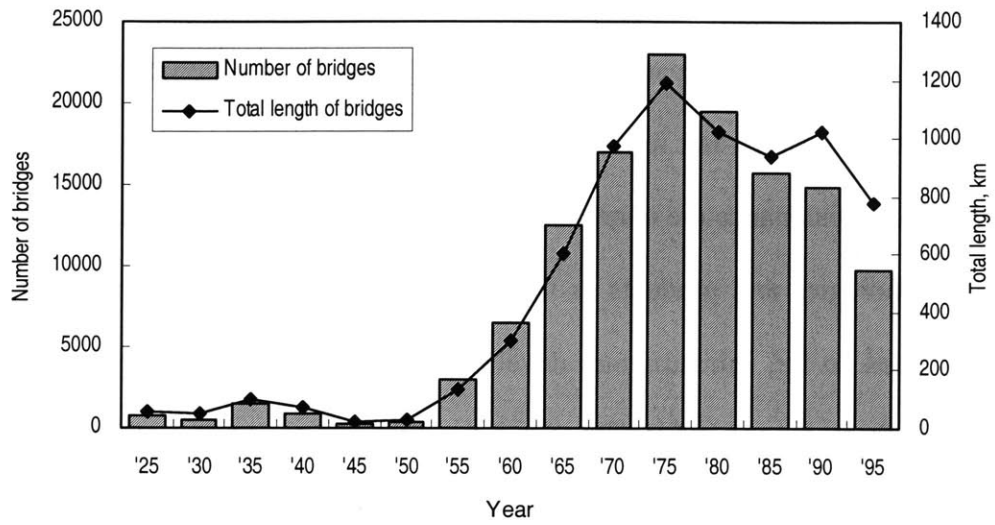
**Figure 3-9 Social Capital Stock in Japan**

For instance, there are 1.36 millions of bridges in Japan. In those bridges, over 4,000 bridges were past their service life and it will increase to over 14,000 bridges in 2010. In 2020, it becomes over 43,000 bridges which come to the end of its service life.

Figure 3-10 shows the number of bridges constructed since 1920. According to the figure, the peak of bridge construction is in the 1970s. These enormous maintenance, repair and reconstruction cost must burden on Japanese economy. In the near future, the national government has to respond to social and economic needs with considering constraints on public financial resources. Therefore, Ministry of Land, Infrastructure and Transport is trying to



introduce the private financing for “asset management” in Japanese construction industry based on the experience in the U.S. and the U.K.



**Figure 3-10 Bridge Construction in Japan**

### **3.4. Construction Market and Private Financing**

Japanese construction industry was worth around \$451 billion annually in 2002, representing approximately 11.7% of Japan's GDP. Against the current economic background of rapid change and deregulation, Japan has tried to abandon its traditional “scrap and build” approach to construction, which left few structures over 50 years old, in favor of an approach in which repairing and maintenance are considered options. This new approach requires a different mix of skills, technologies and products as the U.K. is particularly well placed to provide it. Besides, as describes so far, infrastructure development in Japan has lag significantly behind Europe and the U.S. In the critical public fiscal condition, “long-life” or “maintenance-free” structures are required in Japanese infrastructure development.

On the other hand, Japanese national government has to review the public investment and establish its own approach to devolve their political and financial responsibility to local governments in order to downsize the government. Every local government has its original characteristic both historically and geographically. Therefore, local government basically has to take responsibilities for their own infrastructure development and it needs to function in harmony with the social environment. It must be the way to realize the effective use of resources and maximize its benefit to the tax payers. Besides, by introducing private finance scheme and market force, the local government can expand the range of choices and reduce the cost for public investment.

However, local government has to learn from the fact that the previous trials of private financing ended in complete failure, and promote the public investment without repeating past failures such as the case in “Third Sector.” There is no more national megaproject in Japan and the tendency is toward downscaling of future projects. The national government will lose its

control of managing all public works in local governments' charge. It is the time for every local government to express administrative and political leadership in order to achieve a true decentralization of power.

## **Chapter 4. Private Finance Initiative for Infrastructure Procurement**

In order to stimulate infrastructure investment, public authorities seek to involve the private sector in the provision of new infrastructures. The main purpose of the privatization is not only to overcome the government financial difficulties by assumption of the payment, but also to supply a higher value of service to the customers (users) by establishing a new public-private partnership. However, in the 1980s the Japanese national government made a terrible mistake in application of the private finance scheme for infrastructure development. The “Third Sector (Joint public-private venture)” changed the previous structure of the Japanese construction industry and brought the government’s finances into a serious crisis. The government is required to make a fundamental reform of regulations and systems in order to make effective use of taxes. As a potential solution of financial crisis, PFI is being focused in global industrial market, and the effect is still unclear even in its birthplace, the U.K. The U.K. government is still exploring the potential of PFI.

This chapter describes principle and important key components to implement PFI for infrastructure development. Firstly, it explains the origin and definition of PFI which was developed as one of the Public Private Partnerships (PPP) based on “the New Public Management (NPM) Theory.” Secondary, the main concepts and implementation phase are shown for comprehensive understanding of the current PFI system. Finally, it discusses the government roles in the effective application of PFI.

#### **4.1. What is PPP/PFI?**

The idea of Public-Private-Partnerships (PPP) was born in the United Kingdom under the Thatcher government in 1980s. It was originally based on “The New Public Management (NPM) Theory” which was one of the new policies advocated by Thatcher to lead to less intervention by the government, a more liberated government, reduced taxation, improved public sector efficiency and effectiveness, greater public service responsiveness and accountability to consumers and citizens. PPP was also intended to lead to increased choice between public and private providers of public services to stimulate the private sector and to provide better national economic performance. PPP is a progressive form of NPM theory and is still in the process of evolution.

The Private Finance Initiative (PFI) is one of the schemes, in 1992, that was introduced in the U.K. to privatize certain social infrastructure and public services as deemed appropriate and beneficial to taxpayers, with the objective of promoting a smaller and more efficient government. The Thatcher administration supported the idea of a leaner, smaller government to overcome economic stagnation that has been occurring since the 1960s, ever-growing government deficits, and expanded government. The Major administration continued the policies of downsizing the public sector, deregulating, and introducing market principles into public services, and went a step further by reorganizing government functions into agencies, and promoting market testing, in which the private sectors compete with public services. The underlying objective of these policies is to shift the paradigm of government from public administration to public management. PFI is an extension of this policy trend. For PFI, whose real aim is administrative reform, PPP is the means to transfer much of the public sector's role to the private sector. According to HM Treasury in the U.K., the definition of PFI is:

“the public sector contracts to purchase quality services, with defined outputs, on a long-term basis from the private sector, and including maintaining or constructing the

necessary infrastructure. The term also covers financially free-standing projects (e.g. the Second Severn Bridge) where the private sector supplier designs, builds, finances and then operates an asset and covers the costs entirely through direct charges on the private users of the asset, with public sector involvement limited to enabling the project to go ahead through assistance with planning, licensing and other statutory procedures.”

Under the most common form of PFI, the private sector Designs, Builds, Finances and Operates (DBFO) facilities based on ‘output’ specifications decided by public sector managers and their departments. Such projects need to achieve a genuine transfer of risk to the private sector contractor to secure value for money in the use of public resources before they will be agreed upon. The private sector already builds most public facilities but PFI also enables the design, financing and operation of public services to be carried out by the private sector. Under the PFI, the public sector does not own an asset, such as a hospital or school but pays the PFI contractor a stream of committed revenue payments for the use of the facilities over the contract period. Once the contract has expired, ownership of the asset either remains with the private sector contractor, or is returned to the public sector, depending on the terms of the original contract.

## **4.2. Objectives of PPP**

The idea of Public Private Partnerships (PPP) has been developed and spread by government based on the NPM theory in the U.K. For achieving the best performance of the public and private sectors, the key element of each partnership arrangement is not whether it is classified to the public sector or to the private sector. Instead, what matters is whether it provides the structure most likely to deliver the Government's objectives.

The Government develops PPP's with three broad objectives in mind:

- (1) to deliver significantly improved public services by contributing to increases in the quality and quantity of investment;
- (2) to release the full potential of public sector assets including state-owned businesses, and hence provide value for the taxpayer and wider benefits for the economy;
- (3) to allow stakeholders to receive a fair share of the benefits of the PPP. This includes customers and users of the service being provided to the taxpayer and employees at every level of the organization.

In the U.K., by promoting PPP, the government has tried to invest for modern, quality public services. A key priority for this Government is to increase investment in public services after many years in which the public sector asset stock was allowed to deteriorate. The government sets out details of departments' plans for using this additional investment, and how these plans link to their overall objectives. It also outlines the procedures and systems that will ensure that value for money is obtained. Central to the Government's approach is to use PPP where they provide better value compared to public sector investment. Under PPP, the public sector specifies the outputs required from the investment, but the responsibility for, and many risks associated with, delivering those outputs is transferred to the private sector partner. This can

offer better services, delivered more efficiently and provide better value for money for the taxpayer than public sector investment, provided the outputs can be clearly specified from the outset and that both parties fully understand the risks they are taking on. In addition, PPP encourage innovative approaches, as the private sector partner is given flexibility over the design of the assets and operational procedures.



### **4.3. Basic Concepts of PFI**

PFI is based on the following clearly defined concepts.

#### **1) Public and private sector's role**

The public sector, which has been a provider of public services, becomes a purchaser of appropriate services through PFI. On the other hand, the private sector's role is to supply services created through the management of facilities.

#### **2) PFI is applicable to various public activities**

Various public operations and services are eligible for PFI. Conventional public investment is applicable only for activities in which PFI cannot be efficiently implemented. Table 4-1 shows the example of public works by PFI.

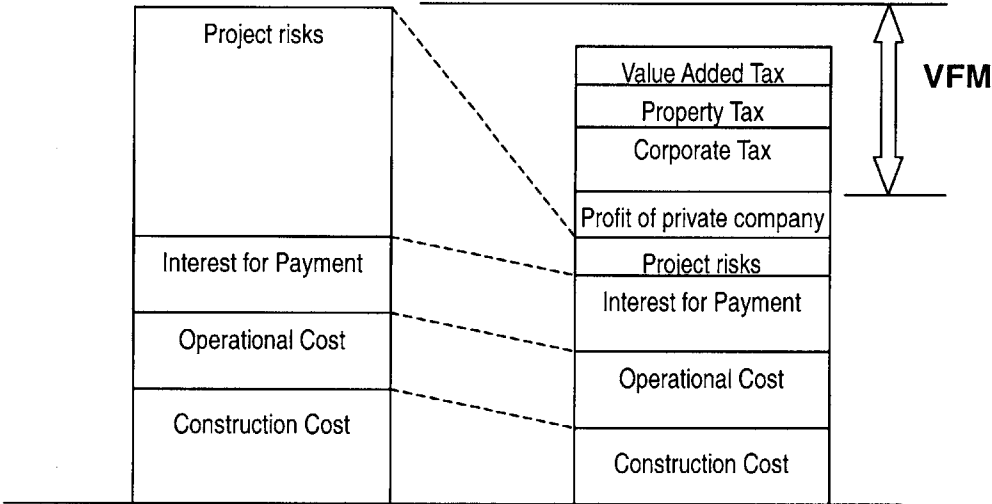
**Table 4-1 Various public activities by PFI**

Field	Type of Business
Transportation	Highway, Surface Transport, bridge, Railway, Underground,
Public welfare	Hospital, Nursing and personal care facility
Culture & Education	School, Student accommodation, Museum, Gymnasium
Government and public office	Government office building, prison, Court, Police office, Fire station
Information	Information systems, Automation of office counter work
Defense	Office building, Training system, School
Other infrastructure	Garbage collection, Urban development, Water work, Public housing

#### **3) Value for money (VFM)**

One of the ultimate goals of PFI is to deliver services that can offer the best value to taxpayers. Public expenditures must always be considered to satisfy the VFM requirement. Basic concept of VFM can be shown as Figure 4-1. Firstly, public sectors estimate expected VFM by comparing the project cost in case of PFI to the cost in case of traditional way (Public Sector

Comparator). The project implementation is depends on this feasibility study. This means the calculation and evaluation of VFM is required from the project planning stage and the result is the absolute key component of success in the project management. Because in case the result of this expected VMF is lower than true value, which means the VMF is underestimated, the project doesn't look like an attractive place to invest for the public sector and it throws away a precious opportunities. On the contrary, in case the result of this expected VMF is higher than true value, which means the VMF is overestimated, the project doesn't look like an attractive place to invest for the private sectors and it weakens their rivalry to win a bid for the project. As a result, effective implementation of PFI cannot be achieved.



**Figure 4-1 Value For Money**

**4) Market testing**

In order to improve the quality of public services by PFI, the public sector needs to compete with the private sector. Under the VFM approach, if the private sector can deliver a public service more efficiently than the public sector, that service has to be privatized. The initial estimation of project VFM by public sectors is significantly important process in the

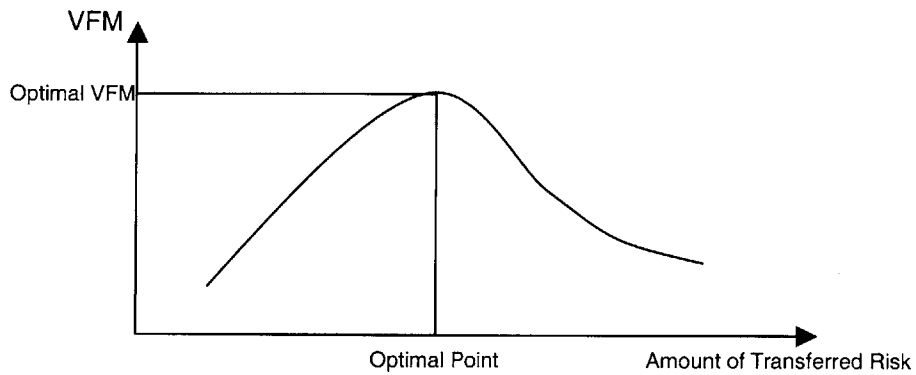
implementation of private financing scheme. If the public sector has enough experiences and abilities to evaluate the project, private sectors can be given the chance to participate in PFI. As the accuracy of VFM is improved, the benefit from the PFI project is likely to increase.

#### ***5) Full disclosure***

Contracts stipulate that information on bidding and contract conditions are not to be disclosed if they are not against the public interest. However, public terms regarding the contractor selection process, progress of projects, and so forth are disclosed as a rule. For example, in the process of disclosure, the government has to show the detail of the project evaluation including bidding price or VFM etc. Moreover, under disclosure guidelines, it is possible to petition the parliamentary ombudsman to have information disclosed by going through proper channels after an internal examination by the administration.

#### ***6) Risk Transfer from public sector to private one***

With the PFI, value for money is achieved through the transfer of risk to the private sector, which is perceived to have an advantage in handling risk. Figure 4-2 shows the relationship between VFM and transferring of risks. Based on the VFM approach, the method and extent of transferring risk to the private sector need to be examined. Transferring all risk to the private sector produces an imbalance from the viewpoint of the public sector. Since private contractors who bear all the risks will charge higher prices, it is not the best VFM solution. In general, VMF can be maximized by transferring appropriate amount of risk in between public and private sectors.



**Figure 4-2 VFM and Risk Transferring**

The risks that can be transferred to the private sector can be divided into two groups, *general risks* that are common all types of public/private service projects and *PFI specific risks* that are PFI public services project specific. Risks come in many forms and often depend on the characteristics of a particular project. The risks involved in providing a playground for a school are sure to differ in some aspects from the risks associated with a large-scale transport project. The transfer of risk differs with PFI public services contracts in that it enables the transfer of project financing risk to the private sector. Therefore, an essential condition of any PFI project is that adequate amount of financial risk is transferred to the private sector to secure value for money.

According to the private report, public services project financing risk, the risk of delivering an economically viable financial package, can be divided into two main types, internal *disposal risk* and external *financing risks*. *Disposal risk* is the risk that the expected value of surplus government assets, detailed for disposal in a PFI contract to fund public services, is lower than expected. Governments can reduce their exposure to this risk by transferring assets, such as redundant hospital buildings and grounds, which have, or are to become, surplus to requirement to the private sector contractor as part of the PFI contract. *External financing risk* is

the risk that the private sector contractor fails to raise sufficient funding for a public services project on the market. As with any contract, the ability of the private sector contractor to secure the finance required to complete a PFI project, must be determined by the sponsoring government before the deal is signed. External financing risks are also related to *interest rate risk*, which is the risk that the interest rate will change between the time a bid is tendered and the time a contract is signed. In the BTO project, because the ownership is transferred to the public sector after construction of facilities, some of the risk is owned by a public sector. Adverse movements in the interest rate during this time mean that the private sector contractor has to pay more to service their debt, which may reduce the attractiveness of a PFI contract.

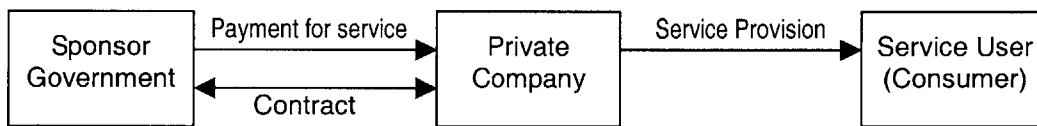
The transfer of project financing risk generates incentives for the private sector to supply services on time and of a higher quality as they only start to receive service payments when a flow of public services actually starts, and continued payment depends on meeting specified performance criteria. A further effect of transferring a project's financing risk to the private sector is that it reduces the general risks of public service projects that have been retained by the public sector. However, since risks and benefits go hand in hand, the higher the perceived risk transferred to the private sector, the greater the risk premium. Given that some risks are difficult to quantify it is difficult to allocate all the risks adequately to either party for accepting a particular risk. Both sectors should not forget the principle, "risk should be allocated to whoever is best able to manage it" and transfer for its own sake. The risks of a public services project should only be transferred to the private sector if, and to the extent that, the private sector is capable of managing such risk. In situations where the private sector is best judged able to deal with risk, such as construction risk, then the public sector should try and transfer this responsibility completely. Where the private sector is deemed less able to manage project risk, responsibility for these risks should remain within the public sector.

#### 4.4. Types of PFI

The structure of PFI is divided mainly following three types depending on the government intervention or fare collecting systems. Table 4-2 shows these three PFI alternatives in U.K. experience depending on the characteristics of the project.

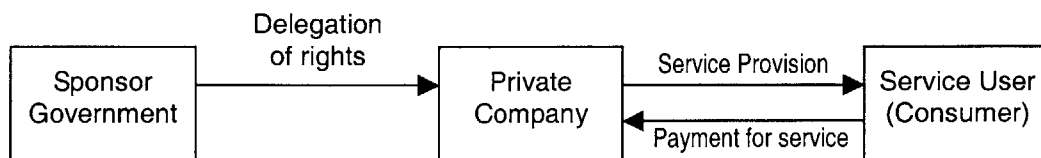
##### 1) *Services sold to the public sector*

This type is the ideal form of PFI in which the private contractor builds and operates a facility, and recovers its investment by selling services to the public sector. However, simple finance leases of facilities are not included. It has a track record in delivering public services such as hospitals, prisons, roads, and information systems.



##### 2) *Financially free-standing projects*

Here the private contractor builds and operates a facility under license from the government. Like toll roads and toll bridges, the investment is recovered through fee revenues, and public expenditures are not involved in principle. BOT (build, operate, transfer) projects commonly seen in Southeast Asia are of this type.



##### 3) *Joint Ventures*

While both public and private sectors provide funding to build facilities, operations are

man-aged by the private sector. Since the investment cannot easily be recovered from operating profit, the project often depends on value enhancement from redevelopment or railroad construction projects. In this type of PFI, effective support from the public sector is allowed. However, usually the support comes not as operating subsidies, but rather is limited to contributions for acquiring and using assets for the development.



**Table 4-2 Classification of PFI in the U.K.**

Type of PFI	Main Role of Public Sector	Main role of Private Sector	Type of Infrastructure
Services sold to the public sector	Project planning and payment for service	Design, Construction, Operation, Maintenance and Financing	Hospital, Prison, School, Road, etc.
Financially free-standing projects	Project planning and Investment to SPC	Design, Construction, Operation, Maintenance and Financing (shortfall of public financing)	Urban development, Surface transport, etc.
Joint-venture	Project planning	Design, Construction, Operation, Maintenance and Financing	Highway, Museum, etc.

## **4.5. Implementation Process**

In the U.K., the birthplace of the scheme, there has been well-established system of PFI. The present Japanese PFI has copied U.K. style of PFI application.

### **1) PFI project supervision**

In the beginning, a Private Finance Committee was established outside the Treasury to act as coordinator for central agencies, local public entities, and private contractors. However, it had no power. To further promote PFI, the Blair administration established the PFI Task Force (TF) within the Treasury with the power of approval, support, and coordination for PFI. The TF is composed of a Project Team of nine experts from the private sector including the head, and a Policy Team of Treasury personnel. The Project Team is responsible for determining feasibility and approving PFI projects. The Policy Team is in charge of rules for PFI projects, procedural matters, and coordinating across agencies.

### **2) PFI project organization**

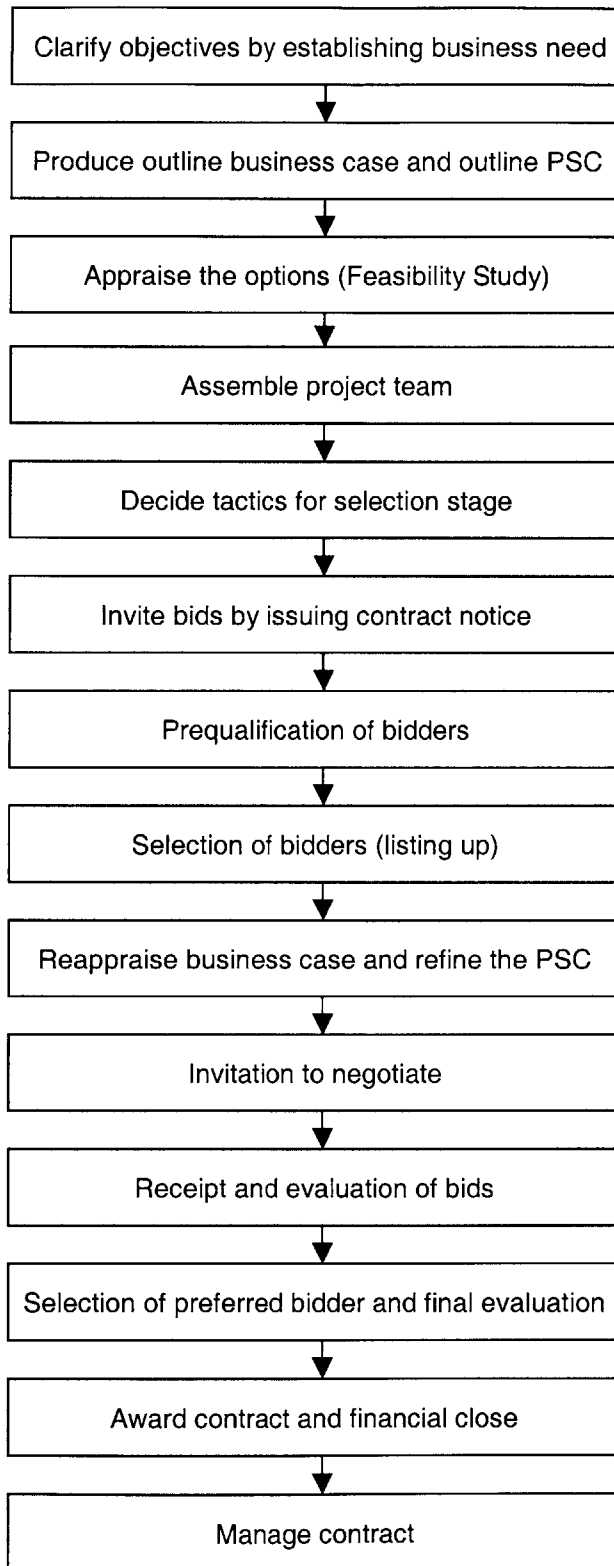
Each PFI department in a public sector office plays the lead role in establishing business needs and moving the project forward. Through the Project Team, the TF supports each department, approves the project, and coordinates participants. Ultimate responsibility for the project rests with each department. A major role is also played by the National Audit Office (NAO). It is an independent office that conducts financial audits and VFM audits, and reports directly to the Public Accounts Committee of the House of Commons.

### **3) PFI procurement process**

Figure 4-3 shows the general implementation process for PFI projects consists of 14 stages. In the preparatory stages, business needs are addressed (Stage-1), and realistic alternatives for meeting these needs are identified and assessed for their efficiency and effectiveness (Stage-2). If PFI is found to be the best method for procurement, an outline



business case is prepared covering specific business plans, risk analysis and budget constraints (Stage-3). At this stage, market sounding is used to determine the level of interest among private contractors and the public. Entering the bidding stages, a project team of experts is formed (Stage-4). Consequently, the team decides the tactics for selection stages and the selection process is formulated (Stage-5). Furthermore, a call for competition is issued with a sufficient explanation of the project. Interest parties are provided further details of the projects (Stage-6). Bidders are screened in a pre-qualification process and a long list is compiled (Stage 7). In the selection stages, the long list of bidders is reduced to a short list (Stage-8), and at the same time the original appraisal of business needs is refined (Stage-9). An invitation to negotiate is then offered to bidders giving them detailed information to use in formulating their bids (Stage-10). After bids are received, discussions are conducted with each bidder to clarify and evaluate their proposal (Stage-11), and negotiations are aimed at ensuring that requirements are met and defining terms of the contract, and bidders are then asked to submit their best and final offer. Based on the offer, plans are reviewed one more time to confirm that the objectives can be achieved (Stage-12). If there are no problems, the contract is awarded and a notice is publicized (Stage-13). The management of the contract defines the working relationship between the public sector client and PFI service provider (Stage-14). While this is a brief description of the procurement process, the PFI guidelines contain detailed information on implementation procedures, including a standard contract form. These guidelines with training and development programs have been prepared for local governments implementing PFI.



**Figure 4-3 Guide to the PFI Process**

#### **4.6. Procurement Scheme of PFI**

Table 4-3 shows the procurement business schemes in PFI. Listed are the basic schemes and there can be some hybrid types applied to the actual PFI projects. In the U.K., the DBFO (Design-Build-Finance-Operate) model is also one of the major schemes for infrastructure development by the private finance. On the selection of PFI schemes, transferring of ownership has close correlation with risk management. The earlier the asset transfers from the private sector to the public sector, the more the amount of risk belonging to the private sector becomes. Under the BOT (Build-Operate-Transfer) model, since the asset is transferred after the operation of the facility, the operation risk, including maintenance risk, is not to be transferred during the operation period and the risk is managed by the private sector. On the contrary, under the BTO (Build-Transfer-Operate) model, since the asset is transferred before the operation of the facility, the operation risk is managed by public sector during the operation period. In the sense that the operation risk can be ignored for the private sector under the BTO model, BOT model is riskier for it and includes high risk premium. As for BOO (Build-Own-Operate), there is no transferring of operation risk in the process of project implementation, hence, the operation risk and disposal risk is to be burden on the private sector and the risk premium is expected to be higher than the case under the BOT or BTO model.

**Table 4-3 PFI Scheme**

	System	Feature	Ownership	Finance Source for Construction	Operation of the Facility	Collection of Project Fund
Heavy ↑	BLT Build- Lease- Transfer	SPC* has no operational department in the organization and builds the facilities. Ownership is to be transferred to the government after lease period. The facilities are to be operated by government and SPC redeem capital invested by the lease fee. Though the system brings expected cost reduction, it does not help to streamline administrative structure.	Private To Government (after lease period)	Private	Government	-
	BOT Build- Operate- Transfer	SPC performs design, construction and operation of the facilities. At the end of operation period (20-30 years) operation of the facilities is transferred to the government for free. Initially, the system was applied for the infrastructure project in developing countries. It helps to bring expected cost reduction.	Private To Government (after contract period)	Private	Private To Government (after lease period)	Services sold Or Joint venture
Government Intervention	BOS Build- Operate- Sell	SPC performs design construction and operation of the facilities. At the end of operation period (20-30 years) operation of the facilities is transferred to the government for value. It helps to bring expected cost reduction.	Private To Government (after contract period)	Private	Private To Government (after lease period)	Services sold Or Joint venture
	BTO Build-Transfer -Operate	Soon after SPC builds the facilities, the ownership is transferred to the government. SPC obtain the right of the use of the facilities and redeems capital invested by its operation. SPC can avoid the owner's responsibility and risk of holding facilities. The system brings expected cost reduction and helps to streamline administrative structure.	Private To Government (after completion of facility construction)	Private	Private	Services sold Or Joint venture
	BSO Build-Sell- Operate	Soon after SPC builds the facilities, the ownership is sold by SPC to the government on installment payment. SPC redeems capital invested by the payment. SPC can avoid the owner's responsibility and risk of holding facilities. The system brings expected cost reduction and helps to streamline administrative structure.	Private To Government (after sales of facility)	Private	Private	Services sold Or Joint venture
	BOO Build-Own- Operate	SPC performs design, construction and operation of the facilities. SPC continues to operate it and the ownership is not transferred to the government. The capital invested is to be redeemed by payments of its end user. The system brings expected cost reduction and helps to streamline administrative structure.	Private	Private	Private	Joint venture
Light ↓	BFO Build-Finance- Operate	SPC performs design, construction and operation of the facilities. SPC continues to operate it and the ownership is not transferred to the government. The capital invested is to be redeemed by payments of the government with consignment contract. The system brings expected cost reduction and helps to streamline administrative structure.	Private	Private	Private	Joint venture

\*SPC; Special Purpose Company

#### **4.7. Government Roles and Intervention**

For the provision of infrastructure service, government intervention can take different forms depends on the characteristics of projects. Compared to the initial forms of government intervention, financial interventions by the government are quite limited. Moreover, nowadays, the project company will not normally gain ownership of the land in the form of either leasehold or ownership rights, but will simply be granted some forms of restrictive license to use the land specifically for the project during the operating period. The present forms of government intervention in the U.K. experience are the following:

- (1) the granting of exclusive rights protecting the project company from the competition of alternative infrastructure
- (2) the insurance of a minimal revenue during the operation phase through "take-or-pay" or "take-and-pay" contract
- (3) the construction of complementary assets to the infrastructure allowing to improve the access to this infrastructure (e.g. the development of railway and road infrastructure to Eurotunnel)
- (4) the internalization of the positive externalities generates by the project through land or equipment granting and contribution of actors benefiting from the development of the infrastructure (e.g. participation of property developers, landowners and shopkeepers to the development of the Bristol Light Rail project in recognition of increase in land values along the railway's route)
- (5) indirect financial aid through, for instance, tax holidays or interest bonus (e.g. subordinated loan provided by the Malaysian government to develop the North-South Highway that could be drawn if the project revenues fell below a projected target level)
- (6) the transfer of revenues from an existing infrastructure to ensure the financing of a new

project during the construction period (e.g. the transfer of the revenue from two existing tunnels crossing the Thames to reduce the debt period during the construction and early operational phase for the development of the new Dartford Bridge).

Even if the provision of government guarantees can be justified by the existence of positive externalities or the lower cost of capital incurred by the public sector, the government intervention might have adverse effects. First, it reduces the incentives for banks or private investors to screen projects carefully. Second, guarantees blunt managerial efficiency in particular when the government guarantees against cost overruns. Finally, guarantees create contingent liabilities for the government which do not appear in the budget. The type of government intervention is crucial in order not to distort the incentive of each stakeholder active in the project. For instance, direct subsidies may be better than guarantees since they run through the normal budgetary process and may be limited to an amount just large enough to make the project attractive to private investors. However, political pressures may lead to inefficient subsidies compared to the social benefit of the project.

## **Chapter 5. Private Finance Initiative in the U.K.**

Private financing has been used for the development of important infrastructure in Europe. In the U.K., the government has introduced the Private Finance Initiative (PFI) in 1992 Autumn Statement in order to promote the construction of new infrastructure. The participation of the private sector in infrastructure projects has surely led to the creation of a new industrial structure in the U.K. and it proposed a future ideal relationship between public and private sectors. However, it is also the fact that there is no project which is near the termination of the concession contract so that it is very difficult to evaluate its efficiency at present.

Against such a background, this chapter first studies a current PFI market situation in the U.K. as a pioneer country of private financing to develop infrastructure. And it secondary describes the features of PFI application in the U.K. construction market introducing typical PFI projects. Finally, summary of this chapter discusses some current issues of the U.K. version of PFI.

## **5.1. The U.K. Construction Market Overview**

The U.K. construction industry contributes around 8% of GDP and employs about 2 million people. The U.K. construction output is 12% of total European output, has the 3rd largest construction output in Europe and is the 5th largest in the world. In 2000, the U.K. construction industry's output was £69.5 billion at current prices, up from £55.2 billion in 1996. It is of major importance to the U.K. economy, accounting for 7.4% of the U.K. gross domestic product (GDP) in 2000. As well as its economic significance, the construction industry is also a major employer. As Japanese construction market, the majority of private contracting firms employ fewer than four people, but in terms of the value of work done, the industry is dominated by a small number of large companies. In 2000, infrastructure accounted for 9.2% of all construction work, a slightly lower figure than for the previous 4 years, and was worth £6.4 billion. Road construction is the main source of work, with the Government's 10-Year Transport Plan giving a boost to expenditure. Gas, air and communications formed the next most significant market. Water and sewerage activities continue to be a major source of work, largely as a result of determinations by the water industry regulator. A major upturn can be expected in the railway industry as a result of recent accidents.

A government-initiated quality scheme to provide customer assurance got off to a very slow start. A major challenge is the lack of skilled labor throughout the industry. Some companies consider that this is serious enough to be a limiting factor in their business development. The U.K. has a tradition of high home ownership, which, coupled with an old housing stock, means that repair and maintenance work is an important part of the construction industry. With the increase in Public Finance Initiative (PFI) schemes, the boundary between public and private sector work is becoming less distinct.



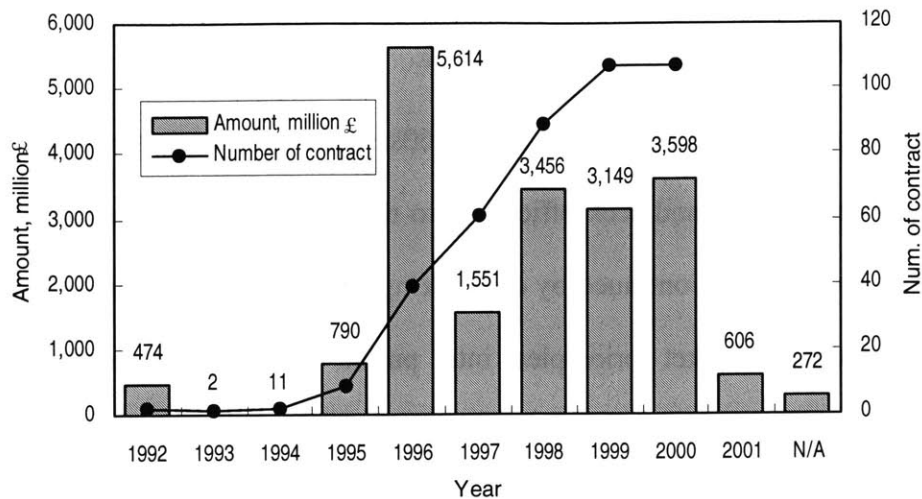
## **5.2. The Scope of PFI Projects in the U.K.**

To overcome economic stagnation since 1960s, Thatcher administration decided to downsize the central government and seek efficiency to the development of infrastructure. The “smaller government policy” was continued by downsizing public sectors, deregulating financial operations and introducing market principles into public service, and made a step by reorganizing government functions into agencies, introducing the Citizen’s Charter, and promoting market testing, in which the private sector competes the public services.

The PFI has meant that more capital projects have been undertaken for a given level of public expenditure and public service capital projects have been brought on stream earlier. As at 1 September 2001 there had been almost 450 PFI deals signed with a total capital value of £20 billion. The increased level of activity must be paid for by higher public expenditure in the future, as the stream of payments to the private sector grows. PFI projects signed to date have committed the Government to a stream of revenue payments to private sector contractors between 2000/01 and 2025/26 of almost £100 billion.

### **5.2.1. PFI Market Size in the U.K.**

Figure 5-1 sets up the number of contracts and annual amount of PFI projects since the PFI was started in the U.K. According to the figure, the number of contracts has been gradually increased since 1992 in which PFI was started, and annual project amount has also increased except from the case in 1996. The highest amount was spent in the year of 1996 because of the Channel Tunnel Rail Link Project (CTRL) which is the amount of £ 4.2 billion and the biggest PFI project in the U.K. until now. The number of projects has been steadily increasing every year and the trend is assumed to continue in the U.K. for some time in the future.



**Figure 5-1 Annual Contract Amount and the Number of Contracts**

### 5.2.2. Type of Projects

Table 5-1 shows that by 1 September 2001 there had been almost 450 PFI project contracts signed with a total value of just over £20 billion, 40% of which has been accounted for by the Department of Transport, Local Government and the Regions (DTLR). From the early stage, the U.K. government tried to apply PFI scheme to the infrastructure development. For example, The Highways Agency (HA), an executive agency of the Department of Transport, has undertaken four road projects under DBFO scheme:

- the M1-A1 link road near Leeds
- the A1(M) widening between Alconburg and Peterborough
- the A419/A417 between Swinden and Gloucester
- the A69 between Carlisle and Newcastle-Upon-Tyne.

In such road projects, the asset is provided by the private sector, the provider retains ownership and contracts to supply free entry to traffic for a pre-specified period of 30 years. The provider is remunerated directly from the government, not the user, in the form of a fixed fee per vehicle (shadow tolls), which is monitored at various points on the road. The government pays directly

for the use of the service by the public, rather than for the provision of road services. The Department of Health has signed the most PFI deals, 105, with a total value of just over £2.5 billion. The largest of these, in monetary terms, is the University College London Hospitals NHS Trust PFI project. The £404 million project includes a development in Euston Road, London to house the University College Hospitals (UCHs), the Middlesex Hospital and the Hospital for Tropical Diseases all on one site.

**Table 5-1 PFI Signed Deals by Department, as at 1 September 2001<sup>1</sup>**

	Number	£ million
Transport, Local Government and the Regions	58	8,289
Health	105	2,502
Defense	37	1,868
Scotland	56	1,865
Home Office	39	1,379
Education and Skills	69	1,167
Work and Pensions	7	835
Inland Revenue	8	391
GCHQ	1	330
Wales	11	309
Environment, Food and Rural Affairs	8	249
Lord Chancellor's Departments	7	208
Trade and Industry	8	185
Northern Ireland	22	130
Treasury	1	118
Customs & Excise	1	73
Foreign and Commonwealth Office	4	62
Northern Ireland Court Service	2	58
Office of Government Commerce	1	10
Culture, Media and Sport	3	7
Public Record Office	1	-
Other	1	-
Total	450	20,033

Table 5-2 shows the number and amount of PFI deals classified by base facility. 127 deals are hospital facilities and most PFI deals and the highest amount was spent for railway facilities which include Channel Tunnel Rail Link Project (CTRL). Infrastructure such as road or railway accounts for large amount in PFI market in the U.K..

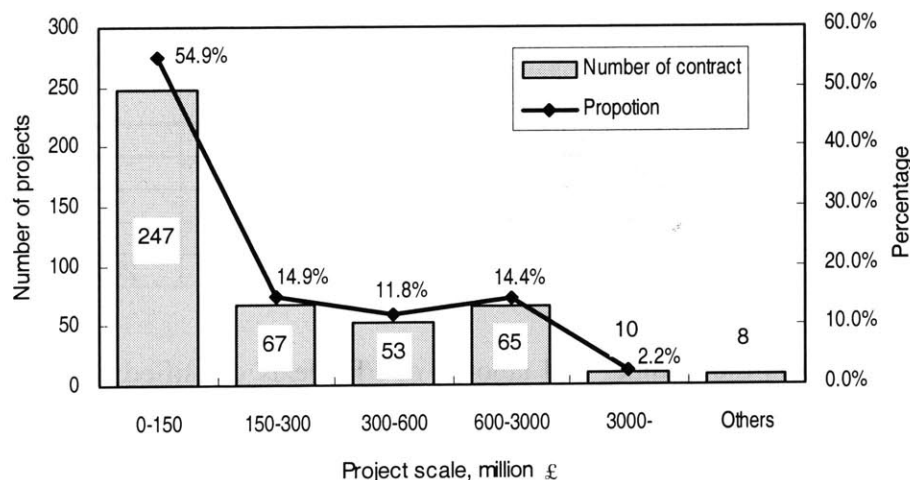
<sup>1</sup> Source: Office of Government Commerce

**Table 5-2 PFI Signed Deals by Facility, as at 1 September 2001<sup>2</sup>**

Types of Facility	Number	£ million
Hospital	127	2,947
School	86	1,713
Public Office	49	1,919
Communication, Information	41	1,471
Defense	37	1,868
Road	20	2,088
Prison	10	452
Sewage	9	588
Waste disposal and treatment facility	6	262
Health, Insurance	6	103
Railway	5	5,134
Underground	5	905
Car transportation	5	106
Library	5	42
Housing	3	7
Others	36	429
Total	450	20,033

### 5.2.3. Size of projects

Figure 5-2 sets up the classification of the PFI projects in the U.K. based on their sizes. Since the PFI was started in 1992, in terms of the size of each project, the range of “less than 150 million pounds” accounts for 50% of total amount.



**Figure 5-2 PFI project classification based on size**

<sup>2</sup> Source: Office of Government Commerce

PFI deals have ranged from small projects, such as the £100,000 Littlehampton Community School ITC facilities project in West Sussex, to the £4 billion deal for the Channel Tunnel Rail Link (CTRL). Table 5-3 shows the 15 largest PFI deals, in value terms, as at 1 September 2001. As the table shows, most of the largest PFI deals were construction projects for infrastructures such as facilities for road network or communication network. There are various reasons for easy application to them. The methods for transferring risk from public sector to private sector or collecting fare from the facility users could be important factors, of course, there would be other factors to be considered.

**Table 5-3 PFI Projects over £ 200 million, as at 1 September 2001<sup>3</sup>**

	Department	Year signed	£ million
Channel Tunnel Rail Link	DTLR	2000	4,178
PRIME(Accommodation transfer to the private sector)	DWP	1995	665
Public Safety Radio Communication Project	HO	1995	500
Birmingham N. Relief Road	DTLR	2000	450
Northern Line Trains	DTLR	1995	409
University College London Hospital NHST	DoH	1995	404
Main Building Redevelopment Headquarters	MoD	2000	400
London Underground Connect	DTLR	2000	355
Second Severn Crossing	DTLR	1995	331
GCHQ Building	FCO	2000	330
Armed Forces Personnel Administration Agency(AFPAA)	MoD	2000	264
Project 2002(Glasgow Schools Project, 29schools)	Scotland	1995	225
M1/A1 Link Road	DTLR	2000	214
Croydon Tramlink	DTLR	2000	205
DLR Extension – Lewisham Link	DTLR	2000	202

<sup>3</sup> Source: Office of Government Commerce

### 5.3. PFI Capital Expenditure

#### Short-term Expenditure

According to *the 2001 Pre-Budget Report*, public sector capital expenditure is projected to rise from £19.0 billion in 2000/01 to £33.2 billion in 2003/04. As a proportion of GDP, public sector capital expenditure will rise from 2.0% of GDP to 3.0% over this period. It is expected that the rise in public sector capital expenditure will be supplemented by capital expenditure under the PFI, raising total publicly sponsored capital expenditure from £22.9 billion in 2000/01 to £35.6 billion in 2003/04. The figures are set out in Table 5-4.

**Table 5-4 Public Sector Capital Expenditure<sup>4</sup>**

£ billion	2000/01	2001/02	2002/03	2003/04
Total public sector capital expenditure (As % of GDP)	19.0 (2.0%)	26.0 (2.6%)	28.8 (2.8%)	33.2 (3.0%)
Estimated capital expenditure under PFI (As % of total public capital expenditure)	3.9 (17.0%)	3.5 (11.9%)	3.1 (9.7%)	2.4 (6.7%)
Total publicly sponsored capital expenditure (As % of GDP)	22.9 (2.4%)	29.5 (3.0%)	31.9 (3.0%)	35.6 (3.2%)
<i>Memo</i>				
<i>Public sector gross investment</i>	19.0	26.0	28.8	33.2
<i>Less depreciation</i>	-12.7	-13.2	-14.0	-14.6
<i>Public sector net investment</i> (As % of GDP)	6.3 (0.7%)	12.8 (1.3%)	14.8 (1.4%)	18.6 (1.7%)

PFI capital spending may be additional to public sector capital expenditure as both public sector capital expenditure and total publicly sponsored capital expenditure are set to rise over the period. In reality it is difficult to demonstrate that something is additional to what would have happened anyway. As a first round effect, some PFI capital expenditure is clearly substitutional as some public capital spending is replaced.

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<sup>4</sup> Transport Select Committee, *Roads for the Future*, 1 February 1990, HC 198-I 1989-90, para 154-156.

Investment for the PFI may be additional when any second round effects are taken into account. For example, public funds that are released from a department's capital program, by an injection of PFI investment, can be used elsewhere to create additional activity. This could be additional spending compared with what would have been the case in the absence of the PFI. A second way in which PFI could provide additional spending is through efficiency savings, which again would release public funds for other purposes.

The Treasury publishes capital spending by the private sector by sponsoring department. The relevant estimates for 2000/01 to 2003/04 appear in Table 5-5. The table shows that over the period estimated capital spending by private sector will be £ 13 billion.

**Table 5-5 Departmental Estimate of Capital Spending by the Private Sector<sup>5</sup>**

£ million

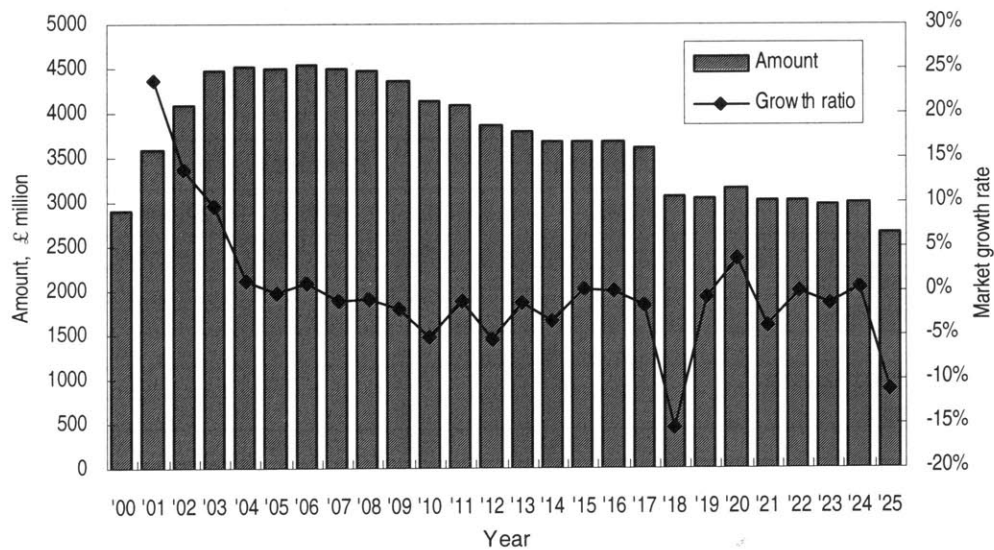
	Estimate	Predictions			Total
	2000/01	2001/02	2002/03	2003/04	
Defense	121	147	200	100	568
Foreign and Commonwealth Office	7	7	6	7	27
Agriculture, Fisheries, and Food	0	0	9	0	0
Trade and Industry	36	61	24	26	147
Environment , Transport and Regions	619	639	855	1,015	3,128
Education and Employment	15	28	9	0	52
Home Office	160	136	297	0	593
Legal Departments	37	36	13	6	92
Culture, Media and Sport	0	0	0	0	0
Health	491	501	235	67	1,294
Social Security	42	17	67	14	140
Scotland	540	289	78	20	927
Wales	160	11	0	0	171
Northern Ireland	39	26	4	0	69
Chancellor's Departments	104	87	19	19	229
Cabinet Office	155	159	42	6	362
Local Authorities	1,352	1,404	1,215	1,150	5,121
Total	3,878	3,548	3,046	2,430	12,920

<sup>5</sup> Source: HM Treasury, FSBR 2001, HC 297, Table C16

## Long-term Expenditure

In response to a recommendation from the Treasury Committee in 1996 the Treasury now publishes forecasts of the committed expenditure for public services flowing from private sector investments signed under the PFI. The following Figure 5-3 from the 2001 *Financial Statement and Budget Report (FSBR)* set out the estimated future payments to the private sector for signed PFI deals.

Actual expenditure in future years arising from deals will depend upon the payment mechanism details for each contract. However, these figures do not tell the whole story, as more PFI deals are signed the size of payments to the private sector will increase further.



**Figure 5-3 Long-term Forecast of Capital Expenditure under the PFI**



## **5.4. Sharing of Risks**

### **Perception Gap between Public and Private Sectors**

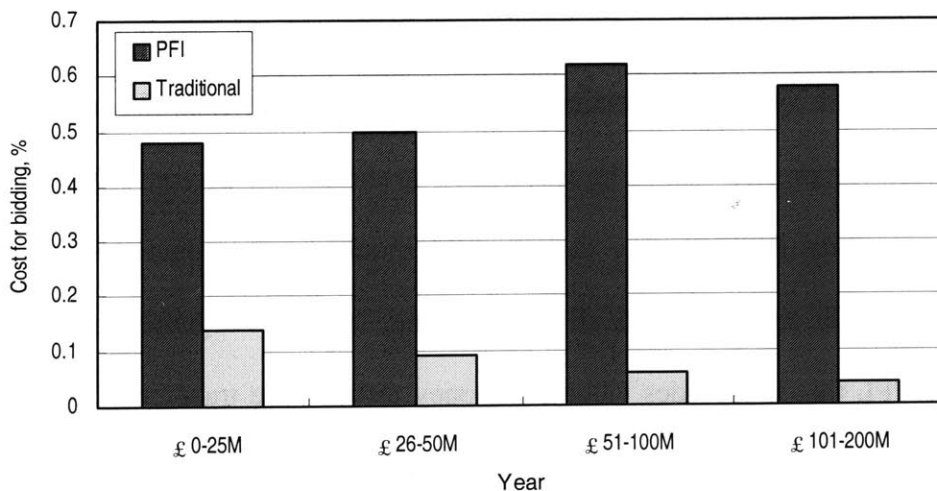
As for transferring risks in PFI projects, the recognition of the optimal point is different between public and private sectors even in the U.K. Given that some risks are difficult to quantify, such as the liabilities that would be transferred back to the public sector in the case of a collapsed DBFO hospital project, it is difficult to decide to what extent the transfer of risk can be deemed optimal. The small amount of available evidence on risk transfer available suggests, that at least in some sectors, PFI contracts have transferred to the private sector a substantial degree of responsibility for some of the risks involved in constructing, operating and maintaining public services and financing the assets that support them. The National Audit Office (NAO) recently surveyed public and private partners involved in 121 PFI projects prior to 2000. Over 95% of both partners agreed that the allocation of risk was either wholly or partially appropriate. However, the views of the partners varied when asked whether they believed the project risks had been allocated optimally. 80% of public sector partners thought the allocation of risk wholly appropriate while only 50% of the private sector partners agreed. An efficiently designed PFI project contract should involve the optimum transfer of all types of risk. Where the financial risks of a public service project cannot be transferred to the private sector, different forms of public private partnerships (PPP's) other than the PFI should be investigated such as design, build and operate (DBO) projects. With all this in mind, the main argument put forward by proponents of the PFI, that it provides value for money through the transfer of risk, would be better defined as value for money through the "optimal allocation of risk".

## 5.5. Current Issues

Though a number of infrastructure projects have been procured by PFI scheme in the U.K., There are many unresolved issues which need to be thrashed out. According to the research by Grahame Allen, the following issues are found in the process of PFI.

### High Bidding Costs

Private partners have often criticized the high cost of organizing bids for PFI projects. It is argued that private sector contractors who tend for PFI project bids have to cover higher 'front-loaded' costs when drawing up detailed specifications and contract terms than when preparing bids for public services projects under conventionally tendered contracts. There is little hard evidence for the cost of the tendering process as it is usually considered confidential. The evidence that does exist appears to support the argument. Figure 5-4 shows the average cost for bid by size of the project is higher for PFI public services projects than for traditionally procured projects.



**Figure 5-4 Comparison of Costs for Bid**

The report finds the total cost of tendering for a PFI project to all potential contractors to be just under 3% of expected total costs while for traditional procurement the total costs accounted for just under 1%.

One reason for the higher cost of bidding for PFI projects is that the time taken between offering public services projects to the private sector and the final signing of the deal can be protracted, especially for particularly intricate and technical projects. The average time taken to complete PFI deals has been estimated at 26 for local government.

There is some evidence to suggest that the relatively more expensive time spent negotiating PFI contracts with preferred bidders is longer than the time taken to initially select the bidder. If this time is not specifically included in either private or public sector cost estimates it increases total expected costs. These costs can be disproportionately high when the PFI project is small scale. The audit Commission has recently produced guidance for local government managers aimed at reducing the time taken to close PFI deals.

## **The Cost of Borrowing**

Under PFI, a public sector may gain access to private financing but the cost of such funds is unlikely to be as low as loans for the traditional procurement. The PFI does not provide a cheaper source of finance to public sectors on the same conditions as the case of traditional procurement, probably at a higher capital cost than traditional one. Under present Treasury rules, public (profit-making) corporations cannot borrow and invest like private sector enterprises as their borrowing is treated as public expenditure. Comparisons of the cost of borrowing by government and the private sector are very difficult to make. The cost of borrowing at any time is determined by a variety of factors, although the main determinants are likely to be the risk of default and the expected returns. PFI scheme is considered riskier than traditional one in the U.K.

Government borrowing for traditional procurement is backed by tax revenues and so is virtually risk-free and hence the cheapest way of raising funds. Private sector companies, which have no such guarantees, are inherently riskier propositions and hence borrow on less advantageous terms. City, or local authority, borrowing may be somewhere between these two, although some companies might be able to borrow money more cheaply than a public authority, especially if the authority is relatively new or has a less than perfect reputation for financial rigor.

Due to the difficulties involved in comparing the actual costs of public and private financing of PFI projects, disparities in the yields of bonds issued by public, private and public/private organizations have often been looked at as proxies. In this cost hierarchy the cheapest source of funds comes from government. Next it is suggested, would be a government/fare revenue backed body such as London Underground. Next are large public limited companies (PLCs) many of whom are PFI players. However, this does not take us very far since a PLC is likely to raise capital by a cost-minimizing combination of a new share issue, bank finance and commercial bonds rather than just through a bond issue alone.

The crucial aspect here is the cost differential between the alternatives. According to figures in the *Financial Times* the yield on 10-year government bonds at the close of play on 12 September 2001 was 4.9%. Similarly dated corporate bonds ranged between 6.9% for Gallaher and 5.6% for Halifax. This suggests that the extra borrowing cost of corporate bonds could be at least one and a half percentage point higher than government bonds. The differential between the returns on public funds and private equity is likely to be much greater. This was demonstrated in the NAO report on the Skye Bridge. The NAO calculated that the extra financing cost of the Skye Bridge was some £4 million on a total project cost of £28 million, or one-seventh. The cost of (private) equity was some 18.4% in real terms, compared with the cost of public capital of 6%.

In this case the private finance option required more than 12% percentage points per year above the public finance rate.

## **Legal Issues**

In addition to the financial issues, there are some legal issues concerning effective application of PFI. Under present European Commission rules for public procurement, contracts above a certain financial threshold are put out to competitive bidders in the Official Journal of the European Communities (OJEC). With regard to the PFI in the UK, these rules allow Government to chose a preferred bidder from the bidders they receive on the basis that they offer the most economically advantageous bid. The preferred bidder then negotiates the detailed proposals for a specific project, with two reserve bidders also chosen in case negotiations with the preferred bidder break down before a contract is signed. Under proposals for a new European public procurement directive, the public sector will no longer be able to select a preferred bidder. At least three bidders will be required to continue negotiations until the finalized PFI contract is signed. This kind of legal restrictions could lead to the cost of bidding becoming high for the private sector, who are already worried about the high cost presently incurred by preferred bidders.

With respect to the selection of bidders for PFI projects, the government needs to simplify the legal framework and minimize the sunk cost created amongst those involved with the PFI. Otherwise, the PFI becomes unworkable in terms of time and cost factors.

## **Chapter 6. Private Finance Initiative in the Japanese Construction Market**

Of the many structural reforms proposed by the Koizumi Administration, one that has been given a particularly high level of priority is the reform of public works. The PFI scheme has been adopted to the construction project in Japan since 1998 and the growing market seemingly promises the government to revitalize depressed construction sector. However, same mistake can be made as the case of “the Third Sector”, unless the government completely understand where, when and how to apply the private finance to the public works. The government has to recognize the differences of private financing schemes between PFI and the others in order to appropriate introduction of PFI, and establish the principles of private financing suitable for a severe environment surrounding Japanese construction industry.

This chapter first describes some kinds of the Japanese style of approach to the commissioning of public works to the private sector; “privatization”, “the Third Sector (joint public-private venture),” and “outsourcing (contracting-out)”, incorporating the principles of the Japanese version of the PFI system and differences among those systems, as a means of reform, and examines its content, the scale of the market, its benefits in terms of reducing the burden on government finance, etc. Secondary, this chapter shows current PFI status in Japan and future perspective of the market. Though Japan has practically imitated the U.K. style on the application of private financing as a initial step, Japanese version of PFI has not been exactly same form as that in the U.K. because of many reasons i.e. the difference of circumstances

surrounding construction industry, certain legal regulations, or other financial issues between the two. Finally, this chapter describes and analyzes the current issues hampering Japanese version of PFI and discusses means for solving the issues from various point of view to embark on new phase of private financing in Japan.

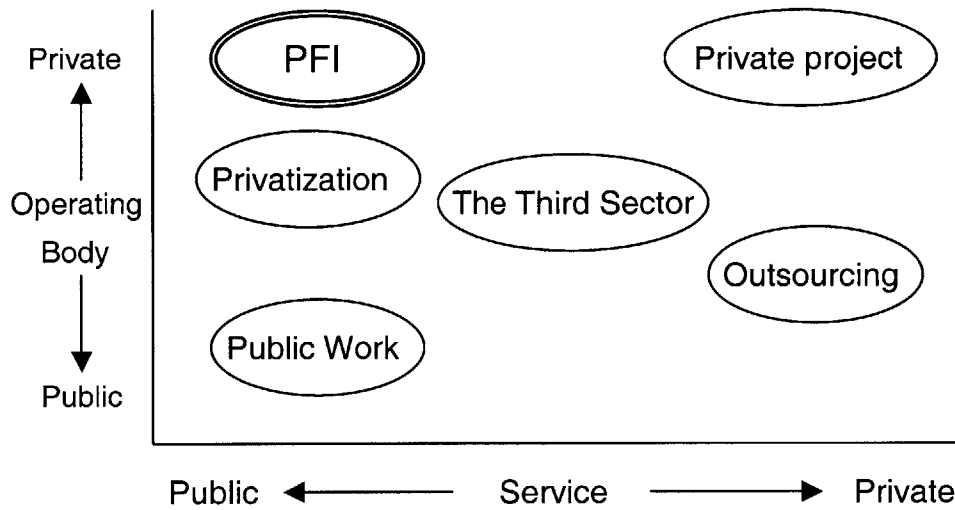
## ***6.1. Private Financing in the Japanese Construction Industry***

### **6.1.1. Types of Private Financing for Public Works**

Since the 1980s, there have been many trials of private financing by the government in Japanese construction industry. Figure 6-1 shows the states of Japanese style of private financing schemes including pure public and private projects. Japanese government positions PFI as a private financing scheme which is providing more public service by private entities. On the contrary, “privatization”, “the Third Sector” and “Contracting-out (what is called outsourcing)” in Japan has been organized at the initiatives of the central government and the system has hampered the full-fledged initiatives of the private sector. Except for a few success cases such as Japan Railway Corporation (JR) or NTT, most of the cases have difficulties in their management, especially in “the Third Sector.” Those organizations give rise to the major issue of cozy relationships among politicians, bureaucrats and business including appointment of a former government official to a high position in a private company. It doesn’t make clear the scope of management responsibility and make little attempt to take it in public-private partnership. As Figure 6-1 shows, the Third Sector has half-public body and supplies half-private service. The contracting-out called “Outsourcing” in Japan also includes public organization and supplies private service. Except for a few cases in privatization, most of the companies have not achieved full-scale privatization yet. In principle, the government is not involved in the management, once the privatized company independently started up the business. However, it actually goes against original policy of not taking part in the management of the company because most companies cannot keep their business smoothly without governmental financial support. As described in Chapter 2, centralized governance structure had bad effect so far on the effectiveness of market mechanism by involving private sector. Now, it needs to develop appropriate strategy to apply THE PFI scheme to upgrade infrastructure by pointing out various defects hiding behind each



private financing scheme.



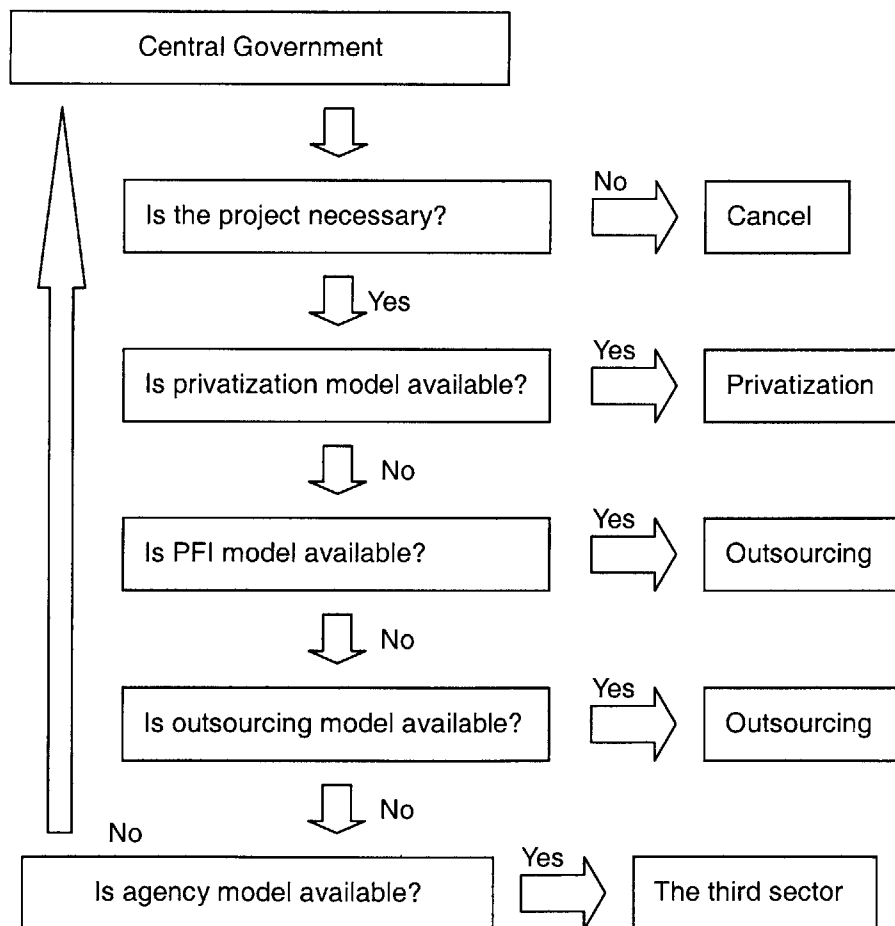
**Figure 6-1 Private Financing Scheme in Japan**

### 6.1.2. Selection of Private Financing Scheme

When the government introduces market forces into the development of infrastructure, one of the private finance schemes is to be selected based on characteristics of the project with the purpose of maximizing the profit of using it.

Figure 6-2 shows the decision making process which is revised POT (Prior Option Test) by the author in order to introduce market mechanism to the public works. PFI is second highest hierarchy in terms of effectiveness of private financing after privatization, then contracting-out (outsourcing) scheme and the Third Sector are following it. In fact, there has been inadequate process to decide the private financing scheme of public works so far in Japan. As a result, the government has lightly chosen the Third Sector scheme as a best one for a long time. That is why there was no solid evaluation system for it in the government policy and it is taken for granted that the private company takes all risks and responsibilities as a package to proceed infrastructure projects without any consideration. Besides, the Japanese public sector is apparently

conservative, and is certainly not known for speedily and zealously embracing market forces. Some officials would no doubt prefer it to stay that way, citing past experience. There has been a little effort the government has done to introduce private entrepreneurship into public works. One experiment in particular, the creation of "third-sector" companies jointly financed by public and private owners, has been disastrous. With most of these companies now in the red, third-sector projects have become a bad example for mismanagement, corruption and the abuse of bureaucratic power. Belatedly, the government is trying to purely privatize them.



Based on "Setting Up Next Steps" Gold Diana, 1991

**Figure 6-2 Revised Prior Options Test**

### **6.1.3. Details and Issues of Private Financing in Japan**

#### **Privatization**

Private Finance Initiative (PFI) is generally not used as the same meaning of "privatization" in the sense that the latter term is most commonly used. In Japan, the meaning of "privatization" is narrowly interpreted and the privatization as one of the infrastructure procurement systems is one that was originally owned by the public sector and is finally owned by the private sector. By the implementation of privatization, the privatized entity may entry into the highly competitive market (as, for example, an airplane or telecommunications market) or hold a monopoly position and so require active regulation once it is transferred to the private sector(as, for example, railway company or utility company). In either case, the ownership is to be transferred from public sector to the private sector to pull out of the business. In principle, the government is not involved in the management, once the privatized company independently starts up the business. When the ownership can be completely shifted from public sector to private sector, government can reduce spending and the issuance of government bonds. Besides, the privatized company can make the most of its own capital and know-how in business, and it can make clear the scope of management responsibility. However, there have been a few successful experiences so far in Japan. Privatization is the ideal scheme of private financing and work on theory, but it is very less versatile scheme due to mounting legal restriction and profitability of the business to the private sector as a risk taker.

#### **The Third Sector (Joint Public-Private Venture)**

##### **(1) What is the "Third Sector"**

Over the past decade and a half in Japan, there has been an economic institution called the "Third Sector", a hybrid of the First (public, i.e. government) and Second Sectors (private

enterprise), which was proposed as a means to vitalize Japan's private sector through local venture capital-cum-tax money. In theory, the Third Sector, under which a public-private consortium buys stocks to create a brand-new company, promised the best of both worlds, the economic targeting of bureaucrats complementing the management of profit-oriented businessmen and entrepreneurs.

It is a worryingly large one. According to a 2000 government survey, the latest available, Japan has 6,794 third sector companies, employing around 200,000 people. Their public capital comes mostly from local governments, which among them have invested ¥4.5 trillion (\$38 billion). Local governments have been able to invest in these projects for years. But the third sector really took off in the early 1980s, when Yasuhiro Nakasone, then prime minister, launched a program of privatization and deregulation, inspired by Britain and America, to import into government "the vitality of the private sector."

Unfortunately, it didn't work out that way, instead the Third Sector became the best of both worlds for the corrupt. Government officials have wound up sinking taxes into unprofitable projects in Babble-era, including theme parks, hotels, resorts, trade centers, and sundry small-town tourist traps, the majority of which remain operating despite perpetual losses. On the other hand the company members, shielded by regulations preventing their companies from being audited properly, escaped the responsibility of formal bankruptcy and saw their enterprises mutate into unsinkable public works projects, staffed by high-ranking bureaucrats. In the management of Third Sector, Public non-financial corporations (e.g. Japan Highway Public Corporation and local public housing corporations) hold outstanding assets worth ¥168 trillion (\$14 billion), including ¥27 trillion (\$2.3 billion) in financial assets like local government bonds, loans, equity shares and investments, as well as tangible fixed assets like sewage and waste disposal facilities, roads, and municipal and natural parks. Their liabilities aggregate ¥136 trillion

(\$115 billion) including ¥52 trillion (\$4.4 billion) in non-equity securities, ¥37 trillion (\$3.1 billion) in borrowings and ¥35 trillion (\$3.0 billion) in equities and investment. Their net assets come to a positive ¥32 trillion (\$2.7 billion).

## **(2) Issues Surrounding the Introduction of “Third Sector”**

The third sector holds some pretty big problems. Finding out the problems of the Third Sector scheme leads to find the problems inherent in Japanese systems.

- (i) The first problem is what is called administrative continuity. Once the project is started, it is almost impossible to change the plan even if it is going the wrong way. Hence, giant projects cannot be altered or cancelled, even though the project conditions are changed.
- (ii) Secondly, it doesn't make clear the scope of responsibility between public and private sector's role. This totally causes both sectors a feeling of less incentive to operate the business profitably. There is no target to achieve through the project and no penalty imposed on the negligence of duty.
- (iii) The third reason, which is related to second one, is that there is no place to utilize private sector's capital and know-how due to the unwelcome intrusion by public sectors. Legal restriction becomes major obstacle to make benefit under appropriate public-private partnership.

## **Outsourcing (Contracting-out)**

### **(1) What is Outsourcing?**

The practice of commissioning the management and maintenance of facilities to private business is already widespread in Japan. However, the private sector does not have enough room to be more efficient by their own creative, and the system remains inefficient. "Outsourcing" is a system that seeks to stimulate the creativity of the private sector, to reduce costs and to enhance

efficiency, through the commissioning of projects to private business, and is characterized by:

- the introduction of performance-based ordering
- performance-based commission
- systems for the observance of performance
- an expansion of the scope of public works entrusted to private business
- contracts running for several fiscal years

At the national level, in the field of water and sewerage, efforts are being made to promote the introduction of outsourcing.

## **(2) The Benefits of the Introduction of “Outsourcing”**

According to the analysis by Japan Research Institute Ltd., the benefit of outsourcing are;

- (i) An estimate of the scale of the outsourcing market based on the example of wastewater treatment, for which a full range of data are available, suggests that an expansion of the range of work on be outsourced could yield up to 250% market growth from the viewpoint of the private sector. This could lead to the creation of new markets based on domestic demand.
- (ii) Meanwhile, the attendant reduction of the number of public officials and of the costs relating to public works have the potential to cut overall management and maintenance costs by around 20%.
- (iii) Moreover, outsourcing is likely to promote the accumulation of management know-how by private business. Major foreign companies have used the know-how they have accumulated through outsourcing work in the context of the PFI's promoting outsourcing will make a foundation for the introduction of the PFI system.

## **(3) Issues Surrounding the Introduction of “Outsourcing”**

Compared with other private financing scheme, the “outsourcing” is adopting in less competitive

markets in Japan and there are some issues in the system as follows.

- (i) Local governments do not have enough practical knowledge and experience of outsourcing with some exceptions. Therefore, management of the business is highly depends on the central government. Adequate step guide may help local governments to make smooth progress of application. Each private sector should have its own regulations and guidelines which are suitable for surrounding environment.
- (ii) There is no appropriate allocation of roles between public and private sectors in business management. It creates inefficient structure of the business by evasion of responsibility between the two sectors. Every local government needs to have effective framework for risk management in order to clearly differentiate the roles of the government from those of the private sector
- (iii) There is no concrete business target. Private sector's effort does not lead directly to get its benefit, so it doesn't give total efforts to carrying out the business. Therefore, the business cannot reflect the advantage of adopting private sector's know-how and management ability.
- (iv) Market mechanism doesn't work in the business field because the scheme makes private sectors lose their competitive spirit. And it may stifle the improvement of technologies in the business field, so the company cannot provide effective service to the customers.

There is a fundamental distinction between outsourcing and other private financing schemes at the provision of infrastructure services. Outsourcing implies the transferring of management rights of the business originally owned by public sectors to private sectors to supply more effective public service by introducing market mechanism. In contrast, other private financing schemes include the transferring of capital assets owned by public sectors to private sectors as well. In fact, the business is comparatively small and expecting market mechanism by

involving private power does not work properly. However it is enough useful to reduce government expenditure.



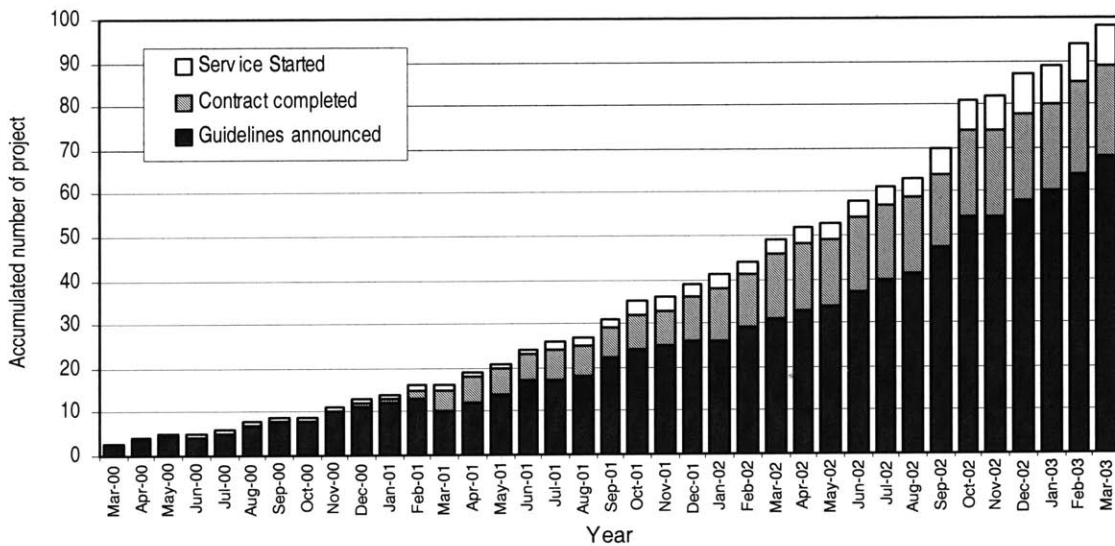
## **6.2. Current State of the PFI Market in Japan**

As a part of these reform policies, Private Finance Initiative (PFI) has been highlighted to rebuild central and local government economy with the purpose of achieving better partnerships between public and private sectors. Though the Private Finance Initiative (PFI) has only recently been introduced to Japan, there are already some innovative approaches to this scheme in public works projects. Since PFI Law went into effect in September 1999, as at March 2003 there has been 98 PFI deals, including 9 service started, 21 contract completed and 68 guideline announced projects in Japan. The increased level of activity is expected to be continued and the relationship between public and private sector must be changed to meet the complex and challenging market needs as the market grows in the future.

### 6.2.1. Market Overview

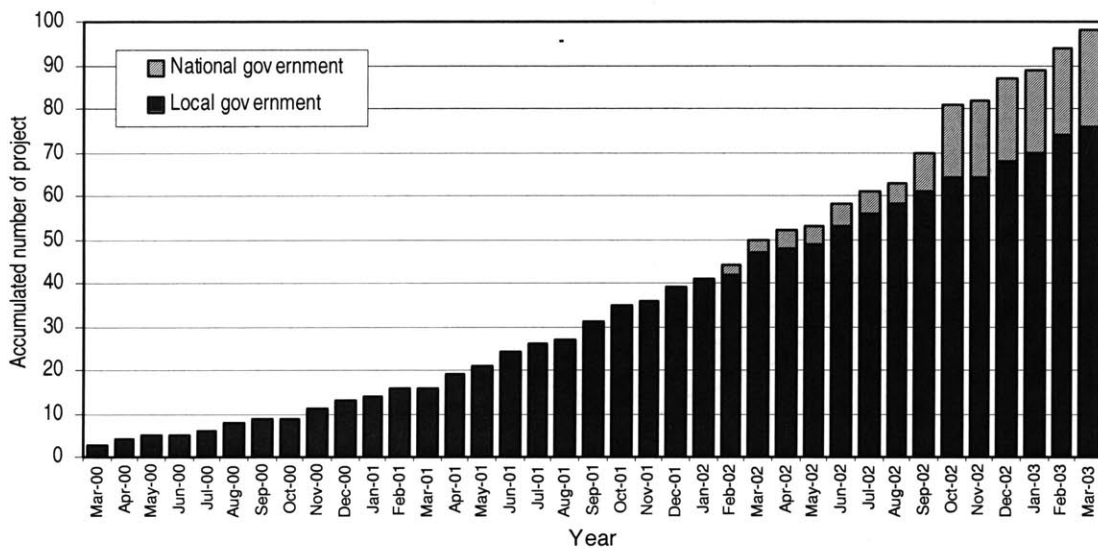
Figure 6-3 shows the number of monthly PFI deals classified based on the progress in the application process since PFI Law went into effect in September 1999. Application of PFI was started in May 2000 and the number has been increased constantly until March 2003.

During the number of deals has been significantly increased to 98 for 3 years, only 9 projects of them started to supply service and 21 projects has been already signed contracts as of March 2003. 68 projects of which are respectively in one of the process categorized as; (i)pre-qualification of the project by public sector, (ii)announcement of project guideline, (iii)invitation of bid, (iv)evaluation of bidders, or (v)final negotiation and waiting for contracts. No PFI project executed by national government has started to supply services. Japanese version of PFI has just started.



**Figure 6-3 PFI Achievement in Japan as to March 31, 2003  
(Procedure)**

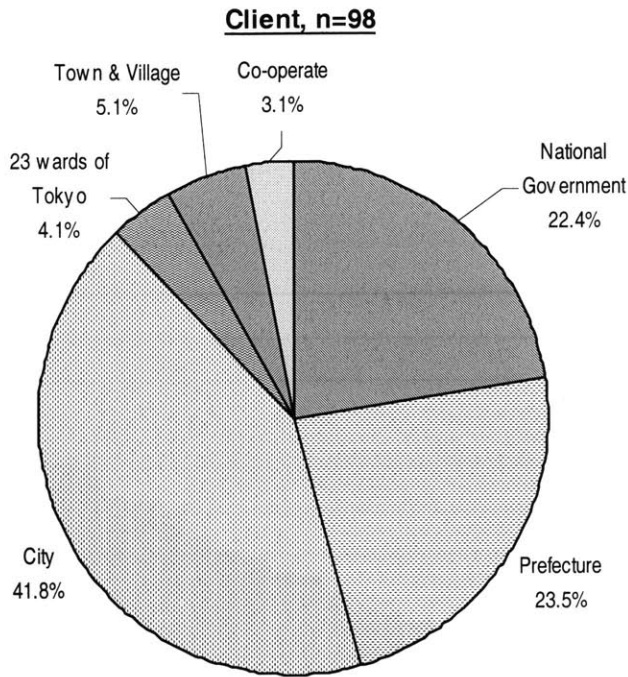
Figure 6-4 shows the number of PFI deals classified based on executive organization, national government or local government, since September 1999. Actual PFI application was started at the initiative of local governments and then national government started it from February 2002. Local governments actively implemented wider adoption of the PFI scheme with the help from national government policy of structural reform. Feasibility studies of more than 200 projects are being proceeded and the number of ongoing PFI is more likely to increase in the future. As in the past, in particular, local governments will actively introduce the private sector way of management to the wide range of purpose.



**Figure 6-4 PFI Achievement in Japan as to March 31, 2003  
(Executive Organization)**

Figure 6-5 shows the shares of 98 PFI deals by individual clients. As for local governments, prefectures and cities, as clients of projects, are occupying a large share of the PFI market in Japan. On the contrary, wards or towns and villages have small share in the market. That is why towns and villages don't have enough administrative experience and adequate ability to manage the project. They also don't have enough financial resource. In terms of the publicity

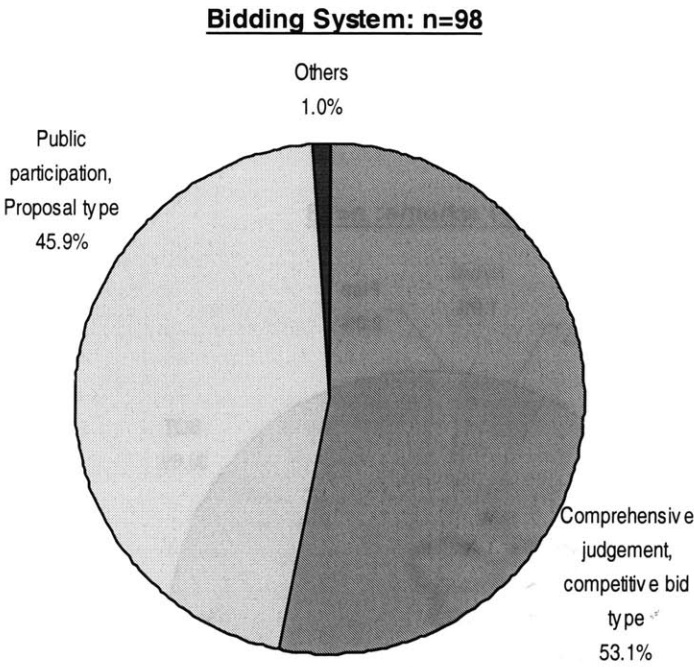
of the project, comparatively large projects in the cities or prefectures are possible to be more effective than small one in towns or villages because the more people can enjoy the service. The project size is an important factor of the effective application of PFI in Japan. When the governments apply PFI to extremely large or small project, it needs to pay close attention to planning and management.



**Figure 6-5 PFI Achievement; Classified by Client**

Figure 6-6 shows the share of PFI deals by bidding systems. There are two types of bid system; “Comprehensive competitive bid type” and “Negotiated contract type” in the Japanese PFI market. The former bidding system is based on the competitive bid, but price is not only the factor of winning bid in the system. It comprehensively takes the quality of maintenance and management or level of technology into consideration at the bid evaluation. Therefore, the public sector has to establish a clear set of criteria for evaluating the quality of the bid and decide the best proposal in using this system. In this regard, local governments are making their own

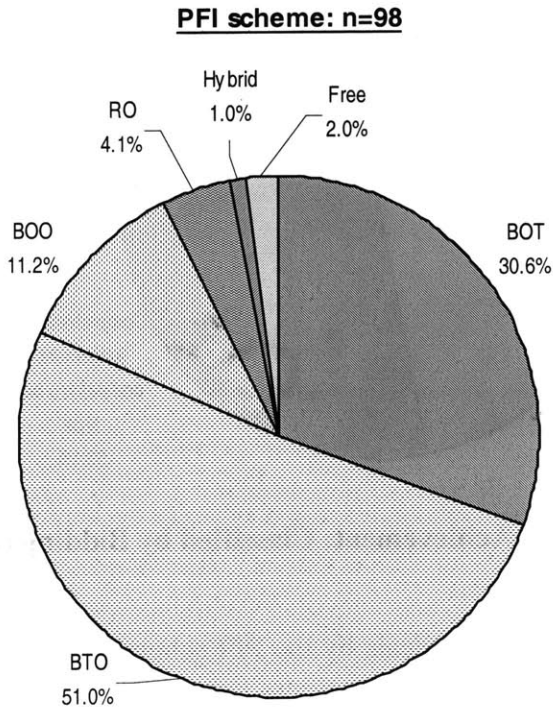
standard based on that of national government, but actual evaluations are quite ambiguous and sometimes they are not disclosed. Finally the winning bidder is often selected by the member of the committee in dogmatic manner. The latter bidding system is based on the negotiated contract. After the local government selects one winning bidder from the bidders which satisfied the evaluation criteria made by the public sector, the contract amount is negotiated between both sectors within the budget. This system also needs the clear criteria and appropriate evaluation method at prequalification and final selection stage, but as in the case with former system, those rules has not been fully functioned.



**Figure 6-6 PFI Achievement; Classified by Bidding System**

Figure 6-7 shows the shares of deals by the PFI schemes. BTO scheme own more than half of all the projects. BTO scheme has been adopted in most of the national government projects (20 in 22 projects) and 40% of local government projects (30 in 78 projects). The reason why BTO scheme is major in the Japanese PFI market is that the government does not intend to

transfer much risk to the private sectors in the case. BTO system is recognized as low risk scheme in all PFI schemes because the private sector doesn't have to take its operating risks and financial risks. In fact, the risk management in the PFI project has not been understood yet by both of public and private sectors because the application of PFI has just started in Japan. On the contrary, in the BOT scheme, private sectors have to take risks (e.g. interest volatility risk) and responsibilities (e.g. negotiation with neighbors) of the project during the operating period. In the case, the total amount of risks taken by private sectors is larger than that in the BTO project. It expresses the conservative approach to the risk transfer by Japanese government and both of public and private sectors are carefully considering the risks now. However, as discussed in Chapter 4, insufficient risk transferring by being oversensitive to it leads to inefficiency of the PFI scheme. As the risks are transferred adequately, the benefit becomes larger for both sectors.



**Figure 6-7 PFI Achievement; Classified by PFI Scheme**

### **6.3. VFM achievement**

#### **VFM Estimation and Evaluation System**

Table 6-3 shows the VFM achievement of 29 PFI projects that the information concerning VFM has been disclosed to the public. According to the table, based on the same PSC, the average of the expected VFM estimated by public sectors at the beginning of the project for feasibility is half as the average VFM estimated by private sectors at the bid. The fact explains that the estimation method of public sectors is not same as private sector's one. Therefore, many profitable projects have been missed due to obscure estimations by public sectors. Besides there is no cutoff point in the criteria of the feasibility study, so the evaluation method of VFM becomes vague. Private sectors have to be involved from the beginning of the project planning in order to improve the accuracy of VFM estimation and not to miss good opportunities for private sectors to participate in the PFI.

#### **Market Integration**

Through the PFI projects, private sectors sell the service to the users. As opposed to the traditional construction project, the infrastructure facility is the medium for collecting charge in the PFI project. One of the main purposes of PFI is providing high quality service to the customer rather than construction of the facilities. Though the construction work is important, the project company (sponsor company) of the project doesn't have to be a construction company. As shown in Table 6-1, around half of the sponsor companies of these 29 projects are not construction companies. Those companies have been made contract with a construction company on the construction separately from the management of the facilities. There will be a new framework of market for infrastructure development in Japan. PFI will accelerate market integration and industrial integration by increasing business transaction across industrial borders. There is no more traditional bidding system for construction work under PFI.

**Table 6-1 Value For Money**

**National Government**

	Public client	Progress	Expected VFM at project evaluation	Actual VMF at contract	PSC (million yen)	Contract price (million yen)	Private contractor (Sponsor company of the group)	PFI scheme
1	The House of Representatives	Contractor selected	8.7%	29.20%	49,006	33,393	Kajima Co.	BTO
2	The Department of the Treasury	Contractor selected	3.0%	17.49%	7,667	6,381	Nippon Steel	BTO
3	The Department of the Treasury	Contractor selected	3.0%	27.71%	10,102	7,370	Obayashi Co.	BTO

**Local Government**

	Public client	Progress	Expected VFM at project evaluation	Actual VMF at contract	PSC (million yen)	Contract price (million yen)	Private contractor (Sponsor company of the group)	PFI scheme
4	Chiba Prefecture	Service started	9.00%	52.00%	2,406	1,153	Maeda Corp.	BOT
5	Kanagawa Prefecture	Service started	8.10%	23.20%	17,823	16,791	Mitsubishi Corp.	BOT
6	Kanagawa Prefecture	Service started	7.40%	28.33%	9,603	6,882	ITOCU Corp.	BOT
7	Okayama city	Contract completed	4.00%	45.00%	3,574	1,966	Obayashi Corp.	BOT
8	Tokyo prefecture	Contract completed	7.00%	11.00%	60,730	53,940	Hitachi Corp.	BOO
9	Chofu city	Service started	17.00%	31.00%	4,813	3,343	Mitsui & Co.	BOT
10	Kanagawa Prefecture	Contract completed	23.80%	28.60%	2,146	1,560	Orix Corp.	BOO
11	Kochi pref.&city	Contractor selected	5.00%	4.20%	131,505	126,050	Orix Corp.	BTO
12	Yakumo city	Contractor selected	7.10%	19.70%	1,165	935	Taisei Corp.	BTO
13	Tokyo prefecture	Contractor selected	8.00%	1.50%	16,538	16,288	Obayashi Corp.	BOT
14	Kashihara city	Contractor selected	53.00%	56.30%	-	-	Nippon Steel	BTO
15	Omiyawata city	Contractor selected	8.00%	14.40%	39,149	33,529	Obayashi Corp.	BOT
16	Kurashiki city	Contractor selected	6.10%	11.06%	28,626	25,461	Kawatetsu Group	BTO
17	Oita prefecture	Service started	9.00%	0.40%	1,356	1,350	Nippon Steel	BOT
18	Kuwana city	Contractor selected	12.50%	22.00%	9,774	7,612	Kajima Corp.	BOT
19	Shiga prefecture	Contractor selected	11.50%	12.80%	7,040	6,139	Obayashi Corp.	BOT
20	Yashika city	Service started	47.00%	25.50%	-	-	Kitai Design Corp.	BOT
21	Okayama prefecture	Service started	7.00%	20.00%	3,532	2,824	Obayashi Co.	BTO
22	Tokyo prefecture	Contract completed	8.00%	43.00%	17,030	9,670	Tokyo Electric Power	BTO
23	Kakogawa city	Contractor selected	12.50%	25.50%	11,896	8,860	Kobe Steel	BTO
24	Tobetuki town and Others	Contractor selected	9.00%	41.60%	2,485	1,450	Taisei Corp.	BOT
25	Kagawa prefecture	Contractor selected	11.20%	12.10%	4,695	4,126	Toppan PRINTED Co. Ltd.	BOT
26	Chiba city	Contractor selected	11.00%	21.80%	10,488	8,206	ITOCU Corp.	BTO
27	Sapporo city	Contractor selected	4.10%	18.80%	22,843	18,549	Toa. Corp.	BOT
28	Ichikawa city	Contractor selected	11.00%	26.00%	-	-	Taisei Corp.	BTO
29	Ichikawa city	Contractor selected	0.00%	26.00%	5,992	4,436	Taisei Corp.	BTO

Total VFM	332.00%	696.19%
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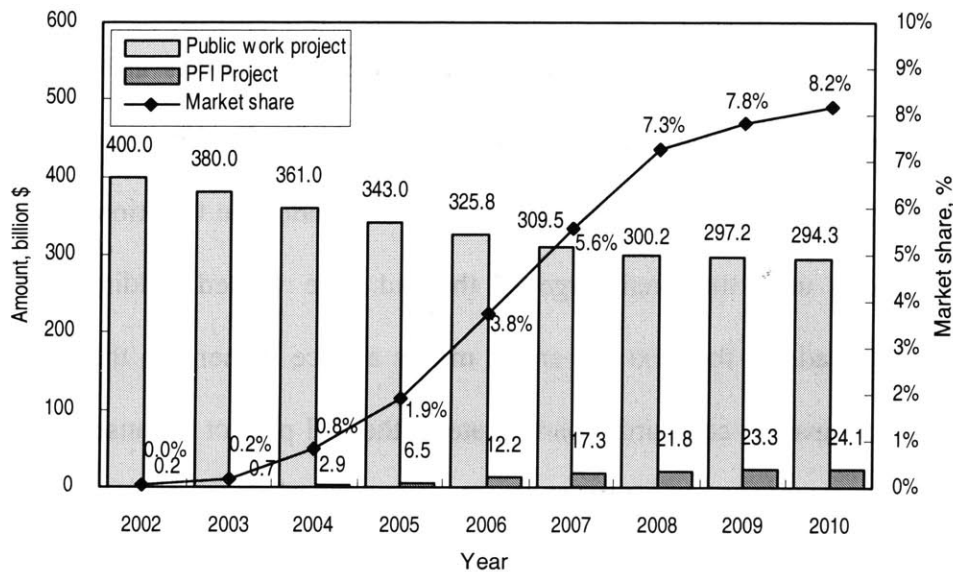
Average VFM	11.45%	24.01%
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## 6.4. Future Market

Figure 6-8 shows the PFI market forecast from 2002 to 2010 estimated by Yano Research Institute. According to the forecast, while the investment for public work is being reduced, the amount of the PFI project is going to increase and the market share to the whole public work is likely to grow at 8.2% in 2010. It is truly difficult to predict future movements of the PFI market including projections of Japan's economic and construction market growth. The market volatility is highly affected by the issue that the application of the PFI scheme has just started in Japan and the mechanism of the market is yet to be established.

Under the reform of public financing, how the PFI scheme will be improved and changed its structure in the future is a critical element of market forecast. The market interest has to be changed responding to the social and economic needs in order to maximize its benefit to the users. Accurate future forecast of the market leads to the adequate allocation of revenue source to the local government.



**Figure 6-8 PFI Market Forecast**

## **6.5. Issues and Challenges of the Private Finance Initiative (PFI)**

### **6.5.1. Issues in Japan's PFI**

#### **(1) Risk Allocation**

According to all the PFI contract documents already awarded, all risks have not been allocated appropriately amongst those involved in the project. The public sectors are still holding a wrong image of risk allocation. They stick to their incorrect opinion of transferring the risks to private sectors. They seem to consider how to transfer financial and political responsibility as much as possible to private sectors. Therefore, in the information disclosure document, they highlight how much they could pass the project risk onto private sectors rather than comprehensive VFM. Their idea, "the more the risks are transferred to the private sectors, the better the project planning becomes" leads to an ineffective use of the PFI scheme and affects the achievement of maximum VFM.

#### **(2) Bidding System**

Under the current legal and taxation system, the PFI scheme is at a disadvantage in competition with the traditional system. As observed in the U.K. cases, the time at planning and bidding stage under PFI is tends to be longer than the time under the traditional system. Many bidders are suspended until the final stage of the bid. The wasted bidding cost of failed companies is likely to add to the next bid and it makes a price higher. On the other hand, the medium and small companies can hardly participate in the PFI project because they don't have enough staff and resources for competitive bidding. As a result, well-financed or limited large companies dominate the market, and hence, the market mechanism doesn't work properly. For encouraging every private sector to participate in PFI and to compete actively in the bid, the government has to establish a new legal framework, especially in the evaluation process.

### (3) Less Competitiveness due to Low Profits

In present circumstances, it seems difficult for private sectors to ensure the profitability of the company by entering the Japanese PFI market. Therefore, the number of participants in the bid decrease and competition become less fierce. As discussed above, the bid is competed for only among the companies which have enough financial power to spare for implementation of the project. Appropriate project feasibility study by the private sector is the essential condition for obtaining the success of PFI, though it is very difficult. The government has to encourage the private sectors to participate in PFI projects. For example, the "incentive system" is a method to maximize the ability of private sectors by paying an additional bonus if the private sector's services are better than those specified in the initial contract.

### (4) Financial Issue

In addition to the above bidding system, the PFI scheme has another disadvantage over the traditional one in raising funds. The government borrowing for traditional project procurement is basically risk-free and hence the cheapest way of raising funds. Besides, the longest loan limit of direct financing is around 15 years in Japan and it doesn't fit to the long-term, over 30 years, PFI project. It reduces the chance to invest various projects by private sectors under the application of PFI in Japan and so narrows the possibilities of the PFI scheme itself. The government has to establish the lending system for the implementation of the PFI project.

### (5) Lack of Clear Objectives for PFI

The basic premise of the application of PFI is maximizing the effectiveness of social services and PFI is important in terms of economic performance and efficiency. Therefore,

governments should carefully select the project meeting to the social needs or fitting to the environment surrounding the society. In order to specify the project priority or details of the business, each public sector should establish its own criteria, and it needs to work efficiently in the implementation of PFI. Heavy dependence on the national government regarding legal regulations or financial support may cause same mistakes as they made in the past. The dependency on national government misleads the PFI application not to reflect the needs or not to supply adequate services.

#### (6) Lack of Experts of PFI in Local Governments

Most local governments get negative to start PFI due to its intricate system and tangled bureaucratic procedures. For the application of PFI in local governments, they initially need to employ professional advisors and establish a framework to apply private financing to public works. Local governments have to support themselves economically and realize administration closely related to local residents. In this sense, they need to develop human resources and technical PFI experts in public sectors.

### **6.5.2. Japanese Version of PFI**

From the perspective of administrative reform, the proposed Japanese version of PFI hardly measures up to its U.K. counterpart. Indeed, PFI will merely be an extension of the private financing policy, and lack the positive macroeconomic impact being enjoyed in the U.K.

The objective of PFI is to establish the framework for promoting private sector's activity to build social infrastructure and contribute to the revitalization of the economy. This is based on the idea of "maximizing the services to consumers (users)." The final destination is not to construct public facilities including roads, railroads and canals, parks, waterworks, public housing, educational and cultural facilities, waste processing facilities, information and communications facilities, new energy facilities, and re-cycling facilities. A comparison with other countries sheds more light on Japan's problems. In the U.K., the government has tried to leave the developing process of infrastructure to private sector and buy high quality public services directly from the project. Japan has much to learn in this respect.

Many local governments are still misunderstanding what the PFI is for and they don't understand that the benefit from PFI project finally returns to governments. Underlying this is a more fundamental confusion about what private financing projects are for: the public interest or private profit? Local governments in Japan seem inclined towards the former notion, yet the act of private sectors creates expectations of the second. Therefore, governments should clarify the benefit and loss of the project to private sectors and share them to maximize the benefit for both sectors. Japanese government has to learn from the past mistakes and explore the best way to achieve successful private financing.

## Chapter 7. New Market Exploring for Private Financing

Private Finance Initiative in Japan has been prevailed targeting at domestic infrastructure development and the number of projects in service become 9 until now as discussed in Chapter 6. PFI has originally started in U.K. and the potentials of PFI scheme has been widely discussed in Europe. Japanese public and private sectors have also argued over the wide range of possibilities to be applied in other markets.

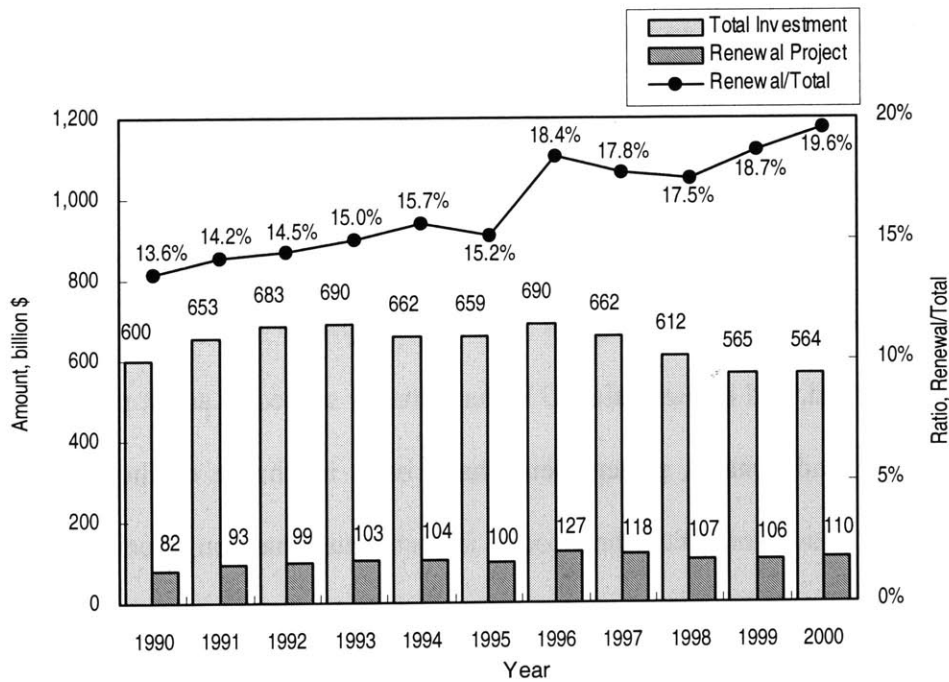
This chapter discusses future expansion of Japanese version of PFI with an introduction of two big potential markets. First, it describes the current status and future potential of private financing in repair and maintenance market. The amount of social stock in Japan has been cumulatively increasing and the huge amount of maintenance work of aged infrastructures has recently been recognized as a national issue by the government. Japanese private sectors have a keen interest to the expanding market. Secondary, it examines private financing in overseas market, especially in Asian country. Japan has historically and geographically taken an advantage to the infrastructure development in Asian construction market. After Asian currency crisis in 1997, the governments in Asian countries have started to accept investment by foreign private companies. In the future, the market will be expanding and become a good investment opportunity for foreign companies. On the other hand, there are many issues and obstacles are lying in between the government and foreign private companies.

## **7.1. Renewal Work for Existing Infrastructure**

While the construction market continues to shrink, maintenance and repair works are steadily increasing. General contractors are seeking business chances in the renewal market. They are increasing staff number in their renewal divisions or creating new renewal-related divisions and affiliated companies. Competition in the office building market is intensifying. Clients seek lower costs, and more technical expertise and ability to make proposals of the contractors. In the market for infrastructure development, the potential of the market become higher while the aging structure is rapidly increasing. There are some reason for adopting PFI scheme to the renewal market in Japan; (1) the amount of renewal project is comparatively smaller than new construction, and so it doesn't need long operating period by private sectors, (2) the know-how for structure renewal work is traditionally on the private sector's side, so PFI scheme is likely to penetrate in the market easily. As for the former reason, the longest loan limit of direct financing is generally around 15 years and this condition is suitable for mid-term project such as renewal work. As for the latter one, the technology for renewal work is rapidly progressing in private sectors and many kinds of software for asset management service are being developed. The software provides a comprehensive structure inventory, condition assessment, needs development, and program generation capability. In particular, U.S. and U.K. are the leader in this field, and in particular, U.K. has already started to adopt private financing in the renewal market. Traditionally, governments have been in charge of the maintenance and repair work in Japan. However, since their social infrastructure has long been developed under the initiative of national government, most local governments are losing control to maintain their aged infrastructure and there is no scope to manage them in the future. The national government is also having a trouble with management of enormous amount of social capital stock built in post-war years all over Japan.

### 7.1.1. Expansion of Renewal Market

The maintenance and repair market was expanded by 1.3 times in the period from FY1990 to FY2000 from ¥8.8 trillion to ¥11.8 trillion. The ratio of maintenance and repair to the total amount of completed projects is also increased from 12.9% to 18.8% respectively. The scale of renewal market heavily depends on the amount of stock to which such works are applied. The stock of private building grew by around 20% from 1990 to 1999, while that of social infrastructure grew by around 60% from 1983 to 1993. The enormous amount of stock is aging and will push up investment in maintenance and repair. Many infrastructure facilities completed after the 1970s, in particular, will need maintenance and repair in the near future and will thus expand the market, because maintenance and repair works including reconstruction and expansion generally peak at around 30 years after construction.



**Figure 7-1 Investment for Renewal Work**



### 7.1.2. The Future Renewal Project Market

According to the future market analysis by Research Institute of Construction and Economy, the size of the maintenance and repair market which is estimated based on the correlation between stock and demand will expand due to growing stock. The analysis is based on the three scenarios assuring different real economic growth rates. The scenarios assume that;

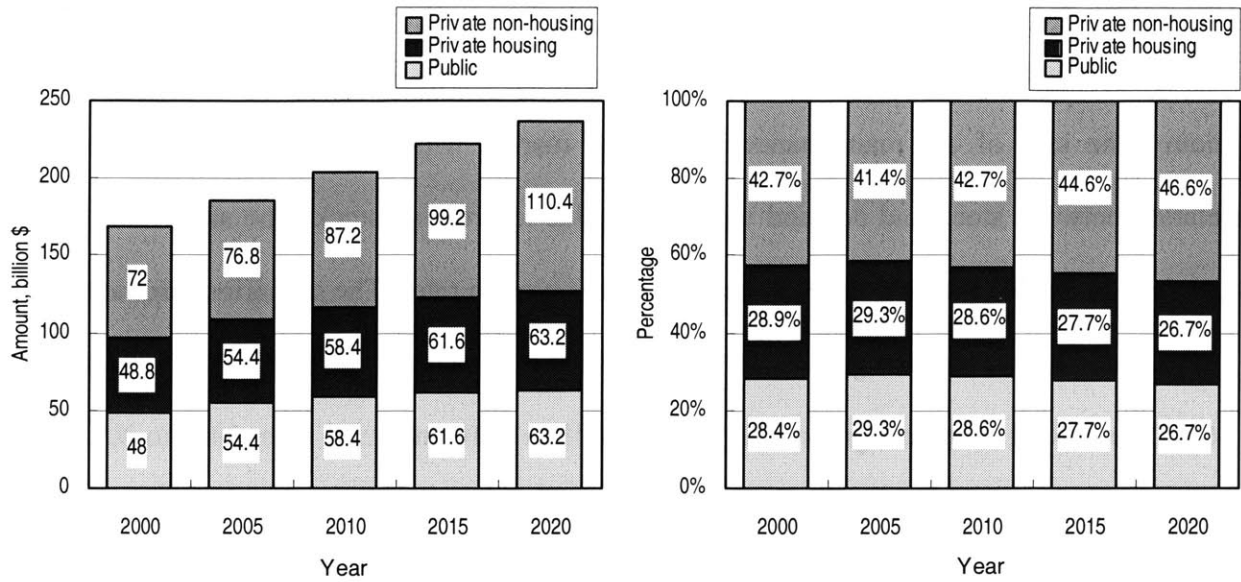
- (1) Case 1: Real economic growth 2.0% from 2001 to 2010 and 2.5% from 2010 to 2020
- (2) Case 2: Real economic growth 2.0% from 2001 to 2010 and 1.5% from 2010 to 2020
- (3) Case 3: Real economic growth 2.0% from 2001(for reference)

Table 7-1 and Figure 7-2 show the mid- to long-term forecasts of renewal market made by the institute. It says the overall renewal market is estimated to be \$168.8 billion in FY2001. the market size grow to \$202-204 billion in FY2010, and to \$226-237 billion in FY2020 finally(numbers are based on constant price in 1995).

**Table 7-1 Mid- to Long-term Forecasts of Renewal Market**

In billion \$

	Year	Case 1		Case 2		Case 3
		2001-2010	2011-2020	2001-2010	2011-2020	2010
		GDP growth, 2.0%	GDP growth, 2.5%	GDP growth, 2.0%	GDP growth, 1.5%	GDP growth, 1.0%
	2000	2010	2020	2010	2020	2010
Investment for Renewal Work	168.8	202 - 204	231 - 237	202 - 204	226 - 232	196 - 199
Government	48.0	56 - 58	58 - 63	56 - 58	58 - 63	56 - 58
Residence	2	2	2	2	2	2
Non-residence(Building)	6	5.6 - 6.4	5.6 - 7.2	5.6 - 6.4	5.6 - 7.2	5.6 - 6.4
Civil Work	40.0	48.8 - 50.4	49.6 - 53.6	48.8 - 50.4	49.6 - 53.6	48.8 - 50.4
Private	121	146	174	146	168	140
Residence	49	58	63	58	63	58
Non-residence(Building)	49	65	80	65	78	63
Civil Work	23	22	30	22	27	18

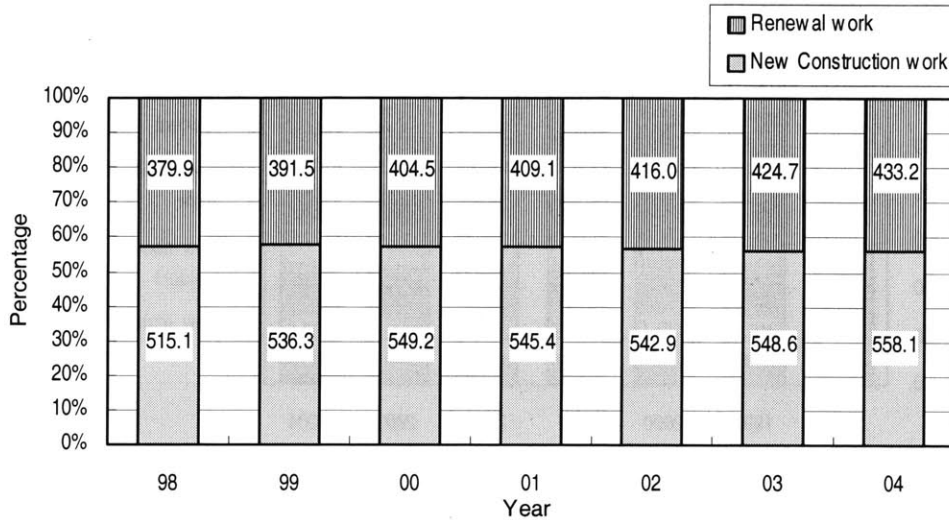


**Figure 7-2 Future Renewal Market in Japan(Case-1)**

The maintenance and repair market steadily grew during the 1990s in terms of flow, thus gaining a larger share of the construction market, while construction investment is sluggish. Future trends will remain the same as before. As discussed in Chapter 1, the government has to manage all social capital assets focusing on the future repair or maintenance and plan with particular emphasis on the life cycle cost (LCC) in order to reduce the cost spending. The application of PFI has a potential to alleviate the economic difficulties in such stringent circumstances now facing Japan.

### 7.1.3. Renewal Market in Europe

The maintenance and repair in the construction market in Europe is now significantly higher than that in Japan. Figure 7-3 shows the current status of construction investment in Europe. Following Europe, the share in Japan will grow as its stock matures.

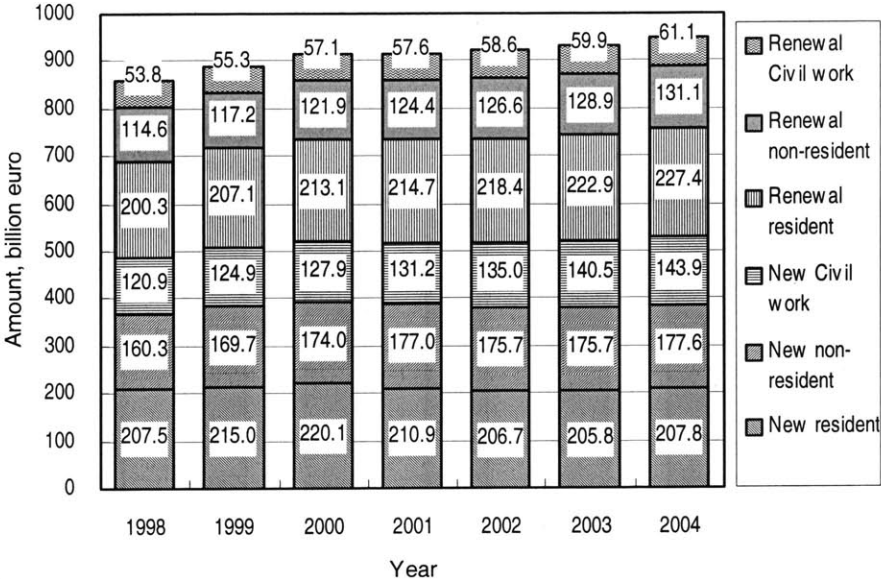


**Figure 7-3 Construction Market in Europe**

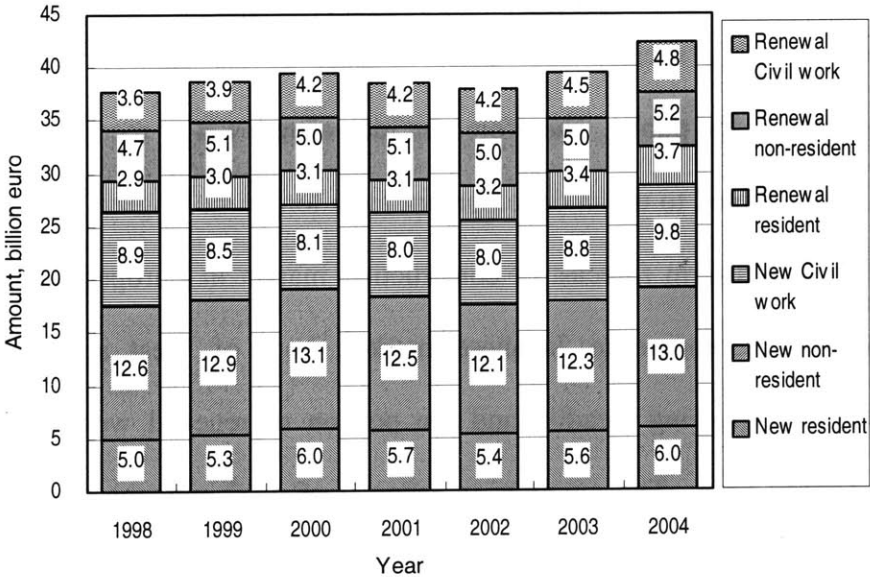
In Europe, recycling society with a low impact on the environment had been of particularly high interest to the public. Therefore, the idea of renewal or reconstruction of social infrastructure has been adopted to urban development for a long time. Figure 7-4 and 7-5 shows the current trends and short-term forecast of construction market in Europe subdivided to two parts of west and east. Compare to Japanese market, both of West and East European construction markets are growing steadily and the portion of renewal works is expected to expand in the next three years. The amounts in renewal of civil and non-resident works are around 200 billion euro in the West Europe and 10 billion euro in the East Europe respectively.

The application of private financing to the infrastructure development is widely prevailed in Europe as observed in U.K.. Most countries have introduced and promoted those

kinds of private financing for reforming and reconstructing aged infrastructures for a long time. As in the previous example of European countries, Japanese government has to recognize and deal with the growing needs for asset management.



**Figure 7-4 Construction Market in West Europe**

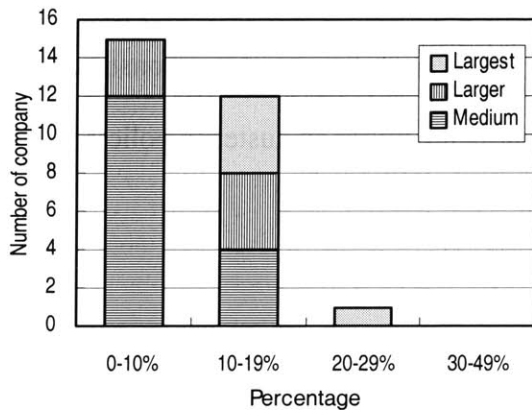


**Figure 7-5 Construction Market in East Europe**

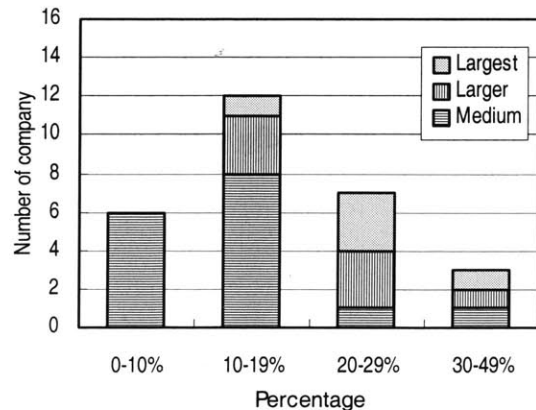
### 7.1.4. Market Interest for Renewal Projects

Figure 7-6 shows the results of a questionnaire survey conducted by Research Institute of Construction and Economy, targeting 28 medium to largest construction companies in Japan. The institute studied how Japanese contractors have an interest in the repair and renewal works of infrastructure. The result says most countries accounts for less than 19 percent of average construction sales to the renewal works in the past three years from 1999 to 2001. In particular, the shares of renewal works in most medium companies are concentrating on the range of less than 10% of average construction sales in the past. And the figure describes the larger companies are likely to have larger amount of sales in renewal market. According to the results of a questionnaire, most companies expect these figures to increase in the next three years from 2002 to 2004. Most companies estimated the increase to be 10%; large companies expected the rise to be over 20%. Though many companies have a strong interest in renewal market, in fact, large companies have advantage over medium companies in terms of personal and financial aspects. Seventy percent of companies have already increased staffing levels and have created or expanded corporate divisions to meet the increasing demand for renewal projects.

1999-2001 average



2002-2004 expected



**Figure 7-6 Past and Expected Demand of Renewal Work for General Contractors**

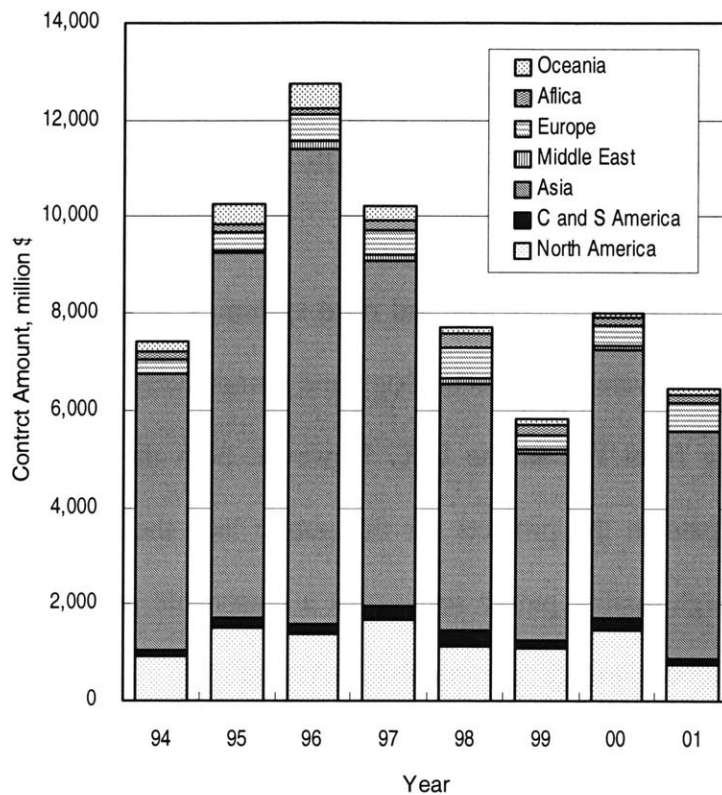
## **7.2. Overseas Construction Market**

### **7.2.1. Overseas Construction Amount**

In the late 1980s, Japanese developers and manufactures invested much in North America due to surplus liquidity and the yen's appreciation. U.S. and Canada were considered to be low risk countries from many points of view. Japanese investors and manufactures wanted to entrust the investments in these countries from Japan contributed to the mitigation of the trade imbalance between Japan and U.S.

But in the early 1990s due to the bursting of the bubble economy in Japan, both of public and private developers reduced their overseas investments and some manufactures shifted their investment to Asia where is making great progress in economic development. Japan is close to this area geographically and historically, hence many Japanese companies had already long established a number of subsidiaries or branches there. As a result, they had a competitive advantage compared to other areas. In recent years, over 65% of the total contract amount was won in Asia.

Figure 7-7 shows the present status of construction activities abroad from 1994 to 2001. Though the total amount of foreign investment has reduced during the past decade, the share of the Asian market is still higher compare to that in 1994. Other foreign markets have been shrinking. Especially after Asian currency crisis in 1998, environment for construction investment became rapidly worse and Japanese government had to adopt an austerity policy.



**Figure 7-7 Foreign Investment Amount for Construction**

### 7.2.2. Private Financing Market in Asian Countries

Due to the fiscal difficulties, most of the Asian countries has reduced capital investment to the infrastructure development. For this reason, every government has to rely on the project financing to private sectors. Table 7-2 shows the current status of infrastructure development by private financing(mainly by BOT) in Asian countries(including Turkey).

Japan's private sector is well adapted to the PFI approach in the sense that public agencies often place turnkey contracts. Private contractors have shown that they can successfully undertake massive projects such as the Hong Kong undersea tunnel project carried out by Japanese construction companies., and BOT contracts for electrical plants in the Philippines. Since the 1980s, Japanese companies in Malaysia have accepted comprehensive orders based on

new construction methods. In taking on public construction projects previously allocated among specialized contractors in planning, design, licenses and approval, coordination, construction, and maintenance, the Japanese firms have drastically reduced construction time and cut the government's indirect expenses.

Interestingly, Malaysia's inefficient and rigid system, a legacy of British colonial rule, was transformed through private sector technology and comprehensive contracts by Japan, who is now in turn learning from PFI in the U.K. However, both the public sector and private businesses who participate in the projects for the public lack the idea of serving the public interest by delivering high quality public services at a reasonable price. Ensuring this requires that transparency is achieved through fairness and disclosure.

In the past, overlooking this aspect has not only eroded the public sector's confidence in government, but also increased global distrust and diminished expectations toward Japan's role in the world. The time has come to introduce PFI oriented around public interest and thereby reform the administration of social infrastructure and public services.

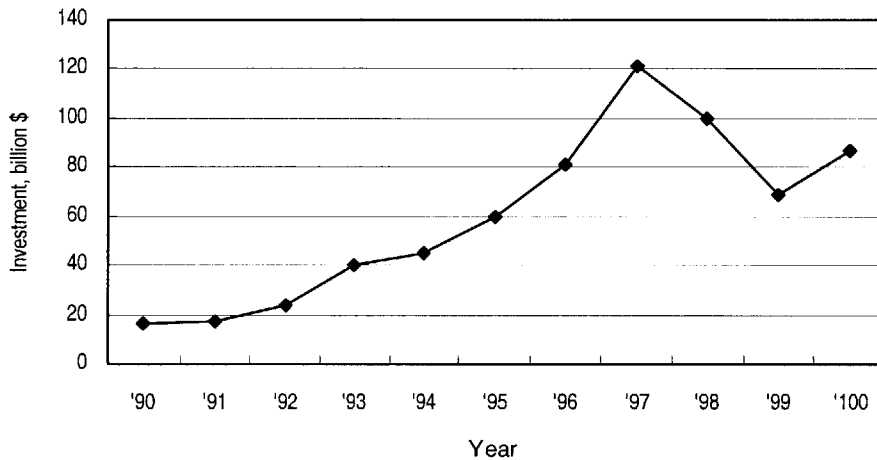
**Table 7-2 Private Finance in Asian Countries**

	Power Plant	Road	Seaport	Airport	Railroad	House	Water-works	Sewage	Others
China	○	○	-	-	-	○	○	○	Urban transport
Thailand	-	○	-	-	○	○	-	◎	Communication
Indonesia	◎	◎	-	-	-	-	-	-	
Malaysia	◎	◎	○	-	○	-	○	○	Communication
South Korea	○	◎	-	-	○	○	-	○	
Philippine	◎	○	-	-	○	-	○	-	
Myanmar	-	-	○	-	-	-	-	-	Hotel, Office
Turkey	◎	◎	○	○	○	○	○	○	



### 7.2.3. Private Financing Market in Developing Countries

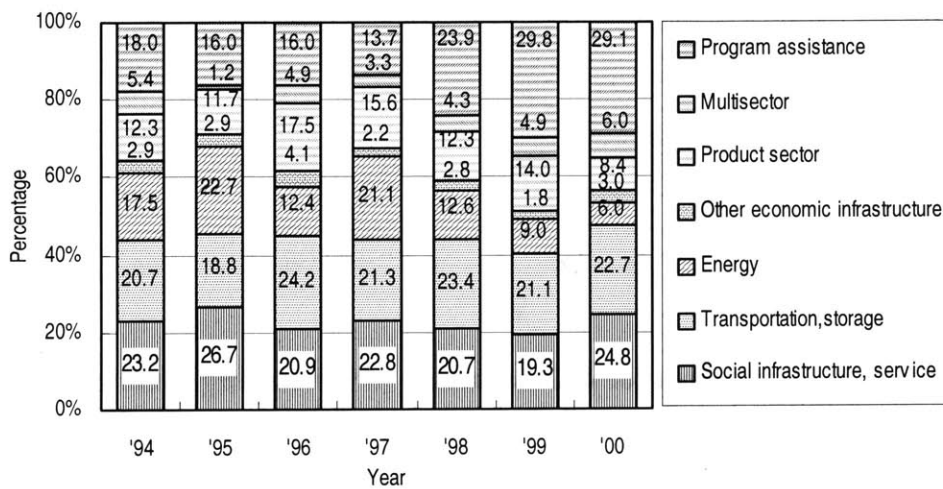
Figure 7-8 shows the total amount of investment for the infrastructure development of developing countries in the world. The total amount of investment in 1997 in its peak is over \$120 billion and around \$90 billion in 2000.



**Figure 7-8 Investment for Infrastructure of Developing Country**

Japan has been historically one of the biggest donor nations. Japan's Official Development Assistance has expanded by four-fold over a period of 15 years, from \$3.8 billion in 1985 to its peak of \$15.3 billion in 1999. The Japanese government eagerly increased official aid to dampen pressure from abroad to recycle its huge accumulated trade surplus, and to take commensurate responsibilities as an economic global superpower in the international development community. Due to the prolonged recession in Japan, however, the public sector is currently undergoing financial difficulties, and Japan's ODA budget will be reduced substantially over the next few years. Upon publicizing the ODA mid-year policy in 1999, the Ministry of Foreign Affairs announced that Japan would no longer have the goal of increasing its total ODA, but would instead improve the quality of ODA it provides.

Figure 7-9 shows breakdown of ODA by Japan from 1994 to 2000. Social infrastructure development in the ODA program has started in the beginning of the 1960s. In particular, basic infrastructure such as roads and bridges has been developed as a main stem of ODA program. Those structures have already experienced over 40 years of service and come to the end of its life. Originally, the purpose of infrastructure ODA is not only providing social assets to the object country but also technology transfers to the engineers working in the construction industry there.

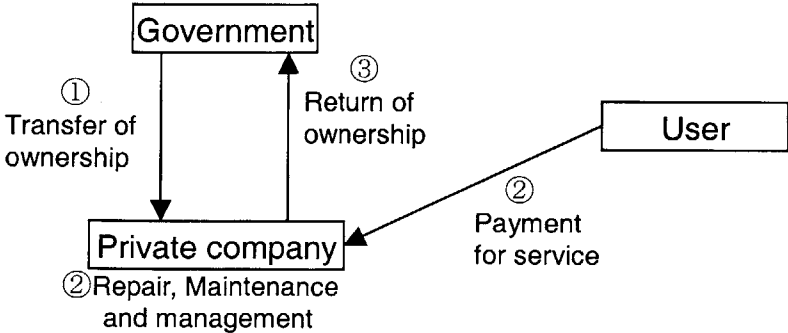


**Figure 7-9 Official Development Assistance by Japan**

Therefore, of most cases, project planning and original design of the structure has been made by Japanese design consultant companies. In the sense of technology transfer, intricate designs are tend to be adopted to the project, and hence, the construction is usually undertaken by Japanese contractors in consideration of technological issues. In some cases, materials for the project are imported from Japan and they are sometimes typical products which are not manufactured and dealt with in many countries. In the context of such a background, countries at receiving end are likely to face technological issues as well as financial difficulties in terms of asset management, such as maintenance or repair after construction of the structure. In fact, this kind of things may happen frequently behind the assistance to the developing countries.

Since 1970, over \$10 billion has been invested only for infrastructure development as a grant of ODA program. The amount spent from 1971 to 1980 becomes more than twice as much as it. The spending is accumulating every year and the amount of social capital stock in recipient countries is growing rapidly. Most projects were strictly selected by project feasibility study and the structures are now forming the foundation of the nation's infrastructure. In the near future, those especially important infrastructure will need maintenance and repairs as Japanese infrastructure needs them. However, under today's tight budgetary conditions Japan's ODA should be more focused and strategy-oriented to achieve Japan's national interests, as well as the interests of the developing countries and the international society as a whole. As a result of reduction of investment by ODA program to this area, Japanese government is promoting the active utilization of private financing scheme.

In this case, the private company has to negotiate with government of the country and decide private finance scheme in order to correct capital spent for maintaining the structure. For instance, in case the structure is bridge or road, private finance scheme is likely to be as following Figure 7-10. After the government transfer the ownership of the structure, the private company repairs and maintains it by own finance. After collecting total cost for maintenance and management of the structure, the ownership is to be returned to the government.



**Figure 7-10 Private Finance Scheme for Maintenance Work**

Originally, the government of the company should take responsibility for developing big scale infrastructure. However, in case that the government has excessive expectations to the development by foreign private companies, easy policy change or contract modification concerned with the project price is often made by officers because of their lack of project planning and management ability. This kind of issues caused by troublesome clients cannot be solved only by the independent efforts of the private company. Japanese government intervention is needed under such circumstances as a important public sector's role for private financing in foreign countries.

China and India are the big markets of construction investment in which private financing will have a good chance of success. However, high systemic and regulatory barriers are blocking market entry by Japanese private sectors. In order to promote private sector's investment to the foreign infrastructures, Japanese government has to enhance support measures for protecting private sectors from various risks that the private company cannot deal with.

## **Chapter 8. Conclusion**

The analysis in this thesis achieved the following conclusions;

### **Conclusion 1**

The application of PFI has just started and it is still counterpart of original U.K. version. In the true sense of evaluation of current Japanese PFI scheme, it needs some more years to judge the quantity of Value For Money (VFM) until the expiration of the service (lease) period. However, the Japanese government is steadily promoting the policy of private financing to the infrastructure in order to revitalizing economy, and in this short- to mid-term, present PFI in Japan, which is yet to be immature, must be changed to the original Japanese version of PFI by making an adjustment to its market environment. Otherwise, it may undermine the public interests as well as the private sector's profits. Besides, let alone VFM of the project, private sectors may not only lose an incentive to make benefit in the private financing project but also be discouraged to participate to the PFI itself. In the sense, the governments need to involve the private sector's know-how from an earlier planning stage, for instance, the stage of estimation of expected VFM in project feasibility study.

### **Conclusion 2**

The success of PFI as a procurement method is becoming well established and a robust procurement framework has been developing in Japan. In particular, prefectures and cities are actively adopting PFI for infrastructure development and PFI project is more effective in cities and prefectures in terms of government's ability of project management and cost-benefit

optimization of the project. The operational benefits of PFI will take much more time to establish. Some of the early signs of the benefits of focusing on project outputs, through risk identification and management and on whole life costing have been promising. The long term VFM of PFI projects will depend on how well the private sector manages the risks burdened on it and on the public sector's success in managing the contracts over their duration, a significant proportion of which are for over 20 years.

### **Conclusion 3**

In the near future, cross-industry competition of infrastructure development will be fierce with the rapid integration of the markets and construction companies will not be only the one who can develop infrastructure in Japan. The PFI is creating the new idea for infrastructure development and management in terms of providing social services as outputs instead of supplying constructing facilities as hardware devices.

### **Conclusion 4**

Private financing schemes can be significantly effective to rebuild the aging infrastructures and to maintain the accumulated social capital stocks. The national government has to establish new management system for the aged infrastructure and needs to preserve the appropriate level of structural function and service provision of existing social capital stock with considering the idea of Life Cycle Cost (LCC).

### **Conclusion 5**

Elimination or reduction of regulations will ease restrictions on competition and expose a wider range of areas to the principle of market competition. Businesses that the public sector has undertaken will be privatized to help expand the scope where the principle of competition can work.

The analysis in this thesis, however, falls short to fully answering all of the questions, and further research remains to be carried out. The author deeply hopes it will be of some assistance to think about public private partnerships in the development of infrastructures toward new era of Japanese construction industry.

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