POLITICAL RISK ANALYSIS SYSTEM FOR
MULTINATIONAL CONTRACTORS

by

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Joseph James Bonner

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ABSTRACT

This thesis will address the issue of political risk as it pertains to the operations of multinational construction firms. It involves the development of an analytical model which will be used for the purpose of evaluating the political, socio-economic issues affecting the macro and micro environment of projects in foreign nations. It is a generic model which structures the analysis process and as such does not address itself to any one specific group or individual nation. It will respond to one of the questions which confront most multinational decisionmakers: What are the possible exposures, impacts and opportunities offered by a project given the nature of the host country's political environment?

The first chapter discusses the international business environment, its structure, the risks encountered and the manner in which multinationals analyze and respond to these factors. Chapter two reviews the multinational contractor and the foreign construction market. It analyzes the particular nature of each and the relationship that exists between the two. In chapter three the multinational's risk environment is explored, followed by an introduction and development of the analysis system in chapter four. The methodology used to implement the system is reviewed in chapter five. The thesis is concluded in chapter six with a brief critique of the system and a discussion of possible political risk mitigation strategies.

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CHAPTER I THE INTERNATIONAL BUSINESS ENVIRONMENT

Introduction

The analysis of environmental risk is of extreme importance to the corporate decisionmaker. Failure to fully understand one's possible exposures can severely affect a firm's ability to attain the objectives set for the business venture. In the international business environment, the multinational is in a constant state of flux, adapting and adjusting to differences in culture, environment and patterns of development. This breeds an environment of high uncertainty fraught with risks for the firm operating within it. The concern over political uncertainty has spanned the growth and development of the political risk analysis industry. However, most of the services offered provide a less than adequate solution to the basic question:

"What impact will the risks encountered in the host country have on one particular business enterprise?"

The system developed in this thesis will attempt to provide an answer to this question as it relates to the construction industry. It will serve as a guideline for analyzing the effect that non-economic variables can have on a contractor's ability to fully realize the expected returns from the project.

Scenario

During the last decade the world has witnessed widespread changes in the structure of the international business environment. There have been changes which have had and will continue to have a significant impact
upon the world's business community for several decades to come. There has been a significant shift in the political and economic order of the world. A shift which has eroded the foundations of once accepted canons set by the industrialized nations. At the root of this upheaval are the nations of the third world, who through a new self-deterministic spirit have begun to take charge of their own destinies.

**Environmental Impacts**

The impact of this on the international business environment has been twofold. First, the third world has developed as a major consumer of advanced technology and as such has provided a large and profitable market to the suppliers of this technology: Multinational Enterprises (MNE's) from industrialized nations. The third world nations have also become much more sophisticated in their dealings for this technology. Experience gained from their long association with MNE's has given many the business savvy and ability to make the MNE's environment more difficult than it has ever been before. Gone are the days when multinationals could use their power and influence to restructure and/or overthrow existing governments in an effort to create an optimum environment for their investments (Kraar - 1980). Nor can they rely on Gunboat Diplomacy or other forms of home government intervention as a means of protecting their foreign investments (Haendel - 1979). The second impact of the changing nature of the international business environment is therefore the increasing level of risk that firms face operating in this market.

One reason for this shift of power has been the recognition by third world nations, of their importance as major suppliers of raw materials.
The traditional pattern of international trade has been the exporting of advanced technology and foodstuffs from industrialized to the less developed countries, transferred via the MNE. These firms provided the capital, entrepreneurial talents and managerial skills that assisted in the domestic growth of many of these nations. In exchange for this technology and expertise, the third world nations exported vast quantities of raw materials, semi-manufactured goods and basic foodstuffs such as sugar, tea and coffee to satisfy the spiralling needs of the developed world. (Haendel - 1979)

The dependence of the industrialized world on these vital resources were spotlighted during the oil embargo of 1973-74. The message delivered by this event and several other smaller but nevertheless critical actions taken by the third world was simple: MNE's would be facing ever increasing regulations and influence by host countries in their future business endeavors. In the last thirty years there has been a growth of nationalism occurring within the third world. This movement has substantially increased the level of political risk faced by multinationals. Nationalist forces acting in the nation have put increasing pressure on host governments to affect measures which favor domestic business interests. To the MNE, many of these measures run counter to, and are not necessarily conducive to the maintenance of profitable foreign investments (Haendel - 1979). Measures such as:

- The expropriation of public utilities
- Government investment in and subsidies for bottleneck industries
- Agricultural reform
- Restrictions on imports, exports and capital flows
- Requirements on reinvestment of profits and on the ratio of foreign to domestic equity
- Compulsory subcontracting and a number of other actions.

The growth and development of the third world has had a tremendous affect on the international construction industry. Few times in history has the world observed the amount of physical development that has occurred during the last three decades. Much of this activity was sparked by the oil rich nations of the world who having acquired unprecedented power and position, invested billions of dollars towards the rapid development of their countries. It was during this period that design and construction began on a number of ambitious projects to install new infrastructures, develop industries and to construct cities on sites which in many cases had previously been uninhabited wasteland. These actions were taken in an attempt to transform rural agrarian cultures into contemporary industrial societies modeled after the developed nations of the world.

Taking the initial lead in providing the knowledge and skilled man-power for the realization of many of these projects were the design, engineering and construction firms of the United States. As a group, these firms had the initial advantage of being the only ones capable of amassing the large amount of skills required for these projects. American Multinational Contractors (MNC's) mobilized vast quantities of man, machine and material and set up operations in countries like Saudi Arabia, Kuwait, Iran and Nigeria, commencing the monumental task of developing the third world. A current look at the situation reveals quite a different scenario.
In recent years, American firms have lost their preferred position as the "prime contractor" in world construction.

As are many other American businesses, Multinational Contractors are encountering increasing difficulties in their ability to operate effectively abroad. One of the primary reasons for this is the unilateral failure of American business to successfully manage the non-economic risks occurring within the nation's business environment. The lesson learned by American businesses in Iran is an unfortunate but prime example of the risks and associated costs of doing business abroad. Whether or not all or part of the one billion dollars in potential losses suffered by American business in that country could of been averted is debatable. However, few will argue against the value that some type of system would have had in the assessment of events which led up to the subsequent revolution. Had American businesses effectively assessed the impact of risk and managed against it, it is most probable that the costs of the revolution might not have been as high.

Definition of Political Risk

The search for an appropriate definition of political risk and what composes it has continually plagued both academicians and corporate decisionmakers. The basic cause is that there is no one clearly defined answer. Political risk is a highly subjective and individualistic event. What may represent high risk to one type of operation may not necessarily represent risk at all to another. In some instances, what is perceived as a risk to one firm, may be seen as a business opportunity to another. Risk must always be analyzed in relation to the specific needs and nature
of the business venture in a particular country.

Political risk has been defined many different ways. The Overseas Private Investment Corporation (OPIC), which provides political risk insurance against losses incurred by American firms engaged in operations abroad, defines it as

"...The risk or probability of occurrence of some political event(s) that will change the prospects for the profitability of a given investment."1

Another accepted viewpoint defines political risk as

"Government interference, through specific acts or events, with the conduct of business or in terms of overall government policy towards foreign investors".2

In Robock's study, political risk develops when discontinuities occur in a business environment which have the potential to affect the overall objectives of a particular business enterprise (Robock - 1971). Root defines political risk as the synthesis of two distinct elements, one of uncertainty and the other of risk (Root - 1971). In this context, uncertainty is defined as the possible occurrence of political events of any kind (e.g., war, revolution, coup d'etat, expropriation, taxation, devaluation, exchange control and import restrictions) that would cause a loss of profit potential and or assets in international business operations. Risk occurs when this uncertain condition is assigned a probability of occurrence given the particular factor or set thereof which affect that variable in the host country (Root - 1971). This definition of risk can be expanded to account for the objective and subjective assessment of its occurrence. In this context, risk can be perceived as being an objective doubt concerning the outcome in a given situation, and uncertainty as a subjective doubt concerning the outcomes during a given period (Williams &
Heins - 1970). Put another way, risk is a state of the world, uncertainty is a state of mind.

For the purposes of this study, political risk is defined as the occurrence of politically motivated events which affect the MNC's ability to operate effectively in the host country. Despite the differences in the formal definition of political risk, all are united in their conviction regarding its importance as an element to be reckoned with in the international business environment.

Causes of Political Risk

The types of political risk and the fundamental factors which cause them are many. Robock classifies political risk into two basic categories, those which affect either the macro or the micro environment of the firm (Robock - 1971). Macro-risks, are those politically motivated events which impact foreign enterprises in a general sense. They are events which create risk for all foreign businesses. Micro-risks are those factors which impact a specific firm or business sector. Two of the more extreme examples of these risks are expropriation and nationalization. The former has been defined as a discriminatory action taken by a government against a particular firm or business activity belonging to a foreign entity. It is a recognized legal right of any sovereign government, and must be enacted to protect the best interests of the host nation. The foreign entity which this action is taken against is entitled to "prompt, adequate and effective compensation" once the event occurs (Robock - 1971). Nationalization is more industry specific. It involves the taking of all business and property in an industry, and is not directed at any one firm.
Since World War II, American firms have encountered these acts in a number of countries, particularly in Latin America. The probability of encountering actions of this type is dependent upon the nature of the particular business venture. Each industry type possesses a different level of vulnerability to these events. In the past, the businesses having the highest propensity towards these risks were public utilities and those engaged in the extractive industry, particularly petroleum and mining. The underlying reasons given as the cause of these acts are in most cases nationalistic. The belief that a country's natural wealth should be developed for its own internal growth and not to be extracted for the benefit of a foreign body is the basic argument used against firms in the extractive industry. National security and the protection of national interest has been the main thrust behind the expropriation of utilities operated by foreigners. Overlaid on this is the image associated with an ability to be self-sufficient and able to control one's own destiny (Robock - 1971). These acts can and have resulted in huge losses to the foreign enterprise. However, for many firms, they are minor factors in comparison to the numerous and less overt ways in which host governments can create risk.

Risk and Instability

Many experts on the subject are of the opinion that the probability of encountering political risk abroad is directly proportional to the relative stability of the host country's political system. There have been instances where MNE's have incurred losses to property and personnel due to socio-political disorders. However, this thesis is not necessarily
valid in all cases. Political instability in and by itself does not unconditionally result in increased risk to all foreign investments. The two concepts are not always positively correlated (Robock - 1971). In some societies, political instability which leads to radical changes of government represents the traditional system of political change. In a case such as this, these changes may have very little impact on foreign investment. The fundamental causes of political instability have their roots in various social, economic and political factors. Lloyd identifies some of the causal variables as:

- Strong internal factors (religious, racial, language, tribal or economic)
- Social unrest and disorder
- Recent or impending independence
- New international alliances and relations with neighboring countries
- Forthcoming elections
- Extreme programmes
- Vested interests of local business groups
- Proximity to armed conflict.

Risk and Modernization

Another cause of political instability within a society is the process of modernization. Kobrin (1977) has found that countries undergoing radical social, economic and political change exhibit a much greater tendency towards political unrest than nations maintaining traditional modes of life or those which have completed their development. Green (1974) supports
this idea and indexes political risk in a nation according to its degree of modernization as it relates to the country's political system. For example, in his index, those countries possessing long established "modernized" governments are ranked higher (e.g., lower risk or change) than those countries with more transitional power systems still in the modernizing process (Haendel - 1979). The problem that modernization presents is basically one of a discrepancy between expectation and fulfillment. This refers to the social desires of the nation and the formal governing system's ability to accommodate these desires. In their analysis of political risk, the Feirabends write:

"The higher (lower) the social wants formation in any given society and the lower (higher) the social want satisfaction: The greater (the less) the impulse to political instability." 3

Kobrin notes:

"The relationship between political disruption and modernization involves the disintegration of traditional societal structures and concurrently the development and raising of national expectations regarding one's condition. Trouble begins when the nation's societal aspirations are high and the political system is unable to effect change which will reasonably satisfy these desires. Frustration sets in which inevitably leads to unrest and subsequently political disruption." (see Kobrin - 1977)

The issue of modernization and political instability is of significant importance to the MNC, for the nature of his business directly involves him in the modernizing process. The MNC provides those components which will play valued roles in helping the host nation establish its new societal trends (e.g., the construction of housing, schools, hospitals, and roads). If the concept of risk and modernity holds true, MNC's have a higher probability of confronting political instability than firms involved in another type of industry.
Multinationals and Political Risk

The response of U.S. multinationals to the political risks confronted in the international business environment has been less than admirable. Their shortcomings can be attributed to the widespread failure of corporate management to systematically analyze and manage the actual and perceived risks encountered in the host country. Over the years, this failure has resulted in the rejection and loss of many potentially lucrative business opportunities abroad due to conservatism and a general lack of awareness. In a study of American multinationals, Kobrin revealed that many businesses have become more concerned with the impact that non-market variables have on their environment. Few, however, have adopted the use of any systematic assessment and evaluation technique that successfully analyses the risk environment. Furthermore, those MNE's that to perform risk analysis', do so via use of a system or systems which treat the problem in a general manner yielding results which are sometimes biased and suspect in their value as an investment aid (Kobrin - 1979). The underlying cause is basically one of attitude and not the lack of ability or the availability of a methodology to perform such an analysis.

In contrast to the rigorous and well-structured financial and market analysis' that form an integral part of most investment decisions, political risk analysis done by multinationals are usually performed in a very unstructured and unsophisticated manner. The reason for this is twofold. First, the numerous components and variables that constitute political risk are considered to be too ephemeral, too difficult to grasp and too full of uncertainty to be analyzed quantitatively. Secondly, due to the
nature of political risk, corporate decisionmakers do not feel comfortable applying the various types of analysis techniques used in other investment decisions to a problem of this nature (Van-Agtmael - 1976). Many MNE's rely on risk indexes or forecasting services as the basis for making investment decisions. The systems used provide fairly superficial analysis of the foreign investment climate for a select number of countries. For the most part, these techniques are very limited in their usefulness, falling short of their goal of providing an effective managerial tool. Their major shortcoming is in their inability to account for the impact of politically motivated events on the specific project or investment under consideration within that nation. Most focus on general macro-risks such as political instability or war and civilian disorder with little treatment of risks at the micro-level. As a result they fail to account for the highly individualistic nature of any given project. Other problems associated with those and other similar methodologies are:

- Subjective assessments based on the evaluation of a very narrow range of factors
- Static measures taken only at the pre-investment stage, neglecting the dynamic nature of the environment which changes over time
- An analysis of risk in general and does not address the issues of risk management.

The response of MNE's to environmental risk has been very inadequate. Most of the strategies adopted as a means of risk management fully exemplify the MNE's lack of understanding about the country's environment. Some of the strategies used by firms to mitigate against these risks are:
• **Avoidance** - Investment if only "safe" environments, foregoing areas which have a greater than average degree of risk, as perceived by the MNE.

• **Premium for Risk** - An increase of required return on investment, shorter payback period or a change in discount rate. All actions are taken to protect against high environmental risk.

• **Adaptation** - Structuring foreign operations in response to the particular environmental conditions of the host country, e.g., joint venturing with local nationals and/or utilization of local business interests.

• **Transfer** - Reduction of risk via transfer to an insuring agency or sharing the risk with other firms.

All of the aforementioned strategies and combinations thereof suffer from the same malaise as do most of the political risk analysis techniques: they fail to account for the particular characteristics of the foreign project being undertaken. The solution to this problem lies in the development of a tool which will allow MNE management the opportunity to systematically analyze risk.

The systematic analysis of political risk is a four step process. First, one must identify those political factors which are or could become pertinent to the business venture. Second, the assessment of the probability of these variables occurring over the life of the venture. Third, determination of the impact these events will have on the venture should they occur. Fourth, the determination of an effective management strategy to mitigate against these risks. One must also understand the
nature of the political and social system of the host country, its patterns of behavior, traditional methods of change, and the casual factors which create the element of risk in the environment (Robock - 1971).

To the MNC, the issues and concepts raised here are of extreme importance. The environment of the MNC is highly volatile. He is involved in a business which is extremely sensitive to environmental fluctuations, both anticipated and unanticipated, where minor shifts in the project's structure can severely impact his ability to reap expected project returns. The nature of the MNC's operation, the type of projects undertaken and the time horizon of the investment is such that the macro-level risks of expropriation and nationalization, two major concerns of other MNE's are not of extreme concern. However, micro-level risks such as policies requiring joint ventures or using local inputs are far more important and can severely hamper the firm's ability to realize expected project returns. The high susceptibility to micro-environmental risks and the failure of insurance programs such as those offered by OPIC or private sector firms to insure against such risks, places the MNC in an extremely tenuous position. Therefore, it is of extreme importance that the MNC fully understand both the exposures and the opportunities that he will encounter in the host country. The purpose of this thesis is to provide such an understanding.
CHAPTER II  THE MULTINATIONAL CONTRACTOR AND THE FOREIGN CONSTRUCTION MARKET

The multinational contractor has become an ever present and continually growing force in the development of both the industrialized and third world nations. The MNC's are represented by firms which provide a variety of services from general consulting through to the planning, design and the subsequent construction of a wide variety of projects. The MNC is a service organization that is in the business of providing technical expertise in exchange for a fee. Internationally, the multinational is involved in the exporting of goods and services abroad, on a short term (project specific) basis and is very rarely involved in direct investment abroad (Moavenzadeh - 1974). The payment received for services is regarded as foreign exchange and as such contributes to the balance of payment policies of the MNC's home country.

The MNC looks to the foreign construction market for two basic reasons. First, as a means of obtaining opportunities for growth which oft times are unobtainable through sole dependence on their domestic markets. Second, as is the case of highly specialized firms, working abroad provides the means of capitalizing on the expertise and experience gained from long involvement in one type of construction or some sophisticated technology. In the mid-seventies many of the leading American contracting firms looked abroad as a means of circumventing the affects of the stiff competition confronted at home, and the recession that severely impacted their domestic market (ENR - 1978).
The leading firms in international construction are those which are generally well established in their domestic markets. Other firms are represented by those who are well versed in some type of industrial or specialty construction. The MNC's importance in the international market is determined primarily by two factors. First, due to the inability of firms from developing countries to provide the services required for the realization of their government's development plans. Second, due to many host governments reluctance to endure the long learning and development process that is required for their firms to acquire the technical expertise required for these plans. Another reason for the importance of the MNC's participation was the developing nations financial needs. Many nations are not endowed with vast quantities of natural resources and therefore are forced to rely on international funding mechanisms as a means of financing their development. Some of the financing available is tied into agreements which mandate the use of goods and services from the country providing the aid. For example, France, Italy, Japan and England all tie loans granted to foreign nations to the use of their national contractors, architects and engineers (ENR - 1979).

In certain instances the MNC is able to access funds which are unavailable to national governments, such as suppliers or export credits. Thus, it is the professional, managerial skills, financial expertise and funding options possessed by the MNC, and the lack of such skills by the developing country firms which determines the MNC's importance. Overall, the MNC is brought in to fill the void existent between government expectations and desires, and the ability of local industry to fulfill these needs.
The Nature of the Multinational's Operations

The MNC is usually highly diversified, offering professional services which include feasibility studies, planning, design, economic development planning, construction management and construction (Moavenzadeh - 1974). In recent years, Construction Management (CM) has grown to become the most dominant type of professional service offered by MNC's. The number of firms offering such services has consistently increased over the last decade. During this period, the number of firms providing CM services to their clients doubled. In 1979 more than 65% of the 400 top U.S. contractors who were awarded foreign contracts, provided construction management services to their clients (Table 2.1a).

Turnkey projects play a significant role in international construction. Nearly half of all foreign work performed by the 400 top American contractors in 1979, $10.7 billion, were design-build agreements (ENR - 1980). At times MNC's are restricted from turnkey projects by regulations set by some project financing institutions. Many of these organizations require competitive bidding which generally results in separate design and construction contracts. Most of the restrictions which mandate against design-build agreements do so in an effort to protect against the conflict of interest that might arise should the same firm be responsible for both design and construction of a project. However, turnkey construction will continue to remain strong, primarily because of its fast-track capabilities and the level of control that can be maintained by the MNC over the project's complete life.
The types of projects are usually infrastructural; the installation of transportation systems, communication lines and utilities (e.g., sewers and water). Many of the projects involve varying types of high technology such as process plants or other industrial applications with a high degree of sophistication. The primary emphasis on industrial and basic infrastructure construction is based primarily on the desire to fulfill the basic needs of the nation. Many of the developing nations are agrarian cultures, some nomadic, living in extended family group units. Most are maintaining modes of life that have existed for centuries. Thus the tremendous requirement for those elements which improve the basic conditions for existence. Coinciding with these projects are those which fulfill the government's desire to acquire images of modernization and development. This desire leads to the construction of luxury hotels, high-rise office buildings and high technology factories, all designed and built by MNC's.

The principal client of the MNC is the government. In other instances he provides a service to a multinational corporation who is looking to construct a plant or manufacturing facility in the host country. In the past, private industry in the host country has played a relatively minor role in the MNC's environment. However, in the last few years, private firms in the more developed of the developing nations have grown to a point where they are now offering increasing opportunities to the MNC.

Size is an important factor in the international market; to the firm as well as to the project. Many of the top firms have large overheads,
operating expenses and investments in capital equipment and personnel that can only be economically absorbed by working on large multi-million dollar projects. For the larger MNC, the big project is essential to the firm's ability to perform efficiently. This is particularly true for those firms whose operations are geared towards the effective use of large economies of scale.

The large resource requirements of some projects can oft times only be amassed and managed by the larger firms. These firms usually have a greater ability to manage the risks confronted, establish and maintain the required information flows and other variables particular to projects of this type. In recent years, over 80% of the total dollar volume of foreign work awarded to the 400 top U.S. contractors was performed by those firms in the top 10% of this group (Table 2.3). Domestically these firms have been equally as powerful, consistently capturing at least two-thirds of the total dollar volume of work awarded in their home market. Industrial builders are the biggest force in this market, accounting for 60% to 80% of all foreign construction dollars awarded to the 400 top U.S. contractors over the last five years (ENR - 1980). This group is followed by diversified constructors with heavy and highway and general contractors accounting for the remainder.

Joint ventures play an ever increasing role in the MNC's environment. In a recent survey, over 90% of the 200 top international MNC's indicated that they either participated or desired to participate in joint ventures. Many firms look to joint venture as a means of reducing their potential risks. At other times, joint ventures are formed to increase the firm's
competitive ability in the market. Some projects are just too large for any one firm to attempt alone, which causes the firm to seek a partner who will provide the support required for the completion of the project. Government regulations and aid, manpower, technology and financial expertise are a few of the other reasons given for forming joint ventures (ENR - 1980).

Joint ventures occur primarily between MNC's from other developed countries. However, joint venture agreements between developed country firms and those from developing countries have been steadily rising in recent years. This change has been brought about first, by the development of host country entrepreneurial talents who now possess the technical and financial skills required to participate in the market. Second, through legislation by host country governments who require or strongly suggest that joint ventures be established with local nations. In many instances, the MNC finds it highly beneficial to have a partner who is familiar with the local bureaucracy, customs, language and means of doing business. The importance of having a partner who is well-versed in the local customs is of immense importance to the firm. The MNC often finds himself working in areas far away in both physical distance and cultural familiarization to that of his own.

The major markets of the MNC are located in the natural resource-rich regions of the world. During the seventies, the greatest dollar volume of contracts for international construction came from the Middle East, with Saudi Arabia accounting for more than 50% of this volume. Other areas offering opportunities for the MNC were Europe, Africa and
the Americas. Many firms currently believe that the MidEast market has peaked and are thus pursuing projects in other regions, most recent of which are Canada and Australia (ENR - 1980).

Regional and political factors also play a part in determining the geopolitical structure of the MNC. Many firms operate extensively in the countries surrounding them for obvious reasons, namely proximity and familiarity. Others are strong in countries which are linked or were linked through colonialism such as the dominance of British and French firms in their present and former colonies. Other MNC's are strong in countries which maintain trade or military agreements between their home government and that of a developing nation. As is the case of many American firms working in Asia and Latin America (Moavenzadeh - 1974). Developed country firms are also noted for their prowess in a particular type of construction. For example, Italian MNC's are known for their expertise in the construction of dams, and American MNC's for their abilities in the construction of nuclear power plants. European and Japanese MNC's are known for their infrastructure projects while MNC's from developing nations are obtaining a reputation as builders of basic infrastructure projects (Moavenzadeh - 1974).

The International Market

The size of the foreign construction market has expanded significantly during the seventies. It has grown steadily over the last decade, and should continue along this pattern making the MNC an ever present and continually growing force in world development for some time to come. The market has provided growth opportunities to a large number of construction
firms around the world. As in the past, the expansion of this market will be fueled primarily by the natural resource-rich nations of the world who will invest still more towards the development of their countries. This large investment of capital will be well received internationally because of its affect on the economies of the industrialized nations e.g., increased exports, earning of foreign exchange, and impact on balance of payments. In the United States alone, the dollar volume of work performed by American firms working abroad increased five times during the decade of the seventies (Table 2.1a). For American MNC's, the foreign construction market represents over 20% of the total volume of work performed by the 400 top U.S. contractors in the last five years, or 22.2 billion in 1979 (Table 2.1a). Internationally, the impact is even greater with foreign projects accounting for over 50%, $67.3 billion, of the total volume of work performed by the top 400 in 1979, an increase of nearly 50% over the previous year (ENR - 1980).

The Tables 2.1a thru 2.5c provide data on the operations, domestic and foreign of the 400 top U.S. contracting firms for the last ten years, and the 200 top international contracting firms for the last two years. These tables show that the market trend has been towards steady and consistent growth, with the one exception being 1976, when a worldwide recession depressed most major markets. Since that time the international construction market has rebounded strongly, allowing the top U.S. firms the opportunity to surpass the high mark of $21.8 billion in contracts attained in 1975 (ENR - 1980). Barring any recurrences of the world recession, the MNC should remain strong for years to come.
<table>
<thead>
<tr>
<th>YEAR</th>
<th>CONTRACT VALUE</th>
<th>Other Professional Services</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TOTAL $ BILLION</td>
<td>FOREIGN % TOTAL</td>
</tr>
<tr>
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<td>91.3</td>
<td>22.2</td>
</tr>
<tr>
<td>1978</td>
<td>79.9</td>
<td>18.3</td>
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<td>15.9</td>
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<tr>
<td>1976</td>
<td>59.9</td>
<td>15.6</td>
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<td>1975</td>
<td>69.5</td>
<td>21.8</td>
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<td>1974</td>
<td>75.6</td>
<td>11.7</td>
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<td>55.0</td>
<td>6.1</td>
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<tr>
<td>1972</td>
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</tr>
<tr>
<td>1971</td>
<td>36.0</td>
<td>4.9</td>
</tr>
<tr>
<td>1970</td>
<td>32.4</td>
<td>4.0</td>
</tr>
</tbody>
</table>

\(^{a}\)Source data complied from ENR 400(1971-1980) and Moavenzadeh - 1974.
### TABLE 2.1b  FOREIGN WORK DONE BY 400 TOP U.S. CONTRACTING FIRMS

<table>
<thead>
<tr>
<th>YEAR</th>
<th>NUMBER</th>
<th>% 400</th>
<th>TOTAL NUMBER &amp; % 400</th>
<th>TOTAL CM NUMBER &amp; % 400</th>
<th>TOTAL DESIGN NUMBER &amp; % 400</th>
<th>TOTAL CM &amp; DESIGN NUMBER &amp; % 400</th>
</tr>
</thead>
<tbody>
<tr>
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<td>82</td>
<td>21.7</td>
<td>57 65.5</td>
<td>44 50.5</td>
<td>35 40.2</td>
<td></td>
</tr>
<tr>
<td>1978</td>
<td>84</td>
<td>21.0</td>
<td>57 67.8</td>
<td>53 63.0</td>
<td>40 47.5</td>
<td></td>
</tr>
<tr>
<td>1977</td>
<td>101</td>
<td>25.2</td>
<td>55 54.4</td>
<td>36 35.6</td>
<td>31 30.5</td>
<td></td>
</tr>
<tr>
<td>1976</td>
<td>90</td>
<td>22.5</td>
<td>38 42.0</td>
<td>32 35.5</td>
<td>19 21.1</td>
<td></td>
</tr>
<tr>
<td>1975</td>
<td>87</td>
<td>21.7</td>
<td>37 42.5</td>
<td>44 50.5</td>
<td>26 29.3</td>
<td></td>
</tr>
<tr>
<td>1974</td>
<td>77</td>
<td>19.2</td>
<td>32 41.5</td>
<td>43 55.8</td>
<td>26 33.7</td>
<td></td>
</tr>
<tr>
<td>1973</td>
<td>63</td>
<td>15.7</td>
<td>N.A. -</td>
<td>33 52.4</td>
<td>N.A. -</td>
<td></td>
</tr>
<tr>
<td>1972</td>
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<td>17.7</td>
<td>24 33.8</td>
<td>39 54.9</td>
<td>20 28.1</td>
<td></td>
</tr>
<tr>
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<td>12 18.4</td>
<td>33 50.8</td>
<td>9 13.8</td>
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</tr>
<tr>
<td>1970</td>
<td>64</td>
<td>16.0</td>
<td>N.A. -</td>
<td>31 48.4</td>
<td>N.A. -</td>
<td></td>
</tr>
</tbody>
</table>

*Source data compiled from ENR 400(1971-1980) and Moavenzadeh - 1974.*
### Table 2.2a  Foreign Work Done by 40 Top U.S. Contracting Firms

<table>
<thead>
<tr>
<th>Year</th>
<th>Total $ Billion</th>
<th>% Total</th>
<th>Contract Value</th>
<th>Other Professional Services</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Foreign</td>
<td>CM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Number</td>
<td>% 40</td>
</tr>
<tr>
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<td>57.4</td>
<td>35.0</td>
<td>36</td>
<td>90.0</td>
</tr>
<tr>
<td>1978</td>
<td>50.2</td>
<td>32.0</td>
<td>37</td>
<td>92.5</td>
</tr>
<tr>
<td>1977</td>
<td>47.6</td>
<td>23.7</td>
<td>29</td>
<td>72.5</td>
</tr>
<tr>
<td>1976</td>
<td>37.6</td>
<td>33.6</td>
<td>25</td>
<td>62.5</td>
</tr>
<tr>
<td>1975</td>
<td>48.0</td>
<td>38.5</td>
<td>27</td>
<td>67.5</td>
</tr>
<tr>
<td>1974</td>
<td>51.1</td>
<td>20.3</td>
<td>27</td>
<td>67.5</td>
</tr>
<tr>
<td>1973</td>
<td>34.6</td>
<td>15.0</td>
<td>N.A.</td>
<td>-</td>
</tr>
<tr>
<td>1972</td>
<td>21.8</td>
<td>11.9</td>
<td>17</td>
<td>42.5</td>
</tr>
<tr>
<td>1971</td>
<td>19.9</td>
<td>21.6</td>
<td>11</td>
<td>27.5</td>
</tr>
<tr>
<td>1970</td>
<td>17.5</td>
<td>20.6</td>
<td>N.A.</td>
<td>-</td>
</tr>
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</table>

*Top 10 percent of ENR 400.*
TABLE 2.2b  FOREIGN WORK DONE BY 40 TOP U.S. CONTRACTING FIRMS

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<thead>
<tr>
<th>YEAR</th>
<th>TOTAL</th>
<th>CM</th>
<th>DESIGN</th>
<th>CM &amp; DESIGN</th>
</tr>
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<tbody>
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<td>NUMBER</td>
<td>% 40</td>
<td>NUMBER</td>
<td>% 40</td>
</tr>
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<td>29</td>
<td>72.5</td>
<td>28</td>
<td>96.5</td>
</tr>
<tr>
<td>1978</td>
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<td>70.0</td>
<td>28</td>
<td>100.0</td>
</tr>
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<td>1977</td>
<td>32</td>
<td>80.0</td>
<td>25</td>
<td>78.1</td>
</tr>
<tr>
<td>1976</td>
<td>29</td>
<td>72.5</td>
<td>19</td>
<td>65.5</td>
</tr>
<tr>
<td>1975</td>
<td>30</td>
<td>75.0</td>
<td>22</td>
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</tr>
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<td>47.5</td>
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<td>1972</td>
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<td>62.5</td>
<td>11</td>
<td>44.0</td>
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<td>70.0</td>
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<td>21.4</td>
</tr>
<tr>
<td>1970</td>
<td>24</td>
<td>60.0</td>
<td>N.A.</td>
<td>-</td>
</tr>
</tbody>
</table>

aTop 10 percent of ENR 400.
### TABLE 2.3
FOREIGN WORK DONE BY 40 TOP U.S. CONTRACTORS COMPARED TO FOREIGN WORK DONE BY 400 TOP U.S. CONTRACTORS

<table>
<thead>
<tr>
<th>YEAR</th>
<th>CONTRACT VALUE OF 40 TOP CONTRACTORS AS A PERCENTAGE OF THE CONTRACT VALUE OF THE 400</th>
<th>NUMBER OF 40 TOP CONTRACTORS THAT PERFORM OTHER SERVICES AS A PERCENTAGE OF NUMBER OF 400 THAT PERFORM OTHER SERVICES</th>
<th>NUMBER OF 40 TOP CONTRACTORS AWARDED NEW FOREIGN CONTRACTS AS A PERCENTAGE OF THE NUMBER OF THE 400 AWARDED NEW FOREIGN CONTRACTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TOTAL</td>
<td>FOREIGN</td>
<td>CM</td>
</tr>
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<td>1979</td>
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<td>90.5</td>
<td>16.9</td>
</tr>
<tr>
<td>1978</td>
<td>62.8</td>
<td>87.9</td>
<td>17.8</td>
</tr>
<tr>
<td>1977</td>
<td>65.3</td>
<td>71.0</td>
<td>16.3</td>
</tr>
<tr>
<td>1976</td>
<td>62.9</td>
<td>81.4</td>
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</tr>
<tr>
<td>1975</td>
<td>69.0</td>
<td>84.8</td>
<td>27.5</td>
</tr>
<tr>
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<td>88.8</td>
<td>25.0</td>
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<td>1973</td>
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<td>85.2</td>
<td>N.A.</td>
</tr>
<tr>
<td>1972</td>
<td>54.5</td>
<td>72.2</td>
<td>16.8</td>
</tr>
<tr>
<td>1971</td>
<td>55.2</td>
<td>87.7</td>
<td>14.6</td>
</tr>
<tr>
<td>1970</td>
<td>54.0</td>
<td>90.0</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

Source: Calculated from Tables 2.1a, 2.2a; Moavenzadeh - 1974
<table>
<thead>
<tr>
<th>YEAR</th>
<th>MINIMUM</th>
<th>MAXIMUM</th>
<th>MEDIAN</th>
<th>NUMBER</th>
<th>% AWARDED NEW FOREIGN CONTRACTS</th>
</tr>
</thead>
<tbody>
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<td>22</td>
<td>25.2</td>
</tr>
<tr>
<td>1978</td>
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<td>100.0</td>
<td>29.1</td>
<td>20</td>
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</tr>
<tr>
<td>1977</td>
<td>0.3</td>
<td>95.5</td>
<td>34.6</td>
<td>32</td>
<td>31.6</td>
</tr>
<tr>
<td>1976</td>
<td>0.3</td>
<td>98.6</td>
<td>34.4</td>
<td>27</td>
<td>30.0</td>
</tr>
<tr>
<td>1975</td>
<td>.002</td>
<td>99.4</td>
<td>33.1</td>
<td>23</td>
<td>26.4</td>
</tr>
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<td>26.8</td>
<td>13</td>
<td>16.8</td>
</tr>
<tr>
<td>1973</td>
<td>0.3</td>
<td>100.0</td>
<td>19.6</td>
<td>10</td>
<td>15.9</td>
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<td>26.4</td>
<td>9</td>
<td>12.6</td>
</tr>
<tr>
<td>1971</td>
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<td>86.0</td>
<td>16.3</td>
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</table>

aData: ENR 400(1971-1980); Moavenzadeh - 1974

bSee Table 2.16 for number of contractors awarded new foreign contracts
<table>
<thead>
<tr>
<th>YEAR</th>
<th>FOREIGN WORK AS A PERCENTAGE OF TOTAL WORK</th>
<th>CONTRACTORS WHOSE FOREIGN WORK CONSTITUTES 50% OR MORE OF TOTAL WORK</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MINIMUM</td>
<td>MAXIMUM</td>
</tr>
<tr>
<td>1979</td>
<td>.02</td>
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<td>1978</td>
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<tr>
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<tr>
<td>1974</td>
<td>.4</td>
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<tr>
<td>1973</td>
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<td>96.6</td>
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<td>86.0</td>
</tr>
<tr>
<td>1970</td>
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*aSource: ENR 400(1971-1980); Moavenzadeh - 1974

*bSee Table 2.2b for number of contractors awarded new foreign contracts.
### TABLE 2.5a FOREIGN WORK DONE BY TOP INTERNATIONAL CONTRACTING FIRMS.a

<table>
<thead>
<tr>
<th>YEAR</th>
<th>CONTRACT VALUE</th>
<th>OTHER PROFESSIONAL SERVICES</th>
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<td>TOTAL</td>
<td>$ BILLION</td>
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<td>1978</td>
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<td></td>
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<tr>
<td>1979</td>
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<td>34.1</td>
</tr>
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<td>1978</td>
<td>36.9</td>
<td>26.1</td>
</tr>
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</table>

aSource: ENR 200(1979-1980)
<table>
<thead>
<tr>
<th>YEAR</th>
<th>NUMBER OF FIRMS</th>
<th>TOTAL VALUE OF FOREIGN CONTRACTS</th>
<th>PERCENT OF TOTAL</th>
<th>OTHER PROFESSIONAL SERVICES OFFERED BY U.S. CONTRACTORS IN 200 TOP INTERNATIONAL CONTRACTING FIRMS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td>CM</td>
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<td>34.7</td>
<td>N.A.</td>
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<td>TOP 20</td>
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<td></td>
</tr>
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<tr>
<td>1978</td>
<td>5</td>
<td>10.8</td>
<td>41.3</td>
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</table>

*Source: ENR 200 (1979 - 1980)*
TABLE 2.5c  FOREIGN WORK AS A PERCENTAGE OF TOTAL WORK AND NUMBER OF CONTRACTORS WHOSE FOREIGN WORK CONSTITUTES 50 PERCENT OR MORE OF THEIR TOTAL WORK AMONG THE 200 TOP INTERNATIONAL CONTRACTORS AND THE 20 TOP INTERNATIONAL CONTRACTORS

<table>
<thead>
<tr>
<th>YEAR</th>
<th>FOREIGN WORK AS A PERCENTAGE OF TOTAL WORK</th>
<th>NUMBER OF CONTRACTORS WHOSE FOREIGN WORK CONSTITUTES 50% OR MORE OF TOTAL WORK</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ALL FIRMS</td>
<td>U.S. FIRMS</td>
</tr>
<tr>
<td></td>
<td>MINIMUM</td>
<td>MAXIMUM</td>
</tr>
<tr>
<td>TOP 200</td>
<td></td>
<td></td>
</tr>
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</tr>
<tr>
<td>1978</td>
<td>40.2</td>
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*aSource: ENR 200(1979-1980)*
The Multinational Abroad

The operations of the MNC have proven to be quite successful. More than 98% of the 200 top international contractors reported profits in 1979, with nearly two-thirds of that profit being realized from their foreign ventures. These firms indicate that the profits obtained from their domestic operations are slightly higher than those obtained from their foreign projects, with the overall margin in 1979 being 2.7% (ENR - 1980).

The number of personnel utilized from the MNC's home office is generally small. The reason for this is twofold: First, due to the high cost of establishing and maintaining the employee's existence abroad. Second due to host government regulations which in some cases restrict the number of foreign personnel that can be brought into the country. Almost all MNC's employ expatriates to work on their foreign projects. They are used primarily in the professional and supervisory positions which are pivotal in the management process. The low and semi-skilled labor required for basic construction tasks are usually provided by local nationals who are trained and retrained by the MNC. The arrangement is beneficial to both the MNC and the host government. The MNC benefits through use of an abundant labor supply which is usually low cost. The government benefits through the employment training and subsequent productivity of nationals. In the long run, it allows the MNC to remain competitive and provides the government with a technically skilled group which will figure prominently in their country's continued development, and who as wage earners will increase domestic economic activity. (See Moavenzadeh - 1974 for a further discussion on the nature of the MNC.)
The MNC versus the MNE

The structure of the MNC's operation abroad and the risks confronted therein are markedly different from that of the traditional multinational enterprise (MNE). The MNC unlike the MNE is rarely involved with the direct investment of capital in another nation. As a result, the MNC does not have the exposures that come with the establishment and maintenance of a production facility. Furthermore, the MNC is not plagued with the risks of expropriation, nationalism and creeping nationalism as are other MNE's. The MNC is in the business of exporting goods and services across international boundaries. The firm's expertise is then used as the means of refining and synthesizing these resources into some functional unit which fulfill a pre-determined need. The MNC rarely encounters a conflict with a government or private interest group who is concerned with the depletion or misuse of reserves of natural resources by a foreign entity. With the exception of currency, the MNC has very little affect on the depletion of valued foreign exchange resources. The MNC's business is generally beneficial to the host country. His efforts usually result in a product which aids in the overall development of the nation. The MNE's perception of an investment's time horizon is usually longer than that of the MNC. The MNE is concerned with maintaining a constant flow of cash of resources realized from an investment whose breakeven point may be a decade into the future. The MNC, on the other hand is concerned primarily with the stability of the expected value of the project returns. These funds are generally obtained shortly after the fulfillment of his duties as mandated by contract.
The MNC's operations abroad are project specific; offices and key personnel are mobilized and set up prior to construction and are usually closed and withdrawn following the terminations of the project. When involved in multiple projects in one country over a prolonged period of time the project office may acquire a greater degree of permanency and at some point can become recognized as a branch office of the firm. This occurs predominately among developed country MNC's working in other developed nations or in those nations whose continued growth and sheer volume of work warrant such an installation, e.g., Saudi Arabia and Brazil. However, it rarely develops the kind of permanency as would a wholly owned subsidiary of a MNE.

**Competition**

The competition confronted by the MNC is intense and growing. It has and will continue to have significant impact on the market's structure. It is being influenced by the factors inside and outside of the host country. For many firms, their competitiveness is a direct result of the support given them by their governments. Many firms rely heavily upon the numerous incentives and aid given to them. Examples of these devices include, direct subsidies, tax credits, loans at concessionary rates, tied-in funding packages and a host of others.

The increasing ability of firms from developing nations to effectively compete for foreign jobs has greatly affected the market. Developing country firms have become extremely competitive in their ability to work in the low and mid-technology construction market. Many of these firms acquired their expertise by joint venturing with developed country MNC's.
Knowledge which has been refined by entrepenuers who subsequently expand into the world of their mentors. As a result, many developed nation MNC's have been forced to abandon the low technology market, remaining competitive by capitalizing on their expertise in high technology. Another factor which has strengthened the competitive ability of developing nation MNC's is the low cost of labor from their respective countries. The ability to supply an abundant supply of cheap labor has made firms from Korea, the Phillipines and India particularly competitive in recent years (ENR - 1980).

Everchanging political and economic factors play key roles in the increasing competition confronted by the MNC. The rise of nationalism among the developing nations has forced host governments to enact and enforce regulations which promote and protect the interest of local business groups over the interests of the foreign MNC. Worldwide inflation has caused many nations to reevaluate, delay or cancel their national development plans. Increased costs have driven certain types of construction beyond the financial realm of many developing nations. International financing has become increasingly difficult to obtain, forcing those nations who cannot finance their own development through the sale of their natural resources, out of the development market. The end result is the reduction of market alternatives and opportunities for the MNC. Thus, it is clearly apparent that the MNC's continued ability to remain competitive and to operate effectively internationally will continue to require a substantial effort.
CHAPTER III  THE MULTINATIONAL CONTRACTOR'S RISK ENVIRONMENT.

The risk environment of the MNC is best defined as the product of the type of project undertaken and the nature of the area in which it is located. The environment is influenced by a number of social, economic, political and technical factors which will ultimately determine the viability of business venture. The MNC should obtain a thorough understanding of these factors prior to the commitment of resources to the project. This understanding can only be obtained from a systematic analysis of the key variables which relate to the project, the host country and the risk that each presents to the firm.

The factors which affect the MNC's risk environment are influenced by five independent forces. As shown in figure 3-1 these forces are:

- **The Host Country** - The nation where the MNC's project is located
- **The Home Country** - The MNC's nation of origin
- **Third Country or Regional Influences** - A nation other than the host or MNC's home, or independent power, religious or cultural groups whose influence extends beyond single nation states to affect entire regions.
- **The Firm** - The MNC, the policies adopted in its foreign operations.
- **The Technology** - The methodologies and resources required for the execution of the construction project.

The effect that each of these forces exert either, individually or collectively will indirectly influence the project's degree of success.
ENVIRONMENTAL FORCES INFLUENCING PROJECT

FIGURE 3.1
or failure. The valuation of success and failure relates to the MNC's ability to meet the goal expectations set for the project. Through his selection of projects, the MNC has the opportunity to determine the initial structure of the project's risk environment. Implicit in this selection is a decision regarding the choice of host country, region, technology and therefore, the specific forces which will affect the MNC's ability to function. This choice provides the MNC an opportunity to evaluate the risks presented by each of these forces. His assessment of these risks will be based in part on the firm's experiences (or lack of) with these forces in prior jobs.

Product/Market Matrix

A clear understanding of this idea can be obtained by analyzing the MNC's decision making process. The structure and operation of the MNC is determined by the firm's upper managerial function. This group sets the firm's goals and objectives and determines the strategies necessary for goal satisfaction. Their strategies are influenced in part by regulations and conditions set by entities in the business environment that are external to the firm. For example, a firm's choice of construction projects to work on, the clients to pursue and the regions to work in, are all internal management decisions dependent and influenced by opportunities offered by each of these markets.

The risks encountered as a result of these decisions can be analyzed through use of the product market matrix (figure 3-2). Product in this instance refers to the specific type of projects that the firm undertakes (e.g., roads, airport or industrial).
LOW RISK

KNOWN PRODUCT
KNOWN MARKET

NEW PRODUCT
KNOWN MARKET

KNOWN PRODUCT
NEW MARKET

NEW PRODUCT
NEW MARKET

HIGH RISK

PRODUCT/MARKET MATRIX\textsuperscript{a}

FIGURE 3.2

The matrix reveals that a firm which maintains operations within a given market, providing a service or product that it is experienced with, faces a relatively low degree of risk due to their familiarity with both product and market. The firm begins to encounter increasingly greater risk as they begin to diversify from their basic product/market mix, facing the highest degree of risk at full diversification into a new product, in a new market. This statement is not meant to imply that the firm which operates in a known environment does not encounter risk. There is still the element of risk, but it is a factor that the firm is somewhat familiar with due to their prior experiences in the area and thus should have some experience in managing this risk.

**The Problem of Regionalism**

The MNC confronts the problem of working in new regions constantly, within his home country as well as abroad. As a service organization, the MNC is dependent upon the needs of his client. The client's decision to build and locate a facility in one location over another results from the economic and business needs of the company at a given point in time. In his duty to the client, the MNC must be flexible enough to service various regions or lose the client and the project. This scenario is especially true for those MNC's involved in industrial construction. Consequently, the MNC is continually struggling with the management of risk generated from regional differences and influences. The basic risk of multiregionalism lies in the MNC's ability to remain competitive with those firms which maintain a strong position in the region. Regional strength is gained from a number of factors. First, through the estimating staff's knowledge of cost
variables in the regional market. These variables are defined as the
cost of labor, material and equipment required for the project. Second,
through the firm's familiarity with the operations of the contractors,
subcontractors, suppliers and regulatory bodies which participate in the
regional market. All of the aforementioned items are of extreme importance
in the MNC's ability to operate effectively in differing regions. The
primary concern here is in maintaining the estimating staff's ability
to develop estimates which are competitive with other firms operating
in the region. Many firms accomplish this by establishing regional
offices which house business development, estimating and technical
groups who keep abreast of the costs and the structure of the regional
market. The staffing requirements, both technical and managerial,
for these offices are fulfilled via the transfer of personnel between
locations, and direct hiring as the need arises.

**Risk Correlation**

Correlation between projects is another concept of importance in the
analysis of risk. Correlation in the context of the MNC's risk environ-
ment refers to the similarities that exist between the components of
different projects. This relationship can be positive or negative depend-
ing upon the specific nature of each project. The positive, negative
valuation of correlation refers to the degree of similarity existent
between the projects and subsequently, the degree of similarity that
exists between the risks encountered by the firm. For example, two
projects under construction in the same city, both of masonry, would be
positively correlated. Due to the similarities in location and con-
struction, both projects would be susceptible to the risk of a labor dispute
affecting masons or unexpected shortages of materials. Thus the firms overall risk is increased because the occurrence of one risk event impacts not one but two projects. Some of the elements that determine the correlation among projects are: (1) geographical factors, (2) type of work, (3) supervision, (4) weather, (5) schedule, (6) owner, (7) economy, (8) subcontractors, (9) political factors, (10) construction methods, (11) resources (money material, equipment and labor), (12) specifications and (13) cost estimates (Vergara - 1976).

The MNC must take extreme care in structuring the firm's portfolio. Portfolio is defined as the total assemblage of products undertaken by a firm at a specific point in time. The MNC should select products that will diversify and subsequently reduce the risk confronted by the firm. Preference should be given to projects which are negatively correlated with others (e.g. dissimilar in component structure). See Vergara - 1976 for a further discussion of correlation and portfolio theory.

**Environmental Risk**

After the decision is made regarding the product/market structure, the MNC's next task is to identify the specific risk exposures which result from this decision. The project's risk environment is determined by three risk variables which influence the project as the country and at the project level. Acting collectively, these variables will determine the total degree of risk that any one particular project will present to the firm. As depicted in figure 3-3, they are:

- Technological Risk
- Micro-Environmental Risk
- Macro-Environmental Risk
FIGURE 3.3
PROJECT RISK VARIABLES

PROJECT LEVEL

TECHNOLOGICAL RISK

PROJECT LEVEL

MICROENVIRONMENT RISK

COUNTRY LEVEL

MACROENVIRONMENT RISK

PROJECT LEVEL

PROJECT RISK
Technological risk impacts the MNC at the project level. It is the risk inherent in the type of project being undertaken; e.g. a bridge, a dam or an industrial plant. Each project type has a different risk environment due to the specific technical and resource requirements of the individual project. Figure 3-4 shows those factors which influence the structure of the technological risk variable defined as:

**Equipment** - the machine inputs used to assist labor in the accomplishment of the necessary construction tasks. (e.g. excavators, cranes, pavers).

Key issues and risks are:

- Determining the appropriate tradeoffs between being capital intensive or labor intensive
- Whether to purchase or lease; which items, from what suppliers
- Resale or reuse value if equipment is to be purchased solely for use on a limited number of projects
- Relocate firm's existing equipment to project site
- Maintenance and availability of parts in the host nation

**Labor** - the various types of human resources required for the project many host countries influence this variable through enacting regulations which require joint ventures with local firms or restrictions on the number and type of foreign personnel allowed to work in their country. Key issues and risks are:

- The choice of labor force; expatriates, local nationals, third country nationals or MNC's home company personnel.
- Should labor force be trained or untrained
- Maintaining the supply, circumventing possible migration or other personnel problems
FACTORS AFFECTING TECHNOLOGICAL RISK VARIABLE
FIGURE 3.4
• Maintaining productivity
• The stability of labor wage rates

Material - those elements and or substances that compose the project being constructed. The basic components of the project that are synthesized by the MNC into some desired product. Key issues and risks:
• Assuring the timely supply of all material requirements within an expected range of costs
• Ability to obtain material which consistently conforms to quality standards
• Maintaining the security of this material prior to its installation in the project through to completion and acceptance by the client

Another risk lies in the use of a material that is new and as yet unproven in a particular application or its installation by a contractor who has limited experience in its use.

Geography - The risks generated due to the characteristics of the project's location. Factors which create geographic risk are:
• The incidence of disease and other health related factors
• The physical nature of the site e.g. mountainous, desert, jungle
• Its proximity to developed centers
• The site's degree of accessibility and the dependability of these routes e.g. subjectivity to flooding
• Development level of the region's infrastructure(e.g. - communication, transportation)

Climatic- The effect that weather and seasonal conditions have on the MNC's ability to execute the project. Climatic risks affect labor productivity,
and at times restrict the firm's ability to perform various construction operations.

Specifications - The guidelines separate and apart from construction drawings which detail the tasks to be performed and the standards to which the final product must conform. The risk presented in the specifications lie in the degree of correlation between them and the construction documents, and in the amount of latitude given to the MNC to vary from these guidelines. Another risk is in the completeness and accuracy of the information present in these documents.

Schedule - The time restrictions which determine the firm's requirements for the task completion. Schedule risks can result in revenue losses due to delays in project completion and subsequent payment of delay damages or resource allocation problems among multiple projects.

Each of the aforementioned factors can be disaggregated to reveal still another group of influencing factors. However, for the purposes of this thesis, the level of detail explored here is sufficient.

Macro environmental risks impact the firm at the country level. They are events which pose risk to all businesses of a particular type without exception. Examples of this include the risk of a change in taxation policies relating to the fees paid to foreign firms or policies which restrict the importing of certain goods into the host nation.

Micro-level risks impact the firm at the project level. They are governed by type of project, nature of its location and specific operations of the firm or group of firms that are involved. An example of this risk would be an organized protest by host country nationals against
the construction of a nuclear power plant.

Both of these risks are affected by the actions of the MNC's home nation, the host nation or by regional forces external to these nations. The greatest risks are usually caused by parties located within the host nation which support or oppose some aspect of the project. The actions taken by these parties depend primarily upon the entities involved and their positions relative to the firm and the project.

Due to the nature of his business, the MNC is far more vulnerable to micro environmental risk than are other MNE's. These are the risks which are too often overlooked by company management. The factors which influence micro-level risk consist of a highly complex set of issues, critical to the MNC's ability to function effectively. As shown in figure 3-5, the components that constitute this variable are as follows:

**Taxation** - the imposition of a change levied by the host country upon foreign firms to benefit groups within the host nation. Examples of this variable include the tax on all material and equipment by the MNC, or the tax paid by the MNC's employees on all wages earned in the host nation. The firm's primary risk lies in the probability of policy changes that can significantly increase the firm's cost burden and or significantly reduce the value of the revenues realized from the project.

**Social System** - The level of development and quality of the host country's basic social structure e.g. education, health and welfare. The potential risks in this area are substantial, particularly when the MNC is required to integrate local nationals into their operations. One potential exposure is in the risk of low or inconsistent productivity from the local labor force.
FACTORS AFFECTING MICRO-ENVIRONMENTAL RISK VARIABLE

FIGURE 3.5
Regulatory - The guidelines and mandates which govern the operations of the MNC in the host country. The potential risks are:

- Problems caused by nuclear or changing jurisdictions and restrictions
- Uncertainties in the host country's legal and judicial structure
- Conflicts between the MNC's home and the host nation's judicial and legal practices.

Financial - The structure of the project's source of funding. The risks associated with this factor are:

- Stability of project's financing structure
- Timeliness of project funds; the firm's ability to obtain the expected payments for services rendered within some reasonable period of time

Political - Those events of a non-economic nature that develop and subsequently impact the MNC's ability to function effectively in the host nation. Political risk develops when the best interests of the firm and entities within the host nation conflict. This conflict can be between the MNC and the government of the MNC and various private interest groups. The MNC can also be affected as a third party, caught in a conflict between his client and another party. For example, an anti-government group could attempt to sabotage a government sponsored project as a means of attacking the nations formal authority. This nation, although not directed against the MNC could potentially result in substantial losses of resources. Some of the possible actions taken by the host country which create risk are:
• Enactment of regulations
• Labor agitation
• Ownership restrictions
• Policies geared towards favoritism or protectionism

The variables and influencing factors that have been discussed in this section provide a general outline of the MNC's risk environment. These variables will play a part in affecting the firm's risk environment irregardless of location. As stated in chapter one, the number of MNE's that systematically and effectively analyze the risk generated by these variables are few. As a group, MNC's are probably the most neglectful when it comes to this task. The purpose of this thesis is to provide one possible solution to this problem. This thesis addresses itself primarily to the issue of non-economic or political risk analysis. However, the methodology developed here is applicable to other analysis problems such as the assessment of a project's technological risk. One problem that arises in this system's specific application is in the separation of non-economic from economic variables. The problem arises primarily because most non-economic variables have economic factors as their underlying causes. However, these political risk variables and their causal factors, are important enough in themselves to justify the attention given them in this analysis.
CHAPTER IV  POLITICAL RISK ANALYSIS SYSTEM

The guidelines set for the development of the system are as follows:

- Dynamic, the system should be flexible enough to respond to continual environmental changes and inputs. It must be able to account for the impact of consistent trends as well as the probability and subsequent impacts of environmental change in the future.
- Indiscriminate, it must be applicable to different project and country types.
- Interactive, must capture the interdependencies of the variables and the sensitivity of change that each one has upon the others.
- Objectivity, all variables must be evaluated in a manner which excludes subjective biases.
- Cost effective, use of system should not impose undue financial burden to the user.

The risks analyzed by this system are those caused by political factors which affect the multinational within the host country. The system is structured to reflect the impact that these variables can potentially exert on the project returns. Return is defined as the amount realized by the contractor over the life of the project. It is the difference between the costs incurred and the revenues received. The objective function, of impact on returns, is chosen in response to the nature of the industry that the system will serve. The assumptions made here are:

a) The MNC's goal in business is to maintain solvency by engaging in projects which can be accomplished profitably.

b) The contractor will operate in a manner which will result in the maximization of the expected project returns.
The system is user oriented requiring substantial user inputs for its operation. It serves as a general guideline, providing the basic infrastructure for analysis. This approach was warranted by the highly individual nature of the projects and the variables which affect them.

System Methodology

The methodology chosen for the assessment process is decision analysis, a technique derived from the fusion of two fields: decision theory and systems analysis. It provides a means for the analysis of complex, dynamic problems of uncertainty. It is composed of three phases:

- deterministic
- probabilistic
- informational

Figure 4.1 depicts the technique's analysis cycle. In the deterministic phase, the problem's initial structure is developed. The important variables, those pertinent to the decision problem are identified. The relationships between the variables are established via the use of analytical models. Each variable is then assigned a value to reflect its possible outcome, and ranked according to its relative importance via a sensitivity analysis.

In the probabilistic phase, the uncertainty of the problem is determined by assigning a probabilistic value to the key variables. Through the model, these assessments yield an outcome which reflects the degree of uncertainty that exists in the problem. When evaluated in connection to the decision-maker's attitude towards risk, the analysis will yield the best alternative given the problem uncertainties.
THE DECISION ANALYSIS CYCLE

(Source: Staël Von Holstein, 1973)
The informational phase evaluates the value of information by assessing the benefits of additional information inputs. The value of this information, which hopefully reduces the problem's uncertainty, is assessed in relation to the cost of obtaining it. If additional information can significantly influence the model's outcome, then the decision-maker should incorporate this information and repeat the analysis. When the benefits of additional information are substantially decreased, the analysis is complete (see Stael von Holstein, 1973).

The model developed in the system captures the critical interdependent relationships existing between problem variables. They are composed of two variable types:

- state variables
- decision variables

State variables represent those factors which are beyond the control of the firm. They are factors whose behavior is influenced by events occurring within the project's environment. These variables are represented in the models as circle nodes. An example of a state variable would be the actions of an extremist group in a host nation.

Decision variables are those factors which are within the firm's control. They are those factors which are determined by the actions taken by the firm in its project operations. An example of a decision variable would be the selection of new projects or new markets for the firm to pursue. Decision variables are represented in the models as squares.

The graphic representation of the relationship between the model variables is called an influence diagram. It is used as a means of visualizing the dependencies which exist between the decision and state variables. The definitions of the relationships used in these diagrams are as follows:
The probabilities associated with random variable B is dependent upon the outcome of random variable A.

The probability of random variable D depends on decision C.

The decision-maker knows the outcome of random variable E when decision F is made.

The decision-maker knows decision G when decision H is made.

**System Development**

The system developed in this thesis uses two separate models for the complete analysis. Each model represents a component of one of the elements which constitute the project return: cost or revenue. The cost model is composed of a series of submodels, namely labor, material and overhead. The disaggregation of this component provides the firm with a clearer understanding of their potential exposures. This opportunity should facilitate the formation of better mitigation strategies.

Each of the models has two variable categories: prime order and second order. Prime order variables are those factors which directly impact the project. In this analysis, they are those factors which will directly change the project's costs or revenues. Second order variables are those which indirectly impact the project through their direct influence
on the prime order variables.

All of the models have the same second order variables, with a slight modification in the revenue model. The variables chosen for the models were selected as a result of an analysis of political science material which relates to political risk. Also studied were the techniques, forecasting services and indexes which have been and are currently being used by MNE's for the analysis of political risk. This information was supplemented through discussions with those well-versed in the area of environmental analysis and those with expertise on the operations of MNC's. This was done to help identify the key variables and the causal factors which potentially create risk for the MNC. This step was vital to the development of a system that is responsive to a specific industry. After the second order variables were determined, a similar technique was used to establish the prime order variables. These variables are represented by those factors that directly impact the project costs or revenues. They are factors which research has shown, will most likely be encountered by the MNC abroad, given the nature of his industry and the second order variables which influence them. As a result, each model has a different set of prime order variables which reflect the character of the individual models.

After all of the variables were established for each model, the influential relationships had to be determined. For simplicity, each cost revenue component was developed independently, each having its own influence diagram. Due to the difference in prime order variables, conceptually, the models should be thought of as one dynamic entity, multidimensional in form. The second order variables could affect one or any combinations of prime order variables at a given time over the life of a project.
4.2 through 4.5 reveal the individual models.

The following section provides the reader with an analysis of the variables selected for the models. It discusses the variable's characteristics and the impact and influence that each has in the MNC's environment.

Second Order Variables

- **Nature of Firms Operation** -- A decision variable which responds to the policies and operation of the MNC abroad. This variable is one of the most important of the second order variables. The attitude and philosophy that the firm maintains throughout its operation will greatly influence the project's risk environment. It will either reduce or increase the risks that the firm will encounter. The primary task of the MNC is to operate in a manner which will facilitate the efficient and timely completion of the project and concurrently, manage the risks presented by entities in the environment. The strategy adopted should be appropriate to the type of project undertaken and the socio-political nature of the project's location. In deciding on the strategy, the MNC must remember that each project has a dual personality. First it must be responsive to the needs and goals of the client. Secondly, it must satisfy the goals and objectives which govern the MNC's operations (Vernon, 1972). Some of the questions to be answered include:

  - Whether the firm should integrate or exclude local nationals from their operations. If yes, what type of relationship should be maintained: joint ventures, subcontracts or purchasing goods and services from local business groups.
• The level of culture sensitivity that the firm maintains in the host nation. Should MNC personnel be given a formal orientation and training in the customs and language of the culture or should the firm insulate itself and its employees from external cultural influences.

• The type of image and degree of visibility that the firm establishes and maintains in the nation.

• The relationship that the firm should establish with the government and or with groups outside of the formal power system.

**Firms Relationship to the Government** -- A decision variable which is influenced by the firm's general operating policies. The basic decision is whether to maintain a close relationship with those in power or to remain neutral. The benefits of establishing a strong relationship include having "friends in the right place", members of the formal power system who will protect the firm's interests. These contacts could be valued assets to the MNC, providing information and support which could greatly increase the firm's competitive ability in the host's market. This relationship will also determine the degree of political "smoothing" that will occur in the firm's behalf, e.g., granting tax holidays, waiving import duties, protection of project site and firm's assets and personnel. This relationship can also be a liability to the MNC. A close affiliation with an unpopular regime could cause non-government groups to take actions against the firm as an indirect means of affecting the formal power system. Problems could also occur for the firm when the government in the host country turns over rapidly. In this case the MNC runs the risk of being severely restricted by the new administration. With the primary client of the MNC
in many nations being the government, it is very difficult for many firms to remain disassociated. However, prior to their commitment, the firm should carefully weigh the benefits and potential losses of this relationship.

**Firm's Relationship to Local Power Groups** -- A decision variable which pertains to the firm's affiliation with those groups outside of the host country's formal power structure, e.g., labor unions, business associations, radical groups. This variable is determined by the formal policies adopted by the firm regarding the nature of its operations. As in the case of the government relationship variable, the affiliation established by the firm with these groups can be an asset or a liability, depending on the strength of these groups and their interests in the project. The MNC must maintain an effective balance between power groups and the government. The firm cannot remain neutral to these entities at all times. The MNC must carefully select his allies in the host country, and should remain sensitive to events which will shift the power structure. This variable indirectly affects the prime order variables with its strongest influence on the government. Pressure from these groups could move the government to enact policies which are debilitating to the firm.

**Involvement of Local Business Interests** -- A decision variable relating to the level of participation by host country nationals in the MNC's project. This variable influences the models prime order variables. The integration of local business entities into the firm's operations is one of the best means of risk mitigation. The MNC benefits first by lessening his image as a foreigner, an identity which could be detrimental to his long term success
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in the host country. Second, using local suppliers, subcontracts or having a local partner links the MNC with persons whose best interests are served by facilitating the effective performance of the MNC. It can also provide the firm with a buffer, someone on the inside who is well-versed with the local bureaucracy, business ethics and customs of the nation. The host country national can guide the MNC around pitfalls that he might otherwise fall victim to if he operated as an outsider.

Regional and External Factors -- Those influences originating from outside of the host nation to impact the project environment within the host country. These factors could include the rise of religious fervor in a region, (similar to the conditions in the Middle-East and the Islamic world in recent years), armed or other political conflicts that occur between the host nation and other forces originating beyond its borders. The MNC is very susceptible to these risks. The firm must carefully evaluate the environment of neighboring countries and the relationship existing between these nations and the host. He must also assess the level of influence that these external events have on the internal environment of the host. Externalities can spawn the growth of extremist and other groups which could increase socio-political disorder in the nation. They can establish and restructure national attitudes relating to foreign business entities, or cause the host-government to enact legislation against the operations of foreign business ventures. All of these actions can significantly limit the firms ability to function in the host nation.
Nationalist Attitudes Towards Firm -- The degree of acceptance that the firm can expect from entities within the host country. Whether it will be favorable or unfavorable is dependent upon the influence of regional factors outside of the host nation. It is also affected by independent power groups which exist within the host nation. The attitudes confronted by the contractor could be anti-foreign; rejection of the firm due to its national origin (American, French, etc.) or a rejection of all foreign entities. Problems could also arise for the firm when it maintains operations in rival nations (e.g., Saudi Arabia and Israel), or has employees which belong to a minority group that is oppressed or unwelcomed in the host country. The firm could also encounter problems due to their affiliation or lack thereof with entities within the nation, as discussed earlier. The image that the firm establishes in the host country is critical to the nature of this variable. If the general perception of the firm is negative, then the probability of encountering risk in the area is high. Conversely, if perceptions of the firm are positive, e.g., the firm is culture sensitive or integrates local business interests into its operations, then the probability of risk presented by this variable will generally be low.

Independent Power Groups -- Factions outside of the formal power structure which have the ability to affect the project's environment through extreme and non-extreme means. They can consist of organized and spontaneous groups that impact the contractor indirectly, by causing a change in formal policy. They can also be radical groups which attempt to effect change by acts of terrorism, sabotage, kidnapping and theft. Knowledge of these groups and their likely behavior is of vital importance to the multinational.
Project's Desirability -- This variable refers to the relative importance of the MNC's project to the government and the appropriate power groups. It provides the MNC with an indication of the degree of controversy that will surround the project. It will also indicate the amount of "smoothing" that might take place to facilitate its completion.

Government Policy -- The MNC is extremely vulnerable to the risks generated by this variable. As the models show, most of the second order variables generate their impact on the project via their ability to influence a change in government policies. The policies referred to in this variable pertain to those that directly impact the foreign MNC's ability to realize the full expected value of the project returns. This variable has the greatest potential for influencing the prime order variables. One of the key factors influencing this variable is the relationship established between the firm and the government. Maintaining a strong relationship with the government is an effective mitigation strategy against the risk of policy changes. However, this must be evaluated in light of the other potential risks that this relationship can generate.

Prime Order Variables

The model's prime order variables are divided into two groups: cost or revenue. The first type are those variables that directly impact the cost components of the project. Cost is defined as the expenditure required to obtain and utilize the resources needed for the project. The cost items considered in the model are labor, material & equipment and project overhead. The revenue variables pertain to those factors which affect the MNC's ability to realize a return from the MNC's project. It pertains primarily to the compensation paid to the MNC for his role in
the project. The following section discusses the specific component variables of the models.

**Labor Cost Model**

The model represented in Figure 4.2 shows those variables which can result in a change of the expected cost of labor required for the project.

- **Labor Restrictions** -- Policies which limit the MNC's ability to use sources of labor from outside of the host country. Examples of these restrictions include a) forced joint ventures with local nationals, b) use of personnel from MNC's home office only (eliminating expatriates), c) limitations on the number of foreign personnel given immigration or work visas, d) work category limitations restricting foreign personnel of certain professions (e.g., civil engineers, mechanical engineers) from working in the host nation.

- **Change in Local Labor Input** -- Policies which require the MNC to increase the use of local labor in his operations. This variable is a function of the labor restriction variable (e.g., restrictions which limit the use of foreign personnel result in the increased use of host national). It is influenced by the actions of local business interests who desire greater participation in the MNC's operations. At times the impacts of this variable can be beneficial, particularly in cases where the cost of local labor is less than the cost of alternative sources. However, it increases the MNC's dependency on the host country and limits his ability to utilize other resources.
Labor Cost Model

Figure 4.2
• **Change in Per Unit Cost of Labor** -- Policies which relate primarily to the wages paid to the local labor force. In many developing nations the wages are set and controlled by the government. Pressure exerted by parties within the formal government or outside of the system can force the wage levels up, changing the variable cost of labor. This can cause significant problems to the contractor, who based his estimate on the cost of labor remaining within some expected range over the project's life. This variable can also be affected by local business entities who raise the cost of the services provided to the MNC.

• **Strikes & Labor Impacting Delays** -- Politically motivated events which affect the productivity of the labor force, including immigration problems, planned slowdowns and absenteeism. The loss of productivity caused by factors impacting this variable increases the number of labor work units necessary to complete the specific project tasks and subsequently the total cost of labor required for the project. This variable is influenced by the project's desirability, government policies towards organized protests and the involvement of local business interests in the MNC's project.

**Material Cost Model**

The model represented in Figure 4.3 pertains to those variables which impact the estimated cost of material required for the project. It applies to all material requirements, those supplied from within the host country and those imported from abroad. The key prime order variables in this model are:
MATERIAL COST MODEL

FIGURE 4.3
• **Civil Disorders** -- Unexpected losses of material due to theft or damage which require the MNC to spend additional funds for replacement. This variable is impacted by the project's level of social desirability, the attitude of various private interest groups towards the firm and the level of involvement and vested interests of host country business entities. The losses incurred could result from actions directed against the firm for reasons of his involvement in the project, or as a result of the random actions of extremist groups.

• **Taxation on Imported Goods** -- This variable affects those goods that are brought in from outside of the host country. It is a protectionist policy enacted to discourage imports and encourage use of locally available material. It reduces the flow of currency outside of the country and increases the level of economic activity within the host country markets. It increases the MNC's cost, particularly for those items which cannot be substituted in the local market.

• **Supply of Local Goods** -- This variable relates to the ability of the MNC to obtain the material and equipment resources required for the project from local markets. This is of particular importance given the issue of taxation discussed above. The inability to acquire these resources from the local market results in increased risk due to possible losses and delays in transporting them from outside of the country. This variable is affected by the government, which in many nations control the primary industries. It's also affected by local business interests who could
profit from "temporary" shortages of material resources. Other risks in this area relate to the quality of material supplied.

- **Per Unit Cost of Material** -- This variable is affected by the same factors which influence material supply. It relates to an increase in material cost which is beyond the expected range accounted for in the MNC's initial estimates.

**Overhead Cost Model**

The last component of the cost model, this sub-model reflects the impact of the risk variables on the indirect project expenses. It includes those costs which are not directly attributable to a change in the direct labor or direct material expenses. They are represented primarily by those variables which are time dependent and are therefore sensitive to factors which cause project delays. As shown in Figure 4.4, the key variables in this model are:

- **Civil Disorders** -- Delays and losses caused by the organized or sporadic actions of non-governmental groups, including kidnapping, sabotage, and thefts. This variable is impacted by the project's desirability; the nationalist attitude towards the firm and the degree of involvement of local business interests.

- ** Strikes and Delays** -- Organized actions taken against the contractor which inhibit his ability to execute the project on schedule. The subsequent increase in completion time increases his time dependent costs. This variable is influenced by the project's desirability, the nationalist attitude towards the firm and the degree of involvement of local business interests.
OVERHEAD COST MODEL
FIGURE 4.4
- **Change in General Requirements** -- A variance in those items which compose the project overhead, caused by the actions of the client or other entities acting within the project's environment. They include the cost of additional insurance, permits and fees over and above those initially incurred, legal expenses, additional facilities for workers, site services and other costs above those accounted for in the MNC's contract estimate. This variable is influenced directly by the level of involvement of local business interests and a change in government policy regarding the clients duties.

**Revenue Model**

This model responds to the impact that these environmental variables have on the value of the revenues received by the firm. The MNC is concerned with his ability to repatriate this revenue out of the host country and convert it into the currency of his choice. The MNC rarely reinvests back into the host country and has few other mechanisms open to him for repatriating funds (e.g., transfer pricing or over-valuing inputs) as do traditional MNE's. The variables which affect project revenues are influenced directly by the host nation's monetary policies. Figure 4.5 shows these variables which are defined as follows:

- **Taxation** -- The levy of a fee against the MNC and his employees on all wages earned inside of the host country. A fee which at times is imposed in addition to that levied by the MNC's home nation. The host country uses taxation as a means of providing funds for their social and development programs, and as a way of keeping foreign exchange currency from leaving the country.
second order variables

REGIONAL & EXTERNAL FACTORS

FIRM'S RELATIONS WITH LOCAL POWER GROUPS

NATURE OF FIRM'S OPERATIONS

GOVERNMENT POLICIES

INFLUENCE OF LOCAL POWER GROUPS

FIRM'S RELATIONS WITH GOVERNMENT

prime order variables

TAXATION CHANGES

REPARTITION RESTRICTIONS

FOREIGN EXCHANGE RATE

CHANGE IN PROJECT REVENUES

REVENUE MODEL

FIGURE 4.5

CONTRACT PROVISIONS
• Repatriation Restrictions -- Regulations which govern the amount of funds that can be removed from the host country and converted into the currency of the MNC's home country or another currency of the firm's desire.

• Foreign Exchange Rate -- The relative rate of exchange between the currency of the host country and that of the multinationals home nation. The problem confronted here is the devaluation of host's currency which reduce the value of the revenues received by the multinational.
CHAPTER 5  SYSTEM IMPLEMENTATION

A five step process is required for the complete implementation of the system. They are:

- information gathering
- probabilistic assessment
- impact assessment
- project selection
- updating and monitoring.

The initial task of the user (MNC senior decision-makers) is to form a project evaluation team. This group is responsible for the full operation of the system from the initial analysis through to project completion. This group should be composed primarily of personnel from within the firm. They should come from different parts of the organization, e.g., senior project managers, field engineers, cost and schedule engineers, specifically those who will become directly involved in the project's operation. The task performed by this group should be used by management as a control variable, a means of evaluating this groups performance. The in-house evaluators should be supported as required by a group of consultants who will provide the expert opinions and assessments of the project's risk variables. The choice of these experts is very important to the systems operation. Care must be taken to select a diverse group who can remain objective in their assessments of the country. They can come from other companies, in a similiar or different business who have had or are currently maintaining a business venture in the nation being evaluated. A good information source from these firms would be regional managers or nationals who are
working directly in the host nation. Other sources of expertise can
come from banks, academia, government or the media, e.g., area reporters
or foreign correspondents. To assure consistency of results, it is best
that this group be maintained throughout the analysis of any one project.

Once the analysis team is formed, the first phase of the system
begins. First the analysts identifies all of the variables which are
deemed important to the firm's effectiveness in that nation. They can
be all or any combination of variables present in the models introduced
in Chapter Four. The analysts can also introduce other variables which
are considered to be important to the problem confronted. The analysts
must then verify or reestablish the influential relationships existing
between the variables (Figure 5.1). Following this, the analysts begin
collecting data pertaining to the host nation's socio-political environ-
ment. The data sought should relate directly to the model variables.
Some of the important questions to be answered by this data include:

- What are the important power groups existing inside and outside
  of the nation's formal control system; what policies and philos-
  ophies do they support and what influence does each have in the
  formal decision making process and in the formation of national
  attitudes?
- Who are the key leaders in the nation, the important power figures;
  what is their current and future role in influencing change?
- What are the important social, political and economic issues of
  the nation and how are they being addressed?
- What is the general investment climate for foreign business; what
  are the factors influencing this environment?
INFLUENCE DIAGRAM - (EXAMPLE)

FIGURE 5.1
- What is the stability of the existing power and economic structure and its impact on the international business environment?
- What are the historical trends relating to the nation's socio-political development and the factors that might impact these trends in the future?

After this data is collected, it is processed into report form, providing management with detailed information on the nation's macro-environment. The analysts must then set the outcome parameters for each of the model's prime order variables (Figure 5.2). These values should reflect three possible outcomes (e.g., high, medium and low changes in cost). They should ideally reflect the full range of possible outcome values for each variable as determined by the variables cumulative distribution on this outcome. In sum, the values chosen should be mutually exclusive and collectively exhaustive.

The probabilistic assessments of these outcomes is based on an analysis of the models second order variables. This analysis is performed via the consideration of a number of factors that either support or oppose the occurrence of the variable being assessed. This information is compiled on the worksheet shown in Figure 5.3. Listed under each second order variable on the worksheet are factors which relate to the prime order variables being assessed. Each factor relates to the influence that each second order variable has in determining the outcome of the prime order variable. Each factor is evaluated by the expert for the level of support or opposition, and the degree of influence the factor has in determining the outcome of the variable. The expert's assessment of this is reflected on the worksheet with a mark in the appropriate area.
<table>
<thead>
<tr>
<th>RISK VARIABLE</th>
<th>OUTCOME RANGE</th>
<th>FINANCIAL IMPACT</th>
<th>FINANCIAL COMPONENT</th>
<th>PROBABILITY ASSESSMENT</th>
<th>E(V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil Disorder</td>
<td>high</td>
<td>+25%</td>
<td>material cost: $400,000</td>
<td>.25</td>
<td>10,000</td>
</tr>
<tr>
<td></td>
<td>medium</td>
<td>+15%</td>
<td></td>
<td>.30</td>
<td>18,000</td>
</tr>
<tr>
<td></td>
<td>low</td>
<td>+ 5%</td>
<td></td>
<td>.60</td>
<td>12,000</td>
</tr>
<tr>
<td>Strikes &amp; Delays</td>
<td>high</td>
<td>+40</td>
<td>project overhead costs: $250,000</td>
<td>.25</td>
<td>25,000</td>
</tr>
<tr>
<td></td>
<td>medium</td>
<td>+25</td>
<td>project overhead costs: $250,000</td>
<td>.45</td>
<td>28,125</td>
</tr>
<tr>
<td></td>
<td>low</td>
<td>+10</td>
<td></td>
<td>.30</td>
<td>7,500</td>
</tr>
<tr>
<td>Taxation of Imports</td>
<td>high</td>
<td>+25</td>
<td>taxation on material: $60,000</td>
<td>.10</td>
<td>1,500</td>
</tr>
<tr>
<td></td>
<td>medium</td>
<td>+10</td>
<td></td>
<td>.15</td>
<td>900</td>
</tr>
<tr>
<td></td>
<td>low</td>
<td>+ 5</td>
<td></td>
<td>.75</td>
<td>2,250</td>
</tr>
<tr>
<td>Labor Cost</td>
<td>high</td>
<td>+30</td>
<td>labor costs: $750,000</td>
<td>.25</td>
<td>56,250</td>
</tr>
<tr>
<td></td>
<td>medium</td>
<td>+15</td>
<td>labor costs: $750,000</td>
<td>.60</td>
<td>67,500</td>
</tr>
<tr>
<td></td>
<td>low</td>
<td>+ 5</td>
<td></td>
<td>.15</td>
<td>5,625</td>
</tr>
</tbody>
</table>

*a Values are totals for noted items during evaluation period.
(Note: all values given are hypothetical.)

PRIME ORDER VARIABLE ANALYSIS FORM

FIGURE 5.2
<table>
<thead>
<tr>
<th>KEY FACTORS</th>
<th>SUPPORT</th>
<th>OPPOSE</th>
<th>DEGREE OF INFLUENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>INFLUENCE OF POWER GROUPS:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NATIONALIST ATTITUDES TOWARDS FIRM:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REGIONAL &amp; EXTERNAL FACTORS:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROJECTS DESIRABILITY:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FIRMS RELATIONSHIP TO LOCAL POWER GROUPS:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FIRMS RELATIONSHIP TO GOVERNMENT:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INVOLVEMENT OF LOCAL BUSINESS INTERESTS:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECOND ORDER VARIABLE ANALYSIS FORM

FIGURE 5.3
The expert then assesses a probability for each outcome value of the variable based on the evaluation of the key factors. Each variable is evaluated and assessed by one expert. The analysts can use one expert to assess a number of variables or different experts for each of the variables. The expert's assessments are all recorded on the variable analysis form (Figure 5.2). This value should reflect the expert's objective opinion of this event occurring in the host country over a predetermined period of time given the variable's influencing factors. The probabilistic encoding of the variables is a very important phase of the system's operation. It must be performed in a manner which excludes the expert's subjective biases (see Stael Von Holstein, 1973). After assessments are obtained for all variable outcomes, the analysts can begin the impact assessment phase.

The methodology used for this process is decision tree analysis. First the analyst develops a tree which orders the variables being evaluated (Figure 5.4). The structure of the decision tree is derived directly from the influence diagrams. Each discrete value of the variable form the branches of the tree. Each branch has two values, one which reflects its financial impact on the project and the other which reflects the event's probability of occurring. Simple calculations done by hand, or by computer when the number of variables evaluated are large provide the analyst with an outcome. The end result of the analysis is the expected value of the either costs or revenues given the political environment of the host nation. Multiple iterations of the problem using different variable combinations give the analyst the opportunity to assess the impact of different environmental scenarios.
Decision Tree - (Example)

Figure 5.4
This information should prove useful in determining mitigation strategies. For example, if the risk associated with the use of host country nationals is high (expected value of change is large), the MNC could protect himself by electing to use a labor source from another country. Another mitigation strategy could be adding a risk premium to the project's bid which will offset the expected value of the change in cost associated with the host country's labor problem. In other instances the firm could use the system's output to compare the cost of insurance premiums which compensate for losses incurred in the host (e.g., war and insurrection) against the expected value of those potential losses. Based on this comparison the MNC can decide whether or not the investment in insurance is warranted, e.g., the cost of insurance is substantially less or greater than the expected value of the losses.

The information obtained in the impact assessment phase should facilitate more adept decision-making due to the increase in information about the project's environment. As a consequence, the objective assessment and selection of projects, (the system's fourth phase) as a process should become somewhat improved. However, this system only remains useful as long as the firm's goals remain with certain parameters (e.g., diversification of risk and profit maximization). The risk return trade-offs generated by the system become less effective if the firm's attitude towards risk is neutral or preferring. The selection of an appropriate project for the firm should be made on the basis of the project's risk environment, the firm's ability to mitigate against these risks and the correlation existing between each project considered and the firms current portfolio.
The final step in the process is the project monitoring phase. The analyst's responsibility in this phase will be to monitor and update the system to reflect environmental changes which occur once the project is commenced. These changes, their impact on project returns and management's strategy for mitigating against these risks should continually be assessed. This assessment should be taken systematically at strategic points during construction, or at points where there is a significant or unanticipated change in one of the variables. The technique most appropriate for the system updating is Bayesian Analysis (see Haendel, 1979 for a discussion).
Chapter 6  Conclusions

The intent of this thesis was to develop a system for analyzing the impact of socio-political events on a foreign business venture. It specifically addresses the problems which confront a multinational contractor working in a nation other than that of his origin. It is industry specific, a characteristic seriously lacking from most of the analysis systems which currently exist. The system developed here does not provide one final outcome (e.g., a risk factor or weighted index) for the occurrence of risk in a nation, nor is it one whose results can be easily accessed by the user from a series of tables. The system is not project or country specific, each project and country analyzed is treated as a separate entity, regardless of whether or not the user is considering different projects in the same nation or similar projects in differing nations. The system developed here requires substantial user participation throughout its complete operating cycle. It allows for continuous monitoring and updating of events in the environment which few systems allow. The analysis is performed by persons within the firm who will also play a role in the project's execution and as such by those who have a vested interest in its successful operation. The project analysis and monitoring performed by this group can be used by their management as a measure of performance. This provides the user with an effective hedge against those whose duty it is to provide this service, an option not available when using consultants or forecasting services. The system provides the underlying framework for analysis and requires the user to define the exact parameters and use of the system. This flexibility allows the user to tailor the analysis to fit his specific needs and goals.
The system developed here provides the MNC with a broad view of his potential exposures. It identifies those variables which can significantly affect the value of the returns realized from the project and the important underlying factors which influence their occurrence. It also provides the user with an expected value of the potential financial liability that these events can present to the MNC.

The success of the system is dependent upon the quality of the user's information inputs. Care must be taken to acquire data that is accurate and concise. The data and information used in past analysis should be stored for use in the future as historical data points and sources of reference. Post-project evaluations should be performed to analyze the accuracy of the system in terms of its ability to realistically forecast the environmental risks and their subsequent financial impact on the project.

The system is not an end in itself, and it will not guarantee that the right decisions will be made. It only provides management with another level of "intelligence" about the project's environment. Furthermore, the information supplied is far from being infallible. It is all based on the assumption that the influencing factors and the results of their occurrence will conform to some rational and therefore predictable state of behavior. This assumption may not necessarily hold true in all instances, thus the user is forewarned.

The system developed in this thesis will provide the user with the information necessary for the development of risk management strategies. Effective risk management requires the accomplishment of two tasks. First there is the analysis of risk, which this system addresses. Second, there
is the mitigation of risk, a very important concern of the multinational. A number of mitigation techniques have been used by multinational contractors with varying degrees of success over the years. The success of each is dependent upon the particular nature of the firm, the project and the host country at a given point in time, and an accurate prediction of the risk and its causes.

One of the most common forms of risk mitigation strategy used by multinational contractors is the mobilization payment. They are monetary awards paid to the firm prior to the commencement of work in the host country. The payments are usually in quantities large enough to eliminate a great deal of the contractor's risk exposure in the nation and thus provides sufficient incentive for his participation in the project. This payment is paid predominately to the top firms in the industry, and serves a two-fold purpose. First it enables the host country to obtain the services of the better firms who would probably be more averse to working in that nation without such payment. Second it reduces the cost of some of the projects by reducing the risk premium that many firms add to their bids as a reflection of their uncertainty and as a hedge against the risk perceived in the host country.

Another common form of mitigation strategy is to reduce risk contractually. The impact of changes in taxation, in labor and material costs in the host nation can be reduced by transferring the responsibility for such increases to the client. In some instances a negotiated contract where the contractor is guaranteed a fee separate and apart from the cost of the project, as a form of agreement is far better than lump-sum, competitively bid jobs. This is particularly true when considering the
MNC's vulnerability to the loss of revenue. In negotiating a contract, the MNC's interests are best served by having the contract governed and enforceable under the laws of a neutral body. In the Middle East, many American firms have been able to obtain contracts which are governed by the laws of Switzerland or some other international agency. This provides the multinational with a better opportunity for the arbitration and resolution of contract disputes.

One of the best means of risk management is achieved by integrating local business entities into the firms operations. By doing this, the multinational faces the risk of losing some control over the decision making. However, the potential drawbacks are more than offset by the benefits received from having a local partner. Care must be taken in choosing a joint venture partner. The MNC must select a partner which will be of unquestionable benefit to the firm. Failure to do so could result in the association with a partner who will be a liability to the firm instead of being an asset. After joint ventures, the next best policy involves the subcontracting of local firms and the use of local suppliers for material and equipment. The benefits of this are similar to those obtained from joint ventures. The MNC should work to integrate local business interests into his operations as much as is realistically possible.

The multinational must be extremely sensitive to the culture and needs of the host country. Project managers and field staff should become familiar with the customs and characteristics of the host country. Most should have a working knowledge of the language. This is particularly important for those persons of the MNC's firm who have to interface
with host country nationals. The establishment of clear and concise communication lines is of the utmost importance. They must be structured in a manner which enables rapid identification and solution of problems. The MNC must maintain an open dialogue with the important entities within the nation. Regardless of the strategy used, it is important that each position taken responds appropriately to the conditions of the project's risk environment. In determining this strategy, the multinational must remain flexible, allowing a certain degree of latitude for adjustment and change.

Finally, the multinational must remember and understand the function that the project serves in the nation, and the role that he plays in providing a service. He must be careful not to overestimate his importance or more importantly, to underestimate the significance of the elements working within the host country. The system developed here has provided a methodology to help analyze the political environment of a nation and its effect on a MNC working abroad. It has identified and described those variables that have the greatest potential for affecting the firm and has shown the key dependent relationships existing between these variables and the project's financial components. On the whole, the system should prove to be a valuable asset to the multinational contractor in his continued efforts to remain effective in the international construction market.
NOTES

CHAPTER ONE:


2. IBID, p. 71.

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