THESIS

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ARMAMENT AND DEVELOPMENT:
A Cross-National
Analysis of the Effects of Military burden
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ARMAMENT AND DEVELOPMENT:
A Cross-National
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By

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ABSTRACT

ARMAMENT AND DEVELOPMENT:
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This dissertation presents an empirical study of interaction between economic growth and military burden in the Third World. The main thrust of analysis is to investigate some political and socio-economic causes and consequences of militarization in developing countries. Two competing arguments have been made about the development-military spending link. The first states that utilization of resources for arms imports and domestic production of weapons is wasteful and detrimental to development potential of less-industrialized countries. The second contends that military spending, like civilian spending, promotes economic development. This study looks at military expenditures and their effects on overall economic growth, growth of civilian sectors, and several other politico-economic factors. The empirical test is presented in the form of multiple regression analysis for sixty Third World states, using cross-national data for 1965-1977 period. The

body of the dissertation also contains a brief discussion of indigenous arms production facilities. The findings help explain the absence of convincing evidence against or for high levels of military expenditures of developing countries.

To my grandfather

ACKNOWLEDGMENTS

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Above all, I am indebted to my parents whose continued encouragement and support brought this work to its end. Any errors of fact or emphasis that remain are solely my responsibility.

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LIST OF ABBREVIATIONS

ACDA	Arms Control and Disarmamnet Agency
GDP	Gross Domestic Product
GDPpc	Gross Domestic Product, per capita
GNP	Gross National Product
IISS	International Institute for Strategic Studies
LDCs	Less Developed Countries
MILBURDN	Military Burden
MILEXP	Military Expenditures
SIPRI	Stockholm International Peace Research Institute

CHAPTER ONE

THE RESEARCH TOPIC

In 1982, world military expenditures in 1981 constant dollars were reportedly $771.1 billions, compared to $565.9 billions in 1972. According to the estimates of the U.S. Arms Control and Disarmament Agency (U.S. ACDA), world military expenditures increased 36 percent over the ten year period of 1972-1982. The most striking feature of the estimates of military spending in the world is that the flow of arms from developed countries to developing countries has increased tremendously in the same period. In 1982, the value of world arms trade has increased to $36.5 billions in current U.S. dollars, most of which was exported to developing countries (U.S. ACDA,1984).

This research will investigate the impact of increased military expenditures in 60 developing nations for the period 1965-1977. The linkage between the levels of military expenditures and development has been the focus of numerous empirical studies. The main questions addressed are: Why are nations accumulating weapons? Why are defense industries established in the Third World? What are the effects of purchases of military equipments and technology on the development of countries at various levels of economic development? Does indigenous weapons production

have a different effect on the economy than the import of arms? Is there a relationship between arms build-up and military power?

A comprehensive answer to these questions requires extensive study of commercial and government-to-government sales of armaments, all forms of transfer of arms under military assistance and defense support programs, and an analysis of various types of military goods and services exchanged between developed and developing countries. My goal here is much less ambitious. I will focus on the relationship between military spending and economic growth.

There is a disagreement over the consequences of military expenditures among those who have analyzed the relationship between military spending and economic development. Two competing arguments have been made. The first holds that increases in military spending in the developing countries decrease the chance of higher rates of economic growth in these countries. Utilization of resources for military purposes is considered wasteful. I shall call this argument the "disarmament" approach. The second holds that military spending promotes socio-economic development. The adherents of this view argue that military expenditures are necessary for political and security reasons, and that use of resources for military programs could have positive effects on the civilian economy through building infrastructure such as roads, seaports, airports, and communication networks as well as

training of skilled labor, and consequent increasing national output. I shall call this argument the "armament" approach. Critics of this view take issue with this contention by arguing that the spin-off effects of defense expenditures are not as productive as the civilian use of resources for developmental programs could be.

The key research questions thus are: Do increases in military spending slow down economic growth of a country? Is there a trade-off between economic growth and defense spending? Can economic performance of the Third World improve if military expenditures were reduced and the resources that were devoted to the military were allocated instead to the investment sector of the civilian economy? What would be the impact of conversion of military industrial resources to the civilian economy? Can a civilian project be undertaken by defense industries instead of their current military-intensive production?

It is essential to note that the reduction of the shares of military expenditures in the national budget to minimum levels depends on non-economic factors. This type of governmental expenditure has great political and security implications which have to be taken into consideration in any analysis of defense spending-development interaction. A relevant inquiry is: How does change in the level of military spending affect the national security of developing countries? Any increase or reduction would have some impact on regional and international security of countries involved. The impacts of these changes on the likelihood of interstate wars and

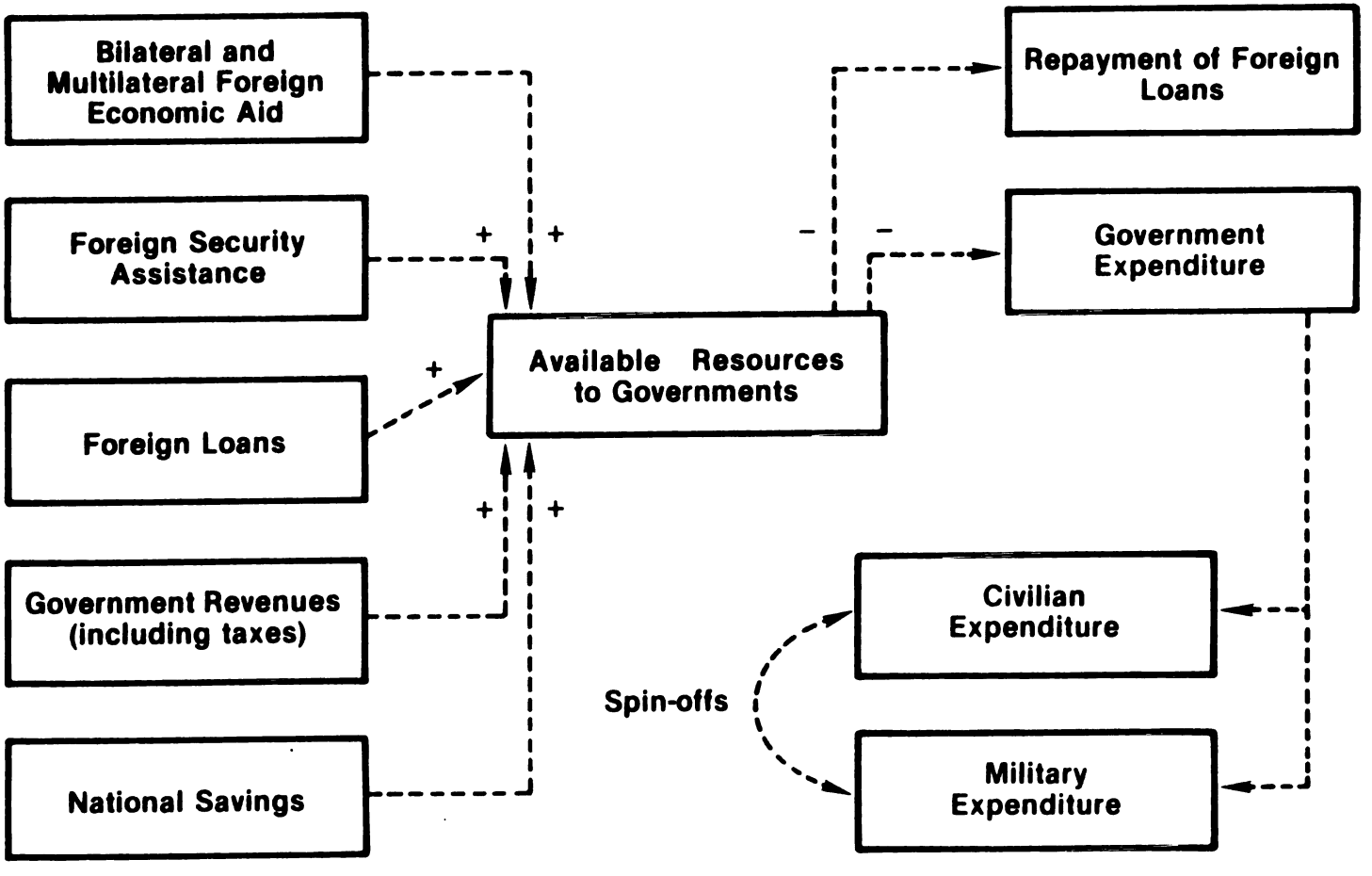
internal conflicts must be investigated. An increase in the defense expenditures of a country may be viewed as a reflection of power struggles and border confrontation, the result of which could be serious interstate hostilities and regional arms races.

I shall examine why Third World decision-makers are willing to spend large sums of money on the establishment of a domestic armaments industry. Obviously, they are not devoting national resources for military development just because they believe military industrialization is needed for the growth of their countries. One of the objectives of this study is to examine whether the provision of military goods and services affects the economic growth and social welfare of Third World countries. From a theoretical standpoint, there may be at least one reason for such a trade-off. If resources are limited (as is the case in all countries), increased spending in one sector of the society leads to decreased spending in other sectors.

A militarization policy, then, is not without cost, and in many ways it can have negative effects on other policies which are far more important for national progress and well-being of people in developing countries. Any nation can spend only as much as it has available through past savings, current borrowing from other nations or from international non-governmental organizations, and current revenue. Figure 1.0 illustrates some major resources available to a Third World government.

FIGURE 1.0

Some Resources Available to Third World Countries



Some governments attempt to increase the output of military goods at the expense of non-military goods and services. According to proponents of the disarmament approach, these decisions have adverse effects for developing nations. Furthermore, they believe that an increase in national growth will be reached more immediately through civilian investments. Aside from economic constraints created by financial ability of the Third World governments, there are political constraints determined by the ability of these governments to attract economic and military assistance extended by foreign governments.

For higher-income developing countries, such as capital-surplus oil-exporting states, the monetary assistance of foreign powers may not be very significant. For this category of developing nations, the non-monetary cooperation of industrialized countries in the forms of the supply of military-related technology and/or sophisticated weapons is of far greater importance. The willingness of the supplier-nations to cooperate with a potential arms-buying nation may have a considerable effect on the short-term growth rate of military expenditures. An example is the decision of Western arms producers to supply the Iranian armed forces during M.R. Pahlavi's regime.

For many Third World governments, the development-military spending linkages are not as important as the linkages between military spending and political variables. A survey of the literature reveals that these governments increase military spending for various purposes, including:

I. Foreign policy goals -- e.g., expansionist policies aimed at conquering other nations, national security policies aimed at deterring foreign intervention, self-sufficiency policies aimed at creating the ability to prosecute a war without dependence on foreign sources.

II. National policy goals -- e.g., nationalistic policies aimed at maintaining domestic order through establishment of a centralized state with strong armed forces, and authoritarian policies aimed at suppressing popular anti-governmental protests.

III. Developmental policy goals -- e.g., industrialization polices aimed at producing arms for export to other countries, and supporting domestic arms industry as part of an import-substitution program.

It is to be emphasized that these have varying degrees of importance for Third World governments. In the next few chapters, I shall concentrate on the important questions raised about the relationship between military spending and development of the Third World.

CHAPTER TWO

THE COSTS OF SECURITY: A REGIONAL COMPARISON

Aims: Chapter 2 first discusses sources of military data. It focuses on two main international organizations involved in publishing estimates of military expenditures (occasionally summarized as MILEXP). The decision regarding which countries to include in the sample representing the Third World was primarily based on data availability. Countries covered are those for which data for each year from 1965 to 1977 were available. The allocation of countries to regions closely resembles that of the World Bank. After classifying the 60 LCDs into the six regional groupings, regional patterns of MILEXP were examined. From this analysis, two main points are made. One is that total MILEXP in the developing world is higher in the 1970s, compared to earlier decades; the second point is that the rate of growth of MILEXP is considerably higher in high-tension areas characterized by escalating interstate conflicts, particularly in the Middle East.

In a world of nuclear arms races, it is not suprising to find Third World political leaders preoccupied with military supremacy. Their preoccupation with armaments arises from the assumption that governments in Europe and North America were able to achieve a high rate of economic growth, and improve the quality of life in their societies, largely because they enjoy a dominant position in international affairs.

Military power is generally viewed as a condition of political stability and economic progress, and an essential element in national struggle for independence. Security reasons have provided ample justification for military spending. A number of empirical studies have been done on

the size of defense budgets in developing countries. They indicate an enormous growth of military expenditures in recent years. Before attempting to examine the trade-off between costs and benefits of investments in military sector and of weapons acquisition, I must determine the sizes of defense budgets in different developing countries and regions.

In regards to national budgets, Wildavsky has pointed out that

> Serving diverse purposes, a budget can be many things: a political act, a plan of work, a prediction, a source of enlightment, a means of abfuscation, a mechanism of control, an escape from restriction, a means to action... (1974: xxiii).

Many analysts have stressed the significance of close examination of budgets of central governments as a way of understanding national priorities. The value of central government expenditures in the military sector on a per capita or absolute basis may then be an indicator of a government's readiness to devote its resources to military programs. To assess the impact of national defense spending, I had to explore reliable data collected on a cross-national comparative basis. The major problem is of course the lack of any useful standard of whether the military expenditures data for a given country are accurate or not. At this point, a discussion of the limitations of available military data sources is needed to draw our attention to the main shortcomings in available military expenditures (occasionally summarized as MILEXP) statistics. Most international organizations rely on

official statistics gathered and reported by governments, who may decide not to reveal the size of their actual military spending publicly.

Since the exact MILEXP of most countries are considered national secrets, the reported figure under the heading "defense" in the official and published government budgets may not reflect the real size of MILEXP. An example of hidden expenditures is provided by Blackaby and Ohlson who observed that "in Britain the initial expenditures on developing the atomic bomb was concealed in the Civil Contingencies Fund under the subhead of 'public Building in Great Britain'" (1982:297)

It is quite possible some governments overestimate their defense budget in an attempt to conceal their military inferiority and deter potential attackers, or under-estimate their MILEXP in the hope of hiding their own military preponderance.

Because of such biases, available defense-related data should be examined very carefully. Here, I seek to highlight some of the apparent differences in the coverage and definitions in military-related statistical time-series which are published by several international research organizations on a regular basis. Details of military data used, and of procedures employed to adjust them, are also given.

How accurate and reliable are MILEXP data? The answer is that no one knows how reliable and bias-free they are. Some researchers view international statistical data with skepticism, and take the unreliability of defense data for

granted because many governments are reluctant to report their actual MILEXP. This is, indeed, a serious weakness in data which forces us to examine MILEXP estimates with a questioning attitude.

A related problem has to do with the issue of aggregation observed in almost all cross-national studies. The use of aggregate data makes it difficult to compare the quality of data. Expenditures on all military goods and services are aggregated in official budgets from one fiscal year to another.

There is no doubt that the quality of data for different years may vary. One can expect to obtain better-quality statistics as time passes. For this reason, it may be justifiable to assert that data should not be compared over time for many developing countries, since their coverage and the reporting methodology have changed over the years.

For the sake of scientific inquiry, it is not advisable to use these problems as an excuse for not conducting empirical research on issues related to the Third World. We must be aware of the shortcomings of these data, and use them cautiously in making cross-national generalizations. We can base our analysis on what is known without making any claim that military data used are complete, or an exact picture of reality. At the same time, we must encourage cross-national data collection efforts through multilateral channels such as the World Bank.

SOURCES OF MILITARY DATA

Two of the most reliable publicly available sources of data on exports and imports of arms, and on military expenditures are:(1) Stockholm International Peace Research Institute (hereafter SIPRI)'s World Armaments and Disarmament: SIPRI Yearbook; which provides data since 1950; and (2) U.S. Arms Control and Disarmament Agency (hereafter ACDA)'s World Military Expenditures and Arms Transfers; which has MILEXP estimates since 1957. SIPRI's 1983 Yearbook covers 129 countries, while ACDA's 1984 edition covers 145 countries.

Several conceptual issues in regard to the definition of defense expenditures must be taken into consideration. Broadly defined, "military expenditures" refers to the central governmental spending for military purposes, i.e., expenditures for the purchases and production of military goods and services for the application of the armed forces. There are two broad classifications of MILEXP: military aid extended by foreign governments, and military spending allocated from national resources. It is extremely difficult to perceive the distinction between the two categories, since most governments do not set apart military aid from other components of their military budgets.

This distinction is important from the point of view that the countries within the same region differ not only in their reasons for larger defense budgets, but also in the form of MILEXP, and consequently in the extent of military burden imposed on their societies. One might

suppose that a certain percentage of the military budget of selected Third World nations is financed by the developed states and by richer developing countries who are willing to act as military aid donors. For instance, the NATO members (Greece and Turkey) and Western-supported Israel in South Europe have benefited from the U.S. Military Assistance Program (MAP), and some low-income Arab nations in the Middle East (e.g., Morocco) might have been the recipient of Saudi Arabia's "Islamic" aid. The observed multiplication of total MILEXP of these regions may, in part, be due to military grant-in-aids extended by foreign sources.

Optimally, one ought to distinguish military-aid-receiving countries from other countries, and should deduct foreign military aid from the proportion of national budget allocated to the military sector, but this practice would largely depend on the purpose of study and the nature of aid. If we intended to measure defense burden, we would have to subtract military aid received by developing countries, unless these aids are in the form of loans that must be repaid.

SIPRI and ACDA do not present military data broken down into the categories of foreign military aid and military spending financed from national resources. In view of the fact that it was not feasible to collect military-related foreign aid data for all countries under investigation, I take into account MILEXP without specifying the proportion of military assistance for the

cross-national tests.

Going back to the meaning of MILEXP, the SIPRI and ACDA data sets use different definitions of MILEXP. This difference is largely due to the problem of ensuring comparability of definitions across countries. A major goal of any organization involved in collecting data on a cross-national basis would be to account for the conceptual differences across nation-states. The achievement of this goal is complicated by the different ways these concepts are defined in the primary sources from which the figures are taken. This, in turn, may be related to political structure of a state and how its government functions. For example, the central government in one country may perform many of the defense-related functions that in another country are performed by the state and local governments, or even by foreign forces. It should be noted that there is no official agreement regarding the reporting of MILEXP by governments.

ACDA defines military expenditures broadly to cover most defense-related spendings. ACDA states that

> [M]ilitary expenditures includes all expenditures of national defense agencies except those for civilian programs. Also included are the military components of mixed military and civilian activities such as atomic energy, space, research and development, and significant paramilitary forces, where such components could be distinguished.1

SIPRI attempts to use NATO's definitions of MILEXP as a uniform standard for all countries. According to the International Institute for Strategic Studies (IISS), the NATO definition of MILEXP

> [i]ncludes all spending on regular military

> forces, military aid to other nations (including equipment and training), military pensions, expenses by host governments for NATO tenant forces, NATO infrastructure and civilian staff costs; paramilitary forces (e.g. gendarmerie) are excluded (1983:vi).

Several open sources are employed to collect MILEXP estimates. These sources in 1983's SIPRI Yearbook include International Monetary Fund's Statistical Yearbook, The United Nations' Statistical Yearbook for Asia and the Pacific, and the Europa Yearbook.

ACDA's data for non-communist countries, which are not NATO members

> [a]re generally the expenditures of the Ministry of Defense. When these are known to include the costs of internal security, an attempt is made to remove these expenditures. As in the past, the files of the Agency for International Development (AID) are a major sources of data for these countries (ACDA, 1984:103).

Other sources used by ACDA are: International Monetary Fund's Government Finance Statistics Yearbook; and the files of several U.S. governmental agencies including those of the Central Intelligence Agency (CIA) and the Defense Intelligence Agency (DIA).

An additional problem is that the figures in the two data sets, particularly in SIPRI Yearbooks, often differ from those shown in previous editions. This happens because of continuous updating as revised and presumably better data become available. This can be a serious difficulty for conducting a time-series analysis for specific countries. In SIPRI Yearbook, it is stated that

> [T]he tables are updated and revised versions of those which appears in the SIPRI Yearbook 1982...These revisions can be quite extensive- not only are significant changes made in figures which were previously estimates, but entire series are

altered when new and better sources come to light (1983:175).

It is important to test whether different empirical results can be obtained depending on which SIPRI Yearbook or ACDA edition we use. Since these sources update their figures in the most recent volumes, I decided not to use information for the most recent years. To confront the problem of data revisions, the cut-off year for the time span under study is chosen to be 1977. As a result, in collecting MILEXP data from SIPRI, the figures for 1965-1974 are taken from the 1978 Yearbook, and the MILEXP data for 1974-1977 are gathered from the 1983 edition. It is assumed that by 1983, major corrections for the 1970's data had been completed. Similarly, two ACDA's volumes were employed. The 1965-1974 MILEXP figures are derived from the 1976 U.S. ACDA issue, and those for 1974-1977 are taken from the 1982 publication.

All these data have been originally expressed at current prices. Because of the lack of a price deflator for military goods, a GDP implicit deflator of the base year is used to estimate real MILEXP. I have considered SIPRI's and ACDA's figures expressed in prices of several different base years. Then, I rebased MILEXP data for the 13 years in an effort to obtain figures in the chosen base year (1973=100) U.S. Dollars. Given the disagreement among analysts about the superior quality of the ACDA's and SIPRI's data[2], it is of great theoretical and statistical significance if one can show that the findings of the research would not be affected if either of these two

Table 2.1

Correlation Matrix for Comparing Average 1965-1977 SIPRI and ACDA Military Expenditures Data, for the Third World (N=60)

	SIPRI	ACDA	SIPRI'	ACDA'
ACDA	[.98]	1.00		
SIPRI'	.39	.37	1.00	
ACDA'	.41	.42	[.83]	1.00

Note: ACDA, and SIPRI denote the levels of real military spending in the Third World for 13-year period from 1965 to 1977. ACDA' and SIPRI' indicate 1965-1977 historical growth rates of real military expenditures by sixty developing countries. All variables are measured in millions of 1973 U.S. dollars.

sources were employed.

Knowing that these two sources make use of several common statistical time-series published by the United Nations and other organizations, I am not suprise that their MILEXP estimates are somewhat similar. Reportedly, ACDA even uses SIPRI's estimates for certain countries. How similar are the estimates of ACDA and SIPRI? To answer this question, I correlated MILEXP for the period 1965-1977, as reported in these two data sources. Table 2.1 gives the result.

It is clear that the SIPRI and ACDA data are strongly and positively correlated. Note in table 2.1 that the correlation between the two levels of MILEXP is .98, and the strength of association between the two growth rates is .83.

In the next chapter, I shall use both the SIPRI and ACDA data to show that the findings are very similar regardless of which military data sources I employed. Therefore, unless otherwise specified, I shall base all tables, figures and empirical analyses on the SIPRI data.

REGIONAL MILITARY SPENDING

In considering the level of military spending in developing countries, it is useful to examine regional variations to analyze whether certain regions have higher or lower MILEXP relative to other regions. One approach is to compare the total, shares, and growth rates of MILEXP in the six regions for the entire time period.

Sample of Countries and Regional Grouping

Given the goals of this study, it was necessary to identify nations which could be viewed as members of the Third World. In the literature of development, several terms are used synonymously to refer to developing countries. These concepts, such as industrializing countries, less industrialized countries, less developed countries, and the South refer to a group of nations which have at least one similar characteristic. They are at a comparatively lower level of development relative to North American, Western European and developed Communist countries. The main criterion for distinction is national income and wealth, often indicated by per capita Gross National Product. Here, these terms will be used interchangably to refer to the Third World countries in the sample.

In selecting the country cases, I used the World Bank's definition, and also ascertained whether the nations in the sample are members of Asia, Latin America or other world regions. Likewise, I used the World Bank's regional classification which identifies six developing geographical areas:

Region 1. Africa, South of Sahara: Cameroon, Central African Republic, Ethiopia, Gabon, Ghana, Ivory Coast, Kenya, Liberia, Malawi, Niger, Nigeria, Rwanda, Senegal, Sudan, Tanzania, Uganda, Zaire, Zambia.

Region 2. East Asia and Pacific: Indonesia, South Korea, Malaysia, Philippines, Thailand.

Region 3. Latin America and Caribbean: Argentina,

Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Hondoras, Mexico, Nicaragua, Panama. Paraguay, Peru, Trinidad and Tobago,Uruguay, Venezuela.

Region 4. Middle East and North Africa: Algeria, Egypt, Iran, Iraq, Saudi Arabia, Syria, Tunisia.

Region 5. Southern Europe: Greece, Israel, Turkey.

Region 6. South Asia: Afghanistan, Burma, Burundi, India, Nepal, Pakistan, Sri Lanka.

Table 2.2 reports the number of countries in each region, and the total sample size. The main reason for the selection and inclusion of these countries in the sample is the availability of data for 1965-1977 (See Appendix 2-A, for a list of country codes, and regional codes). The sixty nations are grouped together into one category of 'Third World' states, and are coded according to their geographical locations.

Table 2.3 provides information on the levels of military spending by the six regional groups as well as the overall trends in Third World MILEXP. It is evident that MILEXP by developing countries grew from about $9,509 million in 1965 to $33,520 million in 1977 in 1973 U.S. dollars. The real growth rate of MILEXP for the Third World during the period 1965-1977 is about 252 percent, and it follows that the average real growth rate of MILEXP were about 19 percent annually.

The average growth rate presented in table 2.3 does not give information about the year-to-year fluctuation. Later, I shall use a better method to compare the average annual real growth rate of MILEXP for the 13-year period,

and measure the average yearly change. The MILEXP data are based on the value of MILEXP in constant 1973 U.S. dollars to provide a measure of growth free from the effects of

Table 2.2

Regional Classification of Countries in the Sample

Region*:	Region Code:	
Africa, South of Sahara	AF	18
East Asia and Pacific	ES	5
Latin America and Caribbean	LA	20
Mid-East & North Africa	ME	7
South Europe	SE	3
South Asia	SA	7
All Regions		60

Note: * The number of countries from each region is placed beside the region code.

Table 2.3

Shares and Growth Rates of Military Expenditures, By Region, for 1965 and 1977

	Total		% Share		Growth rate
	1965	1977	1965	1977	1965-1977
	(million $)		(percent)		(percent)
Region:					
AF	$574.8	$1601.9	6.0%	4.8%	179
ES	665.0	2793.3	7.0	8.3	320
LA	2508.6	5336.9	26.4	15.9	113
ME	1940.0	14240.7	20.4	42.5	634
SE	1286.0	6379.8	13.5	19.0	397
SA	2535.0	3167.4	26.7	9.5	25
All Regions	9509.4	33520.0	100.0	100.0	252

Source: Military expenditure data are taken from SIPRI yearbooks, 1983 and 1978

Note: The growth rate is given by the equation: [GWMIL=(MILEXP77-MILEXP65)/MILEXP65]*100. Refer to table 2.2 for a description of region codes.

changes in prices.

I then compared 1965 shares of MILEXP with those of 1977 for various regional groupings in the Third World. In 1977, the Middle East and North Africa, with 42.5 percent, has the highest percentage share. It also has the highest (6.3 percent) growth rate during the 1965-1977 period. With 4.8 percent, South Africa has the lowest percent share of Third World MILEXP for the same period.

An inspection of the regional shares of MILEXP, provided in Figure 2.1 indicates that developing regions with the highest military spending in 1965 ranked in descending order were South Asia [26.9%], Latin America and Caribbean [25.9%], Middle East and North Africa [19.9%], South Europe [13.9%], East Asia [6.9%], and South Africa [5.9%].

In 1977, the ranking of developing regions in decending order on the basis of total real MILEXP was Middle East and North Africa [42.5%], South Europe [19.0%], Latin America and Caribbean [15.8%], South Asia [9.5%], East Asia [8.2%], and South Africa [4.8%].

Figure 2.2, presents overall changes in real MILEXP expressed in constant 1973 dollars for every year from 1965 to 1977. Very significant changes in the levels of spending occurred. One of the most remarkable points is the gradual increase of MILEXP figures from 1965 to 1972, followed by an upward trend for the years 1972 to 1976, and finally a levelling off in the period 1976-1977.

Possible explanations of this trend are numerous. It has been usually assumed that the basic premise underlying

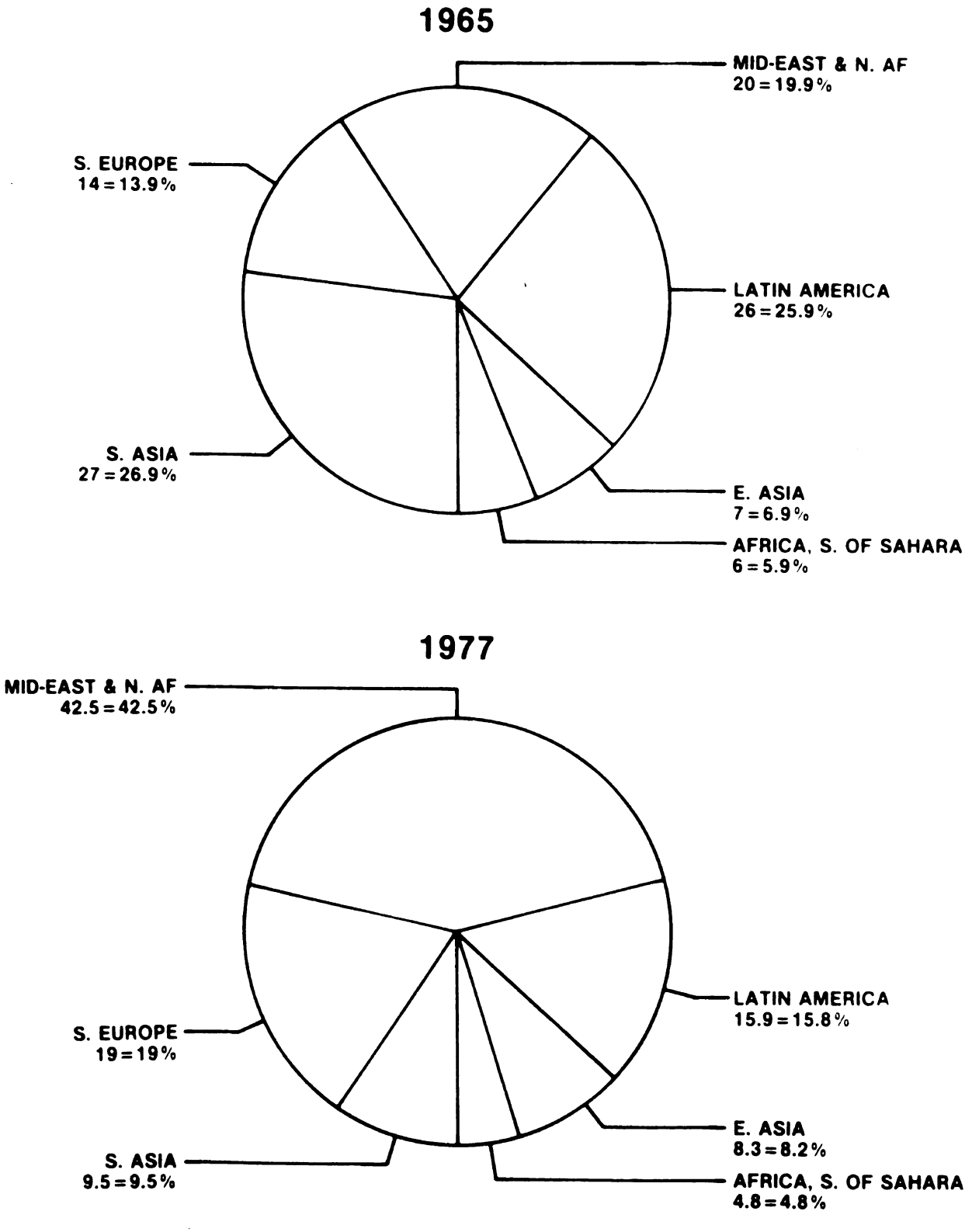
governments' decisions to spend more on defense is national security and prestige considerations. The analysis of these contentions is complicated by the different ways governments achieve their security goals. For example, some countries get involved in establishing their own military-industrial complexes. In other countries, governments decide to either import armaments or rely on formal alliances with major powers and foreign military aid. The countries in each of the six regions differ in the extent to which they devote their national resources to military programs, and may have different reasons for the importance accorded to such programs.

One country's MILEXP may be a function of how much its neighboring countries spend on their armed forces. Another LDC may have hopes regarding economic benefits of production and sales of armaments. It is meaningless simply to compare the size of central government spending in the military sector across regions without taking into account cross-country dissimilarities. Nevertheless, looking at changes in regional MILEXP enables us to identify distinctive regional characteristics, and make interesting observations. By comparing total MILEXP for 1965-1977 across regions (see figures 2.3 to 2.8), a number of remarks can be made.

The most notable point is the pattern of change in MILEXP of Middle East and North Africa. Figure 2.4, shows a sharp increase in 1972-1976, followed by a slight decline during 1972-1977. MILEXP reached its peak in 1976. The

FIGURE 2.1

DISTRIBUTION OF REGIONAL SHARES OF THIRD WORLD MILITARY SPENDING IN 1965 AND 1977



Note: The military data used for the computation of % shares are in 1973 (constant) millions of $ US.

FIGURE 2.2

THIRD WORLD MILITARY EXPENDITURE, BY REGION 1965-1977

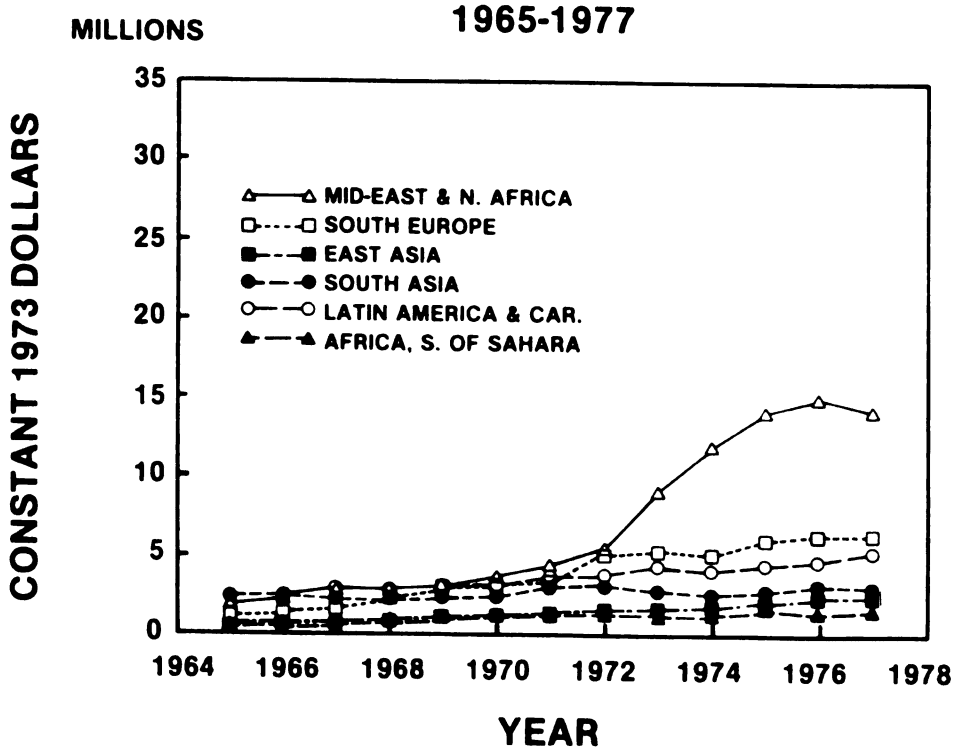


FIGURE 2.3
MILITARY SPENDING IN AFRICA, SOUTH OF SAHARA 1965-1977

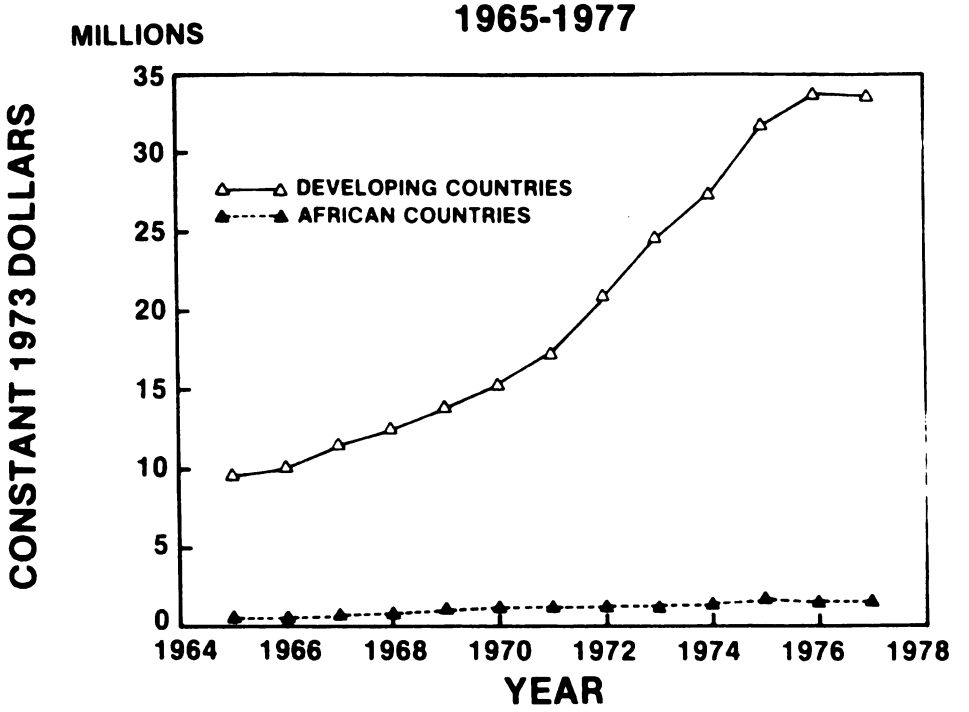


FIGURE 2.4
MILITARY SPENDING IN SOUTHERN EUROPE 1965-1977

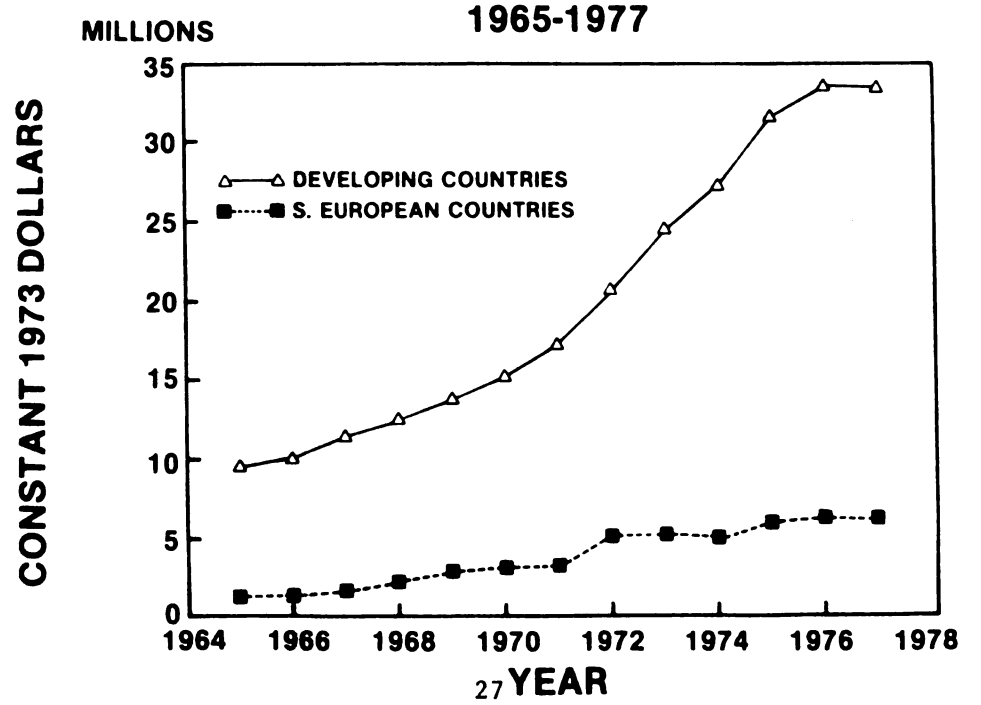


FIGURE 2.5
MILITARY SPENDING IN EAST ASIA
1965-1977

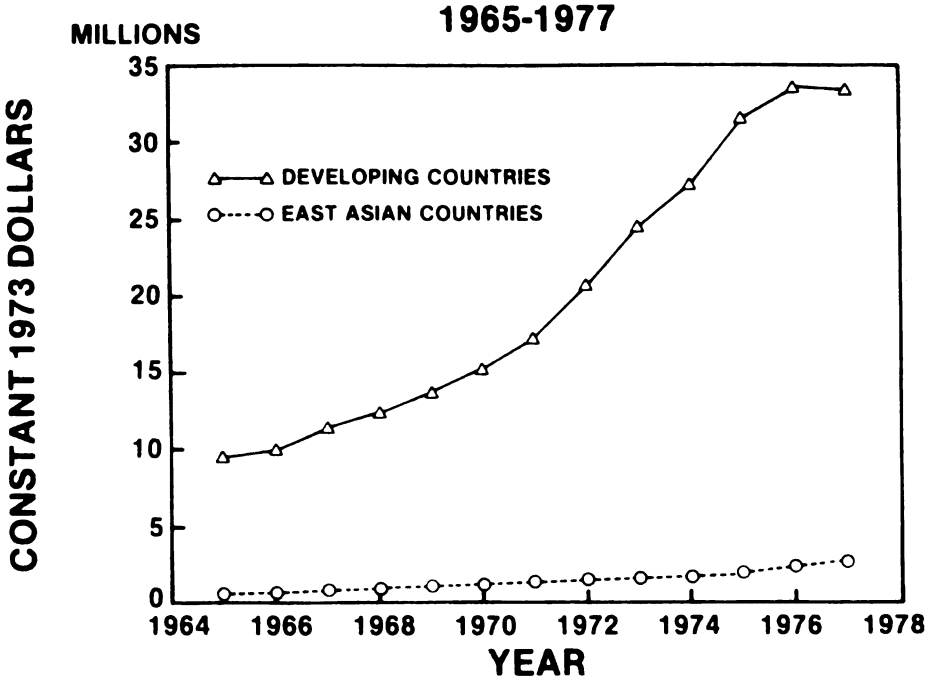


FIGURE 2.6
MILITARY SPENDING IN SOUTH ASIA
1965-1977

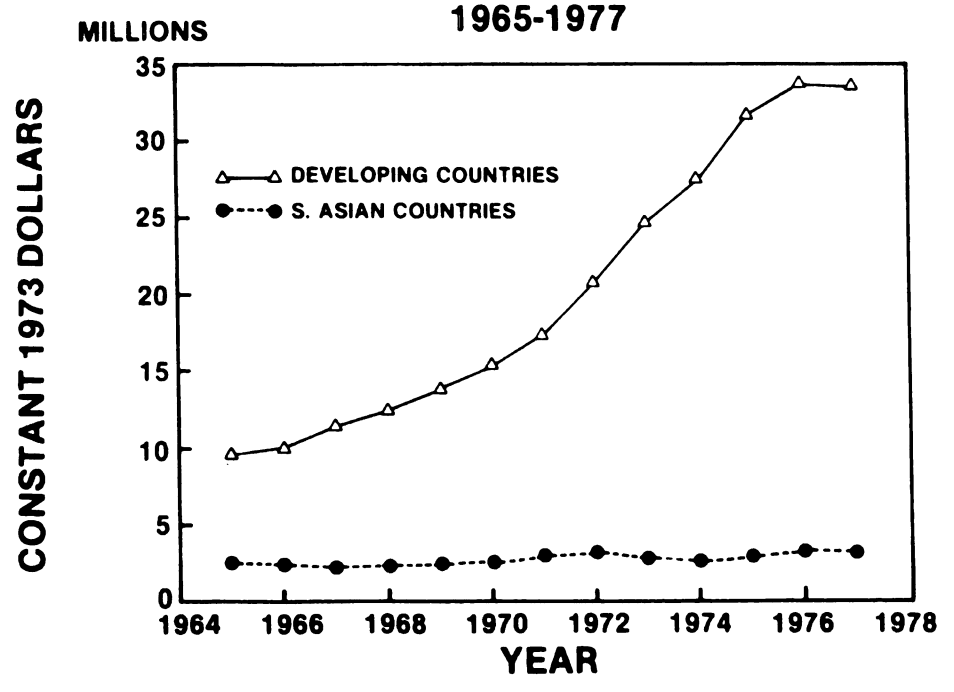


FIGURE 2.7

MILITARY SPENDING IN MID-EAST & NORTH AFRICA 1965-1977

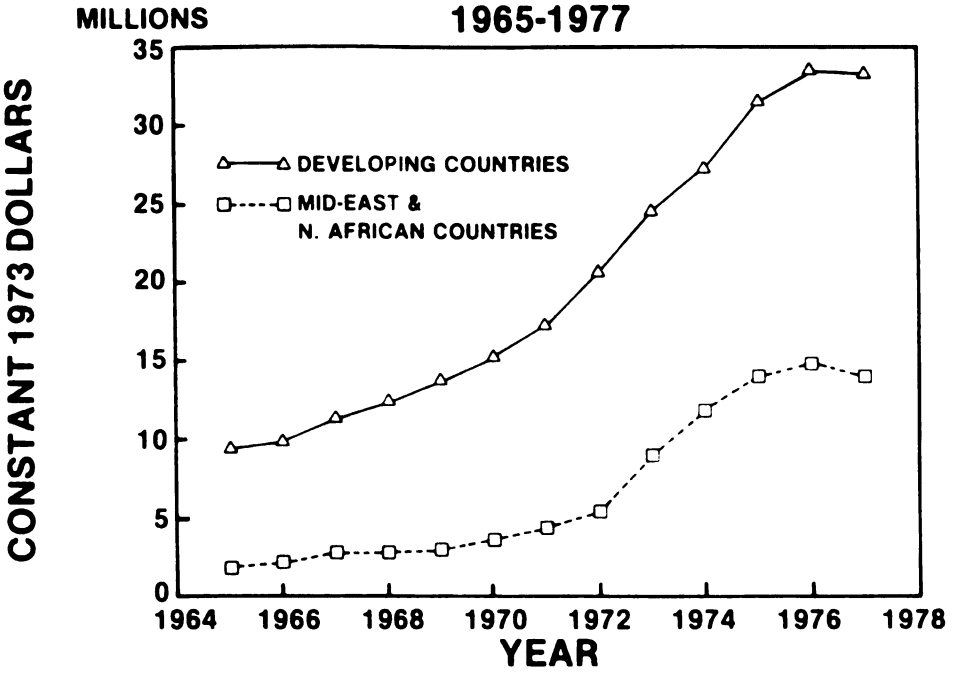


FIGURE 2.8

MILITARY SPENDING IN LATIN AMERICA & CARIBBEAN 1965-1977

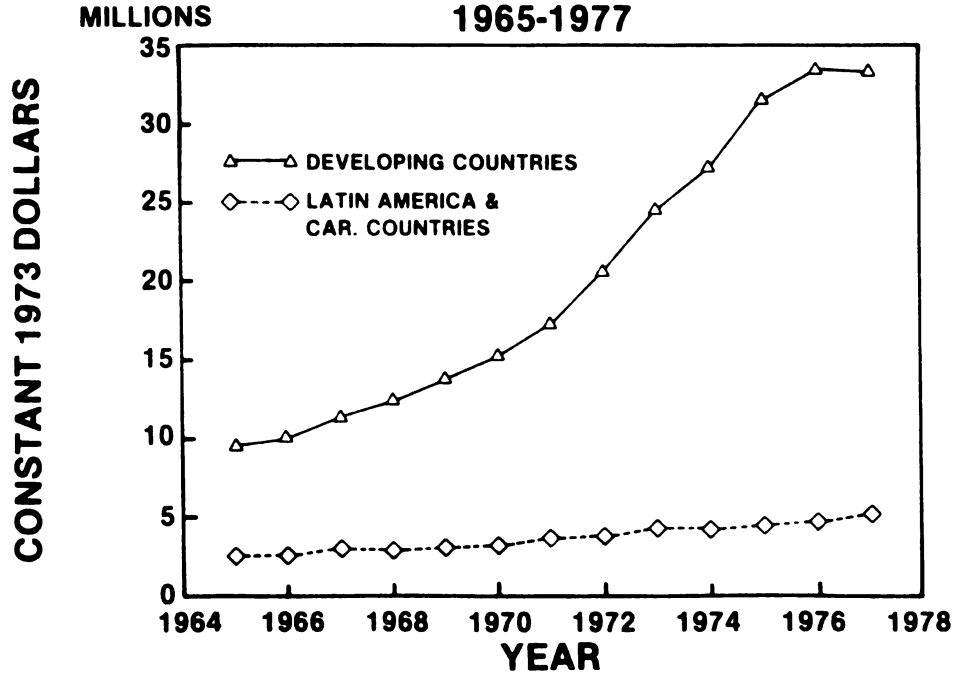
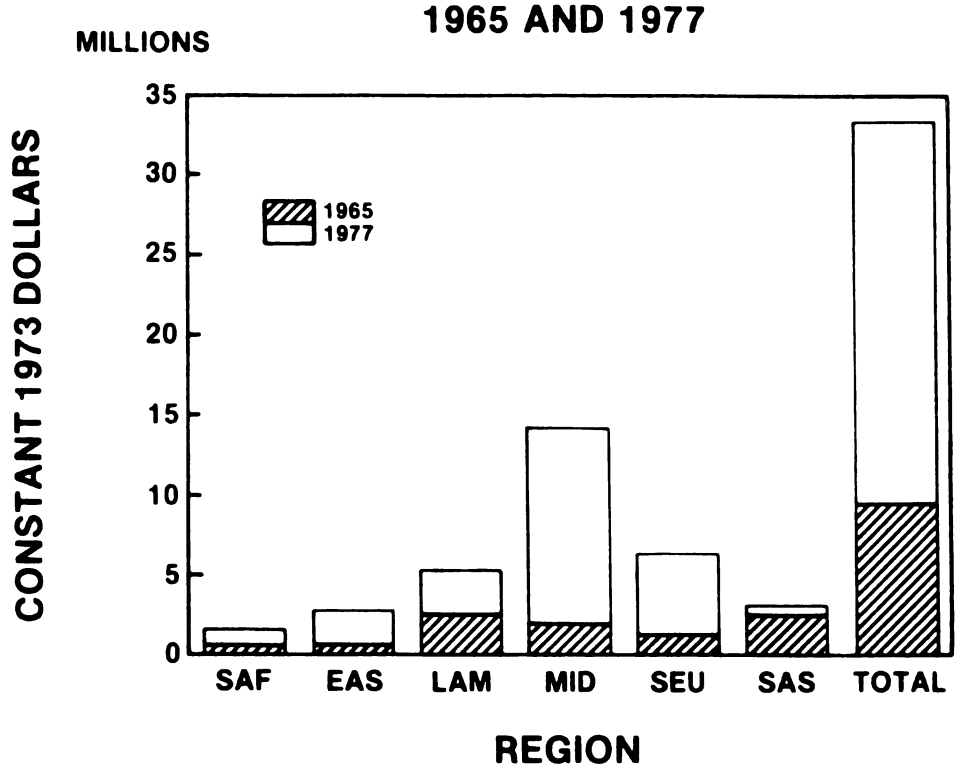


FIGURE 2.9

DISTRIBUTION OF MILITARY EXPENDITURE IN THE THIRD WORLD BY REGIONS, FOR 1965 AND 1977



obvious explanation for the 1976-1976 increase is the changes in the price of oil that might have enabled the oil exporting nations in that region to spend more on military projects.

A second possible explanation for the ever-expanding Middle Eastern MILEXP is the interstate conflicts (e.g., Arab-Israeli conflicts) and internal strifes (e.g., Kurdish struggles in Iran and Iraq). This possibility can be further supported in the light of the data presented in figure 2.4, since the same comparative trends appear in the South European region, where Israel, Turkey and Greece are located. The continuing Arab-Israeli conflicts and the Greco-Turkish conflict over Cyprus have had great impact on how much these governments spent on arms. To a large extent, this assumption may hold true in all regions, but it is particularly a plausible explanation in the Middle East and Southern Europe.

Indeed, Figure 2.9, which shows the regional MILEXP for the two years 1965 and 1977, indicates that high growth in Third World military spending is largely due to drastic growth in Middle Eastern spending. The seven Middle Eastern and North African nations accounted for over 20% of 1965's, and over 42% of 1977's Third World MILEXP. If these countries are excluded, the growth rate of real MILEXP for the other regions would be drastically reduced from 252% to approximately 154%. It may be interesting to note that this region continued to spend more on defense after 1977. ACDA reports that MILEXP of Middle East expanded rapidly in

1980-1982, as a consequence of Iran-Iraq war efforts, and thus ended a 4-year period of moderate growth during 1976-1980. (1984: 3)

From figure 2.9, it can also be seen that 1977's South Asian spending is considerably lower than the figures for 1965. Much of the reduction in 1977 MILEXP may be due to the lessening of military tensions in that region, considering that India-Pakistan conflict over the establishment of Bangladesh as an independent states, and the active involvement of superpowers in South Asia were ended in the early 1970s.

Finally, in the relatively low-tension region of Latin America and the Caribbean, the twenty states had a real growth rate of 113%; indicating an increase of about 9% per annum for 1965-1977.

Overall, two main points can be made. One is that total MILEXP in developing regions is higher in the 1970s, compared to the earlier decade. The point is that the rate of growth of defense spending is quite impressive in certain areas in which MILEXP grows faster as interstate hostilities build up. An even greater source of concern for the ruling regime would be internal political crisis, and the spread of revolutionary ideology. The demand for higher national defense expenditures can be originated from the desire of the governments to provide a barrier against the opposition groups challenging their authorities. In politically unstable developing states, one of the principal attractions of higher MILEXP would be an ability to defeat domestic rebellion.

In addition to looking at the total MILEXP and real growth rates, one must also understand the composition of Third World defense spending. Since most LDCs did not possess Military-Industrial Complexes (MICs) in the 1960s and 1970s, it is reasonable to conclude that a larger share of their defense budget was devoted to the purchase of weapons from arms-producing nations in the North. Only small components of their budgets could have been related to the costs of manpower, military construction, and training of armed forces personnel. It is not difficult to see why there could be a great difference between the countries that build their own military equipment, and generate defense-related jobs, and countries that have to rely heavily on the import of arms and foreign skilled labor force. These differences will be discussed later.

In the meanwhile, I shall address monetary aspects of regional differences regarding the costs of defense, and establish that developing regions increased their MILEXP in the 1970s. Three regions, Middle East and North Africa, Southern Europe, and Latin America and Caribbean with 30 nation-states accounted for over 77% of cumulative 1965-1977 Third World MILEXP. It appears that resource-rich oil producing countries, and newly industrialized countries spent more on their military sectors. What are the consequences of ever-increasing MILEXP in these countries? Why has defense spending grown faster in certain nations? Is there a link between military spending and the economic progress of these countries? Given that several countries

with higher defense budgets are more developed, can we conclude that this is an indication that LDCs can achieve higher standard of living through allocating more resources to defense?

The next chapters are devoted to the review of and conduct of theoretical as well as empirical analyses of the direct and indirect impacts of MILEXP on the socio-economic and political structure of the Third World. The main assumption tested is that allocation of resources to military projects would add to the poor economic performance of non-industrialized countries.

NOTES-CHAPTER TWO

1
This definition is taken from the codebook prepared by Inter-University Consortium for Political and Social Research (ICPSR) for U.S. ACDA's World Military Expenditures and Arms Transfers, 1967-1976, published in 1979, p. 3.

2
Detailed discussion of the problems with existing arms trade and MILEXP data are presented in a number of studies. For an extensive comparison of SIPRI and ACDA sources, different definitions of MILEXP, pricing methods, and coverage, refer to: Brozoska, M. 1982. "Arms Transfer Data Sources." Journal of Conflict Resolution. 26, 1(March): 77-108; Brozoska, M. 1981. "The Reporting of Military Expenditures." Journal of Peace Research. XVII, 3: 261-275; Fei, E.T. 1979. "Understanding Arms Transfers and Military Expenditures: Data Problems" in Arms Transfer in the Modern World, eds. S. Neuman and R. Harkavy. New York: Praeger Publishers; Kolodziej, E. 1979. "Measuring French Arms Transfers." Journal of Conflict Resolution. 23, 2(June): 195-227; Blackaby, F. and Ohlson, T. 1982. "Military Expenditures and the Arms Trade: Problems of Data." Bulletin of Peace Proposals. 13, 4: 29-338; and United Nations, Report of the Secretary General. 1976. Measurement and International Reporting of Military Expenditures, report prepared by the Group of Experts on the Reduction of Military Budgets. New York: United Nations, A/31/222.

Appendix 2-A
The Sample of Countries, Country Code and Region Code

Country *	Country Number	Country Code	Region Code
Afghanistan	01	AFG	R6
Algeria	22	ALG	R4
Argentina	12	ARG	R3
Bolivia	13	BOL	R3
Brazil	14	BRZ	R3
Burma	06	BUR	R6
Burundi	23	BUU	R6
Cameroon	24	CAM	R1
Central African Republic	25	CEN	R1
Chile	15	CHI	R3
Colombia	16	COL	R3
Costa Rica	43	COS	R3
Domincan Republic	44	DOM	R3
Ecuador	17	ECU	R3
Egypt	55	EGY	R4
El Salvador	45	ELS	R3
Ethiopia	26	ETH	R1
Gabon	27	GAB	R1
Ghana	28	GHA	R1
Greece	53	GRE	R5
Guatemala	46	GUA	R3
Haiti	47	HAI	R3
Honduras	48	HON	R3
India	02	IND	R6
Indonesia	07	INO	R2
Iran	56	IRN	R4
Iraq	57	IRQ	R4
Israel	58	ISR	R5
Ivory Coast	29	IVO	R1
Kenya	30	KEN	R1
Korea, R. (south)	08	KOR	R2
Liberia	31	LIB	R1
Malawi	32	MAW	R1
Malaysia	09	MAL	R2
Mexico	49	MEX	R3
Nepal	03	NEP	R6
Nicaragua	50	NIC	R3
Niger	33	NIG	R1
Nigeria	34	NIR	R1
Pakistan	04	PAK	R6
Panama	51	PAN	R3
Paraguay	18	PAR	R3
Peru	19	PER	R3
Philippines	10	PHI	R2
Rwanda	35	RWA	R1
Saudi Arabia	59	SAU	R4
Senegal	36	SEN	R1
Sri Lanka (Ceylon)	05	SRI	R6
Sudan	37	SUD	R1
Syrian Arab Republic	60	SYR	R4

Tanzania	38	TAN	R1
Thailand	11	THI	R2
Trinidad and Tobago	52	TRI	R3
Tunisia	39	TUN	R4
Turkey	54	TUR	R5
Uganda	40	UGA	R1
Uruguay	20	URU	R3
Venezuela	21	VEN	R3
Zaire	41	ZAI	R1
Zambia	42	ZAM	R1

Total: (N) = 60

Notes:

* The list of countries includes all developing countries for which military expenditures were available. Smaller developing countries were excluded because of unavailability of MILEXP data.

CHAPTER THREE

THIRD WORLD DEFENSE SPENDING:
A Survey of Selected Theoretical Studies of Military Spending in the Third World

Aims: This chapter is devoted to a discussion of the interrelated economic and political dimensions of militarization programs as they relate to the Third World. The primary purpose is to direct attention to the major ideas associated with previous studies in this area. Following this goal, two opposing approaches are identified: First, there is the belief that military spending affects socio-economic well-being of the developing societies adversely, endangers national and global security, encourages political repression; and second, that the MILEXP can promote growth, improve the standard of life in the less developed countries (LDCs) through spin-off effects of such expenditures and consequently increase national security. The chapter continues with a discussion of the underlying assumptions in these approaches. The arguments regarding arms build-up illustrate in what fundamental ways the rise of MILEXP could affect the Third World; and set the stage for formulating research hypotheses which shall be tested empirically in subsequent chapters.

This chapter presents several issues related to the military spending-development linkage. The selection of studies in this review is somewhat arbitrary, since a comprehensive examination of all relevant studies was not possible.

In what follows, I shall outline the theoretical approaches to the study of arms transfers, military dependency, and "militarization", and their effects on the socio-economic development and political instability of Third World countries.

Researchers who have been interested in studying the auses and consequences of underdevelopment in the Third orld have relied on different theoretical and qualitative orms of analysis to explain the causes of negative growth nd uneven development among various countries. Most spects of political, social, and economic systems of the eveloping countries have become the focus of studies oncerned with the interaction between militarization and he process of development and industrialization. I shall ocus on some major issues raised in these studies. One of he controversial subjects concerns the relationship etween arms imports and national autonomy.

rmaments and Dependency

A major question examined is whether military build-up auses dependency. Broadly speaking, most studies in this rea are based on theoretical assumptions of "dependency" r "development" approaches. The "dependency" scholars are mong the harshest critics of rising military spending, and ave voiced their concern about the allocation of ubstantial resources to defense by the Third World overnments. One of the hypotheses of the "dependency" pproach to defense spending is that military expenditure eads to a displacement of national resources from roductive economic activities to non-productive or under he most favorable conditions, to less-productive military ctivities. The production and import of military goods and ervices is viewed to be detrimental to the long-range conomic prosperity and growth of the less industrialized

nations (e.g., Wolpin, 1980; Luckham, 1979).

Aside from the use of scarce natural resources, many other reasons are given to prove that military investment can have negative impacts on economic growth. One is that a significant percentage of national R&D efforts is concentrated on military sectors. In sum, human resources as well as mineral resources are taken away from civilian investment. In order to reduce arms imports, and to achieve self-sufficiency, developing countries turn to industrialized countries to supply them with military technology and perhaps raw materials. The access to these technologies is viewed as a necessary condition for the establishment of a modern defense industry. As a result, the form of dependency changes from dependency on imports of manufactured military goods, to dependence on imports of raw materials and military technology.

Theories of "development", on the other hand, contend that most developing countries ought to concentrate on establishing a defense industry because it is the only way by which they can gain self-sufficiency and independence from foreign sources of military equipment and technology. Moreover, the policymakers and scholars who follow this argument believe that governmental expenditures for military purposes (e.g., spending on the creation of domestic arms industries and/or spending on the purchases of weapons) would have similar consequences to civilian expenditures for the economy of a developing country.

Armaments as a Foreign Policy Tool

Arms transfers have been viewed as a useful foreign policy instrument. According to Stockholm International Peace Research Institute (SIPRI), most industrial states are involved in world arms trade. The most notable include the United States, Soviet Union, France, United Kingdom, Italy, and West Germany, in descending order of arms exports during the period of 1978-1982. A considerable share of the weapons exports of the superpowers (i.e., 69% of the Soviet Union's and 56% of the United States' exports) is channelled to the Third World (1983:268-269).

Why do major arms-producing countries strive to have a large share of Third World's military procurement? A host of economic and political reasons are offered in the literature. A potential arms-supplying country can use arms deliveries to implement its foreign policy objectives and increase its influence in a recipient country and in a region. At the same time, the recipient of arms may be able to promote its national security across its border and consolidate the power of the central government (Arlinghaus, 1983).

This view is held by many others who assert that the sales of weapons and military technology is an important policy instrument, which provides the arms-supplying nations with leverage to influence the policies of the arms recipient governments. Klare cites a White House press release of July 9, 1981 in which President Reagan refers to the transfers of arms as "an essential element of

[the U.S. Administration's] global defense posture and an indispensable component of its foreign policy" (Klare, 1982:45).

Military dependency, similar to any other type of dependency, entails some vulnerability. An embargo or blockade could be used to change the actions of dependent nations, and to restrict their autonomy. On the other hand, arms transfers can increase the power of the ruling regimes vis-a-vis the rival national political forces and the actual or potential power contenders in the region.

This relationship between the arms transfers to the World and foreign policy goals of the advanced industrialized countries is worth investigating further. Considering U.S. arms tranfer policies, one can observe a significant change in arms policies -- from armaments delivery in the form of grants-in-aids to sale of arms in exchange for cash. This change was part of the "Nixon Doctrine" which was based on the assumption that the independent Third World nations can fight their own wars without direct U.S. interference in their national affairs. Sending U.S. troops could be replaced by extending financial assistance, and sales of arms to Western allies in the Third World (Congressional Quarterly, 1980).

Partly, this new policy was carried into effect as the result of rising world oil-prices, and significant improvement in the financial abilities of the oil-exporting developing countries to pay cash for their arms. This was especially true for U.S. friends in the Middle East which acquired enough budgeting surplus through their oil exports

to spend on arms manufactured and sold by the United States. The "oil-for-arms" deals of the developing countries that have zealously started to trade their foreign exchange earnings for weapons are subjects of several studies (e.g., Congressional Quarterly, 1980; Albrecht, et al; 1979). It is pointed out that the post-1973 rise in world oil prices has enabled the oil-exporting countries to export arms and military technology with little or no restriction on the quantity of their demands. For economic reasons, western industrialized countries, especially France, have been selling arms in exchange for petrodollars.[1]

From the experiences of the U.S. and other major arms producers, it is clear that sales of domestically produced arms may help Third World countries to offset a fraction of the costs of production. The questions are whether Third World arms producers can compete with industrial countries actively involved in arms trade, and whether they can bypass the protectionist systems working against exports of weapons manufactured in the Third World.

The question of the sophistication of weapons delivered to the Third World arms buyers has also become relevant to the study of arms transfers. The most significant change in the North-South arms trade may be the recent decisions of the advanced arms producers (especially the U.S. and U.S.S.R.) to sell their technologically sophisticated weapon systems to their Third World allies. The U.S. supply of AWACs to Saudi Arabia and the Soviet

export of MIG 25's to Syria are recent examples of the new trends in arms transfers. Perhaps, the most important implication of these trends is the amount of combat-related damages which may be caused if these weapons are used in a war fought between the well-supplied developing countries. (Barnaby, 1976; National Foreign Assessment Center, 1980)

A recent example of a transfer of sophisticated weapons is the Iraqi's French-produced and French-supplied air-to-surface missiles operational on "Super Etendard". These missiles have been used by the Iraqis to strike at commercial vessels in the Persian Gulf, particularly near Kharg terminal, a major Iranian oil-loading facility. More dramatic is the use of these missiles in attacks against civilian targets in a series of offensive moves launched by the Iraqis. Some observers believe that the weapons in the arsenals of the combatants might have affected the violence of the Gulf war. Aside from the belief that complex weapons increase battle-related casualties, the main concern over the new trend in arms transfers to developing countries is that the more technologically sophisticated arms imports cause more serious dependency for spare parts and maintenance. Given that arms imports lead to new forms of dependency, why do developing countries continue acquiring arms so eagerly? A frequently given reason to justify arms build-up is that it makes a country safer by decreasing the liklihood of occurrance of internal or interstate armed conflicts. Next, the implications of military industrialization programs, and transfer of arms for national, regional and superpower

military confrontations are examined.

Armaments and Conflicts

Does militarization cause armed conflicts? Once weapons are accumulated, what do the leaders intend to do with them? Are these weapons used simply as a symbol of state power? Does the ruling regime use them to enforce its will on the opposition groups? Can internal conflicts be viewed as a determining factor of military build-up? A number of works have examined the use of arms against internal enemies of the ruling elite in developing countries (e.g., Klare, 1979; Eide, 1976; Stork and Jim, 1983). They report a few examples of subnational political conflicts which have affected the flow of arms to political factions led by minority groups in the Middle East and North Africa. The Kurds in Iraq were supplied by Iran, Israel, and the United States for their struggle against the Iraqi government. The Shah of Iran, in 1975, sent his well-equipped troops to end the revolutionary armed uprising in Oman, in an attempt to influence the outcome of the ongoing war between the pro-western ruling regime of Oman and its political opponents.[2] The United States is allegedly sending armaments to the groups opposing the leftist government in Nicaragua, and the Afghan fighters resisting the Soviet Union's invasion of Afghanistan.

The fact is that many frictions have emerged within developing countries among the rivals for power. To say that domestic rivalries are caused by military build-up may be an exaggeration designed to overlook fundamental

political problems. Transfer of arms to troubled areas may or may not inflict damage for the peaceful resolution of conflicts. The armaments-conflict relationships may represent a "vicious circle". When peaceful negotiation fails, the risk of armed conflicts will rise, and no doubt the demand for armaments will increase, which affects the frequency and severity of armed conflict.

These contentions show that there is a major problem related to the causal sequence of armament and internal conflicts. It is not clear whether the military build-up leads to political conflict or vice-versa. More generally, it is hard to say if the growing military spending of the developing countries is a cause or a consequence of potential interstate conflicts.

It can be properly argued that potential or actual conflicts are stimulated by militarization, as a number of scholars have done. Presumably arms races at regional levels lead to rising tension among neighboring rival states and eventually cause interstate conflicts. It is observed that the Soviet Union's rising military spending has induced the People's Republic of China (PRC) to increase its own military expenditures. The Chinese action has, in turn, worked as an incentive for the Indian military buildup. Besides, in response to Indian weapons acquisition, the military programs have been assigned top priority by Pakistani policy makers. This chain of action-reaction symbolizes a regional arms race (Muni, 1980: 45).

Usually, the regional arms races emerging in Third World areas are viewed as an extension of East/West

conflicts (e.g., Vietnam war; Korean war; Cuban missile crisis) or as a consequences of South-South conflicts (e.g., Arab-Israeli; Iran-Iraqi conflicts in the Middle East). Regardless of the underlying causes, the arms races in the Third World have taken two distinct patterns: significant increase in the arms imports and/or efforts to create new domestic arms industries or to expand the existing military-related industries.

One must look beyond a simple classification of civilian vs. military investments, and ask what makes investments in defense sectors of the economy different? One should keep in mind that investmets in both civilian and military sectors can take on quite different forms. For instance, certain civilian investments aim at capital-intensive, export-oriented, urban-based, heavy industries, while other types of civilian investments are directed toward labor-intensive, import-substitution, light industries. Similarly, one can not assert that all military programs entail high-technology skill-intensive manufacturing of military goods. As in any other industry, the level, rate and form of investments are subject to availability of resources, and national priorities. But unlike most investments in civilian industries, political considerations play a major role in determining how much should be spent, and which type of spending is most suitable (e.g., arms imports vs. domestic arms production). Conventional wisdom is that repressive and unpopular regimes are more likely to maintain strong military

forces to keep the status quo. Under such conditions, the government allocates a large proportion of national resources to defense in order to protect itself against political uprisings that might weaken its power. A proposition here is that military expenditures would be a function of how repressive a Third World government is.

To finance defense spending, the authorities may (1) use available resources required for investments in other public sectors such as health-care and education; (2) accept foreign military assistance; (3) borrow from foreign banks; and finally, combine all these options. Notice that military expansion through the first option has the most serious adverse effect on the economic well-being of the majority of the population. This occurs because the policy-makers have deemed it necessary to sacrifice welfare for security.

Basically, some controversies are centered on the socio-economic effect of defense-related investment in the Third World (e.g., its impact on social programs, the labor force, capital), while other disagreements are based on the trade-off between security, self-determination and defense spending. As a result of the fact that defense establishments are capital intensive, and require relatively highly skilled labor (e.g., scientists, engineers, technicians), military investments do not overcome the unemployment problem. Some researchers have argued that the sales of indigenously produced arms have positive effects on the balance-of-payments (O'Neil, 1983). Others reply that any export can have positive impact on

national economy, for the simple reason that any export-oriented domestic industries can increase employment and income. (Thorrson, 1982)

The decisions to embark on military industrialization in place of civilian development projects have to be based on the relative importance of military and civilian industries for increasing national military power and increasing the well-being of the people. The national planners must ask: What would be the macro-economic effects of spending in the defense sector? Who benefits from growth in civilian sectors, if it occurs? Here, the distributional aspects of national income are considered. Is there a trade-off between security and the well-being of the poor? Will more military spending produce more security? Does a military expenditures affect rate of economic growth adversely? Does large defense budget lead to militarization of society, and restriction of political freedoms? Does maintenance of large armed forces and modern defense industry increase military power? These questions and similar ones are concerned with the impact of militarization on society, economy, and polity of Third World countries.

Chapter Conclusion

In this chapter, I have attempted to present several questions and answers related to military expenditures and industrialization in the Third World. What might be learned from previous studies that can be useful in the conduct of my research? The political questions raised

regarding the effects of arms expenditures and production are quite challenging, and must be subjected to careful analyses.

In spite of the fact that I am aware of the merit of a case-study approach, and agree that country-specific studies are warranted to determine the consequences of Third World's arms production programs, I believe that most of the questions raised here are not answerable by a case-study approach. For instance, from a case study of Saudi Arabia, one can assert that the oil-revenue has enabled the Kingdom to expand its military power vis-a-vis regional rivals through the import of highly sophisticated weapon systems -- like AWACs -- from the Western arms suppliers. Evidently, the Saudi's government has even embarked on a massive installation of its own military production facilities.[3] Historical analyses can add a great deal to our understanding of countries that are undergoing a rapid process of militarization.

Nonetheless, studies from this perspective cannot be used in making generalizations about the relationship between military expenditures and Third World's development performance. In order to quantify macro-economic effects of militarization, I decided to adopt a cross-national approach to the study of Third World's militarization. Accordingly, several propositions based on some of the ideas developed in previous studies will be the subject of an empirical analysis in the next chapters.

It should be emphasized that this military build-up

creates political issues and as such cannot be treated as a neutral process. To improve the prospects of life in the LDCs, one should look for political solutions. Thus, it is equally important to examine political effects of military programs along with their economic and social impacts. I begin the analysis by first looking at economic performances of these sixty nations to determine the rate of economic growth achieved during 1965-1977. Is it true that countries with heavy defense burden have slower growth rates?

NOTES- CHAPTER THREE

1

Albrecht, U. et.al. 1979. "Arming the Developing Countries." International Social Science Journal. 28: 326-340. According to this paper, oil-producing countries have, in the past, financed R & D efforts of western arms producing corporations. For an explanation of Iran's loan of $75 million to U.S.-based Grumman Corporation to help finance the production of a new generation of aircraft--the "Tomcat"--see: Sampson, A. 1977. The Arms Bazaar, the chapter entitled, "The Arming of the Shah," pp. 271-292.

2

Stork, J. and Jim, P. 1983. "Arms Sales and the Militarization of the Middle East." MERIP. 13,2 (Feb.): 5-15. Stork and Jim look at the arms traffic in the Mid-east and observe that "in 1976, Iran shipped U.S. warplanes to Jordan which in turn transfered them to Morocco; Saudi Arabia supplied Somalia in 1977-78; Egypt has provided U.S. financed arms to Afghan opposition forces since late 1976; Libya has shipped Soviet equipment to Syria. Israel's supply of spare parts and equipment to Iran in its war with Iraqa probably has U.S. approval," (p. 9). For a detailed discussion of armament of "substate" conflict, see Bell, J. B. 1978. "Arms Transfers, Conflict and Violence at Substate Level," in Arms Transfers to the Third World, eds. U. Raanan et. al., Boulder, CO: Westview Press, pp. 309.

3

For a recent discussion of Saudi Arabia's military planning see: O'Sullivan, E. 1980. "King Khaled's Military City (KKMC)--Saudi Arabia's Defence Showpiece." Middle East Economic Digest. 1(August): 8-10. The article reports that the (KKMC) is located 40 km. from the Iraqi border and is planned to be used for internal security in case of political opposition movement against the ruling regime, and for the defense of Saudi's oil fields in case of foreign military attack.

CHAPTER FOUR

THIRD WORLD ECONOMIC DEVELOPMENT

Aims: This chapter focuses on some characteristics of Third World development. It begins with an examination of the most-commonly used indicators of economic growth (e.g. rate of increase in per capita income). Justification for data modification and adjustments such as conversion of GDP from national currencies to U.S. dollars, and converting GDP in current prices in to GDP in 1973 constant prices, rebasing of certain data series and different ways of calculating growth rates are discussed. Cross-national data on GDP at constant market prices for 60 LCDs for the period 1965-1977 are collected. The chapter then considers trends in economic performance of the LCDs by examining trends in the level of GDP, and growth rates of GDP for the entire period, and the two overlapping subperiods of 1965-1973; and 1973-1977. During 1965-1977, the direction of change in national output has been generally upward, since no Third World states show an economic decline as indicated by a negative or zero growth rate of GDP. Yet, the rise in the average 1965-1977 growth rate of GDP show a major difference from one country to another in size and in pattern. Notably national output of oil exporting countries increased much faster than all the other LCDs. On a regional level, the region with growth rates above Third World average are East Asia, Middle East, and South Europe. Cross-national comparisons and regional differences are studied in order to permit better understanding of economic systems within which the governments must make decisions about the size of the defense budget.

The development and growth theories are concerned with the problems of development, including lack of national resources. In a recent article on global resources and the causes of poverty in the Third World, the authors illustrate that contrary to popular opinion, developing countries are not resource-poor. In fact, a large percentage of the world's major resources -- for example

population, arable land, petroleum, uranium and minerals -- is concentrated in the developing world.[1] If this is true, the most serious problem of underdevelopment would be misallocation of resources and inability to use national resources optimally, rather than scarcity of mineral resources.

Certainly, a given economy grows as natural and human resources are directed toward more profitable investments. The assumption that economic growth occurs when governments use their resources more efficiently has increasingly challenged the desirability of militarization as a national objective. Questions that are raised include: Does MILEXP affect growth? Does MILEXP increase a nation's military power? How can developing countries achieve balanced economic growth with significant improvement in life styles of their people, assuming that they may be driven to increase their defense budgets for national security reasons? Such questions interest decisionmakers, researchers and the public; yet it is striking how little policy recommendation is offered on these topics.

Before seeking possible explanations for the fact that no censensus has been established in regards to MILEXP-growth link, it is necessary to address controversy over the rate of economic growth.

ECONOMIC GROWTH

While many aspects of the nature of economic development may be explored, one that seems to have attracted enormous attention is the rate of economic

growth. Rapid economic growth has become an important national goal. National economic planners ask how much growth, or how rapid a rate of growth is required for a Third World Country to equal the level of development of advanced industrial countries in a specific time frame. Among development economists and national planners[2], one can observe a series of debates on how growth could be sustained, and even be increased by a more rapid rate. Despite enormous efforts directed toward development issues, we do not have a clear understanding of what exactly generates rapid growth, or maintains it in the long run.

In the 1950s and early 1960s, the developmentalists argued that low levels of per capita income, and slow rates of economic growth which are common features of Third World's economies, are consequences of low levels of investments and domestic capital formation. These two phenomena -- investments and savings -- are necessary conditions for increasing levels of national productivity and income. Since increases in savings and investments increase productivity, productive factors which are unutilized or inadequately utilized must be better invested to increase total national output and attain higher rates of growth. The capital required for investment can come from foreign or domestic sources of finance. The underlying assumption of these earlier development theories was that national planners should concentrate on how to achieve a rapidly-growing or a steadily-growing types of economies. The question of distribution of the benefits of growth was

seldom addressed. Instead, the view that the newly acquired wealth would eventually "trickle-down" to the poor enjoyed a considerable importance. It was assumed that industrialization would ultimately narrow the gap between the poor and the rich within developing countries.

Furthermore, from the perspective of the "catch up" hypothesis in the earlier development writings, one would speculate that the gap between developing and developed countries would close eventually. This happens if Third World countries follow the same path to industrialization. This type of reasoning is well-represented in W. W. Rostow's book, The Stages of Economic Growth, in which he wrote that all countries pass through five major stages. Rostow spends considerable effort in telling his readers that economic development occurs by a succession of clearly specified processes. These stages of development are identified as: "the traditional society, the pre-condition for the take-off, the take-off, the drive to maturity, and the age of high consumption" (1960:4). Rostow is not alone in viewing economic development through successive stages. From a quite different angle, Karl Marx' s writings can be mentioned among the earlier attempts to present a "stages theory of development" from feudalism to capitalism to socialism.

Within the framework of the "catch-up" model, the main obstacles to rapid economic growth are lack of technology and inadequacy of industrial base. The rate and level of economic growth depends on the extent to which an

undeveloped country can imitate the experience of countries at higher levels of development. A "catch-up" model basically regards development to be a gradual and technical process, moving progressively forward in time. Therefore, high priority must be given to efforts for improving the capacity of less developed countries to make better use of their resources and intensify growth rate of national output.

However, the "catch-up" explanation of the development process has come under attack by many, including the dependency theorists. The principal writings in the dependency perspective suggested that the most notable omission of "orthodox development" theories is the absence of any discussion of the external constraints to development. These constraints might have led to the Third World's slowing-down of productivity growth, and in many instances have even caused "underdevelopment".

It should be kept in mind that developing states are, in varying degrees, confronted with fundamental problems concerning the openness of international markets for their products, the complexity and appropriateness of their scientific and technical infrastructure, the lack of capital and other related issues. It is no trivial nor simple task to find a development strategy that can be adopted to deal with all these problems. Yet, there is no reason to expect that the destinies of all nations at a lower stage of development should be guided by the experiences of the more developed nations. This brings us to a staunch critic of "stages theory of development",

Frank, who argues that

> It is fruitless to expect the underdeveloped countries of today to repeat the stages of economic growth passed through by modern developed societies, whose classical capitalist development arose out of pre-capitalist and feudal society (1969: xvi).

The arguments of the critics continue as follows. The earlier economic theories of development are almost static, while in reality the world has always been changing. The developing countries have a long and difficult way to go before they reach the level of growth of developed economies. An important part of the skepticism concerning the "Catch-up" theory arises from the fact that international circumstances (e.g. world trade systems) under which the developing nations must operate are quite different. Today's developing countries are confronted with a host of new problems such as monopoly of foreign trade reinforced through varied methods of protectionism against outside competition promoted by more advanced nations.

In support of their position, the critics argue that many affluent nations have enforced tariffs levied on imports, commodity quotas and similar trade barriers to protect domestic industries. In addition to adopting "new protectionist" policies, the industrialized countries have implemented discriminatory trade policies that act as impediments to economic growth in developing countries, particularly in those with an "outwardly directed" or "export-oriented" development strategy. A frequently-cited example of such discriminatory practise is the Most-

Favored-Nation (MFN) status granted by the U.S. government to friendly nations. In theory, MFN was devised to attack the complex problems of preferential treatment and discrimination, and to block any efforts to stimulate trade among a group of (e.g., western capitalist) countries. According to the proponents, what seems to be happening is that international trade laws and agreements -- such as General Agreement on Tariffs and Trade (GATT) -- have not been successful in putting an end to discriminatory trade practices.[3]

The assumption that these problems may come to the fore as serious obstacles to development objectives of the LDCs is at the center of the idea of formulating a New International Economic Order (NIEO). The NIEO emphasizes the need for revision of the international monetary system, monitoring international resource transfers from the rich to the poor nation, and coordinating major aspects of national economic policies from the aspect of how it affects the socio-economic policy objectives of all nations in the system. As long as the international system remains unchanged, developing countries will be unable to reach the level of development of the more prosperous nations (Ul Haq, 1981).

Numerous explanations have been offered for underdevelopoment or backwardness of Third World societies. Two opposing ones that we examine in this section are concerned with external or internal sources.

Orthodox economic theory tries to justify a belief that the difficulties of these societies are for the most part

of their own making, and they should be able to overcome their problems through better allocation of national resources. Third World governments can help bring about a higher growth rate by recognizing the range of activities that have been useful to the development of the advanced societies.

The second view states that only optimists would expect the level of development of Third World societies to reach that of the advanced countries. Under the present international economic system, the industrialized states which are the world's science and technology leaders have taken an aggressive approach to prevent others to catch up with or surpass them. Consequently, there is even increasing international competition amongst industialized countries to expand exports of their manufactured products. Helleiner believes that

> It is by now fairly predictable how the structure of trade barriers in the major industrialized countries is likely to evolve. Trade barriers are likely to continue to be the greatest in the sectors in which the developing countries have the most obvious comparative advantage and where transnational corporations are least present (1981:74).

There seems to be a conflict between the desire to keep international trade free, and the fear that a reduction of trade restrictions may be detrimental to indigenous production of goods and services.

We cannot quarrel with an argument made by "stages theorists" that the process of economic development takes a nation from an initial state to a higher state. It is easy

also to agree with the critics on at least one count. This movement depends not only on what stage a nation is in, and the manner by which it reached that stage, but on the development strategies of other nations. States must function within an inter-related and competitive international system, and in a world of increasingly diminishing natural resources.

INDICATORS OF DEVELOPMENT

There are those who believe that the rapid rate of economic growth (typically measured by percentage rate of increase in per capita output or income per capita) enables a developing nation to achieve higher quality of life through higher levels of national income per capita, more equitable income distribution, improved employment opportunities, and in general widespread provision of public goods such as education and health-care facilities.

According to some writings, the individual national governments can help to bring about higher growth rates by the elimination of obstacles against the operations of multinational corporations MNCs. The MNCs are assigned the role of "agents of development", which facilitate transfer of technology and managerial know-how to the Third World. There is a wide difference of opinion about the positive role of the MNCs in the developing nations. The critics have stated that the MNCs act to maximize their corporate profits, and in fact worsen socio-economic inequalities in the less developed countries. Thus, the MNCs hamper economic progress of Third World countries where they

operate (Barnet, 1974; Evans, 1979).

This conflict of ideas may partialy be due to the fact that there have been cases in the Third World where a country has achieved a high growth rate by implementing an open-door policy toward foreign corporations. This outward-looking, export-oriented strategy encourages foreign direct investment in domestic markets through a series of attractive investments such as quota-free trade systems, duty-free ports, and adequate infrastructure. On the other hand, there are fast-growing countries which pursue a protectionist economic policy discouraging foreign direct investment. Their goal is to support and develop indigenous industries free of the competition from foreign firms, and to reduce the danger of external dependence on outside producers of goods and services or on the suppliers of capital and technology.

Increasingly, researchers have questioned the real importance of rapid rates of economic growth, and point out that per capita output or income growth rate does not necessarily provide a fair income distribution, nor alleviate prevalent poverty in the Third World. The critics of rapid economic growth rates indicate that the government may generate more national wealth in larger quantity and more rapidly, but the wealth may be concentrated in the hands of the elite. Democratic distribution of rapidly acquired national wealth has been considered as a major factor in Third World's development success. Not only how fast wealth is generated is of importance, but who reaps the benefits from development efforts of the country has

become an indication of success of development strategies. The assumption here is that the more widely the benefits are shared, the higher the quality of development.

The attack on the orthodox development theories is not confined to theoretical arguments. A great number of empirical works reject the narrow definition of earlier growth theories, while emphasizing social values of development, particularly stressing the need for incorporating the distribution of benefits in their operationalization of the concept of development. For instance, Chichilnisky (1980); Wheeler (1980); Othick (1983); Hicks and Streeten (1979); among others have chosen to focus their attention on social indicators of development. Liu (1980) constructs a "quality of life" (QOL) index with "five major components -- social, economic, energy and environmental, health and education, and national vitality and security" (1980:1). Liu then takes a sample of 33 developed countries, and rank orders them according to QOL indicators. Overall, the U.S. ranked first for providing the top standard of living and satisfying basic human needs of its citizens.

Another recent attempt directed at construction of such measures is The Physical Quality of Life Index (PQLI). The PQLI is a composite measure that focuses on three prevailing social conditions -- infant mortality, life expectancy at age one, and literacy (Brodsky and Rodrik, 1981; Morris, 1979).

Given varied economic policies of national governments,

one is bound to find differences in their economic performance. A country may stress full employment, relatively equal income distribution, and low rate of growth. Another government may opt to escalate its growth rate, eradicate illiteracy, and provide minimum social services, while neglecting unemployment and income inequality.

Growth may be an important dimension of development, but it is nonetheless sensible to assign high priority to social goals of developemnt programs. Measures necessary for a "balanced", "equitable" growth would be a combination of rapid economic growth and plans for redistribution and restructuring. Specific targets relating to development can be aimed at the elimination of mass illiteracy, absolute poverty, hunger, and at enhancing employment opportunities, and improving health of all the population. Improved living standards through increasing social expenditures to benefit the poor along with higher rates of economic growth are critical for development.

In fact, the experience of many countries shows that the nature of economic growth, as indicated by such factors as the quality of life, the rate of unemployment, leisure time, and the like, is of great significance. Developing nations may find themselves under pressure to seek economic plans which promote rapid growth, and the problem for policy makers is how to achieve the aim of higher growth. The acceptance of one basic indicator may facilitate the process of development planning, but there is no question that the analysis of quantitative growth can not be a

substitute for more rigorous study of the social consequences of economic growth. Unfortunately, it is very difficult to construct a composite measure which permits an international comparison of life standards, particularly in view of the disagreement over what constitutes a good quality of life.

When the question is raised of what actually explains a high standard of social and economic life, the focus of the research tends to turn to the efforts of government to better satisfy basic needs of its citizens. There are writers who present a humanitarian or Basic Need-oriented view of development theories (e.g., Sandbrook, 1982). The major problem is that the composite measures of socio-economic indicators are likely to be constructed by emphasizing certain human needs more than others. In this context, one has difficulty assessing the relative importance of non-monetary indicators -- such as the number of telephones, the stock of radio recievers, the number of automobiles, steel consumption, or protein consumption in a country -- that are required for a better life standard. What should be included in an index of development? The answers to such question are often subjectively determined because the interests and ideological beliefs of the researchers may affect how they conceptualize the development of a society. Ultimately one has to examine the roles of all factors including political freedoms.

The enormous international differences in previously mentioned factors makes the whole issue of development a

multi-faceted problem which is closely tied to economic, industrial and political conditions. New concern about growing poverty in the Third World, and the slow-down of economic growth has mounted recently. The United Nations Committee for Development Planning reported that

> [T]he rate of economic growth of developing countries, which in spite of difficulties had averaged 5.3 per cent over the period 1976-78, fell to 4.8 in 1979 and to 3.9 in 1980. In many developing countries per capita real income has not merely stagnated but has fallen, sometimes very sizeably- in part, the result of a 7 1/2 per cent deterioration in their terms of trade in 1980. No improvement in performance is in sight for 1981. Thus, in the first year of the Third World Development Decade, it is forecast that the increase in per capita income will be less than one third of the target solemnly adopted by the international community (1982:2).

In the next section, in an attempt to illustrate Third World's economic situations, we will examine the rate of economic growth, as commonly measured by the per capita Gross Domestic Product, and identify developing countries with more rapid growth of national product over a specific time period, 1965-1977, and also countries with better performance with respect to other indicators of development. Of course, our purpose here is not so much concerned with a test of competing development theories, but rather to ask whether a heavy military burden can bring Third World's development and economic growth to a halt.

MEASURING ECONOMIC DEVELOPMENT

Before identifying the developing countries that grew faster than others, and that are ahead in their ranking of growth rate, or the absolute levels of productivity, it is

essential to discuss some technical issues concerning the computation of growth rates, base-year selections, and the sources of data used in our empirical tests.

Since there is no clear and generally acceptable definition of socio-economic development, we start with the assumption that, for analytical purposes, per capita income (or per capita Gross Domestic Product) is fundamentally a measure of economic development. Gross Domestic Product (hereafter GDP) is Gross National Product minus output produced abroad to which residents can lay a claim.

Yet, we must carefully discuss major inherent weaknesses of per capita income as a single measure of development. According to McGranahan (1972) and Atkinson (1975), the per capita national income is subject to at least three major limitations.

First, per capita income is an aggregate concept and does not adequately reflect the social side of development. Some countries can have a well-balanced economic development covering agriculture as well as manufacturing sectors and a relatively healthy and educated population, while other nations with the same per capita income can be developed in only one part of the economy (e.g., extraction and export of natural resources) and the mass of population may continue to live in either absolute poverty or relative poverty if the fruits of 'development' are primarily enjoyed by a small fraction of the population. Hence, the commonly-used procedure of comparison of GDP

levels, per capita GDP levels, or GDP growth rates, does not provide information about all aspects of economic performance of a nation. While these yield some kind of explanation in regard to development performance, they leave out the consequences of growth. To deal with this problem, we shall incorporate an indicator of income inequality and an index of social inequality in developing societies along with GDP per capita.

Second, per capita national income is a monetary concept, and ignores values that lie outside the monetary sphere. Thus, the "real" values of things that may differ from their prices are not adequately reflected in monetary figures. Unfortunately, we have no way to solve this problem, since data on non-monetary or "real" value of national productivity is unavailable.

Third, national income is a market-based concept, and refers to production for exchange in domestic and international markets. As such it might not apply readily to centrally planned socialist economies, or goods and services that are produced for personal consumption in non-market sectors of market economies. Part of economic transactions, particularly non-market exchanges, are not covered by national accounting systems. For our study the third problem is not serious since no centrally planned economies were included in our sample. Moreover, production for one's own consumption is not a widespread practice. Frost writes that "[T]here is of course the very rare case of the people with no response to the market at all. There is one community in Africa, for example which specializes

in producing exclusively for its own use extremely comfortable lounge chairs of wood and leather." (1961:74)

There are other less-pressing problems that affect the use of the per capita national income as an international measure of development. These additional difficulties arise from technical problems of pricing the product in an inflationary market, and of converting the income of different countries into a single international currency to reflect national purchasing power. Fortunately, several solutions have been proposed to deal with these methodological issues. Finally, there is the major problem of lack of data or inferior-quality data on national income in many countries. It is these last technical difficulties to which we now turn our attention. As is widely expressed, international comparisons of economic growth and similar aggregates of national accounting systems require cross-country comparability with regards to their valuation.

Some Remarks on GDP Figures

Several international agencies provide the principal national accounts aggregates at current and constant prices for a number of developing countries regularly. These figures are "nominal" or exchange-rate-converted measures. What difference does it make whether the figures for Gross National Product are in exchange-rate-converted U.S. dollars or in Purchasing Power Parity-converted international dollars?

According to the researchers directing the United Nations International Comparison Project (ICP), there is a clear tendency for the international-dollar figures to be relatively higher for low-income countries. That is, the exchange rate converted figures tend to understate the real GDP's of low-income countries relative to high-income countries.[4] ICP researchers have attempted to go beyond the comparisons of nominal GDPs. They argue that comparisons relying on exchange rates do not explicitly reflect the differing relative purchasing powers of the currencies over all goods and services (Kravis, Heston and Summers, 1982: 9).

In the absence of sufficient data on purchasing power equivalents, Gross Domestic Product at constant market prices was chosen for the present study as the indicator of real product. According to OEDC, most developing countries compute their national accounts estimates mainly by the production approach. In theory, other aggregate measures such as net domestic product (NDP) or GDP at factor costs, are more suitable for estimating the rate of growth of national income, but GDP at market prices is used to calculate growth rates of "real" national income in our empirical analysis. The main reasons for this selection are data availability and the absence of critical statistical biases (OECD, 1982).

The next task was to choose appropriate conversion factors for expressing in one common international currency the income of different countries. The conversion factors selected were the effective exchange rates utilized in 1973

for carrying out foreign transactions. GDP in current prices and in national currencies were taken from the World Bank's data and then were converted to GDP in 1973 constant US dollars by the use of exchange rates published by the World Bank in World Tables, 1980.

In addition to concerning ourselves with the biases arising from the use of exchange rates for expressing in a common currency the GDP of various countries, we needed to be cautious about the choice of the common base year.

The Choice of Base Year

The term base year is often used to refer to the year to which an index number of 100 is assigned. There are many ways of using an index. For example, some governments report cost of living indexes and consumer price indexes periodically in order to show relative changes in the value of consumer goods and services purchased by urban low-income people. In selecting 1973 as the base year, we are trying to reveal the relative change in prices and costs between 1973 and any other year in the period under investigation.

Would it have made a difference if we had chosen another year instead? If so, is there any reason for preferring one base year to another? These are questions to which we turn.

In calculating real income in U.S. dollars, we used "implicit GDP deflators" taken from the World Bank's dataset. These index numbers are generally reported for

different base years. It was thus necessary to shift all index numbers to the same base year. We transformed the base of our time-series to 1973 in order to compare previous and subsequent changes with conditions at that year.

Looking at table 4.1, we see that the selected base-year's prices and exchange rates have no significant effect upon the measure of economic growth of Iran -- one of the countries included in the sample. The prices were not constant during the 13-year period, but the relative fluctuations of the time-series remained unchanged, since each current value is multiplied by the same constant factor. It must be noted that the estimation of "constant" values of the levels of GDP depends on the selected base-year's prices and exchange rates. Indeed, a change from 1973 to 1975 increased the level of income measured by real GDP values from nearly $295 billions to $526 billion of United States dollars. Although, the ratio of real GDP in 1973 to the real GDP in 1975 is slightly smaller when 1975 is the base year (i.e., 0.913) than when 1973 is the base year (i.e., 0.914), this difference is so small that it can be ignored. For the calculation of growth rate, we conclude that since the relative values of GDP and the growth rates are similar, it makes no difference which year is chosen as the base.

In this study, I decided to adjust "nominal" GDP for the years 1965-1977 to "real" GDP in 1973 prices so we could determine the growth of real GDP for three time spans: (1) the long run of 1965-1977, (2) the short run of

1965-1973, (3) the short run of 1973-1977. Real GDP shows the market value of each year's output measured in terms of constant dollars, that is dollars which have the same value, or purchasing power, as in the base year. For cross-country comparisons, we argue that real GDP is clearly superior to nominal GDP as an indicator of the economy's productive performance over a period of time. In the pre-1973 period, we need to increase or inflate the price level, since the prices in 1973 are higher than previous years. For the post-1973 years, the GDP figures in current prices are higher, and have to be reduced or deflated. The real GDP figures hold prices constant for all years between 1965 and 1977. Growth rates of individual countries and of country groupings are then estimated.

It is clear that no single year can be considered to be the most appropriate base year, as regards the price

Table 4.1
Comparison of Iran's GDP growth rates and GDP levels estimated in current prices and exchange rates and in 1973's and 1975's prices, for 1965-1977

Year	Gross Domestic Product		
	Nominal (current prices & exchange rates)	Real (1973 prices & exchange rates)	Real (1977 prices & exchange rates)
1965	$ 6.54	$ 11.97	$ 21.32
1966	7.18	13.35	23.78
1967	7.96	15.22	27.11
1968	9.09	17.12	30.50
1969	10.22	19.09	34.00
1970	11.67	21.63	38.52
1971	13.39	21.08	37.55
1972	16.69	23.98	42.71
1973	27.01	27.02	48.12
1974	46.78	28.76	51.22
1975	52.65	29.56	52.65
1976	64.68	32.72	58.28
1977	76.02	33.56	59.78
Total	$349.90	$295.06	$525.54
Average	$ 26.92	$ 22.7	$ 40.43
GDPpc		$772.2	$1,375.0
GDP'		1.8	1.8
Ratio of 73/75:	0.513	0.914	0.913

Note: 'Total' refers to total Gross Domestic Product in Billions of US dollars over the entire time period of 1965-1977, and 'Average' denotes the average Gross Domestic Product in Billions of US dollars. GDPpc is the per capita GDP, and GDP' is the growth rate of GDP over the 13-year period, calculated by GDP'= (GDP77-GDP65)/GDP65. A blank in the table shows that the item is not applicable.

structure and the exchange rate for all developing countries. The justification given for the selection of 1973 as the base year, and the procedures employed for adjusting data and rebasing data series like military expenditure series originally based on a different year, has to be offered. Some readers may suggest that 1971 would have been a better base year because 1971 is the mid-point of the 13-year period, and that it is a 'typical' or 'average' year and most appropriate standard for comparison.

I decided that it is not necessary to select a 'normal' base year. In fact, 1973 was preferred to 1971 for quite the opposite reason that it was a non-normal year reflecting remarkable change in the international price structure as a result of the Arab oil embargo. The bias in estimating the GDP growth rates arising from the inadequacy of exchange rates as a conversion device, the poor quality of GDP data, and the arbitrariness of the base year cannot be avoided, but shall be remembered in the conclusions. I believe that one ought to take the best available figures for the analysis, and be aware of the quality of the data used.

Rate of Economic Growth

At the risk of belaboring the obvious, let us make some explanatory comments on the procedures used for the calculation of the growth rates. The growth rates of many variables such as military expenditures and of GDP are used in the empirical testing of MILEXP-Growth propositions. An

illustration of the calculation of GDP growth rates should suffice to make the point. A number of ways have been devised to obtain rates of economic growth (see Jones, 1978).

The conventional way of defining the rate of growth of a variable is as the ratio of the increment in the variable, over a given time period (t2 - t1) to the original level at time t1. Thus, one can define the growth rate of GDP as (change in GDP/GDP). One must, of course, specifiy the time period over which the increment in GDP is measured. Consider table 4.1, which illustrates the change in GDP, ΔG, of Iran as time, t changes. The increment, t, in time is 13 years, and ΔG measures the increment in the GDP during the 13-year and $\Delta G/G$ -- i.e. (1.80) -- is the proportionate rate of growth of the GDP between 1965 and 1977.

Notice that to obtain the growth rate of GDP for the Iranian data, I had to relate the 13-year increase to the beginning year (1965) GDP. Such rates allocate the 13-year increment in GDP in such a way that the proportionate increase is the same in each year of the 13 years. The greater the national product at the end of the period, the greater should be the absolute increment during the specified time period. Therefore, the absolute increase in national product, or GDP, is proportional to the GDP at the beginning of the year, and the proportion is the same each year.

The various calculation procedures are described in the

following equations:

$$(4.1)\quad GDP' = GDP(t) / GDP(t) \qquad \text{for time period(t)}$$

$$(4.2)\quad G' = GDP(t) / GDP(t) * 1/t \qquad \text{for each and every year (t)}$$

$$(4.3)\quad AVEG' = (((GDP')_1 + \ldots + (GDP')_n)/n) \qquad \text{for n years}$$

where, GDP' is the overall growth rate of GDP; GDP is the change in GDP during the specified time period; GDP is the begining year's GDP; G' is yearly average growth rates; and AVEG' is the average annual growth rate. The natural logarithms of G' and AVEG' were also calculated.

Considering data on 1977's and 1965's GDP in millions of 1973 U.S. dollars, and using equation [4.1], overall rates of growth for the sixty countries in the sample were calculated. The problem with the overall growth rates is that they are "end-period" growth rates. The increase in GDP between 1965 and 1977 are divided by the GDP in the begining year (1965). This way of defining growth rate does not consider the levels of GDP in the intervening years. The major problem with such growth rates is that they are influenced by the 1965 and 1977 values, and can thus be unreliable. If the levels of national income in any or both of those two years are extreme values, and affected by certain non-normal, seasonal or cyclical factors, these rates would not represent general trends (World Bank:1984).

An alternative way of measuring growth rates is by calculating the arithmetic mean of annual growth rates for each year in the time period, using the formula[5] [4.3].

This growth rate (AveG') is preferable because it considers the values of GDP for each and every year in the time period.

When I correlated the two (overall and average annual) growth rates for the 60 LDCs, I found that they are positively and strongly related (R-squared= +0.96). About 96% of the overall growth rate is explained by the average yearly growth rate. In addition, the regression of these two growth rates, after a logarithmic transformation of both variables, yielded similar results (R-squared= +0.99). I used both growth rates in major analyses, and found out that the empirical results are almost identical.

The comments given above were intended to clarify the computational procedure employed for the calculation of growth rates. I estimated the measures of economic growth in both per capita and absolute terms and I chose a base year which offsets the effects 1973's drastic increase in world oil prices.

Comparing Economic Growth Rates

Table 4.2 shows the total GDP and per capita GDP for the sixty developing countries in the sample for the 13-year span of 1965 to 1977.

In previous work, the levels of economic development have been measured by either total Gross Domestic Product (GDP) or per capita GDP. According to the data presented in table 4.2, India has the highest GDP which reflects the level of productivity of national resources. Moreover, the

Table 4.2

Total GDP, and GDP Per Capita for Selected Developing Countries, 1965-1977.

RANK a	COUNTRY code/name	TOTAL GDP (US $mill.)	GDPPC (US $)	RANK b
01	02 IND	$ 71827.68	$ 128.44	49
02	14 BRZ	69028.43	701.01	14
03	49 MEX	43874.07	836.99	11
04	12 ARG	34996.77	1453.50	04
05	56 IRN	22696.15	772.22	12
06	54 TUR	19391.32	533.24	20
07	21 VEN	15592.03	1396.44	05
08	07 INO	14037.72	117.38	52
09	53 GRE	13824.02	1561.14	02
10	34 NIR	11619.07	170.38	44
11	08 KOR	11371.16	355.30	30
12	10 PHI	9719.78	260.35	37
13	11 THI	9356.13	253.53	39
14	55 EYP	9309.39	279.07	36
15	16 COL	9085.12	420.36	25
16	59 SAU	8660.60	1345.44	06
17	19 PER	8416.05	603.77	17
18	58 ISR	8243.98	2694.05	01
19	22 ALG	7857.77	550.76	18
20	57 IRQ	6783.67	695.65	15
21	09 MAL	6710.66	606.53	16
22	04 PAK	5682.02	90.45	55
23	37 SUD	3350.47	230.02	40
24	20 URU	2980.88	1062.82	09
25	28 GHA	2765.20	306.53	33
26	41 ZAI	2613.58	118.03	51
27	39 TUN	2485.12	475.37	22
28	60 SYR	2376.56	365.10	29
29	42 ZAM	2365.37	549.11	19
30	46 GUA	2313.48	424.50	24
31	29 IVO	2296.92	414.26	26
32	06 BUR	2278.85	82.20	57
33	17 ECU	2265.38	367.20	28
34	26 ETH	2158.38	82.37	56
35	30 KEN	2075.13	175.50	42
36	44 DOM	1968.28	467.76	23
37	05 SRI	1842.27	145.40	47
38	40 UGA	1732.56	171.72	43
39	38 TAN	1693.94	122.69	50
40	23 CAM	1360.74	195.36	41
41	43 COS	1339.65	755.68	13
42	36 SEN	1276.87	282.46	35
43	01 AFG	1271.00	100.80	53
44	52 TRI	1257.39	1209.12	07

45	51	PAN	1252.23	841.71	10
46	45	ELS	1245.99	350.70	31
47	13	BOL	1151.84	260.35	38
48	15	CHI	1053.77	110.61	08
49	50	NIC	1048.82	522.84	21
50	03	NEP	943.32	80.52	59
51	18	PAR	929.72	389.44	27
52	48	HON	827.98	300.07	34
53	27	GAB	787.18	1556.64	03
54	33	NIG	641.68	155.15	45
55	47	HAI	559.00	129.69	48
56	32	MAW	445.57	95.00	54
57	31	LIB	441.73	317.28	32
58	35	RWA	300.63	81.12	58
59	23	BUU	285.56	77.82	60
60	25	CEN	249.13	151.66	46

Note: Total GDP is in millions of 1973 US dollars, populationis in thousands, and GDPPC is in constant 1973 US dollars. The countries are rank-ordered on the basis of highest to lowest total GDP (rank a) and of highest to lowest GDPPC (rank b).

Source: The World Bank, World Tables, 1980: pp. 30-227.

table reveals that India , the most populated country in the sample is ranked the 49th state in terms of GDP per capita. It is clear that wealth differences among these countries are enormous. Some countries grew more than the others but their real GDP per capita was affected by their higher population growth. Israel, here, is shown to be the country with the highest GDPpc because its real per capita GDP was $2,694. This indicates a high level of national wealth as compared to $77.82 that is the real GDPpc of the poorest country (Burundi).

Regional Growth Rates In The Third World:

Table 4.3 contains data for each of the six geographical areas. By looking at this table, we can identify some regional differences in the levels of real GDP, and real GDPpc. The distribution of the Third World's growth of productivity has been uneven.

During 1965-1977, the range between the highest and lowest percent shares of Third World total GDP was 43.4% (for the 20 Latin American and Caribbean countries) and 8.35% (for the 19 South African nations). Notice that both geographical areas are composed of approximately the same number of countries. In so far as regional shares of GDP is the criterion for the relative level of development, there is a great disparity between the six geographically specified areas. The first impression is that the considerable differences existing among various regions are due to systematic effects of climate, the size and

Table 4.3

Regional Shares of Average and Total Levels of GDP
1965-1977

BY * REGION:	Average Levels of GDP	Average Levels of GDPpc	Total Levels of GDP	Total Levels of %
1. AF	2,139.9	297.4	40,659.3	8.35
2. ES	10,240.0	317.8	51,195.5	10.52
3. LA	10,580.7	684.8	211,614.9	43.48
4. ME	9,614.0	668.0	57,684.1	11.85
5. SE	13,819.8	1,596.1	41,459.3	8.52
6. SA	12,018.7	100.8	84,130.7	17.28
All Third World	8,112.4	507.3	486,743.8	100.00
BY MAJOR a: EXPORTERS				
OPECs	11,556.2	788.4	138,674.6	28.49
Other	7,251.4	437.0	348,069.2	71.51
NICs	38,465.5	836.6	115,396.3	23.71
Other	6,514.9	489.9	371,347.5	76.29

Note: * Refer to table 2.2 for a description of regional codes. a This classification is according to the United Nations Conference on Trade and Development (UNCTAD)'s Handbook of International Trade and Development, 1983. NICs refer to major exporters of manufacturers: Agentina, Brazil, and South Korea. OPECs refer to major petroleum exporting countries: Algeria, Ecuador, Gabon, Indonesia, Iran, Iraq, Mexico, Nigeria, Saudi Arabia, Syria*, Trinidad & Tobago*, and Venezuela. Countries that are marked by an asterisk are not members of Organization of Petroleum Exporting Countries.

Source: The World Bank. (various years).The World tables.

Table 4.4

Third World Economic Growth Rates, Annual Average percent change, by region for 1965-1977

	Growth Rates			
	Overall (percent)		Average Annual (percent)	
	GDP	GDPpc	GDP	GDPpc
1. AF	85 %	36 %	6.54 %	2.77 %
2. ES	140	78	10.77	6.00
3. LA	84	35	6.46	2.70
4. ME	160	80	12.31	6.15
5. SE	110	65	8.46	5.00
6. SA	55	18	4.23	1.38
All LDCs	94 %	43 %	7.23 %	3.31 %

Note: See the notes for table 4.3.
Source: Same as table 4.3.

natural resource endowments, and past historical evolution of a given region (e.g., a region comprised of predominantly former colonial states).

Table 4.4 presents information on the overall growth rates of GDP and GDP per capita for the entire period of 1965-1977, and average growth rates of GDP and GDP per capita for each of the six regions. The overall growth rate of GDP for the entire sample was 94% in absolute and 43% in per capita terms. Considering the overall percent growth rates of GDP, one can see that the Middle East grew at a high rate of 12.31%, symbolizing the largest growth rate in the Third World. Other regions to exceed average growth rate were East Asia (10.77%) and South Europe (8.46%).

The data show that the lowest regional growth rate was achieved by countries in South Asia in absolute (4.23%); and in per capita terms (1.38%). Of the individual countries within these regions, Gabon grew at the staggering rate of 372%, followed by Saudi Arabia (270%), South Korea (217%), and Iran (180%). Indeed, the overall GDP growth rate varied considerably from one country to another. Gabon has the third highest per capita GDP ($1556.64), based mainly upon its export of oil and minerals. Gabon's real GDP, in 1965, was $328.6 millions; and in 1977 was $1552.5 millions. Gabon is ranked very low (53th) in total real productivity for the longer period of 1965-1977.

Niger, one of the most thinly populated nations in North Central Africa, with $641.68 millions GDP for 1965-1977, is ranked 54th after Gabon, has one of the lowest GDP

per capita(45th), and has the slowest growth rate with an overall increase of 14%. The slow economic growth of Niger might in part be due to the 1972 drought condition in that state. It will take years for the productivity of Niger's smaller economy to reach the productivity of Gabon's larger economy. Niger must grow 29 times faster than its present growth rate in order to reach the level of Gabon's productivity. Let us examine the growth rates more closely.

When one considers per capita GDP growth rates that are adjusted for the growth rates of population of various regions, considerable differences among regions, and among countries are still observed. From 1965 to 1977, Third World output in real terms grew in all six regions. The oil-exporters and the major exporters of manufacturing goods made considerable gains in real productivity. Let us examine the annual economic growth rates across regions.

From table 4.4, we can observe that Middle East and North Africa grew annually at 12.3% in GDP, and 6.15% in GDP per capita from 1965 to 1977. Consequently, it is the fastest growing region. East Asia has grown in relative strength, with an average of 10.8% per capita a year. The lowest rate is registered in South Asia [around 4% annually]. The regions with growth rates above the Third World average are the developing countries of East Asia, Middle East and South Europe. The Middle East averages (12.3%) are much higher than the Third World averages (7.2%). The imbalance in the regional shares of Third World may have arisen from great changes in energy costs, when

the oil prices went up sharply in the mid-1970s. Why should we be concerned with these differences?

It may be important for individual countries to be aware of how other countries achieved higher rates of growth. Cross-national analyses of developing nations, accompanied by case-specific studies of the countries that have been successful in achieving higher level of development, may reveal the general patterns, and may help developing countries in their socio-economic planning. In the development literature, greater attention is given to economic activities of the "high growth" category of nations, most notably the Newly Industrialized Countries (NICs), and members of the Organization of Pertroleum Exporting Countries (OPEC). Table 4.5 shows that the income gap between less developed countries has widened with the rise of the share of income of surplus-oil exporting Middle Eastern countries. Also, NICs in Latin America, Southern Europe and South Asia were able to grow rapidly and increase their shares of the Third World income. The experience of NICs suggest that countries may grow faster as a large proportion of domestic output is traded in international markets (or as export industries are expanded).

Let us consider the figure used to calculate the percent shares of GDP in 1965 and 1977, for each region and selected country-groupings. Between 1965 and 1977 in the developing countries, total GDP increased from about $336,135 millions to about $672,240.2 millions (that is, by

Table 4.5

Regional Shares of Average and Total Levels of GDP, 1965 and 1977

Region/ Country Grouping	GDP Levels		GDP % Shares		
	1965	1977	1965	1977	% chg
1. Af	$ 30,745.0	$ 53,691.4	9.2%	8.0%	-1.2
2. EA	32,755.3	77,345.5	9.8	11.5	+1.7
3. LA	144,341.7	290,351.0	42.9	43.2	+0.3
4. ME	34,683.6	88,726.3	10.3	13.2	+2.9
5. SE	26,968.3	57,009.2	8.0	8.5	+0.5
6. SA	66,641.4	105,116.8	19.8	15.6	-4.2
OPEC	90,377.0	198,885.7	26.9	29.6	+2.7
Other	245,758.3	473,354.5	73.1	70.4	-2.7
NICs	72,831.9	169,741.5	21.7	25.3	+3.6
Other	263,303.4	502,498.7	78.3	74.7	-3.6
All LDCs	$336,135.3	$672,240.2	100.0%	100.0%	

Note: A minus sign (-) indicates a decrease, and a plus sign (+) shows an increase. A full stop (.) is used to indicate decimals, and a comma (,) is used to distinguish thousands and millions. Finally, a ($) sign denotes U.S. Dollars.

$336,105 million), an average increase of 7.7% a year. Four out of six geographical areas managed to maintain or increase their shares of Third World output. In 1965, Latin America and the Caribbean dominated the Third World economy, producing 42.9% of its output. As this share increases only slightly to 43.2% in 1977, other regions have risen in economic importance. In the Middle East, especially, there was a noticeable increase [2.9%]. In South Asia and South Africa, the economic situation deteriorated. The percent share of countries in these two regions as a whole fell by 4.2 and 1.2 percent.

On the whole, when one considers GDP growth, most developing countries are shown to be behind the major exporters of manufactured goods and the petroleum exporters. Since low-income Third World countries, especially in South Africa, show a slow growth, one can raise the question of whether "growth" rates of income are influenced by the "levels" of income.

To what extent levels of income affected the growth rates of output can be determined by looking at the matrix of GDP levels and growth rates (see table 4.6). Eleven out of 26 low-income nations --0 in which the GDP was under $300 -- were among those with low-growth in GDP over the entire time period. Correspondingly, no low-income country achieved a high growth rate of GDP. On the other hand, four high-income nations -- namely, Brazil, Gabon, Iran, and Saudi Arabia -- experienced relatively rapid growth. As it was seen before, most of the countries registering large

Table 4.6

Classification of Third World Countries, According to the Rates of Growth in GDP, 1965-77

GDP Growth Rates	Countries in Each Growth, and Income Level Group		
	Low-Income under $300	Mid-Income $300 to $700	Hi-Income over $700
Negati -ve			
0.0- 0.5	AFG(.4), NEP(.3), BUR(.4), ETH(.5), NIG(.1), SEN(.3), SUD(.5), UGA(.5), ZAI(.3), HAI(.3) CEN(.5)	GHA(.2), ZAM(.3)	URU(.2), CHI(.3), TRI(.4), ARG(.5)
0.6- 0.9	IND(.6), PAK(.8) SRI(.6), PHI(.9) BOL(.8), BUU(.7) CAM(.8), EGY(.9)	PER(.7), LIB(.7) ELS(.8), HON(.6) NIC(.8)	VEN(.9), PAN(.9), MEX(.9)
1.0- 1.5	INO(1.2), THI(1.4) KEN(1.2), MAW(1.1) NIR(1.0), RWA(1.1) TAN(1.0)	MAL(1.3), COL(1.0) ECU(1.4), PAR(1.0) ALG(1.0), IVO(1.2) TUN(1.2), DOM(1.5) GUA(1.0), TUR(1.2) SYR(1.3)	COS(1.1), ISR(1.0), GRE(1.0)
1.6- 1.9		IRQ(1.8)	BRZ(1.8), IRN(1.8)
2.0- 2.9		KOR(2.2)	SAU(2.7)
3.0- 3.9			GAB(3.7)
4.0- & OVER			

Note: Income level is the average real GDP per capita, 1965-77. Growth Rate is equal to (GDP77-GDP65)/GDP65*100.

gains in GDP levels were chiefly major exporters of raw materials and manufactured goods.

Evidently, the main explanatory variable for growth rate is not the level of income, since there is no systematic relationship between these two factors. To conclude that there is a systematic association between GDP growth rate-GDP levels, we must see all or most high-income nations in the high-growth categories, and all or most of the low-income nations in the low-income categoies. Since the growth rates of income may be influences by the nature of income distribution, the question investigated is whether there is any relationship between income inequality and growth rates of income.

The country groupings used in table 4.6 are based on average income levels in 1965-1977. The fastest growing countries are Gabon, Saudi Arabia, and South Korea. A high rate of economic growth has not necessarily led to a more egalitarian income distribution or to a democratic political system. In many of these states poverty, inequality and political disorder continue, despite their fast growth.

The data presented in table 4.6 again indicate that some of the developing countries have grown faster than others. A detailed knowledge of political characteristics and development strategies of these nations would certainly enable us to explain these discrepancies. Some countries (e.g., India) have been able to rely on a policy of relative self-sufficiency in regards to industrialization. Others (e.g., Brazil) have relied on industrial countries

to provide technology and capital needed to develop and support indigenous industries.

Economic Growth Overtime

Table 4.7 shows the average annual rates of growth in GDP and GDP per capita for the time period of 1965-1977 and the two subperiods. The figures are compiled for selected countries and each region. Comparing the rate of productivity growth for the pre-1973 and post-1973 periods, a general trend in the Third World is observed. GDP tends to rise rapidly in 1965-1973, and to grow gradually in 1973-1977. In all regions, economic growth remained positive in the period 1973-77, but reflected a greatly moderated pace. All in all, average GDP growth in developinbg countries fell from 6% a year in 1965-1977 to 5% a year in 1973-1977. Why has GDP growth decelarated? Economic deterioration has affected most countries in all regions at all levels of income.

Another notable element in the growth of GDP has been a per capita output decline by half a percent. The reason for a less serious relative decline in per capita GDP may have originated in part from a slow-down of the population growth rates in many developing countries. Five regions show a similar trend -- a fall in the rate of growth of output during the latter period of 1970s. The most remarkable is in the Middle East and North Africa. This region continued to increase its output in all three periods. In fact, it is alone in showing a rise in

Table 4.7
Third World Growth Rate in GDP and GDP per capita, By Region and By Other Classifications, for Selected Periods

Regions Grouping:	1965-1977	1965-1973	1973-1977	% change[a] (77-73)
(1) AF				
GDP	85(6.5)	47(5.2)	23(4.6)	-0.6
GDPpc	36(2.8)	19(2.1)	10(2.0)	-0.1
(2) ES				
GDP	140(10.7)	80(8.9)	33(6.6)	-2.3
GDPpc	78(6.0)	46(5.1)	21(4.2)	-0.9
(3) LA				
GDP	84(6.5)	52(5.8)	21(4.2)	-1.6
GDPpc	35(2.7)	24(2.7)	9(1.8)	-0.9
(4) ME				
GDP	160(12.3)	75(8.3)	50(10.0)	+1.7
GDPpc	80(6.1)	39(4.3)	33(6.6)	+2.3
(5) SE				
GDP	110(8.5)	78(8.7)	18(3.6)	-5.1
GDPpc	65(5.0)	52(5.8)	9(1.8)	-4.0
(6) SA				
GDP	55(4.2)	32(3.6)	17(3.4)	-0.2
GDPpc	15(1.1)	10(1.1)	7(1.4)	+0.3
Country Groups:[b]				
(1) OPECs				
GDP	150(11.5)	73(8.1)	43(8.6)	+0.5
GDPpc	86(6.6)	41(4.6)	29(5.8)	+1.2
Other Countries				
GDP	80(6.1)	49(5.4)	20(4.0)	-1.4
GDPpc	32(2.5)	22(2.4)	8(1.6)	-0.8
(2) Major NICs				
GDP	148(11.4)	89(9.9)	29(5.8)	-4.1
GDPpc	91(7.0)	59(6.6)	18(3.6)	-3.0
Other Countries				
GDP	91(7.0)	52(5.8)	24(4.8)	+1.0

GDPpc	41(3.1)	24(2.7)	12(2.4)	+0.3
ALL THIRD WORLD				
GDP	94(7.2)	54(6.0)	25(5.0)	-1.0
GDPpc	43(3.3)	26(2.9)	12(2.4)	-0.5

Note: GDP and GDPpc refer to the % growth rate of GDP and of GDP per capita respectively, measured by considering GDP at constant 1973 market prices. The numbers in the parenthesis are the estimates of average annual growth rates.

[a] denotes % change in average annual growth rates 1977-1973.

[b] OPECs refers to majorpetroleum exporting countries, and NICs indicates major exporters of manufacturers. For a list of these nations, refer to footnote of table 3.3. Note that we used a hyphen (-) between years (e.g., 1973-1977) to signify an entire time period, including the begining and end year.

productivity in the years 1973-1977.

The post-1973 output slow-down was most noticeable in South Europe, where the output declined drastically by (5.1%) after 1973. The slow-down is also more serious in Newly Industrialized countries than elsewhere, measured in terms of absolute levels (-4.1%) rather than in terms of per capita (-3.0%). Since 1973, the slow-down has been less significant in South Asia's absolute levels of GDP. Indeed, nations in this region shows a rise of productivity measured by growth rates of GDP per capita by (0.3%).

Some facts are readily identifiable. One is that oil has been an important resource, since the exception in regard to slow-down of productivity is the pertroleum producing nations. Energy-exporting countries were at the center of growth in the Third World economy. This is revealed when we look at the data on OPEC. While GDP among OPEC countries increased at an annual rate of approximately 11.5% between 1965 and 1977, the GDP among other Third World countries increase at an annual rate of 6.1%. Their average annual growth rates increased in both absolute and per capita terms between 1965-1977 and during the two sub-periods. During the longer run (1965-1977), the GDP of oil exporting nations grew by 150%, while the GDP of other countries grew by about half of that amount (or 80%) over the same time period.

Since raw materials can be more easily sold in foreign markets, the main mineral exporters[6] tend to have favorable trade balances. Indeed, raw materials and agricultural products account for a predominant part of production and

exports of most developing nations. Liberia, Phillipines, and Chile (iron ore); Bolivia, Malaysia (tin); Ethiopia, Uganda (coffee); Senegal, Niger (peanuts); Sudan, Egypt (cotton); Zaire, Zambia (copper); and Saudi Arabia, Iran and other petroleum exporters. As a result, a large percent of labor force in most of these countries is still engaged in agriculture or mining.

The movement to manufacturing sectors has been underway in a few developing states, notably in South Korea, India, Israel, Thailand, and Brazil, which are exporters of manufactured goods, electronic equipment, machinery, motorcycles and so forth. These countries have achieved remarkable success in the exports of manufactured goods and tend to show a rapid rate of economic growth as compared with other non-oil exporting nations. Overall, the trade orientation of developing countries seemed to affect the rate of GDP growth. In some countries, the aim has been to promote both industrial and agricultural exports. Government policies were designed to improve trade-related infrastructure such as transport systems in order to facilitate production for export as a central aspect of development.

The above discussion suggests that measures taken to reduce imports and expand exports may induce a reallocation towards tradeable goods in the long run. As is well-known, exports of large volumes of military equipment and weaponary are very restricted. Only a handful of advanced industrial states have been able to benefit from sales of

arms. Leaving aside these special cases, access to international markets for export purposes has been limited for products manufactured in the Third World. Of course, the issue of export cannot sufficiently explain cross-national differences in economic performance.

General explanations of these inter-regional differences in growth rates are difficult to find. Part of explanation of the considerable fall in growth rates of a given country may arise from the government's domestic policies and actions (e.g., defense policies). We can also argue that a considerable slow-down in productivity growth can occur because of actions taken by other governments (e.g., increases in oil prices). Whether or to what extent growth was a response to domestic policies or to international situations is hard to say. At any rate, steps must be taken at international and national levels to improve economic performance of developing nations, since both domestic and foreign factors can affect the rate of growth.

The fall or rise in the average growth rate of GDP for 1965-1977 show a major difference from one country to another in size and in pattern. For instance, these nations are different in the sectors (e.g., manufacturing vs. non-manufacturing) that are most affected by the slow-down in growth. Later, I shall attempt to find whether the slow-down was caused by the rise in military expenditures or not.

On a national basis, in several African countries, the rate of GDP growth fell sharply down to near zero or below.

The accute effect of economic decline has been felt by the poorer developing countries, especially in most of East African states- Kenya, Malawi, Rwanda, Uganda, Tanzania -- where a large percentage of productive force is still in agriculture. In contrast, in many Middle Eastern states the rate of growth of output rose. These conclusions may have significant implications for our analysis of MILEXP-growth. In the preceding chapter, I identified the Middle East as a region with one of the highest levels of military expenditures. Since countries in the region have shown a growth rate of MILEXP and GDP above Third World averages, it would be interesting to analyze why they grew faster, and why they spent more on the military sectors. A major concern expressed about the consequences of rising MILEXP is that it may adversely affect either or both the level and growth rate of GDP. Thus, nations with a heavy military burden ought to have low growth rates. Does the slow-down in productivity growth occur in times of War and active arms build-up?

Conclusion

I admit that beneath these group averages lies a wide range of differences. In an analysis of aggregate data, one cannot evaluate actions and policies hidden behind statistics. Nevertheless, important general trends can be identified. The first is that the rate of increase in national income is relatively small in some high-income countries (e.g., Argentina, Chile, Trinidad & Tobago, Uruguay) and relatively large in other high-income

countries (e.g., Gabon, Saudi Arabia, Brazil, Iran).

In the sample of sixty LDCs, 42.3% low-income developing economies had very slow growth. No low-income country is among the rapidly growing economies with growth rates of higher than 1.6%. In contrast, only four out of fourteen high-income countries had slow-growth. Most of high-income developing countries (42.8%) had a steady growth rate. This reflects the fact that rapid economic growth rates do not necessarily influence the level of socio-economic development. On an overall basis, the direction of change in national income has been generally upward, since no Third World countries show an economic decline as indicated by a negative or zero rate of growth in GDP.

The second point is that not all countries shared the same experience. The cases of the capital-surplus oil-producing countries such as Saudi Arabia are unique, because other nations do not show such a significant increase in absolute value of output. Energy-importing countries have suffered from the direct impact of post-1973 increases in oil prices. Certainly, the fast growth in Saudi Arabia in the 1973-1977 period is attributable to the rises of oil prices. Keeping in mind that the price of other raw materials also rose in the 1970s, we can expect to see countries with an abundance of natural resources to have greater posibility for the faster growth rate. In general, the resource-rich countries that were able to make use of their resources showed a fair growth.

Tentatively, then, I have to conclude that despite increased spending in the defense sector, the growth rate of GDP does not seem to be affected negatively in the Middle East. Yet, it can not be argued that economic performance of these nations might not have been better if their abundant resources were devoted mainly to non-military industrialization. It is wise to separate the experience of oil-exporting countries from that of oil-importing countries. Given the abnormal state of the economies of oil-exporters, notably the main capital-surplus oil-exporters such as Saudi Arabia, we must be cautious in generalizing on the basis of the characteristics of these exceptional cases. These countries do not represent the experience of the rest of the developing world. Their share of aggregate GDP for all developing countries amounted to over one fourth of the total in 1965-1977.

In short, developing countries are confronted with a number of such similar problems as population growth, poverty, scarcity of resources, lack of technological base. Yet, they are quite different in regards to political systems, culture, history, socio-economic policies of the ruling governments, and other possible determining factors of growth. The deterioration in economic conditions of a number of LDCs is in part due to policies pursued by national government. To solve their development problems, they can attempt to tackle them on a national basis. As suggested before, less-productive expenditure can be cut. The main task of the next chapter is to determine whether

the size of military budgets of LDCs relative to their national income influences their economic growth rates.

NOTES- CHAPTER FOUR

1
Ferraro, Vincent, et al. 1982. "The Resource Costs of Global Poverty." International Journal of Social Economies. 9,5: 3-35. The data for this analysis comes from: Barney, G.O. et.al. 1980. The Global 2000 Report to the President: Entering the Twenty-First Century. A report prepared by the Council on Environmental Quality and the Department of State, Washington, D.C.: U.S. Government Printing Office, various pages.

2
For a recently compiled and relatively comprehensive list of work related to development and economic growth see: Gran, Guy. 1983. "A Bibliographical Guide to Development Studies". in Development By People. New York: Praeger, pp. 357-470.

3
For a discussion of conflicting ideas concerning international trade reforms see Blake and Walters (1983:11-50)

4
The use of official exchange rates to estimate national income and productivity has been thrown in to question by the United Nations International Comparison Project (ICP). ICP shows that comparison of GDP in real terms can be misleading because such comparisons underestimate national incomes of the poor countries relative to those of the rich ones. The reasons are that the prices of nontraded goods are lower in poor countries. The exchange-rate-conversions of GDP to a common currency do not reflect actual purchasing power of national currencies. Purchasing power parity (PPP) is defined as the number of currency units required to buy goods equivalent to what can be bought with one unit of the currency of the base country, usually the U.S. dollar in the ICP project. (see Kravis, et al, ICPIII,World Product and Income ,1984)

5
The actual formula used to calsulate mean of the annual growth rates of GDP is :
AVEG'=(((GDP66-GDP65)/GDP65)+((GDP67-GDP66)/GDP66)+((GDP68-GDP67)/GDP67)+((GDP69-GDP68)/GDP68)+((GDP70-GDP69)/GDP69)+((GDP71-GDP70)/GDP70)+((GDP72-GDP71)/GDP71)+ ((GDP73-GDP72)/GDP72)+((GDP74-GDP73)/GDP73)+ ((GDP75-GDP74)/GDP74)+((GDP76-GDP75)/GDP75)+ ((GDP77-GDP76)/GDP76)/12)

6
The information provided about major raw materials exported by the countries in our sample are based upon various editions of the World Today Series published for all geographical regions by Stryker-Post publications in

Washington, DC.

APPENDIX 4-A
National Currencies of the Countries in the Sample, in the World Bank's Units of Counts

01	AFG	Millions of Afghanis
02	IND	Millions of Indian Rupees
03	NEP	Millions of Nepalese Rupees
04	PAK	Millions of Pakistan Rupees
05	SRI	Millions of Sri Lanka Rupees
06	BUR	Millions of Kyats
07	INO	Billions of Indonesian New Rupiahs
08	KOR	Billions of Korean Won
09	MAL	Millions of Ririggits
10	PHIL	Millions o Philippine Pesos
11	THA	Millions of Bhat
12	ARG	Millions of Argentine Pesos
13	BOL	Millions of Bolivian Pesos
14	BRZ	Millions of Cruceiros
15	CHI	Hundred Thousands of Chilean pesos
16	COL	Millions of Columbian pesos
17	ECU	Millions of Ecuadoran sucres
18	PAR	Millions of Guaranies
19	PER	Millions of Soles
20	URU	Millions of Uruguayan New Pesos
21	VEN	Millions of Bolivares
22	ALG	Millions of Algerian Dinars
23	BUU	Millions of Burundi Francs
24	CAM	Billions of CFA Francs
25	CEN	Billions of CFA Francs
26	ETH	Millions of Birr
27	GAB	Billions of CFA Francs
28	GHA	Millions of Cedis
29	IVO	Billions of CFA Francs
30	KEN	Millions of Kenya Shillings
31	LIB	Millions of Liberian Dollars
32	MAW	Millions of Kwacha
33	NIG	Millions of CFA Francs
34	NIR	Millions of Naira
35	RWA	Millions of Rwanda Francs
36	SEN	Millions of CFA Francs
37	SUD	Millions of Sudanese Pounds
38	TAN	Millions of Tanzania Shillings
39	TUN	Millions of Tunisian Dinars
40	UGA	Millions of Uganda Shillings
41	ZAI	Millions of Zaires
42	ZAM	Millions of Kwacha
43	COS	Millions of Costa Rican Colones
44	DOM	Millions of Dominican Pesos
45	ELS	Millions of Salvadoran Colones
46	GUA	Millions of Quetzales
47	HAI	Millions of Gourdes
48	HON	Millions of Lempiras
49	MEX	Millions of Mexican Pesos
50	NIC	Millions of Cordobas
51	PAN	Millions of Balboas
52	TRI	Millions of Trinidad & Tobago dollars

53	GRE	Billions of Drachmas
54	TUR	Millions of Liras
55	EGY	Millions of Egyptian Pounds
56	IRN	Billions of Rials
57	IRQ	Millions of Iraqi Dinars
58	ISR	Millions of Isareli Pounds
59	SAU	Millions of Saudi Arabian Riyals
60	SYR	Millions of Syrian Pounds

CHAPTER FIVE

RELATIVE MILITARY BURDEN

Aims: This chapter begins with a discussion of major quantitative studies of Third World MILEXP. These empirical analyses are reviewed and critiqued in order to permit us to better understand the reasons why there is no consensus concerning the consequences of military burden in developing states. Attention then turns to the measurement of defense burden, as it relates to the Third World. Next, cross-national data are used to estimate average defense burdens of 60 developing states for 1965-1977. The empirical evidence illustrates that most Middle Eastern states are among states with the heaviest defense burden, and that rising military burden is seen in all 60 developing states regardless of the level of national income. Finally, simple models are tested across 60 Third World nations for the period of 1965-1977 and two subperiods of 1965-1973 and 1973-1977. The findings indicate no support for the often-emphasized hypothesis in the literature that there is a positive association between military burden and growth in developing states.

In chapter two, a significant increase in Third World military spending was revealed. This chapter examines the effects of MILEXP on economic growth rates of 60 developing countries for 1965-1977. The consequences of defense spending for economic growth and development have been studied before in the literature of political science and economics. The first goal of this chapter is to summarize various arguments concerning the effects of Third World's militarization programs, based on empirical results.

In chapters five and six, attention is turned to the

following topics: (1) the magnitude of government military spending and their effects on GDP, and (2) whether there are common factors such as level of national per capita income, size of population, involvement in international conflicts that might explain the size of and the disparate pattern of military expenditures. This section examines each of these broad topics in view of data collected for sixty developing nations.

It is asserted that Third World leaders devote much of their country's resources to defense due to the uncertain and confusing character of present international order. Military solutions have thus become the supreme instrument against external threats and domestic unrest. One of the problems which faces government planners is trying to determine optimum level of MILEXP in the face of political tensions.

In many developing countries, lack of sufficient resources nessecitates reduction of less-pressing governmental expenditures, and requires efficiency and imaginative planning. The issue of MILEXP is an important one, and is part of the general question of national security considerations for all nations. How much should a government spend on defense? Is there a positive association between military power and levels of MILEXP? It is certainly plausible that under certain circumstances militarization would not only increase military power but promote development.

Indeed, in the 1960s, development theorists considered the role of the military in the process of development to

be of great importance. A good example is Samuel P. Huntington's classic book, Political Order in Changing Societies, in which he states that

> The military is typically the most modern and cohesive force in the bureaucracy of a centralized monarchy....In [the] early stages of political modernization, the military officers play a highly modernizing and progressive role. They challenge the oligarchy, and they promote social and economic reform, national integration, and in some measure, the extension of political participation. They assail waste, backwardness, and corruption, and they introduce into the society highly middle-class ideas of efficiency, honesty, and national loyalty (1968:202-203).

Of course, there is no assurance that the military would remain an agent of modernization. If a ruling regime has no interest in industrialization, one might reasonably expect to find little or no relationship between the organization of or size of the military and the level of development in a Third World society. Given this assumption, what type of military investment is profitable from both economic and political standpoints?

According to development economists, many economic factors must be considered to decide which types of investment are good for the economy. These factors include the ratio of domestic to foreign investment, extent of job creation, export potentials and extent of import-substitution, the ratio of domestic/foreign labor in the industry, level of technology, the availability of raw materials, the extent of available foreign economic and technical assistance, and the level of self-sufficiency achieved. Political scientists, however, have their own

list of priorities, which include the extent of political and military power, diplomatic relations with neighboring countries, ties with the superpowers, the threat of internal opposition to the regime, and other factors shaping foreign and defense policies of nation-states in the contemporary international system.

As the first step, a brief overview of contradictory theoretical assumptions and empirical findings is presented. I shall look at previous works that have incorporated politico-military as well as socio-cultural factors in their analyses. This is followed by a section on constructing an empirical model to test several propositions about MILEXP/GROWTH interaction.

What is Known About the Consequences of Military Spending?

The primary purpose, here, is to analyze the extent to which social scientists have tested the assumptions underlying the issue of militarization, and the effects of military spending in The Third World. Some points must be made concerning the scope of the literature reviewed here. First, attention is mostly confined to cross-national work. Empirical studies of the effects of military spending have been undertaken by defense economists, political scientists, peace researchers, policy analysts, and other researchers working for various governments or for various nongovernmental and/or intergovernmental institutions such as the United Nations. Indeed, one of the significant characteristics of extant works on the issue of economic consequences of MILEXP is that they include contributions

from a wide range of desciplinary fields.

Despite the conduct of a great number of systematic analysis of this topic, a review of these studies reveals inconsistent findings about the effects of national defense spending in developing countries. It is reasonable to assume that the main reasons for this inconsistency have been methodological and ideological differences among the researchers. Methodological dissimilarities may have been caused by different periods of observation, different operationalization of the same variables, use of different control variables, different data sources and analytical techniques.

Is it possible that the inconsistency of results is a function of the multidisciplinary approach to the study of militarization? Certainly, one limitation of such approach is that academic fields tend to have their own vocabulary, and this makes it difficult to coordinate efforts among researchers who unintentionally get involved in duplication and overlap of studies. This, however, can not be considered as the underlying reason for the lack of consensus in the academic community concerning governmental spending on defense. Disagreements exist even among the scholars within a single discipline (say political science). This happens because there is a certain amount of difference concerning the way we define, and then measure abstract concepts such as militarization, poverty, wealth, development, equality, freedom, and so forth. These concepts may convey different images to different human

minds. To avoid misconception, one has to avoid the use of loosely defined terms and ambiguous statements.

Leaving aside methodological dissimilarities for the moment, I must emphasize that previous cross-national work on the subject of economic consequence of military spending has produced two major findings. The first is that military investment affects economic growth positively. The second is that investment in military sectors leads to economic losses for the developing economies.

These contradictions justify a more detailed study of the relationship. Research on the association between development and arms expenditure is at an early stage of progress, and the existing contradictory findings warrant a more detailed analysis of the research problem. It is becoming increasingly obvious that the costs of the rising global military buildup cannot be ignored by those interested in Third World development and the efficient use of world resources.

It is also noteworthy that even the empirical tests of military spending based on similar statistical techniques have provided contradictory evidence of the possible consequences of large military budgets. The relationship between MILEXP and economic development appears to be extremely complex. Consequently, one should look at all possible dimensions including political and economic ones.

Military Expenditure and Development

Benoit's Model

Some scholars argue that increasing level of MILEXP may lead to more security and rapid development. The most

notable proponent of this argument is Benoit (1973, 1978). Since this argument can have obvious policy implications for Third World countries, it is crucial to test its validity. In a widely-cited cross national analysis of MILEXP-growth link, Emile Benoit discovered that a positive relationship exists between the average defense burden[1] and the growth rate of 44 developing countries[2] over the time period of 1950-1965. The author deals with the economic effects of military expenditures and production of arms in developing countries. Unfortunately, major politico-military implications of increasing military spending are largely excluded from this quantitative investigation.

The most interesting statistical finding of this analysis is that, contrary to common expectations, there is not an inverse relationship between heavier military burden and lower rate of economic growth in the two time periods: (1) all available years between 1950 and 1965, and (2) all years within the period 1960-1965. Benoit's finding of a positive correlation is mainly based on simple and multiple regression analysis.[3] He reports that

> The crucial evidence in this matter was the findings that the average 1950-1965 burdens (defense as a percent of national product) of 44 developing countries were positively, not inversely correlated with their growth rates over comparable time periods: i.e., the more they spend on defense, in relation to the size of their economies, the faster they grew- and vice versa. This basic correlation was strong enough so that there was less than one chance in a thousand that it could have occured by accident (1973: PXIX).

He pays some attention to two possible control variables in his attempt to test the spuriousness of the

positive two-way association. He thus focuses on one aspect of "bilateral external resources," namely "government-to-government economic programs," and "investment rate" as two possible third variables which may have affected the original relationship between military spending and growth rate.[4]

Benoit performs partial correlation and stepwise regression analyses, and concludes that

> The empirical evidence supports our contention that defense exerts an influence on growth not only directly but also through its influence on investment and foreign aid (Benoit, 1973: 79).

Criticism of Benoit's Model

A number of scholars have criticized Benoit's study (e.g., Amsden, 1977; Ball and Leitenberg, 1979; Hagen, 1972; Huisken, 1983; Luckham, 1979). They claim that the observed relationship between higher military spending and growth may be spurious, and that the association could have been statistically elaborated if other variables along with the indicators of foreign aid, and investment rate were introduced into the analysis as control factors (Huisken, 1983:13).

In a recent empirical cross-national test for 50 developing countries in 1965-73, Smith and Smith hypothesize that a high level of military spending retards growth. The authors conclude that similar to Benoit's finding of a positive relationship, military spending has a positive effect on growth, although their findings are extremely weaker than Benoit's. The researchers suggest

that

> The small direct effect of military expenditures on growth was outweighed by the indirect effects of a depressed saving ratio so that the total effect was negative (Smith and Smith, 1983: 15).

Amsden (1977) criticizes Benoit's study on the grounds that economic growth achieved through higher levels of defense expenditures cannot be viewed as an element of economic development. Such growth involves "increased emiseration of the poorest people", and does not indicate long-term economic progress for several reasons, e.g., "dependence on imported technology and food" (p. 759).[5]

One other problem with Benoit's model, according to critics of his work, relates to the contradictory findings for the two time periods under investigation. In the multiple regression analyses, the defense burden has a rather strong positive effect on growth rate in the shorter run, but the strength of association is not the same in the longer run (Hagen, 1972: 15). As I shall discuss later, one must pay attention to the different findings in the short-run versus the long-run.

Much criticism of the model is also directed to the causal linkage between military programs and economic growth. Since association does not equal causation, military spending and economic growth can be positively and strongly correlated, but this finding cannot be interpreted as demonstrating that an increase in military spending causes a higher growth rate. Some critics argue that military programs generate "forced savings" by diverting resources from less-productive welfare spending of the

governments to more productive military investment programs. If so, military spending can offset economic growth positively.

At any rate, this is not empirical evidence for hypothesis that economic growth of Third World countries is a function of their high military expenditures. Many other factors must be accounted for. It is possible that countries with higher growth rate spend more on their military. Two possibilities must be investigated. (1) Is it true that the more resources are devoted to the military, the more prosperity and security is generated; or (2) Is it the case that more wealth leads to higher military spending, and in turn to greater political tension among states?

As mentioned in the preceding chapters, at the center of much of the controversy about the development-armament link lies different viewpoints concerning what consitutes 'development', and what the best development strategies are.[6] Some scholars stress the goal of a higher rate of economic growth to 'catch up' with the developed world. Others stress 'development' in terms of greater equality, improvement of the life of the poor, and ultimately alleviation of poverty.

Not suprisingly, the review of empirical studies of development demonstrates that ideological differences among the researchers have affected the conceptualization and operationalization of indicators of development. It would be wise to separate the questions of development and

growth. As one of the critics of Benoit's model mentions, it may be true that military spending has a positive effect on the growth rate, but it does not mean that it has no other negative effect for a Third World society. It is equally important to find out whether the military burden affects the quality of life in developing countries (Hagan, 1972: 14).

Opportunity Costs of Military Spending

Equally important is the question of the opportunity costs of military spending, which has been empirically investigated in developing countries and in developed countries. Russett (1982) addresses the question of trade-off between military spending and several types of federal civilian spending (e.g., health and education) in the U.S. to test whether defense spending preempts resources that might otherwise have been invested in civilian sectors. He concludes that high levels of defense spending did not seem to affect rates of investment in selected civilian sectors, but this should not be interpreted to mean that there is no trade-off between military spending and other types of civilian spending at all levels of government, i.e., federal, state and local levels.[7]

In a cross-national study, Gottheil (1974) examines the consequences of rapidly growing military expenditures of Middle Eastern countries. He uses the Harrod-Domar model to measure the military burden in five Middle Eastern countries (Egypt, Israel, Iraq, Jordan, and Syria) for the years 1960-1969. The author reports an estimate for 1980

military burden of these countries, assuming that annual rates of growth for the period 1970-1980 are similar to the annual growth rates of 1960-1969; and that military expenditure/GNP ratios are equal to the 1960s ratio through the ten year period. The conclusion of this study is that "the gun-butter trade-off can be no more apparent" (Gottheil, 1974: 511).

A similar test of the consequences of military spending is Askari and Glover's (1977) study of "the annual loss of GDP attributable to past and present military expenditures" of the developing countries for 1953-1973. The Leontief-Harrod-Domar model is employed to measure opportunity costs of defense spending. It is found that along with increasing defense expenditures, the "losses of GDP for the Third World as a whole had grown to nearly $103 billion in 1973." The Far-East and the Middle East are the two regions with the highest losses in GDP.[8]

In another cross-national analysis, Dabelko and McCormick (1977) examine the relationship between defense spending, on one hand, and education and health spending, on the other hand, for the years 1950-1972. The level of economic development and regime-type are included in the analysis as intervening variables. It is found that the level of economic development of a nation does not affect the opportunity costs of defense, contrary to the assumption that the richer countries would be less affected by the cost of diverting resources to the military programs at the expense of the civilian programs. The type of regime as a control factor explained some differences in

opportunity costs of military spending. Some regimes have decreased their opportunity costs for military spending in favor of health and education expenditures.

In another article, Deger and Smith aim at showing that high levels of military spending are not a source of economic growth for less developed countries. The study reveals that military spending of 50 LDCs "had a small effect on growth through modernization effects and large negative effects through savings," (1983: 351).[9] It seems that military spending may help an economy to grow at a more rapid pace but cannot necessarily bring about a higher level of development for a Third World society.

From this brief overview, one can conclude that the issue of the impact of military spending in developing nations has not been neglected. Yet, statistical findings associated with previous cross-national studies do not provide conclusive evidence against or for the rise of MILEXP. Believing that there are still avenues open for further research, I set forth to examine the MILEXP-Growth link. To this end, I first attempt to estimate how serious the Third World defense burden is.

Some Comments on the Measurement of the Burden of Defense

In measuring relative defense burden of different countries, I follow the most common practise of estimating military burden in terms of the ratio of military expenditure as a percentage of GDP. One can obtain either a single year estimate or an average defense burden over a

definite time period. As it is done in this study, most cross-national researchers prefer to use estimates averaged over a specified time period rather than for a single year. Other factors must also be considered for the calculation of defense burden. For instance, from the overall governments defense budgets one must exclude military aid extended by foreign sources. Researchers at SIPRI, who have reported the military data used in this analysis, have been concerned with the fact that, in calculating a state's defense burden, military spending ought to be kept free of foreign military aid received from outside sources.

Of course, there are other considerations for the calculation of defense burden. One should not neglect the social costs of having a large military forces. Kennedy (1983) has traced back this concern to the writings of classical economists and political philosophers. Many classical and modern scholars have attempted to find answers to the numerous questions concerning economic productivity of soldiers, and social costs/benefits of maintaining professional soldiers. The opinions on the value of military personnel vary from highly optimistic to extremely pessimistic. On one hand, Adam Smith -- the 18th century laissez-faire economist and philosopher -- held that soldiers are unproductive workers. Soldiers are maintained by the public through taxes paid to governments who tend to spend a high proportion of their tax revenues on the military. On the other hand, John Baptiste Say, in trying to explain the costs of war, takes issue with Smith's contention by pointing out that "Smith calls the

soldier an unproductive worker; for not only does he consume the products necessary for his maintainance, but ...he is called upon to destroy, without any personal advantage to himself, the fruits of others' hard labour" (Say, 1803,ch. 7 quoted in Kennedy, 1983:14)

To what extent are these views of the costs of training and maintaining soldiers applicable to the Twentieth Century? Can we measure social and economic costs of modern soldiers? How seriously is the burden of defense affected by such costs? Do the researchers confront these issues when they are measuring defense burden? To estimate burden, do we need to make adjustments for conscription and reserve military manpower?

It is easy to see that the use of "conscripts" or "reservists" can lower the cost of military personnel and understate the military burden of a nation. It seems reasonable to say that in calculating the defense burden of Third World nations, one has to estimate extra-budgetary personnel costs of conscripts. Otherwise, the estimates of the burden of defense would be biased downwards since Third World nations allot a small amount of money to the conscriptees. A simple test was tried to find the size of this bias in the sample through an examination of published data from one source.

In the Military Balance, the International Institute for Strategic Studies (hereafter IISS) reports the total number of men and women serving in the armed forces of many countries. This source also specifies whether these

countries maintain regular (all volunteer, selective, conscript) forces, and/or irregular (militia, reserve, paramilitary) forces. After obtaining descriptive information of this kind from the IISS, I realized that approximately one-third in this sample of developing states meet at least part of their military manpower requirements through conscription. Only five nations in the sample of 60 Third World states maintain entirely conscript forces. The results of this simple test implied that the bias due to disregarding the low personnel costs of conscripts and reservists is negligible in 55 out of 60 states.

Of course, one must consider the labor composition, wage scales and employment opportunities in civilian sectors of developing economies before assessing the opportunity costs of maintaning large defence forces. As SIPRI suggests, "in a country with chronic under-employment the opportunity cost of a conscript is likely to be low (though it will probably be nonzero); in countries with a labor shortages it will be close to the average wage or salary (1983: 192). The assumption is that the opportunity cost of a conscriptee is what s/he could produce in other sectors of economy. Yet, in cross-national analyses it becomes extremely difficult to account for the differences in the size and composition of military forces. Here, for example, one has to look at the extent to which these sixty nations are confronted with the problems of unemployment, labour shortage, and underdevelopment.

Another related issue is that one cannot always

assume that countries with conscript military forces devote a large proportion of their military budgets to the maintainance and development of defense facilities and equipment rather than military personnel costs.[11] It is possible to observe a combination of very low pay of conscriptees and extremely high salary scales for top military officers in developing states. If so, maintaining a conscript military force will not cut military manpower costs. What is more important is that military establishments can offer better salaries that make them more attractive. This would result in an income gap between military personnel and civilian workers. The use of higher pay scales for the military sectors in the less developed countries can widen the gap between their military personnel and the rest of the labor force. This gap may in the long run lead to the establishment of a military elite as the most privileged social group with significant political and economic power.

One way to test this contention is to ask whether large military spending leads to higher income inequalities. Such a test would tell us if the rise in MILEXP contributes to uneven income distribution in the Third World. Considering that the growing gap may lead to domestic conflicts, one can argue that more spending on the military sector does not necessarily lead to internal stability and order. Instead, it may create inequalities among citizens, stimulate distrust, and perhaps encourage political unrest. These are important issues to be examined

carefully.

The task of data collection on unemployment rates, labour shortages, and military personnel composition for 1965-1977 period for all 60 countries was beyond the scope of present study. Adding these variables would involve the use of either new (possibly national) data sources or strong assumptions about the relevant coefficients when the data are missing for some cases. Therefore, these extentions are left to future work.

It is also important to investigate types of military investment as well as the dollar amount of military expenditures. Some developing countries (e.g.,Israel) have invested in military industries and are able to export manufactured arms to other Third World nations. Domestic production of arms for export is an important consideration which will be discussed in the next chapter. To ensure comparability with previous studies, I shall follow the common practise of measuring burden as the ratio of MILEXP to GDP, expressed as a percentage.

Third World Relative Military Burden

At this point, it is natural to ask which developing country or group of developing countries have a high military burden. Is it to be expected that smaller less developed countries have lower military expenditures/GDP per capita ratio? Is it true that less democratic governments tend to spend more on armaments? Do richer governments in the Third World tend to be big military spenders? These questions are directed at the associations

TABLE 5.1

RELATIVE MILITARY BURDEN, 1965-1977

MILEXP /GDP (%)	GROSS DOMESTIC PRODUCT PER CAPITA (In 1973 U.S. Dollars)			
	$0-200	$200-499	$500-999	over $1000
1%	Nep Sri Nig	Col Lib	Cos Mex Pan	Gab Tri
2%	Buu Cam Cen Ken Maw Rwa Hai	Phi Bol Ecu Par Gha Ivo Tun Sen Els Gua Hon	Brz Nic	Arg Uru Ven
3%	Afg Ind Ino Uga	Tha Sud Dom	Mal Alg Zam	
4%	Tan Zai	Kor	Per	
5%	Eth Nir		Tur	Chi Gre
6%	Bur			
7%	Pak			
11%			Irn	
13%				Sau
14%		Syr	Irq	
20%		Egy		
29%				Isr

Source: Unadjusted data are taken from the World Bank's World Tables and from the SIPRI's Yearbook for various years.

between the size of a country, the type of political system, and the level of national wealth, on one hand, and the size of military budgets, on the other hand.

A close examination of the empirical data presented in table 5.1 reveals a number of interesting issues. On the surface, there seems to be no obvious association between the levels of income per capita and the degree of military burden (percent share of defense in GDP).

These sixty countries exhibit a wide range of military burden and considerably different levels of income. More importantly, there is a significant variation within the same income group. For instance, among the high-income countries (those with income per captia of over $1000), we observe that the defense burden ranges from 1% (Gabon) to 29% (Israel). Considering countries having the lowest level of real GDP per capita (in the present classification, those with income per capita of less than $200) we see India and Pakistan with military burdens equal to 3% and 7% respectively. It is reasonable to assume that the "cost" of defense is higher for Pakistan when compared to India. The point is that as we move from top to bottom within the same column in table 5.1, the relative burden of defense is more pronounced.

Alternatively, moving from right to left within the same row, which indicates countries with comparable degree of military burden, we observe a reduction in the relative burden. In another word, richer nation might be able to tolerate higher burden. Looking at the first row assigned to countries having the lowest level of military burden

(1%), one time Nepal (with less than $200 GDPpc) and Gabon (with over $1000 GDPpc). When considering relative military burden, we should pay attention to the variation within a given income group as well as the wide range of military burden across different income groups.

A second interesting point is that most developing countries spent up to 5% of their GDP on defense. Only in eight countries (Burma, Pakistan, Iran, Iraq, Saudi Arabia, Syria, Egypt and Israel) was the percentage of national income allocated to military over 6%. From table 5.2, it can be noted that the largest share of Third World government expenditures directed toward military is attributed to Middle Eastern countries. The initial analysis may lead a conclusion that rising defense expenditures is more evident among the developing countries which have experienced certain political crisis and have the monetary resources to improve their military forces.

A third major point concerns the relationship between military burden and income inequality. Using data for a smaller sample of developing states (see table 5.3), it is shown that most of the countries with low burden reveal a low or moderate degree of income inequality. The only high burden nation (Israel) has a low degree of relative income inequality. Apparently, relative income inequality is determined by factors other than merely the extent of a nation's military burden.

TABLE 5.2

LEADING COUNTRIES IN MILITARY BURDEN, 1965-1977

COUNTRY	MILITARY BURDEN*
Israel	29 %
Egypt	20
Iraq*	14
Syria	14
Saudi Arabia*	13
Iran*	11
Pakistan	07
Zaire	07

Note: An asterisk denotes OPEC membership.

Table 5.3
Classification of 23 developing Countries
By Military Burden** and Relative Income Inequality*

INEQ*	LOW BURDEN (Under 4 %)	MED BURDEN (4 to 10 %)	HIGH BURDEN (Over 10 %)
LOW	SRI LANKA MALAWI INDONESIA THAILAND INDIA	TANZANIA S. KOREA	ISRAEL
MOD	TRINIDAD & TOB MEXICO COSTA RICA NEPAL PHILLIPINES VENEZUELA ARGENTINA MALAYSIA	TURKEY SUDAN CHILE	
HIGH	KENYA BRAZIL	PERU	

Note: * Relative income inequality is measured by the ratio of % of national income recieved by the richest group to that recieved by the pooerst group. Military expenditures are expressed in 1973 U.S. dollars, and are avereages for the 1965-1977 period. As noted earlier, 1977 is selected as the terminating year since figures for the latest year are generally to be considered as provisional.

** Military burden is MILEXP as % of GDP, 1965-1977. Three different levels of defense burden are identified: (1) low military burden, if MILEXP as a % of GDP is less than 3%; (2) moderate military burden, if a nation's MILEXP as a % of GDP is between 3% and 10%; and (3) high military burden, if a nation spent over 10% of its GDP on military sector.

The countries within each categories are ranked in ascending order of military burden, e.g., Sri lanka has the lowest and India has the highest military burden among the low burden-low inequality nations.

A more thorough case-by-case analysis would perhaps tell us that it is not necessarily a Third World country's financial capabilities that will determine whether central governments increase their military budgets. If necessary, a government might borrow to finance its militarization plans through military aid and long-term guaranteed loans extended by friendly nations or short-term loans received from foreign banks. One has to reflect on the issues related to external sources of finance before reaching any final conclusion about whether military investment results in wasting scarce resources or in rapid economic growth.

The heavy burden which some developing nations were required to shoulder during 1965-77 comes out more obviously in table 5.2. Considering the level of income of the leading military spenders, we can identify three low-income countries (Egypt, Pakistan, Zaire), one middle-income country (Syria), and four high-income nations (Israel, Iraq, Saudi Arabia, Iran).

As I mentioned eariler, high military burden in a low-income country may have a far more serious consequence for potential economic growth. The assumption here is that high-income countries can tolerate relatively higher military burden. A low-income country like Pakistan with a military burden of 7% must shoulder a relatively heavier burden compared to a high-income country like Israel with a defense burden of 29%.

In so far as growth of output per capita or economic capabilities is the criterion, one might suppose the

association between the military burden and growth to be negative for low-income countries, and positive for high-income states. The remainder of this chapter is devoted to statistical tests of the accuracy of this supposition.

The Empirical Models and Tests

How MILEXP affects the rate of economic growth is the first subject that I intend to pursue here. One might begin investigation of this question with the following hypothesis: more rapid economic growth is more likely to occur in countries that have a small defense budget. Alternatively, one could pay attention to the defense burden as a possible explanatory variable: if governments spend more on the defense sector at the expense of civilian sectors, the rate of economic growth declines. The issue here is whether civilian types of investment are more likely than military investment to contribute to growth of an economy.

To quantify the arguments about military burden-development and military burden-growth links, several empirical models will be tested. The first three simple models proposed are by no means innovative formulations. However, they are in line with my primary theoretical assumptions.

A. LEVEL OF DEVELOPMENT AND MILITARY BURDEN

First, I maintain that a nation's level of economic development is affected by its defense burden (i.e., the

more a country spends on defense, the smaller the level of overall domestic output per capita). Consider the following linear function:

$$[5.1] \quad GDPpc_{it} = a + b_1 * MILBURDEN_{it} + e_i \qquad \text{Linear Model}$$

where, GDPpc is the average 1965-1977 real Gross Domestic Product per capita in 1973 prices and exchange rates. MILBURDN is the average military burden for the same period. i refers to 60 developing countries, t denotes the time period of 1965-1977. a and b are respectively the constant term, and the unstandardized regression coefficient. Finally, e is the additive error term employed to represent relevant independent variables excluded from the analysis.

To calculate GDP per capita, the GDP at current market prices in national currencies for each country for each year between 1965 and 1977 are taken from the World Bank's World Tables, 1976 and 1982. Then, these "nominal" GDP values are rebased and transformed into millions of 1973 U.S. dollars by the use of the implicit GDP deflator and foreign exchange rates taken from the same source. The values of "real" GDP, for 1965 to 1977, at constant 1973 prices, in millions of U.S. dollars are then used to calculate total GDP for the entire time period (13 years). Population, in thousands, for midyears 1965 to 1977 are obtained from the World Tables in order to compute the average population, in millions, for the period 1965-1977. Finally, the average real GDP for 1965-1977 is divided by the average population over the same period to obtain the

average 1965-1977 GDP per capita in 1973 U.S. dollars.

Military expenditures for 1965-1977 are taken from SIPRI's Yearbooks. These data series are rebased and adjusted to get MILEXP in millions of constant 1973 U.S. dollars. The average MILEXP for the 1965-1977 is then calculated for each country. MILBURDN (the share of average MILEXP in average GDP) is then computed for the entire period.

The equation [5.1] merely says that a country's level of development is affected by how much the government spends on the military; it does not assume that military expenditure will be influenced by economic development in a reciprocal fashion. The issue of reciprocity is important because the size of a country's defense budget may be contingent on the overall central government budget which is, in turn, determined by available national resources.

Also fundamental to the model is the recognition of the importance of time frames. Since it can not be suggested that military expenditure change the level of economic development or rate of economic growth instantaneously, one must permit some time lag to intervene. The time span of 1965-1977 is chosen to reflect a relatively long period in which military burden may affect GDP per capita growth. It is postulated that during the 13-year period the defense burden-growth link can be clarified.

For a sample of 60 developing countries, the results of the simple regression analysis are presented below for 1965-1977 period, with the t-statistics in parenthesis.

[5.1] GDPpc = 348.15 + 41.94 * MILBURDEN
(3.51)

RSQ=.175 SEE=457.4 F=12.33
Adj. RSQ=.161 D = 1.46 P= .001

There is a positive relationship between a developing country's military burden and its national income levels (see table 5.1 for the list of countries). There is a 1 in 1000 chance that the sample result for the entire sample is due to chance. As military burden increases, GDP per capita increases.

Looking at the result of [5.1] linear regression, it can be seen that military burden accounts for 17.5% of the total variation in GDP per capita. A finding of positive relationship would not suprise those who claim that military investment is similar to any other type of investment in that it can help the growth of the economies. The unanswered question is whether the level of development would have been higher if national resources were devoted to civilian projects instead of defense programs.

One can reasonably assume that in developing countries both GDPpc and defense burden are determined by such common factors as more advanced industrial and technical skills and know-how, which may simultanously increase national income and military investment. More national income might provide a government for Figure 5.1 with more financial resources to spend on the military. In another words, other intervening variables might have caused the appearance of a positive relationship between GDPpc and military burden.

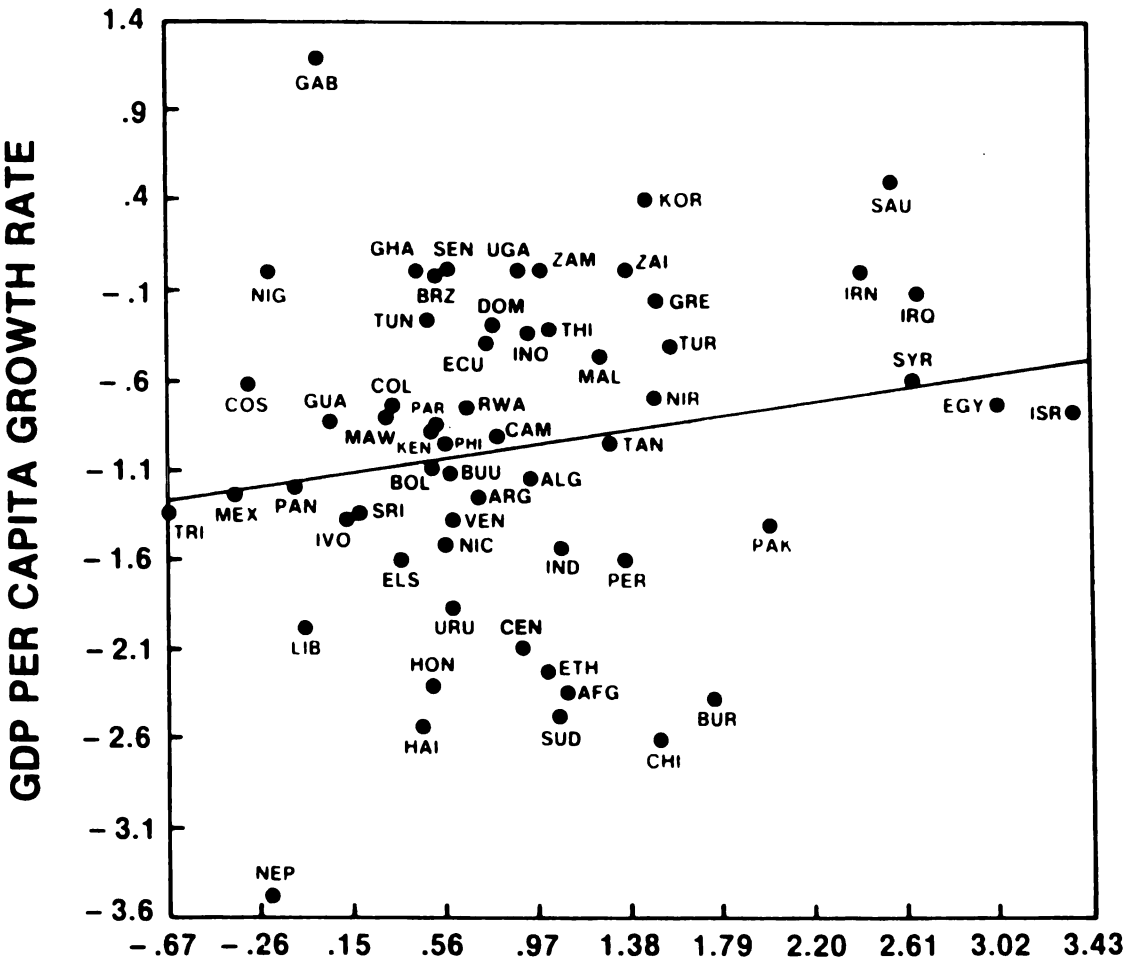
In addition, this is a simplistic view of the real world in which causality is unidirectional. The result of this bivariate regression does not help us to determine the exact causal link between the two variable. A country that is relatively rich would be able to spend more on its military. It is therefore reasonable to assume that as GDP in per capita or absolute terms increases, the military budget increases. Yet, there are states with a low level of income, which have kept increasing their MILEXP, while several high-income states have a light defense burden. The link between defense burden and economic development is very complicated. What is expected is that the magnitude and direction of the effects of military burden, and the primary reasons for the upward trend in MILEXP can be very different in some countries than in others.

Examining scatterplots, some nations are observed to be substantially deviant from the other countries. For instance, one of the scatterplots (Figure 5.1) presents the data visually in a two-dimensional space, with military burden (independent variable) on the horizonal axis and civilian GDP per capita growth rates (dependent variable) on the vertical axis. Each country is designated by a point corresponding to its GDP and MILEXP values. The outliers are those countries with above-average military burden and/or higher than group average GDP per capita growth rates.

Two trends are evident from the scatterplot. Some points are above the regression line (the solid line),

FIGURE 5.1

MILITARY BURDEN AND ECONOMIC GROWTH IN THE THIRD WORLD, 1965-1977



Source: Compiled by the author.

Note: The natural logarithms of military burden and economic growth are used to plot the regression line.

suggesting that high GDP per capita growth rate values can be correlated with either high military (Saudi Arabia) or with lower military burden (Gabon). Similar scatterplots were generated to illustrate the associations between military burden and GDP per capita, military burden and growth rate of total GDP per capita, and military burden and growth rate of civilian GDP for the 60 LDCs. The thirteen outliers that are found outside the 95% confidence interval are India, Brazil, Mexico, Argentina, Venezuela, Indonesia, Egypt, Israel, Saudi Arabia, Iraq, Syria, and Pakistan. These outliers are nations which had either spent more than average on military, or had larger GDP than most other nations in the sample. A simple visual inspection of the plots, characterized by a wide scatter of points that represent each country in the sample, suggests that there does not seem to be a strong association between the variables.

B. ECONOMIC GROWTH RATES AND MILITARY BURDEN

The next step is to describe whether and how military burden affects growth rates of the economy. The link between these two factors can be empirically assessed by testing a unidirectional hypothesis stating that the heavier the military burden, the lower the rate of growth of domestic output. Note that the MILBURDEN-growth link can be presented in its simplest form in the equation [5.2]. Here, I regress values of overall economic growth for 1965-1977 on defence burden in the same time period.

[5.2] $GWGDP_{it} = a + b_1 * MILBURDEN_{it} + e_{it}$ Linear Model

where, GWGDP is the average growth rates of real Gross Domestic Product from 1965 to 1977 (see appendix 5-A for some technical notes on the calculation of growth rates), and the other terms are the same as those defined for equation [5.1]

An Ordinary Least Squares regression analysis produces the result presented below, with the T-statistics in the parenthesis.

[5.2] GWGDP = .367 + .017 * MILBURDEN
(1.267)

RSQ=.027 F= 1.6
Adj. RSQ=.010 P= 0.21 D=2.26

The result for the entire sample of 60 LDCs shows that similar to the level of national output per capita, economic growth rate is positively related to military burden, but the strength of association is considerably weaker (R-square= 0.027). This means that less than 3 percent of variation in overall economic growth rate is explained by military burden. Analysis of cross-national data for 1965-1977 reveals that countries with heavier military burden (higher MILEXP as a percentage of GDP) tend to have a higher economic growth rate. Yet, the relationship is <u>not</u> statistically significant at an acceptable alpha level (here at 5% or better). Since the observed positive association may be due to chance, I conclude that military burden has no impact on growth rate of per capita GDP. The rate by which Third World economies

grow is not affected by how heavy their defense burden is.

C. CIVILIAN GROWTH RATES AND MILITARY BURDEN

It is equally important to consider the impact of defense burden on the economic growth rates in civilian sectors. Hence, the next research hypothesis states that the growth rates in the civilian sector would be a function of military burden. Or more specifically, it is assumed that the heavier the military burden, the lower the rate of growth of civilian output. This view is illustrated by the following linear equation:

$$[5.3] \quad GWCGDP_{it} = a + b * MILBURDEN_{it} + e_{it} \qquad \text{Linear Model}$$

GWCGDP is the growth rate of real "civilian" output, and is calculated through the following procedure. The annual civilian output in millions of U.S. dollars, and at 1973 prices and exchange rates is first computed by subtracting the real MILEXP in each year between 1965-1977 from the same year's real GDP. Then, the estimates of annual civilian output are added up and averaged over the 13-year period, and the growth rates of civilian GDP are computed.

The equation [5.3] states that a country's growth rate of civilian output is affected by the size of the military burden. It is assumed that an increased military burden reduces civilian investments, and leads to a decrease in the real growth rate of civilian GDP (i.e., $b_1 < 0$). The OLS regression results for the entire sample of 60 LDCs, including the T-statistics in the parenthesis are as

follows:

[5.3] GWCGDP = .875 + .005 * MILBURDEN
(.322)

RSQ=.002 F= 0.104
Adj. RSQ=.002 P= 0.75

Once again, The result for the entire sample shows that there is no statistically significant relationship between burden and growth rate of civilian output. The observed association between defense burden and growth rates of output in the civilian sector is not statistically significant at the 5% level.

To summarize, if the results for the entire sample of 60 developing states are considered, one can conclude that the higher the burden of defense, the higher the level of economic development. Military investment does not appear to thwart the development efforts of these states. On the other hand, there is no evidence of the impact of defense burden on either total or civilian economic growth rates. Contrary to prior expectations, military spending does not stimulate growth nor does it retard the growth rates of Third World economies.

The effects of defense burden on growth may be due to other determining characteristics of economic systems. These differences are also possible if the "actual" association between military burden and growth is non-linear. If so, my linearity assumption is totally misleading.

Before addressing the question of linearity, let us pause at this point and ask why the effect of burden is not

stable over time. Since a similar model estimated by Benoit for 1950-1965 yielded a positive and highly significant correlation between growth and burden, I feel that a comparison of the two research designs may help in explaining the opposite findings.

The primary reasons for concentrating on this particular cross-national study rather than on more recent research are as follows. First of all, his findings have received the most attention in the literature, and have stimulated a large body of research that continues today. Yet, during twelve years since Benoit completed his study, the new work conducted on the link between burden of defense and growth has provided divergent results.

Secondly, Benoit's results were based on cross-national data collected for the period 1950-1965 for 44 developing nations. The present study, on the other hand, covers the time span of 1965-1977 for a sample of 60 developing states, 36 of which were included in Benoit's earlier study. In short, these two studies can be viewed as complements of one another. The lack of a significant relationship between the growth rate and burden over the recent past might be considered a product of time, for certain processes take place during a specified time period. The difference between the findings of the two time periods (1950-1965) and (1965-1977) would provide support for my arguments that economic growth rates and rising MILEXP in developing nations are shaped by political forces, and that the interactions between growth and burden

should not be studied as if they are solely of an economic nature.

A Comparison with Benoit's Model

I was unable to exactly replicate Benoit's study because I did not have access to MILEXP data in current prices. Aside from this one exception (i.e., the use of real MILEXP data series), I followed his research design closely and found contradictory results.

I ran an OLS regression with the 1965-1977 data, for 36 countries that were included in Benoit's original sample of 44 less developed states. The results of the regression are summarized below for the two different samples.

[5.3A] GWCGDP = .875 + .005 * MILBURDEN
(.322)

RSQ=.002 F= 0.104 N=60
Adj. RSQ=.002 P= 0.75

[5.3B] GWCGDP = .946 - .003 * MILBURDEN
(.181)

RSQ= .001 F= .032 N=36
Adj. RSQ= 0 P= .858

The results obtained for the 60 LDCs [5.3A] and those attained for the 36 LDCs [5.3B] are quite similar. The only difference is that the sign of the relationship between civilian growth rate and military burden is negative for the sample of 36 LDCs. Moreover, the relationship between military burden and growth rate of civilian output remains statistically insignificant, though positive (r=.1024, t=.483) for the 24 other states that were excluded from Benoit's analysis but included in this study.

During 1965-1977, LDCs which spent more on defense had lower growth rates of civilian GDP, but the sample result is not statistically significant. This is quite in contrast with Benoit's positive and significant (at the .001 level) association between burden and growth during the earlier period of 1950-1965. Why are the results different?

Given major methodological differences (see Appendix 5-B), it is not suprising that the results of the tests are not uniform. First of all, considerable progress has been made, especially for MILEXP data, with refinements of international data sources to improve the reliability and comparability of the published data. Aside from the quality of data, it is also true that data were not available for all years between 1950 and 1965. This forced Benoit to use two different time periods: (1) 1960-1965 in which he could collect data for all five years; and (2) 1950-1965 in which some years were marked with missing data.

Next, there is the problem of neglecting to make any adjustments for inflation.[12] Benoit uses MILEXP and GDP data both in <u>current</u> prices to estimate defense burden but uses GDP figures in <u>constant</u> 1965 prices to calculate growth rate of civilian output. I have used MILEXP and GDP data both in <u>constant</u> 1973 prices and exchange rates to estimate the burden of defense and growth rates of overall and civilian GDP.

The time periods under investigation are also different. The level of industrialization and technological capabilities of many developing states have undergone a

significant change since the 1950's and the early 1960s. Indeed, some of the countries that were regarded as developing countries in Benoit's analysis (e.g., Spain, Yugoslavia) are now considered industrial states, and excluded from the present study for that reason. Together, these factors are suggestive of why the results are varied.

Often cross-national researchers are criticized on the ground that they expect to observe the same kind of association, and the same specific explanations to hold true over time and across nations without taking into account historical changes. What was true in 1950s for a sample of LDCs may not be true for the 1970s. One can reply to this criticism by pointing out that other analytical approaches share some of the same complications. One may not be able to make general statements about how the military burden will affect developing countries, if the international political and economic systems keep changing drastically. Nobody knows for certain what future years may bring. Despite the fact that forcasting is difficult, cross-national studies can explain why certain changes in the relationship have occured. The researcher can answer a number of quite important questions. For instance, was there a relationship between growth and defense burden across nations in 1965-1977? How much did the burden affect growth in different states? Did the direction of association change from one country to another? Did it lead to more or less growth? Were there any other factors affecting the original association between defense burden

and growth? To this last question, I now turn my attention.

AN ANALYSIS OF ATYPICAL CASES

A large number of factors may influence how military burden affects the rate of economic growth and level of development. An important issue to which we must address ourselves is: Does The nature of these influences depend on the inclusion of extreme cases.

I correlated GDP per capita and military burden with and without the outliers, since deviant (or atypical) cases can distort OLS estimates. Examining the plot of the residuals, six nations were seen to be substantially deviant from the other countries. A simple regression with and without deviant cases was run. Interestingly, the regressions (A, B) reported in table 5.4 which gives the Ordinary Least Squares estimates of regression coefficients do not reveal considerably different results.

The main difference is that the relationship between GDP per capita and Burden for the entire sample (A) is statistically significant at .001 level. There is a one in one thousand chance that the sample result has occurred by chance. Whereas the exclusion of the six deviant cases (B) reduces the R-square (from 0.175 to 0.058) and makes the correlation insignificant at 5% level.

For the regressions of growth rate and military burden (C and D), we get almost the opposite result. Exclusion of the three deviant cases leads to a small increase in the R-square (from about 0.03 to 0.07), a slight decrease in the standard error, and a rise of Beta-weight. Also, the

relationship becomes significant at 5% level. There is a weak relationship between burden and growth, if deviant cases are not considered. Finally, the third set of regressions (E and F) do not give us substantially differing result. The relationship is still extremely weak (close to zero), and not statistically significant.

Table 5.4 The Results of Simple Regressions Including and Excluding Deviant Cases

Variables	b	STD error	Beta
I. GDPpc and Military Burden			
A. Deviant Cases included (n=60)	41.94**	11.94	0.419
	(3.51)		
R-square= .175 sig.= .001			
B. Deviant Cases excluded (n=54)[a]	23.94	13.30	0.242
	(1.80)		
R-square= .058 sig.= .078			
II. Growth and Military Burden			
C. Deviant Cases included (n=60)	0.169	0.13	0.164
	(1.267)		
R-square= .027 sig.= .210			
D. Deviant Cases excluded (n=57)[b]	0.015*	0.07	0.270
	(2.074)		
R-square= .073 sig.= .042			
III. Civilian Growth and Military Burden			
E. Deviant Cases included (n=60)	0.886	0.01	0.009
	(0.068)		
R-square= .00008 sig.= .94			
F. Deviant Cases excluded (n=59)[c]	0.065	0.008	0.104
	(0.785)		
R-square= .011 sig.= .43			

The t-statistics are included in the parentheses below the estimated regression coefficients. ** P< .001 , * P< .05.

[a] The six deviant cases excluded are Argentina, Egypt, Gabon, Greece, Israel, and Venezuela. In these countries, the observed and/ or estimated values of GDP per capita were 2 standard deviation above or below the mean, indicating higher or lower than average level of economic development.

[b] The outliers are Gabon, Saudi Arabia and South Korea in which the overall growth rate of GDP per capita is at least 2 standard deviation above the mean.

[c] The deviant case is Gabon.

The results of the analysis of atypical cases reveals three points. First, to show the effects of these atypical cases, we run the regression for 54 nations. Notice that the association between military burden and GDPpc has been substantially reduced, and that the result is not significant at alpha=0.05 level. More importantly, the coefficient of determination is almost one third the size it was when all outliers are included. That is, 33% of the explained variance using all 60 countries is due to the inclusion of extreme cases. For this reason, when one looks at the relationship between GDPpc and military burden, the outliers should be eliminated from analysis. While the hypothesis of a positive correlation between the level of development and military burden remains supported, the strength of the association is substantially less than we previously reported. We have to reject the null hypothesis at a much greater alpha level.

Secondly, the exclusion of deviant cases (B) has increased the explanatory power of the equation. The t-test allows us to reject the null hypothesis that there is no statistically significant relationship between economic growth rate and military burden at the 5% level.

Thirdly, the analysis of the effect of military burden on growth rate of civilian output based on the reduced data set is not different from the one based on the larger data set. The association remains statistically insignificant. Here, we have reported both sets of analyses, and decided not to omit any cases from the subsequent analyses. The

main justification for this decision is that the inclusion of deviant cases does not considerably change the direction or significant levels of the relationships.

Does Time Matter?

Before proceeding further, I should examine the short-run vs. long-run effects of burden on total and civilian growth rates. The results of simple regression analyses are presented in tables 5.5 and 5.6. Three different time spans are specified: 1965-1977, and the overlapping subperiods of 1965-1973 and 1973-1977.

Table 5.5 shows the effects of defense burden on total growth rates of GDP for the three time spans. The major difference is that the growth rate of GDP in the period 1965-1973 (9 years) is unaffected by burden of defense. Now consider the standardized regression coefficients and t-statistics for the other two time periods of 1965-1977 (Beta=.219, t=1.72) and 1973-1977 (Beta=.229, t=1.79). Defense burden affects total growth rates of GDP positively in the longest and the shortest time span. The observed results are statistically significant at 10% level.

Table 5.6 gives us the results of the linear regression of military burden on the growth rate of civilian output for the three periods.

It can be seen from this table that the correlation between growth and defense burden in 1973-1977 is positive

Table 5.5
The Effects of Military Burden on the Growth Rate of Total Output, for Three Periods (N=60)

Periods/Variables	b	STD Error	Beta weight	Expected Sign
Dependent Variable: Growth of GDP[a]				
(A) 1965-1977:				
Y-intercept	0.837***	0.099		
Mil Burden	0.027*	0.016	0.219	-
	(1.72)			
(B) 1965-1973:				
Y-intercept	0.496***	0.527		
GDPpc	0.014	0.102	0.171	-
	(1.32)			
(C) 1973-1977:				
Y-intercept	0.216**	0.031		
GDPpc	0.007*	0.039	0.229	-
	(1.79)			

Statistics	R^2	$\bar{R}^2$	SEE	F	P=	N
(A) 1965-77	0.05	0.032	0.61	2.95	0.09	60
(B) 1965-73	0.03	0.012	0.31	1.74	0.19	60
(D) 1973-77	0.05	0.036	0.20	3.19	0.08	60

Note: T-statistics are in the parenthesis. *sig at 20%, **sig at 10%, ***sig at better than 1%.

Table 5.6
The Effects of Military Burden on the Growth Rate of Civilian Output, for Three Periods (N=60)

Dependent Variable: Growth of Civilian GDP

Models/Variables	b	STD Error	Beta weight	Expected Sign
(A) 1965-1977:				
Y-intercept	0.875***	0.096		
Mil Burden	0.005	0.015	0.042	-
	(0.322)			
(B) 1965-1973:				
Y-intercept	0.543**	0.052		
GDPpc	-0.009	0.010	-0.111	-
	(-0.848)			
(C) 1973-1977:				
Y-intercept	0.206***	0.029		
GDPpc	0.008**	0.004	0.271	-
	(2.14)			

Statistics	R^2	$\bar{R}^2$	SEE	F	P=	N
(A) 1965-77	0.002	0.002	0.59	0.10	0.75	60
(B) 1965-73	0.102	0	0.31	0.72	0.40	60
(D) 1973-77	0.073	0.057	0.19	4.60	0.04	60

Note: T-statistics are in the parenthesis. **sig at 10% level, ***sig at better than 1%.

and statistically significant at 5% level. This means that in 1973-1977 the LDCs which invested more in military sectors had a faster growing civilian economy. However, the percentage of explained variance in growth rates reached a level of only about 7%. This leaves 93% of the variance unexplained.

A second interesting finding is a major difference between the pre-1973 and post-1973 periods. From the data for 60 LDCs in the period 1965-1973, I found a negative association between defense and growth of civilian GDP, though the relationship is not statistically significant at 5% level. High defense burden and rapid growth rates do not necessarily go along a parallel line. A possible explanation is that the overall and civilian growth rates of output which occurred after the 1973 oil crisis improved considerably for the oil-exporting states in the Third World. This finding provides some support for the earlier-mentioned hypothesis that the effects of military burden on growth take place in a totally different manner in richer LDCs.

The Test for Linearity

An objection can be made concerning the empirical tests presented in the preceding section. The objection concerns the linearity assumption. Since it is important to derive the most appropriate functional form for the growth-military burden equation, I address the question of whether the form of association is linear or not.

To test for nonlinearity, I compared the results of

linear regression with the results of logarithmic regression, and (2nd-degree and 3rd-degree) polynomial regressions. The regression equations are as follows:

A) Linear Model:

$$[5.1] \quad Y_i = a + b*X_i + e_i$$

B) Logarithmis Model:

$$[5.2] \quad LogY_i = a + b*LogX_i + e_i$$

C) 2nd degree Polynomial Models:

$$[5.3] \quad Y_i = a + b_1*X_i + b_2*X_i^2 + e_i$$

D) 3rd-degree Polynomial Model:

$$[5.4] \quad Y_i = a + b_1*(X)_i + b_2*(X)_i^2 + b_3*(X)_i^3 + e_i$$

First, consider the results of regression for the link between GDP per capita and military burden (refer to Appendix 5-C). The R-square[13] obtained from the simple linear regression is 0.175 and the F-statistic of 12.33 with degrees of freedom of 58 and 1 is significant at .001 level. In contrast, the proportion of variation that can be explained by the logarithmic model is much smaller than that accounted for by the linear model. The F-statistic is not significant at any commonly acceptable levels.

At first glance, comparing results of polynomial regressions with the linear regression suggests that there may be a departure from linearity. In second-degree polynomial regression, the proportion of explained variation is higher (R-squared=.291) and the standard error

of estimate is smaller (SEE=427.9). The F-test shows that the model is significant at better than .001 level, indicating that a non-linear function is unlikely to have occurred by chance. Looking at the sign of the coefficients in the second-degree polynomial model, one can state that initially military investment is likely to decrease levels of per capita GDP, but at higher levels to increase GDP per capita.

The Third-degree polynomial model also describes a non-linear relationship. The fit of the polynomial equation to the data does not improve substantially when a cubed term for military burden is added as an independent variable. The R-squared increases by only one percent, and the SEE remains about the same. The sign of coefficients show that initially military spending affects GDP per capita positively but the effect will be negative at subsequent MILEXP levels. When MILEXP as a proportion of GDP reaches a certain level, additional spending again is more likely to lead to higher level of GDP per capita. It is important to note that with one exception, all regression coefficients in both polynomial models are insignificant. Thus, the observed sample results are likely to have occurred by chance. All in all, then, a linear specification appears to be the most appropriate functional form for the link between GDP per capita and burden.

In contrast, an examination of the relationship between growth rate of average GDP per capita and military burden suggests that there is no statistically significant association between these variables. This is evident

whether one considers the effects of burden on the growth rate of civilian or total GDP per capita.

As a final exercise, I checked the linearity of the relationship between civilian GDP growth rates and military burden by classifying the 60 LDCs into three sub-groups according to the size of military burden. The three levels of military burden are identified as: (A)Low miltary burden, if MILEXP as a percentage of GDP in 1965-1977 is less than 2%; (B)Moderate military burden, if a state's MILEXP as a pecentage of GDP is between 2% and 4%; and (C)Heavy military burden, if a state spends over 4% of its GDP on defense (see notes for Appendix 5-D for a list of countries in each subgroup).

After classifying, I ran separate regressions for the three different sets of countries grouped on the basis of their defense burden (this kind of test is suggested by Kennedey, 1979:67). The results of the regressions are reported in Appendices D, E, and F. For the the LDCs as a group, the fit of the linear regression to the data is extremely poor, confirming that there is no association between growth rate of either civilian or total GDP and defense burden. The results do not support the argument that higher levels of MILEXP lead to a slow-down in the growth of the civilian economy, nor do they show that more MILEXP can generate faster growth.

When the results of regression for relationship between GDPpc and burden are considered, it is clear that there are differences across groups. Consider the first

group of developing countries with moderate military burden. The signs of the regression coefficients are predominantly negative, revealing an inverse association between burden and per capita GDP. The negative impact is also pronounced in the second subgroup of states with moderate military burden, for which over 40% of variation in GDP per capita is explained by burden in the polynomial regression. The F-statistic is significant at the .1 level. Similar results are obtained for the third subgroup of countries with high defense burden. Over 56% of the variation in GDPpc is explained by defense burden. In LDCs that spent more than 2% of their GDP on military, the level of economic development is affected by defense burden.

Since the results of separate regressions are different from one another, and nonlinear specifications yield a better fit, there is some justification for the belief that the relationship between level of economic development and military burden may be best characterized by a non-linear functional form. Tests for non-linearity suggest several conclusions.

(1) There is an association between level of economic development (GDPpc) of a developing country and its military burden. The change in military burden is accompanied by a change in GDP per capita. The linear relationship is significant at .001 level, showing that as military burden increases, GDP per capita increases.

(2) There is no relationship between military burden and overall civilian economic growth rate, when one considers Third World countries as a group. Although the sample

results are not in the expected direction of the research hypothesis stating that GDP per capita growth rate is affected adversely by burden of defense, the statistical tests conducted indicated one point: in no case were indicator of overall economic growth significantly affected by burden of defense. This is a result inconsistent with earlier cross-national investigations of military burden in developing states.

(3) There is no relationship between civilian GDP growth rate and military burden, in all LDCs as a group. It appears that MILEXP neither promotes nor is detrimental to growth.

These results must be interpreted with caution since they are based on the assumption that no other factors affect the bivariate association. This brings us to the second objection. There is the possibility that the observed results are due to the omission of relevant factors influencing growth-military burden link.

Chapter Conclusion and Summary

The nature of the influences of MILEXP on growth may depend on a multitude of complicated considerations. It is not suprising that the MILBURD-economic growth relationship turns out to be different across country groupings, and between periods as demonstrated by Benoit's famous study. In this study, however, the association between either total or civilian growth rates and military burden was not statistically significant. The long-term consequent effects on productivity may be quite different

from the short-term effects. Because of these differences, it cannot be concluded that MILEXP has a positive impact on growth in all Third World countries. At this point, I can only conjecture about the reasons why levels of output have not been adversely affected by the increases in MILEXP, particularly in the Middle East and North Africa during 1973-1977 period. Some governments have utilized unused resources by investing them in military sectors. MILEXP can broaden the economic base since it requires substantial investment in infrastructure such as transportation facilities and communication networks that can promote growth of the economy.

From data for 60 LDCs in the period 1965-1977 as well as the two overlapping periods of 1965-1973 and 1973-1977, the only significant association is found in the period 1973-77. During this period, defense burden exerts a weak, positive influence on civilian growth rates (R=.271, t=2.14, sig=.05). This indicates that the LDCs with more MILEXP had a faster civilian growth rates.

Why are the results different for different periods and different country-groups? This question is of utmost importance because its answer may reveal why previous cross-national studies have reported divergent findings. Some investigations indicate that higher levels of defense burden in LDCs are accompanied by higher growth rates (e.g., Benoit, 1973 and 1978; Whyness, 1979). Other studies (Smith, 1980; Faini, et al, 1980) provide empirical evidence to negate the link between higher burden and high

rates of growth. Most of these studies cover different time-periods.

It is worthwhile to emphasize that Benoit himself noticed differences between statistical investigations concerning a longer term (1950-1965) and a short term (1960-1965). The appraisal of specific subperiods reveals that so many extraneous factors can influence the original relationship between defense burden and growth - that it is not appropriate to draw any general conclusion based on a simple analysis. The results may be indicative of historically different time periods in which third variables affect either or both burden and growth. Other intervening variables (e.g., rates of investment, population size, war participation) must be held constant.

I must emphasize that throughout this chapter, I have made the tacit assumption that no other factors affect the relationship. The results could be spurious. Consequently, I am not ready to make any conclusive statement about the types and magnitude of costs and benefits associated with military expenditures. Such a conclusion has considerable implication for national economic and military policies in developing countries. As expressed earlier, the results of a one-way relationship of military burden to growth can not be accepted without the tests for spuriousness and curvilinearity. Policy recommendations can be made after analyzing the issues of linearity and non-spuriousness of the bivariate association.

NOTES- CHAPTER FIVE

1 The measure of defense burdens used in this study was "defense as a percent of national product." The other variables included are: economic growth rate (percentage increase in GDP), civilian gross domestic product (GDP minus defense expenditures), bilateral government-to-government economic aid, and investment rate (gross capital formation as a percentage of GDP).

2 Sample of countries in Benoit's study include: Argentina, Brazil, Burundi, Ceylon (SriLanka), Chile, Egypt (U.A.R), Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Ghana, Greece, Guatemala, Honduras, India, Indonesia, Iran, Iraq, Israel, Kenya, Malaysia, Mexico, Nigeria, Pakistan, Peru, Philippines, South Korea, Sudan, Syria, Tanzania, Thailand, Tunisia, Turkey, Uganda, Venezuela, Zambia. The above list shows thirty seven countries that are common to Benoit's and our samples. The following seven coutries were included in Benoit's sample, but are excluded from our study since they are either communist states, or are not considered Third World countries, or data was not available for them. These are: China (Taiwan), Jordan, South Vietnam, Morroco, South Africa, Spain, Yugoslavia. The twenty three states that are included in our analysis, but are absent from Benoit's study are: Afghanistan, Algeria, Bolivia, Burundi,Cameroon, Central African Republic, Ethiopia, Gabon, Haiti, Ivory Coast, Liberia, Malawi, Nepal, Nicaragua, Niger, Panama, Paraguay, Rwanda, Saudi Arabia, Senegal, Trinidad & Tobago, Uruguay, Zaire.

3 In the longer time period (1950-1965), Benoit finds a positive correlation of 0.538 between defense burdens and growth by the use of a simple linear regression analysis (Benoit, 1973: 20).

4 Benoit contends that government-to-government aid programs "contributed external resources to certain countries partly with the definite intent of the donor to enable the recipients to maintain a large defense program that they could otherwise have afforded. As a result, the diversion of the recipient's domestic resources into defense may have been unusally low or even negative in some countries with very large defense programs." In the aid recipient countries, according to the author, the high growth rate and large defense budgets may have been affected by a third factor--the foreign economic aid extended by foreign governments (Benoit, 1973: 21).

5 Amsden, A. H. 1977. "Kaldor's 'The Military in Development'--a Comment." WorldDevelopment. 5,8: 753-761.

In reply to Amsden's criticism of her article, Kaldor argues that "military spending can in certain circumstances generate growth...not through Benoit-type of 'modernizing' effects but because military spending can result inforced savings, i.e. repression can increase exploitation which increases the surplus product available for accumulation. Likewise eocnomic growth tends to generate increased inequality and instability." In 'Reply' to Amsden's 1977 article in World Development, 5,8: 763.

6

For a discussion of major development strategy such as "export-oriented development" vs. "inwardly-directed development" see: From Dependency to Development, ed. H. Munoz. Boulder, CO: Westview Press, pp. 15-42. For a discussion of "Basic Needs" development strategy see: Loup, J. 1983. Can the Third World Survive? Baltimore and London: The Johns Hopkins University Press.

7

Russett, B.M. 1982. "Defense Expenditures and National Well-Being." American Political Science Review. 76: 767-777. For other analyses of the relationship between resources devoted to military and civilian purposes in the developed countries, see: Caputo,D.A. 1975. "New Perspectives on the Public Policy Implications of Defense and Welfare Expenditures in Four Modern Democracies; 1950-1970." Policy Studies. 6,2: 423-446. A historical analysis of the costs of military spending in Japan demonstrates that low levels of defense expenditures promoted Japanese rapid economic growth, see: Boulding, K. and Gleason, A. 1965. "War as an Investment: The Strange Case of Japan." Peace Research Society (International) papers.

8

Askari, H. and Glover, M.C. 1977. Military Expenditures and the Level of Economic Development. Austin: The University of Texas at Austin, p. 34. The authors' model is Sm/V, where Sm is "the $ value of military expenditures in a given country's GDP" and V - "capital output ratio" in order to measure the loss of GDP as a result of military expenditure" (p. 31).

9

Deger, S. and Smith, R. 1983. "Military Expenditures and Growth in Less Developed Countries." Journal of Conflict Resolution. 27,2: 335-353. For other studies showing the negative consequences of military spending, see: Dumas, L.J. 1982. "Military Spending and Economic Decay," in The Political Economy of Arms Reduction: Reversing Economic Decay. Boulder, CO: Westview Press. For a recent study of opportunity costs of defense-related expenditures, see Brozoska, M. 1983. "Research Communication: The Military Related Debt of Third World Countries." Journal of Peace Research. 20,3: 271-277. In this article, the data on military debt are presented for an assessment of the

opportunity costs of arms imports of third world countries.

10

According to a related research hypothesis GDPpc and military expenditure covary in a positive direction. We use the data for all 60 countries and regress dollar amount of MILEXP on GDP. When all countries are considered, this yields GDP= a + 0.393 MILEXP. To test the regression coefficient (b= 0.393) for statistical significance, we select alpha= .05. The t-test indicates that the observed result is statistically significant. As a country spent more on defense, its level of GDP per capita increases.

11

Using data presented in 1983's The Military Balance, I found out that 23 of the Third World states in the sample maintaned conscript armed forces. These 23 states that meet most or all of their military personnel requirements through conscription are: Afghanistan, Argentina, Brazil, Chile, Columbia, Paraguay, Peru, Venuezuela, Ethiopia, Senegal, El Salvador, Guatmala, Hondoras, Mexico, Nicaraguay, Greece, Egypty, Iran, Iraq, Israel, Saudi Arabia, Syria.

The 16 countries that maintain voluntary armed forces are: India, Nepal, Pakistan, Sri Lanka, Burma, Malaysia, Philipines, Uruguay, Dominican Republic, Ghana, Kenya, Nigeria, Sudan, Tanzania, Zaire, and Zambia.

Four states have selective types of military services. These are: Indonesia, Bolivia, Ecuador, and Tunisia. The information on types of military services in the remaining 17 states is not available in IISS's The Military Balance (1983: various pages). By looking at the size of armed forces in these 17 countries, we noted that they possess mostly smaller military forces compared to the aforementioned 43 states.

12

Benoit writes that, "in making our estimates of defense at constant prices, difficulties arose from the lack of uniform or reliable defense price series. As a result we regard our estimates of real changes in defense expendituresas less reliable than most of the other estimates used. They did not appear to be significantly correlated with any of our other series...." "[T]his lack of price adjustment leads to some distortion in comparisons over time, insofar as defense prices and other prices diverge in their movements. However, used in the manner, we used them-averaged over a period of years, to compare with similar period averages of other countries-the distortion should not be serious, unless the discrepancy between defense and non-defense price trends was much larger than in some countries than others. Comparisons between defense burden estimates calculated at current and at constant prices suggest that the discrepancies are generally quite small...."(1973:30)

13

Kennedy argues that the highest R-square criterion by itself can not be used to select the most appropriate functional form between the logarithmic and the linear models. The reason given is that the R-square may not be comparable. Consider logarithmic regression in which natural logarithm of the dependent variable (e.g., log of GDP) is regressed on the natural logarithm of the independent variable (e.g., log of military burden). The R-squared attained from this regression represents the proportion of explained variation in the logarithm of the dependent variable, not the proportion of explained variation in the dependent variable itself. Kennedy notes that this problem can generally be ignored (1979:66).

Appendix 5-A
Some Comments on the Calculation of Growth Rates

Given the primary place of economic growth rates in many empirical models tested in this chapter, it may not be out of place to mention a point about growth rates (e.g., growth rates of GDP, growth rates of MILEXP).

As regards the calculation of growth rates in cross-national analyses, Jackman (1980) goes into a detailed discussion of the problems and merits of different ways of measuring such growth rates and their reliability. The average or "begining-end-years" growth rates of a variable such as GDP (hereafter g') are thought to be less reliable than the average annual "continuous" growth rates (hereafter Cg' for the growth rates of GDP).

Attention must be called to the fact that, for a few countries, there may be a vast difference between the two growth rates. As a test, I considered growth rates of military expenditures in constant 1973 U.S. dollars for Iran and Saudi Arabia. A discussion of the use of constant versus current prices in international comparative studies has already been given in chapter three. The better way followed here is the use of real values. According to the "average" growth rates, the military expenditures of Iran grew by 10.62 per cent per annum, and that of Saudi Arabia grew by 11.53 per cent per annum between 1965 and 1977. If one considers "average-annual" growth rates of the military expenditures in constant 1973 U.S. dollars in these two countries, the figures correspond to respectively 3.23, and 3.07 per cent. Both sets of figures show that MILEXP of Saudi Arabia grew at a more rapid pace.

Yet, the fact remains that one may get biased estimates of growth rate if one simply calculates the change in the values of military expenditures from an initial year (here 1965) to a terminal year (here 1977). This happens when the estimates of MILEXP for the boundary years are inaccurate, or not a suitable indicator of the values of MILEXP for the middle years in the time span (here 1966 to 1976). This may be a more serious problem if the two points are very far separated in time, and if the the MILEXP of the two boundary years were considerably high or low reflecting the effects of unusual events such as wars, economic prosperity, regime change and so forth. The values of initial and terminal years may even determine whether the rate of growth accelerates or decelerates over time.

For the main variables in the models, I calculated both the average and continuous growth rates. For instance, I obtained both G' and Cg' for the 60 LDCs averaged over the period 1965-1977. By correlating g' and Cg', I found out that the two growth rates are positively, and almost

perfectly correlated (R-square=.96). Among the nations in the sample, 1965 and 1977 seem to be quite "normal" years. This may be the reason for the almost perfect, positive correlation between the two growth rates. It appears that the "average annual" and "average" rates covering identical periods and based on identical data sources represent an essentially identical picture despite the fact that the latter is based solely on the two boundary years, and the former averages the year-to-year changes in the GDP for all the years from 1965 to 1977.

Nevertheless, I used "average annual" growth rates of GDP and defense burden to run a simple linear regression for the 60 LDCs during 1965-1977. The results (r=.217, t=1.69) are similar to the regression run for the 60 LDCs, using "average" rates of GDP and defense burden (r=.219, t=1.72)

This practice has been continuously followed in this study in order to make sure that the observed results are not affected by different ways of measuring the growth rates. Any major differences in results are reported. For estimating the values of other variables, similar care has been taken. This is done to ensure that the results are not due to non-normal circumstances.

As I discussed before, the boundary years have to be considered with extreme care. Some countries might have been affected by participation in wars, or climatic changes. The period from 1965 to 1977 spans many major events. An important event -- i.e., the oil crisis of 1973 -- happened almost in the middle of this period. To avoid the problem, the practice of averaging out the estimates of the intervening years was followed.

Appendix 5-B

Comparing the Results of Two Cross-National Analyses of Civilian Growth-Military Burden Link

The Present Study	Benoit's Study
Sample Size	
60 LDCS	44 LDCs
YEARS	
every year between 1965-1977	only available years between 1950-1965
MAIN INDICATORS	
. Defense Burden (average MILEXP of 1965-77 as % of average GDP, Both measured at constant 1973 prices & millions of $U.S.)	Defense Burden (average 1950-65 defense burden which is MILEXP as a % of GDP, measured at current prices.)
$\bar{x}$=3.8, sd=4.9, v=1.32	$\bar{x}$=3.62, md=2.66 * [$\bar{x}$=4.3, sd=5.3, v=1.2]
. Growth Rate of Civilian Output(annual civilian GDP is annual GDP minus annual MILEXP, both measured in 1973 prices & exchange rates, & million of $U.S. The average rates of civilian growth rates are then calculated.)	. Growth Rate of Civilian output is "each year's defense expenditures at constant prices was subtracted from that year's GDP, also at constant prices, to obtain the civilian GDP the cumulative growth of which was called civilian growth." (p 71)
$\bar{x}$=.89, sd=.58, v=.65	x=5.52 md=4.94 * [$\bar{x}$=.94, sd=.45, v=.48]
DATA SOURCES	
SIPRI for MILEXP IBRD for GDP and population	UN IBRD IMF AID

MAJOR FINDINGS	
.There is almost a zero correlation between defense burden & civilian growth rates (r=.042, t=.322).	."The simple correlation between burden and growth rates was strongly positive... [r=.55, t=4.2]**
.The association is negative LICs & HICs; and is positive in MICs. Yet, the relationships are not statistically significant significant.	."[c]ountries with higher growth rates tended to have defense burden."
.What is correlated with burden is not growth rate of Civ GDP, but the level but the level of GDPpc; and that only in HICs.	."What is positively correlated with burden is not the amount of income, but the rates at which it is growing" (p 82)

Notes:

a please refer to footnote 11 at the end of chapter five for a list of countries in the samples.

* md=median, $\bar{x}$=the mean, sd=standard deviation, v= coefficient of variation (sd/the mean). The figures shown in the parenthesis refer to the measures of central tendency and deviation that I have estimated for the 36 states out of the 44 states included in Benoit's for the 1965-1977 period.

** Interestingly, the result of the simple regression of burden-growth for the 36 states that were included in Benoit's study illustrates a negative, though insignificant, association (r=-.031, t=.181). For these countries, 1965-1977's data shows that the more they spent on defense, the lower their civilian growth rates were. It must be emphasized that the observed results are <u>not</u> statistically significant, and thus can be due to chance.

Appendix 5-C
The Regression Results of the Linearity Test, for the period 1965-1977 (N=60)

Dependent Variables / Models	Independent Variables[a] B	B2	B3	RSQ[c]	SEE	F	P
A. GDP per capita							
1. LIN	41.93*			.175	457.4	12.33	.001
	(11.94)			[.160]			
2. LOG	.110			.010	.9	.60	.442
	(.142)			[0]			
3. PO2	-54.59	4.15		.291	427.9	11.68	.000
	(33.61)	(1.36)		[.266]			
4. PO3	9.56	-2.75	.172	.301	428.5	8.04	.000
	(77.88)	(7.67)	(.188)	[.264]			
B. GDPpc growth rate							
1. LIN	.169			.027	.509	1.60	.210
	(.013)			[.01]			
2. LOG	.190			.032	.891	1.91	.172
	(.138)			[.015]			
3. PO2	.059	-.001		.049	.509	1.45	.242
	(.039)	(.001)		[.015]			
4. PO3	-.001	.005	-.0001	.058	.510	1.13	.341
	(.093)	(.009)	(.000)	[.007]			
C. Civilian GDP Growth Rate[d]							
1. LIN	.005			.002	.588	.10	.748
	(.015)			[0]			
2. LOG	.086			.013	.634	.77	.383
	(.098)			[.006]			
3. PO2	.069	-.003		.039	.581	1.18	.315
	(.046)	(.002)		[.006]			
4. PO3	-.016	.006	-.0002	.054	.582	1.06	.375
	(.105)	(.010)	(.0003)	[.002]			

Note: the regression coefficients reported are unstandardized. A blank in the table indicate that the figure is not applicable. *sig at .05 or better.

[a] Independent variables are Military burden (B), MILEXP as a % of GDP for 1965-1977 period. B2 and B3 are, respectively, the squared and the cubed values of

Military Burden for the same period, and are used in polynomial regression equations.

b
LIN= linear model; LOG= logarithmic model; PO2= second-degree polynomial model; and PO3= third-degree polynomial model.

c
The symbol RSQ denotes R-Square statistics. Adjusted R-squares are reported in the brackets, below RSQ values.

d
The results of the regression remains unchanged whether one considers civilian GDP growth rate, in per capita or absolute terms. The results reported in the table are however for civilian growth rate expressed in absolute term.

Appendix 5-D

The Effects of Military burden on GDP per capita for Three Country Groups, 1965-77

Country Groupings/ Models	b Independent Variables B	B2	B3	a RSQ	SEE	F	P
A. Countries with Low Military Burden n=29							
1. LIN	-229.78			.05	406.30	1.58	.220
	(182.84)			[.02]			
2. LOG	-.59			.06	.86	1.74	.198
	(.45)			[.03]			
3. PO2	-2545.3	915.9		.15	393.87	2.21	.130
	(1410.9)	(553.7)		[.08]			
4. PO3	-3267.9	1541.3	-169.05	.15	401.54	1.43	.260
	(5915.5)	(4997.6)	(1342.26)	[.04]			
B. Countries with Medium Military Burden (n=18)							
1. LIN	-136.83			.06	334.73	.99	.336
	(137.84)			[0]			
2. LOG	53.18			.28	660.51	4.37	.061
	(25.44)			[.22]			
3. PO2	-3009.23*	479.45		2.88	302.84	2.88	.088
	(1352.79)	(224.84)		[.18]			
4. PO3	-25298.9	8241.16	-877.62	.41	283.11	3.25	.054
	(12594.3)	(4368.5)	(493.37)	[.28]			
C. Countries with High Military Burden (n=13)							
1. LIN	53.18			.28	660.51	4.37	.061
	(25.44)			[.22]			
2. LOG	.51			.1	1.07	1.21	.296
	(.46)			[.02]			
3. PO2	-124.70	5.99		.50	578.26	5.03	.031
	(88.13)	(2.87)		[.40]			
4. PO3	288.99	-25.98	.68	.56	569.86	5.03	.031
	(373.50)	(28.21)	(.59)	[.42]			

Note: The regression coefficient reported are unstandardized. A blank in the table indicate that the figure is not applicable. *sig at .05 or better.

a

Independent variables are Military burden (B), MILEXP as a % of GDP for 1965-1977 period. B2 and B3 are, respectively, the squared and the cubed values of Military Burden for the same period, and are used in polynomial regression equations. Please refer to appendix 5-C for an explanation of the symbols used to denote the models.

b

Military burden is MILEXP as a % of GDP, for 1965-1977. the countries in each sub-groups and their defense burden in the parentheses are presented below:

(1) The countries with low defense burden (under 2%) are: TRI(.52), MEX(.69), COS(.74), NEP(.79), NIG(.81), PAN(.90), LIB(.94), GAB(1.01), GUA(1.06), IVO(1.14), SRI(1.2), MAW(1.35), COL(1.39), ELS(1.44), GHA(1.55), HAI(1.59), TUN(1.63), KEN(1.65), HON(1.66), BOL(1.68), BRZ(1.69), PAR(1.70), NIC(1.76), PHI(1.76), SEN(1.77), BUU(1.80), URU(1.82), VEN(1.82), RWA(1.93) N=29

(2) The countries with moderate defense burden (between 2% to 4%) are: ARG(2.04), ECU(2.12), DOM(2.18), CAM(2.22), THI(2.80), SUD(2.91), IND(2.94), AFG(3.02), MAL(3.50), PER (3.89), TAN(3.66), ZAI(3.92), N=18

(3) The countries with low defense burden (over 4%) are: KOR(4.29), NIR(4.45), GRE(4.49), CHI(4.59), TUR(4.77), BUR(5.79), PAR(7.42), IRN(11.15), SYR(14.01), SAU(12.79), IRQ(14.34), EGY(20.47), ISR(28.68), N=13

Appendix 5-E
The Effects of Military burden on GDPpc growth Rate for Three Country Groups, 1965-1977

Country Groupings / Models	Independent Variables B	B2	B3	RSQ	SEE	F	P
A. Countries with Low Military Burden n=29							
1. LIN	-.126		.008		.616	.21	.654
	(.277)		[0]				
2. LOG	-.004		.0000		.300	.00	.980
	(.158)		[0]				
3. PO2	1.66	-.71		.032	.620	.43	.655
	(2.22)	(.87)	[0]				
4. PO3	8.33	-6.48	1.56	.053	.626	.47	.708
	(9.22)	(7.79)	(2.09)	[0]			
B. Countries with Medium Military Burden (n=18)							
1. LIN	-.122			.067	.277	1.15	.300
	(.114)			[.009]			
2. LOG	-.279			.073	.208	1.26	.278
	(.249)			[.015]			
3. PO2	-.936	.136		.093	.282	.76	.483
	(1.26)	(.209)		[0]			
4. PO4	-17.1	5.75	-.635	.194	.275	1.12	.374
	(12.2)	(4.24)	(.479)	[.021]			
C. Countries with High Military Burden (n=13)							
1. LIN	-.0007			.0011	.498	.001	.973
	(.019)			[0]			
2. LOG	.039			.009	.287	.096	.762
	(.126)			[0]			
3. PO2	.068	-.002		.08	.500	.436	.659
	(.076)	(.002)		[0]			
4. PO3	.102	-.005	.0000	[.08]	.527	.265	.849
	(.346)	(.000)	(.026)	[0]			

Note: Same as Appendix 5-D.

Appendix 5-F
The Effects of Military burden on Growth Rate of Civilian GDP, for Three Country Groups, 1965-1977

Country Groupings/ Models	Independent Variables B	B2	B3	RSQ	SEE	F	P
A. Countries with Low Military Burden n=29							
1. LIN	-.109			.005	.676	.13	.724
	(.304)			[0]			
2. LOG	.097			.0026	.706	.07	.794
	(.369)			[0]			
3. PO2	2.64	-1.09		.053	.672	.73	.492
	(2.41)	(.94)		[0]			
4. PO3	12.02	-9.20	2.19	.088	.670	.80	.504
	(9.91)	(8.37)	(2.37)	[0]			
B. Countries with Medium Military Burden (n=18)							
1. LIN	-.140			.205	.407	.704	.414
	(.168)			[0]			
2. LOG	-.484			.037	.519	.607	.447
	(.622)			[0]			
3. PO2	-1.08	.157		.120	.417	.464	.637
	(1.86)	(.309)		[0]			
4. PO3	-19.4	6.54	-.722	.12	.417	.639	.602
	(18.6)	(6.43)	(.727)	[0]			
C. Countries with High Military Burden (n=13)							
1. LIN	-.013			.028	.616	.322	.582
	(.024)			[0]			
2. LOG	-.028			.0008	.674	.009	.927
	(.296)			[0]			
3. PO2	-.117	-.004		.211	.582	1.34	.305
	(.089)	(.003)		[.054]			
4. PO3	.289	-.017	.003	.228	.607	.887	.484
	(.398)	(.030)	(.006)	[0]			

Note: Same as Appendix 5-D

CHAPTER SIX

THE CONSEQUENCES OF MILITARY SPENDING AND WAR PARTICIPATION IN THE THIRD WORLD

Aims: This chapter focuses on factors affecting Third World military spending and economic growth. These factors are divided into external and internal categories. External factors are those related to foreign relations of a nation -- ranging from diplomatic to trade interactions. The impact of active war participation on the relationship between burden of defense and growth of civilian economy is examined. Internal factors, on the other hand, are centered on what goes on inside a nation. Internal factors like level of domestic capital formation, investment as a share of GDP, types of military expenditures (e.g., arms production) and population growth, are considered as possible factors determining how defense burden affects growth.

Common sense urges us to think that the rate of growth of GDP can vary from one country to another for many reasons. Hence, any impact of military build-up on the level of economic development or the absence of a significant impact of military burden on rate of economic growth which may appear in simple regression models are not likely to explain the existing variations across nations.

At the center of the analyses in the previous chapter is the assumption that no other factors affect the growth-burden link. In other words, the impact of foreign economic or military aid is assumed to be zero; close ties with the international economic system, and differences in political systems are not taken into account.

Many questions can be raised concerning the adequacy of the models tested so far. Do leading Third World military spending countries have a common characteristic such as a higher GDP in absolute terms, or higher rate of growth of income per capita or low population growth, or high techical-industrial ability? Why are there countries with high GDP growth and high military burden? Why is not the slow-down in growth rate of the economy confined to major military spending countries?

Up to this point, the models examined only the bivariate association between military burden and growth of GDP. To be certain of non-spuriousness of the simple association, one must look at other related factors determining the rate or the level of economic growth as well as the size of defense budgets. Thus, the central task of this chapter is to test the consequences of the military burden for economic growth of the civilian sector, controlling for domestic arms production, domestic capital formation, oil exports, population growth, and war participation. Several political and economic factors may go into determining the size of the military budget.

I. War Participation

It is plausible to assume that the total level of military expenditure of a country is determined by its war involvement. As a further test, "active war participation" is introduced as an explanatory variable. Wartime needs of a government can provide strong incentives for larger defense budgets. It is quite reasonable to assume that the

heavy average 1965-1973 defense burdens of Israel and its Arab rival nations are due to the 1967 and 1973 Middle East wars. The post-1973 heavy defense burdens of these nations have resulted from what their governments perceive as potential external threats to their national security. One can formulate a hypothesis stating that,

> Ha : Governments that are threatened by their national enemies, or that are participants in an on-going arms race, or are victims of widespread domestic political unrest may become dedicated to a massive build-up of weapons, and the development of a stronger armed forces.

Although wars are costly, very few individuals question the need for higher military spending during wartime. It is the peacetime defense burden that is often considered wasteful and a drain on precious resources because it often appears to be optional or a matter of choice. During peacetime resources are directed to the military sectors to maintain the strength of national military forces. One can assume that military expenditures decrease during times of peace, and accelerate during times of war to help the government achieve its war objectives. What is important to know is whether the relationship between burden and growth changes as a result of involvement in interstate conflict.

II. Domestic Arms Production

What would happen if a developing country established a domestic arms industry (frequently abbreviated as DAI) and produced conventional armaments which have traditionally

been regarded as a necessary means to ensure political order within a country as well as a way to increase national power vis-a-vis other states?

Arms production in developing countries has clearly political as well as economic consequences. For the Third World producers of arms, at the early stage of military industrialization, the political benefits seem to be of greater importance than the economic benefits. Political benefits may include increases in national security, independence from arms suppliers of less-sophisticated weapons, and prestige accompanying a stronger armed force. Economic benefits refer to increases in revenue as a result of commercial sales of weapons to other countries, and increases in employment opportunities for native workers. Similar to any other aspects of militarization, there is no general agreement concerning the establishment of a DAI.

There are few empirical studies attempting to relate indigenous arms production to the growth of developing economies. To assess the impact of domestic arms production, oil exports and war involvement, I used three dummy variables as additional explanatory variables in the regression analysis.

THE MODELS AND ANALYSIS

The basic models describing the relationship under investigation are rooted in the assumption of an interplay between economic and political factors. It is thought that the effects of burden on growth may vary from country to

country according to levels of domestic investment. Furthermore, the development of indigenous defense industries may influence the balance of trade position favorably, and thus accelerate productivity growth. Arms industries have been viewed as a political solution for LDCs with difficult access to foreign producers of arms. The establishment of such industries can also have political implications. The assumption here is that the consequences of the defense burden are likely to be different in countries that rely heavily on imports of arms from abroad. I shall apply an Ordinary Least Squares (OLS) routine to cross-national data to examine once again the association between growth and burden.

The research hypotheses tested are as follows: (a) countries that are threatened by others, or are actively involved in a war tend to spend more on defense; (b) countries that possess domestic arms production facilities and particularly those with significant arms export sector are not adversely affected by the burden of defense. Under these assumptions two dummy variables were added to separate growth-burden equations. The indicators of categorical variables are: conflict dummy (war/peace), and Arms dummy (absence/presence of domestic arms production facilities).

With additional control factors introduced, the first growth-burden equation reads:

$$[6.1]\quad G'_{it} = a + b_1 * BUR_{it} + b_2 * WAR_{it} + b_3 * (BUR*WAR)_{it} + e_{it}$$

where, G' is the growth rate of civilian GDP, 1965-77; BUR is military burden (MILEXP as percentage of GDP) for 1965 to 1977; WAR is dummy variable for war participation; BUR*WAR is a multiplicative term, and e is the error term. In the case of equation [6.1], I have assumed that the variance of the error term is the same in the countries participating in wars and other countries. Note that countries were classified as either war participants or others. The thirteen LCDs that were engaged in war during 1965-1977 are presented below, with the number of participations in war in parenthesis:

IND(2), PAK(2), KOR(9), PHI(8), THI(9), ELS(1), HON(1), TUR(1),EGY(1), IRQ(1), ISR(4), SAU(1), SYR(2).

See Appendix 6-B for more details of the wars and source of data. According to data presented in Appendix 6-B, some LDCs were more inclined to engage in inter-state military confrontation. "Singer and Small" 's Correlate of War dataset was used to identify the Third World countries which participated in wars during 1965-1977. A dummy variables was then constructed. Countries that participated at least once in a war during the entire period were given a value of one, and others were assigned a value of zero.

I assumed that countries at times of war might be forced to misallocate their resources. The cost of defense then would be high, particularly if resources are diverted from production to the purchase of military hardware. Under this condition, countries tolerating a high burden of defense might experience considerable slow-down in civilian economic growth.

The equation [6.1] was estimated using OLS and the results are summarized below.

$$G' = .843 - .001\ BUR + .326\ WAR - .0098\ (WAR * BUR)$$
$$\qquad\qquad (.049) \qquad (.283) \qquad (.053)$$

RSQ = .032 F = .626 SEE = .58
RSQ = 0 P = .601 N = 60

The adjusted RSQ statistic indicates that war has no effect on the growth rate of civilian GDP, and does not influence the interaction between burden and growth.

Next, I examined the effect of burden and growth, controlling for arms production.

$$[6.2]\quad G'_{it} = a + b_1 * BUR_{it} + b_2 * ARMS_{it} + b_3 * (BUR*ARMS)_{it} + e_{it}$$

where ARMS is dummy variable for domestic arms production; BUR*ARMS is a multiplicative term, and the other symbols have been described for equation [6.1]. The intercept term would indicate the effects of absence of DAI as represented by the residual category (No Arms=0). The presence of DAI is denoted by the category (Arms=1) whose

impact on growth rates is illustrated by the magnitude and sign of b_1.

According to IISS, 18 LCDs had indigenous arm production facilities during the time span of 1965-1977. See Appendix 6-A for the list of countries, additional information on data sources, and on the categories of armament produced in these LDCs. The HO states that there is no difference in the economic growth rate, controlling for burden, whether one considers arms prouducing states or other LCDs. The results of the OLS estimates are presented below.

$$G' = .577 + .064\ BUR + .726\ ARMS - .0979\ (ARMS * BUR)$$
$$\qquad\quad (.023) \qquad (.187) \qquad (.029)$$

RSQ= .23 F = 5.57 SEE = .52
adj. RSQ= .19 P = .002 N = 60

All three regression coefficients are significant at better than the 1% level. One can conclude that arms production is quite important for the link between growth and burden. Controlling for defense burden, countries with arms production industry have nearly twice the growth rate of civilian GDP than those without DAI. Moreover, the two predictor variables (arms production and military burden) interact on the predicted variable (growth rate). The rate of growth as a function of arms production varies for different levels of military burden. At extremely high levels of military burden, the Arms Producing Developing

Countries (APDCs) tend to achieve lower growth rate of civilian GDP. One major conclusion is that the effect of the share of MILEXP in GDP on the growth rates of civilian GDP is slightly different in the APDCs. Yet, even these countries cannot afford very high levels of military investment.

III. Population Growth and Investment Rate

A country's economic growth rate is a function of domestic capital formation or the rate of domestic investment. Moreover, the population growth rate can affect the growth rate of output. Countries with rapid population growth tend to be more sensitive to a slowdown in economic growth.

It is useful to start with a single-equation multiple regression model where a country's economic growth is influenced by share of MILEXP in national income, and this relationship is affected by rate of domestic investment and growth rate of population. The GDP growth is given by

$$[6.3]\quad G'_{it} = a + b_1 * BUR_{it} + b_2 * INVEST_{it} + b_3 * GWPOP_{it} + e_{it}$$

The symbols used in equations [6.4] are:

G' : growth rate of civilian GDP, 1965-77.
INVEST: gross domestic investment as a % of GDP, 1965-77.
GWPOP : growth rate of population, 1965-1977.
BUR : military burden (MILEXP as % of GDP), 1965-77.

Note that all indicators cover the same time span, and that the relevant indicators are all measured in U.S.

dollars and 1973 prices.

Variables. The variables included in equation [6.4] can be classified according to the theoretical roles assigned to them.

G'_{it} the dependent variable, is economic growth. The indicators of growth include: the growth rates of both total and civilian GDP.

BUR_{it} is the military burden independent. The indicator of defense burden is the dollar amount spent on military as a percentage of total GDP.

$INVEST_{it}$ is a control variable representing domestic capital formation or gross domestic investment. The indicator of investment is the dollar amount of gross domestic investment as a percentage of GDP.

$GWPOP_{it}$ is a second control variable, the population growth rate. The indicator is average annual growth rate of population.

Analysis and Results

One of the first tests conducted in this chapter was a test of multicollinearity. To confront the problem of multicollinearity in the multiple regression models, the following device, suggested by Lewis-Beck (1980) was employed. Each independent variable was regressed on all other independent variables. None of the R-squares were equal to one, indicating the absence of perfect multicollinearity. The highest R-square (RSQ=.31) was attained for the regression of defense burden on the war

dummy. Countries that had participated in war tended to spend more on the military relative to their national output. The only other significant association was found between Gross domestic capital formation as a percentage of GDP and the oil export dummy. Major oil exporting states tended to have higher GDI as a percentage of GDP. On the whole, this test showed an absence of multicollinearity.

Test of Regional Variation

Regional variations were also tested in order to find whether the relationship holds for all regions of the world. It is possible that the world-wide correlation (here correlation in the entire sample) of developing countries between military burden and growth is influenced by strong/weak or positive/negative regional correlations. In chapter two, a geographical classification of the 60 developing states was presented.

Here, the results of the multiple regressions are presented for four regions. The regional classification used here is slightly different from the previous one. Rather than six regional groupings, I have assigned the sample countries to four regions. The five East Asian states (Indonesia, S. Korea, Malaysia, Philippines, and Thailand) along with the seven South Asian states are all assigned to the second region-- Asia. The three Southern European states (Greece, Israel, and Turkey) are assigned to the fourth region-- the Middle East. This reclassification is done in order to have sufficient cases to run the regressions. For the list of countries in the

Table 6.1

The Result of OLS Regression for Growth Rate of Civilian GDP, 1965-1977

Independent Variables	ALL LDCs	AF	AS	LA	ME
Equation [6.4]					
CONSTANT	-.0949	.188	.429	-.107	2.156
	(.279)	(.783)	(.606)	(.496)	(.766)
BUR	-.0016	-.141	.037	-.047	-.042
	(.013)	(.123)	(.056)	(.909)	(.020)
INVEST	.048**	.059**	.665**	.019	-.049
	(.009)	(.015)	(.017)	(.024)	(.024)
GWPOP	.119	-.853	-2.837	2.26**	2.46
	(.750)	(1.53)	(2.708)	(1.05)	(1.62)
Statistics					
RSQ	.36	.63	.68	.42	.58
ADJ R-SQ	.32	.56	.55	.31	.32
SEE	.48	.52	.34	.34	.43
F	10.37	8.56	5.54	3.88	2.26
P	.000	.001	.024	.029	.199
N	60	19	12	20	9

Note: Standard Errors are in the parenthesis below the unstandardized regression coefficients. ***sig at .005 **sig at 5% level

other two regions, refer to Appendix 2-A. Comparisons of the results of the regressions for the four regions and the entire sample would reveal whether there is any difference across regions. The assumption is that natural environment (rain, soil) and political environment (regional arms races, high-tension situations) can affect the productivity level or level of defense burden.

The empirical results and appropriate statistics are presented in table 6.1 for all LDCs and each geographical regions. First, one can observe different signs for burden coefficients from one regional group to another. With the exception of Asian countries, military burden has a negative impact on the growth rates of civilian output. For the Middle East region, burden has a significant negative effect on growth, suggesting that military spending is detrimental to growth. It is important to note that Middle Eastern states are among the leading military spenders in the Third World.

Second, I also tested the hypothese that defense spending has other macroeconomic impacts besides affecting the growth rate. An argument against MILEXP is that it divert resources from investment purposes and so retards growth. A country's growth rate of civilian GDP is determined by the rates of Gross Domestic Investment (hereafter GDI). Increased rates of GDI expand productivity, leading to an increase in the real civilian growth rate. Military burden in turn is supposed to be negatively related to growth of civilian GDP. The more a

country spends on defense, the slower its civilian economy grows, given that investment rates remain constant.

The regression coefficient for investment has the expected positive effect for all but one region (the Mid-east). This indicates that a higher productivity of capital (as measured by the share of investment in GDP) tends to generate a higher rate of civilian growth for a given value of defense burden and population growth rate. In the Middle East, the negative sign of the coefficient indicates a trade-off between investment and defense. More investment seem to lead to slower growth rates in this region, but faster ones in the other regions. This might again be due to the exceptionally high defense burden of the states in this area. One can thus conclude that the extent to which investment affects growth is consistent with levels of increases in MILEXP. Controlling for investment and burden, one can see that higher growth rates of population lead to more rapid output growth only in Latin America. For the other regions, the population growth coefficient is insignificant.

The goodness of fit as indicated by adjusted R-square and SEE improve noticeably when Africa and Asia are considered. The other interregional difference concerns the F-statistic, which is significant for all regions except the Middle East. The result indicates that making generalizations regarding the consequences of MILEXP for economic growth across countries is dangerous.

Chapter Conclusion

The purpose of this chapter was to reexamine the impact of military expenditures on economic growth in light of other factors involved. The economic growth of a state and its military burden is determined by many factors. Unfortunately, not all these factors are quantifiable. Some do have a quantifiable character, such as GDP per capita, population, geographical area, physical volume of resources, value of exports and imports. Others are unquantifiable factors such as position in the world economy and international power position.

The problem of missing data and other methodological or technical problems do not allow far-reaching conclusions to be drawn. What I can present as a conclusion is that barring atypical situations (such as access to marketable resources like petroleum), increases in MILEXP do not promote growth of the civilian economy. This conclusion is not in line with the results of major cross-national studies of which I am aware.

Of course, there is a group of researchers who have stated that MILEXP in general acts as a constraint on growth of national output. If this is true, the solution to a slow-down of growth is then significant cutbacks in the government's defense budget. Owing to the much smaller markets for military goods, the arms producing LDCs are not generally able to offset the cost of arms production by exports of arms.

What cross-national studies in this area have in common is the conclusion that a great many factors are likely to affect the rise and fall of domestic spending on the miliatry. For example, domestic MILEXP is related to the overall military budgets of neighbouring countries and the amount of foreign military assistance.

The empirical tests presented in the preceding sections are cross-national, single-equation studies which analyze only the consequences of higher military spending. They are thus subject to single-equation bias and may be criticized for presenting a simplistic view of the interplay of economic and political variables. A more more complex examination of the link between burden and growth is warranted to reveal the multidimensionality of the issue.

Nonetheless, the basic models tested here help to answer the main questions raised in this study. To find an explanation for why the results of cross-national research on the link between growth and burden are contradictory, I discussed similarities and differences between two cross-national studies (i.e, the present study and the Benoit's study). As mentioned before, the difference between them may partially be due to measurement procedures followed, particularly the use of <u>real</u> income per capita and <u>real</u> MILEXP. It is important to remember the following issue: Viewed in a historical perspective, it is quite probable that the population growth rate was higher in many LDCs in the 1950s and 1960s, and the amount of capital transfered to the economies of the LDCs, most notably through military

and foreign aid programs, was higher.

Moreover, the Third World economy might have become more sensitive to international trade. The countries with more extensive relations with the developed world might have been affected by internal and external mechanisms of trade. Surely, a Third World economy may benefit from advantageous terms of trade. Because of such gains, the growth rate of civilian GDP might become more rapid. A good example is the Cartel arrangements of OPEC, whereby several LDCs could regulate the prices of their oil exports and become successful in achieving a considerably higher growth rate. This may be due to the improvement in the balance of trade of these LDCs in the 1970s.

My analysis also revealed that the tendencies to spend on the military are not likely to be reversed in the near future, so long as the root causes of conflict among nations are not removed. Even the poorest LDCs, like Ethiopia, will be seen to double their MILEXP with no regard for other future consequences, when threatened by war.

Even among a more homogeneous group of states, it is hard to identify a universal pattern of MILEXP. The main inference drawn from these differences is that a number of factors affect the interplay of MILEXP and development. Given the interaction between political and economic goals of states, one must ultimately move beyond a simple focus on the MILBURED-Growth link, and analyze the intervening

effects of political factors such as formal alliances bonding Third World governments with the superpowers and the influences of interstate conflicts.

APPENDIX 6-A
Arms Producing Developing Countries and the Levels of Production Dependency in 1968 and 1978

Countries	1968				1978			
	AC	AFV	SHP	HEL	AC	AFV	SHP	HEL
ARG	5	8	6	--	4	5	5	--
BRZ	5	6	6	8	4	3	5	8
COL	8	--	8	--	6	--	7	--
GAB	--	--	8	--	--	--	6	--
EGY	--	--	8	--	--	--	6	--
IND	4	6	6	6	3	4	4	4
INO	8	--	6	8	6	--	6	6
ISR	5	5	8	--	3	(2,3)	3	--
IVO	--	--	8	--	--	--	6	--
KOR	--	8	8	--	--	6	5	--
MAL	--	--	8	--	--	--	5	--
MEX	8	--	6	--	6	--	6	--
PAK	7	--	--	8	6	--	--	6
PER	--	--	8	8	--	--	5	7
PHI	8	--	8	8	6	--	6	6
SRI	--	--	7	--	--	--	6	--
THI	--	--	6	--	--	--	6	--
VEN	--	--	8	--	--	--	6	--

Source: IISS 1979. The Military Balance, 1979-1980, pp. 101-103.

Notes: AC = Aircraft, AFV = Armored Fighting Vehicle,and HEL = Helicopter. SHP= Ships.

1 = Total Independence.
2 = Near-Total Independence.
3 = Mixed Low R & D Independence and Low Production Dependence.
4 = Mixed Moderate R & D Dependence and Low Production Dependence.
5 = Mixed High R & D Dependence Low Production Dependence.
6 = Mixed High R & D Dependence and Moderate Production Dependence.
7 = Near Total Dependence.
8 = Total Dependence.
-- = No Production.

APPENDIX 6-B

The List of Interstate Wars in Which Developing Countries Participated, 1965-1977

Year	Countries in War	Name of War
1965	D.R. Vietnam; R. Vietnam; and R. Korea	Vietnamese
	Pakistan; India	Second Kashmir
1966	D.R. Vietnam; R. Vietnam; and R. Korea	Vietnamese
1967	D.R. Vietnam; R. Vietnam; R. Korea; and Philippines	Vietnamese
	Egypt; Israel; Jordan; Syria	Six Day
1968	D.R. Vietnam; R. Vietnam; R. Korea; Thailand; Philippines	Vietnamese
1969	D.R. Vietnam; R. Vietnam; R. Korea; Thailand; Philippines	Vietnamese
	Egypt; Israel	ISR-EGY
	El Salvador; Honduras	Football
1970	D.R. Vietnam; R. Vietnam; R. Korea; Thailand; Philippines	Vietnamese
	Egypt, Israel	ISR-EGY
1971	D.R. Vietnam; R. Vietnam; R. Korea; Thailand; Philippines; Kampuchea	Vietnamese
	India; Pakistan	Bangladesh
1972	D.R. Vietnam; R. Vietnam; R. Korea Thailand; Philippines, Kampuchea	Vietnamese
1973	D.R. Vietnam; R. Vietnam; R. Korea; Thailand, Philippines, Kampuchea	Vietnamese
	Egypt; Iraq; Israel; Jordan; Saudi Arabia; Syria	Yom Kippur
1974	D.R. Vietnam; R. Vietnam; Kampuchea	Vietnamese
	Cyprus; Turkey	Turco-Cypriot
1975	D.R. Vietnam; R. Vietnam; Kampuchea	Vietnamese
	D.R. Vietnam; Kampuchea	Vietnamese-Cambodian
1976	D.R. Vietnam; Kampuchea	Vietnamese-Cambodian
1977	D.R. Vietnam; Kampuchea	Vietnamese-

Source: Melvin Small and David Singer's data set.

CONCLUSION

Aims: This chapter presents some suggestions for future studies of the MILEXP-development link.

The important question raised here was whether the effect of military buildup is the same across nations. Does military investment stimulate growth or thwart the development efforts of Third World states? This question is important because one of the main development constraints is the limited resources available to central governments.

The question facing many Third World governments is not always simply one of deciding how much to spend for defense; it is often how to find the best means of meeting military requirements. I would have liked to see the results support a reduction of military expenditures. Yet, the results based on a cross-national approach revealed that there is no general trend in when the effects of military burden on economic growth are studied on LDCs. It was shown that cross-national variation exists in the degree to which the LDCs are influenced by MILEXP. At the same time, there is good reason to assume that not all Third World countries benefit from military expenditures.

The pattern and pace of militarization has been quite different in the Third World. During 1965-1977, Iran was recognized as a model of a rapidly industrializing country

which had adopted a program of rapid militarization primarily financed by its oil export revenues. It is true that the massive increase in the government's oil revenues was a major factor behind the drastic change in Iran's military budgets.

It is equally significant to note that the political factor which led to military build-up in Iran was Great Britain's withdrawal from the Persian Gulf in the early 1970s. After this event, the Shah of Iran decided to take on regional military responsibility, which necessitated the creation of a modern military force. The regime was willing to bear heavy burdens of updating its military force posture.

Until the slow-down of economic growth, Iran had virtually no problem in modernizing its sizeable armed forces. Given the highly centralized budgetary process of Iran, there was little debate around the questions concerning careful military assessments of security threats, eliminating inefficiencies, and alternative ways to utilize national resources. The levels and patterns of defense spending were influenced more by the financial ability of the ruling regime than a comprehensive review of overall national development and security needs. The prime minister would propose the new budget, usually with a large proportion of governmental resources allocated to the military. The budget could be implemented with little or no opposition in Majlis. Of course, the government leaders claimed that military investments induced growth of

industries in non-defense areas, and facilitated the development of local production of non-military goods and services. Yet, sharp increase in military expenditures cannot be explained by the rapid growth rate of the Iranian economy.

It is clear that all countries have one common goal. The single most important goal is to achieve a high degree of autonomy from broader political and economic forces outside the nation. A government which is threatened by internal opposition or foreign domination may emphasize military programs to maintain its own power. With the limited technological and industrial bases in the Third World, and the limited ability to defend themselves against a surprise attack, governments are very concerned with increasing their war reserve supplies, and constantly modernizing their weapons stockpile to acquire a degree of military capability sufficient not only to gain an acceptable level of deterrence but also to be able to offset any armed attack in case deterrence fails.

This is the reason why many Third World countries are establishing an arms industry. They would like to decrease their reliance on outside weapons suppliers. They would like to have weapons production facilities within their own border that would permit them to maintain their military equipment and to produce ammunition and weapons quickly. There is a belief that a domestic arms production facility is the best means to deter aggression or to win a war. As is the case with any industrialization plan, the important problems are lack of capital and the weakness of existing

industrial capabilities.

It must be noted that a drive for security as a significant motivation for government action is only one of the many reasons why a government may resort to an arms build-up. Economic goals can impel national policy makers toward particular policy behaviors -- such as development of a new arms industry. Arms production may even enable them to use arms trade as a foreign policy instrument. The suppliers of arms hope to develop political influence in the recieving countries and to benefit from economic returns of arms exports to foreign countries.

Does military build-up lead to deterioration in interstate relations? A frequently-expressed objection to arms build-up is that the accumulation of weapons in the South may have led to the outbreak or intensity of Third World interstate wars and internal conflicts.

The rise of military spending in many LDCS might have resulted from armed conflicts within nations themselves and beyond. Involvement in wars, or threats of a potential enemy's attack, would induce most governments to increase their defense spending even in situations of scarcity of national resources. During wartime, the question of whether increasing level of MILEXP affects economic productivity adversely and whether the consequent negative effect of military burden on national output and productivity would cause social problems will not be raised.

The link between wars and MILEXP is evident in the Middle Eastern nations. The size of MILEXP in the Middle

East seemed to be considerably higher than in the rest of the Third World. The Middle East is currently considered as a high tension region characterized by a war (Iran-Iraq), various interstate conflicts (Arabs-Iranians, Arabs-Israelis), numerous internal strifes (Kurds in Iran and Iraq), and foreign invasion (Soviet Union in Afghanistan).

Another major controversy considered here is whether military build up is vital for the survival of states. On the surface, this seems quite likely. From a strategic point of view, the possession of a powerful military force seems to have been an integral part of any regime's policy for protecting its interests throughout history. Therefore, it should not be surprising that government leaders of developing countries have become enthusiastically involved in the establishment of a national armament industry, which is widely recognized as a symbol of state power. To assume that military expenditures increase military power, and thus is vital for national security, is to assume that there is no alternative available. Third World leaders who feel insecure are persuaded that military build-up will increase their level of security. Under these conditions, they do not concern themselves with the likelihood that allocation of national resources to military programs reduces their capacity to expand welfare programs.

Are there any other options available to increase national security? Other options available to safeguard national interests, such as formation of regional agreements and formal alliances, must be considered. In certain LDCs, for instance Turkey and Greece, it is

believed that alliance ties with superpowers have influenced defense budgeting. A Third World government may make budget reductions on the assumption that other more powerful alliance members would undertake part of its defense commitments.

For many Less Developed Countries, formation of a military alliance as an alternative way of increasing national power and security has either not been contemplated or has been regarded an unsatisfactory substitute for large defense programs. As a result, no formal defense pact is formed among Third World states. In contrast, the majority of advanced states are members of the two existing major military alliance systems -- North Atlantic Alliance Organization (NATO) and Warsaw Treaty organization (WTO). Membership in these alliance networks has made high military expenditures unnecessary for smaller industrial states.

To understand why governments are willing to bear a high military burden, one can concentrate on the foreign policy goals of nations. Many domestic and foreign factors determine foreign policy goals of a state. These include regime type, internal political stability, ideological orientation of leaders, ethnic diversity, population size, and many others. The main shortcoming of research on the Growth-MILEXP link is that these political factors are not considered. The next logical step is to investigate the impact that militarization policies have on political order inside a nation. It is also important to assess the

external influences. In some states, the defense establishments are closely linked to foreign interests, ranging from interests of foreign military advisors to multinational defense contractors of major arms producing states. The LDCs which have granted base rights to the superpowers, and are recipients of large amount of security assistance, may be more open to external influence.

The political instability of the country and the region undoubtedly leads governments to emphasize militarization. This is not to say that political crisis is the only determinants of arms build-ups. It is rather to observe that political variables must be taken into consideration in any analysis of the MILEXP-Growth link.

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