

Korea's Overseas Construction Work and Its  
Impact on the Korean Economy (1965 - 1984)

by

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## Glossary:

The following monetary units are used throughout this paper:

<b>Dollar</b>	US monetary unit
<b>Won</b>	Korean monetary unit
<b>Yen</b>	Japanese monetary unit

The following terms are used extensively throughout the thesis:

**GNP (Gross National Product)**.....total income earned by domestic citizens regardless of the country in which their factor services were supplied over a given period of time, usually a year.

**per capita GNP**.....GNP divided by total population, GNP per head.

**GDP (Gross Domestic Product)**.....value of all goods and services produced by factors in the domestic economy regardless of who owns these factors over a given period of time, usually a year.

**Value Added**.....increase in the value of goods as a result of a production process. It is calculated by deducting from the value of the output the cost of the input goods that were used up in the act of producing that output.

**Economically Active Population**.....those people above 15 who are employed and those people who are able to work and looking for jobs.

**Unemployment**.....Persons who are able and willing to work, and are available for work, but do not have work.

The unemployment rate in an economy is the number of unemployed people expressed as a percentage of the total labour force.

**Construction**.....According to the definition given by the U.S. Department of Commerce, **Construction Activity** is the activity to produce the immobile product. Accordingly, such activities as mobile home manufacture and shipbuilding belong to the manufacture industry, even though they have many similarities with the construction activity. Throughout this research, the construction activity is basically defined as the activity pertaining to the production of the immobile product. Those activities having to do with design, engineering service, and construction management service are

categorised as a part of construction in this paper as they are closely associated with construction activities. Therefore, the term 'construction' in this thesis is used in its broad sense, including the activities related to architectural design and engineering service as well as tasks performed by general contractors or sub-contractors.

**Overseas Construction.....**In its simple sense, **Overseas Construction Activity** means the construction activity implemented overseas. But, when used in an analysis of overseas construction volume in monetary terms, it includes not only the costs of labour and material inputs used at overseas sites, but also the costs of manpower and overhead at the home office.

**Infrastructure.....**underlying basic facilities such as roads, railways, waterways, airways and other forms of transportation, communications, water supplies, electricity and public services, etc. The level of infrastructure development in a country is a crucial factor influencing the pace of economic development, especially for a developing country.

**Collaboration Project.....**an awarded project divided among collaborating companies, who collaborated in bidding for the project and agreed on each party's responsible portion of the project.

**Joint Venture.....**a company formed by two or more investors, generally two. The partners may be individuals, corporations, governments, or some combination of these three. Lately, many companies use this type of business practice when they venture into a foreign country, generally forming a partnership with a local company to enjoy various privileges reserved for local firms in the country. Profits are divided between them.

**Turn-key Project.....**a project for which one organisation assumes the total responsibility, from the design and engineering stages to the completion of construction. Some parts of engineering, however, may be subcontracted to specialist consultants.

**Hard Currency, Foreign Currency, Foreign Exchange.....** Throughout this paper, these terms all represent US dollars, the most readily convertible of currencies during the period covered (1965-1984).

**LIBO Rate.....**In the money market, banks borrow or lend among themselves for fixed periods. The interest rate at which funds on loan are offered to first-class banks is called the **London Inter-Bank Offered Rate**.



## **Abstract:**

The Korean overseas construction industry played a significant role in enabling Korea to make a spectacular leap from being one of the world's poorest countries in the early 1960s to become one of the newly industrialising countries by the early 1980s. The overseas construction industry's contribution to the Korean economy was particularly pronounced in the 1970s.

Korea's balance of payments rapidly deteriorated in the early 1970s, as she had to pay much higher prices for raw materials to continue implementing her principal economic development strategy of processing and assembling imported raw materials and components for exports. In addition, Korea had to pay back the loans that had been taken out in the 1960s. To prevent increasing deficits in the balance of payments and to sustain Korea's rapid economic growth, the government needed a good source of foreign currency supply.

To lessen her serious problem in the balance of payments, Korea needed a strategy to earn foreign currency while discouraging an excessive spending on imports. The solution was centred around exporting manpower. Fortunately, Korea had an industry that seemed as if it were designed to solve her faced economic problems: the Korean overseas construction industry, exporting manpower to overseas sites, could earn her immediately needed hard currency. Thus, the Middle East construction boom meant much to the Korean economic development.

The contribution of the Korean overseas construction to her economy is as follows: improving the balance of payments, increasing national income, reducing unemployment, spurring corporate internationalisation, improving technical know-how, encouraging manpower development, increasing domestic investment, promoting related industries, and helping Government establish diplomacy with the Third World nonaligned

nations. Of course, there were negative sides such as inflation and high increase of wages. However the loss was minor compared to the gain.

The Korean overseas construction, in many ways, influenced not only the Korean economy but also the society: it gave her people incentives to look outwards and confidence in being a member of the international society .

# Chapter I: Introduction

## 1. Purpose and Scope of Study

Since the launching of her first Five-Year Economic Development Plan in 1962, Korea<sup>1</sup> has achieved a truly remarkable economic growth. Korea's remarkable economic growth under a succession of Five-Year Development Plans is sometimes called "the Miracle of the Han River" (*ala* "the Miracle of the Rhine"), named after the river that flows through the heart of Seoul, the capital of Korea. Making a spectacular leap from being one of the world's poorest countries in the early 1960s, Korea became one of the internationally well-recognised newly industrialising countries (NICs) by the early 1980s.

In Table I-1, the upper part, section A, shows those countries with similar *per capita* GDPs in 1963, and displays the differences that had developed by 1983. The lower part, section B, shows the differences in the *per capita* GDPs that had existed in 1963 for those countries with similar *per capita* GDPs in 1983.

As column 2 of Table I-1 shows, Korea had a much higher rate of economic growth between 1963 and 1983 than any other developing country. According to section A, Korea's *per capita* GDP in 1962 was a meagre 102 US dollars, that is less than the *per capita* GDP of the Philippines, Egypt, and Thailand. But, twenty years later in 1983, while those countries' *per capita* GDPs reached around 700 to 800 US dollars, the Korean *per capita* income increased to more than 2,000 US dollars.

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<sup>1</sup> I have used the term 'Korea' throughout this thesis to refer to the Republic of Korea or South Korea.

Table I-1. Economic Transformation of Developing Countries from 1963 to 1983

1. Country	2. per capita GDP(\$)		3. Distribution: share of total income held by highest 10% of households (%)
	1963	1983	
A. Countries with similar per capita GDP in 1963			
Philippines	183	760	38.5
Egypt	155	700	33.5
Thailand	115	820	34.1
India	90	260	33.6
Indonesia	74	560	34.0
Korea	102	2,010	27.5
B. Countries with similar per capita GDP in 1983			
Portugal	381	2,230	33.4
Argentina	660	2,070	35.2
Brazil	300	1,880	50.6
Chile	330	1,870	34.8
Malaysia	288	1,860	39.8
Korea	102	2,010	27.5

Source: IBRD Annual Report, 1985. For 1963 Data, Korean People's Income, Bank of Korea, 1975

Furthermore, according to section B, those countries whose *per capita* GDPs were similar to South Korea's at around 2,000 US dollars in 1983 had enjoyed substantially higher *per capita* GDPs in 1963 than Korea. In other words, Korea had grown much faster during these two decades than such countries as Portugal and Argentina in order to bridge the income gap that had existed in 1963.

By 1983, Korea also had achieved a more equitable income distribution. As column 3 of Table I-1 shows, the share of Korea's total household income held by the

highest 10 percent of households was under 30 percent in 1983, a level comparable to that in such developed countries as Italy, New Zealand, and Sweden.<sup>2</sup>

It is a widely held belief in Korea that overseas construction has played a significant role in promoting and sustaining this spectacular economic growth. In particular, the overseas construction industry is believed to have contributed enormously to the balance of payments and employment by providing a buffer for the Korean economy against the devastating effects of the two oil price shocks of 1973 and 1979.<sup>3</sup> It is commonly argued that the revenue from overseas construction helped to offset the increased expenditure on oil imports, enabling the Korean economy to continue to grow without suffering a major recession. It is also contended that the overseas construction industry improved the quality of Korea's workforce, promoted the development of technical know-how, and helped to internationalise large Korean firms, not only in construction but also in other areas. Such Middle Eastern countries as Saudi Arabia and Kuwait are often cited as examples that illustrate the 'trail-blazing' role of the Korean overseas construction industry. The active presence of Korean overseas construction companies is believed to have helped Korea to forge strong diplomatic relations with these countries and to establish new markets for such exports as textiles, machinery, and iron and steel products.<sup>4</sup>

Although this view is a popularly held one in Korea, no one, to the author's knowledge, has conducted a systematic analysis of the way in which, and the extent to which, the Korean overseas construction industry contributed to the development of the Korean economy. There seem to have been several reasons for neglecting the need for such a systematic examination:

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<sup>2</sup> World Bank, *World Development Report 1987*, pp.252-253.

<sup>3</sup> 'Korean Contractors Invade the Mideast', *Business Week*, 29 May 1978, p.34.

<sup>4</sup> Shim, U.S., 'Korea's Economic Progress Owes Much to Saudi Arabia', *Diplomacy*, vol. IX, No. 1, November 1983, pp.30-31.

- **a negative view towards construction activity in traditional Korean thought**

The traditional Korean view, rooted in the *Yang Ban*<sup>5</sup> thought, held construction as a dirty, difficult, and dangerous activity suitable only for the lower class. Although Koreans now have a much more favourable view towards the construction industry than in the recent past, they still have a tendency to give little credit to the construction industry, and most scholars tend to pay little attention to its role in the development of the Korean economy.

- **a proprietary attitude within Korean construction companies**

For their part, Korean construction companies have tended to keep a low profile on their overseas activities. Not only did they want to protect their business from competitors,<sup>6</sup> but they may also have wished to avoid the government's rigid restrictions on foreign currency transactions. Their proprietary attitude has had the effect of making much relevant data on overseas construction activities inaccessible for scholarly examination by outside analysts.

- **a lack of time for analysis and reflection**

The government probably could have obtained these data and examined the positive as well as negative impacts of the overseas construction industry on Korean society. Huge amounts of hard currency pouring into Korea from overseas construction not only led to improvements in the balance of payments and employment situation, but also tended to have an inflationary effect on wages and land and housing prices. The government, however, has yet to undertake such a systematic analysis, perhaps too preoccupied with other pressing economic, political, and social issues.

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5 *Yang Ban* was a class of scholar-administrators whose socio-political status was just below that of the Korean royal family. Placed above the class of peasants, artisans, merchants, and servants in the social hierarchy, *Yang Ban* developed much of the traditional code of behaviour in Korea, and influenced the development of the majority of Korea's traditional social and political values, many of which persist in modern Korean.

6 'Competitors Envy the Record,' *MEED*, Special Report: Korea, March 1981.

The objective of this thesis is to trace the development of the Korean overseas construction industry and to assess the extent to which it has contributed to the growth of the Korean economy. This thesis focuses on the following issues:

- **the industry 's history**

How did the Korean overseas construction industry develop from its domestic base?

- **the firms' strategies**

What kind of strategy did Korean contractors adopt in overseas markets?

- **government policy**

How did the government influence the development of the industry?

- **the economic effects**

To what extent, and in what ways, did the overseas construction industry contribute to Korea's economic growth?

This thesis starts out by analysing the characteristics of the construction industry and by examining the role of both domestic and overseas construction in a national economy. After a brief review of the history of the Korean construction industry, the thesis identifies government policies and firms' strategies that helped the Korean overseas construction industry to achieve a remarkable growth during the 'Golden Period' for Korea's overseas construction activity, from the mid-1970s to the mid-1980s.

The impact of the overseas construction industry on the Korean economy is assessed through the use of Input-Output Tables. After tracing the development of the Korean overseas construction industry, this thesis looks at the Japanese case for a useful comparison. While having a similar corporate structure, management philosophy and government-industry relationship as their Korean counterparts, Japanese contractors have tended to enjoy a substantial edge in financial resources and have increasingly used this competitive edge to their advantage, especially in Southeast Asia.

The research focuses on Korean overseas construction activities from 1965 to 1984. The initial date of 1965 has been selected because it marks the beginning of Korea's overseas construction activity. From 1973 on, Korea's overseas construction industry grew rapidly as Korean contractors started participating in the Middle East construction boom. In 1982, less than a decade after their first venture into the Middle East, Korean firms' annual overseas contracts amounted to more than 10 billion US dollars. From 1980 to 1983, Korea was the world's second largest exporter of construction work, surpassed only by the United States of America. By the end of 1984, Korean contractors' accumulated awards over the past two decades amounted to approximately US \$74.3 billion. The terminal date of 1984 has been selected for this thesis mainly because it marks the end of a distinctive period in the history of Korea's overseas construction activities. The period 1965-1984 is one of substantial growth, a period in which overseas construction makes a considerable contribution to the Korean economy. The year 1985 marks the beginning of a period of decline for Korea's overseas construction activity.

Of course, it is important to understand and to analyse the significance of changes since 1985, but to do these things it is necessary to research and understand the period up until 1985. In this sense it is hoped that this thesis will lay part of the foundation for a later analysis of the continuing development of the Korean economy and its relationship with Korean overseas construction. An additional reason for making the core issue of this study the impact of overseas construction upon Korea's economic development in the period 1965-1984 is that it can be argued that overseas construction during this period had a far stronger influence upon the Korean economy than has been the case since 1985. Therefore, this research is limited to the 1965-1984 period. The study of this relationship after 1985 should be reserved for a future project.



## 2. Sources and Methodology

Much of the research and analysis presented in the thesis is based upon the data collected by the author during his long career at the Overseas Construction Bureau, Ministry of Construction, Korea. The data used in the thesis have been provided by the Ministry of Overseas Construction, the Overseas Construction Association of Korea (OCAK), and the major Korean contractors<sup>7</sup> involved in overseas construction activities during the period from 1965 to 1984, and a large part of the data is not readily available or accessible to outside analysts. The author has spent much time collecting and collating information from internal Ministry files and securing specific pieces of information from Korean construction companies. Wherever possible, there are explicit and specific references to sources in the thesis, but in some cases, especially when the information has a certain degree of commercial sensitivity, the references are of a more general kind.

Insights gained from numerous informal communications, and participation in seminars, with top executives and field officers at major Korean construction companies have been of great assistance. Equally helpful has been the author's own professional experience, insights, and feelings accumulated over a period of more than 10 years as a senior official of the Korean Ministry of Construction in charge of over-seeing overseas construction work.

Of course, reports on Korea's overseas construction by research institutes were useful sources, as were those international 'trade' journals that deal with the construction industry; however, the 'open' literature on overseas construction, indeed even on the construction industry itself, is not large. There is almost no secondary literature that offers a theoretical perspective on the relationship between overseas construction and domestic economic development. There are specific, but limited, items in journals covering certain

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<sup>7</sup> The major Korean contractors are Hyundai, Daewoo, Dongah, Dairim, Ssangyong, Samsung, Lucky, and Shinwha.

aspects of Korean overseas construction (e.g., the award of a major contract to a Korean contractor<sup>8</sup>), but these are not of academic or research standard. As a result, much of this work has had to rely on the more informal and unpublished sources described above.

### 3. Organisation of the Thesis

This thesis is organized as follows. Chapter II offers a general description and review of the construction industry. This chapter defines the characteristics of construction, and identifies the major characteristics of overseas construction and the principal causes of overseas construction demand, highlighting the differences between construction and manufacturing industries. This chapter also examines the role of the construction industry in a national economy, focusing on the 'public goods' nature of infrastructure provision and backward- and forward-linkages between construction and manufacturing industries. In the light of this analysis, Chapter II looks at the relationship between the Korean construction industry and the Korean economy. This Chapter will help to understand the core issue of this thesis, how Korean Overseas construction helped the Korean economy.

Chapter III provides a brief historical overview of the Korean overseas construction industry. The industry history is divided into 3 major periods: the growing period in Korea (1945-1964), the pioneering period in Southeast Asia(1965-1972), and the golden period in the Middle East (1973-1984). This historical discussion shows how Korean contractors accumulated experience in the domestic market and prepared themselves for the overseas market. It also provides an overview of how and why Korea decided to go into overseas construction.

While Chapter III chronicles the overall development of the Korean overseas construction industry, Chapter IV provides a detailed analysis of the Korean contractors'

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<sup>8</sup> *MEED*, 20 July 1985, pp.14-16, reports, 'Libya's \$3,300 million order for the first phase of the Great Man-Made River (GMR), the largest single contract, was awarded to Korea's Dong Ah contractor.' *ENR*, 4 Nov. 1985, describes Singapore's Raffles City Complex which was built by a Korean contractor, Sangyong.

performance by the following categories: (i) contract volume by region, (ii) type and size of project, (iii) project completion rate, (iv) usage of manpower, materials, and equipment, and (v) hard currency earnings. Such an analysis should help to explain the tangible quality and quantity of Korean overseas construction activities, and forms the basis for later economic analyses.

Chapter V looks at the major players who had a critical role in the development of the Korean overseas construction industry - namely, the major Korean construction firms, the government, and the Overseas Construction Association of Korea (OCAK). Building upon the general historical overview presented in Chapter III, this chapter describes in some detail the history of major companies, their line of business and company culture, their strategy for business development, and their overseas construction activities. This chapter also discusses the policies of OCAK and the Korean government in support of the overseas construction industry. These discussions should help to explain how Korean contractors became enormously successful in the international construction market during the period 1965-1984.

Chapter VI, 'The Impact on the Korean Economy', is the most important chapter in this thesis. It attempts to draw from all the data and analyses of the previous chapters, and seeks to evaluate the contribution made by overseas construction activities to the development of the Korean economy during the period 1965-1984. This chapter analyses the overall impact of the Korean overseas construction industry by looking at the following elements: (i) improvement in the balance of payments, (ii) increase in national income, (iii) contribution to employment, (iv) corporate internationalisation, (v) improvement in technical know-how, (vi) manpower development, (vii) effects on domestic investment, (viii) effects on related industries, (ix) effects on diplomacy and cultural exchange, and (x) negative effects, such as inflation, speculation in land and housing, and wage escalation. Such an analysis will help to demonstrate how Korean overseas construction activities promoted and sustained the Korean economy during the two decades.

Chapter VII examines Japanese overseas construction activities both as a comparison and a counterpoint to the Korean case. One of Korea's main competitors in the international construction market, Japan is a particularly useful yardstick against which the relative success of the Korean firms can be measured, because it is a country that has very similar customs, culture, and political and economic systems to Korea. For a similar comparative purpose, this chapter also looks at the nature of the government-industry interaction which supported and promoted the development of Japanese construction companies.

The last chapter, Chapter VIII, summarises the major findings and results of this study. Based upon these findings and conclusions, the chapter offers suggestions and recommendations for further research.

## Chapter II. The Construction Industry

As the core issue of this thesis is about the relationship between the construction industry, especially its overseas activity, and a nation's economy, it is important to present an introduction which both outlines the nature of the construction industry and identifies the construction industry's position in the nation's economy. This will be a great help in understanding the over-all arguments of this thesis. As my analyses are connected with Korea's economic development, the relationship between the Korean construction industry and the economy will also be discussed.

This Chapter is divided into four sections. The first section introduces the characteristics of the construction industry since it is a quite different industry from other manufacturing industries. The second section will discuss the relationship between the construction industry and a nation's economy, assessing the importance of the industry as a part of the economy. In this section, the particular influences and effects of the industry on the economy will be examined. Based on the second section, the third section will analyse how the Korean construction industry (domestic and overseas) affected the Korean economy during the period from 1965 to 1984. The fourth and last section will examine overseas construction. This is because *overseas* construction is quite different from *domestic* construction, and the section will present these differences, explain why overseas construction occurred and describe the nature and extent of world construction from the late 1970s through to the middle of the 1980s. In the latter part of this century, the world became 'smaller' and there was an increasing demand for cooperation among nations both politically and economically. Within this trend, construction became very much internationalised and emerged in the 1960s as an important new phenomenon in world trade. The contents of this Chapter will lay the foundation for the rest of this thesis.

## 1. Characteristics of Construction <sup>9</sup>

The construction industry is a form of economic activity which assembles various resources into constructed facilities.<sup>10</sup> These structures range from residential, industrial, commercial and institutional buildings to roads, dams, airports, harbours and other civil work projects, and they play important roles in the process of a country's development.

The construction industry is quite different from other industries in many sense because of the nature of its work. The product of construction is immobile, large, heavy, relatively long lasting and expensive.<sup>11</sup> In manufacturing, the designer and producer collaborate throughout and the client becomes involved only at the end of the process to purchase a finished product, whereas in construction, the project begins with the client and the designer and contractor work separately.

In construction, the conception and planning for the project originates with the client, usually the owner. He must determine the needs for a project: define its basic functions, sizes, budgets, and quality standards. Then he must go to secure financing, identify a suitable site, and select the engineering consultants and contractors who will design and carry out the project.

Construction is also a contracting business. Construction only takes place if there is a specific contract, which is quite different from other businesses. A constructor has to get an order from a client and finish the construction product according to a manual issued by the client or the supervisor of the project. The issuing client may vary from a big government agency to an individual person, but, generally, central and local government agencies and public offices are the major clients.

Construction is also a 'one-of-a-kind' product industry. Contractors get orders from

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<sup>9</sup> The characteristics in this section are defined and summarised from papers given by several scholars to the Construction Association of Korea, Construction White Paper, Construction Association of Korea, 1989, pp. 385-460

<sup>10</sup> P.M. Hillebrandt, *Economic Theory and the Construction Industry* London: Macmillan Press Ltd, 1985, p. 3

<sup>11</sup> *Ibid*, p. 7

clients, but these are rarely the same kind of construction order in terms of the shape, size and contents as may have been received before. All structures are 'one-of-a-kind' products depending upon their different purposes, plans and designs. The products can range from an individual house to a high-rise building, from a rural country-side small road to a super highway, from a local sewage works to a big dam or tunnel project. Therefore, the characteristics of construction work are that it lacks uniformity and individual projects cover a very wide range of construction forms.

Also, each different construction project needs different land for its site. At a certain site only one kind of construction project may be possible. Since a construction project is a 'one-of-a-kind' product and fixed, it is impossible to conduct future business on the same site since there cannot be two products at one site. Therefore, a company has to move to another site after completion of a particular project. At a new site, the company will generally have to have a new plan and design for the new site and meet a different set of purposes for the new project. This is one of the major differences between the construction industry and 'fixed site' factory facilities.

Another characteristic of the construction industry is that it is mainly an outdoor activity and very much subject to climatic conditions. Most construction projects, except tunnels or underground facilities, are built outdoors and, therefore, their progress is much dependent upon the climate and nature's conditions. When it rains or snows construction activity may not be possible. In conditions of severe cold or hot weather, like the Siberia or Middle East, work efficiency may be very low. During the rainy season work progress is also very slow. Weather conditions have a major impact on a project's profitability. If the weather is good during a project period, labour expenditure can be reduced but, on the other hand, if there are adverse conditions, such as rain or snow, labour expenditure will be increased and the profit margin will be decreased. This is especially true with civil works. For example any work concerned with land, such as a highway project, an industrial estate project or an airport, is likely to have the project period shortened if the weather is good during construction.

However, if it rains not only may it not be possible to continue with the work, but it

may also be necessary to delay the project until the ground-foundation hardens. During the monsoon season in Indonesia, it not only rains often but also very hard. In the early days of Korean contractors working in Indonesia, they did not realise that this would be such a severe problem. On some highway projects, after the preparation of the highway-grounds, the rain often washed away their work. Later, constructors learned to use vinyl to cover the ground but, still, when it rained much time was lost by the repeated removal and replacement of the covers which were heavily time and energy consuming jobs. Occasionally, when it rained hard and continuously constructors had to stop their work until the monsoon season was over.

The construction industry is very much affected by the forces of nature. In 1984, the Korean contractor Hanbo experienced a disastrous accident in Jordan. The company was involved in a dam project which was almost completed. Because of an unexpected heavy rain storm on 4th November<sup>12</sup>, the by-pass dam collapsed and washed out offices, construction equipment and even workers who were asleep in the site camp. As a result of this accident Hanbo not only had to face a big loss on the project, but also lost the lives of three of its workers.

The construction industry is also an assembly industry.<sup>13</sup> The finished product is a composition of various products manufactured by other industries. It requires different materials, equipment and specialists at different stages. Each material, equipment and participant in the construction process comes from a different organisation or field. Each one engages in the project only when his expertise is needed. The construction industry is also a labour intensive industry compared to manufacturing industry. Lately labour intensive consumption has been cut down to some extent by the introduction of improved technology, heavy machines and even robots.<sup>14</sup>

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12 Because of geographical reasons Jordan generally starts to have its severe rainy, windy and snowy season from the middle of November to March.

13 The world-recognized Raffles City Complex built by Korean contractor, SsangYong had more than 22,000 different works ranging from the windows to the building's steel beams and more than 70 sub-contracted specialists.

14 J. Bennett, R. Flanagan, G. Norman, *Capital & Countries Report: Japanese Construction Industry*, University of Reading, p. 58



Construction firms generally require a low level of capital investment. This factor facilitates easy entry and exit to the industry and, therefore, there are high rates of entry and exit by firms in the construction industry. A result of this is that most countries have numerous construction firms, but in the majority of countries only about 10 per cent of them are big and have more than 100 employees. Most construction companies are very small scale and have from 5 to 20 employees.<sup>15</sup>

## **2. The Position of Construction in a National Economy**

It is this section's intention to try to show what are the relationships between construction and a nation's economy. As mentioned in the previous chapter, construction plays a significantly important role in a national economy. This is especially true for a developing country. Construction activity plays a dynamic role in the process of economic growth and development; it assists in building the foundation and facilities needed for industrialisation and for the improvement of the living environment. Several key aspects of this role are considered including the contribution to gross domestic product, the contribution to gross fixed capital formation and the creation of employment opportunities.

### *A. Construction's contribution to the Gross Domestic Product.*

Generally, the contribution of the construction industry to a national economy is expressed in terms of the value-added by this industry as a percentage share of total gross domestic product.<sup>16</sup> According to the United Nation's *National Accounts Statistics*, the contribution of construction to a country's Gross Domestic Product usually ranges between 4 to 8 percent. Apparently, the more developed the country, the higher the contribution to the gross national product (Table II-1).

Generally, construction output is highly dependent on changes in Gross Domestic Product growth rates. The data in Table II-1 demonstrates that substantial differences occur among the various countries. These differences depend on the economic climate, the

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<sup>15</sup> *Japanese Recent Construction Status*, Construction Association of Korea, 1987, p. 27

<sup>16</sup> *The Role and Contribution of the Construction Industry to Socio-Economic Growth of Developing Countries*, CMT, Inc., Cambridge, Mass., U.S.A., 1980, p.II-1.

availability of funds for investment, and the necessary facilities to promote the economy and create better living conditions. Many advanced Western European countries experienced a very stable percentage contribution year on year. This can be interpreted as showing that the infrastructures of these countries were well established and well constructed, and that the emphasis in the economy was more on maintenance and repair of existing facilities than on the development of many new, big infrastructure projects.

The United Kingdom, United States and Sweden were in this category. Saudi Arabia (11 per cent) and Nigeria (9 per cent) show high percentages of investment in infrastructure because these countries needed better facilities for development and industrialisation, reflecting their need to diversify from their sole, or major, reliance on the oil industry. Also, these countries had financial resources available from oil for major infrastructure investment.

Japan shows high percentages (9 per cent) of investment as she wanted to improve the living environment and conditions; she built the world's longest bridge, several underwater tunnels, better highways and railways, and even an island for an airport. With her high surplus of hard currency, Japan could afford to do so and intentionally diverted her surplus into internal infrastructure projects.<sup>17</sup> Korea also had relatively high investment (8 per cent) in the late 1970s and 1980s. Korea was developing at a high speed and she needed more and improved facilities for economic development and industrialisation, and more houses for a population demanding better living standards which reflected their increased incomes.

#### *B. Construction's Contribution to the Gross Fixed Capital Formation.*

According to the United Nations' *System of National Accounts*, Gross Fixed Capital Formation (GFCF) is defined in a way that includes outlays of industries, government and private non-profit institutions to additions of new durable goods to their stocks of fixed assets. This GFCF is composed of residential buildings, non-residential buildings, other construction, land improvement and plantation and orchard development, transport

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<sup>17</sup> F. Hasegawa, *Built by Japan: Competition of the Japanese Construction Industry*, M.I.T., 1988, p. 6

equipment, machinery and other equipment, and breeding stocks, draught animals, cattle and the like. In this context, capital formation involving residential buildings, non-residential buildings and other construction (highways, dams, harbours and airports, etc.) arises from , and creates, construction activity.

**Table II-1. Construction Percentage in Total Gross Domestic Product**

Unit: %

	1970	1975	1978	1979	1980	1981	1982
U.S.A.	5	5	5	5	5	4	4
U.K.	6	6	6	6	6	5	5
Japan	8	10	9	9	9	9	9
W/Germany	8	6	6	6	7	6	6
France	10	7	8	7	7	7	7
Italy	8	8	7	7	8	8	8
Canada	5	7	6	5	5	6	5
Netherlands	7	7	7	7	-	-	6
Belgium	7	7	7	7	8	6	6
Denmark	9	8	7	6	-	5	5
Sweden	8	8	8	8	7	7	7
Australia	8	8	7	6	6	6	6
New Zealand	-	-	5	5	5	5	5
Korea	5	6.9	8	8	9	7	8
Hong Kong	3	5	7	7	6	7	7
Indonesia	3	5	5	6	6	6	6
Thailand	6	4	5	5	6	5	5
Philippines	4	6	7	8	8	9	9
Singapore	7	8	6	6	6	7	9
Saudi Arabia	4	10	14	11	10	11	13
Iran	4	6	-	-	8	7	-
Kuwait	3	2	4	3	3	4	5
Egypt	2	5	5	6	4	-	-
Nigeria	6	7	9	8	9	9	9
Ivory Coast	7	7	8	8	-	-	-
Gabon	-	17	8	8	-	-	-
Kenya	5	5	5	5	6	6	5
Brazil	5	6	5	5	5	5	5
Mexico	5	6	6	6	6	7	6
Venezuela	4	5	8	7	6	5	5
Argentina	11	8	7	7	7	6	5

Source: *U.N Yearbook of National Accounts Statistics* ,1982

Table II-2 gives the percentage of the construction sector's contribution to GFCF. It shows a wide range from 40 per cent to 70 per cent but, generally, the values fell in the 50s and 60s. The average of all percentages given in the table is 56. Therefore, it is obvious that construction contributes significantly in the formation of fixed capital assets.

For table II-2 it was difficult to get data after 1978. The classification system used by the United Nations *Yearbook of National Accounts Statistics* changed after 1979.

**Table II-2. Construction as a Percentage of Gross Fixed Capital Formation**

Unit: %

	1963	1965	1970	1971	1973	1975	1977	1978	Avg.
U.S.A	64	61	60	62	61	58	58	59	60
U.K	48	49	48	49	50	54	47	45	49
Canada	68	65	46	68	66	66	66	66	64
W/Germany	63	64	61	62	65	62	60	60	62
Belgium	58	63	61	63	64	65	70	69	64
Sweden	65	66	66	64	61	57	57	61	62
Japan	-	-	53	55	58	60	61	60	58
Korea	61	67	64	58	55	53	57	56	59
Singapore	56	57	41	41	41	45	45	39	46
Hongkong	58	63	37	40	43	47	49	49	48
Philippine	55	55	39	35	40	42	54	52	46
Australia	56	55	57	57	60	60	56	-	57
Saudi Arabia	-	-	75	76	74	80	77	-	76
Egypt	51	47	46	43	41	43	-	-	45
Nigeria	56	53	54	58	76	65	63	-	61
Kenya	-	46	47	49	54	54	43	37	47
Mexico	57	52	54	54	57	58	58	59	56
Venezuela	-	-	54	53	55	52	51	55	53
Argentina	45	46	56	55	52	59	-	-	52

Source: *UN Yearbook of National Accounts Statistics, 1978*, calculated from Vol. 1, Table 9a for individual countries. As the table classification was changed in 1980, data was not available for many countries after 1979.

In the new Yearbooks many countries' GFCF was not available. Nevertheless, the main purpose of Table II-2 is to demonstrate the relationship between construction and gross fixed capital formation. Even though the data are for the 1960s and 1970s, they satisfy the purpose of demonstrating the contribution made by construction to GFCF.

Table II-2 shows that the highly developed countries have a higher percentage contribution made by the construction industry to fixed capital formation than do the less developed countries. The oil producing countries also display the influences from oil income over a different time series, and these include such countries as Saudi Arabia, Nigeria and Mexico.

### *C. Construction is Contribution to Employment .*

In the economies of all countries, the construction industry contributes to economic activity by providing an important source of employment. In developing countries, the construction industry employs between 3 to 6 percent of the total workforce. In industrialised economies construction's contribution is higher, ranging from 7 to 9 percent of all employment.<sup>18</sup>

As the economy develops, the construction industry becomes more sophisticated and its skill levels also becomes up-graded. The construction industry has great labour absorptive capacity, particularly when labour intensive methods are adopted. Riedel and Schulz found that in the low-income African economies, the construction industry plays a very important part in absorbing labour from the agrarian sector.

Many countries have sought to accord a special role to the construction industry as an employment-generating growth strategy.<sup>19</sup> Governments have a tendency to award a priority to investment in construction with the explicit or implicit intention of generating employment opportunities.

In addition to the contribution to employment, construction also promotes other sectors' economic activities and generates employment opportunities indirectly in industries such as the manufacture of building materials and associated delivery services, and also employment in industries involved in the production of construction equipment, services and so forth. As the construction industry is an assembly industry, combining products and

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<sup>18</sup> D.A. Turin, *The Construction Industry: Its Economic Significance and Its Role in Development*, University College, Environment Research Group, p. 43

<sup>19</sup> P.M. Hillebrandt, *Economic Theory and the Construction Industry*, Macmillan, 1985, p. 19

services from other industries, it has strong and wide backward linkages with various industries. Therefore, the construction industries have a powerful influence on the generation of employment indirectly in various fields.

"Unfortunately, uniform and complete data on employment in terms of number of workers and compensation are not available for many countries."<sup>20</sup> Also, it is difficult to establish precisely what levels of employment are generated specifically by construction activity. Because of the shortage and unreliable nature of the data, it is hard to analyse the construction industries' contribution to employment internationally.<sup>21</sup> In a later section, dealing with the Korean case, the influence on employment will be closely examined.

As described above, construction plays an enormously important role in a nation's economy. Nevertheless, there has been very little research and study in this field. There have been many studies in various areas of the economy: international economics, financial economics, market economics, and trade theory, for example, but almost nothing relating to construction economics. For many years scholars thought that construction was not a fruitful area for study and it is also a difficult field in which to develop an economic theory. This arises from several factors. The majority of constructed facilities provide many, many years of economic feedback and may last more than hundred years. Also, the original construction purpose is often changed to meet other economic purposes. For example, in

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20 *Role and Contribution of the Construction Industry to Socio-Economic Growth of Developing Countries*, CMT, Inc., Cambridge Mass., U.S.A., 1980, p. II-29

21 *The Year of Labour Statistics of the International Labour Office*, describes the difficulties in collecting reliable and uniform data as follows.

"National practices vary between countries as regards the treatment of such groups as armed forces, inmates of institution, persons living on reservations, persons seeking their first job, seasonal workers and persons engaged in part-time economic activities. In some countries, all or part of these groups are included among the economically active while in other countries they are treated as inactive.....

The comparability of the data is hampered by the differences between countries - and even within a country - not only as regards details of the definitions used and groups covered, but also by differences in the methods of collection, classification and tabulation of the data. In particular, the extent to which family workers who assist in family enterprises are included among the enumerated economically active population, particularly females, varies considerably from one country to another. The reference period is also an important factor of difference.....

Also, in some countries the statistics of the economically active population relate only to employed and unemployed persons above a specified age, in other there is no such age provision in the definition of economic activity."

England many palaces and castles were built as royal residences or for defence purpose but, today, many of them have been changed to meet tourist purposes. The nature of their economic activity has been changed from construction to tourism. Therefore it is particularly difficult to trace the economic outcomes of construction. This is one of the reasons why there are not many studies of construction economics until today.

### **3. Position of Korean Construction in the Korean Economy**

Since this thesis is dealing with the period from 1965 to 1984, the position of Korean construction (both domestic and overseas) in her national economy will be the main issue to be discussed and analysed throughout this period. Interestingly enough, the economic performances during this period were the most successful in Korean economic history. As mentioned earlier, Korea moved from being one of the poorest countries after the Korean war to become one of the most powerful and best recognised NICs. This period covers the first to the fifth five-year economic development plans over the period from 1962 to the end of the fifth five-year plan in 1986.

Therefore, this section will analyse the five five-year economic development plans seeking to identify the position and importance of construction in the Korean economy. It will make comparisons with other industries in respect to the contribution to the GNP and to employment and also examine the extent to which the infrastructures which contributed to Korean economic development were actually developed, improved and expanded. First, it would be very helpful to study the overall economic indicators and changes during this period and this is done in (Table II-3).

In 1962, when the first five-year economic development plan started, the Gross National Product (GNP) was 3,071.2 billion won (in 1975 constant price) and the GNP reached 4,378.5 billion won in 1966, the last year of the first five-year plan. Throughout these five years the average GNP growth was recorded as 7.8 per cent.

During the second five-year economic development plan period from 1967 to 1971,<sup>22</sup> the annual average growth rate was 9.6 per cent, and the GNP of 1967 was

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<sup>22</sup> From the *Second Five-Year Economic Development Plan*, 1980 constant prices used.

12,449.9 billion won and it increased to 18,563.9 billion won by the end of 1971.

**Table II-3. Performance of the first-fifth Five-year Development Plans**

Unit: %

	First plan (‘62-‘66)	Second plan (‘67-‘71)	Third plan (‘72-‘76)	Fourth plan (‘77-‘81)	Fifth plan (‘82-‘86)
Growth rate of GNP	7.8	9.6	9.7	5.8	8.6
Industrial structure	100.0	100.0	100.0	100.0	100.0
Agri. for. & fishery	34.8	26.8	23.5	15.8	12.8
Mining & manufacturing	20.5	22.2	28.4	30.7	30.1
Others	44.7	51	48.1	53.5	57.1
Gross investment Ratio to GNP	21.6	25.1	25.6	30.3	29.5
Domestic saving ratio	11.8	14.6	23.9	20.5	32.5
Employment population increase rate	3.2	3.6	4.5	2.3	1.9
Unemployed population rate	7.1	4.5	3.9	4.5	3.8

Source: *Major Statistics of Korean Economy* 1988, Economic Planning Board, p.13

For the third five-year plan period from 1972 to 1976, the average GNP rose even higher to 9.7 per cent and the GNP of 1976 ended higher at 29,285.5 billion won. As a result of these high growth rates, the *per capita* GNP increased from 87 U.S. dollars in 1962 to 765 U.S. dollars in 1976, representing a more than eight times increase.<sup>23</sup>

Towards the end of the 1970s, economic growth slowed considerably because of the oil crisis and Korea's turbulent internal political environment; President Park Chung Hee was assassinated in October 1979 and a military regime under General Chun Doo Hwan took power in a coup early in 1980. Consequently, the average economic growth rate fell to 5.8 per cent during the fourth five-year economic development plan period, and the GNP for 1981 was 39,088.7 billion won (1980 constant price). However, because of "three lows" - low oil prices, the low value of the U.S. dollars and low international interest rates in the middle 1980s - the Korean economy was on the up-swing again and it achieved an 8.6 per cent annual average growth rate during the fifth economic development period. The

<sup>23</sup> *Major Statistics of Korean Economy, 1980*, Economic Planning Board, p. 3



GNP of 1986 totalled no less than 59,289.8 billion won.

A summary of the five economic development periods may be offered as follows; during these twenty five years, the annual economic growth averaged 8.3 per cent; the *per capita* GNP started at 87 U.S. dollars in 1962 and reached 2,296 U.S. dollars in 1986 showing a more than 26 times growth; unemployment rates dropped from 7.1 per cent for the first period to 3.8 per cent in the fifth period.<sup>24</sup>

**Table II-4. Growth Rate by Kind of Economic Activity During the First to Fifth Five-Year Development Plans(%)**

Year	GNP	Agri. For. & fishery	Mining & manufacturing	Service	Social Overhead Capital	
					Const. Electricity & water	Construction
1962-1966	7.8	5.94	14.34	7.52	17.48	17.33
1967-1971	9.6	1.58	19.78	11.34	20.4	19.65
1972-1976	9.7	6.12	17.92	9.72	11.84	11.18
1977-1981	5.8	0.6	10.32	7.5	10.92	9.26
1982-1986	8.6	3.84	10.26	8.9	13.02	11.09
1962-1986	8.3	3.62	14.52	9.00	14.73	13.70

Source: *National Accounts, 1987*. Korean National Income, 1982, and *National Accounts, 1987*. Korean National Income, 1982, Bank of Korea.

Note: Prior to 1969, 1975 constant market prices are used. Data beginning 1970 are based on a new SNA classification, which is part of a new data classification system introduced by the U.N.

The next main issue for this section is to examine the place of construction during these development periods by comparing it with other industries. The related data are tabulated in the following tables and are used for analyses later in the thesis.

As shown in Table II-4, the growth rate for agriculture, forestry and fisheries was the lowest at 3.62 per cent. Mining and manufacturing averaged 14.52 per cent, and social overhead capital achieved 14.73 per cent respectively. The growth rate of the service sector was reasonably well balanced with the rate of GNP growth. The high growth rates of construction in the social overhead capital sector throughout the five economic development periods cannot be overlooked. During the first and second five-year economic development periods, construction led the national economy with average annual growth rates of 17.3 per

<sup>24</sup> *Major Statistics of Korean Economy, 1988*, Economic Planning Board, p. 13

cent and 19.7 per cent respectively. A high growth rate in construction was an obvious consequence. In order to achieve high economic and social growth, Korea needed heavy investment in industrial and housing estate, roads, highways, harbours, airports, and other civil works and this demonstrates the vital role that construction plays in the process of economic and social development.

In other words, construction formed the foundation for national economic growth. During and after the third economic development period construction growth rates slowed down to some extent to around 11 per cent. This indicates that the construction industry had already created a large part of the infrastructure foundation for industrial growth and the improvement of living conditions. During the fourth period the Korean economy slowed down considerably, not only in one specific field but overall. However, construction retained a relatively high growth rate of 9.3 per cent. This slowdown was due, as explained above, to world economic recession, the massive price rises for oil and Korea's turbulent internal political crisis. From Table II-4, it is reasonable to assume that the high growth rates in other economic sectors - such as mining, manufacturing, and services - during the second and third periods were possible because they were able to exploit the constructed social, industrial and civil-works infrastructure built at this time.

During these economic growth years, the Korean economy expanded extensively in quantity and, at the same time, there were large transformations in industrial structures. During the years of the first economic development period, the industrial sector was composed of 39.6 per cent agriculture, forestry and fisheries, the largest sector, 18.6 per cent for mining and manufacturing, and 41.8 per cent for social overhead capital and others (Table II-5). But, agriculture, forestry and fisheries became a smaller proportion of Korea's economic activity as industrial structures started to change and the Korean economy developed. During the second five-year period, the agriculture, forestry and fisheries sector decreased yet again to 32.6 per cent while the mining and manufacturing sector increased to 25.8 per cent. This changing trend continued throughout the third, fourth and fifth five-year economic development plans, with agriculture, forestry and fisheries changing from 24.2 per cent to 17.5 per cent and to 13.3 per cent respectively, while mining and manufacturing

increased from 27.3 per cent to 30.2 per cent and to 30.3 per cent over the same period. The service and other sectors increased from 48.5 per cent, 52.3 per cent, and 56.4 per cent respectively. These statistics show us that the Korean economic structure was changing from an agricultural to a rapidly industrialising country.

**Table II-5 Gross Domestic Product by Kind of Economic Activity**

Unit: billion won, %

Year	G D P		Agri. for. & Fishery		Mining & manufacturing		Others		Construction	
	Amt.	Ratio	Amt.	Ratio	Amt.	Ratio	Amt.	Ratio	Amt.	Ratio
1962-1966	677	100	268	39.6	126	18.6	283	41.8	22	3.2
1967-1971	1,872	100	611	32.6	483	25.8	778	41.6	112	2.0
1972-1976	8,288	100	2,004	24.2	2,265	27.3	4,019	48.5	376	4.5
1977-1981	31,678	100	5,538	17.5	9,564	30.2	16,579	52.3	2,425	7.7
1982-1986	68,961	100	9,202	13.3	20,890	30.3	38,869	56.4	5,599	8.1

Source: *Economic Statistics Yearbook*, Bank of Korea, Various year-issues  
 Note: Prior to 1969, 1975 constant market prices. Data beginning 1970 are based on new SNA

It is now necessary to review more specifically the construction sector (Table II-6). In 1962, the first year of the first five-year economic plan, construction activity was only 2.4 per cent of national economic activity, but this activity increased to 3.3 per cent by the end of first economic plan in 1966. By the end of the second and third five-year economic development plans, in 1971 and 1976, it grew to 6.3 per cent and 6.6 per cent respectively. These high growth trends continued throughout the fourth and fifth five-year economic development plan periods and increased to 8.6 per cent in 1986, which was the last year of the fifth economic development plan.

Through these twenty five development years, the growth rates for the construction industry were much higher than the GNP growth rates. During the first and second five-year economic development periods, construction growth rates were almost twice those of GNP, and for the overall periods construction growth rates exceeded those for GNP by five per cent.



**Table II-6. Construction Growth during Five Five-Year Development Plans**

Unit: billion won, %

Year	GNP	Construction		Growth Rate	
		Amt.	Ratio to GNP	GNP	Construct.
1962	3,071.14	75.03	2.4	7.8	17.33
1966	4,378.48	143.82	3.3		
1967	12,449.90	460.64	3.7	9.6	19.65
1971	18,563.90	1,174.90	6.3		
1972	19,546.80	1,176.20	6.0	9.7	11.18
1976	29,285.50	1,946.20	6.6		
1977	32,407.90	2,471.50	7.6	5.8	9.26
1981	39,088.70	3,035.30	7.8		
1982	41,211.60	3,594.90	8.7	8.6	11.09
1986	59,289.80	5,094.90	8.6		

Source: *Major Statistics of Korean Economy, 1982, 1987*, E.P.B

Note: The first Five-year Plan Period uses 1975 constant price, but from the second Five-year Plan Period, 1980 constant price are used.

As shown above, the growth rates of construction were much higher than those for GNP and higher than those for other industries. It is obvious that construction played a vital and leading role both for national economic growth and equally for the growth of other industrial sectors. In other words, construction was one of the major motive forces that drove the development of the Korean economy and it had a significant impact upon the country's economic development.

The next section examines the contribution of construction to employment. Table II-7 shows the trends in the growth of the economically active population from the first to the fifth five-year economic development periods. In the early parts of economic development plans, the population growth rates were almost 3 per cent but the growth rate decreased gradually every year and consequently, by the end of the fifth economic development plan in 1986 it had dropped to 1.24 per cent, only half the rate of increase of the early years.

According to Okun's principle of employment,<sup>25</sup> to reduce the unemployment rate by one per cent, a three per cent increase in the economic growth rate is required. Therefore

<sup>25</sup> A.M. Okun, *Economics for Policy Making, Selected Essays of A.M. Okun*, The M.I.T. Press, Cambridge, Mass., U.S.A., 1983, Editor's Preface ix and pp. 148-150

to achieve high employment rates much higher economic growth rates become a necessity.

In the Korea case unemployment rates dropped considerably from the early 1960s as a consequence of Korea's declining rate of population growth at a time when Korea enjoyed very high growth rates in economic performance. In 1963 the unemployment rate was 8.2 per cent and it dropped to 7.1 per cent by the end of 1966. This order of reduction continued through the second five-year economic development period resulting in an unemployment rate that was down to 4.5 per cent by 1971. Clearly it can be seen that the employed population increased massively while the numbers of the unemployed population decreased from 681,000 in 1963 to 476,000 in 1971. Over the same period the economically active population increased from 8.34 million to 10.5 million.

**Table II-7, Economically Active Population**

Unit: thousand persons

year	Production capable population	Economically active population	Labour force participation rate(%)	Unemployed	Unemployment rate (%)	Population growth rate (%)
1963	15,085	8,343	55.3	681	8.2	2.82
1966	16,367	9,071	55.4	648	7.1	2.55
1967	16,764	9,295	55.4	578	6.2	2.36
1971	18,984	10,542	55.5	476	4.5	1.99
1972	19,724	11,058	56.1	499	4.5	1.89
1976	22,549	13,061	57.9	505	3.9	1.61
1977	23,336	13,440	57.6	511	3.8	1.57
1981	25,100	14,683	58.5	660	4.5	1.56
1982	25,638	15,032	58.6	654	4.4	1.53
1986	28,225	16,116	57.1	611	3.8	1.24

Source: *Major Statistics of Korean Economy*, E.P.B., various issues.

Note: 1) Before 1980, those above 14 years old are included, and from 1980 those above 15 years old only are included.

Over the five economic development periods the population of 14 year olds and over (the production capable population) in 1963 was 15.08 million and it increased to 28.23 million by 1986 (from 1980 the age of those included in the data was adjusted from 14 to 15 years old) while the economically active population increased from 8.34 million to 16.12 million respectively, an almost two-fold increase. With high economic growth rates and high 'employment absorbing' rates from the expanding and labour intensive construction work, unemployment dropped considerably to 3.8 per cent by 1986. Throughout these development years, construction contributed a great deal to the increase of employment and therefore assisted in the reduction of the number of unemployed. To support this point the

next section will examine the volume of manpower absorbed by construction work.

**Table II-8. Persons Employed by Industry (Year-average)**

Unit: thousand persons

year	Total(%)	Agri. for. & fishery(%)	Mining & manufac. (%)	Social Overhead and Other	Services(%)
					Const. (%)
1962-1966	8,023 (100)	4,836 (60.3)	780 (9.7)	2,406 (30.0)	206 (2.6)
1967-1971	9,419 (100)	4,846 (51.5)	1,315 (13.9)	3,260 (34.6)	309 (3.3)
1972-1976	11,534 (100)	5,505 (47.7)	2,078 (18.0)	3,951 (34.3)	451 (3.9)
1977-1981	11,558 (100)	4,986 (36.8)	3,065 (22.6)	5,507 (40.6)	800 (5.9)
1981-1986	14,758 (100)	4,047 (27.4)	3,536 (24.0)	7,175 (48.6)	870 (5.9)

Source: Calculation based on annual issues of *Major Statistics of Korean Economy*, E.P.B

As discussed above, throughout the five economic development periods the structure of Korean industry changed drastically; indeed it may be said that it was almost inverted. During the first five-year economic development period, the population employed by agriculture, forestry and fisheries amounted to an annual average of 4.84 million which was 60.3 per cent of the total economically active population. The next largest employer was social overhead capital and other services, followed by mining and manufacturing which had 30 per cent and 9.7 per cent respectively. In the early 1960s Korea was still clearly an agriculture country. But throughout the five five-year economic development plans Korea changed swiftly from an agricultural to an industrialising country. During the fifth five-year plan period the employment provided by agriculture, forestry, and fisheries dropped to 27.4 per cent while mining and manufacturing, and others increased to 24 per cent and 48.6 per cent respectively.

Throughout the development periods, the agricultural sector lost 39.5 per cent (1963 63.1 per cent, 1986 23.6 per cent) while mining and manufacturing gained 17.2 per cent (1963 8.7 per cent, 1986 25.9 per cent). Social overhead capital and other services sector had a large increase of 22.3 per cent, from 28.2 per cent to 50.5 per cent. As the infrastructure underwent a major increase, construction employment increased significantly from 2.6 per cent to 5.9 per cent with the employed population in construction increasing from 206,000 to 870,000: a more than four-fold increase. This made a large and particular

contribution to Korea's economic and social development. Its social impact was a special one in that construction work largely benefited the 'lower class' by improving their levels of income, and also helped to stabilised their daily lives. The above increase only includes the direct increase from construction but, when induced or indirect employment increases in areas such as construction materials and equipments are taken into account, the contribution of construction to national employment growth is tremendous.

**Table II-9. Migration to Urban Centres**

Unit: thousand person

	1960	1970	1980	1986
Total population	24,989	31,435	37,449	41,161
Urban residents	9,784	15,750	25,738	30,942
Rural residents	15,205	15,685	11,711	10,219
Urbanization ratio (%)	39.1	50.1	68.7	75.2

Source: *Statistics Yearbook of Construction, 1987*, Ministry of Construction

So far this chapter has examined construction in relationship to economic sectors such as GNP, economic growth rates and effects upon employment. The chapter will conclude by demonstrating some of the actual contributions made by the construction industry to Korea's industrial and social infrastructure.

As shown in the above tables, Korea developed her economy from an agricultural to an industrial base. In the process of this industrialisation, large numbers of people migrated to the cities and the rate of urbanisation developed very fast from the early 1960s. In 1960 the urban population was only 39.1 per cent of the total but by 1986, it had grown to 75.2 per cent (Table II-9).

With such rapid urbanisation, the government adopted a major policy which called for a supply of houses for the new urban population of more than 200 thousand units every year. This target was achieved throughout the middle 1970s and into the mid 1980s with the exception of 1981 when 150 thousand units were constructed. The main reason for the short-fall in 1981 was the impact of the double political crises of October 1979, when President Park Chung Hee was assassinated, and early 1980, when General Chun Doo Whan took power in a military coup. In these circumstances the private sector was,

understandably, less willing to make major investments. Even with the annual increase in the supply of houses, housing supply rates worsened. In 1976 the housing supply ratio was 77.4 per cent but had worsened to 69.7 per cent in 1986.

Changes in social structure and in population distribution were largely responsible for this. In Korea it had been traditional for the father, sons and grandchildren to live together in one big house but, as personal incomes improved, married children started to separate from their parents and establish their own homes. This was one of the major factors which led to and made worse the shortage of housing. Another important factor was the sustained migration of people from the rural areas to cities. As many families moved into cities, empty houses were left in rural areas while the cities experienced an increasingly severe problem of unfulfilled house demand (Table II-10).

**Table II-10. Housing Supply**

	Housing units (1,000)	Housing supply ratio (%)	House units constructed		
			public sec.	private sec.	Total
1976	5,024	77.4	61,827	108,143	169,970
1977	5,099	77.2	77,825	125,720	203,545
1978	5,242	76.8	115,433	184,674	300,107
1979	5,416	76.5	118,300	132,748	251,048
1980	5,319	71.2	106,187	105,350	211,537
1981	5,581	73.7	77,633	72,204	149,837
1982	5,736	73.1	68,209	123,211	191,420
1983	5,898	71.8	82,071	143,919	225,990
1984	6,084	71.6	114,081	107,966	222,047
1985	6,107	69.7	132,070	95,292	227,362
1986	6,303	69.7	152,913	135,339	288,252

Source: *Statistics Yearbook of Construction*, 1987, Ministry of Construction

Another serious problem that arose from rapid urbanisation was water supply capacity. The Korean government made huge investments in order to meet the rapidly growing demand for water. In 1986 the water supply capability reached 11.5 million tons per day, which was nineteen times more than the capability of 1961 when it was only 600 thousand tons per day. The *per capita* water supply per day was 102 litres in 1961 and that grew to 295 litres in 1986. Also in 1986, the population receiving water was 28.3 million, or 68 per cent of the total population. By 1961, it had been only 4.4 million when the supply ratio was a meagerly 17 per cent. The number of cities receiving water in 1961 was 64, but this number increased to 472 in 1986 (Table II-11).



**Table II-11. Water Supply Service**

	Total Population (1,000)	Water Service population (1,000)	Water supply service ratio (%)	Installed Capacity(1,000 ton/day)	Per capita water supply per day	Cities of water supply
1961	25,498	4,400	17	600	102	64
1966	29,160	6,474	22	1,140	110	83
1971	31,828	11,600	36	2,670	173	144
1976	35,849	17,910	50	4,409	220	181
1981	38,723	22,088	57	7,508	264	262
1986	41,161	28,289	68	11,505	295	472

Source: *Statistics Yearbook of Construction*, 1987, Ministry of Construction

With rapid economic growth and industrialisation, there was an urgent requirement to improve the transportation systems. The total length of roads in 1961 was only 27,169 km but this had increased two-fold to 53,654 km by 1986. Also, the percentage of paved road had been only 4.1 per cent in 1961, but this had increased to 54.3 per cent in 1986 (Table II-12). These are all remarkable improvements and display the importance of construction for Korea's economic development and industrialisation.

**Table II-12. Road Service**

	1961	1966	1971	1976	1981	1986
Total length (km)	27,169	34,476	40,635	45,514	50,336	53,654
Pavement ratio (%)	4.13	5.61	14.24	23.78	34.13	54.30

Source: *Statistics Yearbook of Construction*, 1987, Ministry of Construction

#### 4. Overseas Construction

This section analyses overseas construction in three dimensions the characteristics of overseas construction, the motivations and causes of overseas construction and the development of overseas construction in recent years. In the first part it is necessary to describe the characteristics of overseas construction since there are several major differences that distinguish it from domestic construction. In the second part, the intention is to study the major causes for overseas construction. The third part uses data on overseas construction from various periodicals and statistical references which have been collected,

tabulated and analysed to assess the recent development of global overseas construction.

### *A. Characteristics of Overseas Construction*

In a general sense the characteristics of overseas construction are similar to those of domestic construction. However, because this construction work is carried out in foreign countries there are a number of significant differences which serve to identify the particular characteristics of overseas construction.

Overseas Construction is the construction related activities earned by country B's contractors from foreign country A's public and/or private sectors. From the perspective of the project-awarded country, overseas construction projects represent an export demand for construction, whereas from the perspective of the project-issuing country, such projects represent an import demand for construction. The import demand for construction is calculated by assessing the total construction demand and deducting from it construction activity carried out by domestic construction companies within the issuing country. In other words, the project issuing country's excess demand for construction represents the import demand for construction. Of course, this is a rather rough and general description of overseas construction. If a two-country model is adopted and assuming that only two countries are considered and there there are no barriers to trade, the export demand for construction to project-awarded country B will be same as the excess demand for construction from project-issuing country A.

**Table II-13. Two Country Model**

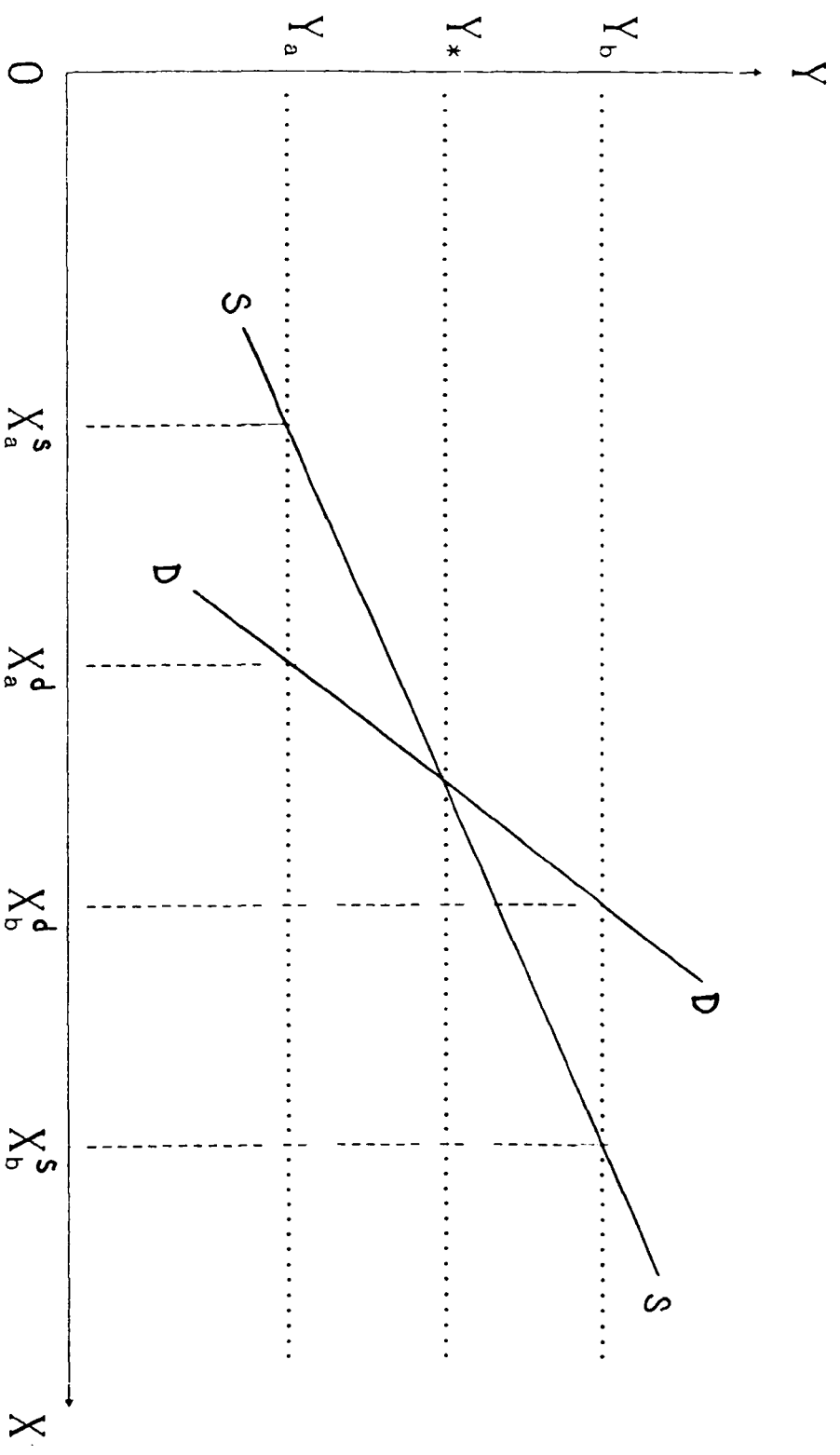
Country	Total construction demand	Internal capable construction supply	Excess construction demand
A	100	80	20
B	110	130	- 20

This may be better explained by the following illustration of the two-country model. As shown in Table II-13, for country A the total construction demand is 100 units but the internal capability for construction supply is only 80 units. Therefore, there is a 20 unit excess construction demand. For country B, while the total construction demand is only

110 units, the internal capability for construction supply is 130 units. Therefore, there is a 20 unit surplus supply capability. Under, such circumstance, if there is no restriction to free trade between these two countries, country B's 20 unit surplus supply capability will make up the 20 unit excess construction demand from country A. In this case there has been a transfer of overseas construction services from country B to country A.

The construction export and import phenomenon can be better explained when one examines the relationship of two countries with mutually different economic capabilities. In Figure II-1, the X-axis is designated as the amounts for construction demand and supply, while the Y-axis is a country's construction supply and demand capability expressed in terms of its economic growth, for example by reference to its *per capita* GDP. The construction capability generally increases with economic growth. The DD curve is the construction demand curve and this demonstrates the relationship between construction demand and the degree of economic development. As a country's construction demand increases with its economic development, the DD curve rises from low left to high right. The SS curve is the construction supply curve, and this shows the relationship between the construction supply capability and a country's economic development. As a country's construction supply capability increases with economic development, so the SS curve also rises upward from low left to high right.

Fig. II-1 Export and Import of Construction between Two Countries Model.



In the early stage of economic development, construction supply ability lags far behind construction demand. But, as the economy becomes developed, and depending on the economic growth rates, the construction supply capability increases faster than the tempo of construction demand. Therefore, at a certain stage ( $Y^*$ ), construction demand and the supply ability come into equilibrium. After this stage ( $Y^*$ ) the construction supply capability exceeds construction demand volume. Consequently, an excess construction supply capability is developed.

Assuming country A's economic development stage as  $Y_a$ , then its total construction demand becomes  $OX_a^d$  and the supply ability is  $OX_a^s$ . Accordingly, the excess construction demand  $X_a^s - X_a^d$  is developed. Meantime, if country B's economic development is higher than  $Y^*$  at  $Y_b$ , then its total construction demand is  $OX_b^d$  with a construction supply ability of  $OX_b^s$ . Then, there will be an excess supply ability of  $X_b^s - X_b^d$ .

Under such circumstances, if there is no trade restriction between the two countries, the  $X_a^s - X_a^d$  will be the same as  $X_b^d - X_b^s$ . Therefore, in this model, one country's excess construction demand is the other country's export demand for construction, and there is an overseas construction export from country B to country A.

The two-country model is necessarily simple and in actual practice country A's excess construction demand does not become all of country B's export demand for construction, because the actual amount issued for overseas construction work is much dependent on the importer's foreign exchange conditions. In other words, when the project-issuing country's foreign exchange capabilities worsen as a result of external economic factors such as a fall in the price of her exported raw materials, overseas economic activities or a decline in the credibility of its currency in the international finance markets, the actually amount issued for import demand will be smaller than the excess construction demand. This one of the major characteristics of overseas construction; hard currency is needed for exported projects.

Overseas construction bears high risks by working in an unfamiliar country. Generally, overseas construction demand occurs in less developed countries, where

infrastructure construction is in great demand. Often, these countries have political environments which are unstable and foreign contractors might face unexpected political risks, such as a change of government or even important changes in construction regulations even with the same government in office.

Under such circumstances, it is sometimes hard to carry out construction projects in an ordinary manner and, in the worse case, the foreign contractor might have to withdraw and sustain a large monetary loss. The war between Iran and Iraq, and the recent Iraqi crisis are good examples. These risks are similar for most international ventures in that different social systems and environments can cause high risks. It is, for example, easy to make mistakes by misunderstanding the way in which business is handled. Different financial systems and exchange rates can also lead to losses, and different tax systems and the host country's profit-repatriation regulations may also lead to reduced profits or losses by foreign contractors.

Differences of culture and customs have the potential to cause labour disputes, and can lead to serious misunderstandings of the foreign workers by the host country's people and government. For example in the late 1970s, when Korean contractors earned huge contracts from Saudi Arabia, many Korean workers were shipped to that country. At the airport, Korean uniformed workers lined up like troops, marched to the project sites in military formations and organised their work-teams in a military manner. The Saudi government became concerned about these military ways and attitudes and took precautions for some time. The Saudi government did not understand the Korean contractors' ways of handling their workers even though they appreciated that this form of organisation was a most efficient way to meet their construction needs. Overseas construction also faces many problems arising from the differences in language, climate, culture, custom, religion and the ways of thinking. Sometimes, it takes quite some time to adjust to new foreign environments.

These are the major characteristics of overseas construction and these serve to distinguish it from domestic construction.

## **B. Reasons for the Existence of Overseas Construction Market**

The international export and import of construction is a relatively new type of international economic trade which is composed of many parts of other economic activities in that the construction industry assembles other industries' products. The international export and import construction business is also composed of the trades of manufacturing facilities, hard and soft services, international finance, and economic cooperation. Within international construction trade, most activities involve the export of construction services and materials from a developed country to a developing country. This can be explained in the following way:.

### *(1) Infrastructure needed for developing a nation*

Many developing countries are not well equipped with suitable infrastructures for the development of their countries. They typically lack such facilities as the ports, airports, highways, water supply systems, housing stock and schools. For example, in the early 1970s, when Korean contractors had many projects in Saudi Arabia, loaded ships had to dock at sea for some months before they could discharge materials and machines on the coast of Saudi Arabia.<sup>26</sup> This cost money and time and was a 'waste' caused largely by the lack of port facilities. Also, these countries typically do not have the construction capability or skills required to build their own infrastructures. Therefore, these countries have to rely on foreign contractors for the development of many parts of their infrastructures.

Generally these countries begin to issue overseas projects when they are in the planning and early stages of their social and economic development programmes. Consequently, they usually issue more projects than their local contractors can handle.

### *(2) To meet the demands of new social and economic structures*

As developing countries improving their economies, the social and economic structures also begin to change, and construction demands change accordingly. In the initial stage, most contracts are issued by government for medium and small projects, and most of them can be constructed by local conventional contractors. But as the pace of development

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<sup>26</sup> Fortune, September, 1976, pp. 113-115, 186, 188

quickness and earnings increase, government projects will become bigger and more sophisticated, and projects require higher engineering and construction techniques which tend to exceed the local constructors' capability. Generally, when a country's personal incomes increase people demand more and better quality houses and an improved living environment. Depending on a country's policy and the local constructors' capability these demands might be met by local constructors. However, economic development requires modernised construction techniques, improved industrial production facilities, better working conditions and environments, more efficient communication, and faster transportation systems.

As local conventional constructors become less and less able to meet these advanced and sophisticated demands, developing countries have to buy the advanced countries' engineering and construction technology if there is to be further social and economic development.

### *(3) Import demand of construction caused by industries' structural changes*

Economic development is accompanied by industrialisation, and this brings many changes in production facilities and scales of production. Throughout the industrialisation processes many new construction demands will be generated. Many new facilities need modern and sophisticated technology including the construction industry.

During the early stage of industrialisation, the food industry, textile industry, wood processing industry and other similar labour intensive industries dominate. As industrialisation proceeds further, the middle stage of industrialisation, steel and chemicals become the major industries. The machine industry, electronic industries, and other capital intensive, and high value-added industries come to dominate in the later stages of industrialisation.

As the major industries and their structures change, different kinds of construction will be required. The scale will generally get bigger, the contents will become more sophisticated and the construction expenditures will be increased. The developing countries' local conventional contractors will face limits in techniques and finance and are



likely not to be able to meet these demands. These developing countries will need the advanced countries' construction capabilities and/or economic cooperation. As explained above, the industrial changes caused by economic development give rise to the import of advanced construction services from developed countries in order to promote the economic growth of the developing countries.

### **C. World Construction in Recent Years (late 1970s through middle 1980s)**

This next section examines the nature of global overseas construction in this period. The period from the late 1970s through to the middle of the 1980s was chosen because it was the most challenging period in world overseas construction history. 1981 saw the all-time high recorded volume of world overseas construction.

Before analysing the data an explanation of the sources and the method of collection is offered. The monthly periodical ENR (*Engineering News Record*) has been the only source of reliable and systematic data relating to overseas construction. Every July the journal summarises data of the total volume of contracts awarded to the top 250 international contractors. Other sources of published data on overseas construction can be found in the periodicals, MEED (*Middle East Economic Digest*) and AED (*Africa Economic Digest*). However, these two journals only cover limited areas; the AED covers only the southern part of Africa while the MEED covers mainly the middle-east and the northern part of Africa. In addition the classification standards are different so that the contents of MEED's international contracts not only cover construction but also non-construction contracts. These two periodicals were used, therefore, simply to support the main data drawn from the ENR. The ENR's listing of foreign contracts awarded to the top 250 international contractors covered only world-wide contracts, however, these were assumed to be a reasonable approximation to the actual total volume of world contracts for the following analytical reasons.

**Table II-14. Comparison between International Top contractors 200 and Next 50(201-250)**

Unit: billion \$, (%)

	'80	'81	'82	'83	'84	'85	'86	'87	Avg.
Top 250	108.6 (100)	134.6 (100)	123.1 (100)	93.6 (100)	80.5 (100)	81.6 (100)	73.9 (100)	74 (100)	(100)
Top 200	107.1 (98.6)	131.4 (97.6)	120.2 (97.6)	91.6 (97.9)	79.2 (98.4)	80.4 (98.5)	72.7 (98.4)	72.5 (98)	(98.1)
201-250	1.5 (1.4)	3.2 (2.4)	2.9 (2.4)	2 (2.1)	1.3 (1.6)	1.2 (1.5)	1.2 (1.6)	1.5 (2)	(1.9)

Source: *Engineering News Record*, McGraw-Hill, Inc., various issues

From Table II-14, it can be seen that the bottom 50 companies of the top 250 companies were awarded contracts that amounted to only 1.9 per cent of the total awarded to the group as a whole. This volume is insignificant, and it can be reasonably assumed that the volume of contracts awarded to companies outside the top 250 group will be very insignificant indeed, maybe less than one per cent of total international contracted volume. Therefore, it is reasonable to treat the total volume of contracts awarded to the top 250 international contractors as a close approximation to the world total contract volume. Before 1978 there was no available data for these international top contractors, but the ENR has published these data from 1978. For the first two years data relating only to the top 200 contractors was available.

Table II-15 shows that the amount of contracts issued increased greatly from 1980 and continued through 1981 to record the highest overseas contract volume of 134.6 billion dollars. Thereafter it started to decrease. The major increase reflected the Middle East countries' enormous earnings from the second oil crisis.

**Table II-15. Top 250 International Contractors' Earned Amount.**

Unit: 100 mil.\$

	1978 1)	1979 1)	1980	1981	1982	1983	1984	1985	1986	1987
A. Amt. earned by 250	1,043	1,306	2,180	2,499	2,175	2,042	1,914	2,095	2,311	2,878
B. Overseas Amt. earned by 250	506	672	1,086	1,346	1,231	936	805	816	739	739

Source: *Engineering News Record*, McGraw-Hill, Inc., various issues.

Note: 1) : 200 biggest constructors. A: Includes domestic and overseas

Since a large proportion of overseas construction was issued by Middle East countries, (30 to 40 per cent, see Table II-16), their financial sources from oil had a strong impact on overseas construction. From 1983 the overseas construction volume dropped drastically because the Middle East countries' oil income decreased as the oil price dropped. The fall in prices resulted from world-wide oil conservation campaigns and new technologies to reduce oil consumption. Also, the world economy was in slump until 1985. From 1985 the top 250 international contractors' total number of contracts started to increase as the world economy began to recover, but the overseas construction *volume* still decreased (Table II-15). The middle east countries' financial status was not as sound as before, and the decline also indicated that many middle east countries already had relatively well developed and established infrastructures. At the same time these countries became less effective and less committed to the policies of diversifying their industrial bases to reduce the dependence on oil. This tendency can be seen more clearly in Table II-16 which shows that the middle east countries issued volume of contracts decreased from 51.2 billion dollars (41.6 per cent) in 1982 to 13.4 billion dollars (18.1 per cent) in 1987, a reduction of almost four times.

Since 1981, overseas construction volumes decreased, except for the Asian region which experienced a three billion dollar increase in 1984 from 15.4 billion dollars in 1983. The same held good for the African region which showed a 3.7 billion dollar increase in 1983 over 1982. But, these increases only happened because a few huge projects were commissioned and similarly large contracts are unlikely to be available in the foreseeable future. <sup>27</sup>

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<sup>27</sup> Engineering News Record, Mc Graw-Hill, Inc. 18, July, 1985, p.34

**Table II-16. Issued Overseas Construction Volume by Region**

unit: 100 mil.\$,(%)

	Middle East	Africa	Asia 1)	South Amer.	Europe	North Amer.	Total
1978	164 (32.4)	87 (17.2)	74 (14.6)	74 (14.6)	57 (11.3)	50 (9.9)	506 (100.0)
1979	218 (32.4)	116 (17.3)	98 (14.6)	98 (14.6)	76 (11.3)	66 (9.8)	672 (100.0)
1980	353 (32.5)	187 (17.2)	159 (14.6)	158 (14.5)	123 (11.3)	106 (9.8)	1,068 (100.0)
1981	482 (35.8)	248 (18.4)	222 (16.5)	180 (13.4)	101 (7.5)	113 (8.4)	1,346 (100.0)
1982	512 (41.6)	177 (14.4)	235 (19.1)	103 (8.4)	111 (9.0)	93 (7.6)	1,231 (100.0)
1983	330 (35.3)	214 (22.9)	154 (16.5)	63 (6.7)	95 (10.1)	80 (8.5)	936 (100.0)
1984	266 (33.0)	125 (15.5)	183 (22.7)	54 (6.7)	92 (11.4)	85 (10.6)	805 (100.0)
1985	216 (26.5)	153 (18.8)	178 (21.8)	66 (8.1)	100 (12.3)	102 (12.5)	816 (100.0)
1986	161 (21.8)	131 (17.7)	173 (23.4)	52 (7.0)	119 (16.1)	104 (14.1)	739 (100.0)
1987	134 (18.1)	90 (12.2)	155 (21.0)	74 (10.0)	172 (23.3)	115 (15.6)	739 (100.0)

Source: *Engineering News Record*, McGraw-Hill, Inc., various issues

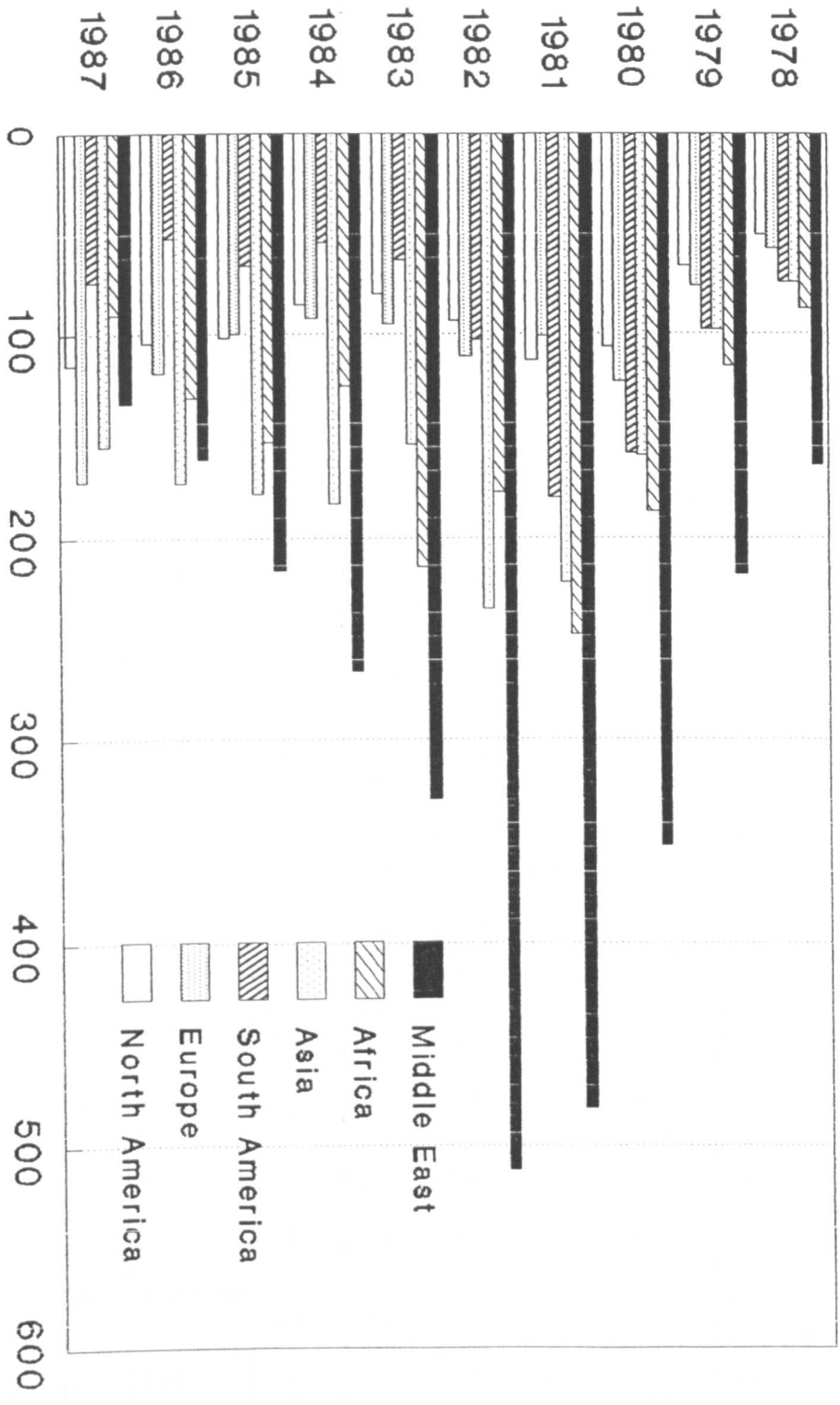
Note: 1) Include Pacific Region

An examination of the overseas construction market by region (Table II-16) shows that the Middle East region accounted for more than 30 percent of the market until 1984. This enormous market was based almost entirely on the availability of the enormous oil revenues earned by the Middle East countries. The next largest markets were Asia, Africa, Europe, North America and South America in that order.

# Fig. II-2. Issued Overseas Construction Volume by Region

Year

( Unit: 100 million \$ )



Source: Engineering News Records, McGraw-Hill, Inc., Various Issues

In the South America region not only the market volume but also the ratio has fallen ever since 1981. This construction market fell in volume from 18 billion dollars in 1981 to less than one third, 5.2 billion dollars, in 1987. Many of South America's infrastructure projects depended heavily on loans from international financial institutions. During this period, many South American countries were in financial crises;<sup>28</sup> hardly able to pay back loans and unable to raise new ones. Since 1981 and 1982, while the Middle East and South American market volumes shrank, the developed regions of Europe and North America had volumes that continuously rose. The European market increased from 7.5 per cent in 1981 to 23.3 per cent in 1987 and the North American market increased from 7.6 per cent in 1982 to 15.6 per cent in 1987.

**Table II-17. Overseas Contract Amount Earned by Different Countries**

Unit: billion.\$, (%)

Rank 2)	Country	1980	1981	1982	1983	1984	1985	1986	1987	Total
1	U.S.A	48.3 (44.5)	47.9 (35.6)	44.9 (36.4)	29.4 (31.3)	30.7 (38.1)	28.2 (34.5)	22.6 (30.6)	18.1 (24.5)	270.1 (34.4)
2	France	8.7 (8.0)	11.9 (8.8)	11.4 (9.3)	10.0 (10.7)	5.3 (6.6)	6.7 (8.2)	7.1 (9.6)	8.6 (11.6)	69.7 (9.1)
3	Japan	4.1 (3.8)	8.4 (6.2)	9.3 (7.5)	8.7 (9.3)	7.3 (9.1)	11.6 (14.2)	9.4 (12.7)	9.9 (13.4)	68.7 (9.5)
4	Korea <sup>3)</sup>	9.5 (8.8)	14.6 (10.9)	13.8 (11.2)	10.4 (11.1)	6.6 (8.1)	4.8 (5.8)	2.6 (3.5)	2.1 (2.8)	64.4 (7.8)
5	Italy	6.2 (5.7)	9.3 (6.9)	7.9 (6.4)	7.2 (7.7)	6.8 (8.4)	8.7 (10.6)	7.4 (10.0)	9.3 (12.6)	62.8 (8.5)
6	Germany	8.6 (7.9)	9.8 (7.2)	9.5 (7.7)	5.4 (5.8)	4.8 (6.0)	5.4 (6.6)	5.5 (7.4)	5.9 (8.0)	54.9 (7.1)
7	U.K	4.9 (4.5)	8.7 (6.4)	7.5 (6.0)	6.4 (6.8)	5.6 (6.9)	5.6 (6.8)	7.0 (9.5)	7.9 (10.7)	53.6 (7.2)
8	Netherland	3.7 (3.4)	4.1 (3.0)	2.0 (1.6)	2.5 (2.9)	1.2 (1.5)	1.4 (1.7)	1.2 (1.6)	1.4 (1.9)	17.5 (2.2)
9	Turkey	0.8 (0.7)	2.7 (2.0)	2.7 (2.1)	3.4 (3.6)	1.9 (2.4)	1.6 (1.9)	2.2 (2.9)	0.8 (1.9)	16.1 (2.2)
10	Yugoslavia	1.0 (0.9)	2.1 (1.6)	1.3 (1.0)	1.4 (1.5)	1.3 (1.6)	0.2 (0.2)	1.4 (1.9)	0.5 (0.7)	9.2 (1.2)
11	Greece	1.6	1.6	1.7	1	1	0.4	0.2	0.2	7.7

28 Latin American Borrowing From U.S., Eurodollar Markets Reflects Banker Caution  
Business Latin America, February 2, 1983

		((1.5)	(1.2)	(1.3)	(1.1)	(1.2)	(0.5)	(0.3)	(0.3)	(0.9)
12	Brazil	1.6 (1.5)	2.1 (1.6)	0.9 (0.7)	0.9 (1.0)	0.5 (0.6)	0.2 (0.2)	0	0.3 (0.4)	6.5 (0.9)
13	Swiss	0.7 (0.6)	0.5 (0.4)	0.4 (0.3)	0.7 (0.7)	0.2 (0.2)	1.0 (1.2)	1.3 (1.8)	1.2 (1.6)	6.0 (0.9)
14	Belgium	0.7 (0.6)	1.6 (1.2)	0.9 (0.7)	0.9 (1.0)	0.5 (0.6)	0.5 (0.6)	0.3 (0.4)	0.5 (0.7)	5.9 (0.7)
15	Sweden	0.4 (0.4)	0.9 (0.7)	0.8 (0.6)	0.8 (0.9)	0.8 (1.0)	0.8 (1.0)	0.8 (1.1)	0.6 (0.8)	5.9 (0.7)
Other		7.6 (7.0)	8.3 (6.1)	8.2 (6.7)	4.7 (5.0)	6.1 (7.6)	4.7 (5.7)	4.9 (6.6)	6.7 (9.0)	51.2 (6.7)
Total		108.4 (100)	134.5 (100)	123.2 (100)	93.8 (100)	80.6 (100)	81.8 (100)	73.9 (100)	74 (100)	770.2 (100)
T o p Countries		7 90.3 (83.3)	110.6 (82.2)	104.3 (84.7)	77.5 (82.6)	67.1 (83.2)	71 (86.8)	61.6 (83.4)	61.8 (83.5)	644.2

Source: McGraw-Hill Inc., *Engineering News Record*, various issues

Note: 1) Overseas contract amount earned by 250 contractors

2) Rank by total amount earned '80-'87

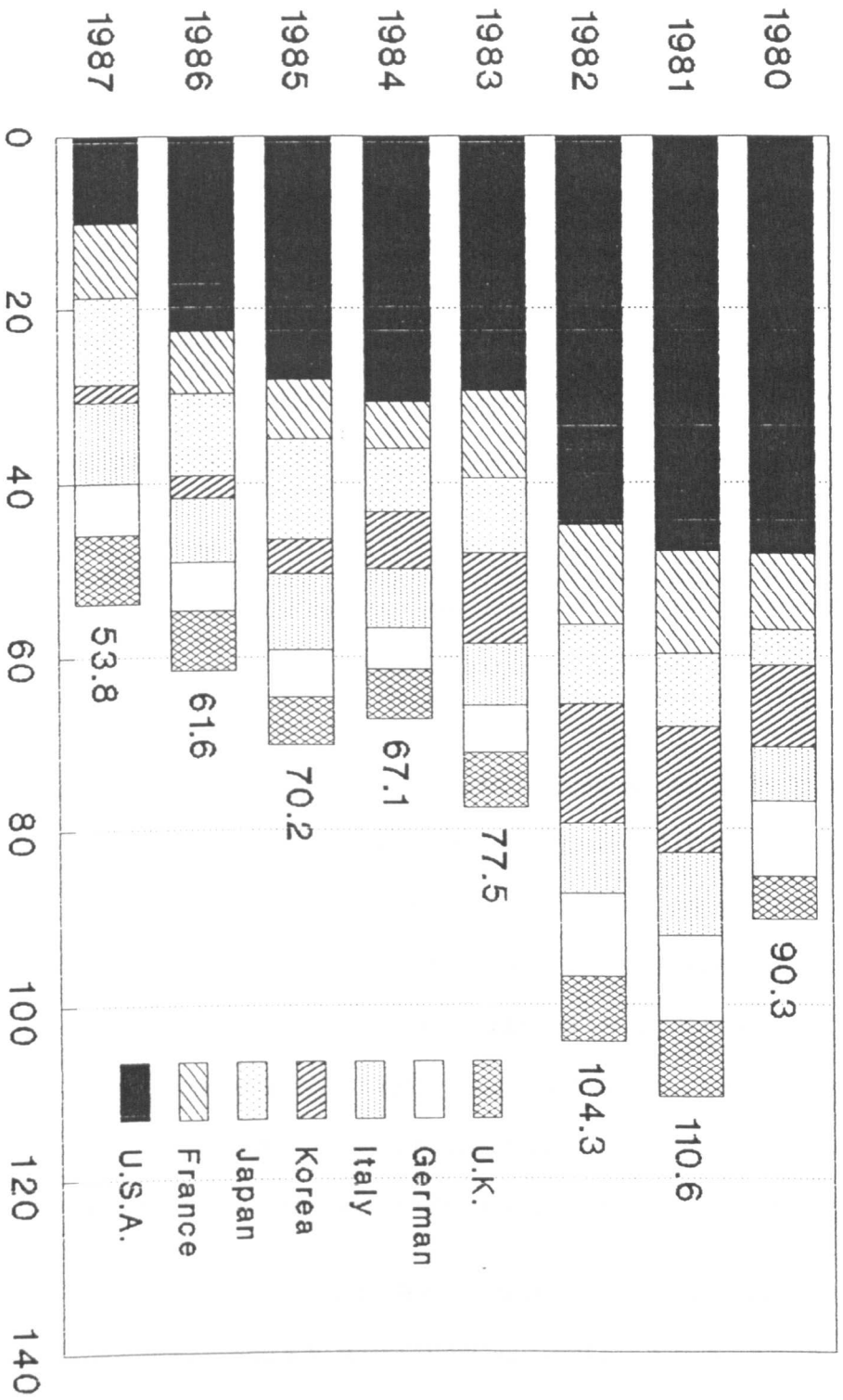
3) Some differences from korea statistics

This arose as a consequence of the decline of the major market, the Middle East, encouraging many top international contractors to directed their marketing efforts towards the advanced countries' construction markets where, even though competition and construction regulations were tough, and profit margins were small, they could be guaranteed.

# Fig. II-3. Overseas Contract Amount Earned by Different Countries

Year

( Unit: Billion \$ )



Source: McGraw-Hill Engineering News Record, Various Issues



Table II-17 demonstrates that the United States' international contractors were most active in the world construction market. More than 30 per cent of the international contracting volume was earned by her contractors. The next country, France, received less than 10 per cent of total awards. There were a number of reasons why the United States' contractors achieved more than other contractors. The United States political and economic influence over the world was much stronger than any other country, and many of the international financial institutions were backed by the United States and had headquarters in the United States. The American contractors were, therefore, much better placed to gain information and make effective business and institutional contacts. Also, the United States' technology was in this period more advanced.

From 1980 to 1983, Korea was in the second place. During this period the Middle East region was the most prosperous market for overseas contractors. The Middle East was the major and most emphasised market for Koreans. Once that market slowed down the Korean international contract volume slid down to seventh in the world ranking of overseas contracting countries. Japan rose to become second in the market. The Japanese major market was Southeast Asia, and Japan supported this market with her abundant foreign aid programme and her surplus hard currency funds, especially through the OECF (Overseas Economic Cooperation Fund). Japan was also advantaged by her geographical location compared to most other countries. The top seven countries received more than 80 per cent of world contracts. The United States had the largest number of contractors in the Top 250 international contractors, averaging about 20 per cent of the total. It was followed by Korea until 1982 after which Japanese contractors took the second place (Table II-18).

So far this Chapter has covered the nature of domestic construction and overseas construction, and also the relationships between national economies, economic growth and the construction industry. These sections will supply the foundation for later economic analyses within this thesis.

**Table II-18. Number of Overseas Contractors in Various Countries 1)**

Rank	Country	1980	1981	1982	1983	1984	1985	1986	1987	Total
1	U.S.A	49	48	46	43	41	43	43	40	353
2	Japan	18	25	27	34	32	39	29	31	235
3	Italy	24	25	30	25	22	17	14	11	168
4	Korea	26	25	30	25	22	17	14	11	170
5	France	17	21	18	21	17	18	18	13	143
6	U.K	16	14	14	15	19	16	17	12	123
7	German	13	15	15	15	12	14	17	17	118
8	Netherlands	11	9	6	8	9	9	7	7	66
9	Turkey	3	12	9	10	8	8	9	6	65
10	Yugoslavia	6	10	10	9	7	5	6	4	57
11	Finland	5	5	3	5	4	5	4	7	38
12	India	9	4	5	6	3	3	3	3	36
13	Spain	3	3	6	5	3	3	3	3	30
14	Swiss	4	4	3	3	3	3	5	5	30
15	Belgium	3	3	2	3	3	4	4	4	26
Others		43	27	26	23	45	46	57	76	343
Total		250	250	250	250	250	250	250	250	2,000
Top 7 countries		163	173	180	178	165	164	152	135	1,310

Source: McGraw-Hill Inc., *Engineering News Record*,

Note: 1) Belong to ENR 250 Top Contractors

2) Rank by Total Number between '80-'87

In many senses, the construction industry is quite different from other kinds of manufacturing industry. Generally, the products of construction are immobile, large, heavy, long lasting and expensive. The distinctive characteristics of construction are that it is a 'one-of-a-kind' product industry (the same kind of product cannot be manufactured at the same site), that it is very much dependent on the climate, and that it is a complex assembly industry. Construction is a vital industry for a country's economic development, especially so for a developing country where basic infrastructure is needed to promote economic growth. Clearly the Korean construction industry made a great contribution to the processes of Korea's economic development.

As the work of overseas construction is carried out in foreign countries, there are some important differences from the domestic construction industry. It is more risky and

faces many problems which arise from the differences in language, climate, culture, custom, religion and even in ways of thinking. One of the main reasons why overseas construction takes place is the lack of technologically advanced construction capability among the local contractors in most developing countries. As a country develops, the size of construction projects change and become bigger and the required technologies become more sophisticated. Overseas construction is a new kind of international trade, and the majority of this trading activity is the export of construction services from a developed country to a developing country. Many developing countries need new, better and more extensive infrastructures to promote economic development. As a country's economy improves, the social and economic structures, and even the industrial structures change and each change demands a new kind of construction development.

## **Chapter III. A Historical Overview of the Korean Construction Industry, 1945-1984**

Chapter II examined the characteristics of the construction and overseas construction industries, and looked at the role of construction in a nation's economy. The Korean case was used as an example. With this background knowledge, it is now time to focus in on the core issue of this thesis, the development of the Korean overseas construction industry and its impact on the Korean economy.

Since their first venture into the overseas construction market in 1965, Korean construction companies rapidly expanded their activities overseas. During the next two decades, the Korean overseas construction industry underwent tremendous changes. The contract volume increased from US \$5.4 million in 1965 to \$13,681 million in 1981, but then dropped to \$6,502 million in 1984 (Table III-1); the number of contracts increased from 1 in 1965 to 280 in 1981, and then fell slightly to 237 in 1984.<sup>29</sup>

These are impressive records deserving a close look. Chapter III will focus on the historical background of this enormous transformation of the Korean overseas construction industry. As in other countries, Korea's overseas construction industry has grown out of its domestic base, and a historical overview of the Korean construction industry should help to show how Korean contractors accumulated experience in the domestic market and applied this experience overseas.

The history of the Korean overseas construction industry up to the mid-1980s can be divided into 3 periods: the Growing Period in Korea (1945-1964), the Pioneering Period in Southeast Asia (1965-1972), and the Golden Period in the Middle East (1973-1984).

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29. *Statistics of Overseas Construction*, Ministry of Construction, December 1985, p.3

**Table III-1. Earned Overseas Contract Volume by Region (1965-1984)**

Unit : thousand \$

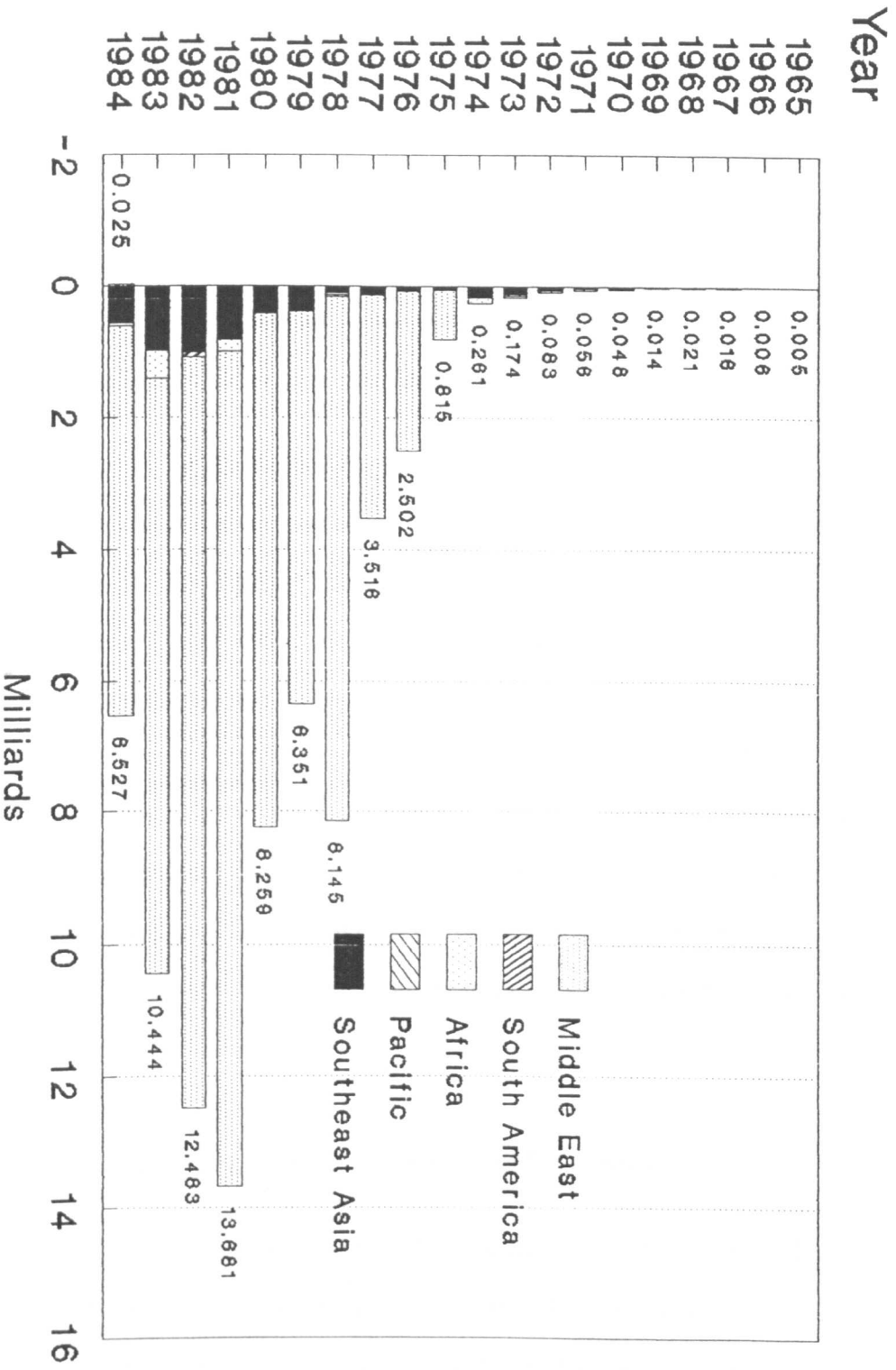
Year	Southeast Asia	Pacific	Africa	South America	Middle East	Total
1965	5,405					5,405
1966	5,598					5,598
1967	15,604					15,604
1968	16,198	4,380				20,578
1969	11,543	2,857				14,400
1970	31,468	*16,521				47,989
1971	34,152	20,499		1,068		55,719
1972	62,313	20,846				83,159
1973	118,082	31,062		1,055	24,059	174,258
1974	145,048	22,540	143	4,028	88,813	260,572
1975	42,513	5,345	15,062	566	751,210	814,696
1976	34,631	17,116	6,745	14,135	2,429,112	2,501,739
1977	119,273	9,678	149	136	3,387,000	3,516,236
1978	91,041	10,448	25,216	35,924	7,982,393	8,145,022
1979	378,010	14,337	566		5,958,383	6,351,296
1980	408,996	4,497	14,841		7,831,040	8,259,374
1981	838,200	2,262	166,304		12,674,238	13,681,004
1982	1,920,521	4,038		67,038	11,391,849	13,383,446
1983	979,202	8,504	430,037	2,901	9,023,287	10,443,931
1984	568,054	137	48,750	-25,089	5,910,514	6,502,336
<b>Total</b>	<b>5,825,852</b>	<b>195,067</b>	<b>707,813</b>	<b>101,762</b>	<b>67,451,898</b>	<b>74,282,392</b>

Source : Ministry of Construction, The Republic of Korea.

Note : \* Includes U.S.A. \$ 2,038,000

During the Growing Period, Korean contractors gained valuable learning-by-doing experience from reconstruction works and projects commissioned by the US Armed Forces stationed in Korea following the Korean War (1950-1953).

Fig. III-1. Overseas Construction earned by Region(1965-1984)



Source: Ministry of Construction of Korea

With the launching of Korea's first Five-Year Economic Development Plan in 1962, the construction industry played a critical role in the building of industrial facilities and complexes and the provision of infrastructure. Quite naturally, it developed into one of Korea's leading industries during this early stage of economic development.

In the Pioneering Period, Korean construction companies made their first ventures into the overseas market. Concentrating on the Southeast Asian and Pacific Islands region during this period, Korean construction companies won many contracts in South Vietnam in particular, aided by Korea's participation in the Vietnam War.

In the Golden Period, Korean contractors brought their accumulated technical know-how and well-trained manpower to the Middle East, and became one of the dominant players in 'the Middle East Construction Boom,'<sup>30</sup> which was fueled by two major oil price increases in 1973 and 1979. At home, Korea implemented her Third (1972-1976) and Fourth (1977-1981) Five-Year Economic Development Plans during this period. Under these Plans, Korea focused on building up heavy and chemical industries, and continued to increase exports. The contribution of the Korean overseas construction industry to the Korean economy may have reached its peak during this period, as the earnings from the Middle East construction boom helped to offset the increased expenditures on oil imports and protect the Korean economy against the two worldwide economic crises triggered by the oil price shocks.

## **1. Growing Period in Korea (1945-1964)**

The two decades following the end of World War II represented one of the most tumultuous periods in Korea's history. For the Korean construction industry, however, this period was one of challenges and opportunities, as the reconstruction work following the

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<sup>30</sup> McQuade, W., 'The Arabian Building Boom is Making Construction History', *Fortune*, September 1976, pp.113-115, 186, 188, 190..

Korean War and the infrastructure construction projects needed for economic development plans provided Korean contractors with a chance to accumulate a great deal of learning-by-doing experience.

With Japan's surrender to the Allied Forces in August, 1945, Korea became independent, but was shortly divided into two halves at the 38th parallel. In June, 1950, the Communist North invaded the anti-Communist South, starting a devastating three-year-long conflict on the Korean peninsula. The Korean War ended in a stalemate, with heavy casualties and economic losses for both sides.

During the Korean War, South Korea suffered about 3 billion US dollars in economic damage.<sup>31</sup> According to estimates, between 42 to 44% of industrial facilities and about 40% of residential houses were destroyed, 47% of railways facilities were damaged, 500 km of roads and 40 km of bridges were destroyed beyond use, and about 80% of the power-generating facilities and electric transmission installations were wrecked.<sup>32</sup> All these needed to be replaced, and these reconstruction works offered challenges and opportunities for the Korean construction industry which was in its infancy. Some Koreans had worked as subcontractors for Japanese companies during the Japanese occupation of Korea (1910-1945), but their experience had a very limited impact on the growth of the Korean construction industry. Before the Korean War, the construction industry was a negligible part of the national economy and was in a very primitive state of development.<sup>33</sup>

If re-building Korea from the damages of the war provided the Korean construction industry with a significant domestic market for some time, building new military installations for the US Armed Forces stationed in Korea offered Korean contractors an opportunity to prepare themselves for the international construction market. US troops had participated in the Korean War as part of the United Nations' forces. The United States left some of its troops in

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31. Sultan, A., 'South Korea's Middle East Penetration Shows Muscle', *MEED*, 16 July 1976, p.3.

32. *10 Years' History of Overseas Construction Association of Korea*, OCAK, Seoul, 1987, p.6.

33. *Private Sector's Construction White Paper*, Construction Association of Korea, Seoul, 1988, p.9..



South Korea after the war, and in 1957, the governments of the Republic of Korea and the United States decided to strengthen the presence of the US Forces in Korea. Korean construction companies won numerous contracts to build facilities and installations for US troops, such as airports, harbours, roads, bridges, barracks, houses and storage facilities, etc.

These contracts helped to internationalise Korean construction companies, and provided them with valuable learning-by-doing experience. First, when companies made bids for these military projects, they had to submit tender documents and drawings. These and other contract documents were required to conform to international standards and had to be in English. Filling out bid applications according to international standards was a valuable learning experience for Korean construction companies. Second, Korean contractors learned to convert from one currency to another according to the prevailing exchange rate, as contract amounts for US military projects were expressed in US dollars rather than Korean monetary units. Third, on the job sites, Korean technicians became familiar with modern machines and equipment as these had to be used to implement jobs for the US Forces' projects.

**Table III-2. Projects Awarded to Korean Contractors by US Forces in Korea**

Year	Project Amount (mil. \$)	Share of Total Volume (%)
1962	14.1	12.6
1963	5.4	4.8
1964	15.3	17.0
1965	13.4	15.3

Source : 5 Year's History of Overseas Construction Association of Korea, OCAK, 1982, p. 26

As Table III-2 shows, the contracts awarded to Korean construction companies by the US Forces in the early 1960s amounted to about US \$15 million per year and accounted for approximately 10% of the total construction volume for the Korean construction industry at

that time.

Most of the projects awarded by US Forces stationed in Korea were architectural and civil works (Table III-3).

**Table III-3. Project Type of US Forces' Works (1962)**

	Civil Works	Architecture	Road	Total
Amount (mil. won)	467	1,183	182	1,833
%	25.5	64.5	10.0	100.0

Source: 5 Years' History of Overseas Construction Association of Korea, OCAK, 1982, p.26  
Note: US \$1 = 130 won (1962)

As discussed above, the United States Forces' projects not only helped Korean contractors to earn dollars, but, perhaps more importantly, provided Korean construction companies with opportunities to acquire valuable on-the-job training from American engineers and accumulate work experience for future ventures in the international construction market.

In 1962, the Korean government started a series of very ambitious Five-Year Economic Development Plans, and the construction industry quite naturally developed into a leading industry, as it became involved in the programmes and plans for the urgently needed infrastructure development or improvement and expansion of industrial facilities and complexes.

During this period, Korean construction companies carried out many heavy infrastructure projects, such as highways, multi-purpose dams, land reclamation works, harbours, electric and communication facilities, industry-estate development and housing, etc. (Table III-4) Many of these big projects were financed by international loans.

**Table III-4. Fiscal Budget for Construction (1962-1986)**

Unit: bil. won, current

	Road	Water Resources	Industrial Estate	Sea Port	Water Supply Sewage	Housing	Regional Develop.	National Physical Survey	Constr. Equip.	Constr. Adm. & Others	Total Constr. Budget
Amt.	2,782	1,182	820	99	674	600	203	5	6	177	6,548
%	42.4	18.0	12.5	1.5	10.2	9.1	3.0	0.07	0.07	2.5	100.0

Source: *25 Years' History*, Ministry of Construction, Seoul, 1987, p.63

Note: The share of construction in Korea's fiscal budget during this period was approximately 7%, as the cumulative fiscal budget for the period was 93,229 bil. won.

From the planning stage, internationally financed projects were carefully reviewed by the international agencies. Working with highly qualified professionals at these agencies, Korean contractors had opportunities to improve their capabilities in design, procurement management, and implementation of projects in accordance with international standards. These contractors were also trained to be keen on working schedules, because delays in the completion of projects would lead to larger interest payments.

New skills and capabilities that Korean contractors acquired during this period at home would later enable them to make rapid advances in the international construction market.

## 2. Pioneering Period in Southeast Asia (1965-1972)

Korean construction companies started participating in the overseas market in the mid-1960s. Their pioneer field was Southeast Asia. In 1965, Hyundai became the first Korean construction company to win an overseas projects by winning a \$5.4 million contract for the Pattani-Narathiwa highway in Thailand. Since it was an IBRD loan project, there was a competitive bid, involving 29 construction companies from 16 countries, such as West Germany, Japan, Netherlands, France, Italy, etc.<sup>34</sup> Although Hyundai won the award, it lost a substantial amount of money, approximately 1 million US dollars, on this project mainly because of the company's inexperience in overseas construction work.<sup>35</sup> Despite the loss, the experience gained from this project was very meaningful and educational for Hyundai and

34. *Hyundai 30 Years*, Hyundai Engineering and Construction Co., Seoul, 1977, pp.129-130.

35. Author's private conversation with Lee, Myung Bak, President of Hyundai Corp.

other Korean contractors.

The pioneering activity of Korean construction companies in Southeast Asia was deeply affected by the Vietnam War. In 1965, the United States scaled up its presence in South Vietnam, and became heavily involved in the Vietnam War. As a close military ally of the United States since the Korean War, South Korea dispatched its troops to Vietnam in 1966, in exchange for stronger security guarantees and increased assistance from the United States.

South Korea's decision to fight on the side of South Vietnam strengthened the relationship between these two anti-Communist countries and led to increased economic exchanges. As a result of Korea's involvement in the Vietnam War, Korean contractors earned opportunities to carry out construction projects, mainly military facilities in Vietnam. This also gave Korean contractors additional opportunities to participate in overseas construction markets in other Southeast Asian countries and the Pacific Islands region.

From 1965 to 1973, Korean contractors earned about \$400 million worth of contracts in Southeast Asia and the Pacific Islands region (Table III-1). Most of these construction projects were financed by international finance agencies, generally the IBRD (International Bank for Reconstruction and Development). Most Southeast Asian countries, in fact, restricted foreign contractors' bids to internationally financed projects, reserving self-financed projects for local companies. While earning valuable hard currency from these internationally financed projects in Southeast Asia, Korean construction companies also accumulated valuable overseas construction experience, in a setting quite different from US military installations in Korea.

The successful expansion of Korean contractors' overseas construction activities during this period can be attributed to their past experience with the US Forces stationed in Korea as well as their accumulated technical know-how, management skills, and knowledge of international construction practices.

### 3. Golden Period in the Middle East (1973-1984)

In 1971, the Korean government started withdrawing its troops from South Vietnam. The United States pulled all of its troops out of Vietnam in 1973, and the whole of Vietnam was taken over by the Communist North in 1975.

Korean construction companies had to look for new markets to make full use of their accumulated experience, technology, manpower, and equipment. They found a bonanza in the Middle East. In late 1973, Samhwan Corporation won a highway construction contract from Saudi Arabia,<sup>36</sup> and other Korean companies followed Samhwan's lead and rapidly moved into the Saudi Arabian market. While there was only one Korean company in Saudi Arabia in 1973, there were seven companies in 1974, and by 1981, when the 'Middle East Construction Boom' had reached its peak, the number of Korean construction companies had increased to fifty-one in Saudi Arabia.<sup>37</sup>

By the late 1970s, Korean contractors had become one of the dominant players in the Middle East construction fields. Taking advantage of the construction boom in the Middle East, Korea by 1980 had become the second largest construction contractor in the international market, surpassed only by the United States.

The construction boom in the Middle East was fueled by two major oil price increases in 1973 and 1979. With increased revenues from their oil exports, the oil-rich Middle East countries formulated very ambitious economic development and diversification programmes; through industrialisation, they wished to reduce their sole dependence on oil.<sup>38</sup> To implement their ambitious economic programmes, these countries budgeted to invest more than \$273

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36. *10 Years' History of Overseas Construction Association of Korea*, OCAK, Seoul, 1987, p.17.

37. *Statistics Yearbook of Construction*, Ministry of Construction, Seoul, 1981, p.3.

38. Knauerhase, R., 'The Oil Producing Middle East States', *Current History*, January 1979, p.12. Also see Table IV-3 of this thesis.

billion in construction projects from 1977 to 1984 (Table IV-3).<sup>39</sup> In order to provide basic infrastructure needed for industrialisation on a massive scale, these development projects called for the building of such structures as highways, airports, harbours, powerplants, desalination plants, refineries, etc.

Nevertheless, even with such massive financial resources, the oil-rich Middle East countries had difficulties in carrying out their ambitious economic development plans on their own, because they lacked technical know-how, management skills, and manpower--virtually of all kinds and at all levels.<sup>40</sup> In contrast, Korean construction companies had well-trained manpower, accumulated know-how, and even government support. Their construction experience in Southeast Asia had prepared them for the Middle East market, and they had many young workers who were eager to work in desert conditions abroad for a better future back at home. These workers wanted to overcome their poverty, and believed they had 'a once-in-a-lifetime opportunity' in the Middle East. Korean construction companies also had the Korean government on their side, especially the Ministry of Construction. The government assisted Korean contractors in finance and through diplomatic channels, and, as will be explained in detail later in Chapter V, it enacted a promotion law to encourage their construction activities in the Middle East. Korean contractors, in short, were ready to meet the Middle East countries' construction needs.

Besides the reasons mentioned above, Korean contractors had other advantages over other countries in bidding. Perhaps the biggest of competitive advantages for Korean construction companies was the prevailing low wage rates. The wage levels for Korean workforce were only about a quarter of those in Japan and about 10 percent of those in a country like Sweden.<sup>41</sup> These low wage levels enabled Korean contractors to underbid their

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39. *Overseas Construction White Paper*, Overseas Construction Association of Korea, Seoul, 1984.

40. Birks, J. Stace, and Clive A. Sinclair, 'Towards Planned Migration in the Middle East: An Evaluation of Patterns and Process of Labour Movement', *Bulletin for the British Society of Middle Eastern Studies*, No. 4, 1977, pp.28-32.

41. 'Twenty Things That South Korea Has Going For It', *Institutional Investor*, April 1978, p.116.

foreign rivals by 10 percent or more.<sup>42</sup> Another important advantage was the high productivity of Korean workers.<sup>43</sup> In general, Korean workers were well-educated, alert, and disciplined. The Korean people place a strong emphasis on education, and the Korean literacy rate during this period was more than 90%.<sup>44</sup> A strong desire to live better led to an excellent work ethic. Combined with military training, which is a compulsory duty for all young male Koreans, this work ethic made Korean workers a well-disciplined workforce.

With such disciplined and highly productive workers, Korean construction companies often completed their projects ahead of schedule. For example, while it generally takes 10 days to finish the structure works of each floor, Ssangyong finished this work in 5 days in its famous Raffles City Complex, at 73 storeys high the tallest building in Singapore. With their accumulated technical know-how, well-trained manpower, and efficiently organised management, Ssangyong completed the enormous project 3 months ahead of schedule, and earned a reputation of excellence. Another good example of an outstanding accomplishment by dedicated Korean workers involves a road project awarded to Samhwan in Saudi Arabia. In 1974, the Saudi government unexpectedly asked Samhwan to finish a portion of the awarded road project within 40 days because of an urgent need to meet the Hajj, the important Islamic event. Although that portion of the project was supposed to take 5 months to complete, Samhwan accepted the special request of the Saudi government, and finished the work within 40 days. Samhwan's workers worked 24 hours a day with 3 shifts. At night, they worked under torch lights. King Faisal was so impressed by Samhwan's accomplishment that he awarded another \$6,500 million project to Samhwan under private contract.<sup>45</sup>

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42. Korea's Crucial Link to the Middle East', *Business Week*, 1 August 1977, p.41.

43. Sultan, A., 'South Korea's Middle East Penetration Shows Muscle', *MEED*, 16 July 1976, pp.6-7.

44. Ministry of Education, Seoul, Korea.

45. *Distress, Glory and Lessons: Anecdotes from Overseas Construction*, Overseas Construction Association of Korea, Seoul, October 1991, pp.212-214.

**Table III - 5. Korean Contractors' Annual Contract Volume: Domestic vs. Overseas**

Unit: \$ million, %

Year	Domestic		Overseas		Total
	Amt.	Share	Amt.	Share	
1973	608.9	77.7	174.3	22.3	783.2
1974	1,008.1	79.5	260.6	20.5	1,268.7
1975	1,034.7	55.9	814.8	44.1	1,849.5
1976	1,529.0	37.9	2,501.7	62.1	4,030.7
1977	2,618.8	42.7	3,516.2	57.3	6,135.0
1978	7,709.3	48.6	8,145.0	51.4	15,854.3
1979	5,962.9	48.4	6,351.3	51.6	12,314.2
1980	4,505.0	35.3	8,259.4	64.7	12,764.4
1981	5,884.7	30.0	13,681.0	70.0	19,565.7
1982	6,908.0	34.0	13,383.0	66.0	20,291.0
1983	7,094.2	40.4	10,444.0	59.6	17,538.2
1984	7,878.9	54.8	6,506.4	45.2	14,385.3

Source : The Construction Association of Korea

More than anything, a strong desire to live better drove young Korean workers to accomplish these remarkable feats. In the past, Koreans had suffered from chronic poverty and had been devastated by the Korean War, and these young workers were now anxious to work hard for a better future. Nearly all of them volunteered to work overtime, even sacrificing holidays. During this period, Koreans were called the worst 'workaholics' in the world, working 50.7 hours per week compared with the US average of 39.4 hours per week.<sup>46</sup>

Such highly motivated workers helped to make Korea become the second largest contractor in the world construction field by the early 1980s. Overall, Korean construction companies earned \$67,452 million worth of contracts in the Middle East from 1973 to 1984

<sup>46</sup> Rowan, R., 'There's Also Some Good News About South Korea', *Fortune*, September 1977, p.171.



(Table III-1). From 1976 to 1983, Korea's overseas contract volumes were higher than domestic contract volumes (Table III-5); from 1980 to 1982, when the Middle East Construction Boom reached its peak, the overseas contract volumes were twice as much as domestic volumes.

So far, this chapter has reviewed the development of the Korean overseas construction industry. As mentioned above, the Korean overseas construction industry had a record of explosive growth, with contract volumes increasing from \$5.4 million in 1965 to \$13,681 million in 1981. This giant leap did not happen overnight or simply by luck. Although there were some lucky breaks, the most important factor in the rapid development of the Korean overseas construction industry was the Korean people's determined efforts to open up a better future, motivated by their bitter past experiences with war and poverty.

Building upon this general historical overview of the Korean overseas construction industry, Chapter IV will carefully examine the overseas activities of Korean contractors and review in detail the records of their accomplishments.

## **Chapter IV. An Examination of Korean Contractors' Records Overseas**

As a first step toward understanding the rise of the Korean overseas construction industry, Chapter III looked at its historical origins, and traced its development since 1945. Chapter IV will build upon this historical overview, and examine the records of Korean contractors' accomplishments overseas.

This chapter will provide a detailed analysis of the Korean contractors' performance by the following categories: (i) contract volumes awarded to Korean construction companies by region and year, (ii) project type, (iii) project size, (iv) project completion rate, (v) hard currency earnings, and (vi) usage of manpower, materials, and equipment, both transferred from Korea and obtained locally. Combined with a qualitative account in Chapter V of the firm strategies and government policies that helped to propel Korean contractors into world prominence, this detailed analysis forms the basis for Chapter VI, where the impact of the Korean overseas construction industry on the Korean economy will be examined.

### **1. Contract Volumes by Region and Country**

In order to have a 'cross-sectional' view of Korean construction companies' activities overseas, it is very important, perhaps most important, to examine the annual contract volume by region, for it gives indications of how Korean contractors responded to changing conditions in the international construction market. According to Table III-1, Korean contractors' activities overseas during the 1965-1984 period had a clear dividing point, before and after 1973.

The cumulative contract volume from 1965 to 1972 was only about \$ 247 million. Of this amount, 73.8% was earned in Southeast Asia, and 25.5% was in the Pacific Islands region. Together, these two regions made up 99.3% of the total contract volume, and one project in South America in 1971 accounted for the remaining 0.7%. In short, Korean contractors' overseas activities before 1973 were limited to Southeast Asia and the Pacific Islands region.

After 1973, however, contract volumes by region changed drastically, as Korean construction companies rushed out to the Middle Eastern market. In 1973, Southeast Asia was still the largest market for Korean contractors, accounting for 67.8% of the total contract volume that year; in comparison, the Middle East's share was only 13.8%. By 1975, however, the balance had shifted completely to the other side, as the Middle East now accounted for 92.2% of the total amount. Since then, the Middle East has been the most lucrative market for the Korean overseas construction industry.

In fact, the Middle East accounted for more than 90% of the total annual contract volume till 1982. The largest yearly volume from the Middle Eastern countries was reached in 1981, at about 12.6 billion dollars in 1981. The volume for 1982 was also as high as 11.4 billion dollars. These two years marked the pinnacle of Korean contractors' achievements overseas, and the total yearly volume, domestic and overseas combined, exceeded \$13 billion for each of these years. After 1983, the awarded volume from the Middle East started falling drastically because of a large drop in oil revenues for these oil-exporting countries.<sup>47</sup> Since 1982, the Southeast Asian region has again become more important for the Korean overseas construction industry.

From the mid-1970s to early 1980s, in fact, the Middle Eastern market was so lucrative for overseas construction work that almost all major Korean contractors rushed out to the Middle Eastern countries, and began to neglect the Southeast Asian region, previously the most

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<sup>47</sup> Strassmann, W.P., and J. Wells(eds.), *The Global Construction Industry*, Unwin Hyman,1988, p. 4

important market for the Korean overseas construction industry. Korean contractors consequently became so dependent on the Middle Eastern market that once the oil price started to fall, their business began to suffer greatly. Korean contractors did once again start paying attention to the Southeast Asian market, but it did not help very much. As Table III-1 shows, when the oil price started to fall in 1982, the awarded volume from the Middle East started to drop. Korean contractors turned their attention to Southeast Asia, and did well in 1982 and reasonably well in 1983. But, that did not last long; in 1984, the awarded volume from Southeast Asia dropped to the level of 1980.

By 1984, the Korean contractors' cumulative contract volume over the past two decades had reached 74.3 billion dollars. By regional share, the awarded volume from the Middle East was the highest, at 67.4 billion dollars or 90.7% of the total amount. The next was Southeast Asia, at 7.9% of the total. Accounting for 98.6% of the total awarded amount, these two regions were the primary markets for Korean contractors. (Table III-1)

#### **A. The Middle East**

Now, it may be helpful to study the details of awarded contract volumes by looking at each individual selected country by region. Since the Middle East was the most important region for Korean contractors, this region will be examined first.

Toward the end of 1973, Korea won its first construction project in the Middle East. As mentioned in Chapter III, it was a 174 km highway project in Saudi Arabia, awarded to Samhwan Corporation for an amount of 24 million dollars (Chapter III, Section 3). Following this lead, many Korean construction companies went out to Saudi Arabia and expanded their activities to other Middle Eastern countries: in 1974 to Jordan; 1975 to Iran, U.A.E., Kuwait and Bahrain; 1976 to Qatar and Egypt; 1977 to Iraq, Sudan and Libya; 1978 to Oman and Yemen; 1980 to Mauritania; and 1983 to Lebanon.<sup>48</sup>

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<sup>48</sup> *10 Years' History of Overseas Construction Association of Korea*, OCAK, Seoul, 1987, pp.21-22.

**Table IV - 1. Earned Contracts by Country: The Middle East**

Unit : million \$

Year	1965 1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	Total	%
Bahrain	160.0	13.3	99.0	68.5	10.8	7.1	23.1	9.1	33.5	68.7	493.1	0.7
Egypt		10.0	4.5	31.1	17.5	107.1	21.3	65.8	2.5	33.0	292.8	0.4
Iran	61.4	7.6	326.5	281.9	-12.4	-63.1		18.1	160.5	299.9	1,080.4	1.6
Iraq			30.4	43.7	8.1	431.1	1,946.3	1,496.6	35.1	981.5	4,972.8	7.4
Jordan	20.2	37.8	2.5	79.2	83.7	18.3	82.2	98.8	80.7	28.4	538.8	0.8
Kuwait	0.8	205.0	257.5	528.1	461.6	378.8	99.3	89.4	130.4	214.2	2,365.5	3.5
Lebanon									1.4		1.4	
Libya			46.4	169.7	175.0	1,366.1	2,468.9	1,061.2	3,953.7	782.2	10,023.2	14.9
Mauritania						11.6	3.6			1.2	16.4	
Oman						52.0		11.1	5.5		68.9	0.1
Qatar		8.4	48.5	88.9	161.6	33.2	85.4	26.2	4.6	37.5	494.3	0.7
Saudi	605.8	2,147.0	2,410.6	6,404.1	4,741.2	5,238.7	7,762.9	8,347.2	4,466.9	3,185.9	45,310.4	67.2
Sudan			20.6	88.3	2.3		9.7	3.6	3.2	14.7	141.9	0.2
UAE	15.9		141.6	112.9	230.1	227.0	134.1	36.4	78.3	212.7	1,189	1.8
Yemen				85.7	78.9	23.1	37.4	128.3	67.3	50.6	471.4	0.7
Total	864.1	2,429.1	3,387.1	7,982.4	5,958.4	7,831.0	12,674.2	11,391.8	9,023.2	5,910.5	67,452.5	100.0

Source : Annual Overseas Construction Data Books, Ministry of Construction

Korean contractors earned 67,447.8 million dollars' worth of contracts in the Middle Eastern region by 1984. The total contract volume awarded by Saudi Arabia was 45,310.4 million dollars, accounting for 61% of the total awarded amount and 67.2% of the total regional volume. In the order of decreasing contract volume, the next in line were Libya with 10,023.2 million dollars (14.9%), Iraq with 4,972.8 million dollars (7.4%), and Kuwait with 2,365.5 million dollars (3.5%), etc. (Table IV-1)

In 1976, the Korean contract volume in Saudi Arabia was approximately 2,147 million dollars. It was a huge increase from the previous year's volume of 505 million dollars, and it amounted to 85.8% of the total awarded volume for 1976. One of the main reasons for such a

big increase was the Korean government's active promotion policy, especially the Overseas Construction Promotion Act and other financial assistance programmes which came into effect on 1 April 1976. Such government support, combined with a large demand for construction work in Saudi Arabia and other Middle Eastern countries, led to a dramatic increase in the number of contractors.

Between 1974 and 1976, the number of contractors increased from 7 to 38. The Korean contract volume in Saudi Arabia increased to 6,404 million dollars in 1978 from the previous year's volume of 2,410 million dollars. Then, the volumes dropped to 4,741 million and 5,239 million dollars respectively for the next two years, before rising again in 1981 to 7,762.9 million dollars and reaching the highest annual volume to date of 8,347 million dollars in 1982. The contract volume decreased sharply in 1983 to approximately 4,467 million dollars. As mentioned earlier, the drastic decreases in volume after 1983 were mainly caused by the decline in the oil price.

Analysing awarded contract volumes by country in the Middle Eastern region reveals an interesting fact. Before 1983, even when the absolute contract volume awarded by Saudi Arabia increased, Saudi Arabia's *relative* importance for Korean contractors kept decreasing, as measured by Saudi Arabia's share of total contract volumes originating from the Middle East. It suggests that while Saudi Arabia continued to be the most important market for Korean overseas construction companies, Korean contractors continuously expanded their sales activities to other Middle Eastern countries.

Table IV-1 also shows that before 1979, Saudi Arabia, Kuwait, and Iran, in that order, were the three biggest construction markets for Korean contractors. There were some changes in 1979, and since 1980, Libya and Iraq have replaced Kuwait and Iran as the second and third most important markets for the Korean overseas construction industry.

Since 1980, Kuwait has adopted a strong preferential policy in favour of native contractors. Accordingly, Korean construction companies faced disadvantages in earning

contracts, and many of them lost money in carrying out projects. Since 1981, Korean contractors have become very cautious to bid new projects in Kuwait.

Iran, on the other hand, had an Islamic revolution in 1979, followed by a war with Iraq which started in 1980 (Table IV-2). From 1979 to 1981, there was not a single new project for bidding, and many of the projects underway in Iran had to be stopped. As the contracts were cancelled, the contract volume awarded to Korean contractors showed minus signs for 1979 and 1980 and zero for 1981 (Table IV -1). After 1982, however, the Iranian economy started to improve, and some of the unfinished projects were revived.

**Table IV-2. History of the Price of Crude Oil**

Unit : \$/bbl

Year	1970	1971	1972	Jan 1973	Oct 1973	Jan 1974	Jan 1979	Oct 1979	Sept 1980	1981	1982	Feb 1983	1984	1985	1986
Price	1.80	2.20	2.50	2.59	5.12	11.65	13.33	14.54	34	36.68	34	29	28.50	27.80	16.50
Events					Arab-Israel War			Iranian Revolution							
										Iran-Iraq War					

Source: Future Paths of World Petroleum, Yu Chul Park, Oxford, Dec. 1983, p. 114, from various issues of Petroleum Economist up to 1987.

In 1982, Iran made new long-range economic development plans.<sup>49</sup> The prospects for the construction market once again seemed very bright, and it could be easily speculated that Iran would have a good potential of growth with the end of the Iran-Iraq war, partly because of their strong desire for reconstruction and economic development. Iran is a country with a large land and abundant natural resources, and has no foreign debt, according to the Islamic religious principle not to borrow from others. Once politically stabilised, she can become a huge market for construction. Also, many international financial institutions are willing to make loans available to Iran for her reconstruction projects.

As for Libya, Samsung became the first Korean construction company to win a project from its government in 1977. Since then, the annual contract volume has increased very

<sup>49</sup>Information collected from the Korean Embassy in Tehran, Iran.

rapidly, jumping to 1,366 million dollars in 1980, increasing to 2,469 million dollars in 1981, and reaching 3,954 million dollars in 1983. After 1984, the contract volume dropped drastically, just as in the case of any other Middle Eastern country due to the oil price fall (Table IV-2).

Since the big oil price fall from early 1983 (Table IV-2), most of the Middle Eastern countries reduced their construction orders (Table IV-3). Even so, Korea earned a big raise in contract volume from Libya in 1983. This increase resulted from a single project, the Great Man-Made River Project. In November, 1983, after lengthy negotiations, Dong Ah Construction Company won this huge construction work, which is known as the world's largest single civil engineering project. This project is a part of Libya's Green Revolution and is designed to pump up underground water in the Sahara Desert and then transport it via 1,900

**Table IV-3. Oil Revenue vs. Construction Contracts**

		Unit : Million \$							
		1977	1978	1979	1980	1981	1982	1983	1984
Saudi Arabia	Oil Rev.	42,125	37,843	57,513	102,261	113,404	76,247	47,813	46,844
	Const.	22,153	12,913	12,946	16,636	15,439	23,140	12,926	8,346
Kuwait	Oil Rev.	8,778	9,424	16,779	17,676	13,793	7,585	8,120	8,978
	Const.	1,874	1,309	1,266	2,659	3,279	4,691	3,310	1,880
U.A.E.	Oil Rev.	9,259	8,661	12,862	19,390	18,761	15,893	12,942	12,342
	Const.	2,757	967	963	1,328	1,489	1,813	1,308	900
Iran	Oil Rev.	23,599	21,684	19,186	13,286	12,053	19,924	19,924	12,944
	Const.	9,886	5,397	425	31	659	455	411	719
Iraq	Oil Rev.	9,505	10,850	21,289	26,136	10,388	10,100	9,650	11,242
	Const.	1,975	3,462	5,117	10,250	19,226	3,137	271	2,888
Libya	Oil Rev.	9,248	9,296	14,912	2,452	15,003	13,944	10,080	11,131
	Const.	2,506	2,934	1,951	2,967	14,511	1,235	5,714	470
Algeria	Oil Rev.	5,562	5,856	8,746	12,647	12,985	11,099	9,700	9,700
	Const.	2,860	2,138	1,998	657	976	5,615	4,155	1,973
Total	Oil Rev.	108,076	103,614	151,287	193,848	196,387	154,101	118,229	113,181
	Const.	44,011	29,116	24,666	34,528	55,579	40,086	28,095	17,176

Source: IMF, International Financial Statics and Middle East Economic Digest



km-long concrete pipelines to supply water needed for irrigation as well as for industrial and municipal purposes. The contract amount was 3,574.9 million dollars.

Korea also started its construction projects in Iraq in 1977. The annual contract volume grew rapidly, to 1,946 million dollars in 1981 and 1,497 million dollars in 1982. Since 1983, Korean construction volume in Iraq decreased rapidly, once again because of the falling oil price and also due to decreasing financial aid to Iraq from her oil-rich neighbours.<sup>50</sup>

It seems that practically all the oil-producing Middle Eastern countries shared a common fate, as their economies were extremely dependent on revenues from oil exports (Table IV-3). Although it may be reasonable to observe that Korean contractors were victimised by the oil price fall, it must be noted that the decline in the oil price had an opposite effect for the Korean economy as a whole, as Korea could save a large amount of expenditure on oil imports-- the flip side of the situation in the mid-1970s.

## **B. Southeast Asia**

As mentioned in Chapter III, Southeast Asia was the first overseas market for Korean contractors, starting with Hyundai's winning of a highway project in Thailand in 1965. By 1984, Korean contractors had earned 5,826 million dollars' worth of contracts from Southeast Asian countries. This amount was 7.8% of the cumulative contract volume earned by Korean contractors, and amounted to 8.6% of the Middle East's share. (Table IV-4).

Although Southeast Asia and the Pacific Islands region were practically the only overseas markets for Korean construction companies before 1972, their share in the Korean contractors' total earned volume dropped drastically after 1973, as Korean contractors rushed out to their new golden market, the Middle East. The contract volume from Southeast Asia fell precipitously to 42.5 million dollars in 1975, and accounted for only 5.2% of the total contract volume for that year.

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<sup>50</sup>*Construction Attache's Annual Report*, Korean Embassy, Baghdad, Iraq, 1983.

Many Korean contractors who rushed to the Middle East later came to regret their decision to neglect the Southeast Asian market instead of continuing their activities at a certain level in this region, even though it had become small compared with the Middle Eastern market. When the Middle East construction boom subsided in the early 1980s, Korean contractors found themselves at a disadvantage in Southeast Asia, compared with their competitors from such countries as Japan. The Southeast Asian market became all the more important in the mid-1980s, as countries like Thailand and Malaysia launched their ambitious economic development plans. Korean construction companies did do well in 1982, with the contract volume from Southeast Asia rising to 1,920.5 million dollars, representing 14.2% of the total volume for that year. In 1983 and 1984, however, the volumes from this region dropped to the 1980 and 1981 levels; for these two years, Southeast Asia's share of the total volume increased only because the Middle East's volume fell more drastically.

As Table IV-4 shows, Korean contractors by 1984 had earned a cumulative sum of 1,959 million dollars from Malaysia (33.9% of the regional total), 1,536 million dollars from Singapore (26.4%), 813 million dollars from Indonesia (13.9%), and 533 million dollars from the Philippines (9.2%). Most works in Malaysia involved oil refinery plants and road projects; in Singapore, high-rise buildings and land reclamation projects; and in Indonesia and Philippines, highway projects.

The most representatively successful project for Korean contractors in the Southeast Asian region was the Raffles City Complex Building in Singapore. It is a tall and beautiful building, with a total of 76 floors, 3 underground and 73 above-ground. Today, the Raffles City Complex Building is a symbol of Singapore. SsangYong contracted this project as a turn-key project in 1982, and the cost of construction was about 400 million dollars.

**Table IV-4. Earned Contracts by Country: Asia**

Unit : million \$

Year	1965 -1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	Total	%
Australia	0.1							77.9	5.8	25.2	109.1	1.9
Bangladesh	6.4	1.0	4.5	13.7	73.0	1.5	53.1	-0.8		40.4	191.9	3.3
Brunei	20.8	0.6	0.8	0.1			4.7	16.5	21.8	32.6	97.7	1.7
Burma							76.0			1.4	77.3	1.3
Hong Kong						14.1	9.6	17.2	49.6	26.1	116.5	2.0
Indonesia	86.3	34.0	15.3	11.4	33.0	78.8	27.9	338.2	102.7	85.3	813.0	13.9
Japan	0.6				0.3	0.6					1.6	
Malaysia	98.1		13.2	12.0	195.7	194.3	267.7	402.0	578.6	197.3	1,959.1	33.6
Nepal	9.5		62.7					35.1	2.1	12.0	121.4	2.1
P.N.G*	21.7										21.7	0.4
Philippines	84.6		22.8	53.8	63.7	105.2	41.8	106.3	16.3	39.0	533.4	9.2
Singapore	2.8					11.5	301.1	928.1	184.0	108.7	1,536.2	26.4
Sri Lanka					12.3		40.1		26.6		78.9	1.3
Taiwan	16.2										16.2	0.3
Thailand	44.8					3.0	16.2		-8.2		55.8	1.0
Vietnam	96.1										96.1	1.6
Total	487.9	34.6	119.3	91.0	378.0	409.0	838.2	1,920.5	979.2	568.1	5,825.9	100

Source: Annual Overseas Construction Data Books, Ministry of Construction

\*P.N.G: Papua New Guinea

Technically, there were many difficulties. The site was near the ocean, and as the building was tall and enormously heavy, a good and strong foundation was needed. The total space above the ground is 300,746 m<sup>2</sup>. The structures, outside and interior arrangements and/or decorations, were enormous tasks. This project had 22,000 different sub-projects and more than 70 sub-contractors were involved.<sup>51</sup>

<sup>51</sup> Ssangyong 50 Years' History, Ssangyong Business Group, Seoul, 1989, pp.350-355.

By completing this project, Ssang Yong showed Korean contractors' outstanding technical capability, diligence, and devotion to work. Lee Kuan Yew, then Prime Minister of Singapore, even remarked during his Singapore's Independence Ceremony Speech, "Nobody believes that we are equal to Korean workers. I don't either. They are tough. You have seen them build Raffles City." <sup>52</sup>

### **C. Pacific Islands, Africa, South America**

In the Pacific Islands region, even though there were not many construction works, Korean contractors continually got involved in projects there. Most of their works involved the United States' military installations, such as airports and naval bases. By 1984, the total earned contracts in this region had amounted 193 million dollars, representing about 0.2% of the total (Table IV-5).

In Africa, most Korean contractors' jobs were in Nigeria, about 45.6% of the regional total. In the early 1980s, before the oil price fall, Nigeria, with its oil exports, had funds to improve its infrastructure. By 1984, the cumulative volume in Africa had amounted to 707.8 million dollars, about 0.9% of the total contract volume (Table IV-5).

As mentioned in Chapter II, South America was not an appealing market for international contractors because of their financial crisis in early 1980s.<sup>53</sup> Among Korean construction companies, Daewoo Corporation kept its manpower and activities in Ecuador. Their projects were mainly in road construction and the scale was small. In 1984, Daewoo had to cancel a road contract because of the Ecuadorian government's financial problems. As a result, the contract volume for that year shows the minus sign (Table IV-5).

## **2. Contracts by Project Type**

Analysing the projects by type will help us to visualise what kind of works Korean

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<sup>52</sup> H.E. Lee, 'Kuan Yew's Speech on Singapore's 26th Independence Ceremony'

<sup>53</sup> Strassmann, W.P., and J. Wells(eds.), *The Global Construction Industry*, Unwin Hyman, 1988, p.4.

**Table IV-5. Earned Contracts by Country: Pacific Islands Region, Africa, South America**

Unit : million \$

year	1965 -1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	Total	%
Guam	91.8	12.2	5.4	7.9	1.0	4.5	0.2		6.4	0.1	129.5	67.1
Pacific T.T.	23.1				13.3		2.1	4.0	2.0		44.7	23.1
Samoa	5.9	4.9	4.2	2.6							17.7	9.1
USA	1.2									0.1	1.3	0.7
Total	122.1	17.1	9.6	10.5	14.3	4.5	2.3	4.0	8.4	0.2	193.2	100

Cameroon				9.1	0.1	14.8				6.4	30.4	4.3
Gabon		6.7		2.5	0.1						9.4	1.3
Liberia										16.2	16.2	2.3
Malawi	6.9			12.1	0.4						19.5	2.7
Nigeria	0.1		0.1				166.3		130.0	26.1	322.7	45.6
S. Africa	8.1			1.5							9.6	1.4
Zaire									300.0		300.0	42.4
Total	15.1	6.7	0.1	25.2	0.6	14.8	166.3		430.0	48.7	707.0	100

Antigua								62.4			62.4	61.3
Bahamas	2.4										2.4	2.4
Ecuador	4.3	14.1	0.1	35.9				4.6	2.9	-25.1	37.0	36.3
Total	6.7	13.1	0.1	35.9				67.0	2.9	-25.1	101.8	100

Source : Annual Overseas Construction Data Books, Ministry of Construction

contractors implemented, labour-intensive or more technology-oriented.

Of all Korean overseas construction projects from 1965 to 1975, 74.2% were in civil works; 17.5%, in architecture; 6.5% in machinery; 1.7%, electricity and communication; and only 0.1%, in consultant work (Table IV-6). This proves that Korean construction work overseas in this early stage of industry development was mainly in labour-intensive projects. But, over the next 5 years, the project-type shares gradually changed. The share of civil works

dropped to 44.7% in 1977 and to 26.4% in 1979. In contrast, the share of architectural works increased, to 29.1% in 1977 and to 46.9% in 1979.

**Table IV-6. Contracts by Project Type**

Unit : million dollars

Types		Total	Civil Works				Archi- tecture	Machinery	Electricity Communi- cations	Consultant
			Subtotal	Roads	Seaports	Others				
Total	projNo.	2,291	763	235	62	466	1,029	268	135	16
	Amt.	74,280	27,900	6,474	4,186	17,241	35,351	7,847	2,913	270
1965- 1975	projNo.	346	119	51	17	51	158	32	20	17
	Amt.	1,496	1,109	443	480	186	262	98	25	2
1976	projNo.	97	20	5	7	8	50	14	6	7
	Amt.	2,502	1,448	94	1,325	9	590	381	66	17
1977	projNo.	169	51	11	10	30	74	24	11	9
	Amt.	3,516	1,571	254	727	590	1,022	677	219	27
1978	projNo.	235	72	16	6	50	120	20	15	8
	Amt.	8,145	2,019	286	313	1,420	4,978	469	621	57
1979	projNo.	201	54	12	5	37	113	17	10	7
	Amt.	6,351	1,679	210	170	1,300	2,979	1,219	470	4
1980	projNo.	238	107	41	6	60	94	24	8	5
	Amt.	8,259	3,739	1,088	496	2,156	3,852	392	271	5
1981	projNo.	270	106	29	4	73	115	23	11	15
	Amt.	13,613	5,023	2,317	129	2,577	7,608	692	295	63
1982	projNo.	262	102	29	6	67	92	36	25	7
	Amt.	13,383	4,876	614	614	3,648	6,238	1,677	580	12
1983	projNo.	236	67	15	1	51	106	39	16	8
	Amt.	10,444	5,199	362	54	4,783	4,150	847	182	66
1984	projNo.	237	65	26	-	39	107	39	13	13
	Amt.	6,502	1,235	669	16	550	3,670	1,395	184	17

Source : Annual Overseas Construction Data Books, Ministry of Construction

In the early and mid-1970s, the major markets for Korean construction companies--

namely, Saudi Arabia, Iran, Indonesia, Malaysia, the Philippines, and Guam-- issued most projects in basic infrastructure works. These countries needed basic infrastructure for their economic development. As their infrastructure needs became reasonably filled, they began to demand more skilled works in architecture.

In the 1980s, Libya and Iraq started inviting foreign contractors to bid for many public works, as they sought to lay the foundation for their industrialisation drive. Orders from these two developing countries made the civil works' portion increase again (Table IV-6). In 1983, the share of civil works rose to 49.8%, mainly due to the Great Man-Made River project of Libya, which cost about 3.6 billion dollars.

Recently, the characteristics of construction works in the Middle East have changed quite substantially, leaning toward more technology-oriented projects, such as plant installation, electric works and communication projects, etc. Korean contractors have been facing some difficulties in winning bids because of these changes, as they lack the necessary technical skills for these advanced, technology-oriented projects.<sup>54</sup>

From 1965 to 1984, the category with the highest number of projects was architecture with 1,029 orders; the next was civil works with 763; then, machinery with 268 projects, and electric works and communication with 135. By amount, architectural works brought in 35.4 billion dollars; civil works, 27.9 billion dollars; machinery, 7.8 billion dollars; electricity and communication, 2.9 billion dollars; and consultant work, only 0.4 billion dollars.

It can be concluded that most of Korean overseas projects were in labour-intensive categories rather than technology-intensive works.

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<sup>54</sup> Knauerhase, R., 'The Oil Producing Middle East States, *Current History*, January 1979, p.11.

### 3. Contracts by Project Size.

Analysing the projects by size can be another way to examine the Korean contractors' initial capabilities and subsequent improvements, because bigger jobs usually go to bigger and more capable contractors.

**Table IV-7. Projects by Contract Size**

Unit : million \$, %

Project	Size	Total	Under 10	10-30	30-50	50-100	above 100
Total	Proj.No.	2,291	1,283	497	191	176	144
	Amt.	74,280	5,907	10,129	7,787	12,448	38,009
1965-1975	Proj.No.	346	322	15	4	3	2
	Amt.	1,496	565	245	146	199	341
1976	Proj.No.	97	73	14	3	2	5
	Amt.	2,502	200	241	121	107	1,833
1977	Proj.No.	169	111	28	10	12	8
	Amt.	3,516	398	498	359	763	1,833
1978	Proj.No.	235	125	56	20	19	15
	Amt.	8,145	432	1,082	733	1,197	4,701
1979	Proj.No.	201	114	42	18	13	14
	Amt.	6,351	518	822	708	1,038	3,265
1980	Proj.No.	238	86	66	38	31	17
	amt.	8,259	549	1,217	1,447	2,202	2,844
1981	Proj.No.	270	88	72	43	39	28
	Amt.	13,681	592	1,599	1,906	3,023	6,561
1982	Proj.No.	262	88	86	27	32	29
	Amt.	13,383	666	2,020	1,194	2,208	7,295
1983	Proj.No.	236	145	48	15	14	14
	Amt.	10,444	1,188	1,120	587	1,014	6,535
1984	Proj.No.	237	131	70	13	11	12
	Amt.	6,502	799	1,285	586	696	3,136

Source : Annual Overseas Construction Data Books, Ministry of Construction

Until 1975, that is, during the early stage of Korean contractors' involvement in



Southeast Asia and the Middle East, fully 93%, or 322, of the total number of projects were under 10 million dollars, and the average project size was only about 4.3 million dollars. Since then, as Korean contractors became heavily involved in many Middle East projects, the project size grew bigger. The number of projects under 10 million dollars decreased to 65.7% of the total in 1977, and declined again to 56.7% in 1979 and 32.6% in 1981. Since 1983, however, the percentages rose up again, to 61.4% in 1983 and to 55.3% in 1984 (Table IV-7).

As the number of projects under 10 million dollars decreased, the number of medium-size projects, in the \$10-50 million range, and large-size projects above 50 million dollars increased. Until 1975, the share of medium-size projects was only 5.5%, but, increased to 42.6% by 1981; large-size projects accounted for only 1.5% of the total in 1975, but rose to 24.8% by 1981.

The average project size until 1975 was only about 4.3 million dollars, but grew to 35 million dollars in 1978, and to about 51 million dollars in 1981. Then, the average volume per project started to decrease, to \$44 million 1983 and \$27.4 million in 1984, as the number of small volume projects increased again.

Practically all of these bigger projects came from the Middle Eastern countries. As mentioned earlier, these countries issued these massive infrastructure construction projects as part of their ambitious economic and industrial development plans.

As analysed above, such trends changed around 1983. In 1983, projects under 10 million dollars increased to 145 (61.4%), compared with 88 in 1982, while projects above 10 million dollars decreased to 91 from 174 in 1982. The drop in the number of large projects was caused primarily by the Middle Eastern countries' austerity policy following the decline of the oil price. Some of these Middle Eastern countries also adopted a policy of dividing big projects into smaller ones to favour local contractors in the bidding. This is another reason why the number of small projects increased after 1983.

#### 4. Performance of Korean Contractors Overseas

By the end of 1984, Korean overseas' total earned contracts were 2,291 projects and amounted to 74,280 million dollars. In order to assess the performance of Korean construction companies, it would be very important to see how the Korean contractors carried out their responsibilities and how much profits they earned for their efforts. This section looks at the completion rate and other performance measures of Korean contractors, and examines how much of their earnings reached Korea.

**Table IV-8. Project Completion Trends**

Unit : million \$

	Contract Amt.		Project Completion		Unfinished Amt.
	Total Cont.	Yr. Cont.	Total Comp.	Yr. Comp.	
1973	421	174			
1974	681	261	13		668
1975	1,496	815	292	279	1,204
1976	3,990	2,502	1,028	736	2,970
1977	7,514	3,516	2,798	1,770	4,718
1978	15,669	8,145	6,495	3,697	9,164
1979	22,010	6,351	10,711	4,216	11,299
1980	30,269	8,259	16,039	5,328	14,230
1981	43,950	13,681	24,448	8,409	19,502
1982	57,338	13,383	33,911	9,463	23,422
1983	67,777	10,444	43,292	9,381	24,485
1984	74,280	6,503	52,349	9,057	21,931

Source : Annual Overseas Construction Data Books, Ministry of Construction

##### A. Project Completion

As the overseas contract volume increased greatly from 1976, the volume of completed works also increased rapidly from 1977, starting with a 40% jump between 1976 and 1977 (Table IV-8). The yearly contract volume continuously increased to 1981, then started to drop;

whereas the annual volume of completed works started falling in 1982. That is, the drop in the volume of completed projects followed the decline in contract volume with a one-year lag.

The ratio of completed projects to total contract volume increased steadily every year. From the low of 2% in 1974, it rose to 19.5% in 1975, 48.7% in 1979, 55.6% in 1981, and eventually reached 70.5% in 1984. This record is a good indication that Korean contractors worked hard and effectively to complete their jobs.

## **B. Hard Currency Earnings**

For the Korean economy as a whole, earning valuable hard currency from overseas may well have been the greatest contribution that the Korean construction industry made, as it not only protected the Korean won against depreciation but also stimulated domestic demand. Hard currency earnings from overseas construction are composed of wages transmitted to Korea by Korean workers overseas, salaries for the staff managing overseas projects at their headquarters in Korea, payments to exporters of materials and equipment for construction projects, various insurance coverages, transportation expenses, overhead costs in Korea for the projects plus the companies' profits.

According to KCI's (Korean Consultant Institute) study of 1082 projects completed by Korean contractors, hard currency earnings, on average, consisted of mostly of wages and salaries, which made up 52% of the total. Exported equipment accounted for 3%; exported materials, 12%; profits, 7%; and insurance coverage, overhead costs in Korea, and other miscellaneous expenses made up the remaining 26%.

Until 1977, the annual hard currency earnings from overseas construction was under 1,000 million dollars. In 1978, it increased to 1,730 million dollars; in 1980, to \$1,883 million; and in 1982, to \$2,766 million (Table IV-9). In 1983 the earnings started to decrease, apparently as a result of a decline in contract volume in 1982. The earnings decreased to 2,169 million dollars in 1983 and 1,999 million dollars in 1984.

**Table IV-9. Hard Currency Earnings**

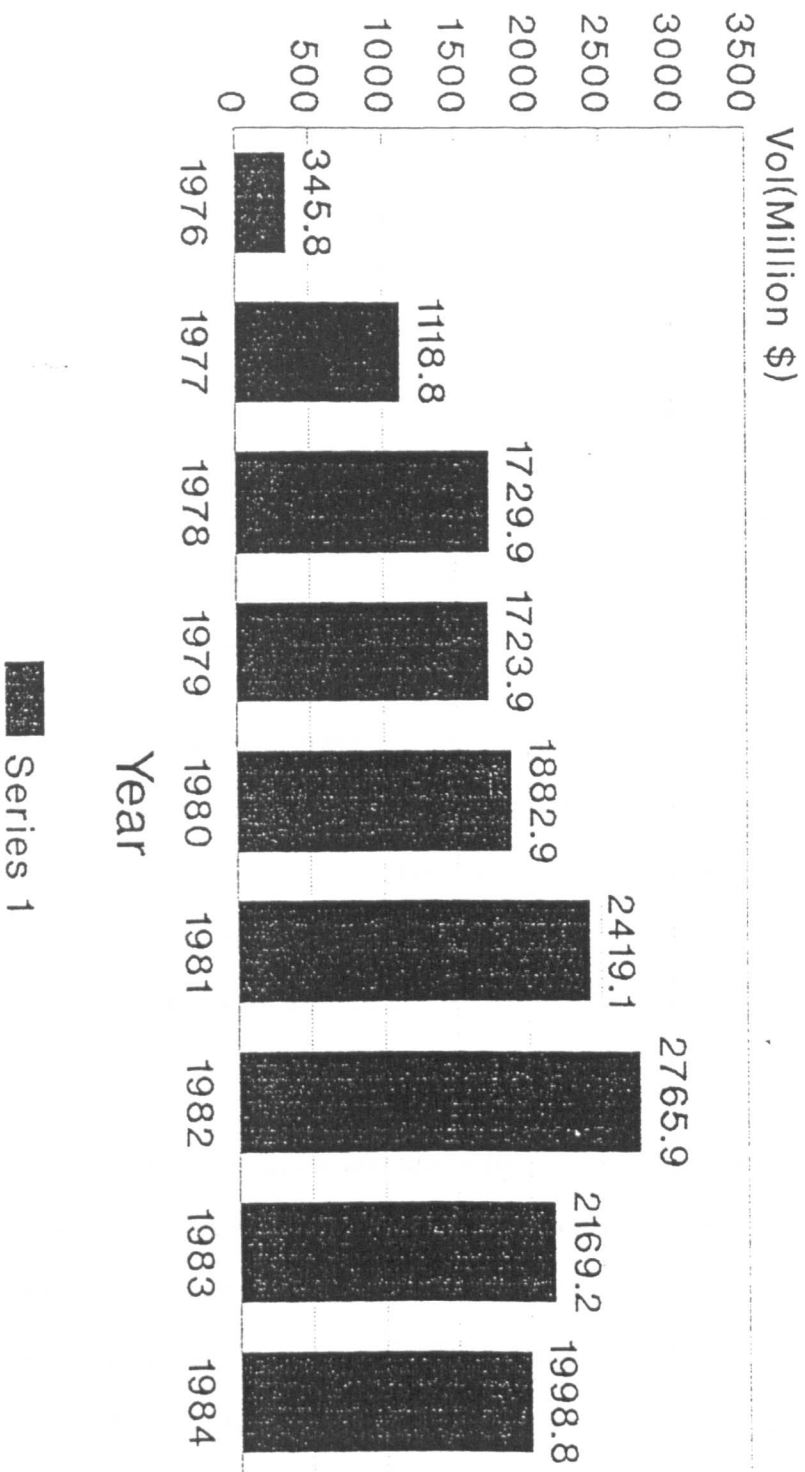
Unit : million \$

Region	Middle East	Southeast Asia	Pacific Ocean	South America	Africa	Total
1965-1975	11.1	88.8	12.9	1.9	1.0	115.7
1976	321.0	22.5			2.3	345.8
1977	1,087.2	23.7	1.0	3.1	3.8	1,118.8
1978	1,721.8	1.9		1.2	5.0	1,729.9
1979	1,694.9	16.1	1.5	4.9	6.5	1,723.9
1980	1,844.9	21.7	4.9	4.7	6.7	1,882.9
1981	2,211.2	198.1	3.2	3.5	3.1	2,419.1
1982	2,484.7	265.0	4.9	-1	12.3	2,765.9
1983	1,964.5	212.1	-4.7	-2.7	-	2,169.2
1984	1,797.1	191.3	1.0	-	9.4	1,988.8
Total	15,138.4	1,041.2	24.7	15.6	50.2	16,270.0

Source : Overseas Construction Data, Ministry of Construction. The data for the period before 1976 were collected by the author from the contractors

# Figure IV-1. Korean Contractors' Hard Currency Earning (1976-1984)

unit: Mil.\$



By 1984, the total earned hard currency amounted to 16,270 million dollars. Of this huge amount, 15,138 million dollars(93%) came from the Middle East, 1,041 million dollars(6%) from Southeast Asia, 50 million dollars(0.3%) from Africa, 24.7 million dollars(0.1%) from the Pacific Islands region, and 15.6 million dollars from South America (Table IV-9).

In 1982 and 1983, the earnings from South America showed minus signs. As mentioned earlier, Daewoo was the only Korean construction company working in Ecuador at that time. Often, Daewoo did not get the appropriate payments for their works from the Ecuadorian Government and therefore, the headquarters in Seoul had to send the maintenance-expenditures. In 1983, the negative earnings from Pacific Ocean region resulted from default-works of Kong Yong Construction Company.

The data above confirm that most of Korean overseas construction earnings came from the Middle East (Table IV-9). For Southeast Asia, its share of hard currency earnings (6%) was small compared with its share of contract volume (8%). The main reason for the small hard currency earnings was the restrictions placed on the use of Korean manpower in this region, as countries in this region required that foreign contractors use a certain percentage of local manpower in construction projects.

Even though both the amount of hard currency earnings and the volume of completed works increased, the ratio of earnings to completed works declined over time. At its peak, which was reached in 1977, the ratio was 63%, but it fell to 40.9% in 1979 and declined further, to 28.8% in 1981, 23.1% in 1983, and 22.1% in 1984 (Table IV-10). This downward trend suggests that the earnings per unit of work declined between the late 1970s and early 1980s.

**Table IV-10. Completed Volume vs. Hard Currency Earnings**

Unit : million \$

	1975'	1976	1977	1978	1979	1980	1981	1982	1983	1984
Completed Amount (A)	279	736	1,770	3,697	4,216	5,328	8,409	9,463	9,381	9,057
Hard Currency Earnings (B)	35	346	1,119	1,730	1,724	1,883	2,419	2,766	2,169	1,999
% (B/A)	12.5	47	63.2	46.8	40.9	35.3	28.8	29.2	23.1	22.1

Source: Overseas Construction Data, Ministry of Construction

\*It was not possible to get the data for the period before 1975 because OCAK was not established until 1976. Relevant data had not been collected before that time.

There were a number of reasons why the hard currency earnings per unit of completed work decreased continuously since 1977. The Middle Eastern countries, for instance, might have learned to increase the effectiveness of their expenditures on construction orders through better project management.<sup>55</sup> The main reason for the downward trend, however, seems to be the decline in the use of Korean manpower, which had been the major source of Korean hard currency earnings. It used to be that Korean skilled manpower was relatively cheap and capable, but this has changed.

The wage and salary scale for Korean manpower has moved up with the development of the Korean economy. At the same time, cheap labour from such developing countries as the Philippines, Pakistan and even China came into the international market, and Korean contractors had to use these workers from the Third World to survive in the international competition. Until 1979, Korean manpower accounted for more than 90% of the workers used in Korean overseas projects, but, as will be discussed in more detail in the next section, the share of Korean workers in overseas projects has declined over time. This also would explain why the hard currency earnings were low before 1975, because most of the Korean projects during those years were in Southeast Asian countries and government regulations in these

<sup>55</sup> Knauerhase, R., *The Oil Producing Middle East States, Current History*, January 1979, p.11.

countries stipulated that only a limited number of skilled foreign manpower could participate in that region's projects.

Another major reason for the downward trend in the earnings-to-works ratio would be the decrease in the use of construction materials and equipment brought from Korea to overseas sites. (This will also be discussed in detail in a later section.) The fall in profit also negatively affected hard currency earnings. According to KCI(Korean Consultant Institution), the ratio of profits to the volume of completed works was 14.9% in 1977, but declined rapidly, to 4.4% in 1979, and 1.8% in 1981. In 1982, it even recorded 0%, before rising back to 5% in 1983.

## **5. The Use of Manpower at Overseas Sites**

This section will study the changing trends in the use of Korean manpower and the Third-World countries' manpower in Korean overseas construction projects. The decline in the use of Korean manpower in overseas projects meant much to Korea, because Korean overseas manpower was the main source of hard currency earnings for Korea from overseas construction activities. This section will examine the statistics on the use of Korean and non-Korean manpower in overseas construction fields and will also explain why the use of the Third-World countries' manpower was increasing relative to Korean manpower.

### **A. Korean Manpower**

In 1975, the number of Korean workers engaged in Korean overseas' projects was only 5,951; in 1976 it tripled to 18,680; then, continuously increased to 105,696 in 1979; reached the peak of 171,170 in 1982; and then, it started to decrease and fell to 131,000 in 1984 (Table IV-11). While the use of Korean manpower was decreasing, the use of Third World countries' manpower was increasing, as Korean contractors increasingly had to use cheaper foreign manpower to survive in the international competition. In Korean overseas construction expenditures, wage and salary payments to manpower accounted for 21.3% of the



expenditures of Korean overseas construction works. <sup>56</sup> According to a 1982 study from the Korean Embassy in Saudi Arabia, the cost of foreign manpower averaged only about 56% <sup>57</sup> of Korean manpower while their productivity was about 78% <sup>58</sup> of Korean manpower. Consequently, Korean contractors had a growing propensity to use the Third-World countries' manpower.

**Table IV-11. Status of Korean Overseas Manpower**

Unit : persons

	Total	Middle East	Southeast Asia	Africa	Pacific & North Am.	South Am.
1975	5,951	3,963	1,387	48	402	151
1976	18,680	16,801	1,258	249	347	25
1977	45,725	44,158	868	240	417	42
1978	84,964	83,380	1,038	268	198	80
1979	105,696	104,666	690	206	78	56
1980	131,137	127,323	3,613	138	54	9
1981	163,088	153,699	9,238	95	38	18
1982	171,170	160,002	10,773	167	198	30
1983	162,017	150,115	11,338	325	211	28
1984	131,001	121,196	9,215	379	69	142

Source: Overseas Construction Data, Ministry of Construction and Writer's Personal Data Collected from the Ministry of Labour and Construction Companies

But, from the national standpoint, the increasing use of foreign manpower in Korean overseas construction projects was of more questionable merit.

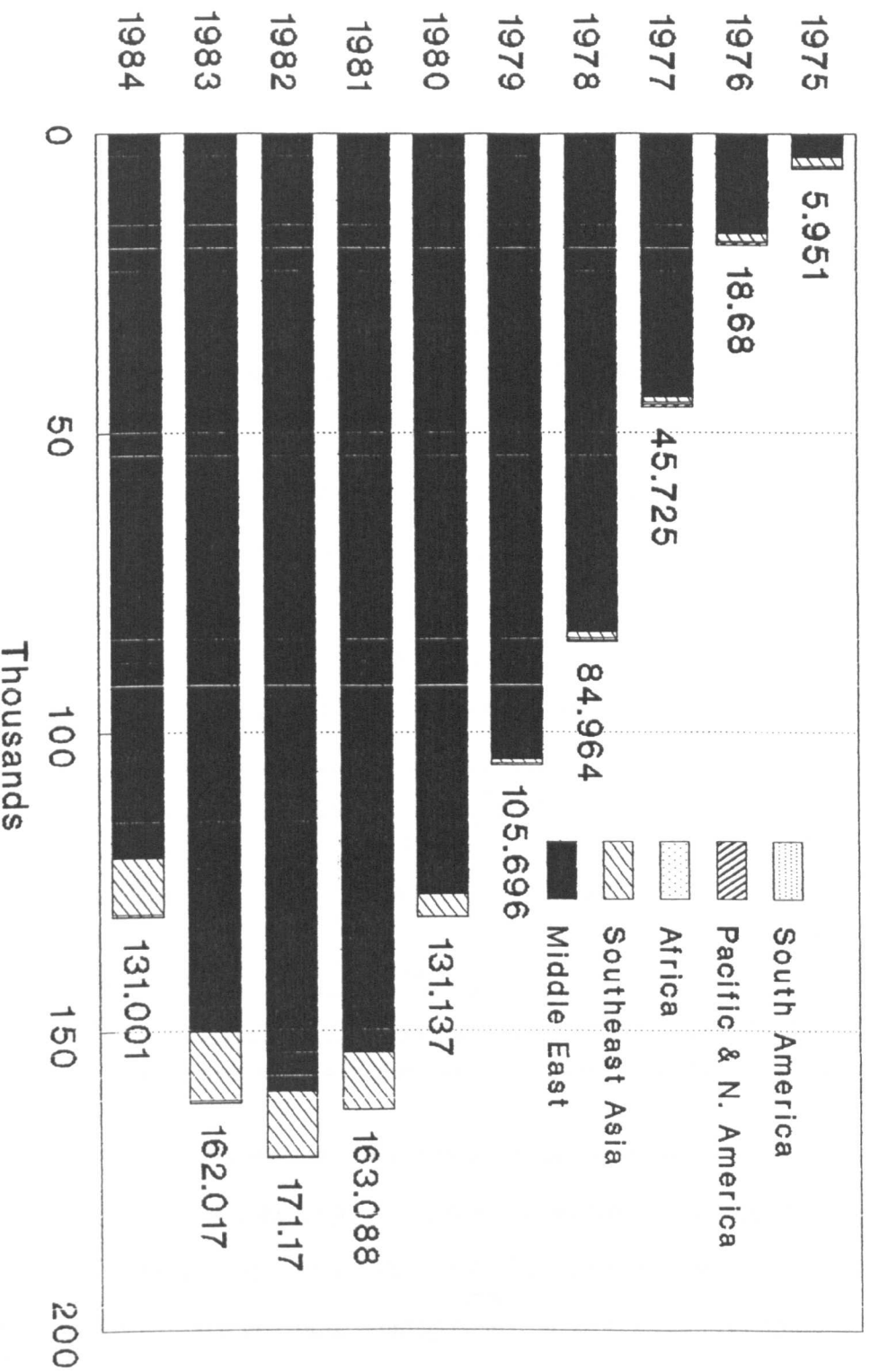
<sup>56</sup> Unpublished Data of Overseas Construction Association of Korea, based on 757 completed projects.

<sup>57</sup> 'Employment and Management of Third Country's Manpower', Symposium held at Korean Embassy, Saudi Arabia, Nov. 1982, p. 59

<sup>58</sup> Ibid, p. 65

# Fig. IV-2. Status of Korean Overseas Manpower

( Unit: Person )



Source: Overseas Construction Data, Ministry Of Construction

Since wage and salary payments to Korean manpower accounted for more than 52% of total hard currency earnings from Korean overseas construction projects, the Korean government discouraged contractors from using the Third-World countries' manpower. This was a contradiction between the government's policy and contractors' preferences. Still, as the contractors' survival in international competition was far more important than the government's desire to maximise hard currency earnings, Korean contractors had a growing tendency to use more Third-World countries' manpower.

By region, in 1984, 92.5%, 121,196 persons of the total exported Korean manpower was in the Middle East, while the manpower in Southeast Asia was only 7% and the rest were minor numbers. As mentioned earlier, it was rather difficult to export manpower to Southeast Asia countries because of their regulations to limit foreign workers to work in their countries, their requirement to use local manpower, and the abundance of local capable and cheap labour forces.

**Table IV-12. Korean Manpower Overseas by Profession in 1984**

Unit : persons

	Manager	Engineer	Skilled Worker	Total
Middle East	5,053	8,485	107,658	121,196
Southeast Asia	481	883	7,851	9,215
Africa	47	124	208	379
Other Regions	75	104	32	211
Total	5,656	9,596	115,749	131,001

Source : Annual Overseas Construction Data Book, 1984, Ministry of Construction

By country, in 1984, Saudi Arabia accommodated the most, with 59.6%, or 78,024 men, of the total exported Korean manpower at various sites. The next was Libya with 15.5%, and then Iraq with 10.3%. These three countries made up 85.4% of the total. By professional grouping, managers and general affairs occupied 4.3% of the total, engineers, 7.3%, and skilled workers, 88.4%. Here, skilled workers include carpenters, iron workers, heavy-machine operators, drivers, plumbers, masons, and even general handy workers. The

predominance of skilled workers stems from the characteristics of infrastructure works, as these works require a large variety of skilled workers (Table IV-12).

## **B. Foreign Manpower**

The use of foreign manpower at Korean overseas construction sites has two important aspects. From the Korean national standpoint, it meant the loss of foreign currency earnings, but, from the Korean contractors' viewpoint, it meant survival in international competition, as they had to employ cheaper foreign manpower to stay competitive in the increasingly tough international construction market.

This section will analyse the use of foreign manpower in the following manner: first, display the statistics on the use of foreign manpower; second, discuss reasons why Korean contractors had to employ more foreign manpower; third, compare their wage scales with Korean workers; fourth, compare their productivity with Koreans; and fifth, examine the problems that arise from employing foreign manpower at Korean overseas construction sites. Most of the data used in this section have been collected by the writer from various seminars, interviews with people at overseas sites, and through informal talks with managers or responsible personnel on this subject.

### **1) Increasing Use of Foreign Manpower at Overseas Sites**

In 1979, foreign workers used in Korean overseas construction projects totalled 8,066, accounting for 7.1% of all the workers employed by Korean contractors. This number increased very rapidly, to 40,090 in 1981, or about 20% of the total, and it continuously increased to 60,299 or 27.1% of the total in 1983, even though the contract volume and the number of Korean workers declined that year (Table IV-13). In 1984, it dropped to 49,622. Since then, however, it has increased again. In 1984, 40,446 foreign workers, or 81.5% of the total foreign manpower used at Korean overseas construction sites, were employed in various projects in the Middle East, and 7,337 (14.8%) were in Southeast Asia. By country,

Saudi Arabia was at the top, with 23,227 persons , or 46.8% of the total foreign manpower employed at Korean construction sites overseas. <sup>59</sup>

It would be interesting to examine the composition of these foreign workers by their nationality and their task. In 1983, the total number of foreign workers employed by Korean contractors in Saudi Arabia was 29,577. Among them, 41.2% were from Thailand; 23.7%, from Bangladesh; 21.6%, from India; 6.5%, from Pakistan; 3.6%, from the Philippines; and 2.6%, from Sri Lanka. By job classifications, 61.6% were manual labourers; 23.3%, skilled labourers; 12.3%, drivers; 3.7%, mechanics, foremen, managers, etc. <sup>60</sup>

**Table IV-13. Korean Manpower vs. Foreign Manpower in Overseas Projects**

Unit : persons

	Total Manpower	Koreans	Foreigners	Ratio (%)
1979	113,762	105,696	8,066	7.1
1980	147,183	131,137	16,046	10.9
1981	203,178	163,088	40,090	19.7
1982	226,633	171,170	55,463	24.5
1983	222,316	162,017	60,299	27.1
1984	180,623	131,001	49,622	27.5

Source : Data supplied to Ministry of Construction by Overseas Construction Association of Korea

## 2) Reasons for the Increasing Use of Foreign Manpower

There were a number of reasons why Korean contractors had to employ an increasing number of foreign workers.

First, during the late 1970s and early 1980s, the Korean workers' wages and salaries

increased rapidly with the growth of the national economy. Table IV-14 shows the

<sup>59</sup>Data from Overseas Construction Association of Korea.

<sup>60</sup>Author's data collected from Korean contractors

increase in the labour costs for selected jobs from 1978 to 1982. As the table shows, there were big increases in skilled workers' monthly salaries, over 100 dollars on average through these 5 years-- in other words, more than a 20-dollar increase per year from 1978 to 1982. It was a significant increase.

**Table IV-14. Korean Overseas Workers' Monthly Salary**

Unit: US dollars

	1978(A)	1979	1980	1981	1982(B)	B-A
Painter	630.41	716.91	716.13	721.36	766.28	135.87
Carpenter	683.81	742.57	761.98	748.93	776.13	92.32
Pipe Layout	691.43	750.43	842.83	778.09	806.73	115.30
Welder	746.94	749.15	862.87	796.67	817.51	70.57
Heavy Mach. Driver	802.93	848.01	909.20	862.01	925.82	122.89
Heavy Mach. Mech.	821.27	837.54	879.27	981.91	925.70	104.43
Concrete Work	652.72	678.85	716.12	755.95	733.25	80.53
Pavement Work	616.06	709.29	720.50	715.92	757.14	141.08
Manual Labour	596.88	615.05	616.75	634.42	673.51	76.63

Source : Writer's personal data collected from contractors, based on surveys and interviews

During this period, there were enormous increases in contract volume for Korean contractors domestically and internationally (Table III-5). The yearly contract volume was about three times the 1977 amount of 6,100 million dollars. With such a huge increase, skilled workers became scarce resources, and commanded high wages. Korean overseas contractors did not have much choice but to use cheaper foreign workers

Second, many project-issuing countries in the Middle East and Southeast Asia began to

require that foreign contractors employ a certain percentage of local manpower, and demand that some technical training be given to these people. Depending on the country, the regulations were as follows.<sup>61</sup>

- (A) Saudi Arabia : Train local workers, and use Arabs as much as possible.
- (B) Libya : Obtain work permits from the Libyan government-- a way as to control the influx of foreign workers.
- (C) Qatar : Follow preferential employment policy, in the order of natives first, Arabs next, and non-Arab foreigners last.
- (D) Kuwait : Practise preferential employment policy similar to Qatar's, requiring 30% or more to be Arabs.
- (E) U.A.E. : Practise priority-policy for Arabs.
- (F) Jordan : Employ 40% or more Jordanians.
- (G) Indonesia : Issue a limited number of visas to general technicians and manual workers (i.e., except engineers), and train local employees.
- (H) Malaysia : Issue a limited number of visas to manual workers and general technicians whose jobs can be done by Malaysians.

In the Middle East, many countries did not have rigorous restrictions, and even in those countries that did have restrictions, 'local-content regulations' were not effective because of their shortage in manpower. In Southeast Asia, however, strict regulations and the availability of local labour raised the share of foreign manpower used in Korean overseas projects in this

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<sup>61</sup> Summarised from Construction Attache's Reports at various Korean Embassies

region.

Third, the Middle Eastern countries imported many developing countries' cheap labourers, especially of the Islamic faith, to carry out their economic developing plans. The Middle Eastern countries requested Korean contractors to use these workers.

Fourth, as will be explained below, Korean contractors had to employ cheaper workers from developing countries, to sustain themselves in the increasingly competitive international construction market.

### **3) Foreign vs. Korean Workers' Wages**

There was a large variance in wages for foreign workers depending on the worker's country of origin and place of employment. Moreover, differences existed even among Korean companies. There was no single well-defined standard to go by. It all depended on the contracting conditions between the employer and employee.

For example, in 1983, an Indian manual labourer would earn 380 dollars per month in Qatar, 497 dollars in U.A.E., and 329 dollars in Saudi Arabia-- about a 50% difference between the highest and the lowest rates. One company might pay a Bangladesh manual labourer 280 dollars per month while another would pay 198 dollars-- roughly a 40% difference. A labourer might earn from one kind of job more than twice the amount paid by another.

In Saudi Arabia, where approximately 75% of foreign labourers employed by Korean contractors were working in 1982, Thai workers' average monthly wage was 514 dollars, the Indian average 500 dollars, the Pakistani, 557 dollars, and the Filipino, 669 dollars. The monthly wage for foreign workers simply averaged over their countries of origin was thus 523 dollars, about 56% of the Korean average monthly wage of 933 dollars (Table IV-15).



**Table IV-15. Monthly Salary by Country of Origin**

Unit : \$ / month

Job	Thailand	Bangla- desh	India	Pakistan	Philipp- ines	Sri Lanka	Average Foreign	Korea
Laborer	361.9	247.7	329.0	312.6	-	235.0	297.2	521.3
Skill Worker	450.8	385.0	393.3	479.5	470.0	-	435.7	589.3
Driver	527.1	454.0	450.6	704.0	639.0	-	554.9	835.7
Mecha- nics	540.0	-	-	-	-	-	540.0	917.3
Foreman	690.0	548.5	561.0	629.2	-	-	607.3	669.8
Manager	515.6	670.0	767.2	661.0	899.0	-	702.6	2,063.5
Average	514.3	461.0	500.2	557.3	669.3	235.0	522.9	933.3

Source : Data provided at Korean Embassy's seminar, Saudi Arabia, November, 1982

Wages by job specification were as follows. For manual workers, the highest monthly pay was 362 dollars while the lowest was 235 dollars and the average was 297 dollars, 57% of the average Korean wage. For skilled workers, the highest was 479 dollars, the lowest 385 dollars, and the average 436 dollars, roughly 74% of the Korean rate. In the case of automobile drivers, the foreign workers' average was 66% of Korean's; mechanics, 59%; and foremen 91%, respectively. As for managers, a foreign manager on average received 703 dollars per month, a level reasonably higher than other foreign workers' wages; however, as the Korean manager's average monthly salary was 2,063 dollars, the foreign rate amounted to only 34% of the Korean rate.

#### 4) Foreign vs. Korean Worker's Productivity

The difficulty of analysing foreign workers' wages pales in comparison to that involved in measuring the productivity of these workers. Even in the same national group, individuals can be much different from one another: Some people are healthy, diligent, and earnest while others are not. Moreover, one individual's productivity can vary considerably depending on

time of the day. His efficiency can also be influenced by the working environment or the characteristics of tasks. It is, therefore, almost impossible to derive a precise measure of productivity. Only rough approximation will be attempted.

**Table IV-16. Productivity of Foreign Workers**

Unit : %, Korea = 100

Job	Thailand	Bangladesh	India	Pakistan	Philippines	Sri Lanka	Average
Laborer	90	84	87	84	-	65	82
Skill Worker	81	75	68	78	84	-	77
Driver	86	82	78	95	-	-	85
Mechanics	67	-	-	-	-	-	67
Foreman	85	75	80	80	-	-	80
Manager	66	65	100	-	81	70	76
Average	79	76	63	84	83	68	78

Source : Data provided at Korean Embassy's seminar, Saudi Arabia, November, 1982

According to a survey done by the Korean Embassy in Saudi Arabia on foreign workers' efficiency in 1982, foreign workers showed high productivity in manual works, automobile driving, and foremanship, but they were poor in skilled jobs, mechanics, and management. In other words, they were good in general manual work, but poor in technical jobs. This result is understandable, as they probably did not have many opportunities to become familiar with technical jobs.

The survey estimated that their average efficiency compared with Koreans' was as follows: in manual work, 77%, mechanics, 67%, and management, 76%, and the total average was 78% compared with Korean workers' productivity (Table IV-16).

### **5) Problems in Employing Foreign Manpower**

While necessary for Korean contractors to stay competitive in the international

construction market, the increasing use of foreign workers created several problems both for the Korean government and the construction companies. First, as previously mentioned, the increasing employment of foreign manpower greatly disturbed the Korean government, for it seemed to mean a displacement of a large number of Korean workers. From 1982 to 1983, there was a reduction of about 9,000 in Korean manpower employed at overseas construction sites; from 1983 to 1984, there was even a larger reduction of about 30,000 workers. Many of them were replaced by foreign workers. With about 5 persons per household in Korea, 30,000 displaced workers affected 150,000 individuals. Faced with this disturbing trend, the Ministry of Labour tried to put a limitation on the share of foreign workers at 20% of total manpower employed by Korean contractors overseas. But it did not work.

Second, the increasing use of foreign workers seemed to mean a reduction of hard currency earnings for Korea. For example, there was a reduction of 30,000 Korean workers in 1983, and if we assume that their monthly salary was about 1,000 dollars since it was 933 dollars in 1982 (Table IV-15), then the reduction in hard currency earnings for Korea due to this displacement would be 360 million dollars a year. It was not a small amount.

Third, there were a number of problems in managing these foreign workers. Language was one of the major barriers that had to overcome in order to improve relations and productivity at job sites; cultural misunderstandings could cause defaults on jobs, and even damaged personal relations among workers and managers.

**Table IV-17. Religions of Foreign Workers Employed in Saudi Arabia**

Unit: %

	Christian	Buddhist	Islamic	Hindu	Other*
Korea	25	40			35
Thailand	5	89	3		3
India		9	55	34	2
Pakistan			89		11
Philippines	**90		5		5
Bangladesh			91		9
Sri Lanka	5	20	70	5	

Source: "Employment and Management of Third-World Countries' Manpower" Seminar, Korean Embassy, Saudi Arabia, November, 1982, p.67

\*most are no religion

\*\*Catholics

Other difficulties arose from differences in religion, cultural background, and even choice of recreational activities. Even those from the same country sometimes had big differences as if they were from different countries. For instance, workers from northern India were quite different from those from the south, and sometimes displayed worse prejudices toward them than toward workers from other countries.<sup>62</sup>

The increasing use of foreign workers at Korean construction sites overseas has several implications for the futures. Koreans have seldom had opportunities to manage people from other countries, and if they are to become effective managers, Koreans now must learn and study other cultures. The government should sponsor research on this aspect of the problem of using foreign workers. The government should coordinate, guide, and supply information and materials to Korean contractors on this matter. This would not only benefit the contractors, but the nation as a whole as well. Korea is a member of the international community, and she should become more internationalised.

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62 Informal Reports from Korean Overseas Contractors

## 6. The Use of Materials and Equipment at Overseas Sites

As mentioned earlier, from the mid-1970s, there was a vast construction boom in the Middle East, especially in Saudi Arabia. Because of this boom, there was a tremendous increase in demand for construction materials and equipment. In the late 1970s, ships had to wait weeks to unload materials and equipments at Saudi Arabian harbours because of this enormous demand.<sup>63</sup> As Korean contractors became very active in this region, they procured many materials, tools and heavy equipment for their awarded construction projects.

Korean construction companies' annual expenditures on construction materials and equipment were as follows: in 1979, \$673 million, in 1980, \$1,692 million, in 1982, \$2,727 million, in 1983, \$2,681 million, and in 1984, \$2,625 million (Table IV-18).

The Korean government wanted to take advantage of this boom, and while adopting a promotion policy, it advised Korean construction companies to use Korean-made materials and equipment at overseas sites. Even with the government's promotion policy and arranged meetings between contractors and manufacturers, the portion of Korean products in construction materials and equipment occupied less than 30%, and, moreover, the portion decreased year by year: in 1979, 29.9%, in 1981, 22.1%, in 1983, 13.7%, and in 1984, 13.2%.

There were a number of reasons why this decreasing tendency occurred. First, Korean products were in a weak position to compete in the international market. The variety of Korean products was very limited, as there were many items that Korean manufacturers did not produce, and even those products that were made in Korea often did not meet the international standards.

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<sup>63</sup> McQuade, W., 'The Arabian Building Boom Is Making Construction History', *Fortune*, September 1976, pp.114-115.

**Table IV-18. Construction Materials and Equipment Used at Overseas Sites.**

Unit : Million \$

	Korean			Foreign			Total
	equipment	material	sub-total	equipment	material	sub-total	
1979	38.4	163.2	201 (29.9%)	107.7	364.2	471.9	673.5
1980	53.9	357.3	411.2 (24.3%)	153.7	1,127.2	1,281	1,692.2
1981	59.5	483	542.5 (22.1%)	373.1	1,539.2	1,912.3	2,454.8
1982	74.9	414.8	489.7 (17.9%)	432.8	1,804.2	2,237	2,726.7
1983	6.6	360.1	366.7 (13.7%)	75.1	2,239	2,314.1	2,680.8
1984	14	333.5	347.7 (13.2%)	156.5	2,121.4	2,277.9	2,625.4

Source : OCAK (Overseas Construction Association of Korea)

The quality, sales systems, and the procurement conditions were poor and unfavourable. These all added up to make it undesirable for Korean contractors to buy Korean products at the market price. Second, most of the projects were designed by consultants from advanced countries. In their design, they generally designated materials and products with which they were familiar or which they had used before-- generally products from their own countries. Project-owners also generally favoured well-known products because of their reputation and reliability. Third, many project-issuing countries adopted a 'local-content' regulation, requiring the use of native products as much as possible; otherwise, high tariffs would be imposed on imported materials.

As for exported Korean products, there were more materials than equipment. The equipment portion was only 10% of the total exported products, mainly because of Korea's inability to manufacture sophisticated construction equipment. Much of the equipment used at Korean overseas construction sites was European-made, especially UK-made, rather than US-

made, perhaps because of the relative distance from the Middle East.

This chapter examined in detail the records of Korean overseas construction activities. It analysed the data not from only one angle, but from several different aspects. This chapter looked at the earned contracts by year, region, and country. It also analysed the received projects by type and size, and described how Korean overseas contractors performed their jobs by analysing project completion rates and hard currency earnings. Among these items, the yearly hard currency earnings would be the most important data for Chapter VI.

The manpower problem for the overseas construction industry was discussed at length: Korean overseas contractors increasingly had to employ the Third-World countries' manpower instead of Korean workers to sustain their viability in the tough international market, but this strategy might have hurt hard currency earnings for Korea. As Korean contractors received an enormous number of contracts from the Middle East, Korea tried to export many Korean-made materials and equipment to those construction sites to increase its hard currency earnings, but this policy did not see much success. These discussions and data, together with qualitative accounts in Chapter V, form the basis for the economic analysis in Chapter VI.

## **Chapter V: The Role of the Korean Government, Overseas Construction Association of Korea, and Korean Contractors in Overseas Construction**

Since their first venture into overseas construction fields in 1965, Korean contractors by 1984 had won 2,291 projects for a total amount of 74,282 million dollars.<sup>64</sup> By 1984, Korean construction companies had worked in 37 countries all around the world except on the European Continent and in the Communist Bloc. At one time, 84 Korean construction companies<sup>65</sup> and more than 171,000 persons worked at overseas construction sites.<sup>66</sup>

Hard work and determined efforts helped to make Korea become the second largest construction-exporting country by the early 1980s. Such a rapid rise as a global construction power did not happen accidentally. It took concerted efforts of the government and private firms, as well as hard work of young workers, to propel the Korean overseas construction industry to world prominence. It is the objective of this chapter to discuss the role of the major players in the development of the Korean overseas construction industry-- in particular, the Korean government, the Overseas Construction Association of Korea, and Korean overseas contractors-- and examine the strategies and policies that helped to effect an enormous transformation of the Korean construction industry within a few decades.

### **1. The Role of the Government (Ministry of Construction)**

Generally, in any country, government policy can have a strong impact on the country's industries. This is especially true in developing and underdeveloped countries, where the market is still in its infancy.

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<sup>64</sup> Overseas Construction Data, Ministry of Construction, December, 1984, p.3. Also see Table IV-6.

<sup>65</sup> Total Number of General Contractors (59) and Specialised Contractors (25), Overseas Construction Data, Ministry of Construction, December, 1981, p.3.

<sup>66</sup> Overseas Construction Data, Ministry of Construction, December, 1982, p.3. Also see Table IV-11.



In order to be effective in promoting a particular industry, however, government policy or strategy must be based on a clear understanding of that industry's characteristics. Certainly, it is true that, in general, financial assistance programmes such as tax exemption and promotion funds can provide private firms with an incentive to increase their investment in targeted industries; however, for an industry with international clients, diplomatic assistance can be at least equally effective in helping private firms. Through diplomatic channels, the government, for instance, can try to define the terms of economic exchange in a mutually beneficial way with another government, and help domestic firms to conduct business in a foreign country without being burdened with undue regulation. The overseas construction industry is an example of such internationally-based industries.

In Korea, the overseas construction industry falls under the jurisdiction of the Ministry of Construction. Korean contractors have to get licences from the Ministry to work overseas and are advised and assisted by the Ministry. Before 1973, Korean overseas construction activities were insignificant: 22 contractors<sup>67</sup> worked overseas, but their total volume was only 421 million dollars for the period from 1965 to 1973 (Table III-1). As mentioned in Chapter IV, however, a watershed in the history of the Korean overseas construction industry was reached in 1973. Because of the oil price increase in 1973, oil-producing Middle East countries earned an enormous amount of money from their oil exports, and to foster their industrial development, these countries launched many huge infrastructure projects with their 'petrodollars', and generated the so-called 'Middle East Construction Boom'. Many construction companies rushed out to the Middle East and competed with each other for projects.

In 1973, Korean contractors were very small in size, low in financial assets, and lacked technical capability and experience with overseas construction projects, compared with highly experienced and technically sophisticated big contractors from advanced countries. Korean contractors, in short, did not seem to be capable of competing internationally for big projects.

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<sup>67</sup> This was the number of licensed overseas contractors at the Ministry before 1973. Most of their works were in Southeast Asia and the Pacific Islands region.

Moreover, the Middle East at that time was a very unfamiliar place to Koreans, and it was difficult for Korean contractors to move into this region on their own.

In order to facilitate the Korean construction companies' venture into the Middle East, the Korean government worked together with Korean contractors to earn and implement construction projects. Often, the government stood in front to bear the risks involved in overseas construction work. Commenting on the expansion of overseas construction work in the Middle East, one industry observer noted: "Most dramatic was the rapid overseas expansion of contractors from the Republic of Korea and their capture of a large part of the construction market of the Middle East, a movement strongly fostered by the Korean government." 68

There was a good reason why the Korean government had to assume an active role in overseas construction. Korea had launched a series of ambitious Five-Year Economic Development Plans in 1962. 69 Korea's Economic Development Plans had just gotten on track when the first oil crisis shook the world economy. The oil price shock of 1973 had a seriously negative impact on Korea's growing economy, which was then in the early phase of the Third Five-Year Economic Development Plan (1972-1976).

Korea's balance of payments rapidly deteriorated in the early 1970s, as she had to pay much higher prices for raw materials to continue her principal economic development strategy of processing and assembling imported raw materials and components for exports. In addition, Korea had to pay back the loans that had been taken out in the 1960s to establish her light manufacturing industries. 70 To prevent increasing deficits in the balance of payments 71

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68 Strassmann, W.P., and J. Wells(eds.), *The Global Construction Industry*, Unwin Hyman, London, 1988, p.4.

69 See Section 3, Chapter II and Table II-3. p. 146

70 According to *The Major Statistics of Korean Economy*, published in 1980, the loans from 1959 to 1966 added up to \$295.6 million, and the loans from 1967 to 1971 amounted to \$2,165.5 million. These were large amounts for the Korean economy those days.

71 It was a well-known speculation about this time that the reserve of hard currency holdings at the Bank of Korea was almost depleted. Refer to Appendix 3 for Korean Loans and Foreign Exchange Holdings in the

and to sustain Korea's rapid economic growth, the government needed a good source of foreign currency supply.

One way to solve the balance of payments problem was to scale up its policy of exporting processed goods, but the success of this strategy was in doubt; for it might put more burden on Korea's foreign currency holdings as she would have to increase her imports of raw materials and capital in order to increase her exports. The prices of final processed goods had to reflect the price increases in raw materials, and, unless these processed goods-- at higher prices-- could find ready markets overseas, the strategy of processing a larger quantity of imported raw materials for exports might only aggravate the balance of payments.

To lessen her serious problem in the balance of payments, therefore, Korea needed a strategy to earn foreign currency while discouraging excessive spending on imports. The solution, it seemed, had to be centred around exporting manpower.

Fortunately, Korea had an industry that seemed as if it were designed to solve the balance of payments problem and other problems that the Korean economy faced. The Korean overseas construction industry could 'export' manpower to overseas sites, make reasonable profits, and earn additional hard currency by exporting construction equipment and materials. Therefore, at that time, it seemed that there was no better solution than the overseas construction industry to solve Korea's problems in the balance of payments and earn immediately needed hard currency.<sup>72</sup>

The government designated the overseas construction industry as a strategic industry, and established a promotion policy in support of Korean contractors overseas. In 1975, the Korean government enacted the Overseas Construction Promotion Act, and also established various assistance programmes having to do with finance, tax, and insurance, to increase the profitability of overseas construction projects and insure their successful completion.

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Early 1970s.

72 See Table VI-3.

## **A. Overseas Construction Promotion Act <sup>73</sup>**

As indicated above, the main purpose of this Act was to help Korean contractors to receive orders on overseas construction projects and execute these orders adequately. This Act mainly covered the role of the government in the following four areas: 1) Issuing Licences to Contractors to Engage in Overseas Construction Business; 2) Granting Permission on Bids for Overseas Projects; 3) Guiding Korean Contractors to Reduce Excessive Competition; and 4) Operating Overseas Construction Promotion Fund.

### **1) Licence to Engage in Overseas Construction Business**

Under this provision, anyone who wishes to operate overseas construction business should obtain a licence issued by the Minister of Construction for each line of business. Eight different categories of construction business were defined under this provision, including general contractor, specialised contractor, electric contractor, etc.

It was believed that licensing contractors by each category of business would encourage them to specialise and improve their technical capability in a particular area. In order to obtain a license, a construction company was required to demonstrate its intention to specialise in a particular line of construction business and upgrade its technical capability. The licensing provision also helped to protect the project-owner's interest by screening out those Korean companies without the ability to carry out international projects. By giving the permission only to certain qualified construction companies, the Korean government helped to insure that international projects awarded to Korean contractors would be successfully implemented, and Korean contractors' reputation maintained in the overseas market.

### **2) Permission on Bids for Overseas Projects**

Before bidding for an overseas project, an overseas constructor is required to obtain a

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<sup>73</sup> Overseas Construction Promotion Act, Law No. 3316, Entirely Amended on 31 December 1980, Related Law and Regulation on Overseas Construction, OCAK, August, 1990, p. 5

permission from the Minister of Construction under this provision. This provision is designed to reduce 'excessive competition' among Korean contractors, to prevent too many Korean contractors from bidding for the same project.

If many Korean contractors competed with one another to win a certain project, there would be a lot of waste from the national standpoint, as every one of these companies would travel to the project-issuing country, and spend resources to prepare for the bid. More seriously, the competition might be reduced to an in-fighting among Korean contractors. These contractors might even dump the bid price for the sole purpose of winning the project--sometimes the emotional competition among them becoming more important than rational consideration for profit. Under such excessive competition among Korean contractors, 'economic rents' from the project would go to the project-issuing country rather than to Korea.

To prevent such money-losing competition in advance, the government stipulated that before entering the bid, one or two eligible contractors for the project be recommended by the Overseas Construction Association of Korea (OCAK) after evaluating the merits of competing contractors. Depending on the character, size, and complexity of project, one or two contractors would be selected for the Ministry's approval, but, generally only one contractor would get the permission. Through such an arrangement, the selected contractor would be able to bid at a reasonable, profitable price, and prevent other wastes such as duplicative bid preparation.

When a particular contractor contributed substantially to Korea's overseas construction activity in a certain region by opening a new market there, the Ministry of Construction may give priority to that contractor when granting permission to enter into a contract in that region.

### **3) Prevention of Excessive Competition**

To prevent excessive competition among Korean contractors, the government requested that contractors conform to the following provisions:

(1) Report on Plan of Activities for Receiving Orders of an Overseas Project.

When an overseas contractor has an opportunity to bid for an overseas project, he shall report to the Ministry of Construction and the Korean Embassy having jurisdiction over the region in advance of his plan of activities.

(2) Adjustment of Competition for Receiving Orders.

The Ministry of Construction may advise overseas contractors concerned to make necessary adjustments in competition for receiving orders if there are more than two overseas contractors for the same overseas project.

(3) Designation of Overseas Contractors to a Certain Country or Region.

In order to prevent 'overly heated competition' among overseas contractors in one area, the Ministry of Construction may designate contractors to different countries or regions.

Again, in the interest of the nation, it was necessary for the government to guide and control the traffic of overseas contractors. Otherwise, many contractors might compete for certain projects in the same region at the same time. As discussed above, excessive competition among Korean contractors might lead to dumping, and eventually result in a very unsatisfactory job performance, damaging the reputation of Korean contractors. 'Overcompetition', in short, would not be in the interest of the nation; nor would it be in the interest of the contractors. If the provision on the issuing of licenses to construction companies affected competition by encouraging specialisation among contractors and by erecting entry barriers to low-quality firms, these provisions were established with the express purpose of reducing excessive competition among contractors and enhancing the profitability of undertaking construction projects in various regions.

#### **4) Overseas Construction Promotion Fund**

The Overseas Construction Promotion Fund was established for the purpose of securing

a financial source necessary for a stable growth of the overseas construction industry.

The fund is supported from the following financial resources:

- (1) Contribution by the government
- (2) Contribution by overseas contractors
- (3) Profits generated through operation of the fund

The fund is operated and managed by the Overseas Construction Association of Korea, and the fund is mainly used for the following purposes:

- (1) Furnishing technical service grant abroad for opening an overseas construction market.
- (2) Inducing the development of advanced technology.
- (3) Opening a new overseas construction market and encouraging international cooperation.

In short, the major purposes of the Overseas Construction Promotion Act of 1975 were to devise an efficient way to coordinate the process of obtaining overseas projects; prevent disreputable companies from engaging in overseas construction projects; enhance the international competitiveness of contractors by encouraging specialisation; and prevent excessive competition among Korean overseas contractors.

## **B. Assistance in Finance**

To encourage the Korean contractors' construction activities overseas, the Korean government also strengthened its promotion policies in finance, insurance, and tax, as the size of Korean overseas projects became larger, the duration of projects longer and the competition with other international contractors more fierce.

In finance, the government stood behind all the necessary bid and performance bonds posted for overseas construction projects. The government also helped Korean contractors to obtain international loans and finance whenever they needed a huge amount of capital to carry

out their projects.

## **1) Bonds Guaranteed by Financial Organisations <sup>74</sup>**

In construction, a guaranteed bond means that if the contractor (obligor) fails to perform or complete his obligations to the project-owner (obligee), the third party (guarantor or surety, here the financial organisation) will pay an amount equal to the loss to the obligee. In overseas construction, from the initial stage of submitting a bid to the last stage of maintenance, there are various guaranteed bonds required at different stages. Followings are some of the major bonds required:

### **(1) Bid Bond**

This is a bond submitted by the contractor to the owner when the contractor bids for a project. This bond is guaranteed by a bank or insurance company with the promise that the contractor shall meet all the required bidding conditions. Generally, the amount of bond is around 1 to 5 % of the bidding price.

### **(2) Performance Bond**

This is a bond submitted by the order-receiving contractor to the project-issuing agency with the promise that the contractor shall carry out all the contracted obligations for that project. The amount of bond is usually from 5 to 10% of the contracted amount, and the duration of bond is the same with the project period.

### **(3) Advance Payment Bond**

This is a bond promising that the contractor shall pay back the advance payment to the project-issuing agency throughout the project period. The size of bond is the

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<sup>74</sup> *Ten Years' History of Overseas Construction Association of Korea, OCAK, Seoul, 1987, pp.70-73.*



total amount of advance payment, and it is generally 10 to 25% of the total contracted amount. The duration of bond is the same with the project period. The advance payment is reduced proportionally with the progress of the project and the amount of bond is also reduced at the same rate.

#### **(4) Maintenance Bond**

This is a bond that the contractor shall remedy any defect in the completed project during the maintenance period. Generally, the amount of this bond is the same as the amount of the performance bond, and the bond is presented to the project-owner when the completed project is handed over to the owner.

As most of the Middle Eastern projects were huge, the amount of bonds required was quite large, and the conditions on most of these bonds were 'on-demand' and stringent as well. Quite understandably, many financial institutions and insurance companies were hesitant to assume risks for these bonds. Overseas construction companies were thus often faced with the problem of finding a financial guarantor.

In Korea, it was the government that assumed the role of the risk-bearer. The government stood strongly behind all bonds issued to overseas contractors by financing agencies, domestic banks, and insurance companies, and made it easier for construction companies to win overseas projects.

#### **2) Assistance in Overseas Financing ('Local Financing')<sup>75</sup>**

Overseas financing is the capital raised locally in the project-issuing country by a contractor working at an overseas site. To raise this capital, the domestic bank in the contractor's home country has to issue a stand-by L/C (letter of credit) to the local bank as a

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<sup>75</sup> *Ten Years' History of Overseas Construction Association of Korea, OCAK, Seoul, 1987, pp.73-75.*

guarantee.

Even when the contractor's overseas office does not have enough mortgage for guarantee, the domestic bank with which the contractor's main office has an account, issues the stand-by L/C to a foreign bank, with which the overseas branch office does business. The overseas office then can draw the necessary finance from the local bank. In case the overseas branch office is unable to pay back the loan within the promised time, the domestic bank will have the responsibility to pay back the debt to the local bank in accordance with the stand-by L/C. The official duration of any stand-by L/C is one year, but it can be extended by the home office of the domestic bank under the contractor's request.

For the Korean overseas construction industry, the Ministry of Finance, under Foreign Exchange Management Regulation 2-27, stipulated that overseas financing be allowed only for the following cases:

- (1) to pay any fees or post bonds required for bidding or carrying out a contract
- (2) to buy raw materials and the respective fees for insurance, transportation, storage, and manpower
- (3) to make any necessary financial investment for equipment or pay the warranty for tax exemption of imported equipment
- (4) to pay expenses needed for the business activities of overseas branch offices

### **3) Assistance in Domestic Financing<sup>76</sup>**

The Korean Export-Import Bank supplies a low-interest loan for any overseas consulting project concerned with technology export and also for any plant export. Besides these two types of loans, the Korean government established in 1986 the EDCF (Economic Development Cooperation Fund), an incentive fund supplied at low interest rates for overseas construction works. The details are as follows:

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<sup>76</sup> *Ten Years' History of Overseas Construction Association of Korea*, OCAK, Seoul, 1987, pp.75-76.

### (1) Loan to Export Technology Overseas

The Korean EXIM Bank established this loan to encourage technology export to overseas construction or consulting works. The interest rate is set at the LIBO rate + 1%, and the repayment period is 10 years, including 5-year grace period in accordance with the OECD guidelines.

### (2) Loan for Plant Export

This was established to encourage the export of engineering design and construction or supervision works, as well as that of construction equipment or materials in connection with these works. The interest rate and repayment period are the same as above.

### (3) EDCF (Economic Development Cooperation Fund)<sup>77</sup>

As this Fund was established quite recently in 1986, a discussion of this Fund may not belong to this paper. But, this is a 100% government-invested fund, and it could be worthwhile to take a look at this fund, as it may have strong influences on receiving construction orders from overseas in the future-- much the same as the way the Japanese OECF is functioning today for Japanese overseas contractors. This Fund is in its infant stage compared with the Japanese OECF, which was established in 1961. The purpose of this Fund is to facilitate economic cooperation by assisting in industrial development and economic stabilisation of developing countries and to promote economic exchange between the Republic of Korea and such countries.

This Fund is available for those overseas construction projects deemed to contribute to the industrial development

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<sup>77</sup> The Economic Development Cooperation Fund Laws and Regulations, The Export-Import Bank of Korea.

of developing countries. At present, the Fund's capital stands at 3,036 billion won (4 billion US dollars). The interest rate varies between 2.5%-5%, depending on the country and the repayment period is 20 years, including a 5-year grace period. As of 1992, the number of committed projects is 21 in 17 countries, most of them in Southeast Asia, for a total amount of 250 million US dollars.<sup>78</sup>

#### **4) Financial Supervision**

As described above, financial institutions assisted contractors in the successful completion of projects, by reducing their anxieties over a shortage of finance. At the same time, financial institutions also monitored the financial flow to make sure that it would be used in the most efficient way, and not for purposes other than overseas construction work. In each region, financial institutions had their own representatives to follow up on the cash-flow and collect information about the contractors' financial status.

#### **C. Assistance in Insurance<sup>79</sup>**

As mentioned in Chapter II, most overseas construction works during the 1965-1984 period were carried out in developing countries. These overseas construction projects were often fraught with high risks because of the possibility of war, domestic political upheavals, internal disturbance or labour disputes, etc., in developing countries. This was especially true of Korean construction works overseas, since most Korean overseas projects were in the Middle East, where the political and religious environments were characterised by a high degree of volatility. This kind of uncertainty was discomfoting not only to contractors but also to bankers, who issued bonds for the contracted projects.

Contractors and bankers alike had to find a way to disperse the risks involved in overseas

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<sup>78</sup> *The Dong Ah Ilbo* (Daily Newspaper), Seoul, 2 October 1992, p.7.

<sup>79</sup> *Ten Years' History of Overseas Construction Association of Korea*, OCAK, Seoul, 1987, pp. 80-82, *Overseas Construction Assisting Programmes*, OCAK, 1985, p. 141

construction projects. In Korea's case, the government adopted comprehensive and long-range insurance policies to reduce risks for individual contractors and bankers. The insurance programmes mainly concerned with overseas construction are 'the overseas construction insurance' and 'the export guaranty insurance'. The details of these programmes are as follows:

### **1) Overseas Construction Insurance**

This programme covers delays in receiving payments for finished works and losses caused by the project-owner's negligence or from the owner's bankruptcy, etc., in connection with construction or related works overseas. Any loss caused by war or expropriation is not covered by this programme.

### **2) Export Guaranty Insurance**

This programme covers any loss to the bond-issuing bank, caused by unreasonable demands from the project-owner or agency. Thus insured against loss, banks would be less hesitant to issue bonds to overseas contractors. This programme, therefore, indirectly helps contractors.

## **D. Assistance in Taxes <sup>80</sup>**

The Korean government also offered preferential treatment to overseas contractors in taxes. There were three major programmes in this area: earned income deduction for the income earned from overseas construction works; reserve for any loss resulting from overseas business; and special depreciation for any equipment or machinery used for overseas business.

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<sup>80</sup> *Ten Years' History of Overseas Construction Association of Korea*, OCAK, Seoul, 1987, pp. 83-84, *Overseas Construction Assisting Programme*, OCAK, 1985, p. 147

### **1) Earned Income Deduction**

The Government allowed 2% of the annual amount earned from overseas construction works to be tax-deductible for that year, deductible prior to taxation. This deducted amount, however, was to be used only as reserve for business rationalisation, to be used for the undisposed deficit, or otherwise, transferred into the capital.

### **2) Reserve for the loss from Overseas Business**

A contractor engaged in overseas construction works was allowed to reserve a certain amount for future losses in the overseas business.

The allowed amount for reserve is 2% of the total earned income from the overseas business. After 4 years, the reserve or the remainder, after the deduction from the reserve for losses, shall be added proportionally to the profit for the following 3 years.

This programme helps the overseas contractor when he had a loss in his business, and it also helps even when he did not incur losses, as he does not have to pay the appropriate tax immediately and instead can spread out the tax payment over 3 years.

### **3) Special Depreciation on Equipment or Machinery**

This is a programme to allow depreciation on equipment or machinery used for overseas business, earlier than is normally permitted. In this way, the contractor may be able to utilise the deducted amount, resulting from early depreciation, for his business.

## **E. Government Assistance in Other Areas**

In addition to assistance programmes in finance, insurance, and taxes, the Ministry of Construction dispatched Construction Attachés to 10 countries with responsibilities to engage in construction-related diplomacy with the respective government agencies, collect information on construction projects, and act as trouble-shooters for overseas contractors' problems.

In connection with 'construction-diplomacy', the Ministry of Construction each year invited a quite few members of foreign governments or government-related agencies, generally those who were responsible for construction projects, to give them an opportunity to see and learn about Korea and to foster a friendly relationship with them (Table V-1). Such diplomatic activities probably enhanced the Korean contractors' odds of winning overseas construction projects.

The Korean government also helped construction companies to cope with the end of the Middle East Construction Boom when some of the oil-rich countries in the region could not make cash payments. As mentioned in Chapters III and IV, the decline in the oil price starting in 1982 severely depressed the oil revenues for most Middle Eastern countries, and marked the end of the construction boom in this region.

Apparently faced with serious financial problems, Libya and Iraq, in particular, had difficulties in paying for completed projects and started paying in oil instead of hard currency. Korean contractors decided to take these oil payments, rather than wait a few to several years for cash payments, because the accumulated interest -- i.e., opportunity costs-- for the delayed amounts could become very large.

**Table V-1. Foreign VIPs Visiting Korea in Connection with Construction**

		unit: persons		
		Total	Invited	Voluntary
1976	Minister, Vice-Minister	7	7	-
	Director-General	14	8	6
1977	Minister, vice-Minister	16	12	4
	Director-General	11	4	7
1978	Minister, Vice-Minister	19	8	11
	Director-General	16	5	11
1979	Minister, Vice Minister	17	10	7
	Director-General	20	8	12
1980	Minister, Vice Minister	10	3	7
	Director-General	28	12	16
1981	Minister, Vice Minister	24	6	18
	Director-General	26	10	16
1982	Minister, Vice Minister	28	13	15
	Director-General	34	14	20
1983	Minister, Vice Minister	17	4	13
	Director-General	30	10	20
1984	Minister, Vice Minister	19	9	10
	Director-General	6	-	6
1985	Minister, Vice Minister	20	5	15
	Director-General	7	-	7

Source: Ministry of Construction

Note: Some of these guests were equivalent to Minister, Vice-Minister, or Director-General.

Korean contractors preferred to take these oil payments for another reason as well; they wished to avoid rigid regulations that controlled the outflow of hard currency from these countries because hard currency was in short supply.

The contractors, however, had difficulties in finding markets to sell their oil, as these countries attached conditions 'not to sell in their own oil markets'. The Korean government arranged to import a part of this oil, and helped the contractors' cash flow.



## **2. Overseas Construction Association of Korea (OCAK) <sup>81</sup>**

The Overseas Construction Association of Korea was established by Korean overseas construction businessmen in November, 1976, in order to regulate their overseas activities autonomously, to protect their rights and interests and to perform overseas construction efficiently. The association is a juridical person.

The president of the OCAK is elected by the members of the Association and approved by the Minister of Construction. The Association is managed by the Board of Directors. One who obtains a licence for overseas construction business will be automatically entitled to membership. Presently, it has 77 members: 56 general contractors and 21 specialised contractors in such fields as electrical or architectural, etc.

The Association works as an intermediary between the government and overseas construction companies. The Association advises the government, and submits views and recommendations on laws and policies pertaining to overseas construction. The Association collects and analyses materials and information on overseas construction, and distributes any valuable information to member companies. Often, the Association acts as a quasi-government agency in handling the matters commissioned by the Government. For example, in selecting candidates for a certain overseas project, the Association supervises the process of selection and resolves disputes among the interested contractors.

The major functions of the Association are as follows:

(1) Manage the Overseas Construction Promotion Fund.

This fund is available for feasibility studies and designed as a grant-aid-- i.e., aid to developing countries without the imposition of a repayment obligation, to help them formulate development projects and receive technical assistance in these projects. In technical cooperation, the OCAK, with partial help from this fund, invites people, generally from the

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<sup>81</sup> *Ten Years' History of Overseas Construction Association of Korea*, OCAK, Seoul, 1987, pp. 91-110

government or government-related agencies in developing countries, for technical training every year. Each year the OCAK usually invites about 50-60 persons from 10 different countries.

The Fund is also available for research on construction technology and for information collection on advanced construction technology. Another main purpose is to stimulate and sponsor contractors to open up new overseas construction markets. The 'grant-aid' mentioned above is one of the ways to achieve such a goal.

- (2) Collect materials and data on overseas construction, and analyse them to produce valuable information for member contractors.
- (3) Examine the profitability of overseas projects.
- (4) Study the policies and systems pertinent to overseas construction, and submit opinions and make recommendations to the Government.
- (5) Supervise and guide overseas contractors' activities in order to protect their interests autonomously.
- (6) Develop close ties with major international organisations and other professional groups. Maintaining good relationships with these organisations needs active participation in international meetings and seminars.
- (7) Train and retain the overseas manpower to update their knowledge and capability. Provide basic overseas construction education programmes, in language, culture and customs.

### **3. Korean Contractors in Overseas Construction**

So far, this chapter has discussed the roles played by the Korean government and the

Overseas Construction Association of Korea. While it is important to examine the government policies and strategies that formed the foundation of the contractors' activities overseas, it would be no less important to learn about the trailblazers and pioneers on the forefront--namely, the construction companies themselves. The objective of this section is to take a close look at these companies, in regard to their organisation, management philosophy, and field of specialisation, etc.

It would not do much good to introduce all 51 general contractors, since many of them are very small in size. In 1984, for instance, top 7 companies earned 82% of the total contract volume.<sup>82</sup> Since these 7 companies are generally recognised as industry leaders, it would make more sense to study these companies in detail. The 7 companies are Hyundai, Daewoo, Dong Ah, Daelim, Ssangyong, Samsung, and Lucky. In addition to these companies, one more will be introduced as representative of small to medium-sized companies: A specialist in chemical plant works, Shinwha has been doing very well up to these days. Virtually all of the 7 large companies' operations are similar to one other. Since most of the Korean construction companies have a short business history, most of them are still owned by the founder or one of his family members. Most of the operations have been centralised, and most of the decision are made by the founder's family. As the companies have been growing bigger, only recently have some of them started decentralising their operations.

In the following presentation, the introductory part on each company is mostly based on the company's history book. The data for such figures as manpower, capital, and contract volume were collected from the Construction Association of Korea (different from OCAK). Each company's strategy for business development or management philosophy is cited primarily from the company's history book or interviews with the chairman, president, or senior executive officers, depending on who was available.

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<sup>82</sup> Overseas Construction Data, Ministry of Construction, Seoul, 1984, p.7.

## **(1) Hyundai Engineering and Construction Company, Ltd.<sup>83</sup>**

Hyundai Engineering and Construction was established in 1957 as the mother company of the Hyundai Group today. This distinguishes Hyundai from the other conglomerate-based construction companies of Korea. While the other conglomerates expanded from trade business to construction, the Hyundai Groups started in construction business and moved into other fields. Hyundai is now a well-recognised multinational corporation with 29 subsidiaries involved in engineering and construction, trading and shipping, shipbuilding and plants, automobiles, electronics and electricals, machinery and equipment, steel and metal, petrochemicals, light manufacturing, distribution, leisure, insurance and securities, and finance.

Hyundai Engineering and Construction is the largest construction company in Korea, and in 1985, the Engineering News Record (ENR) ranked Hyundai 7th in the list of international contractors.<sup>84</sup> Among Korea contractors, Hyundai is the first construction company to initiate overseas construction work.

Date of Company Establishment: 25 May 1947

Name of Founder and Chairman: Chung, Ju Yung

Lines of Business: Power Plant, Industrial Plant, Buildings,  
Environment and Sanitary Works, Housing,  
Marine and Offshore Works, Water Resources  
Development, Transportation, Electrification,  
and Engineering design

Manpower in Construction (1990): Engineers -- 1,541  
Total Employees -- 4,277

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<sup>83</sup> Company History Book, Hyundai Co., Seoul.

<sup>84</sup> *Engineering News Record*, McGraw-Hill Inc., July 1986, p. 42

Capital in Construction (December, 1990): 209,297 million won  
(\$1 = 708 won)

Contract Volume (1990): 273 projects, for 2,126,968 million won

Overseas Branch Offices in Construction: 8 in W. Europe, 8 in  
N. America, 12 in the Middle East and Africa, 19 in  
Asia, 5 in E. Europe, 1 in Australia, and 1 in Colombia.

Company's Strategy for Business Development<sup>85</sup>:

The company's mottoes are creativity, leadership, drive, and diligence. Building upon the vast experiences that the company has gathered in overseas construction and the technical expertise that its workers have developed, the company will continue to place emphasis on efficiency and expand beyond national boundaries. The resources of Hyundai affiliates, ranging from machinery works to steel, construction materials and equipment manufacturing, trading, and financing, will further solidify the company's progress into technology-intensive, high value-added areas. The company realises the importance of human capital, and will continue to invest heavily in education and training, and accommodate the workers' needs.

## **(2) Daewoo Corporation**

Starting as a trading company, Daewoo Corporation has become one of the largest conglomerates in Korea. Today, this corporation exports about 3,000 items ranging from textiles to industrial plants.<sup>86</sup>

Daewoo Construction is a division of this corporation. In its early days, Daewoo was concerned only with domestic or the company's own projects; compared with the other major Korean contractors, this company started rather late in the international construction market, in 1976. Moreover, unlike in the case of most other companies, its first overseas project was not

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<sup>85</sup> Based on the company history book and informal talks with Hyundai's executives.

<sup>86</sup> Annual Report 1990, Daewoo Corporation, Seoul.



Currently, Daewoo is working towards achieving an international status as a high-tech engineering constructor. Through heavy investments in R&D, the company continues to pursue intensive technology development. Having relied on the import of foreign technology in its early days, Daewoo is making a rapid progress in its own innovative work in construction and engineering fields. R&D work at the Construction Technical Research Institute, in particular, is leading to development and application of new construction methods. While remaining as a domestic construction leader with its advanced technology, the company plans to expand the scope of its international activities to include the countries in Africa and America.

### **(3) Dong Ah Construction Industrial Company, Ltd.**

Since its establishment in 1945, Dong Ah has been devoting itself to construction business in Korea and throughout the world. For more than four decades, Dong Ah has grown steadily and expanded its organisation to become one of the largest business groups in Korea. Dong Ah has actively participated in the Korean government's long-term economic development plans, and is well-recognised for its successful undertaking of many extensive public works. Dong Ah has also diversified its activities, to include such projects as power plants, integrated iron and steel mills, and nuclear power plants.

Internationally, Dong Ah is well-known for its two world-famous projects. One is Saudi Arabia's Automatic Telephone Expansion Project, the largest single contract in the history of telecommunication works. For this project, Dong Ah had to install 1,260,000 telephone lines covering all regions of Saudi Arabia.<sup>89</sup> The project was worth 1.25 billion US dollars, and it took seven years for Dong Ah to finish. The other one is the Great Man-Made River Project in Libya, which is known as the world's largest single civil engineering project. The work involves pumping up underground water in the Sahara Desert and then transporting it via 1,900 km of concrete pipelines to districts needing water. The first phase of the project was worth

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<sup>89</sup> Company History Book, Dong Ah Construction Co., Seoul, p.43.

about 3.7 billion U.S. dollars,<sup>90</sup> and the second phase, about 4.8 billion dollars.<sup>91</sup> These projects attest to Dong Ah's reputation in the international market.

Date of Company Establishment: 20 August 1945

Name of Chief Executive Officer: Choi, Won Suk

Lines of Business: Civil Works, Architectural Works, Power Plants, Chemical / Petrochemical Plants, Industrial Plants, Telecommunication Works, Electrical Works, and Sewerage Treatment Works

Manpower in Construction (1990): Engineers-- 688  
Total Employees-- 3698

Capital in Construction (1990): 86,750 million won  
(\$1 = 708 won)

Contract Volume in 1990: 94 projects, for 334,080 million won

Overseas Branch Offices: London, Reading, Kingston, U.K.; New York, U.S.A.; Frankfurt, Germany; Tokyo, Japan; Benghazi, Tripoli, Libya; Riyadh, Saudi Arabia; Abu Dhabi, U.A.E.; Baghdad, Iraq.

Company's Strategy for Business Development<sup>92</sup>:

At present, the whole company is very much tied up with Libya's Great Man-Made River (GMR) Project. The second phase of this mammoth project, worth about 5 billion US dollars,

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<sup>90</sup> *MEED*, 24 July 1985, pp.14-16.

<sup>91</sup> Under a \$4.63 Billion Contract with Libya, Korea's Dong-Ah Lays Pipeline for Desert River', *Diplomacy*, vol. XVI, No. 3, Seoul, 1990, pp.36-37.

<sup>92</sup> Based on an interview with Ryu, Young Cheol, President of Dong Ah Construction Co.



will keep Dong Ah busy for the next several years. The first phase of the project is expected to be finished by 1994, and the second phase, by 1998. The company's first priority is to finish the GMR project successfully. With its extensive experience, accumulated technology, and engineering ability, Dong Ah would diversify from its primary market, the Middle East, to Southeast Asia and other markets. In the future, Dong Ah is interested in joint venture projects with local firms, especially in resource development projects.

#### **(4) Daelim Engineers and Contractors.**

Daelim was established in 1939 as a registered corporation for construction services. The company grew dramatically after the Korean War, benefiting from its participation in the National Reconstruction and Rehabilitation Programme. From the early 1960s, Daelim continued on a path of dynamic growth by undertaking construction projects in connection with industrialisation programmes under the nation's successive Five-Year Economic Development Plans.

After successful job performances in the Vietnamese market during the Vietnam war, Daelim advanced into the neighbouring Southeast Asian markets. From the early 1970s, Daelim earned a number of sizable projects in Saudi Arabia and other Middle Eastern countries, and became a reliable and capable general contractor in international markets.

Daelim is the backbone of the Daelim Group comprising 13 affiliated companies. The individual companies are in the business of ceramics, concrete, motorcycles, marketing, real estate, securities business, leisure industry and so forth. In 1987, Daelim moved into the petrochemical industry by merging with a former subsidiary, Honam Ethylene Company, and divided its organisation into the Construction Division and the Petrochemical Division. Daelim has been well-recognised as a leading Korean construction and petrochemical company.<sup>93</sup>

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<sup>93</sup> Company Brochure, Daelim Engineers and Contractors, Seoul.

Date of Company Establishment: October, 1939

Name of Chief Executive Officer: Lee, Joon Yong

Lines of Business: Petrochemicals, Oil Refining, Gas Processing, Power Generation and Distribution, Chemicals, Desalination, Pharmaceuticals, Off-shore and On-shore Facilities, Environmental Engineering, Civil Works and Architectural Works.

Manpower in Construction (1990): Engineers-- 1,118  
Total Employees-- 2,116

Capital in Construction (1989): 97,505 million won.  
(\$1 = 671.4 won)

Contract Volume in 1990: 199 projects, for 1,229,182 million won.

Overseas Branch Offices: London, U.K.; New York, U.S.A.;  
Tokyo, Japan; Jakarta, Indonesia; Al-Khobar, Saudi Arabia; Cairo, Egypt; Singapore; Dubai, U.A.E.;  
Teheran, Iran.

Company's Strategy for Business Development<sup>94</sup>:

Daelim has been focusing its attention on developing technology-intensive business lines. For this purpose, the company established in 1974 Daelim Engineering Company, a wholly-owned subsidiary of Daelim Engineers and Contractors. At the same time, the company also established its Technical Research Institute, and this institute has been instrumental in advancing the company's engineering capabilities and construction technologies. Because of the increasingly severe competition in the international market, Daelim has streamlined the management, reshaped its internal organisation, improved productivity and sought out new markets; Daelim further enhanced its construction and engineering capabilities by establishing

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<sup>94</sup> Management Strategy and Execution, Daelim, Seoul, May 1992, pp.111-134.

joint operations with DEC (Daelim Engineering Company). Combining DEC's accumulated engineering and design capabilities with Daelim's own extensive experience in plant construction worldwide establishes Daelim as a fully integrated business leader in design, engineering, construction and management services. Daelim puts a strong emphasis on teamwork; its people are united under the motto of diligence, integrity, and creativity.

#### **(5) Ssangyong Engineering and Construction Company Ltd.**

Ssangyong Engineering and Construction (Ssangyong E & C) is a part of the Ssangyong Group. Ssangyong was founded as a small manufacturer of daily necessities in 1939. Ssangyong's growth really started after the Korean War through a massive production of cement. As of 1991, Ssangyong had total sales of 10.4 billion US dollars and trade volume of 3 billion US dollars. A conglomerate consisting of 22 domestic subsidiaries and 23 foreign subsidiaries, Ssangyong now has over 24,000 employees worldwide.<sup>95</sup>

For more than half a century, Ssangyong construction activities have been for the group's own production facilities. Ssangyong E & C was formally established in 1977 through a re-organisation of the Group's resources in construction manpower, equipment, and other fields. As the Ssangyong Group expanded in various business operations, Ssangyong E & C rapidly diversified its experience while at the same time increasing its expertise in construction management and advanced technology. Ssangyong E & C is internationally renowned for its architectural works. Notable works by Ssangyong E & C include Indonesia's largest edifice, the Grant Hyatt Jakarta Hotel<sup>96</sup>, and the world's tallest hotel, the 73-storey-high Westin Stamford Hotel, part of the Raffles City Complex in Singapore.<sup>97</sup> The total number of hotel rooms constructed by Ssangyong E & C has exceeded the 7,000 mark.<sup>98</sup>

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<sup>95</sup> Company Brochure, Ssangyong Group, Seoul, p.6.

<sup>96</sup> *Ssangyong's 50 Years*, Ssangyong Group, Seoul, 1989, p.366.

<sup>97</sup> *Ibid*, pp.350-355.

<sup>98</sup> Based on materials supplied by Ssangyong's overseas construction division.

Date of Company Establishment: 18 October 1977

Name of President: Kim, Suk Joon

Lines of Business: Architectural & Housing Works, Civil Works,  
Industrial Plants, and Chemical & Petro-  
Chemical Plants.

Manpower in Construction (1990): Engineers-- 596  
Total-- 1,450

Capital in Construction (1989): 55,200 million won  
(\$1 = 671.4 won)

Contract Volume in 1990: 103 projects, 406,968 million won

Overseas Branch Offices: Garden Grove, California, U.S.A.;  
Tokyo, Japan; Singapore; Kuching, Sarawak, Malaysia;  
Jakarta, Indonesia; Hong Kong; Negara, Brunei; Saipan;  
Riyadh, Saudi Arabia; Amman, Jordan; Kuwait;  
Teheran, Iran; Guam.

Company's Strategy for Business Development<sup>99</sup>:

Ssangyong operates under the managerial philosophy of Reliability, Innovation, and Harmony; reliability in products and service is essential to earn the trust and loyalty of clients; innovation is essential to create new products and services with a highest quality; and harmony is essential to bring out the very best of Ssangyong people's talent. With its extensive experience and expertise, Ssangyong E & C plans to invest their efforts in development projects (in California, USA), offshore construction works, and communications and telecommunications system works. In international markets, Ssangyong E & C plans to expand their construction activities in Vietnam, China, and Iran.

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<sup>99</sup> Based on an interview with Lee, Seung Moo, Ssangyong Construction's Executive Managing Director.

## **(6) Samsung Engineering and Construction Company, Ltd.**

Samsung Group was established in 1938 when Korean industry was in its infancy. Today, Samsung is the largest conglomerate in Korea, and its business covers a wide range of trade, machinery, engineering and construction, chemicals, electronics, insurance, service, and culture and social welfare. Like other corporations worldwide, Samsung was merely a small private company in the beginning, but has grown into an enterprise that encompasses 27 subsidiaries. Engineering and Construction is one of these subsidiaries. Samsung aims to become one of the world's ten largest conglomerates by the year 2000.<sup>100</sup>

Date of Company Establishment (E&C): 30 March 1957

Name of Chairman: Park, Ki Suk

Lines of Business: Design and Engineering, Construction Management, Architectural Works, Civil Works, Plant Construction, and Urban and Regional Development

Manpower in Construction (1990): Engineers- - 1,062  
Total Employees-- 1,969

Capital in Construction (December, 1990): 48,044 million won  
(\$1 = 708 won)

Contract Volume in 1990: 219 projects, 849,767 million won

Overseas Branch Offices: London; New Jersey, USA.; Tokyo, Japan;  
Taipei, Taiwan; Baghdad, Iraq; Riyadh, Saudi Arabia;  
Moscow, Russia; Tripoli, Libya; Kuala Lumpur,  
Malaysia; and Kuwait

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<sup>100</sup> The World of SAMSUNG', Samsung Group, Seoul, 1990.

## Company's Strategy for Business Development<sup>101</sup>:

While emphasising her domestic activities, Samsung will pursue both global competitiveness and cooperation with other multinational corporations to enhance its technological and marketing capabilities. Samsung has a strong interest in upgrading its engineering capability to an internationally well-recognised level. To achieve this goal, the company places a great emphasis on technology development and training and recruiting of qualified manpower.

Samsung's most recent effort is aimed at initiating construction business with former socialist countries. Although inter-governmental guarantees of investment may be lacking, the company has taken the important first step of establishing branch offices in China, Russia and Hungary.

Like many other Korean companies, Samsung's top management (Chairman and President) generally made all the important decisions and their control over the company was absolute. Lately, however, the Group has adopted the division-centre system, and has been allowing an increasing degree of management independence.

### **(7) Lucky Development Company, Ltd.**

Since its establishment in 1969 as a member company of the Lucky-Goldstar Group, Lucky Development Company has grown remarkably to become a leading general contractor, and has achieved a fair reputation in worldwide construction business circles. Initially, LDC gained experience and technical expertise through its close association with Lucky-Goldstar, which was ranked 32nd in the world in 1987 among Fortune 500 corporations outside the US.<sup>102</sup>, and is well-recognised worldwide in the fields of chemistry, electronics, finance and trade. As the construction arm of the of the Lucky-Goldstar Group, LDC has had the

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<sup>101</sup> 'The World of SAMSUNG', Samsung Group, 1990, and Company Brochure, Samsung Engineering & Construction Co., Ltd.

<sup>102</sup> *Fortune*, July 1988.

opportunity and financial support to develop its skills and prepare itself for international operations.<sup>103</sup>

Date of Company Established: 19 December 1969

Name of President: Koo, Cha Won

Line of Business: Chemical Plants, Industrial Plants, Electrical Facilities, Communication Facilities, Architectural and Housing Works and Civil Works

Manpower in Construction (1990): Engineers-- 499  
Total Employees-- 1,192

Capital in Construction (December, 1990): 47,500 million won.  
(\$1 = 708 won)

Contract Volume in 1990: 185 projects, for 567,490 million won

Overseas Branch Offices in Construction: Riyadh, Saudi Arabia; Los Angeles, U.S.A.; Saipan. The group has 13 offices in Asia-Pacific, 11 in North America, 6 in Central and South America, 12 in Europe and 6 in Middle East and Africa

Company's Strategy for Business Development<sup>104</sup>:

To meet the continuing challenges and demands of tomorrow which require more advanced and cost-effective construction techniques, LDC puts strong efforts into research and development, while doing its best to expand the market and enlarge scope of activities. In the meantime, LDC diversified its activities with projects such as wet crude oil handling facilities and electric power distribution networks, and expanded its operations to include Africa and the

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<sup>103</sup> Company Brochure, Lucky Development Co., Seoul, 1990.

<sup>104</sup> Based on materials given by Director Lee, Soo Jo, head of overseas operation, and company brochure of the Lucky-Gold Star Group

United States.

In addition to general contractor activities, LDC is moving into the field of general development with its financial support from the Group. LDC is involved in the development and co-development of the both domestic and overseas properties. Overseas, as the Los Angeles and New Jersey areas are the two strongest real estate markets in the United States, LDC has concentrated on these areas. At Saipan and Guam, attractive resort areas situated in Northern Mariana Islands of the Pacific Ocean, LDC has invested in the development of condominium and hotel complexes. These complexes will offer an excellent and relaxing paradise for city-weary vacationers.

The Group's management philosophy is: (1) Creating Value for the Customer, and (2) Management Respecting Human Dignity

#### **(8) Shinwha Engineering & Construction Company, Ltd.**

Shinwha is a company to make people believe in the saying, 'Small Is Beautiful'. Shinwha specialises in chemical fields, and is in fact a giant among the country's small and medium-sized contractors. While Shinwha may be a dwarf in comparison with Korea's 'chaebol', the big conglomerate corporations, she has been rated as one of the most sound and credit-worthy companies. Shinwha also has a good reputation and high credibility in the international market.

Date of Company Establishment: 21 August 1969

Name of Chairman: Lee, Nam Joo

Lines of Business: Refinery, Petrochemicals & Chemicals, Chemical Fertilisers, Inorganic Chemicals, Pharmaceuticals, Food Processing, Seawater Desalination, Oil Storage Tanks & Pipelines, Cement & Ceramics, Power Plants, and all other business activities



associated with the aforementioned.

Manpower (1990):           Engineers-- 103  
                                  Total Employees-- 755

Capital (December, 1990): 21,459 million won.(\$1 = 708 won)

Contract volume in 1990: 38 projects, for 106,663 million won.

Overseas Branch Offices: Riyadh, Jeddah and Jubail (Saudi  
                                  Arabia), Dubai (U.A.E.), Singapore, Teheran (Iran).

Company's Strategy for Business Development<sup>105</sup>:

Shinwha, on the basis of its accumulated experience in construction works for industrial plants, tries to diversify its construction business to encompass engineering design. Recently, the engineering portion of the company has been growing steadily, and 30% of the total permanent manpower is now in the engineering design works.

Shinwha is now an integrated engineering and construction contractor with expertise in the fields of oil, petrochemical, thermal power and chemical plants. With such integrated EC (engineering and construction) capability, Shinwha is aiming to win big turnkey projects in these fields. For this purpose, Shinwha is pouring investments into research and development.

The management of Shinwha has been highly centralised around the chairman, but, as the business expands and grows, the chairman has decentralised some of the company's operations in recent years.

So far, this Chapter has examined the contributions made by the Korean government, Overseas Construction Association of Korea, and contractors in the development of the Korean overseas construction industry. The government's promotion policy largely set the pace for Korean contractors' activities overseas; the Korean government adopted outward-looking

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<sup>105</sup> Based on an interview with Chairman Lee, Nam J.

strategies to sustain economic growth and reduce the balance of payments problem following the oil price shock of 1973. Korean contractors performed outstanding jobs overseas to become internationally recognised construction companies within a short period.

It might be reasonable to characterise the role of the Korean government and contractors during this period as follows: 'The construction boom in the Middle East supplied fresh materials for a magnificent dinner. The Korean Government and contractors were outstanding cooks, and the delicious meal arrived just at the right time to provide nourishments for the desperately hungry Korean economy'.

Building upon this chapter's qualitative account of the major players in the development of the Korean construction industry, Chapter VI analyses its impact on the Korean economy and society. Chapter VII will take a look at the Japanese overseas construction industry for comparison.

## **Chapter VI: Impact on the Korean Economy and Society**

The previous chapters looked at the industry characteristics of construction and overseas construction, discussed the role of the construction industry in a nation's economy, and reviewed the history of the Korean overseas construction industry in considerable detail. Chapter II introduced a general conceptual framework within which the role of construction and overseas construction industries in a nation's economy could be analysed; Chapter III presented a historical overview of the Korean overseas construction industry, focusing on the reasons for the success of Korean contractors in the Middle East; in considerable detail, Chapter IV examined data on the Korean contractors' accomplishments overseas; and Chapter V discussed the government policies and company strategies that played a critical role in the development of the Korean overseas construction industry. Building upon the preliminary discussions and historical data presented in Chapters II through V, this chapter will examine the core issue of this thesis, the impact of the Korean overseas construction industry on the Korean economy and society.

Figure VI-1 displays the major economic variables that are closely related to the overseas construction industry. The distance from the centre (i.e., overseas construction industry) measures the closeness of the relationship-- the shorter the distance, the closer the relationship.

Figure VI-2 shows how overseas construction work affects the growth of the national economy, the balance of payments, and employment. While Figure VI-1 shows only the overall relationship between the overseas construction industry and major economic variables, Figure VI-2 displays the flow of direct and indirect influences from overseas construction work.

FIGURE W-1. IMPACT GIVEN BY OVERSEAS CONSTRUCTION INDUSTRY

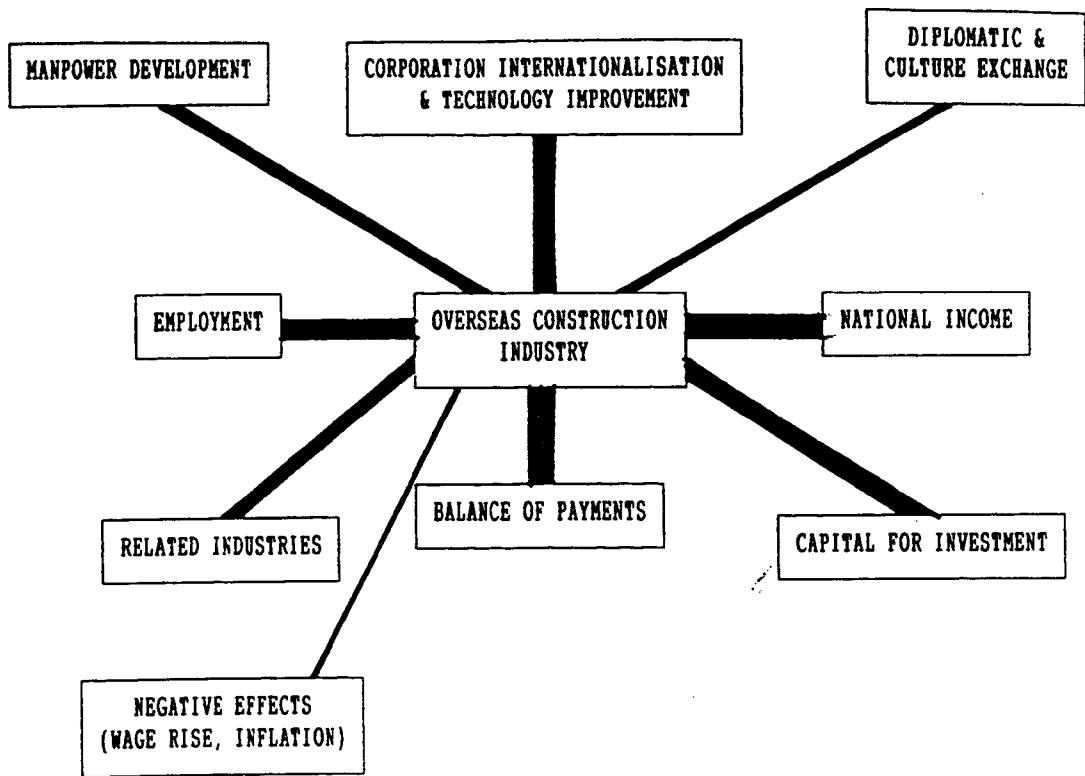
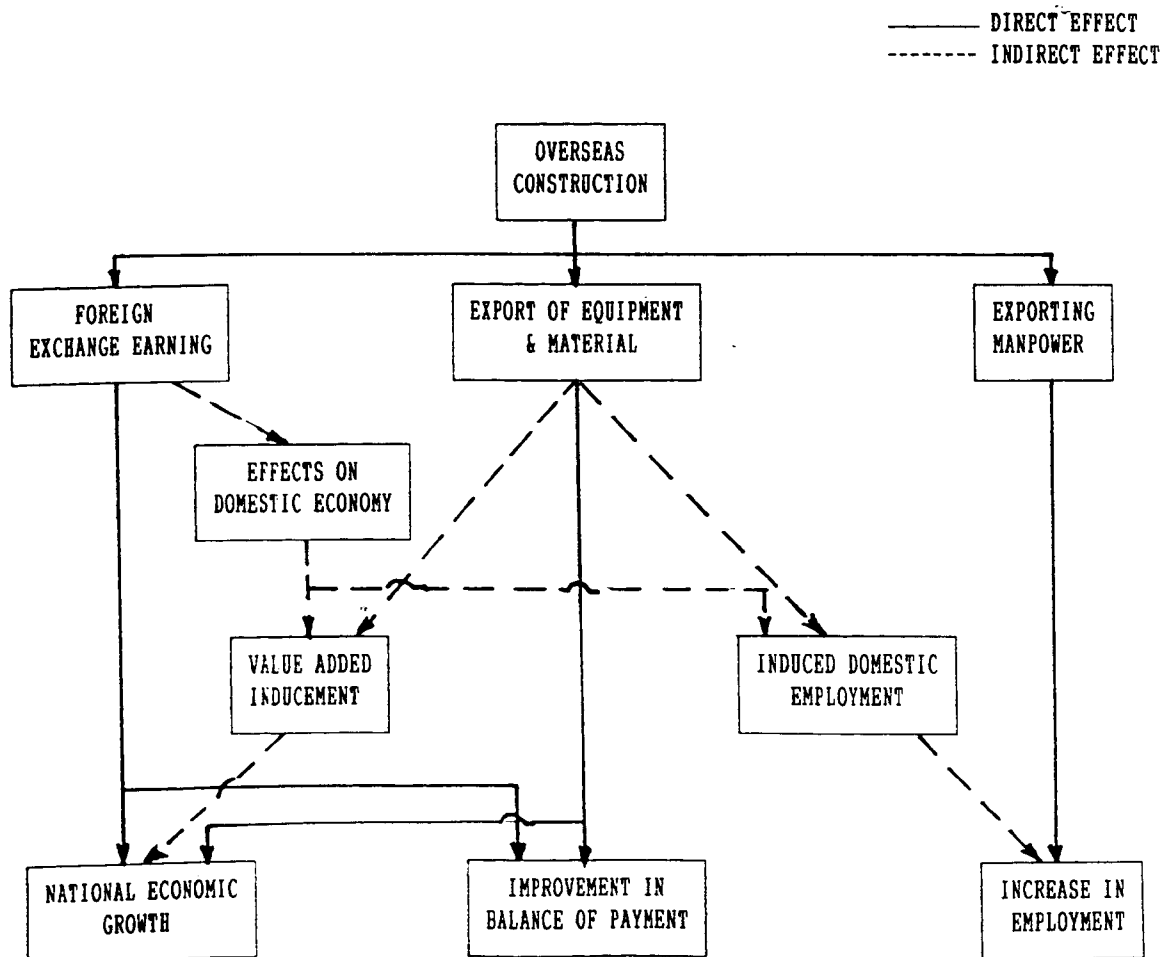


FIGURE W-2. THE DIRECT & INDIRECT EFFECTS ON NATIONAL ECONOMY BY OVERSEAS CONSTRUCTION



According to Figure VI-2, overseas construction work would create foreign exchange earnings, exports of equipment and materials needed for construction projects, and exports of manpower to overseas sites. The earned foreign exchange will in turn lead to an improvement in the balance of payments, and contribute to the nation's economic growth. This improvement in the balance of payments has effects on the domestic economy through multiplier effects; the earned foreign exchange from overseas construction work ultimately raises GDP and increases domestic employment, as the earnings propagate through various sectors of the domestic economy. This basic multiplier mechanism will apply in a similar manner for Exported Equipment and Materials as well as Exported Manpower.

Among the major economic variables influenced by overseas construction work, the balance of payments is one of the most important. The inflow of earned foreign exchange increases the national income and helps domestic capital formation.

In the Korean case, in particular, the overseas construction industry's contribution to the nation's balance of payments was of exceptional nature. As was discussed extensively in Chapter V, earnings from Korea's overseas construction activities poured in just at the right time to rescue the faltering Korean economy. For many years, Korea suffered a chronic deficit in the balance of payments, and the overseas construction industry helped to reduce this burden to a considerable extent, especially during the critical periods around the two oil price shocks of 1973 and 1979.

In general, the export of construction services is quite different from the export of commercial products. While exporting commercial products involves a simple process of selling finished products in foreign markets, selling construction services overseas entails more diversified and complex activities, including the export of manpower, technology, capital, and intermediate products such as construction machinery and materials, and even food and clothing for the exported manpower. The overseas construction industry can have a major impact on the nation's economy because the enhancement of technology and human resources

within the industry can propagate rapidly through its numerous backward- and forward-linkages with related industries.

The 'linkage effect' of the overseas construction industry was particularly notable in the Korean case. Korean construction companies' activities overseas enhanced the opportunities to import and accumulate advanced technology and know-how, and encouraged companies to be internationalised. As Korean contractors earned more projects, there were more opportunities for Koreans to be employed overseas, and this increase in overseas employment-- and the resulting shortage of skilled workers-- led to the creation of manpower training & development programmes at many Korean companies. Furthermore, the Korean overseas construction industry not only created opportunities for related industries in construction equipment and materials, but it also often functioned as a bridgehead for other Korean industries, as the presence of Korean contractors in a foreign land helped other Korean producers to develop export markets for manufactured goods.

Besides these economic impacts, the Korean overseas construction activities also had influences on other areas. Korean contractors helped the government to forge diplomatic relations and establish cultural exchange programmes with host countries. Moreover, the Korean overseas construction industry helped Korean workers to develop a more cosmopolitan outlook, as they had opportunities to live in other countries for an extended period of time. It is, however, difficult to quantify these numerous social influences of the overseas construction industry.

The Korean overseas construction industry also had a number of negative effects on the Korean economy, mainly due to a mismanagement of hard currency earnings from overseas construction. The increased inflow of hard currency led to undesirable results such as inflation, wage escalation, and especially, speculation on land and housing. The shortage of skilled manpower broke down Korea's wage structure in Korea, and adversely affected the competitive position of Korean overseas contractors, who had relied heavily on cheap wages .

The increased inflow of hard currency earnings from overseas construction work led to severe disputes within the Korean government in the late 1970s. Concerned primarily with inflation and conspicuous consumption induced by the Middle East Construction Boom, the Ministry of Finance insisted that the volume of overseas construction work be reduced. But the Ministry of Construction had an opposite argument. Noting that the Middle East Construction Boom provided Korea with a rare opportunity to earn a huge amount of hard currency overseas, the Ministry suggested that Korea take full advantage of this opportunity. The dispute between the Ministry of Finance and the Ministry of Construction reflected the dual nature of drastically increased hard currency earnings from overseas construction projects. Unless both the positive and the negative economic impacts of the overseas construction industry are carefully analysed, it would be impossible to make an objective evaluation of its contribution to the Korean economy.

In this Chapter, the Input-Output model is used to assess the overseas construction industry's contribution to Korea's economic development. One economist has characterized the Input-Output model as follows:

Input-Output is primarily concerned with the methods of analysing interdependence among the industries or sectors of an economy. The modern economy is no isolated land. Production is highly specialized, and industries in an economy are dependent on each other. Changes by a single individual in the economy will thus generate a series of repercussions throughout the entire economy. The changes in any industry will, of course, be small, but they spread from one industry to another over the entire economy so that their cumulative overall effect may be considerable. Thus it is important that economists be able to evaluate the total effects, both direct and indirect, of a change in economy into finer units. Input-output techniques are capable of tracing out effects.... For this reason, input-output techniques have been gaining steadily in importance as a powerful analytical tool.... it is thus possible to use input-output analysis in empirical studies, where more abstract and elegant forms of theories are difficult to apply." 106

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106. Yan, C., *Introduction to Input-Output Economics*, Holt, Rinehart and Winston, Inc., 1969, pp. 2-3

Since its invention by W.W Leontief of the United States in 1936, the Input-Output model has been used worldwide as an economic impact analysis tool. The US government started officially using this model in 1947; Britain, in 1948; and Japan, in 1951. <sup>107</sup>

Korea started using Input-Output Tables in 1964, and since then, the Bank of Korea has revised these Tables more than 10 times. There are other methods of assessing economic impacts such as the regression analysis, but these Tables have been used as a powerful tool in economic impact analysis in Korea. These Tables have been prepared by specialists for a number of years, and it is doubtful that there would be other more reliable numbers on economic indices, factors, or inducing coefficients than the ones in the I-O Tables. Accordingly, this model is adopted in this paper for an economic impact analysis of the Korean overseas construction industry.

**Table VI-1. Annual Hard Currency Earnings up to 1976**

	unit : million \$										
	'66	'67	'68	'69	'70	'71	'72	'73	'74	'75	'76
Total	4.4	8.6	10.6	6.3	12.6	10.9	10.1	6.7	9.5	35.3	345.8
Middle East									0.9	10.1	321.0
S.E. Asia	4.4	8.6	10.6	5.5	10.2	6.8	8.6	5.6	6.2	22.0	22.5
Pacific Islands				0.8	1.9	3.7	1.5	1.1	2.4	1.6	0.2
South America					0.5	0.4				1.0	-0.2
Africa										0.6	2.3

Source: Writer's personal data collected from the Ministry of Finance and Bank of Korea files

The statistics presented in Table VI-1 show that the Korean overseas construction industry's foreign currency earnings really started rising in 1976. Before 1976, the foreign

<sup>107</sup> 'Commentary on Input-Output Tables', Bank of Korea, 1987, pp. 9-10



currency inflow had not been significant enough to have any profound influence on the Korean economy. Accordingly, this chapter will focus on the period from 1976 to 1984.

## **1. Improvement in the Balance of Payments**

The balance of payments is a systematic record of all transactions between residents of one country and the rest of the world for a certain period. This record of transactions is comprised of three accounts: current account, capital account, and financial account. In analysing the balance of payments, the current account is usually the most important of the three, as it takes into account all the influences on national income, employment, and other economic variables.

The current account has three components: visible trade, invisible trade, and unrequited transfers. Invisible trade refers to exports and imports of services, including overseas construction work. Visible and invisible trade make up the trade balance. In this section, the contribution of overseas construction work to the invisible trade balance and the current account will be analysed first.

With the two major oil price increases in 1973 and 1979 (Table IV-2), the oil-producing countries, especially in the Middle East, earned an enormous amount of hard currency and invested heavily in massive infrastructure projects to create better living conditions and to develop a modern industrialised economy.<sup>108</sup> As described earlier in Chapter III, Korean contractors started their construction work in the Middle East in 1973, and earned an increasing number of contracts from the mid-1970s through the early 1980s. With their increased contract volume, their hard currency earnings also increased.

According to the Bank of Korea, the total foreign currency earning from overseas construction work during the 1976-1984 period was 12,311 million dollars (Table VI-2). These earnings greatly helped to reduce the chronic deficit in Korea's balance of payments.

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<sup>108</sup> See Chapter III and Table IV-3.

The earnings reported in this table are somewhat different from the figures displayed in Table IV-9 because the Bank of Korea's account did not include the exports of construction materials and equipment as well as other earnings from transportation, insurance, etc., even though these earnings resulted from overseas construction work. The Bank of Korea categorised these items differently.

Another reason for the difference has to do with the timing of repayment on overseas financing.<sup>109</sup> During the implementation stage, Korean contractors borrowed a certain amount of money each year from local or third countries' banks to carry out their projects; the contractors did not deduct this amount from that year's earnings because repayment was not due at that time. The Bank of Korea, however, treated these loans in a different way, deducting each year's borrowings from that year's balance. Consequently, the contractors' reported earnings in the 1970s and early 1980s were more than the figures calculated by the Bank of Korea. Since the late 1980s, however, the contractors' balances have been often less than the Bank's, because the contractors started paying back their local loans. In this chapter, the Bank of Korea's data will be mainly used because the Bank's economic indices and coefficients have to be applied for analytic purposes.

Table VI-2 shows that earnings from overseas construction work constituted a major part of the invisible trade receipts, as it contributed between 20% and 50% of the total throughout these years. In 1977, the receipt from overseas construction work increased about three times from the previous year, from 438 million dollars to 1,246 million dollars; the overseas construction receipts started dropping off substantially after 1982 with the end of the Middle East Construction Boom.

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<sup>109</sup> See Chapter V for overseas, or 'local', financing, p. 112.

**Table VI-2. Invisible Trade Balance and Overseas Construction**

unit : million \$

	1976	1977	1978	1979	1980	1981	1982	1983	1984
Invisible Trade Receipt	1,643	3,027	4,450	4,826	5,363	6,598	7,476	7,179	7,316
Overseas Const. Receipt	438	1,246	2,148	2,004	1,751	2,174	2,452	1,890	1,710
Ratio(%)	26.7	41.2	48.3	41.5	32.6	32.9	32.8	26.3	23.4
Invisible Trade Payment	1,715	2,761	4,226	5,021	6,749	8,116	8,030	7,613	8,194
Overseas Const. Payment	190	589	1,099	605	300	310	196	150	64
Ratio(%)	11.1	21.3	26	12	4	3.8	2.4	2.0	0.8
Invisible Trade Balance	-72	266	224	-195	-1,386	-1,518	-554	-434	-878
Overseas const.	248	657	1,049	1,399	1,864	1,864	2,256	1,740	1,647

Source: The Bank of Korea.

During this period, Korea's trade balance in construction showed a surplus every year; whereas, the total invisible trade balance was in deficit every year except for 1977 and 1978. Had it not been for overseas construction work, Korea's invisible trade balance would have registered a serious deficit every year, ranging from \$320 million in 1976 to \$3,384 million in 1981. Overall, Table VI-2 shows that from 1976 to 1984, the earnings from overseas construction work were more than one-third of the total invisible trade receipts, while the overseas construction payments constituted less than 10% of the total outgoing invisible trade payments.

As Table VI-3 shows, Korea also ran a chronic deficit in trade balance during the same period, and the current account was in deficit every year except for 1977. During this period, overseas construction work was one of the few bright spots in Korea's trade. To a considerable extent, the earnings from the overseas construction industry offset Korea's increased expenditure on imported oil.

**Table VI-3. Current Balance and Overseas Construction**

unit : million dollars

	1976	1977	1978	1979	1980	1981	1982	1983	1984
A.Current Balance	-313.6	12.3	-1,085.2	-4,151.1	-5,320.7	-4,646.0	-2,649.6	-1,606.7	-1,372.6
B.Trade Balance	-590.5	-476.6	-1,780.8	-4,395.5	-4,384.1	-3,628.3	-254.4	-1,699.6	-1,035.9
C.Import of Petroleum	1,580	2,000	2,190.1	3,330.8	5,654.2	6,504.2	6,075.3	5,768.0	5,807.4
D.Invisible Trade Balance	-71.8	266.0	224.0	-194.6	-1,385.9	-1,518.4	-554.2	-434.6	-877.6
E.OC's Contribution to Balance of Payment	248	1,103.3	1,575.3	1,704.9	1,862.6	2,406.3	2,746.3	2,106.5	1,994.1
(Overseas Constuction)	248	656.7	1,049.2	1,399.0	1,451.5	1,863.8	2,256.5	1,739.8	1,646.6
(Export Materials & Equipment)	N.A.	446.6	526.1	305.9	411.1	542.5	489.8	366.7	347.5
F. E/C (%)	15.4	55.2	71.9	51.2	32.9	37.0	45.2	36.5	34.3

Source: Personal Work based on the data from The Bank of Korea, Ministry of Energy and Resources, Exported Materials & Equipment, Overseas Construction Association of Korea  
N.A.: not available

In 1978, earnings from overseas construction increased to 1,575 million dollars, but the current balance showed a deficit of 1,805 million dollars because of the deficit of 1,781 million dollars in trade balance. Increased expenditure on imported crude petroleum was the main reason for the increase in the trade deficit. In 1979, Korea's overseas construction earnings increased sharply to 1,705 million dollars, but the current balance further deteriorated to 4,151 million dollars, again as increased payments on imported oil raised the trade deficit. If there were no earnings from Korea's overseas construction work, the current balance would have amounted to more than 5,800 million dollars.

As Table VI-3 shows, overseas construction earnings, including exports of construction materials and equipment, covered about 40% of the import payments for crude petroleum from 1976 to 1984.<sup>110</sup> In particular, during the golden years of the Middle East Construction Boom from 1977 to 1979, overseas construction earnings covered more than half the amount spent on imported oil. The overseas construction industry, in short, helped the Korean economy to overcome the worldwide oil crisis.

## **2. Contribution to National Income**

A country's national income is the evaluated market-value for that nation's total produced goods and services for a certain period. It is often expressed as the nation's gross national product, GNP. The overseas construction industry has several impacts on national income: (1) the foreign exchange earnings from overseas construction projects; (2) the multiplier effects on national economy caused by this earned foreign currency; (3) the earnings resulting from exporting equipment and materials for overseas construction projects; and (4) the multiplier effects caused by the earnings on exported equipment and materials.

In Table VI-4, all values are changed to 1980 constant prices, to be compatible with the induced coefficients in the 1980 Output-Input Table published by the Bank of Korea. All values are expressed in won, Korean monetary unit, because the GNP was expressed in won with a greater accuracy, and all the economic indices to be used were evaluated in won by the Bank of Korea. Since the main purpose of Table VI-5, adapted from the 1980 I-O Table, was to help determine the contribution of the overseas construction industry to GNP, the choice of monetary unit is not a big problem, but, obviously, a close attention must be paid to the accuracy of the numbers.

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<sup>110</sup> Ramsey, D. South Korea's Answer to its Oil Bills, *The Financial Times*, Survey: Construction, August 30, 1977

**Table VI-4. Overseas Construction's Effects on GNP**

unit : billion won (1980 constant price), %

	1976	1977	1978	1979	1980	1981	1982	1983	1984
A. Overseas Constuction Earnings	451.2	697.0	1,053.5	1,133.0	881.7	1,047.1	1,325.3	1,076.9	1,049.4
B. Value Added Induced by O.C. Earnings	315.8	487.9	737.4	793.1	617.2	733.0	927.7	753.8	734.6
C. Exported Amt. of Equip. & Materials for O.C.	N.A.	378.8	404.8	205.5	250	322.3	298.8	232.2	213.3
D. Value Added Induced by Export of E&M	N.A.	251.2	269.6	129.0	148.6	199.5	185.0	145.6	133.2
E. Total Earnings from Overseas Construction (A+B+C+D)	767.0	1,814.9	2,465.3	2,260.6	1,897.5	2,301.9	2,736.8	2,208.5	2,130.5
F. GNP	29,285.5	32,407.9	35,981.1	38,502.7	36,672.7	39,088.7	41,211.6	46,109.1	50,003.0
G. A/GNP(%)	1.5	2.1	2.9	2.9	2.4	2.7	3.2	2.3	2.1
H. E/GNP(%)	2.6	5.6	6.8	5.9	5.2	5.9	6.6	4.8	4.3

Source: Personal Work based on the Data from Annual Data Books, Ministry of Construction, Major Statistics of Korean Economy, 1985, Economic Planning Board, Economic Statistics Yearbooks, The Bank of Korea, Input-Output Tables of 1980, The Bank of Korea, Exported Equipment and Material Data, Overseas Construction Association of Korea.

Data on exported equipment and materials for 1976 were not available; annual data on exports of construction equipment and materials are prepared by the Overseas Construction Association of Korea (OCAK), but this organisation was not established until late 1976. Accordingly, the contribution of the overseas construction industry for 1976 should be higher than is shown in Table VI-4.

For proper economic analysis, a number of calculations have been made for the figures

presented in Table VI-4. The calculations involved are as follows:

#### A. Overseas Construction Earnings in 1980 Constant Prices

Overseas construction earnings in current prices had to be changed to 1980 constant price, because the economic indices from Output-Input Table were based on 1980 prices:

$$\text{current price} / \text{deflator}^{111} = \text{1980 constant price}$$

Deflator is the value ratio from a certain year to 1980-- i.e.,

$$\text{item's current price} / \text{that item's 1980 price}$$

#### B. Value-Added Induced by Overseas Construction Earnings

This induced amount of value-added is the result of those economic activities caused by hard currency earnings penetrating and 'multiplying' through the Korean economy.

$$\begin{aligned} &\text{foreign exchange earnings} * \text{value-added inducing} \\ &\text{coefficient, 1980} = \text{induced earnings in 1980 prices} \\ &* : \text{multiply} \end{aligned}$$

The value-added inducing coefficient is a coefficient resulting from 1 unit of penetrated foreign currency, evaluated by the Bank of Korea to be 0.7 for 1980. <sup>112</sup>

#### C. Exported Amount of Equipment and Materials for Overseas Construction in 1980 Constant Price (Table VI-6)

Like A, the current price of exported amount has to be changed to 1980 constant price.:

$$\text{current price} / \text{deflator} = \text{1980 constant price}$$

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<sup>111</sup> Data from the Bank of Korea

<sup>112</sup> Compilatory Report on '80 Input-Output Tables, The Bank of Korea, 1983, p. 120

## D. Value-Added Induced by the Export of Equipment and Materials

This value-added induced amount is the induced economic activities caused by earnings from exports of equipment and materials.

$$\text{exported amount} * \text{weighted average value-added inducing coefficient, 1980} = \text{value-added induced amount in 1980 prices}$$

The weighted average value-added inducing coefficients were calculated as follows:

Multiply the value-added inducing coefficient of 1980 for each exported item by the weight of that item in total exported amounts for that year. Add up these numbers to obtain the weighted average value-added inducing coefficient for that year in 1980 constant price.

The value-added inducing coefficient for each exported item in 1980 is supplied from the 1980 Input-Output Tables (II).<sup>113</sup>

The weight of an item in total exported amounts for a certain year was calculated from Table VI-6:

$$\text{exported amount of an item} / \text{total exports that year}$$

The calculated 'Weighted Average Value-Added Inducing Coefficients' are summarised in Table VI-5.

The following numbers, for 1979, provide an example.

### A. Overseas Construction Earnings in 1980 Constant Price

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<sup>113</sup> 1980 Input-Output Table(II), The Bank of Korea, 1983, pp.594-626



- a. Overseas Construction Receipt (Table VI-2): \$2,004 million
- b. Overseas Construction Payment (Table VI-2): \$605 million
- c. Exchange Rate (won/dollar): 484
- d. Overseas Construction Receipt in Won: 969.94 billion
- e. Overseas Construction Payment in Won: 292.82 billion
- f. Deflator for Overseas Receipt: 0.6367
- g. Deflator for Overseas Payment: 0.7501

h. Overseas Construction Receipt in 1980 Constant  
Price (d/f): 1,523.38 billion won

i. Overseas Construction Payment in 1980 Constant  
Price (e/g): 390.37 billion won

j. Overseas Construction Earnings in 1980 Constant  
Price (h - i): 1,133.0 billion won

#### B. Value-Added Induced Amount by Overseas Construction Earnings

a. Overseas Construction Earnings in 1980 Constant Price: 1,133 billion won

b. Value-Added Inducing Coefficient for 1980: 0.7

c. Value-Added Induced Amount by Overseas Construction  
Earnings in 1980 Price(a\*b): 793.1 billion won

#### C. Exported Amount of Construction Equipment and Materials in 1980 Constant Price

a. Exported Amount of Equipment and Materials (Table VI-2):  
\$305.9 million

b. Exchange Rate (won / dollars): 484

c. Exported Equipment and Material in won: 148.1 billion

d. Deflator for Exports: 0.721

e. Exported Equipment and Material in 1980 constant  
price(c/d): 205.5 billion won

#### D. Value-Added Induced Amount by Exported Equipment and Materials

- a. Exported Equipment and Material in 1980 constant price: 205.5 billion won
- b. Weight Average Value-Added Induced Coefficient in 1980: 0.6277 (Table VI-5)
- c. Value-Added Induced Amount by Exporting Equipment and Materials(a\*b): 129.0 billion won

Row E of Table VI-4 is the total earnings connected with overseas construction work, the sum of foreign exchange earnings, value-added induced amount by these earnings, the earnings from exporting equipment and materials to overseas construction sites, and the value-added induced amount by exporting construction equipments and materials. Understandably, the total earnings for 1976 were quite low compared with other years, because the amount of exported equipment and materials was not included due to lack of data.

All numbers exhibited an increasing trend except for 1980. There is no direct evidence on 'capital flight', but, in 1980, Gen. Chun Doo Hwan took over the government with military force. Domestic politics that year was marked by much uncertainty and instability, and earnings from overseas might have been sent to some place safer than Korea.

The ratio of overseas construction earnings to GNP between 1977 and 1984 ranged from 5 to 7%-- significant shares for a single item in the national income account, especially when it is considered that the domestic construction industry's contribution to GNP was not included. As shown in the analysis above, Korean construction work overseas contributed very much to Korea's economic growth. This was one of the good reasons why the Korean economy could sustain a high rate of economic growth, even through the periods of general recession around the world due to oil price shocks. In short, it would not be an exaggeration to state that the Korean overseas construction industry played a critical role in Korea's economic growth during the 1970s and the early part of 1980s.

Table V15 Weighted Average Value Added Including Coefficients for exported Equipments & Materials

	1977		1978		1979		1980		1981		1982		1983		1984	
	A. Value Added Including Coeffi- cient	B. Export -ing ratio	Coeffi- cient A x B	B. Export -ing ratio	Coeffi- cient A x B	B. Export -ing ratio	Coeffi- cient A x B	B. Export -ing ratio	Coeffi- cient A x B	B. Export -ing ratio	Coeffi- cient A x B	B. Export -ing ratio	Coeffi- cient A x B	B. Export -ing ratio	Coeffi- cient A x B	B. Export -ing ratio
Equipment																
Industrial machinery	0.6860	0.128	0.0878	0.032	0.0219	0.103	0.0707	0.099	0.0679	0.085	0.0583	0.133	0.0912	0.016	0.0110	0.02
Construction and mining																
Motor vehicles	0.5644					0.026	0.0147	0.029	0.0164	0.025	0.0141	0.020	0.0113	0.002	0.0011	0.02
Other transportation Equipment	0.6539					0.006	0.0039	0.002	0.0013							
Materials																
Rollled steel products	0.4893	0.03	0.0147	0.01	0.0049	0.148	0.0724	0.250	0.1223	0.174	0.0851	0.193	0.0944	0.142	0.0695	0.08
Steel pipes and plated steel sheets	0.5418					0.023	0.0125	0.033	0.0179	0.012	0.007	0.039	0.0211	0.023	0.0125	0.02
Iron and steel foundry products and forgings	0.6892	0.567	0.3908	0.61	0.4204	0.170	0.1172	0.109	0.0751	0.112	0.0772	0.107	0.0737	0.134	0.0924	0.1
Cement and cement products	0.06499	0.025	0.0162	0.005	0.0032	0.022	0.0143	0.021	0.10136	0.020	0.130	0.017	0.0110	0.033	0.0214	0.02
Plywood	0.2530	0.016	0.004	0.022	0.0056	0.025	0.0063	0.037	0.0094	0.022	0.0056	0.026	0.0066	0.022	0.0056	0.04
Wooden building materials and wood products	0.5702	0.05	0.0342	0.075	0.0428	0.069	0.0393	0.057	0.0325	0.048	0.0274	0.032	0.0182	0.056	0.0319	0.07
Plastic products	0.6110					0.010	0.0061	0.015	0.0092	0.015	0.0092	0.015	0.0092	0.017	0.0104	0.02
Clay products for construction	0.6894					0.013	0.0090	0.011	0.0076	0.006	0.0041	0.008	0.0055	0.007	0.0048	0.01
Dyestuffs, pigments and paints	0.5182					0.008	0.0041	0.002	0.0010	0.004	0.0021	0.003	0.0016	0.002	0.0010	0.01
Metal products for construction	0.5697					0.008	0.0045	0.010	0.0057	0.005	0.0028	0.005	0.0028	0.003	0.0017	0.01
Other construction materials	0.6739	0.057	0.0337	0.118	0.0795	0.138	0.0930	0.102	0.0687	0.141	0.0950	0.133	0.0896	0.189	0.1274	0.15
Electrical apparatus and equipment supplies	0.5974					0.024	0.0143	0.039	0.0233	0.100	0.0556	0.073	0.0436	0.117	0.0699	0.15
General machinery parts	0.6879	0.024	0.0165	0.026	0.0179	0.061	0.0420	0.033	0.0227	0.045	0.0310	0.056	0.0385	0.061	0.0420	0.12
Daily necessary and other supplies	0.71	0.092	0.0653	0.078	0.0554	0.133	0.0944	0.089	0.0632	0.194	0.1377	0.142	0.1008	0.175	0.1243	0.16
Total	1.000	0.8632	1.000	0.8669	1.000	0.8277	1.000	0.5942	1.000	0.6189	1.000	0.6191	1.000	0.6239	1.00	0.6226

A: 1980 Input-Output Tables (II), The Bank of Korea, 1983, pp. 594-626.  
 B: Calculated Data from Table V.6

Table VI6 Exported Equipment and materials for Overseas Construction

Unit: million dollars

	1977	1978	1979	1980	1981	1982	1983	1984
Equipment	57.4	17.1	41.3	53.9	59.5	74.9	6.6	14.0
Industrial machinery	57.4	17.1	31.4	40.9	46.1	64.9	5.8	6.9
Construction and mining								
Motor vehicles			8.1	12.0	13.4	10.0	8	7.1
Other transportation Equipment			1.8	1.0		0	0	
Materials	399.3	509.1	264.7	357.2	483.1	414.9	360.1	333.5
Rolled steel products	13.5	5.5	45.3	102.8	94.6	94.3	52.1	27.8
Steel pipes and plated steel sheets			6.9	13.7	6.5	19.2	8.4	6.9
Iron and steel foundry products and forgings	252.8	320.7	51.9	44.8	60.9	52.6	49.3	35.7
Cement and cement products	11.3	2.5	6.8	8.8	10.9	8.2	12.1	6.7
Plywood	7.0	11.5	7.6	15.1	11.9	12.6	8.0	12.9
Wooden building materials and wood products	26.9	39.4	21.2	23.4	26.1	15.7	20.6	24.7
Plastic products			3.0	6.1	8.2	7.3	6.4	6.3
Clay products for construction			3.9	4.5	3.2	3.8	2.7	1.7
Dyes/inks, pigments and paints			2.3	0.8	2.0	1.3	.9	4.0
Metal products for construction			2.4	4.3	2.5	2.3	1.1	4.4
Other construction materials	25.6	62.0	42.1	42.0	76.7	64.9	69.2	53.6
Electrical apparatus and equipment supplies		12.8	11.9	41.0	50.2	35.6	42.8	51.3
General machinery parts	11.0	13.8	18.6	13.4	24.4	27.4	22.3	42.4
Daily necessary and other supplies	41.2	40.9	40.8	36.5	105.0	69.7	64.2	55.1
<b>Total</b>	<b>446.7</b>	<b>628.2</b>	<b>308.0</b>	<b>411.1</b>	<b>542.8</b>	<b>489.8</b>	<b>368.7</b>	<b>347.5</b>

Source: Overseas Construction Association of Korea and Collected Data from Korean Private Contractors.

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### 3. Contribution to Employment

In the early stage of its economic development, Korea's primary strategy was to take full advantage of its large 'economically active population'. In the early 1960s, Korea's unemployment rate was close to 8%,<sup>114</sup> and since Korea's technical capability was not very high, the Korean government strategically targeted labour-intensive industries, in order to utilise Korea's abundant human resources.

As Korean construction companies became active in overseas markets, unemployed workers were able to earn opportunities to be gainfully employed, especially after 1973 as Korean contractors rushed out to participate in the Middle East Construction Boom.<sup>115</sup>

Korean contractors categorized their workers into 2 groups: regular employees and temporary skilled workers. Regular employees were permanent members of the company. Generally, they were college graduates, and they were entitled to fringe benefits such as pension, health care, etc. Regular employees had to go through competitive written examinations and interviews before being hired. A heavy weight was also placed on their educational background during the screening process.

The temporary workers, on the other hand, were usually contracted for 1 or 2 years at a time for their trained specific skills. Generally, they were not highly educated, and they did not receive the company's fringe benefits. Skilled workers generally did not have any written examination; their examination would usually involve actual demonstration, demonstration of specific skills and experiences as a carpenter, mason or steel worker, etc.

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114 *Civilian Construction White Paper*, Construction Association of Korea, Seoul, 1988, p.98.

115 *Ibid*, pp.101-102.

**Table VI-7. Overseas Construction's Effects on Employment**

unit: 1,000 persons, 1980 constant price

	1976	1977	1978	1979	1980	1981	1982	1983	1984
A. Workers at Overseas Const. Sites	18.7	45.7	85.0	105.7	131.1	163.1	171.2	162.0	131.0
B. Induced Employment by O.C.'s Hard Currency.Earnings (O.C.'s Hard Currency Earnings bil. won)	104.6	161.6	244.3	262.7	204.4	242.8	307.3	249.7	243.3
(O.C.'s Hard Currency Earnings bil. won)	(451.2)	(697.0)	(1053.5)	(1133.0)	(881.7)	(1047.1)	(1325.3)	(1076.9)	(1049.4)
C. Induced Employment by Export Const.E & M ( Amt.of Const. Equip.&Mat. bil.won)	N.A.	70	78.0	31.7	34.0	46.4	40.7	34.8	31.7
( Amt.of Const. Equip.&Mat. bil.won)	(N.A)	(378.8)	(404.8)	(205.5)	(250.0)	(322.3)	(298.8)	(232.2)	(213.3)
D. Total Employment by O.C. (A+B+C)	123.3	277.3	407.3	400.1	369.5	452.3	519.2	446.5	406
E. National Employed Population	12,412	12,812	13,412	13,602	13,683	14,023	14,379	14,505	4,429
F. O.C's Contribution (D/E, %)	1.0	2.2	3.0	2.9	2.7	3.2	3.6	3.1	2.8

Source: Personal Work based on the Data from Annual Data Books, Ministry of Construction, Major statistics of Korean Economy, 1985, Economic Planning Board, Economic Statistics Yearbooks, The Bank of Korea, Input-Output Tables of 1980, The Bank of Korea, Exported Equipment and Material Data, Overseas Construction Association of Korea.  
 N.A.: Not Available O.C. : Overseas Construction

The effects of overseas construction projects on employment can be broken into two

components, direct and induced. The direct effect would be an increase or decrease in the number of workers at overseas construction sites; whereas, the induced influence would be the multiplied employment opportunities in the industries that have backward- or forward-linkages with the overseas construction industry-- e.g., construction equipment and materials industries. These effects are summarised in Table VI-7.

Table VI-7 shows that the number of workers at overseas construction sites increased continuously until 1982, but then started to decrease in 1983. The reason for the decline was the same as mentioned earlier-- i.e., the contracted volume started to decrease in the Middle East. Between 1977 and 1982, the number of workers at overseas construction sites increased by about 4 times, from 46,000 persons to 171,000 persons. In the domestic economy, about 300,000 jobs were created annually in connection with the overseas construction projects. On average, overseas construction work accounted for about 3% of the nation's employed population, considerably reducing the unemployment rate and improving the living standard of workers.

In 1976, the contributing ratio was quite low compared with other years', simply because the exported equipment and materials were not taken into account. In 1980, the employment opportunities induced by overseas construction work declined even though direct employment created by overseas work increased, probably because of the reduced hard currency earnings from overseas construction work, as explained earlier. It could be also due to the instability in Korea's internal political and economic environment in 1980.

As was the case for Table VI-4, a number of calculations were needed to be made for the economic analysis presented in Table VI-7. As before, all values had to be expressed in 1980 constant price. The calculations are as follows.

**A. Number of Workers at Overseas Construction Sites**

**B. Employment Induced by Hard Currency Earnings from Overseas Construction Work**



Transferred to Korea, hard currency earnings from overseas construction work supplied the capital to create new jobs.

employment induced by hard currency earnings =  
hard currency earnings \* employment inducing  
coefficient (person/bil. won, 1980)

employment inducing coefficient = employment  
coefficient for whole industry, 1980 <sup>116</sup> \*  
production inducing coefficient for whole  
industry, 1980 <sup>117</sup>

Production inducing coefficient is the coefficient  
inducing other related industries to produce an unit  
of a certain item.

As the employment coefficient of 1980 was 132.5  
persons/bil. won and the production inducing coefficient  
of 1980 was 1.75, the 1980 employment inducing coefficient  
was 231.88 persons/bil. won:

$$132.5 \text{ person/bil. won} * 1.75 = 231.88 \text{ person/bil. won}$$

Therefore, the number of employment opportunities induced  
by the Korean overseas construction industry's hard currency  
earnings for 1977 were 161,600.

$$697 \text{ bil. won} * 231.88 \text{ person/bil. won} = 161,620 \text{ persons}$$

### C. Employment Induced by the Export of Construction Equipment and Materials

The number of employment opportunities induced by the  
export of construction equipment and materials was

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116 1980 Input-Output Tables (I), The Bank of Korea, 1983, p. 521

117 Compilatory Report on '80 Input-Output Tables, The Bank of Korea, 1983, p. 119

estimated as follows:

$$\begin{aligned} & \text{employment induced by equipment \& materials exports} = \\ & \text{exported amount} * \text{weighted average employment} \\ & \text{inducing coefficient (persons/bil. won, 1980)} \end{aligned}$$

The weighted average employment inducing coefficient was calculated as follows:

Multiply the employment coefficient of each exported item in 1980 by the production inducing coefficient of that item in 1980. Multiply this product by the weight of that item in the total exported amounts for the given year. Add up these numbers to obtain the weighted average employment inducing coefficient for that year in 1980 constant price.

The employment coefficients of exported items, presented in Column A of Table VI-8, came from the 1980 Input-Output Tables(I)<sup>118</sup>, and the production inducing coefficient of exported items, in Column B, were from the 1980 Input-Output Tables(II).<sup>119</sup> The annual weight of an item in total exported amount, presented in Column D of Table VI-8 for that year, is the same as the figure in Column B of Table VI-5. The calculated Weighted Average Employment Inducing Coefficients are summarised in Table VI-8.

The employment induced by the export of equipment and materials for 1977, for instance, was calculated as follows:

$$\begin{aligned} & 378.8 \text{ bil. won} * 184.80 \text{ person/bil. won} = \\ & 70,002 \text{ persons (Row C, Table VI-7)} \end{aligned}$$

As Korean contractors earned more big projects from the Middle East, construction companies competed among one another to attract good engineers and skilled workers, and

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118 1980 Input-Output Tables(I), The Bank of Korea, 1983, pp. 522-525

119 1980 Input-Output Table(II), The Bank of Korea, 1983, pp. 526-559

began to offer higher salaries and wages and show an increasing concern for their employees' welfare. The resulting improved living standard for workers was one of the Korean overseas construction industry's indirect contributions to the society.

#### **4. Corporation Internationalisation and Technological Improvement**

As briefly mentioned earlier, overseas construction work also contributed much to the internationalisation of Korean corporations and the improvement of their technological capability. Working in other countries in itself had an internationalising effect on companies and their workers. Carrying out hundreds and hundreds of projects overseas also helped them to accumulate technical know-how and valuable management experience.

Under the influence of Korea's outward-looking economic development strategy, Korean corporations' international activities increased noticeably not only in the field of construction, but also in other industries through their exports as well as their close relationship and joint ventures with multinational corporations.

Korean construction companies established joint corporations with local companies in the Middle East and Southeast Asian countries mainly to take advantage of these local companies' knowledge and connections and to receive privileges reserved for local companies by their government.<sup>120</sup> In carrying out overseas projects, Korean contractors also formed collaborative or subcontracting relations with companies from advanced countries.

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<sup>120</sup> Overseas Construction White Paper, Overseas Construction Association of Korea, 1989, pp-145-150.

Table VII-8 Weighted Average Employment Including Coefficient for exported Equipments & Materials

	1977		1978		1979		1980		1981		1982		1983		1984					
	A. Employ-ment Coeffi- cient (pers/ bil, won)	B. Produc- tion Induc- ing Coeffi- cient	C. Employ-ment Induc- ing Coeffi- cient	D. Export- ing ratio	A. Employ-ment Coeffi- cient (pers/ bil, won)	B. Produc- tion Induc- ing Coeffi- cient	C. Employ-ment Induc- ing Coeffi- cient	D. Export- ing ratio	A. Employ-ment Coeffi- cient (pers/ bil, won)	B. Produc- tion Induc- ing Coeffi- cient	C. Employ-ment Induc- ing Coeffi- cient	D. Export- ing ratio	A. Employ-ment Coeffi- cient (pers/ bil, won)	B. Produc- tion Induc- ing Coeffi- cient	C. Employ-ment Induc- ing Coeffi- cient	D. Export- ing ratio				
Equipment			A x B																	
Industrial machinery	71.4	2.1397	152.35	0.128	19.50	0.032	4.87	0.103	15.89	0.089	15.08	0.085	12.95	0.133	20.28	0.016	2.44	0.02	3.05	
Construction and mining																				
Motor vehicles	55.8	1.9613	109.44					0.026	2.85	0.029	3.17	0.025	2.74	0.020	2.19	0.002	0.22	0.02	2.19	
Other transportation Equipment	65.7	2.2535	148.05					0.008	0.89	0.002	0.30									
Materials																				
Roll steel products	14.1	2.6169	36.90	0.03	1.11	0.01	0.37	0.148	5.46	0.250	9.23	0.174	6.42	0.193	7.12	0.142	5.24	0.08	2.95	
Steel pipes and plated steel sheets	18.8	2.7890	52.51					0.023	1.21	0.033	1.73	0.012	0.63	0.039	2.05	0.023	1.21	0.02	1.05	
Iron and steel foundry products and forgings	94.8	2.0011	189.70	0.567	108.72	0.61	118.04	0.170	32.80	0.109	21.09	0.112	21.67	0.107	20.71	0.134	25.93	0.1	18.97	
Cement and cement products	50.3	2.2016	110.74	0.025	2.77	0.005	0.57	0.022	2.44	0.021	2.40	0.020	2.28	0.017	1.94	0.033	3.77	0.02	2.21	
Plywood	53.4	1.3501	72.10	0.016	1.17	0.022	1.61	0.025	1.83	0.037	2.70	0.022	1.61	0.026	1.90	0.022	1.61	0.04	2.88	
Wooden building materials and wood products	149.85	1.8785	281.65	0.06	22.56	0.075	28.2	0.069	25.95	0.057	25.44	0.048	18.05	0.032	12.03	0.056	21.06	0.07	19.72	
Plastic products	75.4	2.2463	169.37					0.010	1.72	0.015	2.58	0.015	2.58	0.015	2.58	0.017	2.93	0.02	3.39	
Clay products for construction	117.3	1.9551	229.33					0.013	3.05	0.011	2.58	0.006	1.14	0.008	1.88	0.007	1.64	0.01	2.29	
Dyestuffs, pigments and paints	33.0	1.8211	60.10					0.008	0.49	0.002	0.12	0.004	0.24	0.003	0.18	0.002	0.12	0.01	0.6	
Metal products for construction	57.6	2.0994	120.83					0.008	1.04	0.010	1.30	0.005	0.65	0.005	0.65	0.003	0.39	0.01	1.21	
Other construction materials	93.25	1.6908	157.69	0.057	9.21	0.118	19.07	0.138	21.76	0.102	16.08	0.141	22.23	0.133	20.97	0.189	29.80	0.15	23.65	
Electrical apparatus and equipment supplies	64.45	1.9738	127.21					0.024	5.00	0.100	12.83	0.083	11.83	0.073	9.37	0.117	15.01	0.15	19.08	
General machinery parts	89.3	2.0566	183.65	0.024	4.46	0.026	4.83	0.061	11.33	0.033	6.13	0.045	8.36	0.056	10.40	0.061	11.33	0.12	22.04	
Daily necessary and other supplies	68.9	2.13	146.76	0.082	14.3	0.078	12.13	0.133	20.68	0.089	13.06	0.194	30.17	0.142	22.06	0.175	27.21	0.16	23.48	
Total			1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	

A: 1980 Input - Output Tables (I), The Bank of Korea, 1983, pp.522-525.  
 B: 1980 Input - Output Tables (II), The Bank of Korea, 1983, pp.526-556.  
 C: Calculated Data from Table V-6.

In many cases, consulting and engineering firms from advanced countries designed projects, or Korean contractors subcontracted out the engineering and/or design portions to the advanced countries' engineering firms, while the Korean contractors carried out the construction portion. Through this kind of collaboration, Korean firms not only improved their capabilities in engineering and management, but, also in finance, procurement, transportation, and trade. <sup>121</sup>

In general, it would be very hard to quantify the extent of corporate internationalisation and technological improvement in concrete terms. One way to estimate these improvements indirectly would be to examine the scope of Korean construction companies' ties with other countries' engineering firms and contractors. Another way to learn about Korean companies' know-how accumulation and internationalisation would be to count the number of projects jointly implemented overseas through international collaboration. Joint projects implemented in different countries would lead to the accumulation of work experience in different environments.

By the end of 1984, Korean firms had formed 40 joint-corporations in 10 countries. The total investment for these joint ventures amounted to 54.1 million dollars; Korean firms' investment share was 28.7 million dollars, which was 53.1% of the total amount. Their total earned contracts amounted to 5,153.8 million dollars (Table VI-9). It was a remarkable achievement through joint-ventures.

Most of the joint-ventures were formed in Saudi Arabia: 241 of 291 total projects (82.8%) and 4,461 million dollars of the total achieved volume 5,153.8 million dollars (87%) were in Saudi Arabia, as most of Korea's overseas projects were in Saudi Arabia, 61% (Tables III-1 and IV-1). The next was in Nigeria, which accounted for 6% of the total volume. Most of the joint-ventures in Nigeria were formed in the early 1980s when she had an abundance of

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<sup>121</sup> Hasegawa, F. *Built By Japan, Competitive Strategies of the Japanese Construction Industry*, M.I.T., 1988, p. 10

oil money following the second oil shock of 1979. Third in line was Malaysia, with 4% of the volume.

**Table VI-9. Joint-Ventures and their Contracting Amount (1969-1984)**

unit : thousand \$

	Number of Coporations	Investment			Contracting Amount	
		Amount	Korean side	Counterpart	No. of proj.	Amount
Saudi Arabia	20	44,134	21,889.5	22,244.5	241	4,461,395
Malaysia	6	984	374	610	8	209,903
Indonesia	2	400	290	110	6	8,830
Hong Kong	1	128	96	32	1	64,103
Brunei	1	4.7	4.7	-	3	26,797
Egypt	1	500	250	250	6	12,866
Sudan	1	1,750	875	875	9	16,044
Nigeria	3	2,086	834	1,252	5	305,529
Guam	1	2,500	2,500	-	12	48,346
U.S.A	4	1,610	1,610	-	-	-
<b>Total</b>	<b>40</b>	<b>54,096.7</b>	<b>28,723.2</b>	<b>25,373.5</b>	<b>291</b>	<b>5,153,813</b>

Source: Overseas Construction Statistics Book, Ministry of Construction, December, 1984.

Korean contractors also had collaboration-projects with firms from advanced countries, such as England, France, Germany, and Japan (Table VI-10). By the end of 1984, the number of joint-projects with these companies had reached 37, for a total contract amount of 3,279.6 million dollars. These projects had begun to be formed since 1976. The reason for the late formation of these collaborating projects was that prior to that time, not many companies from advanced countries had had much confidence in the ability of Korean contractors. By the end of 1984, the number of Korean contractors' subcontracts with advanced countries' companies had reached 246 projects for a total of 8,413 million dollars. <sup>122</sup>

<sup>122</sup> Data given by Overseas Construction Association of Korea.

**Table VI-10. Korean Contractors' Collaborating Projects with Foreign Firms (1976-1984)**

unit : thousand \$			
Project Country	Foreign Firm's Nationality	No. of Projects	Contracting Amount
Australia	Australia	2	9,469
Indonesia	Indonesia	3	18,454
Iran	Iran	1	232,514
	U.S.A	1	99,092
Libya	W.Germany	2	96,860
Malaysia	Malaysia	3	30,732
Philippines	France	1	18,821
Saudi Arabia	United Kingdom	1	4,597
	U.S.A	3	374,984
	W.Germany	1	217,878
	Saudi Arabia	16	1,575,460
	Netherlands	3	600,707
<b>Total</b>		<b>37</b>	<b>3,279,568</b>

Source : Data collected and summarised from Overseas Construction Statistics Books, Ministry of Construction

Another way to estimate the extent of Korean construction companies' internationalisation would be to contrast their overseas construction activities with their activities at home. As shown in Table III-5, in 1974, Korean contractors' overseas construction activities (20.5%) were minor compared to their activities in the domestic market(79.5%). But, the overseas construction share continuously increased. In 1975, it was 44.1% overseas vs. 55.9% domestic; by 1976, the overseas portion had overtaken the domestic share by a big margin, 62.1% vs. 37.9%. Since then, the overseas share has been ahead of the domestic portion. In 1981, eight years after Korean contractors' first venture into the Middle East, overseas construction work accounted for 70% of Korean companies' total construction work. It was quite a big change in just 8 years. This huge change in the composition of construction work suggests that the internationalisation of Korean contractors and their absorption of technology from overseas proceeded at a rapid rate during this period.

Korean contractors' overseas volume was not only high relative to their domestic volume, but it was also high compared to other nations' overseas construction volume. As discussed early in Chapter II (Table II-17), the Korean contractors' annual contracting volume was second highest in the international construction market from 1980 to 1983. Through these years, their average annual contracted volume was over 12 billion dollars and more than 10% of the world awarded volume. Also, according to the ENR survey, among the top 250 international contractors, 26 Korean contractors were included in 1980, 25 in 1981, 30 in 1982, 25 in 1983 and 22 in 1984 (Table II-18).

These facts add up to suggest how rapidly Korean contractors became internationalised in a short period of time. Korean contractors had to work hard to be well-received in the competitive international market. Through their determined efforts, Korean contractors improved and learned advanced technology and management techniques.

An anecdote related by the chairman of Hyundai, the internationally well-known Korean conglomerate, illustrates how far the Korean construction industry has had to travel to become one of the major players in the international market. According to Chairman Chung Ju Young's recollection, in their first international project in 1966, a 98 km highway project in Thailand, Hyundai engineers did not even know how to produce the asphalt properly and they did not know how to finalise the important hardening of ground, as they had never had working experiences before in a hot and heavily damp country. Even the foreign supervisors for the project became very angry at Hyundai's engineers, and were amazed by their lack of technical capability. This is one of the good examples that show how underdeveloped Korea's technological capability was in the early days of its involvement in the international construction market. Today, Chairman Chung says that even though Hyundai lost about one million dollars on that project, it was a great learning experience for the company, which has since become one of the best-known construction companies in the world. The Thai project was a milestone in the company's history.<sup>123</sup>

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<sup>123</sup> *Distress, Glory, and Lessons: Episodes in Overseas Construction*, Overseas Construction Association of



As Korean contractors improved their technical capability, they began to get turn-key projects. Most of their turn-key projects were in architectural and civil works. In the early 1970s, their earned turn-key projects were in small numbers. These project numbers increased to 9 in 1977, 19 in 1978 and 1979, and reached a peak of 31 in 1980. The numbers then dropped, to 26 in 1981, 11 in 1982, 9 in 1983, and 7 in 1984 (Table VI-11). The decline in the annual number of earned turn-key projects occurred as Saudi Arabia started issuing less projects. As Table VI-11 shows, however, the average size of earned turn-key projects increased, even though the annual number of projects declined. In other words, as Korean contractors accumulated experience and improved their engineering ability, their earned projects became bigger and more complex. The earned turn-key contracts were mainly concentrated in the Middle East, especially in Saudi Arabia.

Korean contractors' turn-key projects included architectural and civil works and even sophisticated plant construction as well as design works. These works had to be designed and constructed with advanced technology and know-how.

Through their international activities, Korean construction companies earned many valuable opportunities to gain access to advanced knowledge and technology. Their accumulated know-how and techniques improved the quality of their domestic construction work as well as their overseas work, making a great contribution to the advancement of Korean technology and, ultimately, Korea's social and economic development.

**Table VI-11. Korean Contractors' Overseas Turn-Key Projects**

unit : thousand \$

Year	Country	Contract	
		Number of Projects	Amount
1974	Indonesia	1	46,001
1975	Iran	1	10,277
	Saudi Arabia	1	12,895
	Sub - Total	2	23,172
1976	Saudi Arabia	1	22,106
1977	Saudi Arabia	6	771,728
	Sudan	1	20,000
	Iraq	1	30,400
	Kuwait	1	170,278
	Sub - Total	9	992,406
1978	Saudi Arabia	16	2,430,074
	Sudan	1	88,345
	Qatar	1	2,105
	Kuwait	1	19,980
	Sub - Total	19	2,540,504
1979	Saudi Arabia	16	1,665,452
	Kuwait	1	324,072
	Bahrain	1	1,932
	North Yemen	1	31,953
	Sub - Total	19	2,023,409
1980	Saudi Arabia	25	1,229,770
	Egypt	1	66,245
	Qatar	1	66,429
	Libya	3	189,813
	Philippines	1	325
	Sub -Total	31	1,552,582

1981	Saudi Arabia	17	1,106,911
	Qatar	1	55,574
	Egypt	1	16,965
	Libya	6	1,656,377
	North Yemen	1	15,674
	Sub - Total	26	2,851,501
1982	Saudi Arabia	7	1,370,405
	Jordan	1	5,058
	Qatar	1	10,706
	Libya	1	533,561
	Malaysia	1	34,224
	Sub - Total	11	1,953,954
1983	Saudi Arabia	4	403,930
	Kuwait	1	472
	Libya	1	3,296,974
	Zaire	3	300,000
	Sub - Total	9	4,001,376
1984	Saudi Arabia	4	59,983
	Libya	1	24,594
	Indonesia	1	7,300
	Nepal	1	2,080
	Sub - Total	7	93,957
	Total	135	16,004,968

Source: Yearly Overseas Construction Data Books, Ministry of Construction.

## 5. Effects on Domestic Investment

In her early days of economic development, Korea put emphasis on utilising her cheap, large, and capable labour-force. As mentioned before, Korea used this competitive advantage as the most important element of her outward-looking development strategy, and heavily relied on labour-intensive industries.<sup>124</sup>

As the Korean economy grew rapidly, however, the Korean government began to see the

<sup>124</sup> *Overseas Construction White Paper*, Overseas Constructin Association of Korea, Seoul, 1989, p.163.

limitations of its industrial policy. No longer could Korea continue her economic growth by relying on cheap wages and government subsidies; as wages went up by a considerable degree around the mid-1970s, Korea had to change her industrial structure, and move away from labour-intensive industries in order to be more competitive in the international market.<sup>125</sup> Korea had to move toward an industrial structure based on capital-intensive industries and high technology.

Under the Fourth Five-Year Economic Development Plan (1977-1981), the Korean government planned massive investments in the heavy and chemical industries, which required an enormous amount of capital. In 1979, at its highest level, the investment ratio was 35.6%, and it averaged around 31% during the five years.<sup>126</sup>

In order to implement this industrial transformation, Korea needed a great amount of capital for heavy investment. The shortage of investment capital was one of the serious bottlenecks for Korea's economic development. To make up for this shortage, Korea not only had to use domestic savings, but also had to depend on foreign investment.<sup>127</sup>

During this period, the national savings portion averaged 25.5%<sup>128</sup> while the average portion of foreign savings was 5.6%.<sup>129</sup> Clearly, the investment capital supplied by national savings was in great demand. In this respect, hard currency earnings from Korean construction companies' overseas work flowed into Korea just at the right time, and served as a source of investment capital (Table VI-12).

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<sup>125</sup> Kim, S.G., and D.G. Choi, 'Working Manpower Overseas and Its Significance to Economics', Korea Development Institute, Seoul, December 1985, p.36.

<sup>126</sup> Saving and Investment Ratio, Major Statistics of Korea Economy, 1984, Economic Planning Board, p. 55

<sup>127</sup> *Five Years' History of Overseas Construction Association of Korea*, OCAK, Seoul, 1982, p.6.

<sup>128</sup> Saving and Investment Ratio, Major Statistics of Korea Economy, 1984, Economic Planning Board, p.55.

<sup>129</sup> *Ibid*, p. 55

**Table VI-12. Overseas Construction's Contribution to Domestic Investment**

unit : billion won

	1976	1977	1978	1979	1980	1981	1982	1983	1984
A. Overseas Construction's Foreign Ex. Earnings	451.2	697.0	1,053.5	1,133.0	881.7	1,047.1	1,325.3	1,076.9	1,049.4
B. Saving Ratio of Households (%)	11.8	16.5	17.8	16.5	10.3	10.8	11.9	12.9	15.1
C. Contribution Amount. to Gross Domestic Inv. (A*B)	53.2	115.0	187.5	186.9	90.8	113.1	157.7	138.9	158.5
D. Gross Dom. Investment	3,556.9	5,026.5	7,554.9	11,139.4	11,630.2	13,343	13,979.8	14,745	17,492
E. C/D(%)	1.5	2.3	2.5	1.7	0.8	0.8	1.1	0.9	0.9

Source: Major Statistics of Korean Economy, 1986, Economic Planning Board, Ministry of Finance, Savings Promotion Agency, Overseas Construction Association of Korea.

As shown in Table VI-12, earnings from overseas construction work made reasonable contributions to the gross domestic investment, from 1977 to 1979-- 2.3%, 2.5%, and 1.7% respectively. From 1980, the contribution ratio dropped because of a decline in the propensity to transfer earnings to Korea. As mentioned before, this decline was caused by the low national economic growth and the domestic political disorder in 1979-1980.

Of course, these contributions to the gross domestic investment were estimated figures based on the national households' propensity to save. Generally, the propensity to save among the overseas workers' families was higher than the national average, while the construction companies' savings propensity was probably lower.<sup>130</sup> With these caveats, the national households' savings propensity was assumed as a rough estimate of the overall propensity to save for overseas workers and construction companies.

<sup>130</sup> At that time, companies had more propensity to buy real estate such as land, rather than put the money into savings.

## 6. Effects on Construction-Related Industries

As mentioned earlier, the overseas construction industry had a wide-ranging influence on various parts of the Korean economy. The overseas construction industry had strong impacts on construction-related manufacturing industries; also, service industries such as finance, insurance, transportation (airline industry), commercial trade, etc. became active at home and overseas as Korea's overseas construction industry grew rapidly.

The industries with the closest ties with construction were in the manufacturing of construction materials and equipment. As discussed in Chapter IV, with the Korean government's promotion policy, both the manufacturers and contractors tried hard to use Korean products, but did not meet much success (Table IV-18). Nevertheless, Korean manufacturers earned opportunities to improve their technology and capability internationally, as they made efforts to meet international standards, and improve quality, sales system, and procurement conditions.

Their packing techniques for shipping, for instance, improved as they catered to the needs of Korean construction companies overseas. These improvements in technical knowledge and capability became valuable assets to various industries, but they are hard to quantify.

As for the service industries, the fees paid to domestic banks for guarantee purposes, such as for performance guarantee, prepayment guarantee, equipment and materials, and other various guarantees, and the amounts paid to insurance companies grew quite impressively with the expansion of the overseas construction industry. The figures for the golden years of Korea's overseas construction work were particularly impressive. The guarantee-fee paid for 1979 was 25.4 million dollars; for 1980, \$29.5 million; for 1981, 37.9 million dollars; and for 1982, 38.7 million dollars. The amounts for insurance for those years were 20 million dollars, 25.5 million dollars, 44.6 million dollars and 54.3 million dollars, respectively. <sup>131</sup>

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<sup>131</sup> Figures are from OCAK's collected data from contractors, banks and insurance companies. These are

The contribution to Korea's air transportation industry might be estimated comprehensively as follows. Table IV-11 shows how many persons were at overseas sites per year. It is hard to tell how many of them worked overseas for how many years. But, according to the author's personal experience over many years, it is almost certain that very few workers stayed out there for one year or less without any special reason; most of them stayed overseas for two years, and about one-third of them stayed three years or a little longer. Accordingly, it might be reasonable to say that their average stay overseas was two and a half years. The total yearly number of workers at overseas construction sites from 1975 to 1984 was 1,019,430. When this number is divided by 2.5, it produces 407,770. Thus, construction workers purchased less than half a million round-trip airline tickets to travel to overseas sites. Of course, their travel distances to work-sites were quite different, but, since most of these sites were in the Middle East (94%), the round-trip air-fare per person could be assumed to be about 1,500 dollars.<sup>132</sup> Multiplying the number of tickets, 407,770, by this ticket price suggests that the overseas construction industry contributed roughly 612 million dollars to Korea's airline industry.

In addition to these construction workers, Korean companies frequently dispatched executive officers, managers, and engineers to overseas sites for sales function, estimation, bidding, negotiation, contracts, procurement and supervision of the job progress. The number of these higher-level employees dispatched to overseas sites was about 3,000 per year.<sup>133</sup> For 10 years, the numbers add up to 30,000, and accordingly, their air-travel expenses would be about 45 million dollars. These two air-travel expenses would sum up approximately 660 million dollars, and most of this amount was absorbed by Korean Airlines.

The overseas construction industry even had influences on the newspaper industry. For

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reasonable numbers, but they are not totally accurate as a few contractors' data were not available because they went bankrupt.

132 This airline ticket price was supplied by Korean Airline.

133 This number was given by the Overseas Construction Association of Korea.

example, when an overseas contractor earned a new project, he bought advertisements in newspapers for new managers, engineers, technicians, labourers and even cooks. He had to pay high fees for this advertisement.

With the expansion of the construction companies' overseas business, banks and financing agencies also became busy handling remittance and salary-payments for overseas employees.<sup>134</sup> Shipping companies got involved in handling and shipping materials and equipments to overseas project sites. Merchants exported daily necessities. Even other industries such as international telecommunication were influenced. The overseas construction companies also functioned as outposts for trading companies in international markets.

## **7. Manpower Development**

The expansion of Korean construction companies' activities in the Middle East created numerous job opportunities, and even led to an unprecedented phenomenon of labour demand exceeding labour supply, especially with regard to capable and experienced skilled workers.

For an individual citizen, education & training opens the door to job opportunities and increases the chance to obtain a better job and a higher social status, while for a nation, manpower development through education & training helps to create a highly efficient labour-force, which is the driving force for a country's industrial and social development.

Except for a few who were highly skilled, workers at overseas construction sites were generally not well trained. Their technical capabilities improved, however, with their job opportunities at construction sites, with their 'on-the-job training'.

According to the economic statistics yearbook for 1984, published by the National Bureau of Statistics of Korea, the unemployment rate in Korea in the early 1960s was high,

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<sup>134</sup> All employees open bank accounts before going overseas. A certain percentage, generally around 10%, is paid to employees at overseas sites for petty expenses. The rest are paid to families in Korea through the bank accounts.



close to 8%. In 1970, this rate dropped to 4.5%; in 1978, when Korean business conditions were at their peak, the rate dropped further to 3.2%. Although the business environment deteriorated from 1979, the unemployment rate hovered around 4%. Overseas construction work in the late 1970s helped to keep the unemployment rate at such a low level.

With the falling unemployment rates in the later part of 1970s, there occurred an unusual phenomenon in the Korean labour market: construction companies got engaged in a severe competition to scout engineers and skilled technicians. Such a high demand for engineers and skilled workers caused an 'unreasonably' high rise in wages, as companies attempted to 'steal' these workers away from their competitors. (This phenomenon will be discussed in detail in the last section of this chapter, a section on the negative economic impacts of the Korean overseas construction industry.)

Korea had a limited number of specialists in engineering. They migrated to those overseas construction companies with higher salaries and managerial positions, while engineering firms suffered 'a brain drain'. These labour migrations made manpower management difficult, and even had ill effects on productivity. As the problem became so serious, the Korean government sent out advice-notices to construction companies to cool down this trend, asking these companies 'not to scout away other firms' employees with unreasonably high salary offers'.<sup>135</sup>

This shortage of skilled manpower became an important factor in the establishment of manpower development programmes. Developing excellent manpower became an important issue for Korea's industrialisation as well as individual companies' prosperity. In 1974, the Korean government adopted a compulsory guide suggesting that companies with more than 500 employees train their manpower internally, but, this policy was not strongly enforced. Starting in 1977, the government stressed the importance of this policy for the nation's economic development, and expanded it to apply to companies with more than 300

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<sup>135</sup> *Ten Years' History of Overseas Construction Association of Korea*, OCAK, Seoul, 1987, p.54.

**Table VI-13. Number of Technical Trainees Trained by Institutes**

unit : person

	1978	1979	1980	1981	1982	1983	1984	Total
Total Number of Trainees (A)	100,425	129,297	104,502	78,365	62,920	52,142	51,846	579,497
Public Institutes	19,201	28,488	31,153	26,274	28,085	24,711	22,803	180,715
Companies' Institutes (B)	73,038	90,992	66,213	48,406	30,131	20,960	20,764	350,504
Authorised Institutes	8,186	9,817	7,136	3,685	4,704	6,471	8,279	48,278
No. trained by Overseas Const. (C)	30,669	33,929	28,001	17,793	12,216	9,352	6,514	138,474
C/A(%)	30.5	26.2	26.8	22.7	19.4	17.9	12.6	23.9
C/B(%)	42.0	37.3	42.3	36.8	40.5	44.6	31.4	39.5

Source : Labour White Paper, 1990, p.229, Ministry of Labour, and Overseas Construction Association of Korea

Table VI-13 shows how much contribution was made, through the overseas construction companies' technical training programmes, to national manpower development. Between 1978 and 1984, the Korean overseas construction companies trained 138,474 persons. During this period, the total number of trained workers in Korea was 579,497. Of this total, private companies trained 350,504 persons. The overseas construction companies trained about 24% of the total trainees, carrying out 40% of the private companies' training programmes. These were quite substantial contributions.

The overseas construction companies also adopted a work-relief policy for the destitute unemployed. They trained these people and gave them jobs at overseas project sites. This

136 *Labour White Paper*, Ministry of Labour, 1990, p.198.

policy contributed much to the society in terms of welfare and stability. For instance, from July, 1982 to June, 1983, Korean contractors trained 15,973 persons and 66.2% of them, 10,580 persons, were employed at overseas projects.<sup>137</sup>

Korea hosted the Asian Athletic Games in 1986 and the Olympic Games in 1988. These two major sporting events called for many sophisticated construction projects, and highly trained and experienced overseas construction workers contributed much to the completion of projects on time.

Finally, as many Korean young workers visited and worked in other countries, they had opportunities to see and learn other countries' culture and to compare the living standards. They had opportunities to make comparisons with other countries, develop their knowledge, and open their eyes and build their confidence.<sup>138</sup> Perhaps, these immeasurable insights gained from overseas experience became most valuable and powerful assets to Korea's economic development based on its outward-looking strategy.

## **8. Effects on Diplomacy and Cultural Exchange**

So far, this chapter has been mainly looking into the economic effects of the overseas construction industry. It is, however, also important to recognise the non-economic effects, such as the effects on society, diplomacy and culture.

From the end of the nineteenth century, Korea started to modernise herself in various fields and turned her eyes to the outside world. The Korean people started to orient their mentality for modernisation, and expand their activities onto the international stage. Koreans, however, did not have many opportunities to assert themselves in the outside world. The overseas construction activities since 1965 provided Koreans with good opportunities to learn about

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<sup>137</sup> Data given by OCAK (Overseas Const. Asso. of Korea)

<sup>138</sup> Kim, S.G., and D.G. Choi, 'Working Manpower Overseas and Its Significance to Economics', Korea Development Institute, Seoul, December 1985, p.48.

other countries, and gave them the confidence and incentive to assert themselves abroad, making positive contributions to the modernisation of Korea.

Korean contractors had been all over the world (37 countries by 1984<sup>139</sup>). Their activities were not only in project-issuing countries, but, also in advanced countries, for procurement and engineering consulting purposes.

Up to 1984, roughly 440,000 young Koreans worked overseas, and it would be difficult to ignore their presence and influence in these countries. In particular, most of the countries that hosted Korean contractors were nonaligned countries, and many of them did not have any diplomatic relationship with Korea. Under such circumstances, where diplomatic contacts were not possible, private contractors went in and pioneered to establish some form of diplomatic relationship.

Many of these nonaligned countries were under-developed, and they needed infrastructure for their economic progress. Many of these countries produced oil, and they issued many massive infrastructure projects. Therefore, Korean contractors' presence in those countries had a double meaning-- economic as well as diplomatic.

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139 *Statistics Yearbook of Construction 1984*, Ministry of Construction, Seoul, p.3

**Table VI-14. Project-Host Countries Before the Establishment of Diplomatic Relations**

Region	Country	Date of Diplomatic Relationship	Date of First Project	Remarks
Middle East	Kuwait	1979. 6.11	1975. 1	Embassy
	Bahrain	1976. 6.28	1975.10	Embassy
	Jordan	1975. 3.31	1974.11	Embassy
	U.A.E	1980.12. 5	1975.11	Embassy
	Qatar	1976.10.14	1976. 2	Embassy
	Libya	1980.12.29	1977. 4	Embassy
	Iraq	1981. 7.20	1977. 5	General Consulate
	Yemen	-	1978.10	No Diplomatic Relations
Southeast Asia	Bangladesh	1974. 3. 1	1973.11	Embassy
Africa	Nigeria	1980. 6.27	1974.12	Embassy
	South Africa	-	1975. 6	No Diplomatic Relations

Source : Ministry of Foreign Affairs, Ministry of Construction.

Korean contractors' success was much dependent on how the contractors adjusted themselves to these nonaligned countries' utilitarian policies, and the private diplomacy through the overseas construction companies made it possible for the Korean government to establish formal diplomatic relations with these nonaligned countries. Table VI-14 displays those countries where the private economic relationship through overseas construction work served as the initiating point for a formal diplomatic relationship with Korea.

For instance, Libya was a nonaligned country 'leaning to the left', and had maintained a formal diplomatic relationship with North Korea for many years, but not with South Korea. In 1977, Daewoo, a major South Korean construction company, earned contracts in Libya, and economic exchange between these two countries grew rapidly since then to become important trading partners (Table IV-1). Finally, in 1981 these two countries established an ambassador-level diplomatic relationship. This is a good example of how Korean overseas contractors

helped the government in building diplomatic relations with left-leaning nonaligned countries.

The Korean overseas construction industry also contributed much to cultural exchange. As overseas construction work required many Korean technicians and workers at project sites, there were many opportunities for them to come in contact with other countries' culture and customs. Korean workers learned about other countries' culture, and at the same time, introduce the Korean culture to these countries. Moreover, Korean workers at overseas sites also had opportunities to define and make comparisons between Western, Islamic, and Korean cultures. The insights gained from this cultural contact helped these Korean workers to develop a more cosmopolitan outlook, and make Korea a more open society.

## **9. Negative Effects**

Although the Korean overseas construction industry had many positive impacts on the Korean economy, it also brought some undesirable effects. Because of increased money supply due to the hard currency earnings from overseas construction work, the Korean domestic economy faced inflationary pressures.

In particular, as Table VI-15 shows, land and housing prices rose drastically between the mid-1970s to the mid-1980s, as speculation raged in the real estate market. Many trace the roots of this dramatic rise in land and housing prices to the inflow of foreign exchange earnings from overseas construction work and the government's laissez-faire policy on real-estate investment. As analysed in the sections above, an enormous amount of hard currency flowed into the Korean money market during the Middle East Construction Boom. With increased earnings, workers as well as construction companies could not find more trustworthy investment targets than real estate, and many of them put their savings and surplus earnings in real estate. Combined with speculative investments, the outpouring of money into the real estate market drove up the land and housing prices.

**Table VI-15. Land and Housing Price Rise Index (1975 - 1985)**

		1975 = 100									
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Land Price (%)	100	121	177.5	317.8	387.6	453.6	485.8	513.0	675.7	821.6	885.7
		21.0	47.7	79.0	22.0	17.0	7.1	5.6	31.7	21.6	7.8
House Price (%)	100	127.3	158.5	207.4	285.8	362.5	439.2	449.4	551.1	568.2	568.2
		27.3	24.5	30.8	37.8	26.8	21.2	2.3	22.6	3.1	0

Source: Land Price-- Ministry of Construction; Housing Price-- Korea Housing Bank

In 1977, the land price rose by 47.7%, while the housing price went up by 24.5% from the 1976 level. In 1978, the land price shot up by 79%, while the housing price increased by 30.8%. In 1979, the price increases were 22% and 37.8%, respectively. From 1980 to 1982, the rate of price increases fell down considerably because of the domestic political disorder and low economic growth. In 1983, there was a momentary rise due to the government's relaxed policy on real-estate investment, which was designed to revive the stagnant housing market.

Another serious negative economic effect triggered by the Middle East Construction Boom was the drastic increase in workers' wages both at home and abroad. Of course, this wage increase had two sides. As mentioned earlier, the increase did hurt Korean contractors' position in international competition, but, it helped to improve the living standard of low-class labourers.

The significant increase in wages for overseas construction workers has already been discussed in Chapter IV (Table IV-14). The high level of overseas wages and the labour shortage in the domestic labour market pushed up the domestic wage level.<sup>140</sup> Table VI-16 shows that there was more than a 100% wage increase for domestic construction workers from 1976 to 1980. This wage escalation also influenced wages in other industries, and eventually had a seriously negative effect on Korea's export business, which still relied heavily on labour-intensive industries.

<sup>140</sup> *Ten Years' History of Overseas Construction Association of Korea*, OCAK, Seoul, 1987, p.54.

**TableVI-16. Domestic Wage Increase, 1976 vs. 1980**

unit: 1,000 won

	Manual Labour	Carpenter	Electrician	Welder	Pipe Layout	Arch. Tech.	Heavy Mach. Driver	Avg.
1976	54.3	62.9	89.9	64.4	92.1	86.6	84.5	76.4
1980	165.8	163.3	176.3	146.7	156.8	229.6	202.1	177.2
% Increase	205.3	159.6	96.1	127.8	70.2	165.1	139.2	131.9

Source: Ministry of Labour

Also, the export of construction materials caused a shortage of these materials in the domestic market, and naturally led to price increases. The price rises in land, wages, and materials, all made the housing price go sky-rocketing. This drastic price rise in the housing and apartment market, in turn, generated an inflationary pressure on various segments on the Korean economy.

As analysed above, the Korean overseas construction industry greatly influenced numerous areas of the national economy. The overseas construction industry gave Korean opportunities to enrich their knowledge, to earn a good volume of hard currency, to be internationalised, to improve their capability and to accumulate the know-how. These knowledge and experiences gave them confidence, incentive, encouragement and positive attitudes for their country's outward looking economic development strategy.

Since the impact on Korean economy influenced by the overseas construction has been very comprehensive, it would be hard to grasp all details of its effects. Nevertheless, the contribution had been very impressive: it improved the balance of payments, increased the national income, opened more opportunities for employment, promoted other related industries, improved Korean contractors' technical capability, developed the manpower, accumulated capital for domestic investment, and even helped the government's diplomatic relationship with the third world nonaligned countries.



As the wave of impact spread widely and complicatedly into the Korean economy and society, it is hard to follow through. Therefore, as a powerful model able to measure the interlocked wave of impact, and used for many years to measure the economic impact in Korea, the Input-Output Table was used in this chapter analyses. Some of these influences were intangible to measure such as knowledge, know-how, confidence, incentive, diplomacy, cultural exchange and manpower development, etc.

Of course, there were other negative side defects such as inflation and high increase in wages. But, the loss was minor compared to the gain.

## **Chapter VII. The Japanese Overseas Construction Industry**

Many similarities between Korea and Japan in social customs, cultural values, and economic organisations have led to similar practices and regulations in their construction industry. Guided by similar government policies and business strategies, Japan and Korea have been very actively involved in the international construction market. Before 1983, Korea was the second highest project-earning country, but, since 1984, Japan has been the second-highest project earning country, surpassed only by the United States. Japan and Korea compete severely with each other to earn overseas construction projects.

Using their similarities in customs and culture as 'controls' for these two countries, it may be instructive to compare the development paths of their overseas construction industries. By analysing the historical development of the Japanese overseas construction industry and examining the differences between the Korean and Japanese industries, it may be possible to make a more balanced assessment of Korean contractors' performance overseas.

In this chapter, Section 1 will examine the history and background of the Japanese overseas construction industry; and explain how and why the Japanese contractors decided to participate in the international construction market. Section 2 will analyse statistical data on Japanese overseas construction activities, looking at earned contracts by project size and type, etc. Section 3 will examine the Japanese position in the international construction market. Section 4 will focus on the Japanese government policies designed to support the overseas construction industry. Based on these discussions, Section 5 will make comparisons between Japanese and Korean contractors.

## **1. The Rise of the Japanese Overseas Construction Industry**

This section will look at the historical background of the Japanese overseas construction industry. Part A will look at the domestic origins of the Japanese overseas construction industry. Part B will discuss the motives for Japanese contractors to participate in the international construction market.

### **A. The Origin of the Japanese Overseas Construction Industry**

After Japan's defeat in World War II, on 15 August 1945, Japan came under the United States' supervision. Just like the United States Armed Forces in Korea, the US Forces in Japan tendered many projects to Japanese contractors, and these contractors earned opportunities to familiarise themselves with the Western ways of contracting and managing projects. They also became familiar with advanced construction machines and equipment.

At the same time, Japanese contractors profited from Japan's reconstruction projects after the Second World War. Following the outbreak of the Korean War in June, 1950, the United States invested heavily in infrastructure to build new airports, harbours, roads, and houses, etc. in Okinawa. Japanese contractors cashed in on these new opportunities to master large-scale project management.<sup>142</sup> These experiences in the domestic market helped the Japanese contractors to become active players in the international arena.

In 1952, Japan signed a peace treaty with the United States and became an independent country. Under this treaty, Japan had to pay wartime reparations to those countries formerly occupied by Japan during World War II, and in the early 1950s, Japan agreed to pay reparations to such Southeast Asian countries as Burma, Indonesia, Vietnam, and the Philippines, etc.<sup>143</sup>

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<sup>142</sup> Strassmann, W.P., and J. Wells(eds.), *The Global Construction Industry*, Unwin Hyman, London, 1988, p.61.

<sup>143</sup> *Ibid*, p.61.

**Table VII-1. Japanese Construction Works as Reparation Payment**

unit: million yen

Year	Country	Work Contents	Amount
1955	Burma	Hydroelectric Power Plant	1,235
1956	Burma	Electric Power Transmission	2,410
1959	Indonesia	Drainage Tunnel Works	944
1959	Indonesia	Hotel Construction	3,103
1960	Vietnam	Dam and Hydroelectric Power Plant	10,000
1961	Vietnam	Electric Power Transmission Power	1,900
1962	Indonesia	Drainage Tunnel Works	3,372
1962	Indonesia	Hotel Construction	5,147
1962	Indonesia	Bridge Construction Works	3,740
1962	Indonesia	Textile Equipment & Material Supply	170
1963	Indonesia	Building Construction	3,959
1963	Indonesia	Textile Plant Works	152
1963	Indonesia	Communication Plant Works	46
1963	Indonesia	Technical Assistance	50
1963	Indonesia	Dock Construction Works	144
1964	Indonesia	Building Construction Works	5,040
1964	Indonesia	Technical Assistance	770
1964	Indonesia	Dam Building Works	1,415
Total			43,597

Source: Facts of Construction Export, Kajima Publishing Co., Tokyo, 1977, p.255.

Part of the reparations was 'paid' in construction works: of the total compensation amount of about 360 billion yen (approximately 1 billion dollars), 12%, or about 43.6 billion yen (121 million dollars), was paid in the form of construction works (Table VII-1).<sup>144</sup>

The first overseas construction work under this settlement was No.2 Baruchan Water-Power Station in Burma, which was started in 1955, and the last one, in 1964, was the Kalikonto Dam in Indonesia (Table VII-1). Such projects enabled Japanese contractors to cultivate the overseas construction market, especially in Southeast Asia.

Apart from these reparation-related projects, Japanese commercial overseas construction works did not start until the late stage of the reparation period. In 1961, Kumagai-Gumi earned water transmission tunnel works in Hong Kong, and Goyou Construction Company received a contract for repair works on the Suez Canal in Egypt.<sup>145</sup> Thus, building upon their experiences with reconstruction projects and US military installations at home and reparation works in Southeast Asia, Japanese contractors began their venture into the international construction market.

## **B. Motives for Involvement in Overseas Construction Work**

Although Japanese construction companies ventured into the international market on a commercial basis in the early 1960s, Japanese contractors were content to concentrate on the expanding domestic market in the 1960s. The Tokyo Olympics of 1964 generated a construction boom, and Japan's rapidly growing economy produced a large demand for construction works throughout the 1960s. Therefore, Japanese contractors paid little attention to overseas works on a commercial basis.

With the first oil crisis of 1973, however, the slowing down of the Japanese economy

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<sup>144</sup> Dakemodo, N. *Facts of Construction Export*, Kajima Publishing Co., Tokyo, 1977, pp.254-256.

<sup>145</sup> *Overseas Construction Association of Japan, Inc., 25 Years*, OCAJI, Tokyo, 1981, pp.51-53.

led to a slump in the domestic construction market. The Japanese government adopted an export promotion policy for the construction industry. The Ministry of Construction, in particular, provided tax exemption for a certain amount of profits earned from overseas construction works.<sup>146</sup> Encouraged by these incentives, Japanese contractors rushed out to the international construction market, in part to avoid severe competition and depressed profit margins at home.<sup>147</sup> These contractors also wanted to utilise their accumulated experiences and technical know-how in the international field.<sup>148</sup>

## 2. Japanese Contractors' Overseas Activities

As mentioned above, Japanese overseas construction work started after the Second World War with the wartime reparation works, mostly in the Southeast Asian countries. As Table VII-2 shows, Japanese overseas total contract volume from 1955 to 1985 was approximately 8 trillion yen: from 1955 to 1959, the amount was 9.6 billion yen (0.1% of the total); from 1960 to 1969, 196.3 billion yen (2.5%); from 1970 to 1979, 2,605.4 billion yen (32.8%); and from 1980 to 1985, 5,124 billion yen (64.6%).

As Table VII-2 suggests, the Japanese overseas construction activities did not begin in full-scale until the 1970s. As mentioned earlier in this chapter, Japan's domestic construction market contracted severely after the first oil crisis in 1973. With increased competition and tighter profit margins at home, it was perhaps only natural that Japanese contractors would look outward and make efforts to thrive in the overseas construction market.

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146 Strassmann, W.P., and J. Wells(eds.), *The Global Construction Industry*, Unwin Hyman, London, 1988, p.62.

147 Hasegawa, F., *Built by Japan: Competitive Strategies of the Japanese Construction Industry*, John Wiley & Sons, Inc., New York, 1988, p.82.

148 In 1981, the OCAJI (Overseas Construction Association of Japan, Inc.) conducted a survey asking why Japanese contractors had decided to venture into the international construction market. The reasons were as follows: (1) The domestic construction market was poor; (2) Wanted to internationalise their companies; (3) Wanted to utilise their experiences and technical know-how, etc.

**Table VII-2. Japanese Overseas Construction Volume**

unit: 100 mil. yen

Period	Contract Amount	% to Total Volume
1955 - 1959	95.6	0.1
1960 - 1969	1,963.3	2.5
1970 - 1979	26,054.1	32.8
1980 - 1985	51,240.0	64.6
(1980)	(5,110.0)	(6.4)
(1981)	(7,127.6)	(9.0)
(1982)	(9,215.5)	(11.6)
(1983)	(10,140.0)	(12.8)
(1984)	(9,350.3)	(11.8)
(1985)	(10,296.5)	(13.0)
Total	79,352.8	100.0

Source: '30 Years History', Overseas Construction Association of Japan, Inc., 1986

Note: Volume only for members of OCAJI (57 contractors)

The annual Japanese overseas construction volume was only 93 billion yen in 1973, but it grew to 333.3 billion yen in 1975, 4.6 times the 1973 volume, to 625.6 billion yen in 1979, and exceeded 1 trillion yen in 1983 (Table VII-6).

### A. Characteristics of Contracts

#### 1) Economic Cooperation vs. Commercial Contracts

In general, Japanese overseas construction activities can be divided into two categories based on the degree of government involvement: (1) 'economic cooperation' activities, based on economic assistance programmes; and (2) 'commercial' activities, largely free of direct government support. The 'economic cooperation' activities involve construction contracts tied with the Japanese government's loans and grant-type aid to foreign countries, mostly developing countries in Southeast Asia; whereas the 'commercial' contracts have to do with projects earned through international bidding, private contract, or contract arrangement with Japanese subsidiaries registered in a foreign country.

From 1976 to 1985, the cumulative volume of Japanese overseas contracts tied to economic cooperation programmes was more than 12% of the total amount. These contracts resulted mainly from the Japanese government's loan programme, the OECF (Overseas Economic Cooperation Fund), or grant-type aid (Table VII-3). In the mid-1980s, the Japanese government annually lent about 600 billion yen (approximately 3 billion dollars) to developing countries out of the OECF, to be used for buying commercial products or developing projects.<sup>149</sup> Generally, 10 to 20% of this fund was loaned for infrastructure-building projects, such as roads, dams, bridges, and water supply and sewage systems, etc.

**Table VII-3. Japanese Overseas Contracting Activity**

unit: 100 million yen

Year	Economic	Cooperation	Commercial		Total
	Amount	%	Amount	%	
1976	714	13.1	4,737	86.9	5,451
1977	447	10.8	3,674	89.2	4,121
1978	828	13.9	5,125	86.1	5,953
1979	435	7.0	5,821	93.0	6,256
1980	589	10.9	4,829	89.1	5,418
1981	1,464	16.7	7,285	83.3	8,749
1982	1,054	11.4	8,219	88.6	9,273
1983	1,454	13.8	9,082	86.2	10,536
1984	1,586	15.7	8,525	84.3	10,111
1985	1,108	9.9	10,064	90.1	11,172
Total	9,679	12.3	67,361	87.7	77,040

Source: Ministry of Construction 'Overseas Project Information' JETRO, 8.8.1986.

Note: Total volumes are different from Table VII-2 because the Ministry of Construction summarised data from 145 Japanese contractors and 106 foreign joint-ventures, while OCAJI (Table VII-2) was concerned only with the record of its 57 contractor-members. As suggested by the similarity of the figures in Tables VII-2 and VII-3, however, many of the non-OCAJI members are small construction companies that account for an insignificant portion of the total contract volume.

<sup>149</sup> OECF Annual Report 1991, The Overseas Economic Cooperation Fund, March, 1991, p. 115



## 2) Main Contractors (Mother Companies) vs. Overseas Subsidiaries

The projects awarded to Japanese construction companies also could be divided into those earned by Japanese main contractors and those awarded to Japanese overseas subsidiaries. As Table VII-4 shows, the main contractors earned 85.7% while the subsidiaries contracted 14.3% of the total volume.

**Table VII-4. Japanese Overseas Contract Volume**

unit: 100 million yen

Year	Main Contractor	Overseas Subsidiary	Total
	Amount %	Amount %	
1976	4,746 87.1	705 12.9	5,451
1977	3,648 88.5	473 11.5	4,121
1978	5,615 94.3	338 5.7	5,953
1979	5,693 91.0	563 9.0	6,256
1980	4,653 85.9	765 14.0	5,418
1981	7,890 90.2	859 9.8	8,749
1982	7,819 84.3	1,455 15.7	9,273
1983	8,864 84.1	1,672 15.9	10,536
1984	8,123 80.3	1,989 19.7	10,112
1985	8,946 80.1	2,226 19.9	11,172
Total	65,996 85.7	11,945 14.3	77,040

Source: Construction Industry Handbook, Japanese Construction Industry Strategy Study Association, Kyosei Publishing Co., September, 1987, p.113

Note: Overseas subsidiaries' volume survey started from 1976.

Since 1980, the volume earned by Japanese-owned overseas subsidiaries has increased quite substantially, from 9% of 1979, to 14% in 1980, and then to 19.9% at 1985. This increase in the Japanese-owned subsidiaries' share of total contracts is mainly due to the expansion of Japan's overseas investment, as well as the belief among Japanese contractors that it would be more beneficial to expand as local firms in foreign countries to receive

preferential treatment reserved only for local firms by their government.<sup>150</sup> According to the data given by the Japanese Ministry of Construction, the Southeast Asian region-- especially, Singapore, Malaysia and Hong Kong-- was the major market for Japanese overseas subsidiaries between 1979 and 1983, but, from 1984, the North America region-- namely, the United States and Canada, became the major market, although the Asian market still remained important to the Japanese contractors.<sup>151</sup>

**Table VII-5. Japanese-Owned Overseas Subsidiaries (1985)**

Company	Asia	Middle East	Africa	South America	U.S.A	Europe	Other	Total
Kumagai Gumi	8	1			7	1	1	18
Shimizu	5			1	1	2	2	11
Kajima	4	1		1	4			10
Takenaka	4	1		1	2	2		10
Taisei	4	1	1	1	1		1	9
Ohbayashi	4	1			2			7
Yokyu	3				4			7
Toda	2			1	4			7
Others	32	4		4	7		2	49
<b>Total</b>	<b>66</b>	<b>9</b>	<b>1</b>	<b>9</b>	<b>32</b>	<b>5</b>	<b>6</b>	<b>128</b>

Source: Overseas Construction Year Book, Japan, 1986

Note: 128 companies in 24 countries

By the end of 1984, the Japanese contractors had established 128 local companies in 24 countries. By region, there were 66 companies in Asia, 32 in the United States, and 9 each in the Middle East and South America. Kumagai-Gumi, for instance, had 18 subsidiaries in foreign countries, with 8 in Asia and 7 in the United States; Shimizu had 11 overall, Kajima and Takenaka each had 10, and Taisei had 9 subsidiaries.

<sup>150</sup> Hasegawa, F. *Built by Japan, Competitive Strategies of the Japanese Construction Industry*, M.I.T., 1988, p. 10

<sup>151</sup> Data collected from *Overseas Construction Yearbook, 1984, 1986*, Industrial News Publishing Co., Tokyo, p.24 in the 1984 volume and p.229 in the 1986 volume.

## B. Contract Volume by Region and Country

By the end of 1985, the number of countries where Japanese contractors had construction activities, had reached a total of 67.<sup>152</sup> As explained earlier, for a number of reasons after the Second World War, the Japanese contractors started their overseas construction works in Southeast Asian countries. From 1955 to 1975, their works were mainly concentrated in Asian countries; from 1976 to 1979, in the Middle East countries; and from 1980 to 1985, in the Southeast Asian countries again. But, from 1983, the Japanese construction activities in United States and Canada increased greatly (Table VII-6, Table VII-7).

According to Table VII-6, the Japanese works in Asia accounted for as much as 80% of the total overseas construction volume in 1982, while the volume in the Middle East declined drastically from a high of 59% in 1979 to 12% in 1982. After 1982, however, the Asian share continuously dropped, to 65% in 1983, 53% in 1984, and 36% in 1985.

The Middle Eastern share declined as well, to 37% in 1980, 26% in 1981, 12% in 1982 and 10% in 1984. As was the case for the Korean overseas construction industry, the drastic fall in the volume of Japanese contracts earned from the Middle Eastern countries after 1982 was mainly caused by the decline in the oil price.<sup>153</sup> As Japanese contractors reduced their activities in the Middle East, however, Japan did not face as severe adjustment problems as did Korean contractors. Since Korean contractors much more heavily depended on the Middle Eastern projects than did their Japanese counterparts, once the oil price started to drop, it hurt Korean contractors to a much greater extent.<sup>154</sup>

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152 Overseas Project Information, JETRO, 8 August 1986.

153 Strassmann, W.P., and J. Wells(eds.), *The Global Construction Industry*, Unwin Hyman, London, 1988, p.4.

154 Ibid, p.5.

**Table VII-6. Japanese Contractors' Earned Volume by Region**

Year	Asia	Middle East	Africa	S.America	unit: %		Total Volume (100 mil. yen)
					N.Amer. & Europe	Pacific & Other	
1973	89	3	-	6	-	2	930
1974	58	30	10	1	-	1	1,203
1975	55	23	16	2	-	4	3,333
1976	23	66	4	7	-	0.2	5,451
1977	40	45	4	4	-	7	4,121
1978	50	38	8	3	-	1	5,953
1979	28	59	4	6	-	3	6,256
1980	43	37	8	9	-	3	5,418
1981	61	26	4	8	-	1	8,748
1982	80	12	1	3	-	4	9,273
1983	65	15	3	2	8	7	10,536
1984	53	10	1	3	17	16	10,111
1985	36	11	2	5	24	22	11,172

Source: Data from Overseas Construction Actual Facts, Japanese Overseas Construction Problem Study Association, 1983, p.7, and Overseas Projects Information, JETRO, 1986 (retabulated).

Another difference that distinguished Japanese contractors from their Korean counterparts was the Japanese contractors' growing ability to earn contracts from advanced countries, such as the United States, European countries and Australia, etc. The Japanese contractors' volume earned from North America and Europe accounted for only 8% of the total in 1983, but it grew impressively to 17% in 1984, and to 24% in 1985. Also, the volume share of Australia and the Pacific Islands region grew greatly, from 7% in 1983 to 16% in 1984, and then to 22% in 1985 (Table VII-6).

In comparison, Korea's overseas contract-volume was mainly concentrated in the Middle East, and together with Southeast Asia, the Middle East accounted for 98% of the total amount. For the Japanese overseas construction industry, however, these two regions' combined volume was 80% of the total in 1983, 63% in 1984, and 47% in 1985. In other words, their combined share gradually decreased, as the Japanese contractors were able to

diversify their market and move into developed countries.

Analysed by country, Japanese overseas construction works were mainly carried out in Singapore, Malaysia, Indonesia, Hong Kong, and China in Asia; Iraq, Iran and Saudi Arabia in the Middle East; and in Australia and the United States (Table VII-7).

In 1981, their awarded volumes in Malaysia, Iraq and Singapore were 172.8 billion yen, 121.3 billion yen, and 106.7 billion yen, respectively (1 U.S. dollar = 228 yen). In 1982, boosted by projects on Hong Kong's subway works, the Japanese contractors earned 195.3 billion yen in Hong Kong, and their contracted volumes in Malaysia and Singapore were 187.4 billion and 125.7 billion yen, respectively. In 1983, the Japanese contractors received contracts worth 264.3 billion yen for the Singapore subway project in Singapore, and earned 162.4 billion yen in Malaysia and 106.2 billion yen in Indonesia, respectively. From 1983 on, Japan also became actively involved in the United States construction market, and earned 78 billion yen (336 million dollars) in 1983.

Due to a general recession in Southeast Asian countries in the early 1980s, the Asian construction market slipped from first place on the list of Japan's major overseas construction markets. Instead, the United States became the largest market, as many projects were issued to Japanese contractors by Japan's multinational companies in America.<sup>155</sup> In 1984, the Japanese contract volume in America (mainland USA + Hawaii) was 186.7 billion yen, 140.7 billion yen from Malaysia, 107.9 billion yen from Singapore and 107.4 billion yen from Australia.

In 1985, Japan received contracts worth 275.5 billion yen (approximately 1.37 billion dollars, with 1 U.S. dollar = 200.6 yen) from the United States (U.S. mainland 198.7 + Hawaii 76.8) and this was the highest volume ever received from a single country in the history of the Japanese overseas construction industry. The next big volume of 176.3 billion

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<sup>155</sup> Bennett, J., Flanagan, R., Norman, G., "Japanese Construction Industry", Capital and Countries Report, University of Reading, England, May, 1987, p. 73

yen was from Australia, followed by Hong Kong's 105.8 billion yen.

**Table VII-7. Top 10 Project-Issuing Countries for Japanese Overseas Contractors**

unit: 100 million yen

	19 81		19 82		19 83		19 84		19 85	
	Country	Amount	Country	Amount	Country	Amount	Country	Amount	Country	Amount
1	Malaysia	1,728	Hong Kong	1,953	Singapore	2,643	U.S.A	1,530	U.S.A	1,987
2	Iraq	1,213	Malaysia	1,874	Malaysia	1,624	Malaysia	1,407	Australia	1,763
3	Singapore	1,063	Singapore	1,257	Indonesia	1,062	Singapore	1,079	Hong Kong	1,058
4	Hong Kong	801	Saudi Arabia	653	Hong Kong	796	Australia	1,074	Singapore	864
5	Saudi Arabia	468	Indonesia	416	U.S.A	780	Hong Kong	844	Hawaii	768
6	Indonesia	438	Sri Lanka	195	Kuwait	699	Thailand	601	Egypt	655
7	Thailand	214	Brunei	195	Australia	546	China	467	China	610
8	Panama	208	Thailand	155	Saudi Arabia	437	Saudi Arabia	432	Malaysia	390
9	Mexico	180	E. Germany	136	Sri Lanka	214	Hawaii	337	Indonesia	390
10		150	Panama	99	Algeria	191	Indonesia	279	Brazil	295

Source: 'Overseas Project Information', JETRO, 8.8.1986

Note: U.S.A. here means the mainland U.S.A. , as Hawaii is separated out because of its big volume.

The typical Japanese construction work in the US and Australian markets involved urban re-development projects. For these projects, Japanese contractors generally bought land or old buildings and developed new residential houses, shopping centres, or offices. They then sold the completed projects at value-added prices. To carry out these kinds of projects, the Japanese businessmen not only supplied the necessary construction works but also the financial services.<sup>156</sup> The Japanese businessmen could carry out these projects with financial support from their government or Japanese banks.<sup>157</sup>

<sup>156</sup> Sidaell, A.C., Van Metzinger, W., Tucker, R., Japanese, Korean, and U.S. Construction Industries, The University of Texas at Austin, July, 1988, p. 12

<sup>157</sup> It would be, however, difficult to determine the amount of available financial resources and the extent of financial support, especially in regard to the banks. It would be very difficult to trace the kinds of financial resources and loans used under different circumstances, depending on project type, etc. The writer also believes that it would be another very challenging research project to analyse the impacts of these loans.

### C. Contracts by Project Type

An analysis of the Japanese overseas projects by type clearly shows that while the contract-volume of civil works such as dredging, land reclamation, sea-port, etc. has decreased, the volume of commercial and industrial buildings has drastically increased over time. This increase was mainly caused by the rising volume of construction works associated with the growing number of Japan's overseas development/investment projects, especially in the United States and Australia.

According to Table VII-8, the share of dredging and land reclamation works in total volume decreased from 18.3% in 1976 to 10% in 1980, and then to 3.1% in 1985. As for overseas seaports and associated works, their volume share decreased from 15.4% in 1976 to 7% in 1980 and to 3.3% in 1985. The increase in the share of railway works between the late 1970s and the early 1980s was mainly due to the Hong Kong and Singapore subway projects commissioned to Japanese contractors. Civil works-- i.e., roads, airports, plants, power and electric transmission line projects, as well as dams, and water supply and sewage works-- all fell after the mid-1970s.

In contrast, the share of public building projects continuously increased between 1979 and 1984. As for commercial building works, the volume share increased rapidly from 1981 through 1985, accounting for as much as 54.5% of the total overseas volume in 1985. Again, these changes in the composition of Japan's overseas construction works by project-type occurred because of the Japanese contractors' heavy investment in development projects in the United States and Australia.<sup>158</sup>

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<sup>158</sup> Hasegawa, F. *Built by Japan: Competitive Strategies of the Japanese Construction Industry*, John Wiley & Sons, Inc., New York, 1988, p.94.

Table VII-8. Projects by Type

unit: billion yen

	19 76		19 77		19 78		19 79		19 80		19 81		19 82		19 83		19 84		19 85		Tot al	
	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
	A	12	64	11	39	5	44	10	24	13	44	11	35	9	54	6	80.1	5	16	8	28	90
%	18.3		12.9		10.3		5.0		10.0		5.4		6.6		9.1		2.2		3.1		7.1	
B	7	54	12	56	3	34	12	46	7	31	10	37	10	49	3	11	4	18	6	30	74	366
%	15.4		18.6		7.9		9.6		7.0		5.8		6.0		1.2		2.4		3.3		6.1	
C	5	19	1	4	5	64	2	3	3	4	6	68	10	119	7	61	9	58	11	46	59	446
%	5.5		1.3		14.9		0.7		0.9		10.5		14.5		6.8		7.6		5.0		7.4	
D	11	57	6	15	7	8	5	76	14	41	7	26	11	69	10	49	13	46	5	8	89	395
%	16.4		5.0		2.0		15.7		9.2		4.0		8.4		5.6		6.0		0.9		6.6	
E	4	36	2	2	5	23	2	10	2	10	1	3	1	1	3	13	5	21	1	3	26	122
%	10.4		0.8		5.4		2.2		2.3		0.4		0.2		1.5		2.7		0.4		2.1	
F	14	32	14	32	11	69	10	42	20	79	11	39	13	37	28	92	18	45	18	66	157	533
%	9.2		10.5		16.2		8.8		17.9		6.1		4.5		10.4		5.9		7.3		8.8	
G	4	19	1	20	7	37	6	28	3	8	3	27	8	100	11	148	10	48	7	40	60	475
%	5.4		6.7		8.7		5.9		1.8		4.5		12.3		16.7		6.3		4.4		7.9	
H	1	4	1	3	3	19	2	11	4	23	2	13	3	7	3	18	1	5	6	32	26	134
%	1.1		1.1		4.3		2.4		5.1		2.0		0.8		2.0		0.7		3.5		2.2	
I	5	17	4	16	6	34	7	32	5	16	5	23	9	30	8	17	7	20	4	12	60	216
%	4.9		5.1		7.9		6.7		3.6		3.5		3.7		1.9		2.6		1.3		3.6	
J	5	25	17	47	14	53	21	108	21	102	30	219	40	177	44	135	41	158	17	58	250	1081
%	7.1		15.7		12.4		22.3		23.1		33.9		21.6		15.2		20.6		6.3		17.9	
K	5	16	8	54	3	15	8	18	6	19	20	86	24	154	42	216	62	288	75	497	253	1363
%	4.5		18.0		3.4		3.6		4.3		13.3		18.8		24.4		37.7		54.5		22.6	
L	4	7	6	13	8	29	4	83	13	65	13	69	6	22	10	47	7	41	4	91	75	466
%	2.0		4.4		6.7		17.2		14.7		10.6		2.6		5.3		5.3		10.0		7.7	
M	77	350	83	300	77	427	89	481	111	442	119	645	144	819	175	886	182	764	162	911	1,219	6,025
%	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	

Source: Overseas Construction Association of Japan, Inc., May 1987; Overseas Construction [continued] Actual Facts, Japanese Overseas Construction Problem Study Association, 1983, p.11.  
 Note: Data of O.C.A.J.'s 57 members only, but they were Japan's major contractors.

1. No. of Projects 2. Project Amount  
 A. Dredge, Land Reclamation B. Seaport C. Railway D. Road E. Airport F. Plant G. Power, Electricity  
 Transmission H. Dam I. Water Supply, Sewage J. Public Building K. Commercial Building L. Others M. Total



### **3. Japanese Contractors in International Competition**

This section will examine the Japanese contractors' position in the international construction market, and make some comparisons with other advanced countries' construction industries. These comparisons should provide a clearer picture of the international dimensions of the Japanese construction industry.

#### **A. Japanese Contractors in the International Market**

As discussed in Chapter II, every year the E.N.R. (Engineering News-Record) publishes the Top 250 International Contractors in its July issue. According to the 1986 publication, among the 250 contractors, 43 were American, 39 Japanese, 28 Italian, 18 French, 17 Korean, 16 British and 14 German in 1985.

In 1980, the Japanese contractors listed in the Top 250 earned 3.9% of the 250 top international contractors' total volume for 7th position among the construction-exporting countries. The share of top Japanese contractors' volume, however, continued to increase over the early 1980s.

In 1981, Japan accounted for 6.2 % of the total volume for 7th place overall; in 1982, 7.5% of the total for 5th place; and in 1983, 9.3% for 4th place. In 1984, Japan accounted for 9.1% of the total volume, and climbed up to 2nd place overall, and since 1984, she has kept her No. 2 ranking, with a 14.2% share in 1985, 12.7% in 1986, and 13.4% in 1987 (Table II-17).

When the world's big construction companies are ranked by total received volume-- domestic and overseas combined-- in 1985, among the top 25 contractors (with a contract volume of at least 2,000 million dollars), 9 were American, including the top 6 companies on the list; 8 were Japanese, including the companies from 7th to 13th; and 4 were from France, 2 from UK, 1 from Germany, and 1 from Korea (Table VII-9).

The table demonstrates that Japanese contractors were quite large and very active players in the international construction market.

**Table VII-9. 25 Biggest International Contractors in 1985 by Received Volume**

unit: million \$

Rank	Company	Country	Received Contract Amount			O.C. Rank
			Total	Domestic	Overseas	
1	The Parsons Corp.	U.S.A.	8,620.0	3,592.9	5,027.1	2
2	Bechtel Group Inc.	U.S.A.	7,364.0	3,738.0	3,626.0	3
3	The M.W. Kellogg Co.	U.S.A.	6,757.0	533.0	6,204.0	1
4	Morrison-Knudsen Corp.	U.S.A.	5,887.7	5,469.5	418.2	47
5	Brown & Root Inc.	U.S.A.	5,578.7	2,650.0	2,928.7	4
6	Fluor Corp	U.S.A.	5,127.4	3,735.2	1,392.2	14
7	Kajima	Japan	4,953.4	4,325.7	627.7	30
8	Shimizu	Japan	4,779.1	4,173.7	605.4	34
9	Kumagai Gumi	Japan	4,692.2	2,516.4	2,175.8	6
10	Taisei	Japan	4,641.3	4,374.8	266.5	65
11	Mitsubishi	Japan	4,410.0	2,985.0	1,425.0	13
12	Ohbayashi	Japan	4,280.0	3,902.2	377.8	50
13	Takenaka	Japan	3,787.0	3,598.0	189.0	83
14	Lummus Crest Inc.	U.S.A.	3,500.0	1,080.0	2,420.0	5
15	Phillpp Holzmann AG	W.German	3,232.5	1,284.3	1,948.2	8
16	Stearns Catalytic Corp	U.S.A.	3,118.9	2,645.9	473.0	43
17	Bouygnes	France	3,050.0	1,800.0	1,250.0	16
18	Hyundai	Korea	2,536.4	538.3	1,998.1	7
19	SAE - Societe	France	2,501.0	1,337.0	1,164.0	19
20	Spie Batignoll	France	2,442.6	1,230.3	1,212.3	17
21	Turner Corp.	U.S.A.	2,440.8	2,384.5	56.3	166
22	Hazama	Japan	2,266.3	1,766.5	499.8	39
23	Davy Corp.	U.K.	2,118.8	507.5	1,611.3	11
24	GTM - Entrepose	France	2,075.7	1,456.4	619.3	32
25	John Brown Eng. & Cons.	U.K.	2,066.0	323.0	1,743.0	10

Source: Engineering News Record, McGraw-Hill Inc., 17 July 1986.  
Collected from various issues of ENR and retabulated

## **B. Comparison with Other Countries: Social Infrastructure Investment**

A comparison with other major countries' construction industry shows that Japan's construction investment to GNP ratio was much higher than that for any other country. In 1983, the Japanese ratio was 17.5%, while the West German ratio was 12.5%, the French 9.1%, the British 8.1%, and the American 7.9% (Table VII-10). The high construction investment-to-GNP ratio for Japan suggests that Japan is still in great need of social infrastructure compared to other advanced countries, such as houses, highways, sewage systems, and leisure facilities, etc.<sup>159</sup> Therefore, the Japanese contractors were in a much better position than their counterparts in other countries, as the needed infrastructure works in Japan provided Japanese construction companies with a sound domestic base. The strong domestic demand for construction helped the Japanese contractors to have a strong financial position, compared to their rivals from advanced countries where social infrastructure works had been largely completed..

According to the Japanese Construction White Paper published by the Ministry of Construction in 1986, the availability of sewage systems to residents in Tokyo was only 34% in 1984, compared to 97% in London in 1976, 72% in New York in 1979, and 65% in Paris in 1975. Per capita area of Tokyo's city parks was 2.2 square meters in 1985, compared to 30.4 square meters in London in 1976, 37.4 square meters in Bonn in 1984, 12.2 square meters in Paris in 1984, and 45.7 square meters in Washington, D.C. in 1976.<sup>160</sup> Fig. VII-1. illustrates that social infrastructure facilities in Japan were far behind those in Britain, West German, and the United States. Based on the ratio between social capital stock and GNP, Britain would be the richest country in the world.

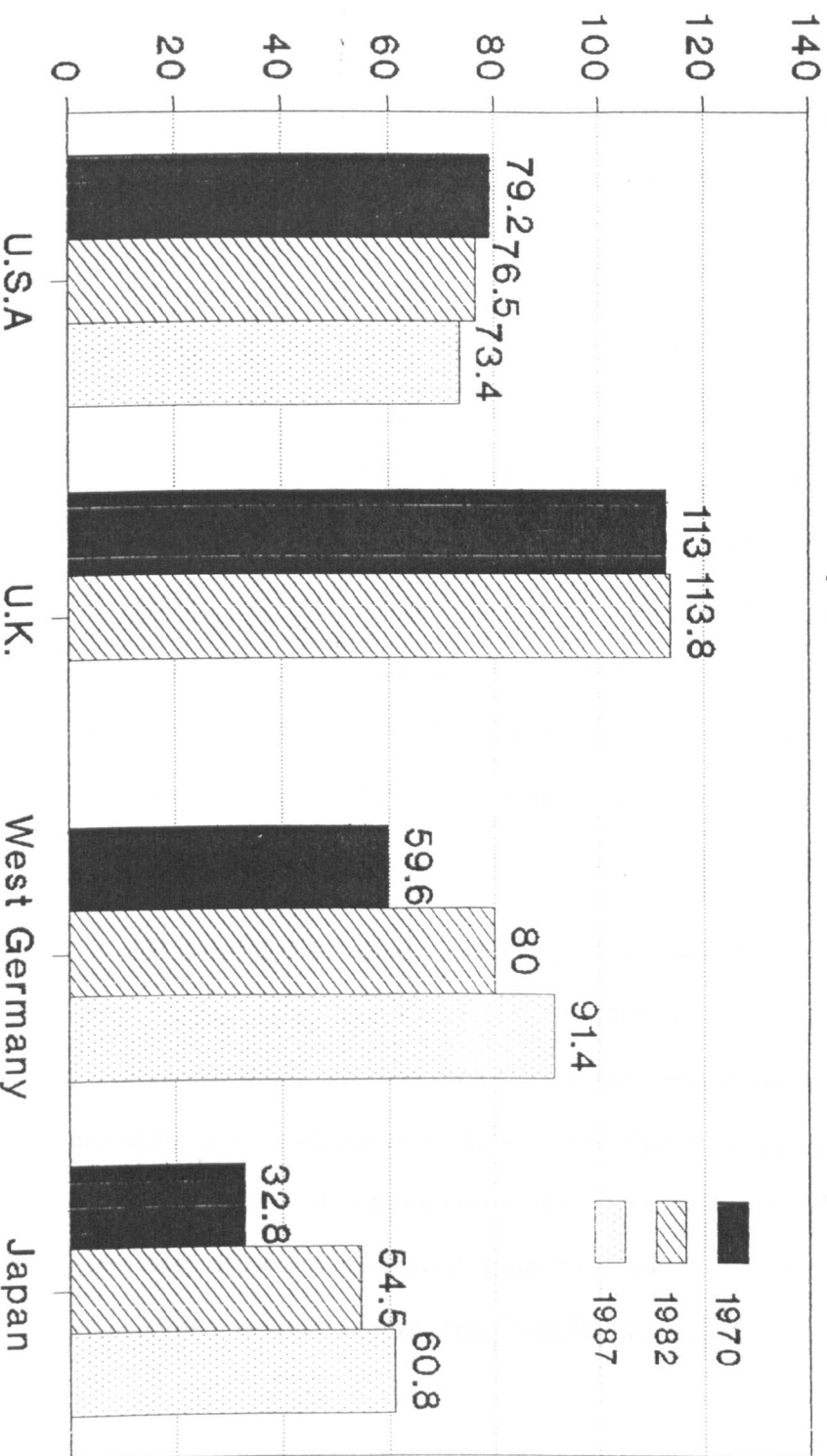
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<sup>159</sup> Hasegawa, F. *Built by Japan: Competitive Strategies of the Japanese Construction Industry*, John Wiley & Sons, Inc., New York, 1988, p. 21

<sup>160</sup> *Ibid*, p.6.

# Fig. VII-1. An International Comparison of the Ratio of Social Capital Stock to GNP

Note: The figures are nominal amount of social capital stock divided by nominal GNP (GDP for W. Germany and the U.K.)



Source: U.K. - National Income and Expenditure (Central Statistics Bureau)  
 Japan - National Economic Accounts Annual (Economic Planning Board)  
 U.S.A. - Survey of Current Business (Department of Commerce)  
 West Germany - Statistisches Jahrbuch (Federal Statistics Bureau)

In 1983, the Japanese domestic construction market volume was 202 billion dollars, a little less than 262.7 billion dollars of the United States, but 5 times that of Britain, 4 times that of France, 2.5 times that of West Germany, and about 27 times that of Korea (Table VII-10).<sup>161</sup>

The number of Japanese contractors in 1983 was 510,000; for the United States, it was 1,200,000 in 1977; for Britain, 160,000; for France, 340,000; for West Germany, 70,000; for Korea, only 500. In the Japanese case, 99.3% of the total number of contractors were small and medium enterprises with capitals of less than 100 million yen (approx. 420 thousand dollar, 1 U.S. dollar = 240 yen), and about 50% of them were privately owned companies. In the US case, 60% of the 1,200,000 enterprises were privately owned companies, and those companies with more than 50 employees were only 7%.<sup>162</sup> Therefore, it would be reasonable to say that most of the contractors in both countries were small and financially weak enterprises, with most projects issues to a small number of big contractors. This is one of the general characteristics of the construction business, a feature shared by most countries.

The number of Japanese workers in construction was 5.4 million in 1983. This number was higher than America's 5.3 million, even though the Japanese construction investment volume was less than that of the United States. The reason must be that the majority of Japanese construction works tended to be in the labour-intensive fields of architecture and civil construction works, while the American construction projects involved more diversified and less labour-intensive works. Also, the use of advanced construction-management techniques must help in saving manpower waste.

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161 Ibid, p.22.

162 Material presented at Seminar to Korean contractors by F. Moavenzadeh, Professor of M.I.T., 1985.

**Table VII-10. Major Countries' Construction Related Indicators (1983)**

unit : 100 million

	Japan	U.K.	U.S.A.	France	W.Germany	Korea
A.G.N.P. (100 mil. \$)	11,563	4,583	33,048	5,430'	6,549	753
B.Const.Investment (Japan = 100)	2,020 (100)	369 (18)	2,627 (130)	496" (25)	819 (41)	73 (3)
C.Const.Invest. Ratio B/A (%)	17.5	8.1	7.9	9.1	12.5	9.7
D.No.of Const.Co. (1,000)	516	161	1,200*	338	73	0.5
E.No. of Const. Workers (1,000)	5,410	1,650	5,253**	1,637	1,452	816

Source: Construction Industries of Major Western Countries, Research institute of Construction and Economy, in *Built By Japan*, by F.Hasegawa, M.I.T., 1988, p.22  
 Note: ' - 1982 number, " - 1982 number, \* - 1977 number, \*\* - 1982 number

#### **4. Government Support for the Japanese Overseas Construction Industry**

In understanding the development of the Japanese overseas construction industry, it is important to examine the Japanese government's promotion policies for this industry, especially in the area of financial support, for these measures may well account for the recent success of the Japanese construction companies in the international market. In winning and implementing overseas projects, Japanese firms have substantial advantages over Korean firms, particularly in the area of financial support. Today, the primary requirement for the implementation of many of the needed construction projects -- especially in developing countries-- is not technical ability or cheap labour, but financial support.<sup>163</sup> In many cases, a country, especially a developing or underdeveloped country, cannot initiate or implement a project without financial backing, even if the country is fully aware of the value of the project for future economic development. Lately, the ability to provide an attractive package arrangement, combining financial support, technical capability, and ability to carry out the

<sup>163</sup> Strassmann, W.P., and J. Wells, *The Global Construction Industry*, Unwin Hyman, London, 1988, p.5.

project, has become far more important than a low bidding price in winning a project. The financial arrangement may be the most important part of the package.

## **A. Promotion Policy of the Japanese Ministry of Construction<sup>164</sup>**

### **(1) Overseas Construction Promotion Fund**

This fund was established at OCAJI (Overseas Construction Association of Japan, Inc.) in September, 1978 with 200 million yen (950 thousand dollar, 1 U.S. dollar = 210 yen), 100 million yen of government grant plus 100 million yen donation from the members of OCAJI. The fund is mainly available for pre-bid feasibility study, training for overseas manpower and information collection on overseas construction.

### **(2) Financial Guarantee System for Overseas Construction Project**

Any loan or debt borrowed from financial institutions for overseas construction or consultant projects can be guaranteed by the Japanese construction guarantee company. Through such an arrangement, financial agencies would be willing to lend to the contractors. Presently, Japan has three such financial guarantee companies: East Japan Construction Guarantee Company, West Japan Construction Guarantee Company and Hokkaido Construction Guarantee Company. These companies were established according to the law to guarantee public works.

### **(3) Investigation and Feasibility Studies of Overseas Construction**

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<sup>164</sup> Study paper on Construction between Korean and Japanese Construction, Economic Research Institute for Korea Industry, Oct. 1987, pp. 382-385

With government budget, the Ministry of Construction studies the development plans of developing countries and also investigates the developing countries' socio-economic conditions, and with above studies and investigations, tries to find out or develop feasible projects. The projects for investigation are mainly in infrastructure, such as bridges, highways, harbours, railways, and water supply systems, etc. Once appropriate projects are found and if Japanese financial support is needed, they would perform the feasibility study with the cooperation of JICA (Japan International Cooperation Agency) and explore the possibility of loan from OECF (Overseas Economic Cooperation Fund).

## **B. Financial Support Systems**

Among the Japanese government's support policies for the overseas construction industry, financial support measures would be the most important. As mentioned in the beginning of this section, the realisation of many construction projects depends mainly on the kind of financial arrangements that can be supplied. One industry observer has noted: "A realisation of large overseas construction projects depends heavily on the availability of low-cost funds, and a fund shortage can result in suspension or delay of the project. Accordingly, a contractor can attract orders by providing a project financing service, such as receiving credits from government organisations and persuading banks, insurance companies, and other investors to join an international consortium as financing members."

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In this section, the Japanese financial support systems will be discussed in three parts. Among these, the OECF (Overseas Economic Cooperation Fund), is to be the powerful and most helpful financial support system for the Japanese overseas construction industry.

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165 F. Hasegawa, *Built by Japan, Competitive Strategies of the Japanese Construction Industry*, John Wiley & sons, Inc., 1988, p. 179.



(1) Overseas Economic Cooperation Fund (OECF) <sup>166</sup>

The Overseas Economic Cooperation Fund was established in March, 1961 with the purpose to promote the overseas economic cooperation with developing countries. It is a 100% government invested fund. The fund of the first fiscal year, 1961, was 1,150 million yen (3.2 million dollar, 1 U.S. dollar = 360 yen), the average interest rate of committed loans to foreign governments was 3.5%, and the repayment period was 20 years and 6 months, including a grace period of 7 years and 6 months. Since then, the Fund has been expanded, and as of March, 1991, 30 years from its establishment, the capital has grown to 2,706 billion yen (18 billion dollars, with 1 US dollar = 150 yen). The loan conditions have been softened considerably, with the current average interest rate of 2.6% and repayment period of 28 years, including 9 years-and-2 months-long grace period

In early days, most of loans were tied loans, but, recently, 85% of loans are untied. More than 70% of these loans have been made to Southeast Asia countries and around 70% of their loans have been in construction or construction-related works.

When a loan is tied, the recipient must procure goods or services from the lending country only. When a loan is untied, the recipient country may procure them not only from the lending country but also from any other eligible country.

OECF's total committed projects in 1990 were 100 and the corresponding amount was 1,006.8 billion yen (6.3

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<sup>166</sup> Study Paper on OECF by EXIM Bank of Korea, 1986, Various Annual Reports of OECF, Study Paper on Cooperation Between Korean and Japanese Construction, Economic Research Institute for Korea Industry, Oct., 1987, pp. 368-370

billion dollars, 1 US dollar = 160 yen).<sup>167</sup> Among 64 major projects, the principal contractors of 54 projects were Japanese or Japanese consortium with other countries' contractors. Japanese overseas contractors have been enjoying these loans, and this financial advantage is one of the reasons why the Japanese contractors have been doing so well in the overseas construction market lately.

(2) Support from EXIM Bank of Japan <sup>168</sup>

The Export-Import Bank of Japan was established in 1950 as the Export Bank of Japan. Since its establishment, the Bank has continuously expanded and diversified its functions and activities. Reflecting its active involvement with imports, the Bank was renamed as the Export-Import Bank of Japan in 1952. The purpose of the Bank is to provide a wide range of financial services, mainly in the fields of plant and ship exports, development and imports into Japan of natural resources, overseas technical services and Japanese overseas investment. It is a financial institution wholly subscribed by the government. As of March, 1990, the Bank's capital was 967.3 billion yen (6.1 billion dollars) and the outstanding loans were 5,733 billion yen (36.2 billion dollars).

Among various Bank's lending activities, the loans connected with overseas construction are as follows:

**Supplier Credits:** Credits are provided to Japanese companies for their exports of plant and as well as related equipment and machineries.

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167 The Overseas Economic Cooperation Fund Annual Report 1991, OECF, Tokyo, October 1991, p.115.

168 The Export-Import Bank of Japan, 'Role and Function', EXIM-Bank of Japan, Study Paper on Cooperation Between Korean and Japanese Construction, Economic Research Institute for Korea Industry, Oct., 1987, p. 372

Technical Service Credits: Provide funds for the export of technical services, which include:

- engineering and consulting services
- feasibility studies, design and supervision
- overseas civil engineering and construction activities of infrastructure such as roads, railways, harbours, airports, dams, water supply and sewage systems, and land reclamation, etc.

Overseas Investment Credits: Funds for Japanese Corporation's overseas investment activities or for their overseas projects. The investment activities can be investment in construction and/or development projects.

In 1984 and 1985, a major reason for the success of Japanese contractors in the United States and Australia was this overseas investment support (Table VII-7), provided for investment in real estate development projects. For example, in Hawaii, a Japanese leading international contractor, Kumagai Gumi invested 4 billion dollars in Ko Olina project as the developer, as well as being a constructor.<sup>169</sup> The company initiated integrated activities from development of demand to planning, design, funding, and construction. To create a development project, a contractor needs enormous financial support, and, with its growing trade surplus, Japan can afford to offer this.

Buyer Credits: Funds available to foreign importers and foreign financial institutions for import of plant, equipment, and technical services from Japan.

The interest rate and repayment term can vary depending on the changes in market interest rates,

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<sup>169</sup> F. Hasegawa, *Built by Japan, Competitive Strategies of the Japan Construction Industry*, John Wiley & Sons, Inc., 1988, p. 95

time-length of loan and other factors such as political stability.

(3) Japan International Cooperation Agency (JICA) <sup>170</sup>

The Japan International Cooperation Agency (JICA) was established in 1974 for the purpose of implementing government-based assistance to developing countries mainly in the fields of technical cooperation and long-term loan programme associated with Japanese companies' overseas activities. JICA is a fully government-affiliated agency under the Ministry of Foreign Affairs.

In technical cooperation, the JICA invites people, generally government or government-connected personnel, from developing countries for technical training every year, dispatches Japanese experts abroad, sends survey teams to help formulating development plans and projects, and extends technical assistance in implementing these projects.

The long-term loan programme is associated with the Japanese companies' overseas projects such as roads, railways, harbours, sewage and water supply systems, telecommunication and school facilities, etc. The interest rate varies from 0.75% to 3.5%, and the repayment schedule is 25 years, including 5 years' grace period. The budget of JICA in 1990 was 125 billion yen (788 million dollars).

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<sup>170</sup> Japan's Official Development Assistance (ODA), JICA is an implementation office of ODA, various annual reports, Ministry of Foreign Affairs, Japan

### **C. Export Insurance System** <sup>171</sup>

The Japanese Government has an export insurance system to protect against the risks associated with exports or other international transactions. For the cases of exporting plants, technical services and construction works, the 'export proceeds' insurance or 'technical services supply' insurance are available. The technical services supply insurance was renamed from overseas construction works insurance in 1983, and is the most important insurance support system for the construction industry, as it covers any losses due to political risks, such as war or internal disorder, as well as commercial risks, such as bankruptcy.

### **D. Support through Tax Reduction** <sup>172</sup>

The Japanese tax system provides support for export industries not through tax credits, but through reduction of taxable income. For consulting firms involved in overseas activities, 20 percent of total income is deductible prior to taxation. This is one of the strongest support policies that the Japanese government adopted, as it tried to promote the technical and design capability of Japanese consulting firms, which was inferior to the capability of advanced countries' engineering and consulting firms. As practically all Japanese overseas contractors have their own consulting companies, they take advantage of this policy, especially with regard to turn-key projects. In addition, this policy allows a portion of overseas contractors' profits to be saved in reserve funds for future losses, and this amount can be exempted from taxation for five years.

So far, this section has discussed the Japanese government's support policies for the overseas construction industry. As much as government support, the Japanese contractors

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171 Trade and Investment Insurance in Japan, and International Trade Insurance in Japan, Export-Import Insurance Division, Ministry of International Trade and Industry, Japan

172 An Outline of Japanese Taxes, 1990, Tax Bureau, Ministry of Finance

also enjoy the private sector's support in overseas markets. A few observers of the Japanese construction industry, for instance, have noted the positive impact of the rising yen on Japanese contractors' business. They have stated: 'The increase in foreign direct investment by Japanese manufacturing and commercial companies that can be expected to arise from the strength of the yen provides a natural market for Japanese construction firms and will lead to increased international involvement by them.'<sup>173</sup> Increased direct investment overseas by Japanese manufacturing and commercial companies creates more construction projects for Japanese contractors, as these contracts are generally awarded to the compatriots based on the traditional practice of direct negotiation between the client and contractor, rather than through a competitive bid.

## **5. Comparison between Korean and Japanese Overseas Contractors**

The core topic of this thesis is the development of the Korean overseas construction industry and its impact on the Korean economy. An overview of the Japanese overseas construction industry is provided mainly to enhance our understanding of the Korean case. Hence it would be sensible now to make an explicit comparison between these two countries' overseas construction industries.

First, in the late 1970s and early 1980s, Korea did much better than Japan in overseas construction. According to Figure VII-2, during the period from 1981 to 1985, Korea's earned contract volume was almost twice the volume awarded to Japan. While the Korean contractors concentrated on the Middle Eastern market, receiving 89% of their total contracted volume from that region, the Japanese contractors were active in Southeast Asia, with 59% of their received contract volume coming from that region. The Japanese contractors were also more diversified, without overly relying on any single region like their Korean counterparts.

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<sup>173</sup> J. Bennett, R. Flanagan, G. Norman, *Capital and Countries Report: Japan Construction Industry* (University of Reading, 1987 ) p. 73

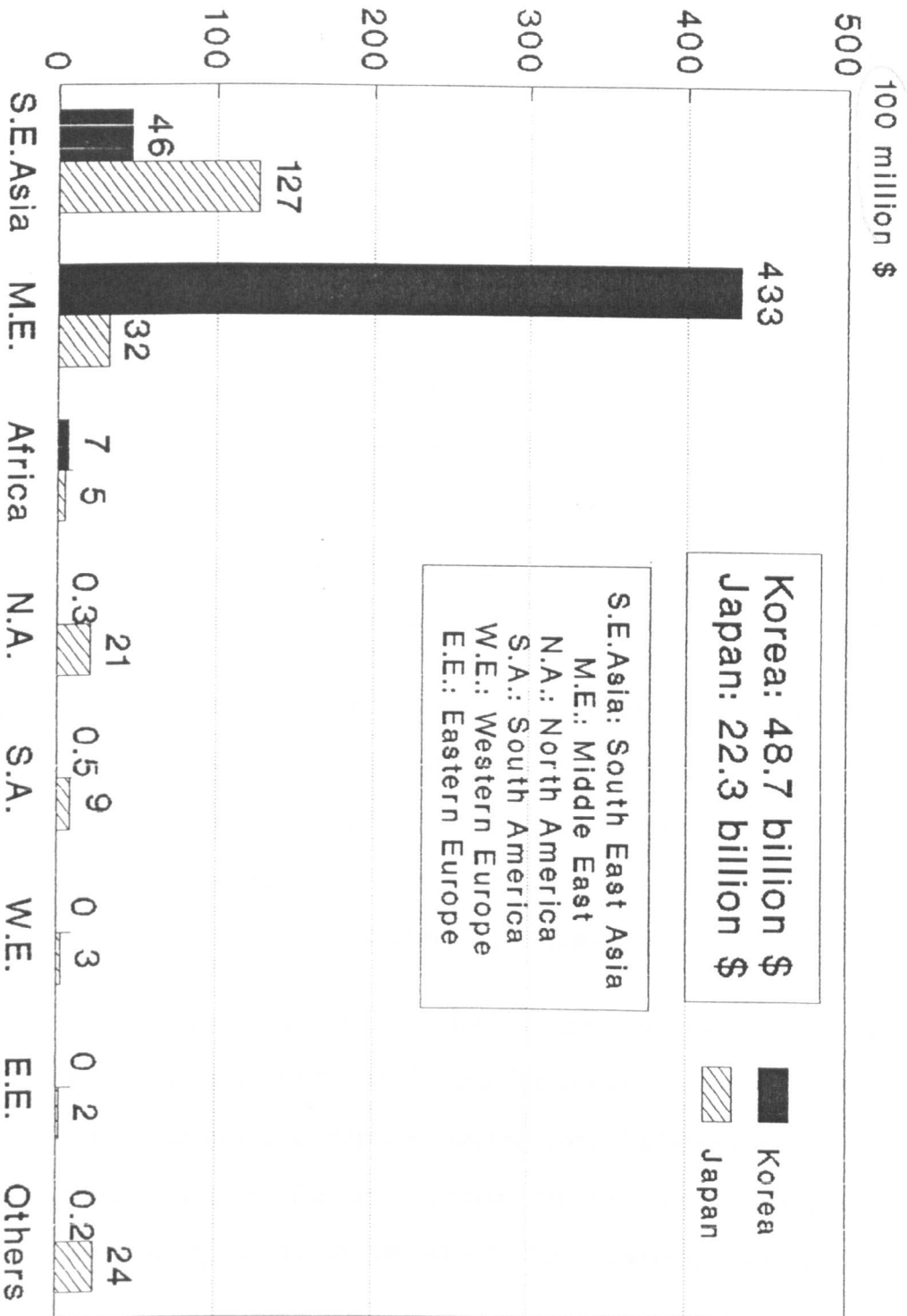
There were reasons why the Korean contractors had to be leaning more toward the Middle East, while the Japanese were more interested in Southeast Asia. Korean construction companies could take their manpower with them to the Middle East. The more manpower they had in overseas projects, the more profitable it was to the companies. The Japanese contractors just could not beat the Korean workers' cheaper wages in the Middle East. In Southeast Asia, the Korean contractors were allowed to take only a limited number of workers with them. Moreover, many projects in this region needed financial support, which the Korean contractors were not ready to supply as they lacked the necessary financial resources. In contrast, the Japanese contractors were able to arrange these financial loans through their financial institutes. This was the primary reason why the Japanese contractors earned more projects in Southeast Asia.

A second difference would have to do with the contractors' dependence on overseas construction. Generally, the Japanese contractors' overseas volume was not more than 20% of their yearly total contract volume<sup>174</sup>; whereas, the overseas share for Korea's big contractors remained high, reaching as much as 80% of the total earned volume in the early 1980s. Certainly, it is quite dangerous to depend so heavily on the overseas market, if there is not enough domestic demand to absorb a loss of the overseas market. Although the Korean construction industry was adversely affected by the end of the Middle East Construction Boom in the mid-1980s, they were fortunate enough to replace the losses with projects associated with the 1988 Seoul Olympics and with new housing programmes in Korea.

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<sup>174</sup> Strassmann, W.P., and J. Wells, *The Global Construction Industry*, Unwin Hyman, London, 1988, p.77.

Fig. VII-2. Korean and Japanese Overseas Construction Volume(1981-1985)



Source: Personally summarised figure based on the data from the Ministries of Korea and Japan



A third difference between Korean and Japanese contractors concerns their technical capability. Although there is no relevant research or reference work concerning the technological differences between the Japanese and Korean construction companies, it would be an 'educated' guess that the Japanese construction technology should be more advanced since the Japanese technology, in general, is more advanced than Korea's. How much advanced would be hard to evaluate, but there were cases where the Japanese contractors won projects because of their superior technology. For example, in Taiwan, the ground is generally soft, making it difficult to bore the tunnel for subway, but the Japanese contractor had a necessary technology, the Shield Method, to overcome this problem and win the project. The same Japanese contractor, Kajima, also became successful in the United States because of this Shield Tunnel technology. As they have worked in overseas markets over 20 years, Korean contractors should be pretty much up-to-date on construction technology, but still the Japanese investment in construction technology research is far more than Korea's.

The most important difference between Korean and Japanese contractors, however, would have to do with the degree of financial support. As discussed earlier in this chapter, Japan's growing trade surplus gives Japanese contractors a decisive edge over their rivals in international competition. Today, many international contractors cannot just sit and wait for project orders to come in, but have to go out and *create* demand.

To carry out a construction project, enormous financial resources are often required. Many developing countries realise that they need to implement various construction projects for their economic development, but, they generally lack the financial resources to carry out these programmes. The Japanese contractors are ready to come in and 'create the demand', by supplying the financial support needed for such construction projects.

Indeed, it would not be an exaggeration to contend that this difference in the ability to supply financial support is the very meaningful difference between Korean and Japanese overseas contractors. If the Korean contractors had the financial resources of the Japanese,

the Korean contractors could probably earn as many contracts as the Japanese, if not more. As a well-known Korean phrase goes, 'money makes more money'.

Naturally, the next question, then, would be how the Korean contractors can overcome this problem. It is not a simple issue. Since the answer for this question is not within the scope of this thesis, however, it will be reserved for future research.

This chapter has looked at the Japanese overseas construction industry. Today, many people in this field are very much concerned that in near future, the Japanese contractors might take over the international construction market with their strong financial muscle just like they did in the manufactured goods market. This concern has prompted the United States to take a strong stand against the Japanese overseas investment policy. The United States has strongly argued that 'money in Japan should be spent in Japan'; that is, if Japan is to reduce its trade surplus and resolve economic friction with other countries, it must increase its domestic spending, instead of channeling surplus funds into overseas investment. Much is expected of the Japanese response.

## Chapter VIII. Summary and Conclusion

As the title of this thesis indicates, the major objective of this thesis is to trace the development of the Korean overseas construction industry and analyse its impact on the Korean economy during the period from 1965 to 1984. Korean contractors started their overseas works in 1965, and the Korean overseas construction industry reached its peak in 1983, before entering a period of decline. During the 1965-1984 period, there were striking changes in the Korean economy as well, and these remarkable transformations had fairly strong correlations with changes in the Korean overseas construction industry.

In the early 1970s, the Korean economy was in a very poor condition, due in part to the heavy burden of foreign loans taken out in the previous decade. Entering an early stage of economic development in the 1960s, Korea's growth strategy relied on low wages at home and loans from overseas. With low domestic savings, a large portion of investment in heavy and chemical industries had to depend on foreign savings. In 1962, foreign savings supplied as much as 83% of the total investment demand in Korea.<sup>175</sup> Using these loans and low-wage manpower to build up light manufacturing industries, Korea planned to import raw materials and components and export processed or assembled products to overseas markets.

Starting in the 1970s, the Korean economy suffered from inflation because of its 'debt overhang'. Combined with excessive loans, rising wages at home and the worldwide economic recession in the early 1970s almost drove many corporations into bankruptcy. The first oil crisis in 1973 aggravated these terrible economic conditions, and made many international financial institutions hesitant to lend any more money to Korea. It seemed that Korea's only hope was to export her rich manpower to increase her hard currency earnings.

Just in time, orders for construction projects poured in from the Middle East to solve

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<sup>175</sup> Kim, K., *The Korean Economy*, K.D.I., Seoul, 1984, p.5

these problems and revive the Korean economy. Lacking manpower and other factor inputs, the Middle Eastern countries needed to import technology, manpower, equipment, materials and even the daily necessities for the imported manpower, to carry out their construction projects. As the Korean contractors started earning massive projects, Korea could export technology, manpower, equipments and materials, etc.

The Middle East Construction Boom rescued many Korean manufacturing and trading companies, which had been on the verge of bankruptcy, as they found valuable export markets for their goods in project-host countries. As discussed in Chapter II, the comprehensive nature of the construction industry affected many related industries through forward- and backward-linkages. In this sense, the Korean overseas construction industry could provide a buffer against all the serious economic shocks of the early 1970s.

It is this chapter's objective to summarise the Korean overseas construction industry's contribution to the Korean economy. This chapter will present major findings from each of the previous chapters and close with some concluding remarks and suggestions for future research.

## **1. Summary of Findings**

Chapter I introduced the purpose and core issue of this thesis. It described the data sources and research methodology, and presented the organisation of the thesis.

Chapter II introduced the industry characteristics of construction and overseas construction, and examined the role of the construction industry in a nation's economy. The Korean case was used as an example.

## **Industry Characteristics of Construction**

Construction is a quite different industry from the manufacturing industry. Generally, the construction products are immobile, large, heavy, long-lasting, and expensive. The major characteristics of construction include: the client-initiated product, one-of-a-kind product, and contracting business. The construction industry exhibits many of the features of an assembly industry. It also depends very much on the climate. There are a few large companies in the industry, but most construction firms are small and poorly financed.

## **Relationship Between Construction and National Economy**

Construction plays a significant role in a nation's economy, particularly in developing countries, as they need basic infrastructure for their economic development. Despite its importance, there are very few studies on the construction industry and almost no theoretical literature on its economic aspects.

For the Korean case, the construction industry played a very important role and made a great contribution to her rapid economic growth under a series of Five-Year Economic Development Plans from 1962 to 1986.

## **Industry Characteristics of Overseas Construction**

Generally, the industry characteristics of overseas construction are similar to those for domestic construction. But, as the works are carried out in foreign countries, overseas construction involves more risk and faces more problems, because of the differences in language, climate, culture, customs, religion, and even the ways of thinking.

Overseas construction is a new kind of international trade. Most of this trade is characterised by the export of construction services from a developed country to a developing country to address the developing countries' need for basic infrastructure, social capital and

urban facilities, and new plants which reflect changes in industrial structure.

Chapter III dealt with the emergence of the Korean overseas construction industry, and presented its historical background. Since 1965, the year of Korea's first venture into the international construction market, Korean contractors have accumulated impressive records; the annual contract volume increased from 5.4 million U.S. dollars in 1965 to 13,681 million dollars in 1981, making Korea the second-largest construction-exporting country in the world between 1980 and 1983. The development of the Korean overseas construction industry can be roughly divided into 3 periods.

### **Growing Period in Korea (1945 - 1964)**

After the Korean War, the United States Forces continued to be stationed in Korea. Korean contractors received contracts from US forces to build their facilities and military installations, gaining valuable opportunities to become familiar with international bidding for contracts, project management, and working with modern machines and equipment.

There were many reconstruction works after the Korean war, and these were followed by many heavy infrastructure projects during the Korea's First Five-Year Economic Development Plan period (1962-1966). By performing these reconstruction and infrastructure projects, Korean contractors developed their capabilities and know-how.

### **Pioneering Period in Southeast Asia (1965 - 1972)**

In 1966, the South Korean Government dispatched her troops to South Vietnam, and this relationship with Vietnam brought opportunities to Korean contractors to build military facilities for Korean, United States and Vietnamese forces in Vietnam. This experience also gave Korean contractors opportunities to extend their activities into other Southeast Asian countries and the Pacific Islands region. These countries provided Korean construction companies with a chance to accumulate valuable learning-by-doing experience in actual international construction fields.

In 1965, Hyundai became the first Korean construction company to win an overseas project by earning a 5.4 million dollar highway project in Thailand. Even though Hyundai lost about 1 million dollars on this small project, it was a milestone in the history of the Korean overseas construction industry, and offered then-inexperienced Korean construction companies valuable lessons.

### **Golden Period in the Middle East (1973 - 1984)**

By 1973, the Vietnam war was all but over, and Korean contractors had to look for new overseas markets. The Middle East filled the gap. The Middle Eastern countries earned an enormous amount of oil money after the 1973 oil crisis, and with their massive financial resources, these countries planned very ambitious economic development and industrialisation programmes to reduce their dependence on oil revenues.

Nevertheless, these oil-rich countries had difficulties in carrying out their development plans because they lacked the necessary manpower, technical know-how, and experience in construction; whereas, Korean construction companies had well-trained manpower, rich experience, accumulated know-how and support from the Korean government. The Korean contractors were also able to underbid their international competitors by 10% or more with their cheap, disciplined, and productive manpower.

Korean contractors earned 67,452 million dollars' worth of contracts from the Middle East between 1973 and 1984 (Table III-1), which helped the Korean economy enormously. The main driving force behind the Korean contractors' remarkable achievement was the Korean people's desire to raise their living standards and overcome their bitter experiences with war and poverty.

As a preliminary step towards assessing the analysis of the contribution of the Korean overseas construction industry to the Korean economy, Chapter IV analysed in detail the basic

data on the accomplishments of Korean overseas contractors. These data were presented in their various aspects as follows.

### **Contract Volume by Region and Country**

The year 1973 marks a watershed in the history of the Korean overseas construction industry. Before 1973, Southeast Asia was the major market for Korean contractors, but after the first oil crisis of 1973, the Middle East became the most lucrative market for the Korean overseas construction industry, as the Middle Eastern countries started issuing a number of massive construction projects. The Middle East Construction Boom reached its peak after the second oil crisis of 1979.

By 1984, the Korean contractors' total earned amount had reached 74.3 billion U.S. dollars. The largest yearly volume for Korean contractors was 13.7 billion dollars in 1981.

Regionally, the Middle East was by far the most important market for the Korean overseas construction industry, accounting for 67.4 billion dollars of contract volume (90.7% of the total); Southeast Asia was next, with the contract volume of 5.8 billion dollars (7.9%). Countrywise, in the Middle East, the cumulative contract volume earned from Saudi Arabia was 45,310.4 million dollars (61% of the total); Libya, 10,023.2 million dollars (13.5%); Iraq, 4,972.8 million dollars (6.7%); and Kuwait, 2,365.5 million dollars (3.2%). In Southeast Asia, Malaysia accounted for 1,959 million dollars (2.6%); Singapore, 1,536 million dollars (2.1%); and Indonesia, 813 million dollars (1.1%).

The heavy reliance on the Middle Eastern market later became a burden for the Korean overseas construction industry. Once the oil price started to fall in 1983, the Korean contractors could not find a viable replacement for the Middle East market, as they had depended for more than 90% of their contract volume on the oil-rich countries in this region.



## **Contracts by Project Type**

In the early stage of the history of the Korean overseas construction industry, Korean contractors' work was mainly in labour-intensive fields. But, gradually, the composition of earned projects changed towards technology-intensive areas. From 1965 to 1984, architectural projects accounted for 35.4 billion dollars, and civil works, 27.9 billion dollars; whereas, more technically sophisticated construction projects involving machinery accounted for 7.8 billion dollars; electricity and communication, 2.9 billion dollars; and consultant works, 0.4 billion dollars.

## **Contracts by Project Size**

Until 1975, most (93%) Korean overseas projects were under 10 million dollars, and the average project size was approximately 4.3 million dollars. With the increasing involvement of Korean contractors in the Middle Eastern projects, however, the project size grew bigger over time.

In 1981, the share of small-size projects, under 10 million dollars, declined to 32.6% ; whereas the share of medium-sized projects, from 10 to 50 million dollars, increased to 42.6% and that of the large-size projects, above 50 million dollars, rose to 24.8%. Also, the average project size rose to 51 million dollars in 1981. A comparative analysis of the average project size over time has been complicated since 1983, as many Middle Eastern countries in that year adopted a policy of dividing big projects into small ones to protect local contractors in bidding.

## **Overseas Contractors' Performance**

By 1984, the Korean contractors' completion rate on their earned projects had reached 70.5%-- an indication that Korean contractors worked hard and effectively to complete their works in time. Their total hard currency earning was 16,270 million dollars. Of this amount, 15,138 million dollars (93%) came from the Middle East; 1,041 million dollars (6%) from

Southeast Asia; 50 million dollars (0.3%) from Africa; 24.7 million dollars (0.1%) from the Pacific Islands region; and 15.6 million dollars from South America.

### **The Use of Manpower**

In 1975, the number of Korean workers engaged in overseas projects was only 5,951. With the the Middle East Construction Boom, this number increased drastically in the late 1970s, and reached the peak of 171,170 in 1982. The use of Korean workers at overseas sites, however, started decreasing in the early 1980s, as Korean construction companies increasingly relied on cheaper foreign workers in order to survive in international competition. In 1979, the number of foreign workers at Korean overseas construction sites was 8,066 (7.1% of the total), but this number increased to 60,299 (27.1%) in 1983. Generally, Korean workers were twice as expensive as workers from the Third-World countries.

The increasing use of foreign workers meant a decline in hard currency earnings from overseas construction work. Moreover, there were difficulties in managing foreign workers, because of the differences in language, religion, custom, and cultural background, etc.

### **The Use of Korean-Made Materials and Equipment**

As Korean contractors earned a large number of projects during the Middle East Construction Boom, they had to procure many materials, tools, and heavy equipment. Their annual expenditures for these procurements amounted to 673 million dollars in 1979, and reached as much as 2,727 million dollars in 1982.

The Korean government wanted to use this opportunity to promote construction-related industries, and advised Korean contractors to use Korean-made materials and equipment. This strategy, however, fell short for the following reasons. First, Korean products were lacking in variety and quality. Second, in designing projects, many engineers generally designated well-

reputed materials and products from advanced countries. Third, many project-issuing countries insisted that their native products be used as much as possible in their projects. Consequently, Korean-made materials and equipment accounted for less than 30% of the total inputs used at Korean overseas sites.

Chapter V introduced the major actors who played a critical role in the remarkable growth of the Korean overseas construction industry.

### **Korean Government (Ministry of Construction)**

In the early 1970s, the Korean economy was in a slump, badly in need of hard currency to solve the balance of payments problem. Realising that the export of construction services-- and a cheap, large, and capable labour force-- offered a solution to the problem, the Korean government in 1975 introduced the Overseas Construction Promotion Act, and also established numerous assistance programmes in finance, tax, and insurance to help Korean contractors to earn profitable projects overseas. The government also extended other forms of supports, such as dispatching construction attachés with responsibilities to help contractors with the respective government agencies and to strengthen the contractors' position in overseas markets.

### **Overseas Construction Association of Korea (OCAK)**

OCAK was established by Korean overseas construction businessmen in order to self-regulate their overseas activities, to protect their rights and interests, and to perform overseas construction efficiently. This Association also works as an intermediary between its individual members and the Korean government, and performs various functions to promote overseas construction business. Anyone that has an overseas construction business licence will automatically become a member of OCAK. Presently, OCAK has 77 members, with 56 general contractors.

## **Korean Contractors in Overseas Construction**

With the support of the Korean government and OCAK, Korean construction companies achieved remarkable accomplishments in a short period of time. Of all the Korean companies, some deserve a special mention. In 1984, the top 7 Korean construction companies earned 82% of the total overseas volume, and they are generally recognised as industry leaders in Korea. In addition to one specialised mid-size contractor, Shinwha, each of the following seven companies' management philosophy, business strategy, and industry status were discussed in this section: Hyundai, Daewoo, Dong Ah, Daerim, Ssangyong, Samsung, and Lucky. Overall, the Korean government and private construction companies worked very closely to exchange valuable information and promote the Korean overseas construction industry.

Chapter VI, the most important chapter of this thesis, examined the impact of the Korean overseas construction industry on various macroeconomic variables. Input-Output Tables were used to analyse the multiplied, or induced, effects of the overseas construction industry on the Korean economy.

### **Balance of Payments**

The total hard currency earnings from overseas construction work between 1976 and 1984 amounted to 12,311 million dollars. These earnings greatly reduced a chronic deficit in Korea's balance of payments, covering about 40% of the increased expenditures on oil imports during this period. The increased hard currency earnings from overseas construction work made it easier for the Korean economy to recover from an economic slump triggered by the two oil crises of 1973 and 1979.

## **National Income**

The overseas construction industry's contribution to national income is the sum total of foreign exchange earnings from overseas construction work, the value-added amount induced by this earned foreign currency, the earnings from the export of equipment and materials for overseas construction projects, and the value-added induced by these exports. The Input-Output economic impact analysis model was used for this analysis.

The annual contributing ratio of overseas construction work to GNP was between 5 to 7% from 1977 to 1984-- a very significant level for a single item in the national account. The contributing ratio for 1980 was, however, unusually low. Although there is no strong evidence, serious uncertainties created by Gen. Chun's takeover of the government in 1980 may well have caused a 'capital flight'.

## **Employment**

In the early 1960s, Korea's unemployment rate was close to 8%. As Korean contractors became actively involved in overseas projects, there were many opportunities for Korea's large 'economically active population' to find employment at overseas construction sites.

The effect of overseas construction work on employment can be divided into direct and induced components. The direct effect would be the number of workers employed at overseas construction sites, while the induced impact would be the multiplied employment opportunities created at home by the earned foreign exchange from overseas construction work and by the export of construction-related equipment and materials. Again, the Input-Output model was used for this analysis.

The Korean overseas construction industry's contribution to employment reached its peak in 1982, as the direct employment totalled 171,000 persons and the induced employment, 348,000 persons. On average, the overseas construction industry contributed 3% to the

national employed population during the period from 1976 to 1984, helping to reduce unemployment and improve the living standard of workers to a substantial extent.

### **Corporate Internationalisation and Technology Improvement**

It would be very hard to quantify corporate internationalisation and technology improvement, but progress in these areas could be assessed indirectly-- e.g., by counting the number of joint-ventures formed with other countries' engineering firms and contractors. By the end of 1984, Korean firms had formed 40 joint-corporations in 10 countries, for a total contract amount of 5,153.8 million dollars. Korean contractors also had established 37 collaboration-projects with advanced countries' firms, for a total of 3,279.6 million dollars.

Comparing the overseas share of Korean contractors' activities with the domestic portion offers another way to evaluate the extent of corporate internationalisation. In 1974, the overseas portion (20.5%) was minor compared to the domestic share (79.5%); however, starting in 1976, overseas work accounted for much more than 50% of the total volume.

The Korean contractors' overseas volume was not only high relative to their domestic volume, but it was also high compared to other countries' overseas contract volume. In the early 1980s, the Korean contractors' annual contracting volume was second highest in the world market. Taken together, these records suggest how rapidly Korean contractors became internationalised and improved their technology.

### **Domestic Capital Formation**

In the 1960s, Korea's basic economic strategy was to rely on cheap wages and concentrate on labour-intensive industries. With the rapid development of its economy, however, Korea came to face the limitations of its industrial policy around the mid-1970s. Korea had to change her industrial structure, and needed a great deal of capital to establish more capital-intensive industries. Foreign exchange earnings from Korea's overseas construction work played an important role as a source of investing capital.

## **Related Industries**

As the overseas construction industry entered a period of rapid growth, it had a stimulating effect on the related industries at home and overseas. Although the export of construction-related materials and equipment to overseas sites was not too successful, Korean manufacturers in these industries earned opportunities to improve their technology and capability by competing in the international market. Domestic banks and insurance companies greatly benefited from the Middle East Construction Boom, as they got to handle the construction companies' finance, insurance, and various guarantees. The Korean Air Lines profited from transporting a large number of Korean workers and engineers. Even the business of newspaper industry, shipping companies and telecommunications, etc. were also influenced by the overseas construction industry. In addition, the overseas construction companies functioned as outposts for trading companies in international markets.

## **Manpower Development**

In the Korean labour market, the Middle East Construction Boom led to an unprecedented phenomenon of shortage of capable and skilled workers. Such labour shortage resulted in 'unreasonably' high increases in wages and high mobility among these valued workers, as the Korean society had only a limited number of specialists in engineering.

Later, the shortage of skilled manpower became a motivating factor for the establishment of manpower development programmes at many companies. Raising excellent manpower became an important issue for Korea's industrialisation and individual companies prosperity.

## **Diplomacy and Cultural Exchange**

In non-economic aspects, Korea's overseas construction companies served as a bridgehead for the Korean government, as their private diplomacy helped the government to establish formal relations with their host countries, many of whom followed a policy of non-alignment. Many of these nonaligned nations were under-developed and oil-producing

countries which had issued many infrastructure projects needed for their economic development. At the same time, the overseas construction industry also contributed much in the way of cultural exchange with these countries.

### **Inflation**

Because of the increased money supply due to the inflow of hard currency earnings from overseas construction work, the Korean domestic economy was faced with a serious inflation problem. This price rise, in turn, encouraged speculation in real-estate such as land and housing. Another serious negative effect was the rapid escalation of workers' wages. This wage increase had two sides for the Korean economy. It weakened the competitive position of Korea's trading companies and construction firms in the international market, while it helped to improve the living standards of the lower-class workers.

Chapter VII reviewed the development of the Japanese overseas construction industry, and made comparisons with its Korean counterpart. The Japanese and Korean overseas construction industries share many similarities, but the Japanese contractors enjoy a substantial competitive advantage in financial resources.

### **The Historical Background of the Japanese Overseas Construction Industry**

After the Second World War, the United States Forces stayed in Japan, and tendered many construction projects to Japanese contractors. These contractor became familiar with international practices in construction services. The Japanese reconstruction work after the Second World War and the outbreak of the Korean War in 1950 also contributed to the growth of the Japanese construction companies.

As part of wartime reparations agreement, Japanese contractors supplied 121 million dollars' worth of infrastructure works in Southeast Asian countries from the 1950s to the early



part of the 1960s. Such projects enabled Japanese contractors to cultivate the overseas construction market in Southeast Asia.

The Japanese push into the overseas construction market did not really start until 1973, however. After the first oil crisis in 1973, the Japanese domestic construction market contracted greatly, and the government adopted promotion and tax-exemption policies for overseas construction works. With these incentives, Japanese contractors rushed out to the international construction market.

### **Japanese Contractors' Overseas Activities**

From their first venture into the overseas market in 1955 to 1985, the Japanese overseas total contract volume was approximately 8 trillion yen, but, most of this volume-- 7.7 trillion yen (97%)-- was achieved in the second half of this 30-year period. The Japanese contractors' overseas works were mainly in Asian countries from 1955 to 1975; in the Middle East, from 1976 to 1979; and back in Asia, from 1980 to 1985. From 1983, however, Japanese contractors started challenging the markets in such advanced countries as the United States and Australia.

The typical Japanese market-penetration strategy in the United States and Australia involved development projects. In these development projects, Japanese contractors generally bought land or old buildings and developed new residential houses, shopping centres, or offices, and then, resold them with value-added costs. For these projects, the Japanese contractors not only supplied the construction works, but also provided the necessary financial services with support from the Japanese government or banks.

In the early days, most of the Japanese overseas projects were in civil works, but, lately the majority of the Japanese projects have been in commercial and industrial buildings, as Japanese contractors have become increasingly involved with development projects and construction orders from Japanese multinational companies in overseas markets.

## **Japanese Contractors in the International Market**

According to the E.N.R's July 1986 publication, among the Top 250 International Contractors, 43 were American, 39 Japanese, 28 Italian, 18 French, 17 Korean, 16 British, and 14 German. In terms of contract volume, Japan has held on to the second place since 1984. In 1985, when the world's big construction companies were classified by the total awarded volume, domestic and overseas combined, the Top 25 contractors included 9 American companies, 8 Japanese, 4 French, 2 British, 1 West German, and 1 Korean firm. These figures indicate that there are some very large Japanese contractors who are quite active in the international market.

In 1983, the Japanese construction investment to GNP ratio was 17.5%, while the West German ratio was 12.5%, the French 9.1%, the British 8.1%, and the American 7.9%. In other words, Japan was still in great need of social infrastructure facilities compared to other advanced countries. According to the Japanese 1986 Construction White Paper, the Japanese social infrastructure facilities were far behind Britain's, West Germany's and the United States'.

### **Government Support for the Japanese Overseas Construction Industry**

Today, the primary requirement for the development or implementation of many of the needed construction projects -- especially in developing countries-- is not technical ability or cheap labour, but financial support. In many cases, a developing or underdeveloped cannot initiate or implement a project without financial backing, even if the country is fully aware of the value of the project for future economic development. Lately, the ability to provide a comprehensive package arrangement, combining financial support and technical capability to carry out the project, has become far more important than a low bidding price in winning a project. In this respect, the Japanese contractors have many advantages over their rivals in the international construction market, as they are supported by a number of promotion and protection measures designed by various government agencies and banks.

The Japanese Ministry of Construction helps to manage the overseas construction promotion fund and the financial guarantee system for overseas construction projects, and performs feasibility studies on potential overseas projects. The most important among the Japanese government's policies designed to promote the overseas construction industry is financial support, as these financial measures form the core of package arrangements. These measures take the form of the Overseas Economic Cooperation Funds (OECF), financial support from the Japanese EXIM Bank, and technical assistance and long-term loan programmes managed by the Japan International Cooperation Agency (JICA). Among these, the OECF is the most powerful and helpful support programme, as the repayment period is longer, the interest rate lower, and the amount of loan available larger under this programme than any other support measures. In addition to financial support, the Japanese government also offers the incentive systems of export insurance and tax reduction for overseas construction business.

### **Comparison between Korean and Japanese Overseas Contractors**

In the late 1970s and early 1980s, Korean contractors did much better than the Japanese, almost by a 2-to-1 margin in terms of earned overseas construction volume. Korean contractors preferred to concentrate most of their activities (89%) in the Middle East while Japanese contractors diversified their market and earned contracts in various regions of the world. As a result, the Japanese contractors have been faring much better than their Korean counterparts since the oil price decline of 1982.

In the 1970s and 1980s, the Japanese contractors' overseas volume was generally not more than 20% of their yearly total volume, while many of Korean big contractors' overseas share exceeded 80%. The Korean contractors' heavy reliance on overseas markets could have been dangerous; fortunately, however, the 1988 Seoul Olympics created a sufficient construction demand in the domestic market to make up for the lost volume in the Middle East.

The greater reliance of Korean contractors on the overseas market-- particularly the

Middle East-- distinguishes them from their Japanese counterparts; however, the most important difference between the Japanese and Korean contractors is the degree of financial support that they enjoy from their respective government and government-affiliated agencies. The Japanese contractors have a substantial competitive edge over their Korean rivals because of the far greater financial support available to them. With their strong financial muscle, the Japanese might take over the international construction market as they have done in the manufactured goods market.

## 2. Conclusions

In an introductory note to a book on the remarkable growth of the Korean economy, I.B. Tauris made the following assessment of Korea's accomplishment:

"In less than a quarter of a century, South Korea has done the most extraordinary turnaround of any nation in modern history. Devastated by war, with the countryside in ruins and war with the fanatically hostile North Koreans, South Korea has transformed itself into one of the greatest success stories of recent times.

Now a powerful competitor in the global market, ....South Korea's economic miracle rests largely upon the strength and dedication of its workforce. More disciplined and hard-working than even the Japanese, ....the South Koreans are now a model for developing nations in Asia and further afield." 176

The author believes that the above statement is true to a large extent, and also believes that Korea's overseas construction industry made valuable contributions to the development of the Korean economy. In this work, the author has tried to trace the development of the Korean overseas construction industry and assess its contribution to the nation's economy through a careful analysis of personally collected data. Hopefully, the following concluding remarks will

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176 The Introduction Note by I.B. Tauris for the book, *The Warrior Worker, the History and Challenge of South Korea's Economic Miracle*, R.T. Kearney, I.B. Tauris & Co. Ltd., 1991.

summarise the author's position, and help to characterise the role of the Korean overseas construction industry in the growth of the Korean economy.

**1. The overseas construction industry (1970s - 1980s) was the right kind of industry at the right time for the Korean economy.**

In the early 1970s, the Korean economy was in a critical condition. Externally, Korea had to pay back a large amount of principal for the loans that had been taken out in the 1960s for the implementation of her ambitious Five-Year Economic Development Plans; internally, the Korean economy suffered inflation due to this debt overhang. Moreover, Korea's basic economic strategy of exporting processed products through the use of her cheap labour-force was beginning to fall apart, because of the drastic increase in the prices of imported raw materials after the first oil crisis of 1973. Many of her industries were on the brink of bankruptcy, and the unemployment rate was on the rise.

Korea needed to earn a massive amount of hard currency to break out of this crisis and sustain her economic growth. The solution had to be centred around exporting her cheap and capable manpower. Just in time, construction orders from the Middle East poured in. Over the course of the following decade, the Korean overseas construction industry not only absorbed all the exportable manpower, but also earned a huge amount of hard currency to solve the country's urgent problems in the balance of payments.

**2. Hard currency earnings from overseas construction works made substantial and wide-ranging contributions to various sections of the Korean economy.**

From her first overseas venture in 1965 to 1984, Korea received a total of 2,291 projects for the corresponding amount of 74,280 million dollars. The total earned foreign currency from these projects was 16,270 million dollars. This huge amount of foreign currency helped to lessen the chronic deficit in Korea's balance of payments, increase the national income, decrease the unemployment rate, help domestic capital formation, and promote various related

industries.

Overseas construction activities also helped the Korean contractors to internationalise themselves, accumulate technical know-how, develop manpower, and even play an influential role in pioneering Korea's establishment of diplomatic relations with the Third-World non-aligned nations and promoting cultural exchanges with their host countries.

Of course, the Korean overseas construction industry also produced negative effects, such as land and housing price increases and wage escalation, but these were very minor compared with the positive effects.

**3. Korea's remarkable achievement took the determined efforts of the government and private firms working hard together to improve the nation's economy.**

Because of the troublesome economic conditions in the early 1970s, the Korean government chose overseas construction as a strategic industry to earn the needed foreign currency to sustain Korea's economic growth. The government introduced incentive policies, such as the overseas construction promotion act, and established various assistance programmes in finance, tax and insurance. Supported by such measures, Korean contractors worked hard to make Korea the second-largest construction-exporting country in the world by the early 1980s, earning the nickname 'Workaholic Koreans' along the way.

**4. Korea's overseas construction industry owed very much to the Middle East Construction Boom.**

After the Vietnam War, Korean contractors badly needed a new market to make up for the loss of contract volume in Southeast Asia. In 1973, after the first oil crisis, the Middle East became the site for a construction boom, as the oil-rich countries in the region launched massive industrialisation programmes with their drastically increased oil revenues. The second oil crisis of 1979 extended this boom.

With their cheap, disciplined, and well-trained manpower, Korean contractors easily won

contracts in international bidding. The big advantage of the Middle Eastern projects was that there was no restriction on employing Korean workers as long as the projects needed this manpower. Of course, more Korean workers meant more hard currency earnings for Korea. By 1984, 91% of Korea's total earned contracts had come from the Middle East; however, once the oil price started to fall, Korean contractors' earnings began to decline drastically, and Korea's construction companies were faced with the need to diversify their market.

### **5. The Middle East Construction Boom broke down Korea's wage structure.**

The increased volume of overseas construction work raised the demand for skilled workers. This increase in labour demand led to 'manpower scouting' and wage escalation, and consequently, broke down Korea's wage structure. Later, this drastic increase in wages weakened Korean contractors' competitive position in the international market, and forced them to employ a greater number of cheaper workers from the Third-World countries.

### **6. Political Stability must mean much to Economic Stability.**

According to the analyses presented in this thesis, all the economic performance measures in Korea strangely made a very poor showing in 1980, even though the trends before and right after that year were excellent. Of course, the second oil crisis in 1979 did adversely affect the Korean economy; however, 1980, above all, was the year in which Korea suffered from a severe internal political turmoil, as President Park was assassinated near the end of 1979 and General Chun took over the government by a coup d'etat in 1980. From the economic figures, it can be reasonably inferred that the Korean internal political turmoil of 1980 adversely influenced the domestic economy to a great extent. Politics must have strong, unbreakable ties with economics, and they are interdependent on each other.

## **7. Korea's construction promotion act should be changed.**

The significant changes in the character of the international construction market and growth in the size and capability of Korean construction companies call for some modifications in Korea's construction promotion act. In the future, the government should assume the role of a coordinator; instead of dictating and controlling private firms' activities, the government should allow these companies a greater freedom in choosing their markets and bidding for projects, as they have accumulated enough experience to make their own decisions.

## **8. Construction is a very important part of the economy. In the future, more scholarly attention should be paid to the economics of the construction industry.**

Construction is an important part of economic activities, and is quite different from manufacturing industries. But, surprisingly, very little scholarly work has been done on the economics of the construction industry, perhaps because of the complexity of this industry or the problem of following through the long-lasting nature of construction work. Now, with the advent of more sophisticated computer technology, the long-lagged economic effects of construction should be reasonably well-traced for analysis.

## **9. Overseas construction is more complicated and riskier than domestic construction.**

Overseas construction is a new kind of international trade. Many developing countries issue construction projects for international bidding, as their indigenous contractors are not able to meet their demands. Overseas construction jobs have an added dimension of complexity as the works are performed in a foreign land, under an unaccustomed weather, environment, and business practices. Also, as many of the projects are carried out in politically unstable developing countries, overseas construction work involves more risk.



**10. In the future overseas construction market, a greater degree of financial support available to the Japanese contractors will give them a substantial competitive advantage over their rivals from other countries.**

Many of future overseas construction projects, particularly in developing countries, are likely to require a package arrangement, combining financial support, technical know-how, and project management and implementation capability. Among these elements of a package arrangement, financial support is by far the most important, and the Japanese contractors' financial muscle will give them a substantial competitive edge in the future.

### **3. Suggested Further Research**

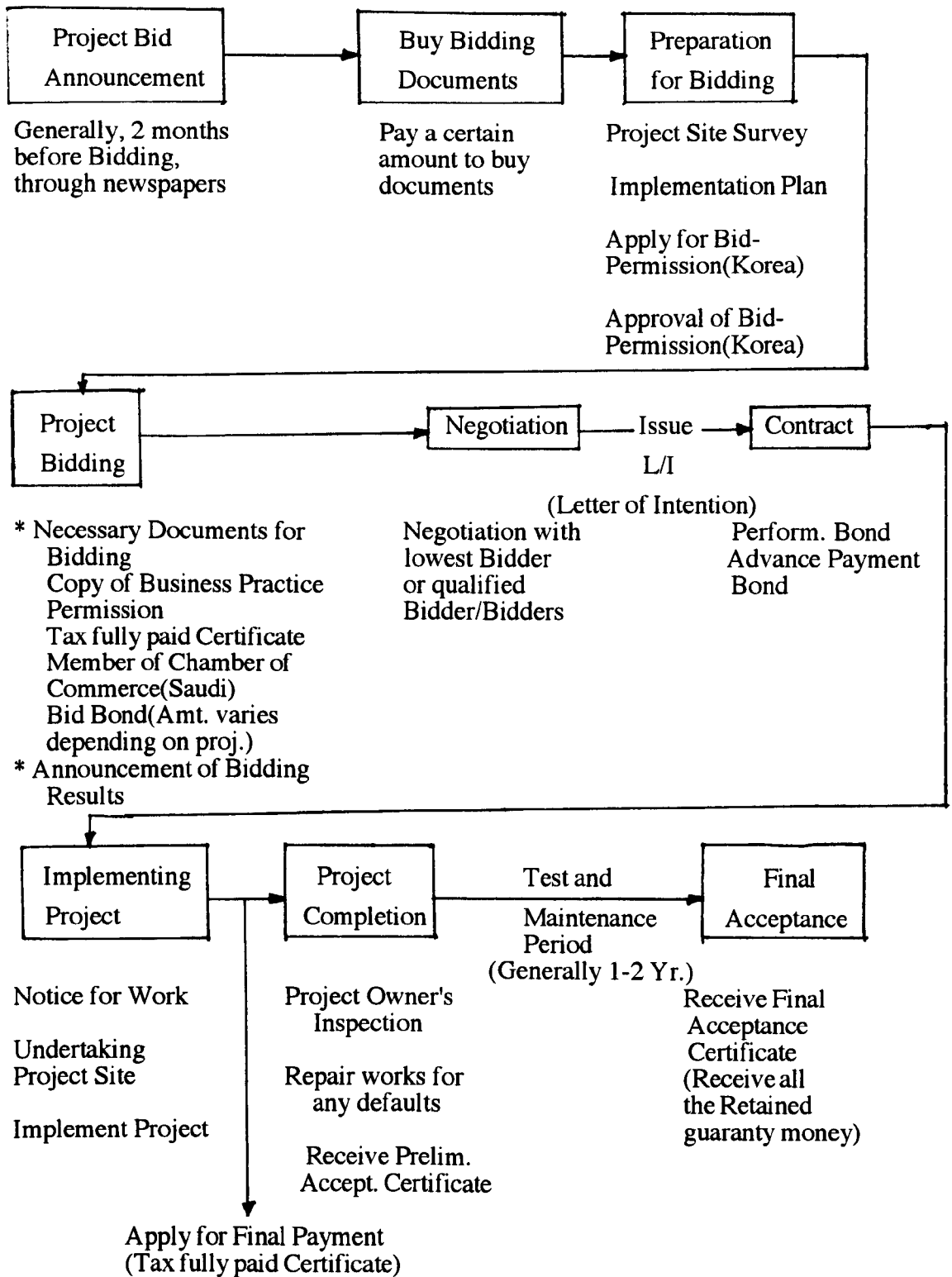
The scope of this thesis is limited to the period from 1965 to 1984. It should be interesting to analyse the trends in the Korean overseas construction industry after 1984 , as Korean contractors have had to cope with the end of the Middle East Construction Boom since the mid-1980s.

As for policy, how to arrange financial support for Korean contractors' future overseas projects would be an important subject.

With the advancement of computer technology, simulation studies or long-term empirical analyses of construction and overseas construction industries should be further pursued.

It would make a challenging research work to analyse the profitability and risk for the Japanese long-term loans on overseas construction projects.

# Appendix 1. Flow-Chart from Project Bidding to Completion (The Saudi Arabian Case)



## **Appendix 2: Types of Contract in Overseas Project**

### **1. Lump Sum or Fixed Price Contract**

In this contract, the contractor agrees to complete a certain project within the signed amount of money and time-period. Generally, the owner encourages competition among bidders and can benefit from this competition. The owner shares a minimal involvement in the construction process and bears a little risk. The contractor bears a bigger proportion of risk as the cost of construction has more probability to rise from the time of his estimate. In this contract, generally the contractor tries hard to complete the project ahead or within the project-period. For these reasons, most public sector projects are contracted in lump-sum fashion.

### **2. Unit Price Contract**

In this contract, the contractor or contractors quote the prices by units of items or sub-projects. Generally, this type of contract is used when the exact amount of work is hard to estimate or when the project is enormous or complex. The low bidder is determined by the total amount of costs of all items, or the project can be subcontracted to different low bidders. The advantage to the owner is his privilege to select low bidders, while the advantage to the contractor is its flexibility in making changes in the amount of work within the quoted unit prices.

### **3. Cost Plus Fee Contract**

The contractor is paid for the actual cost of work undertaken as well as a fee. The actual cost is the direct cost of the project and the fee covers the indirect costs; it includes the profits, and general and administrative costs at home and overseas offices. The fee can be paid either as a fixed amount or a percentage of the direct costs. Therefore, the final price cannot be certain until the project is completed. The total cost will be very much dependent on the

efficiency of the contractor. While the contractor bears not much risk, the owner takes on a great deal of financial risk. Especially, if the fee is arranged as a percentage of actual cost, the contractor may have a tendency to increase the actual cost and the length of project-period. Despite its disadvantages to the owner, this contract is used where it is difficult or impossible to quantify the extent of work, such as to rebuild a war-stricken chemical complex plant. It also has an advantage of shortening the construction-period as the construction can start from the early stage of design phase.

#### **4. Target Cost Plus Profit Contract**

The target cost is the highest price that the contractor estimates it would pay for the direct costs to complete the project. If the project is carried out for less than the target cost, the savings are divided between the owner and contractor according to the contract. Consequently, both parties have a common interest in minimising cost. Fewer claims occur and settlement is easily solved. There is a good chance that the owner will accept the project as it is finished.

The above types are commonly used. Often, the combination of two or three of the above contracts can be used depending on the character of project; for example, in a lump sum project, the unit price contract may be used for a certain item of the project.

### Appendix 3: Korean Loans and Foreign Exchange Holdings in the Early 1970s

unit : mil. \$

	1970	1971	1972	1973	1974	1975	1976
Total Loans	2,277	2,984	3,580	4,257	5,955	8,449	10,533
Foreign Ex.Holdings	584	535	694	1,034	1,049	1,542	2,961

Source: Foreign Exchange Statistics, Quarterly, Bank of Korea, 1976, 1977, 1978

### Appendix 4: Various Data on the World Construction Market

1. World Construction Investment by Region
2. World Construction by Work Characteristics
3. World Construction Investment by Type of Project
4. World Yearly Total Construction Investment Amount  
and Amount Earned by the Biggest 250 Contractors
5. Overseas Contracting Amount vs. Total Construction Investment Amt.  
by Region (250 Biggest Contractors)
6. Market Share of Middle Eastern Construction  
by 250 Largest Firms
7. Market Share of Asian Construction by 250 Largest Firms

## World Construction Investment by Region 1)

Unit: 100 mil.\$

	1978	1979	1980	1981	1982	1983	1984	1985	1986
Europe	5,155	5,877	6,588	5,898	5,616	5,386	5,108	5,049	6,575
West	3,139	3,780	4,467	3,835	3,508	3,323	3,114	3,038	4,167
East	2,016	2,097	2,121	2,063	2,108	2,063	1,994	2,011	2,408
USSR	1,496	1,539	1,567	1,542	1,588	1,591	1,545	1,530	1,841
Developing Countries	2,498	2,924	3,507	3,691	3,515	3,362	3,294	3,197	3,163
Middle East	548	592	697	754	831	878	814	762	628
Africa	378	427	526	544	489	486	436	390	381
Asia 2)	858	995	1,185	1,177	1,239	1,248	1,297	1,267	1,294
(China)	(285)	(321)	(360)	(251)	(283)	(283)	(295)	(320)	(295)
S. Ame rica	714	910	1,099	1,216	956	750	748	778	860
N.Ame rica	2,860	3,212	3,304	3,589	3,402	3,685	4,147	4,504	4,646
(USA)	2,539	2,859	2,903	3,125	2,970	3,244	3,719	4,054	4,174
Japan	1,969	2,139	2,253	2,384	2,128	2,184	2,226	2,268	3,354
<b>Total</b>	<b>12,482</b>	<b>14,152</b>	<b>15,652</b>	<b>15,562</b>	<b>14,661</b>	<b>14,617</b>	<b>14,776</b>	<b>15,018</b>	<b>17,738</b>

Source: Collected Data from Construction Statistics Yearbook, U.N. and National Accounts Statistics, U.N., various issues from 1979 to 1988.  
The writer summarised the data and tabulated.

Note: 1) Total Amt. for 131 countries  
2) - Including Pacific Region

## World Construction Investment by Work Characteristics 1)

Unit: 100 mil.\$

	1978	1979	1980	1981	1982	1983	1984	1985	1986
Europe	5,155 (100)	5,877 (100)	6,588 (100)	5,898 (100)	5,616 (100)	5,386 (100)	5,108 (100)	5,049 (100)	6,575 (100)
New Const.	4,104 (79.6)	4,648 (79.1)	5,106 (77.5)	4,529 (76.8)	4,222 (75.2)	4,053 (75.3)	3,831 (75)	3,789 (75)	4,943 (75.2)
R&M	1,051 (20.4)	1,229 (20.9)	1,482 (22.5)	1,369 (23.2)	1,394 (24.8)	1,333 (24.7)	1,277 (25)	1,260 (25)	1,632 (24.8)
Middle East	548 (100)	592 (100)	697 (100)	754 (100)	831 (100)	878 (100)	814 (100)	762 (100)	628 (100)
New Const.	539 (98.4)	586 (99)	680 (97.6)	739 (98)	811 (97.6)	855 (97.4)	791 (97.2)	741 (97.2)	609 (97)
R&M	9 (1.6)	6 (1)	17 (2.4)	15 (2)	20 (2.4)	23 (2.6)	23 (2.8)	21 (2.8)	19 (3)
Africa	378 (100)	427 (100)	526 (100)	544 (100)	489 (100)	486 (100)	436 (100)	380 (100)	381 (100)
New Const.	358 (94.7)	404 (94.6)	495 (94.1)	514 (94.5)	458 (93.7)	460 (94.7)	414 (95)	363 (95.5)	362 (95)
R&M	20 (5.3)	23 (5.4)	31 (5.9)	30 (5.5)	31 (6.3)	26 (5.3)	22 (5)	17 (4.5)	19 (5)
Asia2)	2,827 (100)	3,134 (100)	3,438 (100)	3,561 (100)	3,367 (100)	3,432 (100)	3,523 (100)	3,539 (100)	4,648 (100)
New Const.	2,627 (92.9)	2,906 (92.7)	3,159 (91.9)	3,208 (90.1)	3,043 (90.4)	3,064 (89.3)	3,184 (90.4)	3,183 (90)	4,170 (89.7)
R&M	200 (7.1)	228 (7.3)	278 (8.1)	353 (9.9)	324 (9.6)	368 (10.7)	339 (9.6)	352 (10)	478 (10.3)
South Amer.	714 (100)	910 (100)	1,099 (100)	1,216 (100)	956 (100)	750 (100)	748 (100)	778 (100)	860 (100)
New Const.	664 (93)	850 (93.4)	1,023 (93.1)	1,140 (93.7)	880 (92.1)	687 (91.6)	683 (91.3)	771 (91.4)	812 (94.4)
R&M	50 (7)	60 (6.6)	76 (6.9)	76 (6.3)	76 (7.9)	63 (8.4)	65 (8.7)	67 (8.6)	48 (5.6)

North	2,860	3,212	3,304	3,589	3,402	3,685	4,147	4,504	4,646
Amer.	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)
New	2,499	2,747	2,798	3,028	2,839	3,111	3,500	3,802	3,922
Const.	(85.6)	(85.5)	(84.7)	(84.4)	(83.5)	(84.4)	(84.4)	(84.4)	(84.4)
R&M	411	465	506	561	564	574	(647)	(702)	724
	(14.4)	(14.5)	(15.3)	(15.6)	(15.6)	(15.6)	(15.6)	(15.6)	(15.6)
Total	12,482	14,152	15,652	15,562	14,661	14,617	14,776	15,008	17,738
	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)
New	10,714	12,141	13,261	13,158	12,253	12,230	12,403	12,589	14,818
Const.	(86.1)	(85.8)	(84.7)	(84.6)	(83.6)	(83.7)	(83.9)	(83.9)	(83.5)
R&M	1,741	2,011	2,390	2,404	2,409	2,387	2,373	2,419	2,920
	(13.9)	(14.2)	(15.3)	(15.4)	(16.4)	(16.3)	(16.1)	(16.1)	(16.5)

Source: Collected Data from Construction Statistics Yearbook, U.N. and National Accounts Statistics, U.N., various issues from 1979 to 1988.

The writer summarised the data and tabulated

Note: 1) For 131 Countries

2) Includes Japan & Pacific Region



## World Construction Investment by Type of Project 1)

Unit: 100 mil.\$

	1978	1979	1980	1981	1982	1983	1984	1985	1986
Europe	5,155 (100)	5,877 (100)	6,588 (100)	5,898 (100)	5,616 (100)	5,386 (100)	5,108 (100)	5,049 (100)	6,575 (100)
Residential	1,937 (37.6)	2,231 (38.0)	2,555 (38.8)	2,305 (39.1)	2,087 (37.2)	2,073 (38.5)	1,949 (38.1)	1,891 (37.5)	2,515 (38.3)
N-Residential	1,733 (33.6)	1,944 (33.9)	2,216 (33.7)	1,966 (33.4)	1,923 (34.2)	1,764 (32.7)	1,633 (32.0)	1,632 (32.3)	2,111 (32.1)
Civil	1,485 (28.8)	1,653 (28.1)	1,812 (27.5)	1,623 (27.5)	1,606 (28.6)	1,550 (28.8)	1,527 (29.9)	1,524 (30.2)	1,969 (29.6)
Middle East	548 (100)	592 (100)	697 (100)	754 (100)	831 (100)	878 (100)	814 (100)	762 (100)	628 (100)
Residential	174 (31.7)	203 (34.3)	247 (35.5)	249 (33.0)	264 (31.8)	316 (36.0)	307 (37.7)	278 (36.5)	225 (35.8)
N-Residential	103 (18.8)	135 (22.8)	145 (20.9)	161 (21.4)	183 (22.0)	177 (20.2)	167 (20.5)	159 (20.9)	139 (22.1)
Civil	271 (49.5)	254 (42.9)	303 (43.6)	344 (45.6)	384 (46.2)	385 (43.8)	340 (41.8)	325 (42.6)	264 (42.1)
Africa	378 (100)	427 (100)	526 (100)	544 (100)	489 (100)	486 (100)	436 (100)	380 (100)	381 (100)
Residential	88 (23.3)	90 (21.1)	106 (20.2)	114 (21.0)	104 (21.3)	108 (22.2)	99 (22.8)	82 (21.9)	85 (22.3)
N-Residential	103 (27.7)	118 (27.6)	138 (26.2)	148 (27.2)	137 (28.0)	136 (28.0)	123 (28.2)	108 (28.4)	107 (28.1)
Civil	187 (49.5)	219 (51.3)	282 (53.6)	282 (51.8)	248 (50.7)	242 (49.8)	214 (49.1)	189 (49.7)	189 (49.6)
Asia2)	2,827 (100)	3,134 (100)	3,438 (100)	3,561 (100)	3,367 (100)	3,432 (100)	3,523 (100)	3,535 (100)	4,648 (100)
Residential	1,024 (36.2)	1,082 (34.5)	1,122 (32.6)	1,130 (31.7)	1,072 (31.8)	1,063 (31.0)	1,079 (30.6)	1,080 (30.6)	1,396 (30.0)
N-Residential	642 (22.7)	768 (24.5)	950 (27.6)	979 (27.5)	920 (27.3)	954 (27.8)	98 (27.9)	991 (28.0)	1,301 (28.0)
Civil	1,161 (41.1)	1,284 (41.0)	1,366 (39.7)	1,452 (40.8)	1,375 (40.8)	1,415 (41.2)	1,463 (41.5)	1,464 (41.4)	1,951 (42.0)

South	714	910	1,099	1,216	956	750	748	778	860
Amer.	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)
Residential	253	331	385	412	311	254	264	275	295
	(35.4)	(36.4)	(35.0)	(33.9)	(32.5)	(33.9)	(35.3)	(35.3)	(34.3)
N-Residential	224	263	277	309	281	221	177	184	232
	(31.4)	(28.9)	(25.2)	(25.4)	(29.4)	(29.5)	(23.7)	(23.7)	(27.0)
Civil	237	316	437	495	364	275	307	319	333
	(33.2)	(34.7)	(39.8)	(40.7)	(38.1)	(36.7)	(41.0)	(41.0)	(38.7)
North	2,860	3,212	3,304	3,589	3,402	3,685	4,147	4,504	4,646
Amer.	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)
Residential	1,419	1,521	1,366	1,385	1,184	1,683	1,963	2,087	2,145
	(49.6)	(47.4)	(41.3)	(38.6)	(34.8)	(45.7)	(47.3)	(46.1)	(46.2)
N-Residential	630	772	870	963	978	938	1,086	1,265	1,303
	(22.0)	(24.0)	(26.3)	(26.8)	(28.7)	(25.4)	(26.2)	(28.1)	(28.0)
Civil	811	992	1,069	1,241	1,240	1,064	1,099	1,161	1,198
	(28.4)	(28.6)	(32.4)	(34.6)	(36.5)	(28.9)	(26.5)	(25.8)	(25.8)
Total	12,482	14,152	15,652	15,562	14,661	14,617	14,776	15,008	17,738
	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(200)
Residential	4,895	5,458	5,783	5,595	5,022	5,497	5,661	5,685	6,661
	(39.2)	(38.6)	(36.9)	(36.0)	(34.2)	(37.6)	(38.3)	(37.9)	(37.5)
N-Residential	3,435	4,050	4,596	4,526	4,422	4,190	4,167	4,339	5,193
	(27.5)	(28.6)	(29.4)	(29.1)	(30.2)	(28.7)	(28.2)	(28.9)	(29.3)
Civil	4,152	4,647	5,260	5,437	5,217	4,931	4,950	4,982	5,884
	(33.3)	(32.8)	(33.7)	(34.9)	(35.6)	(33.7)	(33.5)	(33.2)	(33.2)

Source: Collected Data from Construction Statistics Yearbook, U.N. and National Accounts Statistics, U.N., various issues from 1979 to 1988.

The writer summarised the data and tabulated.

Note: 1) Total Amount for 131 countries  
2) Includes Japan & Pacific Region

## World Yearly Total Construction Investment Amount and Amount Earned by the Biggest 250 Contractors

Unit: 100 mil.\$

	A.World Total Invest Amt. a)	B.Amt.Ear- ned by 250 Contractors	C.Overseas Proj.Amt. Earned by 250 Cont.	B/A (%)	C/B (%)	C/A (%)
1978	12,482	1,043 b)	506 b)	8.4	47.8	4.1
1979	14,152	1,306 b)	672 b)	9.2	9.2	4.8
1980	15,652	2,180	1,086	13.9	13.9	6.9
1918	15,562	2,499	1,346	16.1	16.1	8.7
1982	14,661	2,175	1,231	14.8	14.8	8.4
1983	14,617	2,042	936	14.0	14.0	6.4
1984	14,776	1,914	805	13.0	13.0	5.5
1985	15,008	2,095	816	14.0	14.0	5.4

Source: Collected Data from Construction Statistics Yearbook, U.N., National Accounts Statistics, U.N. and Engineering News Record, various issues from 1979 to 1988.  
The writer summarised the data and tabulated.

Note: a) Total Amt. for 131 Countries  
b) 200 Biggest Contractors

## Overseas Contracting Amount vs. Total Construction Investment Amount by Region (250 Biggest Contractors)

unit: %

	Middle East	Africa	Asia a)	South Amer.	Europe	North Amer.	Total
1978	29.9	23.0	8.6	10.4	1.1	1.8	4.1
1979	36.8	27.2	9.9	10.8	1.3	2.1	4.8
1980	50.7	35.6	13.4	14.4	1.9	3.2	6.9
1981	63.9	45.6	18.9	14.8	1.7	3.2	8.7
1982	61.6	36.2	19.0	10.8	2.0	2.7	8.4
1983	37.6	44.0	12.3	8.4	1.8	2.2	6.4
1984	32.7	28.7	14.1	7.2	1.8	2.1	5.5
1985	28.4	40.3	14.1	8.5	2.0	2.3	5.4
1986	25.6	34.4	13.4	6.1	1.8	2.2	4.2

Source: Collected Data from Construction Statistics Yearbook, U.N., National Accounts Statistics, U.N. and Engineering News Record, various issues from 1979 to 1988

Note: a) Include Pacific Region, Exclude Japan (Since Japan didn't issue any overseas project, it didn't make any difference)

## Market Share of Middle Eastern Construction by 250 Largest Firms

unit: Bil.\$ (%)

	1980	1981	1982	1983	1984	'80-'84
U.S.A	8.9 (25.2)	10.4 (22.4)	18.5 (36.1)	12.7 (38.5)	10.7 (40.2)	61.2 (31.8)
Korea	7.6 (21.5)	10.5 (22.6)	10.7 (20.9)	4.8 (14.5)	4.9 (18.4)	38.5 (20.0)
Japan	2.3 (6.5)	3.9 (8.4)	2.5 (4.9)	2.5 (7.6)	1.2 (4.5)	12.4 (6.5)
Europe	11.7 (33.0)	17.2 (37.0)	15.4 (30.1)	9.4 (28.5)	6.8 (25.6)	60.5 (31.4)
France	2.5 (7.2)	4.2 (9.0)	3.7 (7.2)	2.3 (7.0)	1.6 (6.0)	14.3 (7.1)
W.Germany	3.1 (8.8)	3.0 (6.5)	2.4 (4.7)	1.3 (3.9)	0.9 (3.4)	10.7 (5.6)
Italy	2.3 (3.5)	2.3 (4.9)	2.8 (5.5)	1.1 (3.3)	1.1 (4.1)	9.6 (5.0)
U.K.	0.9 (2.4)	1.4 (3.0)	3.0 (5.8)	1.4 (4.3)	1.2 (4.5)	7.9 (4.1)
Netherlands	0.9 (2.6)	2.1 (4.5)	0.4 (0.8)	1.3 (3.9)	0.3 (1.1)	5.0 (2.6)
Yugoslavia	- (-)	- (-)	0.6 (1.2)	0.5 (1.5)	0.2 (0.8)	1.3 (0.7)
Others	2.0 (5.6)	4.2 (9.1)	2.5 (4.9)	1.5 (4.6)	1.5 (5.6)	11.7 (6.1)
Turkey	- (-)	0.9 (1.9)	1.9 (3.7)	2.1 (6.4)	1.2 (4.5)	6.1 (3.2)
Others	4.8 (13.6)	3.6 (7.7)	2.2 (4.3)	1.5 (4.5)	1.8 (6.8)	13.9 (7.2)
Total	35.3 (100.0)	46.5 (100.0)	51.2 (100.0)	33.0 (100.0)	26.6 (100.0)	192.6 (100.0)

Source: Engineering News Record, McGraw-Hill, Inc., various issues

## Market Share of Asian Construction by 250 Largest Firms

unit: Bil.\$ (%)

	1980	1981	1982	1983	1984	'80-'84
U.S.A	10.5 (66.0)	9.4 (43.9)	9.4 (40.0)	4.8 (31.2)	8.8 (48.1)	42.9 (45.4)
Korea	0.7 (4.4)	1.4 (6.5)	2.4 (10.2)	1.2 (7.8)	0.8 (4.4)	6.5 (6.9)
Japan	1.4 (8.8)	2.4 (11.2)	5.6 (23.8)	4.8 (31.2)	4.4 (24.0)	18.6 (19.7)
Europe	2.7 (17.0)	7.5 (35.0)	5.4 (23.0)	4.3 (27.9)	3.7 (20.2)	23.6 (25.0)
France	0.6 (3.8)	2.4 (11.2)	1.3 (5.5)	1.1 (7.1)	0.9 (4.9)	6.3 (6.7)
W.Germany	0.1 (0.6)	1.1 (5.1)	1.8 (7.6)	1.2 (7.8)	0.5 (2.7)	4.7 (5.0)
Italy	0.4 (2.5)	0.4 (1.9)	0.2 (0.9)	0.4 (2.6)	0.4 (2.2)	1.8 (1.9)
U.K.	0.7 (4.4)	1.8 (8.4)	1.1 (4.7)	1.2 (7.8)	1.0 (5.5)	5.8 (6.1)
Netherlands	0.5 (3.1)	0.2 (0.9)	0.2 (0.9)	0.2 (1.3)	0.1 (0.5)	1.2 (1.3)
Yugoslavia	- (-)	- (-)	- (-)	- (-)	0.2 (1.1)	0.2 (0.2)
Others	0.4 (2.5)	1.6 (7.5)	0.8 (3.4)	0.2 (1.3)	0.6 (3.3)	3.6 (3.8)
Turkey	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
<b>Total</b>	<b>15.9</b> <b>(100.0)</b>	<b>21.4</b> <b>(100.0)</b>	<b>23.5</b> <b>(100.0)</b>	<b>15.4</b> <b>(100.0)</b>	<b>18.3</b> <b>(100.0)</b>	<b>94.5</b> <b>(100.0)</b>

Source: Engineering News Record, McGraw-Hill, Inc., various issues

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