The Conflicts and Risks in BOT Projects

by

Jye-Shing Lin

B.S. Civil Engineering, National Taiwan University, Taiwan, 1996
M.S. Civil Engineering, National Taiwan University, Taiwan, 2001

SUBMITTED TO THE DEPARTMENT OF CIVIL ENGINEERING IN PARTIAL FULFILLMENT OF THE REQUIREMNTS FOR THE DEGREE OF

MASTER OF SCIENCE IN CIVIL ENGINEERING
AT THE
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

June 2003

Signature of Author: _____

Department of Civil and Environmental Engineering
May 5, 2003

Certified by: _____

Fred Moavenzadeh
Professor of Civil and Environmental Engineering
Thesis Supervisor

Accepted by: _____

Oral Buyukozturk
Chairman, Departmental Committee on Graduate Studies

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Abstract

With a foreseeable, constrained financial status of a government, it is a feasible way to make public infrastructures viable for private sectors to participate. This concession can create a win-win situation for both the government and the private company. It also generates the maximum benefit for the public and the society if the project is well organized. Besides, private participation brings efficiency into infrastructure field and spur the economy in the long run.

The degree of government involvement is vital to the success of a BOT project. If the government imposes too many restrictions on the project, it stifles the incentives. If the government helps the concessionaire too much, the project deviates from the main spirit of BOT delivery method.

As a case study, the Taiwan High Speed Rail Project is discussed. This project changed its planned financial structure after the project encountered different difficulties in both debt and equity financing. However, the Taiwan government played an active role to help the project proceed. From this case study, one can also see how risks are allocated through different contractual agreements.

Thesis Advisor: Fred Moavenzadeh
Title: Professor of Engineering Systems and Civil & Environmental Engineering

Acknowledgement

I would like to thank Professor Moavenzadeh for providing insightful thoughts and practical recommendations concerning this research. Besides, I would like to thank Chien Wang at MIT Joint Program on the Science & Policy of Global Change for providing me guidance and opportunities throughout these two years.

I also want to thank all the friends who encourage me and help me go through hard time in my life.

Finally, I wish to send my greatest respect to my parents, who always make every effort to support their son.

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Chapter 1 Overview of the Construction Industry in Taiwan

1.1 General Economic Performance

Taiwan's gross national product (GNP) reached USD 288.9 B in 2002, with per capita GNP becoming US$12,900. Besides, the economic growth rate went down by 2.18% in 2001, but it went up again by 3.54% in 2002.

Some economic indicators are listed below:

Table 1.1 Economic Indicators of Taiwan (2002)

Items		Unit	1998	1999	2000	2001	2002
Economic Growth	1.Economic growth rate	%	4.57	5.42	5.86	-2.18	3.54
	2.GNP	100 M US$	2,692	2,905	3,139	2,868	2,889
	3.Per capita GNP	US$	12,360	13,235	14,188	12,876	12,900
	4.Gross national savings/GNP	%	26.0	26.1	25.4	24.0	25.4
Prices (annual changes)	1.Consumer price index	%	1.7	0.2	1.3	-0.01	-0.2
	2.Wholesale price index	%	0.6	-4.5	1.8	-1.3	0.1
	3.Import price index	%	0.7	-4.1	4.6	-1.3	0.4
	4.Export price index	%	5.6	-8.5	-0.9	0.3	-1.5

Source: Directorate General of Budget, Accounting and Statistics (2002)

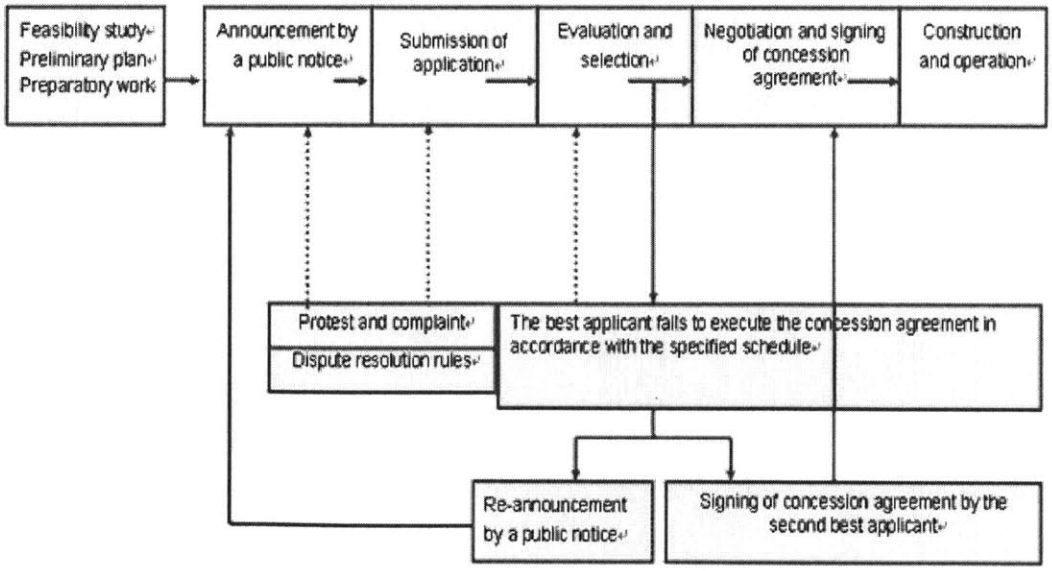
1.2 Government Policies Concerning the Construction Industry

After Asia Financial Crisis occurred in 1997, the economy of Taiwan had been affected significantly, especially when Taiwan has been an export-oriented country. While other Asia counties were suffering from the Crisis, in order to lower down the 1997 Financial Crisis impact on the economy, the Executive Yuan of Taiwan planned a 2-year "Expand Domestic Needs Plan" to sustain and, further, to spur the economy in 1998.

In this two-year plan, the government enacted several laws that encourage private sectors to participate in the development of public infrastructure. For example, " Law for Promotion of Private Participation in Infrastructure Projects" is enacted to upgrade the level of public service, to expedite social economic development and to encourage private participation in infrastructure projects.[1]

Under this law, for a government-planned project, the procurement procedure is as the following:

Figure 1.1 Procedure of Private Participation on Government-Planned Projects

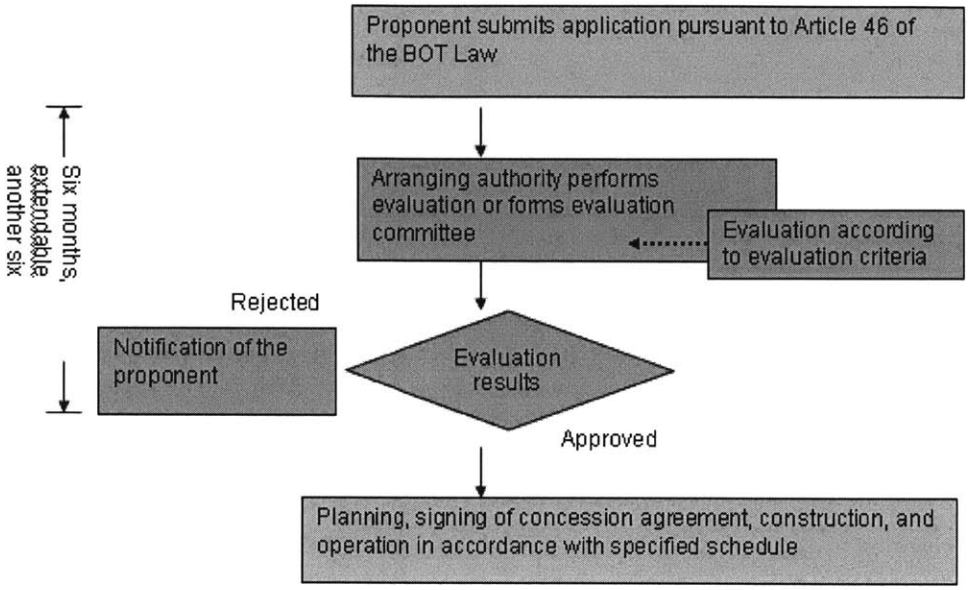


Source: Public Construction Commission, Executive Yuan

[1] Article 1 of the Law for Promotion of Private Participation in Infrastructure Projects.

For a unsolicited proposal, the procedure is as following:

Figure 1.2 Procedure of Private Participation on Unsolicited Projects



Source: Public Construction Commission, Executive Yuan

These laws set the foundation for the private participation in infrastructure projects.

In September 21, 1999, a massive earthquake, measuring 7.3 on the Richter scale, struck the island of Taiwan near the city Chi-Chi. This Chi-Chi earthquake caused 2,455 deaths, 8,000 injuries, and the destruction of 38,935 houses. The government established the 921-earthquake post-disaster recover commission to coordinate the processes of recovery of residential building, campus, transportation systems, and other infrastructures.

In FY1999-2000, a supplementary budget of USD 3.12 B (NTD106.1 billion) was compiled; in 2001, USD 183 M (NTD6.23 billion) was allocated in the central government budget; and a special budget of USD 2.94 B (NTD100 billion) was added to bring the total to over USD 6.244 B (NTD212.3 billion).

This reconstruction also affected the construction industry in Taiwan.

Overall, there has been no room for massive government-financed projects under the constrained financial situation. Therefore, encouraging the private investments or private participation is a feasible way to build more useful infrastructures the public need.

Now, the government is planning to seek more private participations on several projects. These projects include an entertainment park, independent power plants, shopping malls, high-speed railway, rapid transit system to the airport, and incineration plants. Among these, the high-speed railway and the rapid transit system to the airport attracted the most attention because of the total amount of money involved. These ongoing or future BOT projects have stimulated and will keep stimulating the construction industry.

1.3 Market Demand

1.3.1 Public Sector

Table 1.2 Spending on Public Infrastructures (2000)

Category	Cases	Amount (USD in Billion)	%
Hydraulic Construction	6	4.740	4.25%
Transportation and Communication	12	77.040	69.09%
Urban and Residential Construction	3	23.410	21.00%
Recreational Construction	4	0.357	0.32%
Educational Building	8	2.823	2.53%
Energy Development	1	0.390	0.35%
Environment Protection	1	2.740	2.46%
Total	35	111.499	100%

From Table 1.2, one can observe that most of the public infrastructure budget goes to transportation and communication section, which accounts for 69% of the entire budget. According to the forecast of Public Works Commission, Executive Yuan,

the future budget for public infrastructure will keep declining due to the financial constrains of the government.

1.3.2 Private Sector

Because of the bad economy, the real estate market keeps plunging in recent years; therefore, the construction industry, as well as real estate industry, has suffered from the lower demand from the market than the last decade. There is an excess of available residential and commercial buildings in the real estate market. Furthermore, the number of large development projects has decreased for years. In other words, the construction market in private sector has been in a slump for at least 5 years.

1.4 Construction Industry

From the Construction GDP's perspective, it keeps declining for straight nine years, and it continues to lower down its percentage of the total GDP: from 5.57% in 1994 to only 2.92% in 2001, a 47.5% decline. This phenomenon shows the construction industry cannot keep up with the growth of other industries.

Table 1.3 Percentage of Construction GDP in total GDP

	GDP by Economic Activities (in Millions)				
	Total		Construction		
Year	NTD	USD	NTD	USD	% of total
1994	6,463,600	190,106	360,326	10,598	5.57%
1995	7,017,933	206,410	381,383	11,217	5.43%
1996	7,678,126	225,827	376,746	11,081	4.91%
1997	8,328,780	244,964	391,785	11,523	4.70%
1998	8,938,967	262,911	389,255	11,449	4.35%
1999	9,289,929	273,233	358,300	10,538	3.86%
2000	9,663,388	284,217	329,567	9,693	3.41%
2001	9,506,624	279,607	277,651	8,166	2.92%
2002	9,734,351	286,304	252,950	7,440	2.60%

Source: Directorate General of Budget, Accounting and Statistics (2002)

(Exchange Rate: NTD/USD = 34)[2]

1.4.1 Profile of Construction Company in Taiwan

The features of the construction companies in Taiwan are:

(1) Lacking of the ability to finance.

(2) Small business units.

(3) More focus on the domestic market, with only a small involvement in international projects.

1.4.2 Numbers and Types of Construction Company in Taiwan

In August 2000, there were 6236 construction entities registered under the Construction Industry Regulation, with a total capital of 8.51 billion USD. The average capital per entity was 1.364 million USD in 2000, up from USD 0.735 million in 1996.

[2] Hereafter, USD stands for US Dollar. NTD stands for New Taiwan Dollar. The exchange rate (NTD/USD) 34 is used throughout the following chapters.

In this industry, 1879 (14.1%) companies are registered as Type A, 1658 (12.4%) as Type B, and 9646 (72.2%) as Type C.

To be registered as a Type A construction company, the company must meet the following standards: 1) must have at least NTD 100 M (USD 2.94 M) of its capital. 2) must have being registered as Type B construction company for at least two years. 3) the total construction fees of the projects this company involved for the past five years must exceed NTD 200 M (USD 5.88 M). 4) some restrictions about the professionals in the company.

To be registered as Type B is similar to be registered as Type A: 1) with NTD 15 M in capital. 2) being as a Type C company for at least two years. 3) the total construction fees of the project this company involved for the past five year must exceed NTD 100 M. 4) some restriction about the professionals in the company.

To be registered as Type C is the easiest: 1) with at least NTD 3 M of capital. 2) some restriction about the professionals in the company.[3]

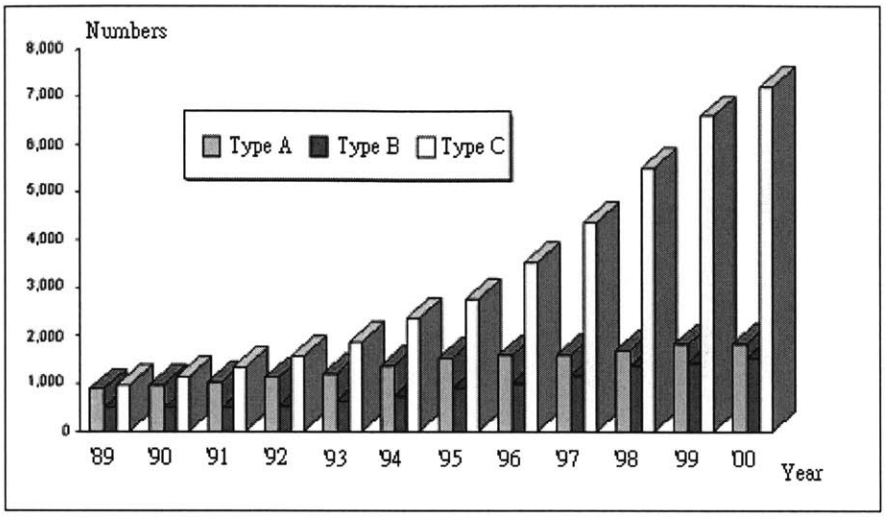
Table 1.4 Numbers and Scale of Construction Companies

Company's Capital	Number of companies
Below 3 M NTD	6,236
Below 15 M NTD	2,476
Below 1,000 M NTD	1,319
Below 2,000 M NTD	214
Below 5,000 M NTD	52
Below 10,000 M NTD	18
Above 10,000 M NTD	14
Total capital in the industry	289,309,541,404 NTD

Source: Taiwan Construction Industry Regulation (2000)

[3] Article 7, chapter 2 of Rules and Regulations on administration of Construction Companies

Figure 1.3 Numbers of Type A, B, C Construction Company



Source: THSRC's Yearly Report 2001

The reasons contributing to the fact that the number of the companies has doubled are the Six Years National Development Plan and several BOT projects.

1.4.3 Top Ten Construction Companies in Taiwan

Table 1.5 Top Ten Construction Companies in Taiwan in Year 2000

Ranks	Company Name	Revenue (in USD Millions)	Net Profit (in USD Millions)	Specialties
1	RSEA Engineering Corp.	824.53	6.47	1) Public infrastructure
				2) Environmental Engineering
				3) Develop Industrial Area Projects
				4) Construction Management
2	Bes Engineering Corp.	456.44	-78.85	1) Public infrastructure
				2) Commercial Building
				3) Transportation Projects
3	CTCI Corp.	427.44	34.06	1) Industrial Plants
				2) Environmental Engineering
				3) Public infrastructure

4	Cathay Real Estate	325.65	56.68	1) Residential & Commercial Building
				2) Develop Real Estate Projects
				3) Public Infrastructure
5	Pacific Construction Co., Ltd.	284.32	-48.41	1) Public Infrastructure
				2) Develop Real Estate Projects
6	Ever Fortune Corporation	278.65	33.53	1) Residential & Commercial Building
				2) Develop Real Estate Projects
				3) Public Infrastructure
7	Far East Construction	245.32	147.59	1) Industrial Plants
				2) Residential & Commercial Building
8	Goldsun development and Construction Co. Ltd.	244.76	-38.56	1) Residential & Commercial Building
9	Der Pao Construction	241.71	34.24	1) Residential & Commercial Building
				2) Public Infrastructure
				3) Industrial Plants
10	Fu-Tsu Construction Co., Ltd.	223.21	125.76	1) Residential & Commercial Building
				2) Industrial Plants
				3) Public infrastructure

Source: Common Wealth Magazine, Special Edition, 2000

1.5 Challenges and Opportunities

During the development from poverty to prosperity in Taiwan, the construction industry has played an important role. However, most of the construction companies are small-scale businesses, usually family businesses with a few amounts of professional engineers. Construction companies in Taiwan should find ways to

survive and thrive in today's globalization trend, especially after Taiwan has become the 144th member of the WTO (World Trade Organization)) in January 2002. This means the construction industry will face not only domestic competitions but also international challenges. Some possible solutions for most of the construction companies are

(1) Improving their abilities to finance.

(2) Increase their specialties.

(3) Seeking more chances in international market, especially lucrative markets in the Mainland China and other Asia countries.

In the future, the construction industry is expected to become more prosperous because of several massive BOT projects, which will spur the economy of the construction industry.

Chapter 2 The BOT Solution

2.1 Background of BOT Solutions

In traditional Design-Bid-Build delivery method, multiple entities involve in the project, and there are great chances of having disputes over these entities since there are myriads of contractual relationships between different entities.

Build-Operate-Transfer (BOT), on the other hand, is a project delivery method in which the Project Company is responsible for financing, building, and operating it for a predetermined period of time before handing over the assets to the host government. BOT is best applied in developing countries that are in need of infrastructures but cannot finance them on their own. Through using BOT and the financing ability of private organizations, these developing countries can have great benefits without taking much of the financial and operational responsibility.

BOT has the following advantages: 1) private companies are normally more efficient than the government because they are less bureaucracy; 2) private companies can finance a project much easier than the government does, for they do not have to justify their investments to the public. They, therefore, can finance a larger sum in a shorter period than the government can; 3) private firms tend to fulfill the goals of the program and start serving the public earlier, because not only that they have a more robust financing ability, but also that they have a stronger incentive to finish the project early to collect revenue; 4) private firms normally have a deeper pool of experienced personnel. Employees of private firms are exposed to different types of projects in different parts of a country or of the world. They also can pull together a team of sub-contractors with whom they are familiar in a short period of time to support them if needed. Given these, it is hard for state-owned agencies to match

private firms in terms of experience, exposure, and connection (with support companies).

2.2 Procedures in a BOT Project

A BOT project roughly involves eight steps from start to finish. Below are features of the different step:

1) Proposing a project

Either the host government or a private firm (or a joint venture of private firms) can propose a project. In either case, the proposing entity sees the need for an infrastructure, and believes using BOT is best for public interest or private sector participant. It is important for the government to have a clear picture of future development and keep constant communicating with the private sector because private firms will only propose if they have known the development concepts of the government. Also, by doing so, more creative project proposals by the private sector will appear.

Another point needed to be emphasized is that if a project is going to use BOT delivery method, it has to be proposed as a BOT project at this initial stage, since financing, payment and management of BOT is very different from those of the other delivery methods. It will benefit all parties by making the intention clear at the very beginning.

2) Bidding

The bidding process begins with the host government announcing a Request for Proposal (RFP), then short-listing interested firms (or alliance of firms) to few qualified one. The host government should pay attention to other parameters such as

the benefits the project will contribute to the society, its closeness to the government's central development concepts, the firm's experience, synergy, quality, etc. There has been numerous literatures on evaluating methods, like that of Birgonul & Dikmen (1996), Tiong & Alum (1997), and Lloyd (1996). Short-listed companies are normally invited to present their bids, with the corresponding conceptual design, in three to six months. In their presentations, they will give details about:

- Expected Completion Date;
- Cost Estimates & Schedules;
- Financing Structure;
- Fee Determining Mechanism & Concession Length;
- Social & Economical Benefits to Host;
- Risk Analysis & Management;
- Dispute Resolution.

The host government will evaluate the proposals based on the aforementioned details.

3) Negotiating & awarding contract

The host government, or its representative, will rank the proposals and start negotiating terms and rights with the first-ranked firm – the ranking criteria varies from case to case, but in general, economic attractiveness and risk are of the highest concern. The host government has to grant the private firm certain rights and exemptions because it will govern the eventual Project Company, which operates highly autonomously. For example, it will have to alter any existing laws denying a foreign company owning a national asset. Plus, the host government can protect the private firm by using its power to reduce risks. For example, it can ensure that competing programs will not be implemented during the construction and concession

periods, or tax laws and wages laws will not change to an extent that the project cannot be profitable; some even guarantee minimum revenues (if the end product - such as power of a power plant - can be purchased by government agencies). If the first-ranked private firm and the host government agree on their respective rights, responsibilities, and gains, then a contract will be awarded. If the first-ranked firm cannot reach an agreement with the host government, the government will withdraw from the negotiation and start negotiating with the second-ranked firm, and the same procedure follows.

4) Setting up a Project Company

A Project Company is a separate entity from the winning private firm because there is a need to separate the routine function of the private firm from that of the Project Company. In terms of accounting, it is especially important as the BOT project is not necessarily financed by the private firm, and its revenue is not part of the private firm as well. As far as legal responsibility is concerned, the aforementioned winning firm can be a general contractor, a designer / engineer, or a joint venture, therefore, a Project Company has to be setup to hold as an individual legal entity. It also helps exclude other parties from exercising the special rights or exemptions grand by the host government.

5) Financing the project

The Project Company will issue bonds or equity, and borrow money from either or both governments and banks to finance the project. The portion of equity ranges from 10% to 30%. When the Project Company borrows from a bank or the government, it may use the equity it holds as lateral. In other words, if it fails to

complete the project, the borrower will become the legal owner of the project and enjoy the privilege and special rights grand by the host government prior.

6) Constructing

The Project Company can be the general contractor of the project, or it can hire a company to perform the construction duty. If the Project Company hires another party to participate in the construction process, it must be aware of the labor-related issues listed in the contract to avoid conflicts.

7) Operating

Just as in the construction phrase, the Project Company can either run the infrastructure itself or hire another party to do so. During the operation phrase, the Project Company should charge fees according to the pricing mechanism agreed upon with the host government during the negotiation process. Similarly, tax payment and degradation penalty should be paid based on the agreement. The Project Company is responsible for the operation and maintenance cost during this phrase.

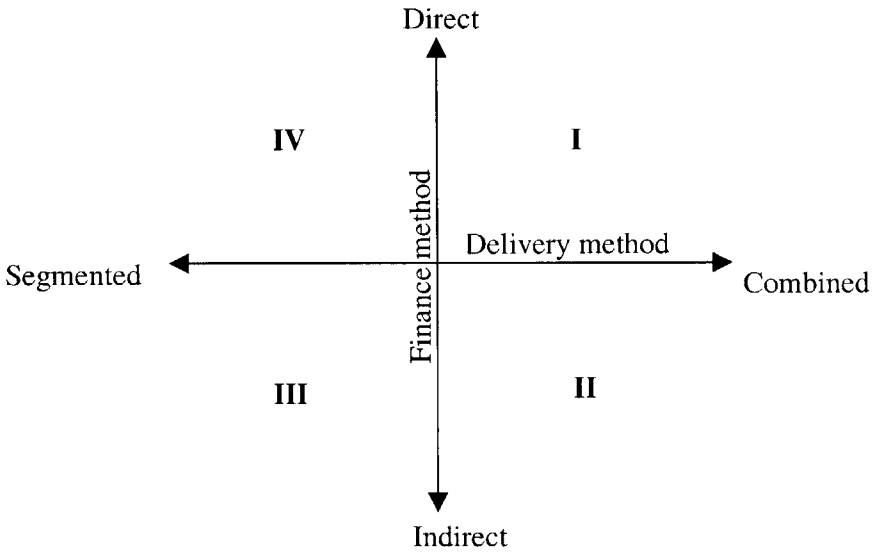
8) Transferring

When the concession period is over, the ownership of the infrastructure, alongside with all contingence funds, is transferred to the host government. The concession period can be extended if both the Project Company and the host government agree to do so, under any circumstances. Even if the concession period is not extended, the government can still hire the Project Company as the operation manager and allow it to continue running the infrastructure, but the distribution of revenue collected may differ.

2.3 Quadrant Framework

Another metric to examine the BOT project is to see where it is located in the Quadrant Framework, which was conducted at MIT's Civil and Environmental Engineering in the early 1990's.

Figure 2.1 The Quadrant Framework



This framework comprises two perpendicular axes; the horizontal axis represents the continuum of delivery methods measured by the degree to which typical elements are segmented or combined with one another, while the vertical axis represents the continuum of financing methods measured by the degree to which government assumes the financial risk for producing, operating, and maintaining the project through its life cycle.

The vertical axis describes the range of potential choices to be made by government to fund (or finance) infrastructure. The vertical axis depicts a strategic election by government to arrange project funding somewhere between two fundamentally different extremes:

(a) to "push" specific project "directly" through current cash appropriations, or

(b) to "pull" specific projects "indirectly" through incentives, mandates, dedicated income streams, or other measures, which encourage the private sector to finance Government goals.

The horizontal axis describes the range of potential choices to be made by government for project delivery. The horizontal axis represents a strategic election by Government to approach planning, design, construction, operation, and maintenance, in one of two, fundamentally different ways:

(a) by clearly separating each of these different steps in the procurement process from one another (a "segmented" process) or

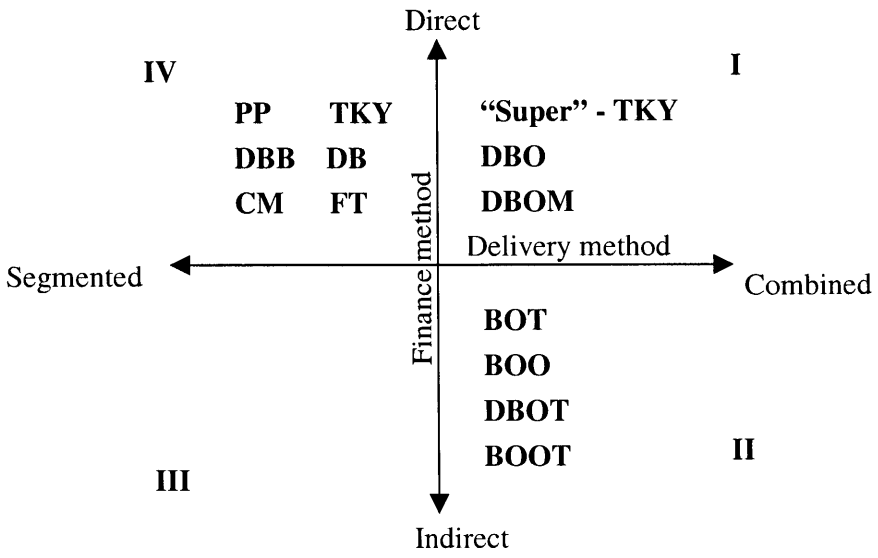
(b) by combining all these aspects of an infrastructure project into a single procurement of the completed facility (a "combined" process)

With these two fundamental strategies arrayed on the axes in Figure 2.1, infrastructure development strategies can be graphically described and compared.

Figure 2.2 summarized how the common project delivery methods described by Gordon fit into the Framework. Several variations of Design-Build-Operate and Design-Build-Finance-Operate are added.

Here are what the acronyms stand for: 1) PP: Parallel Prime; 2) DBB: Design-Bid-Build; 3) CM: Construction Management; 4) TKY: Turkey; 5) DB: Design-Build; 6) FT: Fast Track; 7) "Super"-TKY: Turnkey with Finance; 8) DBO: Design-Build-Operate; 9) DBOM: Design-Build-Operate-Maintain; 10) BOT: Build-Operate-Transfer; 11) BOO: Build-Own-Operate; 12)DBOT: Design-Build-Operate-Transfer; 13) BOOT: Build Own Operate Transfer.

Figure 2.2 Fitting the Project Delivery Methods into the Four Quadrants



Chapter 3 Case Study – Taiwan High Speed Rail Project

3.1 The Need for a High Speed Rail in Taiwan

The reason to have a high-speed transportation system in Taiwan is two-fold:

First, Taiwan had enough capital to finance its public infrastructure projects after the economic growth during the 60s and the 70s. At that time, most of the infrastructure projects were funded directly by the government, since it could finance the project with adequate capital instead of searching for outside resources. After the 80s, due to the increasing size of project and the complexity involved, projects needed tremendous investments, which might soon wear down the government's budget. Meanwhile, government attempted to distribute more resources on other areas, such as education, high-tech research, art, and social welfare. This reallocation of resources, thus, resulted in a big gap between the desired and available funding for project financing. Besides, the government has been continuing to pursue an aggressive program toward the high-tech industry, which has made Taiwan the 3rd largest country in computer hardware production in the world. Taiwan's economic achievements have resulted in an average increase of 6.4% per capita income over the past 10 years (1988 – 1998[1]). In order to meet the requirement for the future growth, a rapid public transportation system is needed to keep pace with the economic growth.

Secondly, the population is concentrated in the West Corridor of the island, which only has an area about 25,600 square kilometers, and the density of this area is 750 persons per square kilometer.

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[1] ROC Ministry of Economic Affair Report

With an insufficient transportation network in Taiwan, this highly dense population leads to traffic congestion and to the need for an alternative to travel along the island faster and more economically.

Table 3.1 shows the estimated travel time and costs of different transportation options in Taiwan. It demonstrates the potential market of the HSR.

Table 3.1 The Estimated Travel Time and Costs of different transportation means (Traveling from Taipei to Kaohsiung)

	Time (Estimated)	Cost (Per Trip)
Airplane	55 min.†	52 USD
Bus	5 hr 10 min	15 USD
Traditional Train	4 hr 20 min	26 USD
High Speed Train	**90 ~ 120 min**	**34 USD**

In brief, population, bad traffic condition, and economic activities all contribute to the need for a high-speed transportation system. Therefore, the introduction of high-speed railway transportation has been the most viable and timely solution.

3.2 Project Development

The development of Taiwan HSR and the implementation plan are as follows:

(1) Conceptual Study (1974 – 1981)

The Taiwan Railway Administration (TRA) conducted a super railway study.

(2) Feasibility Study (1989 – 1993)

† Base on "port to port" basis. The travel time will be longer if it is on "city to city" basis

The High Speed Transit System 2020 (HSTS) study completed in 1990, outlined pairs of arterial transport systems linking major cities. HSTS also outlined a High Speed Rail system to collect and distribute inter-city passenger trips along the West Corridor. Following describes how the project developed and finally transited to BOT project.

In 1989, the Ministry of Transportation and Communication (MOTC), according to Section 1113(3) of the Environmental Planning and Assessment Act 1989 (EPA), proposed two tracks high-speed railway system, around 400 kilometer in length, from Sung-Sang (next to downtown Taipei) to Dro-Inn (next to downtown Kaohsiung). As a result of the Environmental Impact Statute (EIS) process, the Government convened a Commission of Inquiry.[2]

In 1991, the Commission of Inquiry suggested that the project should not be constructed under fiscal constraints, and an upgrading of the existing north-south traditional rail system with improvement in other transportation vehicle should be implemented in priority. However, the Government did not accept the Commission's finding.

In September 1992, the Ministry of Transportation and Communication (MOTC) announced the preparation of a statute relating to a HSR. The MOTC was the proponent within the meaning of the EPA Act and proposed a fixed price construction project with a HSR Authority bearing operation responsibility.

A formal decision, in accordance with the EPA 1989 to build the HSR link was made in 1993 by the MOTC.

At the Legislative Yuan's Capital Works Committees meeting of 1995, the Premier of Council of Economic Planning and Development gave its approval to the

[2] MOTC #1173 Report

MOTC in order to seek Expressions of Interest from private sector participation and did not commit the provision of Government funding for the project. The document of Seeking Expressions of Interest explicitly stated that the registered private sector proponent will bear all the construction risk and traffic risk, and bids should be developed on this basis.

(3) Bid, Award, and Contract Signing (1997 - 1998)

Preliminary Proposals to finance, design, construct, operate, and maintain the HSR were received in 1997 from two proponents: Chinese Development Corp. and Taiwan HSR Consortium. The MOTC Assessment Panel evaluated each proposal, according to the published criteria and decided the Taiwan HSR Consortium was the first priority selection to negotiate with. The application by China Development Corp. was decided to be the first runner-up to the most desirable proposal. The Assessment Panel considered that the Taiwan HSR Consortium (THSRC) proposal provided the best offer and recommended THSRC to conduct a more detailed investigation and submit an affirmative offer.

On July 23, 1998, The Ministry of Transportation and Communications (MOTC) and THSRC (Taiwan High Speed Rail Corp.) signed "The Contract for the Construction and Operation of the High Speed Rail from the North to the South of Taiwan ", "The Contract of the Station Area Development of the High Speed Rail from the North to the South of Taiwan", "The Memorandum of Items Responsible by The Government ", and "The Memorandum of Contract Execution".

(4) Financing and Construction

In 1999, the Ministry of Transportation and Communication (Party A), Taiwan High Speed Rail Company (Party B), Chauo Tung Bank (Party C), the International Commercial Bank of China (Party C), the Bank of Taiwan (Party C) signed "The Consensus of the Tripartite Financing Agreement of High Speed Rail Project."

On February 2, 2000, HSRC and other 25 banks jointly signing the "Contract of Syndicate Loan for Taiwan High Speed Rail Project", " Taiwan High Speed Rail Project Loan Enterprise Contract". On this day, the THSRC successfully finalized the syndicate loan.

Civil work constructions started from March 2000 and are expected to complete in October 2005.

Table 3.2 Milestones met by BOTHSR

February 1996	The draft plan of land acquisition was approved.
November 1996	The Taiwan High Speed Rail Consortium was formally established.
March 1997	The draft planning for special areas of HSR Station was completed.
July 1997	The completed plans for 5 special areas of HSR Station were started.
September 1997	On behalf of the Ministry of Transportation and Communications (MOTC), the Bureau of Taiwan High Speed Rail (BOTHSR) selected THSRC as the preferred bidder.
December 1997	THSRC completed the concession negotiations with BOTHSR.
May 1998	The Taiwan High Speed Rail Corporation was formally established.
July 1998	THSRC entered into several concession agreements and memoranda with MOTC, i.e. the Construction and Operation Agreement (C&OA), the Station Zone Development Agreement, and the Memorandum on Government Commitments and the Contract Execution Memorandum.

February 1999	The master and detailed plans were approved by the urban commission of the Ministry of Interior.
August 1999	THSRC concluded in writing the negotiations on government commitments.
October 1999	The area compulsory purchase for 5 special areas of HSR Station was completed.
May 2000	The Land Acquisition for HSR Line was completed.
September 2000	THSRC completed the base design of the six HSR stations and proceeded with urban design review process.

Source: Bureau of Taiwan High Speed Rail (BOTHSR)

3.3 Project Description

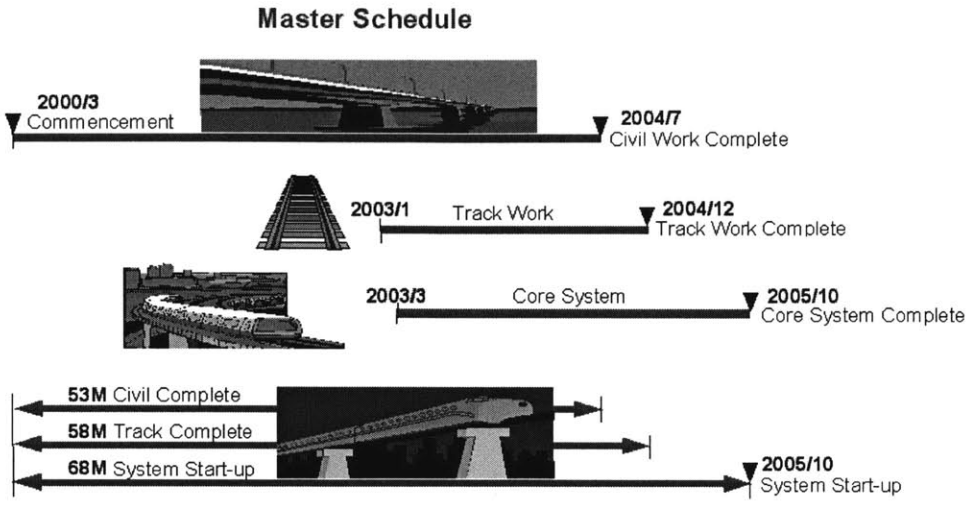
3.3.1 General Description

The civil engineering works of this project comprise 345 kilometers of primary route structure from Taipei (in the north) to Kaohsiung (in the south). The main civil engineering design and build contracts have been divided into twelve major civil engineering packages (Please see Figure 3.2).

THSRC is awarded 35 years of operation concession and 50 years of land development.

The whole construction works started from March 2000, and is expected to finish on October 31, 2005. Among this total construction period, civil works take 53 months to complete; track work, 24 months; core system, 31 months.

Figure 3.1 Schedule of this project



3.3.2 Project Participants

The Taiwan High Speed Rail Corporation (THSRC), formerly known as the Taiwan High Speed Rail Consortium, was founded by five local business groups in 1998:

(1) Continental Engineering Corporation

(2) Evergreen Corporation (Taiwan) Ltd.

(3) Fubon Co., Ltd.

(4) Pacific Electric Wire & Cable Co., Ltd., and

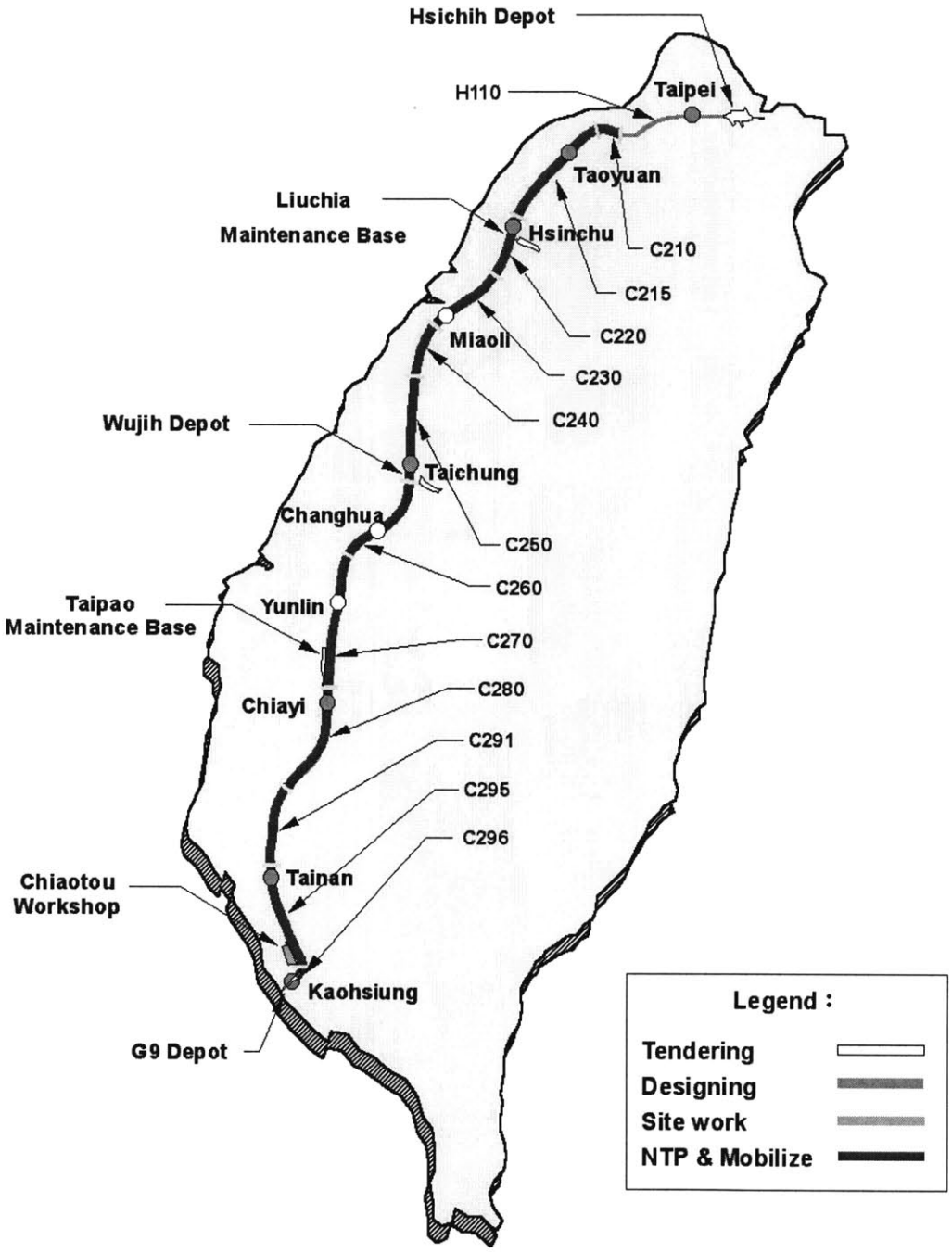
(5) Teco Electric & Machinery Co., Ltd.

Contractors are from different countries: Taiwan, Japan, Korea, German, and Holland...etc.

Table 3.3 Lists of Major Contractors

Name of the Major Contractor	Nationality
Obayashi Corp.	Japan
Shimizu Corp.	Japan
Daiho Corp.	Japan
Samsung Corp.	Korea
Korea Heavy Industries & Construction Co. Ltd.	Korea
Hyundai Engineering & Corp.	Korea
Zen Pacific Civil Contractor Co. Ltd	Hong Kong
Bilfinger and Berger Bauaktiengesellachaft	German
Hochtief AG	German
Ballast Nedam international	Holland
Italian Thai Development Public Company Limited	Thailand
Pacific Electric Wire & Cable Company	Taiwan
Evergreen Construction Corp.	Taiwan
Fu Tsu Construction Co. Ltd	Taiwan
Chiu Tai General Contractor Co. Ltd	Taiwan
Kou Kai Construction Co. Ltd	Taiwan
Chung Lin General Contractor Co. Ltd	Taiwan
Pan Asia Corp.	Taiwan
Continental Engineering Corp.	Taiwan
International Engineering & Construction Corp.	Taiwan

Figure 3.2 HSR route map and Civil Work Contract Packages



Status of Civil Works Contracts

Table 3.4 Breakdown of Civil Work Contracts

Contract No.	Location	Contractor	Main Item
C210	16K+800~28K+080 (Taipei County/ ShulinCity ~Taoyuan County/ Gueishan Hsiang)	Joint Venture of Obayashi Corp. of Japan, Fu Tsu Construction Co. Ltd of ROC	Including Hueilung Tunnel (2.15KM) , Linkou Tunnel (6.45 KM) and Viaduct
C215	28K+080~68K+540 (Taoyuan County/ Gueishan Hsiang ~Hsinchu County/ Hsinpu Town)	Joint Venture of Obayashi Corp. of Japan, Fu Tsu Construction Co. Ltd of ROC	Including Hukou tunnel (4.29KM) , Cut and Cover Tunnel & Embankment/ Cut
C220	68K+540~86K+320 (Hsinchu County / Hsinpu Town ~ Hsinchu County/Baushag Town)	Joint Venture of Daiho Corp. of Japan, Chiu Tai General Contractor Co. Ltd of ROC, and Kou Kai Construction Co. Ltd of ROC	Including shorten tunnel, Viaduct, Cut and Cover Tunnel & Embankment/ Cut etc by covering Hsinchu Station Guideway
C230	86K+320~109K+760 (Hsinchu County/Baushan Town~ Miaoli County/ Houlung Town)	Joint Venture of Hyundai Engineering & Corp. of Korea, Chung Lin General Contractor Co. Ltd of ROC, Zen Pacific Civil Contractor Co. Ltd of Hongkong	Including shorten tunnel,Viaduct, Cut and Cover Tunnel & Embankment/ Cut etc by covering Miaoli Station Guideway
C240	109K+760~130K+600 (Miaoli County/ Houlung Town~Miaoli County/Yuanli Town)	Joint Venture of Hyundai Engineering & Corp. of Korea, Chung Lin General Contractor Co. Ltd of ROC	Including Miaoli tunnel (3.06KM), other shorten tunnels, Viaduct, Embankment/ Cut
C250	130K+600~170K+400 (Miaoli County/ Yuanli Town~Changhua	Joint Venture of Hochtief AG of German, Pan Asia Corp.	The Viaduct is the main structure, the others are shorten

	County/ Changhua City)	of ROC, Ballast Nedam international of Holland	tunnel, Viaduct, embankment / Cut
C260	170K+400~207K+015 (Changhua County/ Changhua City~ Changhua County/Sheichao Hsiang)	Joint Venture of Bilfinger and Berger Bauaktiengesellachaft of German, Continental Engineering Corp. of ROC	Paghuashan Tunnel is the longest tunnel of this line(7.36KM), the others are Viaduct, embankment/ Cut, which includes Changhua Station Guideway
C270	207K+015~249K+814 (Changhua County/Shijou Hsiang ~Chiayi County /Taipao City)	Joint Venture of Bilfinger and Berger Bauaktiengesellachaft of German, Continental Engineering Corp. of ROC	Including Viaduct, embankment/ cut, which includes Yunlin Station Guideway
C280	249K+814~284K+221 (Chiayi County /Taipao City ~ Tainan County/Madou Town)	Joint Venture of Samsung Corp. of Korea, Korea Heavy Industries & Construction Co. Ltd. Of Korea, International Engineering & Construction Corp. of ROC	Including Viaduct, embankment/ cut, which includes Chiayi Station Guideway
C291	284K+221~312K+734 (Tainan County/Madou Town ~ Tainan County /Gueiren Hsiang)	Joint Venture of Shimizu Corp. of Japan, Evergreen Construction Corp. of ROC	Viaduct
C295	312K+734~340K+058 （Tainan County /Gueiren Hsiang ~Kaohsiung County/Renwu Hsiang）	Joint Venture of ItaIian Thai Development Public Company Limited of Thailand, Evergreen Construction Corp. of ROC, Pacific Electric Wire & Cable	Viaduct and Embankment

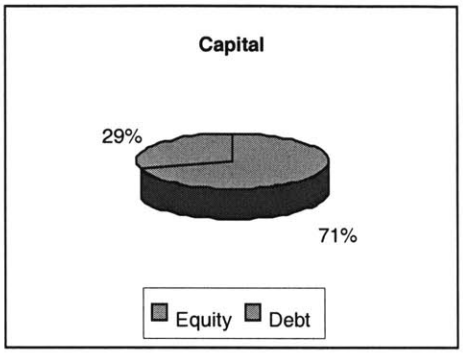
		Company of ROC	
C296	340K+058~343K+120 (Kaohsiung County/Renwu Hsiang ~ Kaohsiung City/Zeoyin City)	Joint Venture of Shimizu Corp. of Japan, Evergreen Construction Corp. of ROC	Viaduct and Embankment

Table 3.5 Breakdown of Station Construction Contract

Contract No.	Station	Construction Contractor	Station type
S215	Taoyuan	Futsu/Obayashi JV	Underground, four tracks, two side platforms
S220	Hsinchu	Daiho	Above ground level, four tracks, two side platforms
S250	Taichung	Taisei/CEC/CTCI/Taian JV	Above ground level, four tracks, two side platforms
S280	Chiayi	Teco/Takenaka JV	Above ground level, four tracks, two side platforms
S290	Tainan	Evergreen/Shimizu JV	Above ground level, four tracks, two side platforms
S395	Tsoying	SECI	At ground level, six tracks, three island platforms

3.3.3 Brief of Financial Features

Project Company:	Taiwan High Speed Rail Corporation (THSRC)
Equity:	US$ 3.76B
Debt:	US$ 8.23B (syndicated loan, 20 years)



This company consists of five domestic companies. The equity of THSRC is US$ 3.76B, and the five domestic companies were scheduled to invest up to 51% of the equity in the first financing stage. Another 29% to 34% of equity comes from institutional investors, and the other 15% to 20% comes from the stock market.

In 2000, banks agreed to lend a syndicated loan to this project company. The total amount of this loan is USD 8.23B. The syndicated banks are leading by three major Taiwanese banks -- "Chiao Tung Bank", "the Bank of Taiwan" and "the International Bank of China".

This loan has five years of grace period, which means the THSRC does not have to pay for the principal during the five-year construction period.

If there is a financial crisis in this project (e.g. default on repayment), then the concession is terminated and the government is obligated to step in and to assume in full remaining debt of the THSRC. Also, more than 70% of this loan is from government deposit (e.g. pension, insurance, postal savings). In other words, Taiwan government substantially guarantees this project.

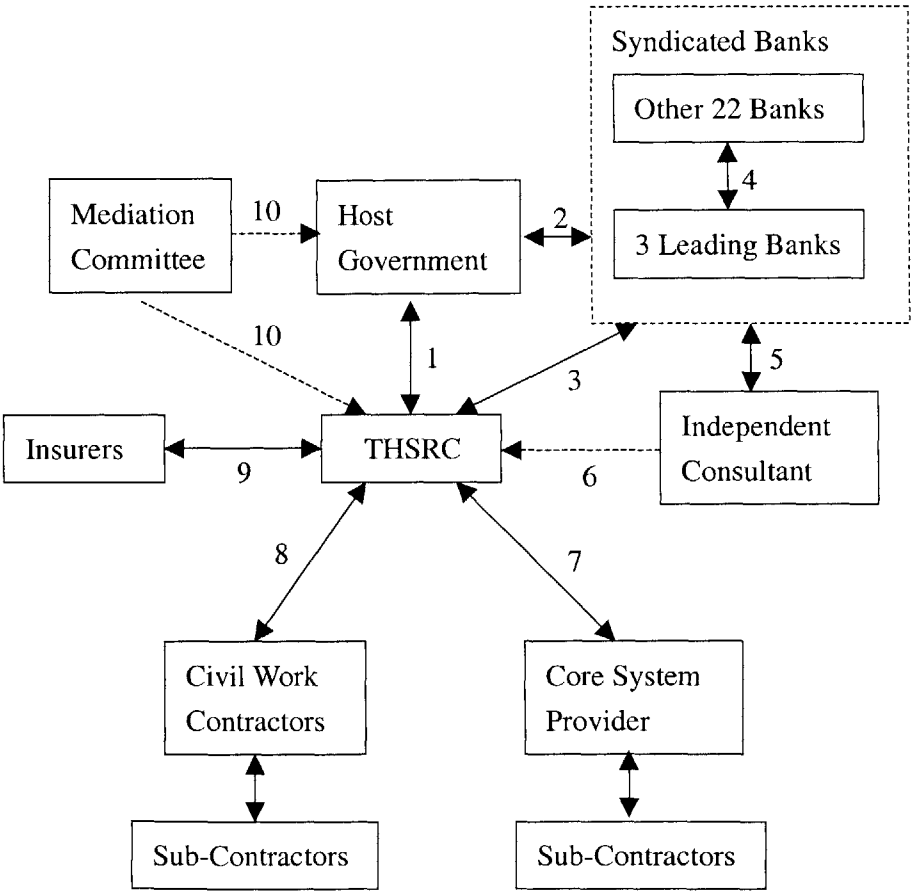
The core financial frame is comprised mainly from domestic fund. Therefore, this project can avoid from the variable exchange rate.

More details about the financial structure are discussed later in Chapter 4

3.4 Contractual Structure of this BOT project

There are many entities involved in a BOT project. A contractual structure chart can easily show the relationships between different entities. (Please see Figure 3.3)

Figure 3.3 Contractual Structure of this BOT project



The following explains the notes of Figure 3.3.

Note 1: The government and the THSRC signed the "Contract for the Construction and Operation of the High Speed Rail from the North to the South of Taiwan ", the "Contract of the Station Area Development of the High Speed Rail from the North to the South of Taiwan", the "Memorandum of Items Responsible by The Government ", and the "Memorandum of Contract Execution".

Note 2: The government and the syndicated banks signed the Tripartite Contract. It states that the government provides NTD 240 B capital as the source of the syndicated loan.

Note 3: The THSRC and the syndicated banks signed the "Contract of Syndicate Loan for Taiwan High Speed Rail Project." Details of note 1, 2, and 3 will be discussed later in Chapter 4.

Note 4: The three leading banks of this syndicated loan are Chauo Tung Bank, the International Commercial Bank of China, and the Bank of Taiwan. From the viewpoint of these three banks, seeking another 22 banks to participate the syndicate loan is a method to disperse their risks.

Note 5: The syndicated banks hired an independent consultant company to estimate the market price of the project and to monitor the project. The hire of the independent consultant company must be approved by all three entities: the government, the THSRC, and the syndicated banks. Under this mechanism, every three months, the independent consultant submits its monitoring report to the government, the THSRC, and the syndicated banks.

Note 6: The independent consultant company "monitors" the THSRC. They do not have a contractual relationship.

Note 7: The THSRC has a USD 2.794B core system contract with the Taiwan Shinkansen Company, which consists of seven Japanese companies. (Please see Table 4.5) Besides, this contract fee is paid in US dollars.

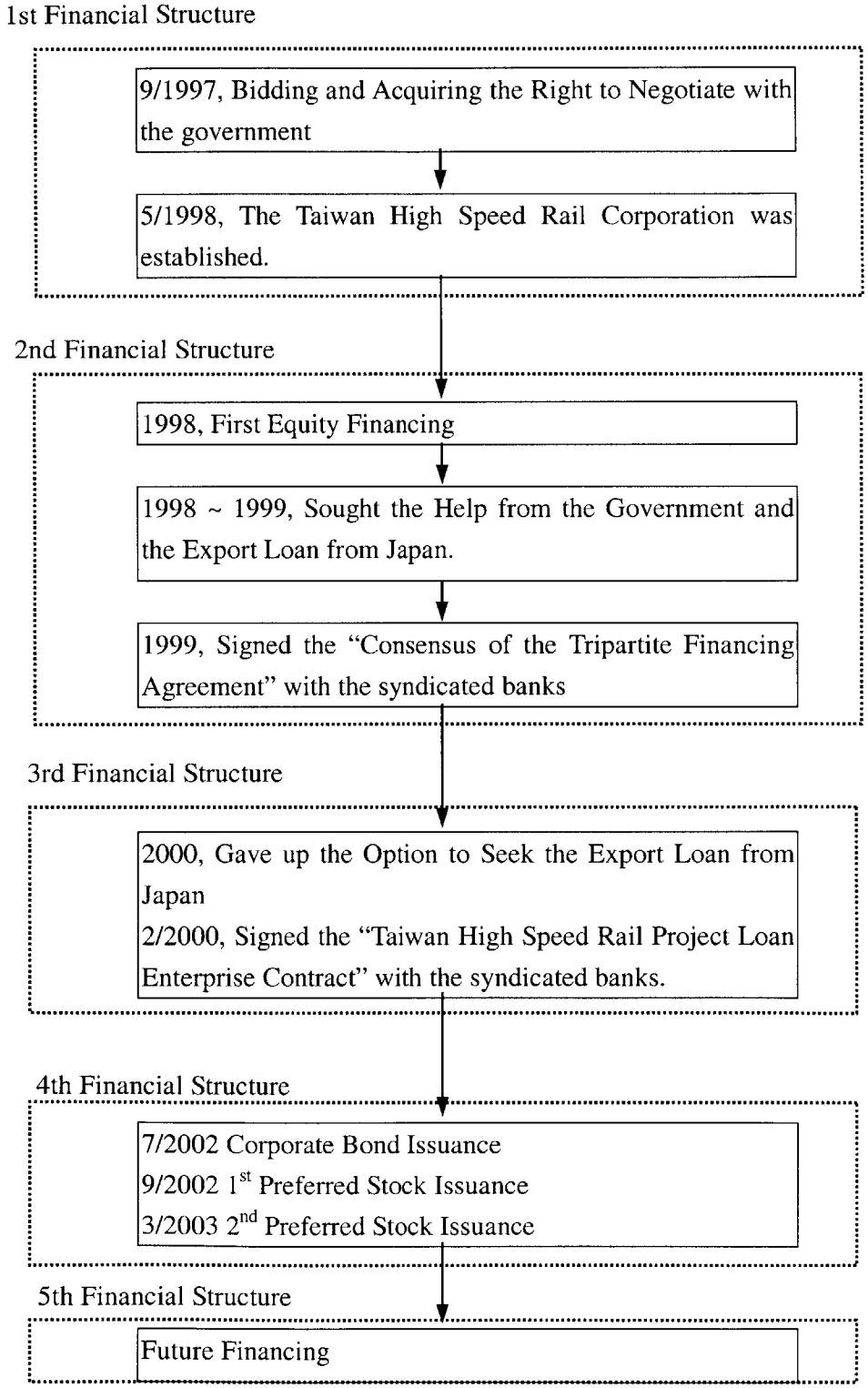
Note 8: Every civil work contract was awarded to a joint venture comprising local companies and foreign companies (please see Table 3.4), and the construction fees are all paid in New Taiwan dollars. The total amount of civil work contract is USD 4.075 B.

Note 9: The THSRC has an insurance contract with the insurers. The insurance policy covers construction risks, delay loss, and the liability for third party.

Note 10: According to (1) Article 19.3 of the "Statute for Encouragement of Private Participation in Major Transportation Projects (SEPP), (2) Section 18.2.1 of the "Contract for the Construction and Operation of the High Speed Rail from the North to the South of Taiwan ", and (3) Section 13.2.1 of the "Contract of the Station Area Development of the High Speed Rail from the North to the South of Taiwan", the THSRC and the government need to establish a mediation committee. This mediation committee serves as an alternative dispute resolution to the government and the THSRC. If there is a dispute between the government and the THSRC, instead of going to an arbitration / litigation process, both entities will send the dispute to the mediation committee. The main goal of this mechanism is to prevent both entities spending too much time and money on litigation processes, and to use negotiations to solve disputes. This mediation committee only serves as a mediator or a conciliator, and it does not have any contractual relationship with the government and the THSRC.

Chapter 4 Financial Structure

4.1 Timeline for Development



The following explains the development of THSRC's financing and the difficulties it encountered.

4.2 Initial Financial Structure

September 25,1997 (Bidding)

Taiwan High Speed Rail Consortium (THSRC), consisting of 5 domestic companies, Seimens (Germany), and Gec Alsthom International (France), outbid the Chinese Development Corp. primarily due to the offering THSRC gave: THSRC will pay the government back USD 3.1B (NTD 105.7B) in the first 30 years after the operation of the high speed rail. In other words, THSRC's future payback will offset the investment the government had made on this project, which was mainly conceived as the major advantage of the BOT project: the government, at the end, does not have to pay for the construction and maintenance fees of its infrastructure and the private company completes the financing task.

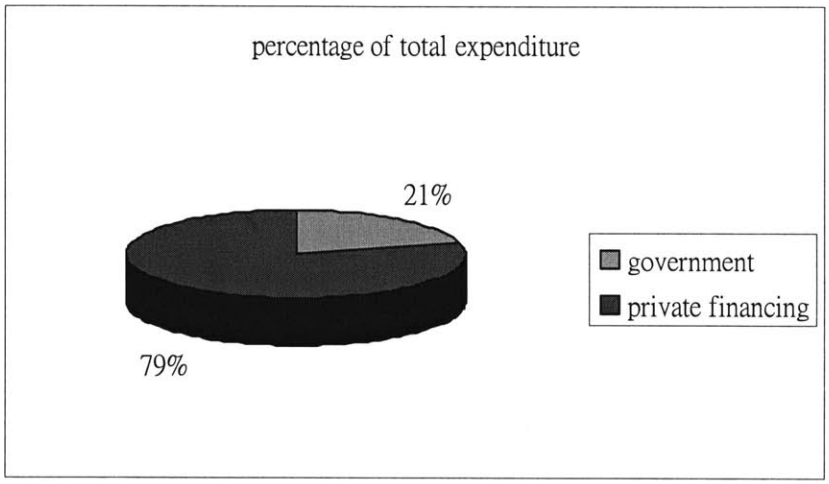
Table 4.1 Original members of Taiwan High Speed Rail Consortium

Company Name	Nationality
Continental Engineering Corporation	Taiwan
Evergreen Corporation Ltd.	Taiwan
Fubon Co., Ltd.	Taiwan
Pacific Electric Wire & Cable Co., Ltd.	Taiwan
Teco Electric & Machinery Co.	Taiwan
Seimens	German
Gec Alsthom International	France

4.2.1 Total Expenditure

From the original proposal, the total expenditure is USD 15.1B (NTD 513.3B). 21% of the total expenditure (USD 3.1B) is from the government, and the remaining 79% (USD 11.99B) is from private financing.

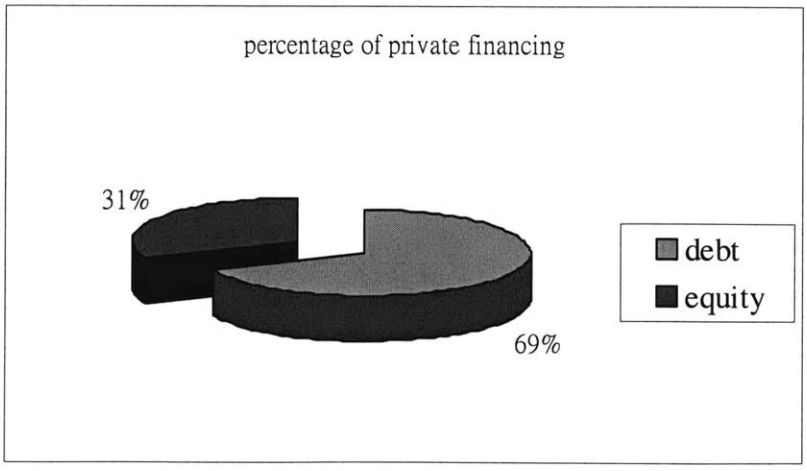
Figure 4.1 Sources of Total Expenditure



4.2.2 Private Financing

69% of USD 11.99B private financing (USD 8.23B) is from debt, either through domestic or international sources. The remaining 31% of private financing is from the equity of the THSRC.

Figure 4.2 Percentage of Private Financing



4.2.2.1 Equity

In the original plan, the 7 original Taiwan High Speed Rail Consortium members provide 51% of the equity. (Later, the two foreign companies will quit this project consortium due to the core system selection problem.) Institutional investors account for 29 to 34 % of the USD 3.75B equity. Furthermore, according to THSRC's proposal, the remaining 12 to 20 % of its equity will come from the public offering in the stock market.

Table 4.2 Planned Equity Shares Breakdown

Entities	Equity shares (%)
5 domestic companies with Simens and Gec Alsthom Int. Co.	51
Institutional investors	29 ~ 34
Public (normal) investors	12 ~ 20

4.2.3 Financial Risks in the Initial Structure

In the initial stage, the financial risks were well distributed. None of the involved entities had a very high risk exposure. The risks were allocated through the government, members of THSRC, institutional investors, and public investors.

Table 4.3 Breakdown of Financial Sources (Original Plan) in USD

Sources	Amount	% of total expenditure
Self-financing	11.98B	79.41%
-Equity	3.75B	24.86%
-- 7 members of THSRC		12.67%
-- Institutional investors		7.21% ~ 8.45%
-- Public (normal) investors		2.98% ~ 4.97%
-Debt	8.235B	54.55%
Government	3.109B	20.59%
Total Expenditure	12.098B	100%

4.3 Second Financial Structure

4.3.1 Developing to the second financial structure

November 1997 (Encountered financing difficulties)

After encountering private financing difficulties, THSRC filed a USD 8.2B (NTD 280B) loan application to Council for Economic Planning and Development, Executive Yuan (CEPD) according to the Construction and Operation Agreement (C&OA), which states: The government should help the THSRC to apply for the mid- to long term fund supporting from CEPD.[1]

June to July 1998 (Disagreement of the loan application)

Because of the disagreement about the degree of government aids/ involvements, the THSRC and the Ministry of Transportation and Communications (MOTC) did not sign the "Memorandum of Items Responsible by The Government ".

[1] Article 12.2 in Construction and Operation Agreement (C&OA)

Since the MOTC highly questioned the memorandum putting the government into too much risk exposure, these two parties could not sign the Construction and Operation Agreement (C&OA) at first attempt.

First settlement with the government about financing

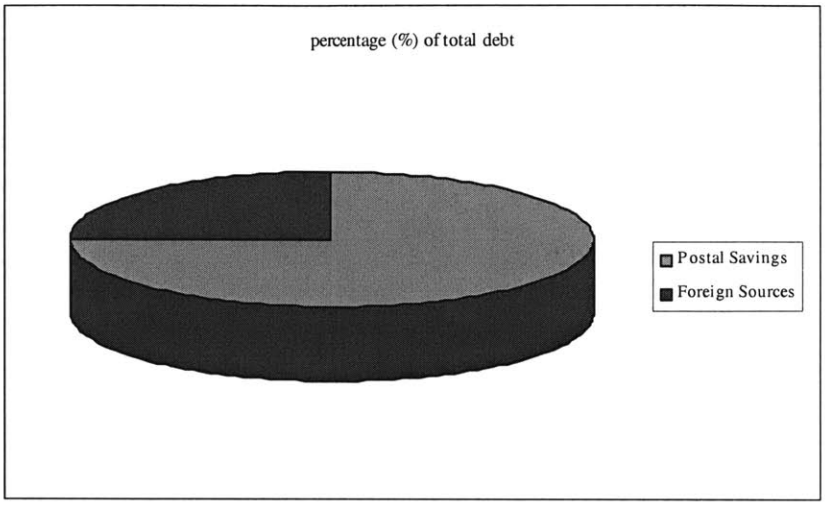
After the efforts of the President of Taiwan and the Minister of Executive Yuan, Council for Economic Planning and Development (CEPD) agreed to deposit USD 6.18B (NTD 210B) of postal savings into the 25 banks. Then, these 25 banks made a syndicate loan agreement with the THSRC by using the deposit as the source of capital. However, due to the high risk of this project, CEPD did not approve the whole amount of the loan application (USD 8.2B/ NTD 280B), and CEPD asked the THSRC self-finance the remaining USD 2.06B (NTD 70B) from foreign sources.

At this first stage, the THSRC assured the source of 75% of the loan.

Table 4.4 Sources and Amounts of the loan

USD	NTD	Sources	Percentage
$6.176 B	$210 B	Postal savings	75%
$2.058 B	$70 B	Foreign sources	25%

Figure 4.3 Sources of debt



4.3.2 Risk Allocation in the 2nd Financial Structure

In 1999, the Ministry of Transportation and Communication (Party A), Taiwan High Speed Rail Corporation (Party B), and 25 banks (including Chauo Tung Bank, the International Commercial Bank of China, and the Bank of Taiwan) (Party C) signed "The Consensus of the Tri-party Financing Agreement of High Speed Rail Project."

On February 2, 2000, HSRC and other 25 banks jointly signing the "Contract of Syndicate Loan for Taiwan High Speed Rail Project", " Taiwan High Speed Rail Project Loan Enterprise Contract".

Under this consensus, the government will deposit its USD 6.18B (NTD 210B) of postal savings into the 25 banks to provide the source of the syndicate loan. In other words, that postal savings deposited in the 25 banks gave the THSRC the credit to borrow money from the syndicate loan.

Since this project is the first BOT project in Taiwan, most of the banks doubted the feasibility of this project, and they were lack of confidence in the projected cash flow of this project. These banks considered this project too risky

for them to be lenders. Therefore, after the government agreed to deposited USD 6.18B into their account to provide the source of the loan, these banks still need more methods to mitigate their potential risks, especially in this massive, first-time BOT project in Taiwan.

It seems that the banks assume all the risks of this massive loan because these banks have the syndicate loan contract with the THSRC. However, to protect themselves, these banks insisted to add some clauses in the contract. These clauses lower down the banks' risks significantly.

Followings explain how the banks mitigate their risks by adding important clauses into the loan contract.

(1) "Forced buyout and government takeover" clause.

The most important question about the risks is what will happen if the project company fails to meet its debt responsibilities. Instead of taking the whole risks, these 25 banks made an agreement with the government and the THSRC to add a clause in the Construction and Operation Agreement (C&OA), which states: "if the project company defaults and the project is terminated by the government, the government will buy the project back and take the debt responsibility the company leaves".[2]

In other words, if the THSRC goes bankrupt, this project does not really "go bankrupt" because the creditors (banks, in this case) do not take over the project as usual.

The project will be taken over by the government, and the government will take the whole responsibility of the project. For example, the government will either hold another bidding for this project to resume the construction / operation, or take the construction/operation responsibilities by itself

[2] Article 11.2.2 and 17.2.3 of the Construction and Operation Agreement (C&OA).

(2) 3:7 Equity Debt Ratio

In order to mitigate the risks of the 25 banks, the syndicate loan contract states that the THSRC must retain enough equity so as to borrow money from the banks even though the THSRC has a USD 6.18B loan credit. The equity to debt ratio is limited at 3 to 7. This means, for example, if the THSRC only has USD 3 millions in its equity, the THSRC can only borrow USD 7 millions from its USD 6.18B loan credit. This clause protects the banks because the risk is high when the debt to equity ratio (D/B ratio) is high.

4.3.3 1st Stage of Equity Raising

Due to the bad economy, the equity raising did not go smoothly. In the first stage of the equity raising, the THSRC only raised USD 1.47B (NTD 49.99B) for its equity. According to the Statute of Encouragement of Private Participation in Major Transportation Projects (SEPP), the government can invest in the project, but the investment cannot exceed 20% of the equity. Therefore, among this USD 1.47 B equity, the government invested in total USD 235.3 M (NTD 8B). NTD 3B came through the name of Taiwan Sugar Corporation (government-owned) and NTD 5B came through the name of the Development Fund, Executive Yuan. Totally, the government accounted for 16% of the equity at this stage. None of the USD 1.47B came from the stock market. The other 84% of its equity were from its 5 original consortium members and other institutional investors.

4.3.4 Overall Looking at the Second Financial Structure

The most significant feature of this financing is that the THSRC needs to raise enough equity in order to borrow money out of its loan credit to meet its capital

needs as the project proceeds. This imposes another risk because the THSRC will fall into difficulties to attract enough investment out of the market if the economy becomes unfavorable during the 5-year construction period, which demands intensive capital spending.

To summarize the role the government played in this second stage:

(1) Depositing USD 6.18B of postal savings into banks' account to provide the source of the syndicate loan. This mount of money accounts for 75% of the total required debt of the whole project (USD 8.23B).

(2) Giving guarantees to both the THSRC and the banks that the government will take over the project if there is possibility of bankruptcy.

(3) Government investments account for 16% of the THSRC equity, which is around USD 235.3 M.

In this second financial structure, the government plays an important role.

4.4 Third Financial Structure

4.4.1 The Change of the Core System

Formerly a member of the Chinese Development Corp., the Japan bullet train system (Shinkansen) failed in the first BOT bidding. Now, after the THSRC first encountered the difficulty to seek loans, the Shinkansen system sought to gain another opportunity to win the core system contract. In order to get the contract, the Shinkansen system offered the possibility to help the THSRC get a NTD 70B export loan (about 85% of the core system contract fee) from the Export-Import Bank of Japan (later became Japan Bank for International Cooperation), and promised to invest at least 10% of the equity of the THSRC.

Later, the THSRC held the bidding for the core system, and the TSC (Taiwan Shinkansen Corporation, consisting of 7 Japanese companies.) won the bid. This led the EuroTrain system providers (mainly consisting of Seimens and Gec Alsthom International) file a lawsuit to the THSRC because the switch of core system caused their loss.

The Taiwan Shinkansen Corporation (TSC), consisting of 7 Japanese companies, was awarded the core system contract, which is around USD 2.8B (NTD 95B).

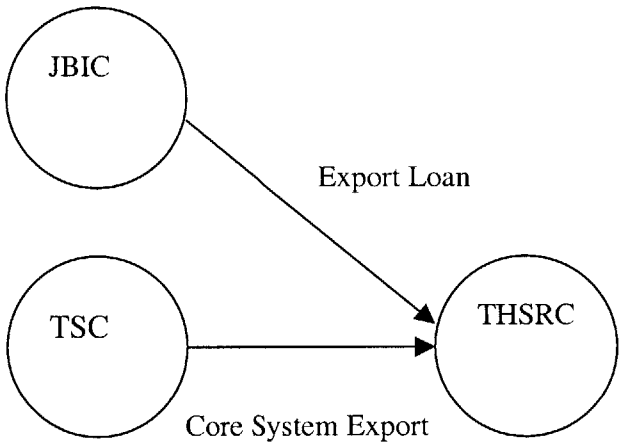
Table 4.5 Seven Members of the TSC

Company Name
Mitsui & Co
Mitsubishi Heavy Industries, Ltd.
Kawasaki Heavy Industries, Ltd.
Mitsubishi Corp
Marubeni Corporation
Sumitomo Corp
Toshiba Corporation

In Japan, export loans refer to loans that finance Japanese's plant exports to developing countries. Here, plants include power generation and communication equipments and facilities. Since this long-term export loan for developing countries is subject to heavy risks including political risk, interest-rate risk and foreign exchange risk, the export loan provider must have to set stricter standards to protect itself from potential risks.

Figure 4.4 Original Scheme for Seeking Export Loan From JBIC

(JBIC stands for Japan Bank of International Cooperation, TSC stands for Taiwan Shinkasen Corporation, and THSRC stands for Taiwan High Speed Rail Corporation)



4.4.2 The Decision Not to Seek the Export Loan from Japan

Because of the high risk of this project, the Export-Import Bank of Japan would offer the loan only if the THRSC meets the following requirements: 1) guarantees both from the Taiwan government and from a certain amount of good rating commercial banks. (Among 25 domestic commercial banks, from the Export-Import Bank of Japan's perspective, only half of them were considered eligible to give out guarantees.) 2) Some contract changes in the Construction and Operation Agreement (C&OA) and Contract of Syndicate Loan for Taiwan High Speed Rail Project. 3) 15-year loan period, different from the 20-year loan period the THSRC proposed. 4) All loans paid in Japanese dollars.

Considering the stricter requirements the Export-Import Bank of Japan imposed and the exchange rate risk, the THSRC decided to forgo the option to seek the export loan from Japan.

4.4.3 Second Settlement with the government

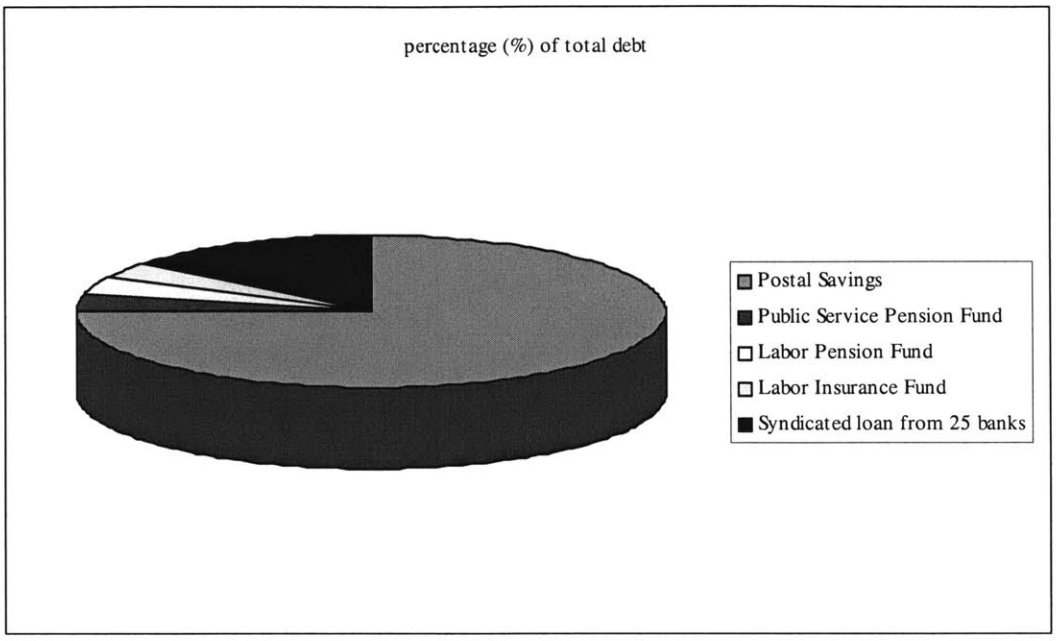
Unable to meet the standards set by the Export-Import Bank of Japan, the THSRC, again, turned to the Council for Economic Planning and Development (CEPD) asking for more aids on the loan issue. Finally, in addition to NTD 210B postal savings, the CEPD agreed to provide USD 882M (NTD 30B) capital as the source of the syndicated loan. This NTD 30B capital comes from the pension funds (each 10B from Public Service Pension Fund, Labor Pension Fund, and Labor Insurance Fund, respectively). Besides, the 25 banks agreed to offer the remaining USD 1.176B (NTD 40 B) loan credit to the THSRC based solely on the 25 banks' capital, without the deposits from the government-controlled funds.

At this time, the THSRC finalized its NTD 280B loan issue. After this, the remaining financing problem is how to pour enough money into its equity.

Table 4.6 Breakdown of Sources of THRSC's loan

USD	NTD	Sources	Percentage
$6,176,470,588	$210B	Postal Savings	75%
$294,117,647	$10B	Public Service Pension Fund	3.57%
$294,117,647	$10B	Labor Pension Fund	3.57%
$294,117,647	$10B	Labor Insurance Fund	3.57%
$1,176,470,588	$40B	Syndicated loan from 25 banks	14.29%

Figure 4.5 Sources of THRSC's loan



In summary, the total NTD 280B loan totally comes from domestic sources, which put all the risks domestically.

4.4.4 The Four Funds

Together, postal savings, public service pension fund, labor pension fund, and labor insurance fund play important roles in this loan. These four funds are called "The Four Funds" in Taiwan, and are used by the government to maneuver and to comply its own financial policies.

The total amounts of these four funds are massive and keeping growing:

Table 4.7 The Amount of the Four Funds

Fund Name	Amount (USD)	Data Date
Postal Savings	93.12 B	02/2003
Public service pension fund	4.508 B	12/2002
Labor pension fund	8.05 B	12/2002
Labor insurance fund	15.00 B	11/2002

4.5 Fourth Financial Structure

4.5.1 First Issuance of Convertible, Preferred Stock

As mentioned before, as the project goes, the project company must keep financing its equity so that it can borrow enough money from its syndicate loan credit. Therefore, after raising NTD 50B of equity, the THSRC started to issue its first convertible, preferred stock in September 2002. And the company hoped to attract at least NTD 18.4 B capital into its equity by the end of 2002.

The features of this convertible preferred stock are: 1) a promised 5% yearly interest rate, but without the right to vote. 2) Without the right to get dividends 3) Period: six year, but can be extended to 7 years and 1 month 4) After possessing this convertibles for three years, the investors can choose to convert the stocks to common stock, but they will lose the predetermined, promised 5% interest rate 5) Private financial institutions, insurance companies, and government-owned institutions are prospective stockholders.

To encourage more investments onto the major transportation projects, the government states its encouragements in the Statute for the Encouragement of Private Participation in Major Transportation Projects (SEPP) as follows: " For those entities/people who hold the stocks of domestic major transportation projects or significant infrastructures for more than two years, these entities/people can claim 20% of their investments as deductibles from taxable income, starting from year 2."[3]

Therefore, to calculate its real rate of return, here are some calculations:

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[3] Article 33 of the Statue for the Encouragement of Private Participation in Major Transportation Projects (SEPP)

At second year, the companies can file 20% of their investments as deductibles in their taxable incomes. The money they save in this deductible is: (Income tax in Taiwan is 25%)

$20\% \times 25\% = 5\%$

But this 5% rate of return is the return companies get in the second year, to calculate the average yearly return, one must consider the first two years of the 5% returns of the preferred stock:

$(5\% \times 2 + 5\%) \div 2 = 7.5\%$

Therefore, in year 2, the investment really has a 7.5% rate of return.

Using the same formula, people can calculate the rate of return in year 3, 4, etc.

Year 3: $(5\% \times 3 + 5\% \times 2) \div 3 = 8.33\%$

Year 4: $(5\% \times 4 + 5\% \times 3) \div 4 = 8.75\%$ ... etc

Table 4.8 The Real Rate of Return of Investment in Convertibles

Year	1	2	3	4	5	6
Real Rate of Return (%)	5.00	7.50	8.33	8.75	9.00	9.17

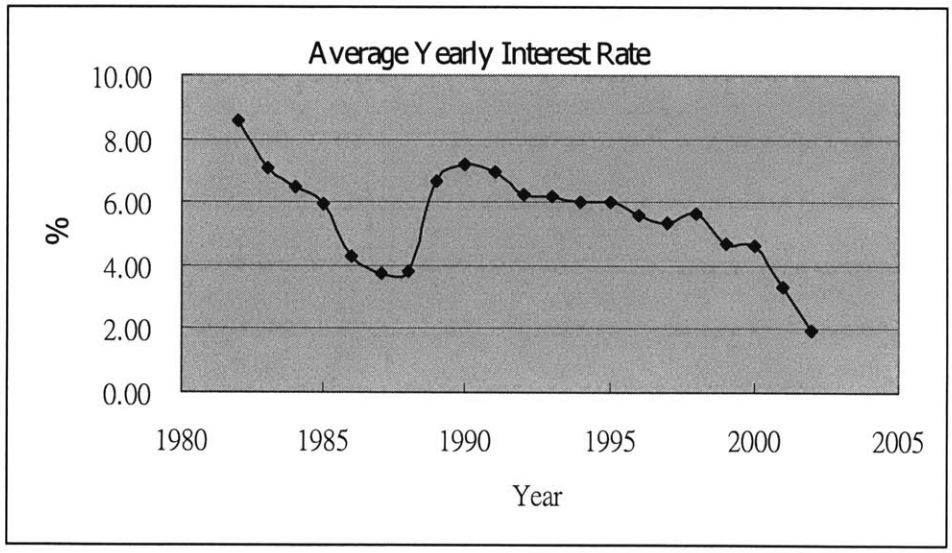
This imposes a great incentive for entities to invest in this kind of project. Since the interest rate has been plunging to around 1.9% in these two years, the 7.5 ~ 9.17% rate of return of investment in this project has attracted several financial institution investors, insurance companies, and government-owned companies.

Table 4.9 Average Yearly Interest Rates of Commercial Banks from 1995

Year	Average Yearly Interest Rate (%) of Commercial Banks
1995	6.01
1996	5.57
1997	5.38
1998	5.68
1999	4.70
2000	4.63
2001	3.35
2002	1.95

Source: The Central Bank of China

Figure 4.6 Interest Rate Fluctuation over the recent 20 years



Source: The Central Bank of China

Because of this high rate of return incentive, this convertible, preferred stock offering attracted NTD 26.9 B investment by January 2003, which is NTD 8.5 B more than its original target (NTD 18.4 B), thus making the total equity of the THSRC NTD 76.9B.

Among the 45 institutional investors, 16 of them are financial institutions; 11 of them are insurance companies; 2 of them are securities companies.

In this stage of equity financing, one thing has to be mentioned: ING Group (Dutch) also invested in this convertible preferred stock, which marks the ability of this project to attract foreign investments.

4.5.2 Issuance of Corporate Bonds

In addition to the loan credit the THSRC has, the THSRC issued a NT 10 B corporate bond in June 2002. The features of this corporate bond are 1) 5-year duration (expire in 2007, 2 years after the operation of the high speed rail system) 2) 3.5% yearly interest rate, and 3) guaranteed by 27 banks, therefore, the risk is quite low for the bondholders.

4.5.3 Second Issuance of Convertible, Preferred Stock

The THSRC issued NTD 23.1 B convertible, preferred stock in March 2003. This preferred stock has the same period and interest rate as the former preferred stock. The targets of this equity financing are still institutions and members of the THSRC, but not the government-owned institutions this time because the Legislature Yuan has forbidden any further investment from the government-owned institutions devoted to this project.

If this ongoing financing goes well, the equity of the THSRC will become NT 100B.

This second stock issuance (NTD 23.1 B) is crucial to the success of this BOT project because this equity will affect the money amount the THSRC can borrow from its syndicate loan credit. More capital is needed to pay the massive construction expenditure in Year 2004 and 2005, each of which will cost around

NTD 100 B. According to the 3 to 7 E/D ratio in the contract, if the THRSC can successfully finance NTD 23.1 B, this company has the right to borrow NTD 53.9 B from its syndicate loan credit.

4.5.4 Future Plan of Equity Financing

Since the government investments on this project have almost reached the 20% upper limit, the following equity financing will focus on foreign sources and will consider having public offerings in the stock market. However, it is hard to attract foreign investments and public capital when the whole project is still under construction because of the high-risk nature of the construction period. Thus, after the completion of the civil works, the construction risks will go down significantly, and, then, it will increase the incentives for public/foreign sources to invest in this project. Because of this, the THSRC decided to go public later after it passes the high-risk construction period (year 2004). Furthermore, the THSRC will only issue common stock in the future, not preferred/convertible stocks.

Because the overall construction is a little behind the schedule, it may increase the total expenditure from NTD 412.2B to NTD 430 B in order to meet the scheduled completion day: October 31, 2005.

4.6 Overall Financial Structure

During the equity raising period, the THSRC still has to meet the following requirements of the Construction and Operation Agreement (C&OA): 1) The investments from the original 5 members of the THSRC must exceed 25% of the total equity. 2) The total investment made by government-owned institutions must be less than 20%.

4.6.1 Equity So Far

Because the government investments almost reached the 20 % upper limit, how to attract more investments for the THSRC, without the government aids/sources, will be true obstacle in the future for the THSRC. The financing ability will determine whether this project will succeed or not.

By January 2003, the THSRC has raised NTD 76.9 B in its equity. The THRSC hopes to raise more investment into it equity until it reaches NTD 150 B.

Table 4.10 Breakdown of Equity So Far

Entities	% of equity
5 original members of THSRC	27.47
Continental Engineering Corporation	
Evergreen Corporation Ltd.	
Fubon Co., Ltd.	
Pacific Electric Wire & Cable Co., Ltd.	
Teco Electric & Machinery Co.	
Government-owned institutions or companies	18.86
Taiwan Sugar Corporation	
Development Fund, Executive Yuan	
The Bank of Taiwan	
Land Bank of Taiwan	
Central Trust of China	
Taiwan Cooperative Bank	
Other institutions	53.67
Financial Institutions	
Insurance Companies	
Foreign Companies (e.g. ING, and TSC)	

4.6.2 Debt So Far

Until January 2003, the THSRC has used up NTD 87.45B out of its NTD 280 B syndicate loan credit. Besides, in order to increase the money it can maneuver, the THSRC issued a NTD 10B corporate bond in 2002.

To summarize its debt and equity structure:

Table 4.11 D/E Ratio So Far and the Future

	Amount	
	Jan. 2003 (NTD)	Planned (NTD)
Syndicate loan	87.45 B	210 B
Corporate bond	10 B	10 B
Total debt	97.45 B	220 B
Total equity	76.9 B	150 B
D/E Ratio	1.27	1.47

Chapter 5 Risk Analysis and Risk Allocation

5.1 Risk Analysis

The whole project consists of three phases: development, construction, and operation phase.

Table 5.1 Definitions of Different Phases

Phase	Beginning	End
Development	The concessionaire is awarded the right to negotiate with the government	Before the construction process starts
Construction	The construction process starts	The construction process ends
Operation	The project starts to generate revenue	Transfers the project to the government

Different risks spread through different phases. For example, the foreign exchange rate risk exists only in the construction phase, while the political risk exists throughout the whole project life.

The definitions of risks are defined as follows:

(1) Preparatory task risk: The government is responsible for preparatory tasks, such as land acquisition, approaching road construction, and legislation of related laws. These tasks must be accomplished before the construction phase starts. Therefore, this risk only spreads in the development phase.

(2) Credit risk: Credit risk refers to the risk generated by the concessionaire's inability to gain loan agreements with banks. Seeking loans is a major task for the concessionaire in the development phase. If failing to finalize a loan agreement, the concessionaire must forgo the project.

Table 5.2 Risks in Different Phases

	Phase		
Risk Type	Development	Construction	Operation
Preparatory Task	→		
Credit	→		
Financing	→	→	
Political	→	→	→
Construction		→	
Foreign Exchange		→	
Interest Rate		→	→
Default		→	→
Income Risk			→

(3) Financing risk: This risk refers to the risk generated by the concessionaire's inability to attract enough equity. In this case study, the concessionaire needs to finance equity until the completion of the project; therefore, the financing risk spreads both the development phase and the construction phase.

(4) Political risk: If there is a dramatic political change, the project might be affected. The political risk refers to this kind of risk. This situation is possible to happen any time during the concession period. Therefore, the political risk spreads through three phases.

(5) Construction risk: Risks arise significantly during the construction period. These risks include damages to its properties, personal injury, delay loss, and damages to the third party properties...etc. This risk only exists in the construction phase.

(6) Foreign exchange rate risk: If there is a fluctuation of foreign exchange rate, the construction fees might also change. Therefore, this risk only exists in the construction phase.

(7) Interest rate risk: The real cash flow of the project starts from the beginning of the construction period, and it ends when the project is transferred to the government. The fluctuation of interest rate must influence the cash flow; therefore, this interest rate risk exists whenever there is a real cash flow.

(8) Default risk: When the concessionaire is unable to repay its debt, the concessionaire defaults. It is possible for the concessionaire to default any time after the project has its cash flow. Hence, this risk spreads the construction phase and the operation phase.

(9) Income risk: After the operation of the project, the project starts to have revenue. However, this future revenue is subject to uncertainties. These uncertainties contribute to this risk during the operation phase.

5.2 Risk Allocation

Different entities involved in the project assume different degrees of risk. The following examines how different risks are allocated to different entities.

5.2.1 Preparatory Task Risk

During the negotiation period, the government and the THSRC signed the "Memorandum of Items Responsible by The Government," which lists 20 tasks that must be completed by the government. These 20 tasks include: land acquisition, law modification, urban planning, environmental issues, negotiations with the

Taiwan Railway Administration, solutions to the vibration problem near the Tainan Science Park, and license acquisition.

In the Construction & Operation Agreement (C&OA), it clearly states: "the government is responsible for the tasks listed in the memorandum. If any of these 20 tasks in the memorandum cannot be accomplished by the government, and therefore causes any loss for the project, the government is responsible for this loss." This clause puts the preparatory task risk onto the government.

Take land acquisition as an example. As HSR spans through lands owned by fourteen county governments, the land acquisition process may lead to unforeseeable delays in planning and construction because of the negotiation process. Only the government can have the legal power to enforce the land acquisition law; thus, the government must take this risk.

5.2.2 Credit Risk and Financing Risk

Although the THSRC consists of several top Taiwanese companies, the creditworthiness of this project was still low. The reason for this is that this project is the first and the biggest BOT project in Taiwan, the banks were lack of confidence in its future cash flow projection. Therefore, the government played an important role to help the THSRC acquire the syndicated loan. First, in order to provide the capital source of the syndicated loan, the government deposited USD 7.06B (NTD 240B) into syndicated banks' accounts. Secondly, it guarantees the syndicated banks that the government will take over the project and will take the whole debt responsibility if the concessionaire fails. These two actions helped the THSRC finalize the syndicated loan. Hence, both the government and the concessionaire take this risk.

Because the debt to equity ratio must remain at 7 to 3 throughout the construction phase, the THSRC needs to have the ability to attract enough equity investments so as to borrow money from its syndicated loan credit. If the THSRC fails to do so, the THSRC will fail to meet its capital requirement. This financing risk is especially severe during the construction period because the project needs intense capital in this period. Lacking of financing ability increases this risk, and the THSRC takes this financing risk solely.

5.2.3 Political Risk

In the Construction & Operation Agreement, it also states, "If there is a policy change that leads to loss, the government is responsible for this loss." This clause makes the government take this political risk.

The political situation of Taiwan is very unique. Before the civil war of China in the 1940's, it was a providence of China. As an aftermath of the civil war, it is now an independently administrative region. Although it has its own governing body, it is recognized as a country by some but considered a part of China by others.

There are four major political parties in Taiwan: Democratic Progressive Party (DPP) [ruling party], KuoMinTang (KMT), New Party (NP), and People First Party (PFP). Election takes place once every four years. Nobody can predict what will happen if one day the ruling party declares Taiwan's independence, or declares its merger with China. Either case will create a large impact on the social aspect of the region, such as severe loss/gain in human capital and private investment, which in turn affect interest rate and cost of capital.

For political reasons, the region is always under the threat that there may be a possible military action from China. Such a possibility, however, has been greatly reduced in the last decade due to increased communication and commerce between

the regions. Other factors, however, can still affect the political atmosphere of Taiwan in a long term, such as China's expectations for a resolution of the "One-China" principle, the Democratic Progressive Party's approach to the issue, China's reaction to the future evolution of Taiwan's democratic system and its foreign policy, etc.

Since the railway project is supported by the government to a significant extent (70% of loan from the government deposits in banks), if there occurs a drastic political change, not only the support can become a problem, but also that the project may not be able to operate at all because of permitting, policy, or legal issues.

5.2.4 Construction Risk

There is a great degree of uncertainty during the construction period. To avoid the loss caused by this uncertainty, the concessionaire usually uses insurance to lower its risk exposure.

In this case, the THSRC has insurance policies covering:

(1) Construction risk: This coverage includes construction property loss and the force majeure loss. This coverage can pay the THSRC up to USD 11.73 B (NTD 363.6 B).

(2) Third party liability: This coverage includes damages to third party property, and personal injury. This coverage can pay the third party up to USD 100 M (USD 3.4B)

(3) Delay loss: If there is a delay causing cost overrun, this situation is covered by this policy. The insurance company will pay up to USD 740 M (NTD 22.94 B)

If the loss exceeds the insurance upper limit, the risks are borne by the THSRC and contractors. However, by using insurance, the construction risk can be mitigated significantly.

5.2.5 Foreign Exchange Rate Risk

The following Table 5.3 is a glance of the exchange rate of the recent years:

Table 5.3 Exchange Rate (NT$/US$), Average of Monthly Figures

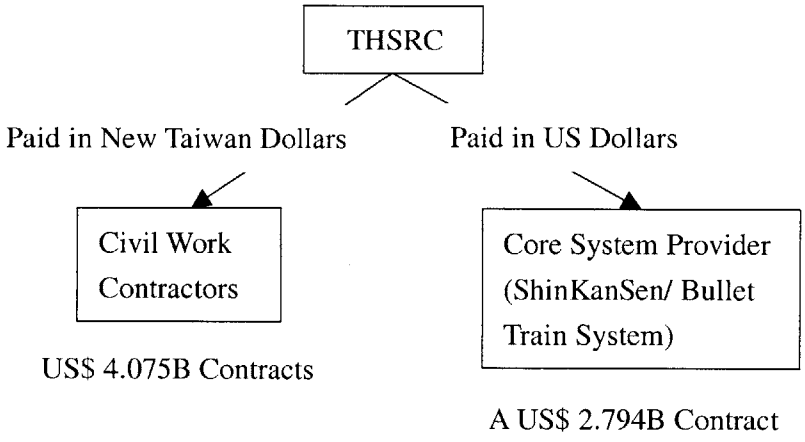
Date	Rate	Date	Rate
1984/01	40.205	1984/07	39.477
1985/01	39.321	1985/07	40.136
1986/01	39.593	1986/07	38.119
1987/01	35.304	1987/07	31.114
1988/01	28.628	1988/07	28.726
1989/01	27.821	1989/07	25.816
1990/01	26.081	1990/07	27.163
1991/01	27.197	1991/07	26.982
1992/01	25.150	1992/07	24.783
1993/01	25.452	1993/07	26.682
1994/01	26.495	1994/07	26.658
1995/01	26.300	1995/07	26.278
1996/01	27.406	1996/07	27.573
1997/01	27.477	1997/07	28.032
1998/01	34.117	1998/07	34.387
1999/01	32.300	1999/07	32.338
2000/01	30.890	2000/07	30.984
2001/01	32.673	2001/07	34.821
2002/01	35.040	2002/07	33.471

The strength of New Taiwan dollar is closely related to the robustness of the Taiwan economy. In the early 90's, when electronic exports provided a substantial source of income, the New Taiwan dollar was strong. As the Asian economy grew

weak towards the end of the 90's, incorporated with the transformation of the economy (more toward service industries), Taiwan's exports dropped and New Taiwan dollar weakened. And it is expected to remain soft for the next couple years due to the recovery after the Asian economic crisis and the fierce competition from Mainland China.

As far as the effect of exchange rate on the High Speed Railway project is concerned, it is not as significant as that on other import / export industries. The syndicated loan is in New Taiwan dollars, which greatly reduces the direct effect of exchange rate on the project. In other words, the syndicated banks do not take any foreign exchange rate risk in this project.

Figure 5.1 Foreign Exchange Rate Risk Exposure



The THSRC has high foreign exchange rate risk exposure in this case. The THSRC has a USD 2.794B core system contract with the Taiwan Shinkansen Company, which consists of seven Japanese companies. (Please see Table 4.5) Besides, this contract fee is paid in US dollars, thereby making the THSRC exposed to the foreign exchange rate risk.

However, the civil contracts transfer the foreign exchange rate risk to the foreign civil work contractors. Every civil work contract was awarded to a joint venture comprising local companies and foreign companies (please see Table 3.4), and the construction fees are all paid in New Taiwan dollars; therefore, it decrease the THSRC exchange rate risk.

5.2.6 Interest Rate Risk and Inflation Risk

According to the "Contract of Syndicate Loan for Taiwan High Speed Rail Project," the interest rate of this loan is 1% higher than 1-year postal savings deposit rate throughout the project life. This setting makes the banks subjected to the interest rate risk and inflation risk during the 15-year repayment period.

The civil work contracts of this project are all design/build with lump sum, fixed-price contracts. This means the lump-sum contract prices will not change during the course of the construction period because the contract prices were decided when the contract were awarded to the contractor. This contract form makes contractors assume the inflation risk.

5.2.7 Default Risk

Normally, if a company defaults, the creditors/banks have the right to take over the facility. However, in this case study, there is no use for banks to have a high-speed railway because the banks are not interested in operating a high-speed railway system. Besides, banks do not have the expertise to operate the system.

Therefore, the design of the bankruptcy mechanism affects the attitudes of banks about whether to have a loan agreement with the concessionaire.

In this case, in order to protect themselves from taking too much risk, the syndicated banks successfully insisted to put several key clauses into the contract.

The following factors mitigate the default risk for the banks.

5.2.7.1 Government's Takeover and Buyout Clause

According to the Tripartite Contract, the government has the obligation to take over the project and to buy the project back if there are severe problems occurring in the concession period. These severe problems include:

(1) The THSRC fails to repay the debt for straight six months.

(2) The THSRC still cannot improve its situation after receiving consecutive warnings from the government. The reasons to receive warnings from the government are, for example, accident occurrence, serious delay, bad quality control, and failure to meet the operation standards set in the Construction & Operation Agreement (C&OA)...etc.

The buyout price will be based on the estimated market price of the project, and an independent consultant company estimates the market value of this project.

Although the government guarantees that the project will be bought back if there is a financial crisis, the government's guarantee also has an upper limit in amount – The buyout price will not exceed USD 9.59B (NTD 325.9B). This upper limit buyout price is determined by the total construction expenditure appeared on the proposal of the THSRC.

The buyback mechanism is: the government must repay the whole debt after taking over the project. When the estimated market price/buyout price is less than total debt, the government can ask the THSRC to pay for the difference. In other words, the government takes the whole debt responsibility after taking-over the project. This buyback mechanism ensures the banks to get the full repayment of the loan and to avoid the default risk.

5.2.7.2 Independent Consultant Company

The syndicated banks hired an independent consultant company to estimate the market price of the project and to monitor the project. The hire of the independent consultant company must be approved by all three entities: the government, the THSRC, and the syndicated banks. Under this mechanism, every three months, the independent consultant submits its estimate and monitoring report to the government, the THSRC, and the syndicated banks. During the construction period, the market value of the project depends on the degree of project completion.

Also, if the THSRC tries to borrow more money than the estimate, the THRSC must file a document to the government to explain the reasons about this over-borrowing. The reason to set up this mechanism is to protect the banks and the government at the same time, because the government will buy back the project according to the estimate. Suppose that the THSRC has the ability to over borrow, this will bring the risks back to the banks and the government.

5.2.7.3 The Debt to Equity Ratio Must Remain at 7 to 3

According to Nevitt (1983)[1], lenders/banks look to the equity investment as providing a margin of safety. They have two primary motivations for requiring equity investments in projects:

(1) The more burdens the debt service puts on the cash flow of the project, the greater the lenders' risks.

(2) Lenders do not want the investors to be in a position to walk away from the project. They want the investors to have enough at stake to motivate them to see the project through to a successful conclusion.

[1] Nevitt. Peter, "Project Financing," 4th edition, pp.29

Therefore, the banks ask the debt to equity to debt ratio must remain at 7 to 3 throughout the project life.

Dias and Ioannou (1995) presented a mathematical model, based on Capital Asset Pricing Model, attempting to predict the optimal E/D ratio for the project. They concluded that when the optimal E/D ratio ranges from 40% to 60%, it maximizes the return of equity shareholders. In this case study, the E/D ratio is 44.9% (Please see Chapter 4, 44.9% = 31% / 69%), which falls into this optimal ratio range.

5.2.7.4 First Priority

The syndicated banks also asked the government to guarantee that the banks still have the first priority to the equity liquidation of the high-speed railway, if there is a chance that the government decides to forgo the whole project after the government takes over the project.

Furthermore, the whole hardware of the high-speed railway system can only be seen as the collateral of this syndicated loan. This means the THSRC cannot use the hardware of high-speed railway system as collateral to borrow money from other banks again.

5.2.7.5 Six-Month Repayment Deposit

In the "Contract of Syndicate Loan for Taiwan High Speed Rail Project", it states that "if the THSRC is unable to repay the debt for straight six months, this is seen as default." Thus, the banks successfully added a clause in the contract to ask the THSRC to deposit six-month interest payments in banks' accounts serving as a "performance bond." This also decreases the risks the syndicated banks bear.

5.2.7.6 A Syndicate of 25 banks

The leading banks of this syndicated loan are Chauo Tung Bank, the International Commercial Bank of China, and the Bank of Taiwan. From the viewpoint of these three banks, seeking another 22 banks to join the syndicated banks is a method to disperse their risks.

5.2.7.7 Summary of the Default Risk

By using the methods mentioned above, the banks assume low default risk in this project. The THSRC and the government take this default risk.

5.2.8 Income Risk

The most vital part of this project is its future cash flow. The income risk is heavily related to this future cash flow.

The major income of this project comes from the operation of the high-speed railway and the revenue from the land development.

5.2.8.1 Revenue from the Railway Operation

Normally, governments subsidize project companies if the number of passengers does not reach some standard. However, in this case, the government does not subsidize the THSRC no matter how many passengers the project company attracts. Therefore, the project company assumes this income risk solely.

Currently, passengers can travel across the island via highways and railways, and the coverage of the High Speed Railway is very small compared to that of the highways. To put the comparison in perspective, even when the 345-km railway is completed, it only accounts for 1% of the current highway coverage (34,901 km). This ratio indicates that the current highway network may already suffice in supplying most of the market the high-speed railway intents to enter.

Table 5.4 Statistics of Railways and Highways in Taiwan

Railways:	*Total:* 4,600 km (519 km electrified) *Narrow gauge:* 4,600 km 1.067m *Note:* only 1,108 km of route length (including the electrified part) is used in common carrier service by the Taiwan Railway Administration; the remaining 3,492 km is dedicated to industrial use (1999)
Highways:	*Total:* 34,901 km *Paved:* 31,271 km (including 538 km of expressways) *Unpaved:* 3,630 km (1998 est.)

Source: The World Fact Book 2002

Secondly, even though the High Speed Railway saves a lot of time for passengers traveling between Taipei and Kaohsiung, the 2 main cities in Taiwan, it may not benefit much to passengers who travel between adjacent cities.

As a result, ridership can be very difficult to predict and hence constitutes a great income risk.

5.2.8.2 Revenue from the Land Development

The revenue of the land development is also unpredictable since this revenue is heavily related to the economy. If the economy goes down, businesses are unwilling to rent the commercial space near the station, and then the THSRC will generate less revenue due to the bad economy.

To summarize this, the concessionaire assumes this income risk solely.

5.3 Risks of Bondholders and Stockholders

5.3.1 Risks of Corporate Bondholders

As mentioned in Chapter 4.5.2, the THSRC issued a USD 29.4M (NTD 10 B) corporate bond in June 2002. The syndicated banks guarantee this corporate bond,

thus making these banks fully responsible for this corporate bond in case the THSRC defaults.

Since the syndicated banks guarantee the corporate bond, the risks of this corporate bond is relatively low. Even if this BOT project fails, these bondholders can still get their money back due to the banks' guarantee.

5.3.2 Risks of Preferred Stockholders

This convertible, preferred stock offers an average yearly 7.5% to 9.17% rate of return, which is relatively high, compared to an average 2 % of yearly interest rate in 2002. Although having several privileges as mentioned in Chapter 4.5.1, the stockholders, at the same time, assume higher risks all by themselves because they will lose their investments when the project fails.

5.3.3 Risks of Other Common Stockholders

Other common stockholders, as well as THSRC members, assume most of the project risks, because they will lose their investments when the project fails. On the other hand, they have greater chances to earn a much higher rate of return.

5.4 Priority

5.4.1 The Priority if the Project is Successful

If this project operates well, the profits of this project will distribute to different entities according to the following priority:

Table 5.5 The Priority If the Project Functions Well

Priority	Entity	Note
1	Syndicated Banks	Repayment
2	Corporate Bondholders	3.5% yearly interest rate
3	The Government	10% of pre-tax profits
4	Preferred Stockholders	5% yearly interest rate
5	Common Stockholders	After-tax profits

5.4.2 Priority if the Project Fails

If the project fails, the priority to get money from the government is as follows:

Table 5.6 The Priority If the Project Fails

Priority	Entity	Note
1	Syndicated Banks	100% secured by the government
2	Corporate Bondholders	100% secured by the syndicated banks
3	Preferred stockholders	Same as common stockholders
4	Common Stockholders	Government Buyout Price minus Debt

If the government buyout price is larger than the debt, both preffered stockholders and common stockholders will share the remaining equity liquidation. However, if the government buyout price is less than the debt, the preferred stockholders, as well as common stockholders, will lose their investments totally in this project.

5.5 Summary

Table 5.7 Summary of Risk Allocation

Entity	Risks Assumed by the Entity
Syndicated Banks	Default Risk (limited to corporate bond)
	Inflation Risk
	Interest Rate
The Government	Preparatory Task Risk
	Credit Risk
	Political Risk
	Default Risk (most of the risk)
The Concessionaire	Credit Risk
	Financing Risk
	Income Risk
	Technical Risk
	Exchange Rate Risk
	Default Risk (limited to equity investment)
Contractors	Inflation Risk
	Exchange Rate Risk
Bondholders	Default Risk
Preferred Stockholders	Default Risk
Common Stockholders	Default Risk

Chapter 6 Conclusion

6.1 Government's Role

Governments can play extremely passive roles in BOT projects. Passive governments always see themselves as mere regulators or inspectors. Without the full confidence in the BOT mechanism, passive governments impose too many restrictions in both procurement laws and contracts, thus making private sectors lose their interests in making potential profits out of participation in public infrastructure projects. In other words, conservative governments stifle the incentives of BOT projects.

On the other side of the spectrum, governments can act as extremely active governments – facilitating, guaranteeing, subsidizing, and, also, investing in projects. If governments involve themselves too much in projects, they will make the projects deviate from the main spirit of the BOT delivery method. Suppose that governments assume the roles of investors, guarantors, and, even, lenders, and then this mechanism will give out too many advantages to the project companies because the governments take too many risks on themselves without allocating those risks properly.

Therefore, governments should avoid being on the both extreme sides of the spectrum.

6.2 Government's Role in This Case

6.2.1 Broaden the Sources of Capital

The large capital requirements of public infrastructure projects need helps from governments. Governments should review the present laws and regulations with a view to broadening the sources of capital. This might include relaxing the rules on

foreign participations in syndicate loans, allowing the issuance of corporate bonds and commercial paper, and lifting limitations on insurance companies' participations.

In this case, in order to let insurance companies be able to invest in this BOT project without violating the law, the Taiwan government successfully modified the "Insurance Law". Besides, the government also approved the issuance of corporate bonds. These actions all contribute to broaden the sources of capital.

6.2.2 Providing Incentives to Investors

As mentioned in Chapter 4.5.1, the government states its encouragements in the Statute for the Encouragement of Private Participation in Major Transportation Projects (SEPP) as follows: " For those entities/people who hold the stocks of domestic major transportation projects or significant infrastructures for more than two years, these entities/people can claim 20% of their investments as deductibles from taxable income, starting from year 2." After considering this incentive, the investors can gain 7.5 ~ 9.17% rate of return in this project. This rate of return is much higher than averaged 2 to 3 % interest rates in Year 2001 and 2002. As a result, this law successfully helped the THSRC attract over USD 791M (NTD 26.9 B) investment from September 2002 to January 2003

6.2.3 Promise to Buyback the Project

In this case, the government guarantees to take over the project and buy the project back if the project company fails at any time of the concession period. This guarantee lets the government bear most of the default risk. However, the government puts an upper limit on this guarantee – the maximum buyout price will not exceed USD 9.59B (NTD 325.9B).

6.2.4 Helping the Project Company Acquire the Loan

Since this project is the first and the biggest BOT project in Taiwan, the banks were lack of confidence in its projected future cash flow. Therefore, the government must play an important role to help the THSRC acquire the syndicated loan. First, the government deposited USD 7.06B (NTD 240B) into syndicated banks' accounts as the capital source of the syndicated loan. Secondly, it guarantees the syndicated banks that the government will take over the project and will take the whole debt responsibility if the project company fails. These two actions helped the THSRC n.

6.2.5 Investing in this Project

In addition to help the company finalize the syndicated loan, the government also invested in this project. The government invested NTD 8B in this project in the first equity financing stage. Furthermore, the government-owned institutions also invested in the project during the second equity financing stage. The government investments account for 18.86% in equity totally.

6.2.6 Providing Incentives to the Project Company

In order to let Taiwanese people have an affordable alternative to travel from different cities on the island, the government had the idea of setting the cap for the maximum ticket price for the future high-speed railway before the bidding process. As a result, the government and the THSRC, together, specified the maximum ticket price in the Construction & Operate Agreement (C&OA).

Because of the constrained financial status, the government will not have enough budgets to subsidize the concessionaire in the future. Hence, in order to make this project viable for BOT project, and to add more incentives into this project, the government gives out a 50-year right for the concessionaire to develop lands nearby

the stations. Otherwise, unlike other similar projects, the THSRC cannot sustain itself only by the revenue generated from the operation of the high-speed railway.

6.3 Conclusion

From the above discussions, one can know the Taiwan government plays an active role in this BOT project – facilitating, guaranteeing, and investing in this first BOT project in Taiwan.

With more potential BOT projects and more private participations in public infrastructure coming in the future, there is an immediate need for the Taiwan government to establish a mechanism for private participations in the infrastructure projects, so that it can generate the maximum benefit for both the government and the public.

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