

CHAPTER 1

INTRODUCTION

1.1 Introduction

During the past decade studies concerning military expenditure have increased considerably. In most of the studies an attempt has been made to examine the relationship between economic growth and military expenditure. The majority of these studies are cross-country analyses. In the present study an attempt is made to examine the relationship between economic growth and military expenditure in a single country, namely Sri Lanka. In section 1.2 the global trend in military expenditure is briefly reviewed. In section 1.3 various definitions of military expenditure are given. Section 1.4 concerns the military expenditure in less developed countries (LDCs). A survey of the literature, which is the main component of the present chapter, comes in section 1.5. The objectives of the study are given in section 1.6 and the outline of the study in section 1.7.

1.2 Global Perspective

World spending on military related activities has been growing rapidly in recent years. Most countries regularly spend vast amounts and use substantial other sources, both physical and human, on their military effort. Since the beginning of the 1980s world military spending has been growing, on average, by over 3

per cent above inflation each year [World Armament and Disarmament, SIPRI (Stockholm International Peace Research Institute) Year Book, 1986, p.209]. On the one hand, wealthy countries can afford to devote resources to military expenditure. On the other hand, poor countries, though they cannot afford to do so, also devote a big slice of their GDP to military related activities. It is interesting to note that, over the last 20 years expenditure on military related activities has grown more rapidly in developing countries than in NATO¹ (North Atlantic Treaty Organization) or the WTO² (Warsaw Treaty Organization) countries.

Table 1.1 provides data on world military expenditure in 1980 and 1985. This table shows the increase in military expenditure from 1980 to 1985. However, the data on the USSR, WTO countries and China is unreliable according to the SIPRI Year Book - 1986.

Table 1.1

WORLD MILITARY EXPENDITURE 1980 AND 1985

(in million U.S. dollars at 1980 prices
and exchange rates)

Country/Region	1980	1985
USA	143,981	204,896
Other NATO countries	112,320	122,784
USSR	131,800	146,200
Other WTO countries	12,479	13,932
Europe		
(other than NATO and WTO)	15,427	16,639
Middle East	41,190	49,634
South Asia	6,599	9,087
Far East(excluding China)	27,360	34,800
China	42,700	30,000
Oceania	4,273	5,350
Africa (excluding Egypt)	14,758	12,699
Central America	2,853	3,797
South America	11,305	13.300

Source : SIPRI Year Book - 1986 , p.231

There are several reasons for the increase in spending on military related activities. These reasons can be summarised into three major categories (Maizels and Nissanke 1986, p.1129).

- (a) National reasons
- (b) Regional reasons
- (c) Global reasons

Military or defence expenditure can grow for any or all of these reasons. For example, internal conflicts, civil war and communal or ethnic problems might increase the military expenditure of a country. Similarly, regional tension, border conflicts or the influence of super powers can cause an expansion in military expenditure.

When the military sector is important it leads to an acceleration of the arms race between countries. The importance of military power is the main reason for the arms race between countries including super powers and their allies. As a result, the arms industry has become one of the most important activities in the present world economy. Some Third World countries produce sophisticated weapons today. They produce them not only for their own consumption but also for earning foreign exchange by exporting those weapons to other developing countries. India and Pakistan are two such countries which have sophisticated and rapidly growing arms industries.

A rapid increase in military related expenditure may lead to a reduction in other expenditure. Especially in the developing world there are problems of supplying urgently needed basic facilities such as food, shelter, education and health. Increasing military expenditure in these countries can cause social as well as political problems.

Apart from the social problems there are serious economic problems, such as how military expenditure affects the overall economic development of the world, how it affects other government expenditure and so on. While most politicians see only the beneficial side of the increase in military expenditure,

economists have different views regarding the costs and benefits of increased military expenditure. In some countries military industries have provided substantial job opportunities and positively contributed to the country's balance of trade through the supply of arms to others. In these cases economists see the benefits of increasing military expenditure even in developing countries. However, some are not so optimistic about this and look at the high opportunity cost of military expenditure. Table 1.2 indicates that the growth rate of world military expenditure is much higher than the growth rate of world output. If this trend continues the result would be a huge arms build-up and the possible threat of war.

Table 1.2

GROWTH OF WORLD OUTPUT AND MILITARY EXPENDITURE

BY ECONOMIC GROUPS. (in percentages)	
Area	1980-1985
World :	
GDP (Gross Domestic Product)	2.4
Military Expenditure	3.2
Industrial	
Market Economies:	
GDP	2.1
Military Expenditure	4.9
Non-Market Economies:	
GDP	3.7
Military Expenditure	0.3
Developing Countries:	
GDP	1.8
Military Expenditure	3.1
Source : SIPRI Year Book- 1986	

In Table 1.2, industrial market economies include Portugal and South Africa and non-market economies cover WTO countries and China. The developing countries include oil exporting countries and the rest of the world excluding Portugal and South Africa.

The most notable feature in this table is that the growth rate of military expenditure in developing countries is similar to the world's growth rate of military expenditure.

1.3 Definition of Military Expenditure

In general, the term "military" stands for defence forces such as Army, Navy and Air Force. It also implies other paramilitary forces which are involved in military activities. "Military expenditure" is the expenditure incurred in activities which are related to military forces. This includes both current and capital expenditure. Military expenditure data produced by the various sources, usually, differ from each other. The main reason for this difference is that there is no standard definition of security spending. The United Nations has given a standard definition for security expenditure but this definition is not widely accepted (Ball 1984a, p.6). The definitional problem of military expenditure arises in the case of national governments too. For example, under the budget estimates of the Ministry of Defence in Sri Lanka there are some allocations for certain departments which do not directly participate in defence activities, for example, The Department of Civil Aviation.

The military expenditure data produced by NATO does not take into account the civilian type expenditure of each of the NATO defence ministries and does not include military type expenditure by other ministries. The IISS (International Institute of Strategic Studies) publications depend on national budget estimates in providing military expenditure data. SIPRI publications use the NATO definition as a guideline. IMF (International Monetary Fund) publications use a comprehensive definition of military expenditure. They take into account each service which supports military personnel and activities but exclude civilian type expenditure borne by the defence department

or ministry. The data published in The UN Statistical Yearbook are based on individual national definitions of military expenditure. The World Bank definition includes "....all expenditure, whether by defence or other departments, for the maintenance of military forces, including the purchase of military supplies and equipment, construction, recruiting and training. Also falling under this category is expenditure for strengthening the public service to meet war time emergencies, for training civil defence personnel, and for foreign military aid and contributions to military organizations and alliances" [World Bank (1983), p.212].

For the purpose of the present study, we have taken only the direct military expenditure data. More details will be provided in chapter 5 regarding the military expenditure data used in this study.

1.4 Military Expenditure in LDCs

Since the end of the Second World War not a single war has taken place in the developed world. All the wars have taken place in the poorer countries of the world (Kaldor 1978, p.57). Although there are some exceptional cases (eg.Northern Ireland) it is apparent that military coups, social unrest, civil wars, border conflicts and similar kinds of disturbing activities are more common in the developing world than in the developed world. Therefore, it is not surprising to have a higher growth rate of military expenditure in the developing than in the developed countries.

Table 1.3 illustrates defence expenditure as a percentage of GDP or GNP (Gross National Product) and also as a percentage of the total government spending of selected Asian countries.

Table 1.3

DEFENCE EXPENDITURE AS A PERCENTAGE OF GDP/GNP AND
GOVERNMENT SPENDING IN SELECTED ASIAN COUNTRIES

COUNTRY	YEAR	% of GDP/ GNP	% of GOVERNMENT SPENDING
BANGLADESH	1979	1.4	20.1
	1982	1.6	20.6
BURMA	1979	3.6	24.3
	1982	3.5	35.0
INDIA	1979	3.0	20.4
	1982	3.3	27.6
INDONESIA	1979	3.2	13.7
	1982	3.3	12.4
KOREA [SOUTH]	1979	5.2	29.5
	1982	6.0	36.0
MALAYSIA	1979	5.7	16.0
	1982	8.2	17.7
PAKISTAN	1979	6.4	34.9
	1982	7.1	45.6
SRI LANKA	1979	1.3	2.7
	1983	1.3 ³	3.2

Sources : Asia Year Book, 1985, p.21

Government Treasury, Sri Lanka

One can look at this unusual increase in military expenditure in developing countries in the light of the three major headings noted on page 4. National reasons are the most important in determining the defence expenditure in developing countries. Most of these countries became politically independent only after the Second World War. They have had little experience in politics, administration and other governing activities. The struggle for political power between races, tribes, religious groups and rich and poor has been inevitable. These conflicts are common in most of the developing countries. When these conflicts have become uncontrollable the last, and possibly the worst, thing to appear has been a dictatorship.

Under national reasons there are various sub categories such as, the political, social, religious and economic. For example, Harris (1985 p.47) in his study has demonstrated that economic forces have at least a moderate influence on defence expenditure in 5 ASEAN (Association of South East Asian Nations) countries.⁴ In one way or another the above reasons seem to create a situation in which military forces have to play an important role. When the role played by military forces becomes so important expenditure on military related activities increases.

Regional reasons can also lead to an increase in expenditure on defence forces or military related activities. Border disputes and military build-ups in neighbouring countries can lead to an increase in military expenditure in a country. One prominent example of this is the case of India and Pakistan. The expansion of military forces in Pakistan has caused India to expand its military related activities. Similar examples can be seen in Korea, Israel and some of the African and Latin American countries. Regional tension between countries can accelerate military expenditure in those countries. The continued increase in military expenditure in two rival countries can also create

the threat of a possible war. Iraq and Iran provide a good example in this context.

Turning to the international reasons, it can be argued that the growth of military expenditure is in most cases associated with super powers. For example, defence treaties with super powers or other militarily powerful countries can cause an increase in defence expenditure in that country. This situation again depends on the political leadership or the political belief of that country. There are a number of studies in which an attempt has been made to analyse the effects of international reasons on the growth of military expenditure [For example see Maizels and Nissanke (1986)].

1.5 Survey of the Literature

The study of military expenditure has become popular among economists since the pioneering work of Benoit (1973,1978) who analysed the relationship between defence expenditure and economic growth. Benoit's work drew the attention of a number of scholars to this area. Subsequently, Rothschild (1977), Frederiksen and Looney (1982), Deger (1986), Deger and Sen (1983), Deger and Smith (1983), Faini, Annez and Tailor (1984), Biswas and Ram (1986), Maizels and Nissanke (1986) and David Lim, (1983) among others, have made valuable contributions to this field of research. Table 1.4 summarises some important studies undertaken in relation to military expenditure. Studies on military expenditure can be divided into three main groups according to their conclusions.

Table 1.4

A Summary of the Studies Carried Out on Defence Expenditure.

T.S. = Time Series
C.S. = Cross Section

Title	Author	Year	Area of Study	T.S. or C.S.	Details of the Model Used.		
					Time Period	Coun- tries	Results of the Study
1. Defence Spending Economic Structure and Growth.	Ames, P., Faini, R. and Taylor, L.	1984	Defence expenditure and economic growth.	C.S. and T.S.	1952- 1970 1950- 1972	69 LDCs.	Defence burden hinders economic growth.
2. Growth and Defence in Developing Countries.	Benoit, B.	1978	Defence expenditure and economic growth.	C.S.	1950- 1965	44 LDCs.	Strong positive correlation between defence expenditure and growth.
3. Economic Development and Defence Expenditure.	Deger, S.	1986	Defence expenditure and economic growth.	C.S.	1965- 1973	50 LDCs.	Military expenditure will reduce economic growth.
4. Another Look at Growth and Defence in Less Developed Countries.	Lim, David	1983	Defence expenditure and economic growth.	C.S.	1965- 1973	54 LDCs.	Higher defence spending hurt economic growth.

Table 1.4 continued..

Title	Author	Year	Area of Study	U.S. or C.S.	Time period	Countr- ies	Results of the Study
5. Military Expenditure, Spin-off and Economic Development.	Deger, S. and Sen, S.	1983	Spin-off effect of defence expenditure and economic growth	U.S.	1951- 1971	India	Spin-off effects not significant.
				C.S.	1965 1975	50 LDCs	Increased military expenditure reduces growth.
6. Economic Growth and Defence Spending: Granger Causality.	Jording, W.	1986	Military spending and economic growth	C.S.	1962- 1977	57 LDCs	Military spending is not a strong exogeneous variable.
7. Military Expenditure, Export and Growth.	Reich, J.J. K.W.	1977	Growth, export and military spending	C.S.	1955- 1969	14 OECD Countri- es	Increased military spending reduces export and lower economic growth.
8. Defence Expenditure, External Public Debt and Growth in Developing Countries.	Looney, R.E. and Frederiksen, P.C.	1986	Growth/defence relationship according to the country's borrowing capacity	C.S.	1950- 1965	44 LDCs.	Positive relationship of military burden to growth in resource abundant countries and negative relationship in resource constrained countries.
9. Budgetary Trade-offs between Education and Defence in Latin America.	Verner, J.G.	1985	Trade-offs between defence and education/health	C.S.	1948- 1979	18 Latin American countries	Negative trade-off in 1 country, positive trade-off in 10 countries and no trade-off in 7 countries.

Table 1.4 continued..

Title	Author	Year	Area of Study	T.S. or C.S.	Time period	Countr- ies	Results of the Study
10. Military Expenditure and Industrialization in Africa.	Nabe, O.	1983	Military expenditure and socio-economic development	C.S.	1967-1976	26 African Countries	Military expenditure negatively related to socio-economic development.
11. Military Expenditure and Economic Growth in Less Developed Countries: An Augmented Model and Further Evidence.	Basudeb, Biswas and Rati Ram	1986	Economic growth and military expenditure	C.S.	1960-1970 and 1970-1977	116 LDCs	No consistent statistically significant connection between military spending and economic growth.
12. The Determinants of Military Expenditure in Developing Countries.	Alfred Maizels and Machiko Nissanka	1986	Factors determining military expenditure	C.S.	1978-1980	83 LDCs	Level of military expenditure depends on domestic/regional and global and also on political/military and economic factors.

In the first group it has been concluded that increased military expenditure can help the development process of a country by way of accelerating economic growth (Benoit 1973, 1978). The second group of studies differs. It is argued that increased military expenditure will not accelerate economic growth but rather hampers the process of development [Ball (1983), Deger (1986), Rothschild (1977), Lim (1983)]. Most of the studies on military expenditure fall into either of these categories although a few conclude that increased military expenditure neither helps nor hampers economic growth (Biswas and Ram, 1986).

The work of Benoit (1973) covered 44 developing countries over the period 1950-65. His findings were that over the period, and also during the short period of 1960-65, high defence burdens were positively correlated with higher growth rates. Benoit defined defence burden by calculating military expenditure as a percentage of civilian gross domestic product. Benoit's findings can be summarised as follows:

- a) Countries with a heavy defence burden had the most rapid rate of growth.
- b) Countries with the lowest defence burden had the lowest growth rate.
- c) Military governments do spend more on defence than civilian governments.
- d) In the 1960-65 period defence burden seems to be a more significant determinant of growth than in the 1950-60 period.

There is a question as to whether defence expenditure influences growth or vice versa. Benoit found the causality running primarily from defence burden to economic growth. Benoit discussed the tangible benefits of defence programmes such as feeding, clothing, housing, educational programmes, medical care and public works (construction etc.) activity. If increased defence expenditure programmes offer civilians utilizable training then, according to Benoit, it may make a significant contribution to the productivity of the civilian sector.

Benoit's work has been criticized by many others. The basic criticism against defence expenditure is that it represents a significant opportunity cost. According to Chan (1985) there are four major negative effects of defence expenditure. These are the modernization effect, balance of payment effect, the effect on the productivity and technological base of the country and the import intensive nature of defence expenditure. The modernization effect shows the negative outcome of increased defence expenditure in an economy. As a result of increased defence expenditure there may be a reduction in civilian GDP. This reduction may lead to some crowding-out effects on civilian consumption and investment. Secondly, if growth is export led, high military expenditure could lead to ".....chronic and serious displacement of capital and talent from the most dynamic sectors of civilian production to military production" (Chan 1985,p.417). Thirdly, the use of research and development resources in defence can hinder the country's technological and productivity progress in the civilian sector. Finally, in most cases defence expenditures are import intensive in nature.

Deger (1986) has shown three main points on which Benoit's work can be criticised. Firstly, he (Deger) sees a definitional error in Benoit's model. Secondly, the way Benoit has chosen his variables can give highly sensitive correlation results. Even a simple change can give misleading results. Finally, the most

important criticism is that the econometric work on Benoit's model is based on a single equation system. Deger argued that the relationship between the defence variable and other variables cannot be explained in a single equation model. In order to obtain more accurate results simultaneous equations should be used.

Deger pointed out four major ways in which defence expenditure can influence economic growth. The economic growth of a country can be influenced through aggregate demand stimulation activities. This can be done by increasing (reducing) aggregate demand through higher (lower) defence expenditure. Furthermore, the spin-off effects of increased military expenditure can influence economic growth. Another way of influencing economic growth is by allocating resources away from potential investment opportunities. This can affect the overall economic growth of the country. Finally, increased military expenditure may create new resources. However, the autonomous nature of military expenditure can lead to opposite results in a dynamic context. Military expenditure may have a direct opportunity cost and it can reduce the potential savings available for planned investment.

Deger (1986) used a cross section of 50 developing countries for his study covering the period 1965-73. His findings showed that the military burden has a negative effect on economic growth. Moreover, the military burden has a negative effect on domestic savings and foreign capital. In terms of resource creation and reallocation away from productive uses, Deger found that military expenditure has a significantly negative effect.

Ball (1983) criticized Benoit's argument of the potential positive effects of military expenditure on economic growth. According to Ball (1983, p.517), civilian goods and services produced in the military sector may cost more than if produced by

civilians. "...military substitutes are not always cheaper was demonstrated by Benoit's own study of India where he (Benoit) estimated that the cost to the Indian army of producing it's own food on military farms was more than one third greater than the cost of producing it from the civilian economy" (Ball 1983, p.517). It is also the case that the benefits of military training to the skill levels of the civilian economy would be considerably reduced in countries with professional armed forces, while where urban unemployment is high.

Deger and Sen (1983) looked at the spin-off effects of military expenditure. They used time series data on India for the period 1951-71 and cross section data for 50 developing countries for the period 1965-73. They concluded that the effect of an increased military burden is to reduce a country's economic growth rate.

Faini, Annez and Tailor (1984) based their study on a Keynesian type model. They estimated a regression equation by using cross section data of 69 developing countries. In the same study they used time series data on India for the period 1950/51-71/72. They regressed growth of output on changes in exports, population, the defence burden, capital inflows and capital stock. For all developing countries they found that an increase in military expenditure had a significant negative impact on economic growth. Increases in the defence burden depressed the investment/GDP ratio. For the time series study for India they found that increased military expenditure had an economically important real cost in foregone investment, lower growth rate, and lagging agricultural supply.

Verner (1983) and Nabe (1983) in two different studies, analysed some other aspects of defence expenditure. Verner (1983) used a time series analysis to explain the relationship between education and defence in 18 Latin American countries over

the period 1948-79. His results showed that there was a negative trade-off in ten countries and no significant trade-off in the remaining seven countries. In Nabe's (1983) study, he computed a general index of social development levels for 26 African countries for each year from 1967 to 1976. This index covered both education (number of school teachers per 1000 population and government expenditure on education as a percentage of GDP) and health (number of physicians per 100 population and government expenditure on health as a percentage of GDP) sectors. Nabe (1983) concluded that for this group of countries military expenditure was negatively related to his social development indicator.

Rothschild (1977) used the pattern of rank correlation across growth, exports and military spending for 14 OECD (Organization for Economic Co-operation and Development) countries⁵ between 1956 and 1969. He concluded that increased defence spending tends to reduce exports and lower economic growth.

Lim (1983) used a model based on the Harrod-Domar growth model for his cross-section analysis on 54 developing countries for the period 1965-73. He estimated regression equations for different regions of the world and showed inter-regional differences in the relationship between defence and growth. His conclusion was that "...defence spending is detrimental to economic growth in developing countries...." (Lim 1983, p.379).

Another study, by Harris, Kelly and Pranowo (1987), analysed trade-offs between defence and education/health expenditure in developing countries. They found that (based on one year's data) countries which allocated relatively high proportions of their central government expenditure to defence did not usually allocate relatively low proportions to education and health. These countries allocated high proportions of their central

government expenditure to the education and health sectors as well.

Frederiksen and Looney (1986) examined the relationship between growth and defence spending in developing countries in a framework which differed from other studies. It was a cross-section analysis based on data for 44 developing countries from 1950-65. They recognized differences in the borrowing capacity of each country. The hypothesis used was as follows:

- (a) a negative relationship exists between defence and economic growth in countries which are financially and resource constrained.
- (b) a positive relationship exists in countries which are relatively resource unconstrained.

The results confirmed the hypothesized positive relationship between defence and growth in the unconstrained group, but did not confirm the relationship assumed for the constrained group.

In another study Joerding (1986) used the Granger causality test to check the assumed exogeneity of military expenditure in relation to economic growth. The test results, performed using two measures of military spending, consistently showed that military spending is not a strong exogeneous variable.

Biswas and Ram (1986) in their study looked at a large sample of developing countries (116) for two periods 1960-70 and 1970-77. They reviewed earlier studies and used a conventional model and an augmented neoclassical model in their study. The conventional model had been derived by using the simple neoclassical production function. Here labour, capital, and

military spending enter as inputs. The augmented model considered two important mechanisms through which military expenditure may effect economic growth. These were the external effects of military spending and the factor productivity differences between the civilian sector and military sector. The estimates obtained from these models suggested the absence of any significant externality effect of military sector output on civilian production and that there is no statistically significant factor productivity differences across these two sectors. The results of the augmented models led to the conclusion that military expenditure neither helps nor hinders economic growth in developing countries.

While most of the researchers studied the relationship between economic development and defence expenditure, a few attempted to identify the determinants of military expenditure in developing countries. The study by Maizels and Nissanke (1986) is one example which looks at the main factors influencing the level of military expenditure. This analysis was based on three level distinctions covering national, regional and global levels. This was applied to a cross country regression for 83 developing countries for the period 1978-80. They concluded that the differences among developing countries in the relative size of their military burden is a reflection of factors, both domestic/regional and global, and both political/military and economic.

Nawaz (1983) took a different approach in analysing the relationship between military expenditure and economic growth. He reviewed the economic impact of defence expenditure and said "...The entire debate over defence expenditures and their economic costs comes down to the twin question: how much defence does a country need and [how much] can it afford? In the final analysis, it is the prerogative of individual governments to assess both the costs and benefits of rising expenditures on

the defence sector and to decide, according to their priorities, the proper allocation of resource between defence and other needs" (Nawaz, p.35).

1.6 Objectives of the Study

Increasing military expenditure in developing countries has raised number of social, economic and political problems. In the present study the main concern is with the economic problems associated with military expenditure. Problems such as whether there is any relationship between defence expenditure and economic growth, whether increased defence expenditure really affects the economic development of a country and so on should be looked at. Most of the studies concerning military expenditure have used cross-section data. This has become a popular choice mainly because many reseachers have undertaken cross-country studies. There are few single country studies using time series data.

For the purpose of the present study Sri Lanka has been chosen since it's background provides for a good case study. More specifically, the following reasons governed the choice of Sri Lanka for this study:

1. During the last decade (1976-86) Sri Lanka has achieved an average annual growth rate of 5.0 per cent in real terms. On the other hand, expenditure on the defence sector has shown a rapid increase during the same period. Therefore, it may be interesting to examine the relationship between those two variables.

2. Ongoing ethnic problems in the country have resulted in a significant increase in military expenditure. Since it is unlikely that there will be an immediate settlement of the problem, further increases in defence expenditure, at least for another few years, cannot be avoided.
3. No detailed studies have been undertaken on Sri Lanka in the field of military expenditure to date.
4. Data are available in sufficient detail to undertake a comprehensive analysis of military expenditure.

In view of the above factors, it is worthwhile to examine the relationship between economic growth and defence expenditure in the case of Sri Lanka. However, one should be aware of the complicated nature of this area of study. Most of the econometric analyses undertaken on military expenditure, with special reference to developing countries, have been criticized. The difficulty for this type of analysis is the political and economic instability prevailing in most of these countries. As far as developing countries are concerned, it is difficult to draw conclusions or make policy recommendations by looking only at the regression results of an econometric work on defence burden and economic growth. Wider issues concerning socio-economic developments are crucial to such countries, even though they are not always suitable for econometric analysis.

The objective of the present study goes beyond an econometric analysis of military expenditure. The economic linkages between defence expenditure and other macro-economic

variables, such as capital formation, human capital, import costs, foreign exchange and other external effects, also need to be examined. This will give a clearer picture of the relationship between defence expenditure and economic growth. (In chapter 3 of this study these linkages are discussed in more detail.) In addition, budgetary trade-offs between defence expenditure and non-defence expenditure will also be examined.

In summary, the first objective of this study is to examine the relationship between defence expenditure and economic growth in Sri Lanka, secondly, to examine the economic linkages between defence expenditure and some other macro-economic variables in Sri Lanka, and thirdly, to examine the budgetary trade-offs between the defence and non-defence sectors in Sri Lanka. A model will be used and an econometric analysis undertaken to achieve the first and third objectives while descriptive analysis will be used to achieve the second objective.

1.7 Outline of the Study

This is a case study on military expenditure and economic growth in Sri Lanka. In chapter 1 a general overview of military expenditure and a survey of the relevant literature was given. In chapter 2 the case of Sri Lanka is considered. In this section the Sri Lankan economy and the role of the defence forces are examined. In a more analytical way the determinants of military expenditure in Sri Lanka are also outlined in the chapter 2. Chapter 3 is mainly devoted to analysing the economic linkages of military expenditure. While examining economic linkages in general the situation in Sri Lanka specifically will be considered. Budgetary trade-offs between defence expenditure and non-defence expenditure will be analysed in chapter 4. Deviating from conventional studies, the defence-non-defence trade-offs in Sri Lanka will be examined in more detail, i.e.,

recurrent expenditure and capital expenditure separately. Chapter 5 will be devoted to the major analysis with a model and empirical results. Finally, chapter 6 will give the conclusions of the study.

Notes:

1.NATO Countries: Belgium, Canada, Denmark, France, FR
Germany, Greece, Italy, Luxumbourg, Netherlands, Norway,
Portugal, Turkey, UK, and USA.

2.WTO Countries: Bulgaria, Czechoslovakia, German DR,
Hungary, Poland, Romania, and USSR.

3.1983 data has been taken here as it is more appropriate.

4.Five ASEAN Countries: Indonesia, Malaysia, Philippines,
Singapore, and Thailand.

Chapter 2

THE CASE OF SRI LANKA

2.1 Introduction

The intention in this chapter is to explain the economic, social and other relevant background and details of the defence forces of Sri Lanka. In section 2.2 the recent history of the island and its overall economic condition is briefly considered. Then, in section 2.3 the role of the defence forces in Sri Lanka is examined and how they have become important in the defence of the country is explained. This section will help to understand the next section (2.4) in which recent developments are reviewed and the main factors in the changing role of the defence forces is examined. Turning to the specific area in section 2.5, the determinants of military expenditure in Sri Lanka are examined in detail. An econometric analysis is used in this section to identify the most significant variables which affect the level of military expenditure in the country. Finally, in section 2.6 future trends in defence expenditure in Sri Lanka are looked at.

2.2 The Sri Lankan Economy

Sri Lanka (till 1972 Ceylon) is a tropical island located in the Indian Ocean with an area of about 65,600 square kilometers. The island's population is around 16 million, and consists of different ethnic communities. The major community groups are the Sinhalese, Tamils and Muslims of which the Sinhalese form the majority. The country has a democratic parliamentary system and the head of the state is an elected president who has executive powers.

With the arrival of the Portuguese in the sixteenth century the country started a new era in its history. The Portuguese captured the coastal area of the country and ruled it till the mid seventeenth century. At that time the Dutch captured this area and they ruled it till the late eighteenth century. Then the British came and captured the whole country and ruled it until 1948.

During this period European culture, religion and other social customs became prominent in Sri Lankan society. The most important impact was on the economic life of the country. The arrival of Europeans saw the beginning of the organized plantation sector in Sri Lanka. With the development of this sector, mainly tea, rubber and coffee, the subsistence agricultural sector, which had been the most important till that time, became less important. This change established the foundation of a dual economy in Sri Lanka.

Sri Lanka gained independence from Britain in 1948. However, this did not change the country's economic life or economic system. The plantation sector started playing the dominant role in the external trade of the economy as the main foreign exchange earner. Table 2.1 shows, even today, how

important this sector is to the Sri Lankan economy.

Table 2.1

PRINCIPAL EXPORTS OF SRI LANKA - 1985 (% of total)

Tea	-	33.1
Rubber	-	7.0
Coconut Products	-	6.6
Minor Agricultural Products	-	3.8
Textile Garments	-	21.8
Petroleum Products	-	10.7
Others	-	17.0
Total	-	100.0

(Source: Sri Lanka, Country Report No.2, 1987. Economist Intelligence Unit (EIU), London.)

Sri Lanka has been the second largest supplier of tea in the world market for many years. In recent years Sri Lanka's share in total world tea output has declined and in 1985 it was 17 per cent. However, Sri Lanka has retained her relative position as the second most important tea producer in the world (Central Bank of Sri Lanka. Review of the Economy - 1985). Despite its large share of the world tea market, Sri Lanka has no control over the price of tea. Like many other developing countries, (most of them are exporters of agricultural products) Sri Lanka's economy is severely affected by the instability of export prices in the world market. Some actions have been taken in the past to change this vulnerable situation of the Sri Lankan economy. These programmes have included diverting the export sector from more

volatile agricultural products to stable industrial products. However, to achieve this kind of long term objective more time is needed. So far no significant results have been achieved, except in the textile garment sector.

Sri Lanka follows an economic policy with few restrictions on imports, a liberalized tax policy on foreign investments, and incentives for private businesses. The government is trying to establish a free market economic system but still the state's share of total economic activity is high. Even though the capital city and big cities, where around 20 per cent of the total population lives, enjoy most of the benefits achieved through liberalized policies, around 70 to 80 per cent of the people live in the rural areas of the country. They are mainly involved in agricultural activities and their contribution to national income is considerable. The non-monetarised sector's role in the economy cannot be ignored. Data on some of the important macro-economic variables of Sri Lanka are given in Table 2.2.

Table 2.2

MACRO-ECONOMIC INDICATORS OF SRI LANKA - 1985.

GDP at market prices	Rs. Billion	159.8
Real GDP growth	%	5.0
Consumer price inflation	%	1.4
Population	Million	15.8
Exports (f.o.b.)	U.S.\$ Million	1,333.0
Imports (c.i.f.)	U.S.\$ Million	1,948.0
Current account deficit	U.S.\$ Million	556.3
Total external debt	U.S.\$ Billion	3.4
Debt service ratio	%	22.4
Exchange rate (average)	Rs. per U.S.\$	27.16

(Source : Sri Lanka, Country Report, No.2, 1987, Economist Intelligence Unit (EIU), London.)

2.3 The Role of the Defence Forces in Sri Lanka

The role played by the defence forces in Sri Lanka was not significant during the 1950s and 1960s. Just after becoming independent from Britain the government of Sri Lanka had to organize its own military power. The closure of British Royal Air Force bases at Katunayake and Trincomalee in the early 1960s made the Sri Lankan defence forces solely responsible for the country's defence. The defence force of Sri Lanka mainly consists of its Army, Navy and Air Force. Except for a few incidents, these forces were important only in ceremonial proceedings (for example: Independence Day celebrations).

The armed forces of Sri Lanka were mainly involved in law and order maintaining activities during communal clashes between different communities. Even though they were involved in the Second World War under the British rule, they never directly fought in a war. Until their involvement in the present anti-terrorist activities in the northern and eastern part of the country, only in 1971, did the armed forces play an important role in the field of defence of Sri Lanka. In 1971, Sri Lanka had its first revolutionary type insurrection against the ruling government. The insurrection was organized by a leftist political organization called Janatha Vimukthi Peramuna (People's Liberation Front). Students (mainly university) were the main participants in this struggle. They attacked police stations all over the country and captured some of those in the remote areas of the country. However, the armed forces easily recaptured these areas without much trouble. In recent times this has been the only occasion on which Sri Lankan forces have played a major role with regards to the defence of the country. Table 2.3, given below, shows the strength of the defence forces of Sri Lanka.

Table 2.3

DEFENCE FORCES OF SRI LANKA.

Army

Regular	16,000	
Reserve	14,000	30,000

Navy

Regular	2,960	
Reserve	1,000	3,960

Air Force

Regular	2,600	
Reserve	1,100	3,700

Total Armed Forces		37,660
--------------------	--	--------

Para Military Forces

Police Force		21,000
Home Guard Service		5,000

(Source : Asia Year Book - 1987, pp. 20-21)

The Sri Lankan Army consists of 5 task forces (infantry brigades: 5 regular and 6 reserve battalions), 2 reconnaissance regiments (1 reserve), 2 field artillery (1 reserve), 1 anti-aircraft regiment, 1 field engineer regiment and 1 engineer plant regiment, 1 signal battalion and 1 special task force (4000 men). It has a fleet of armoured fighting vehicles which include 45 vehicles, 160 armoured personnel carriers, 71 artillery guns, 24 mortar guns, a number of anti-aircraft guns and 48 air defence guns. The Navy has bases in Trincomalee, Tangalle and Kalpitiya.

It has 3 command ships, 2 large patrol craft, 42 small craft, 6 fast attack craft and 4 amphibiouscraft. The Air Force has 1 squadron with 11 small transport planes, 1 squadron with 12 helicopters (including attack helicopters), 14 training aircraft and 2 jets in storage. There are 12 aircraft and 26 helicopters on order (Source: Asia Year Book- 1987, pp. 20-21).

2.4 Recent Developments

The present situation of conflict, which is the main reason why the defence forces have become very important, in the country's northern and eastern part is not a sudden development. This is not the place to discuss the beginning of Sri Lanka's ethnic problem. However, it is necessary to briefly note how the near civil war situation, which has adversely affected the economic, as well as social and political life of the country, arose. During the British administration, the majority Sinhalese community was deliberately kept out of key government positions. This may have been a method used by British rulers in their colonies to prevent any threat to colonial rule from the majority local people. In the years after independence key positions within the new governments moved from Tamils to Sinhalese. The so-called 'nationalistic' drive among politicians created a difficult situation for Tamils. Ethnic clashes between minority Tamils and majority Sinhalese first erupted in 1958. Gradually, Tamils started feeling that they were being discriminated against and lost their faith in the majority Sinhalese. The situation worsened in the early 1980s and deteriorated further after the 1983 communal clashes between the two communities. As a result, some Tamil political organizations started fighting for their own separate homeland. This was the starting point of terrorist activities in the Tamil dominated area of the country. This situation developed rapidly and the present problem of violent activities in the northern and eastern parts of the country is

the result of that. At present there are two major groups fighting against the Sri Lankan government defence forces to establish a separate state in the northern and eastern parts of the country. So far it has cost around 5000 lives and millions of dollars in property damage and production losses.

The increase in terrorist activities in the country has created a situation in which the Sri Lankan government is compelled to increase the share of defence expenditure in its annual budget. Appendix II shows military expenditure data for Sri Lanka from 1965 to 1987, in nominal values. This increase in defence expenditure, especially in the 1980s, is a direct result of increased military activities in the troubled part of the country. In 1986 defence expenditure rose to almost Rs.2 billion. The cost will continue to rise as the armed forces are obtaining more weapons, vehicles and other war-related materials. It is also necessary to recruit more people to the defence forces and training of these people is expensive. The indirect costs and effects of these activities are not easy to calculate but they may be high.

While the continuing increase in military expenditure draws large amounts of resources away from other sectors, the decreasing revenue share aggravates the government's budgetary problems further. The economic situation in the affected area has a fall in government revenue by way of loss of productive activities such as agriculture, fishing, and tourism, etc. Difficulties in collecting taxes is another major loss to government revenue. Apart from the loss of revenue, the area has lost most of its social services like education and health facilities. However, it is difficult to measure the net loss (gain) to the government by means of calculating savings from reduced expenditure on social services and losses in tax revenue.

2.5 Determinants of Military Expenditure in Sri Lanka

The factors underlying military burden (the share of military expenditure in GDP/GNP) can vary from country to country. The determinants of military expenditure have been examined in detail by Looney (1986), Maizels and Nissanke (1986) and Harris (1985). Generally, it is presumed that military expenditures are in large part a function of political or strategic factors with economic variables playing at most a tangential role (Looney 1986, p. 4). On the other hand, Harris (1985, p.41) tried to determine the extent to which domestic economic conditions have influenced levels of defence expenditure in five ASEAN countries. It is shown in his study that "...the size of G.N.P. (Gross National Product) determines the broad order of magnitude of defence expenditure and domestic economic conditions influence its level in any year" (Harris 1985, P. 47).

Maizels and Nissanke (1986) point out that "...the differences among developing countries in the relative size of their military burdens... appear to reflect a complex of factors domestic, regional and global which are not easy to disentangle and which no doubt vary in emphasis from country to country" (p. 1137). It appears that wars or tensions with neighbouring countries are only a part of the reasons which determine the level of defence expenditure. Domestic political and socio-economic factors, external factors such as relations with global power blocks and the availability of foreign exchange to buy arms are also determinants of defence expenditure in developing countries (Maizels and Nissanke 1986, p. 1137).

Looney (1986, p.27) in his cross country study showed that per capita military expenditure tends to increase in line with increases in per capita income. The results of Looney's study

further showed that "....whether developing countries are examined as a whole, on a broad regional basis or by degree of resource constraint/unconstraint the validity of the results is same" (Looney 1986, p. 27).

Another factor which has been taken as important by Looney (1986) is the external borrowing capacity of the country or the public external debt of a country. ".... public external debt does appear to have played a significant role in expanding military expenditure per capita...., it may be assumed that, for a number of developing countries, a high proportion of the public external debt accumulated by 1982 had been used to significantly expand military expenditure on a per capita basis...." (p. 29).

In the case of Sri Lanka, we can use the framework developed by Maizels and Nissanke (1986) to examine the factors which influence the level of military expenditure. They have developed a table which is reproduced as Table 2.4, to analyse the potential influence on the level of military expenditure in developing countries.

Table 2.4

POTENTIAL INFLUENCE ON THE LEVEL OF

MILITARY EXPENDITURE

	National	Regional	Global
I. Political framework	1. Nature of the state	2. Regional alliance	3. Adherence to a global power block
II. Military activity	4. Vested interests of military establishment 5. Internal repression 6. Civil war	7. Regional war or inter-state hostility	8. Foreign military aid
III. Economic linkages	9. Level of economic development 10. Real income growth 11. Size of state budget 12. Influence of military industrial complex	13. Regional economic grouping	14. Growth of foreign exchange availability 15. Influence of foreign capital 16. Influence of major aid donor

(Source: Maizels and Nissanke 1986, p. 1129)

There is no doubt that national reasons are more important than regional or global reasons in determining the level of defence expenditure in Sri Lanka. If global reasons are considered it can be seen that Sri Lanka is a non-alliance country with no adherence to a global power block. It also receives no military assistance under any military aid programme from any country in the world. Sri Lanka also has no defence treaties with any country in the region or outside it.

The growth of foreign exchange availability is not directly related to the extent of military expenditure in a country like Sri Lanka. It may be an influencing factor for oil exporting countries. Foreign exchange availability in Sri Lanka shows no stability due to price fluctuations in the world market for agricultural products and therefore, the balance of payments deficit has always been a problem. Therefore, the growth of foreign exchange availability cannot be taken as a significant causal factor on the level of military expenditure in Sri Lanka. It is also unlikely that foreign capital has any influence on military expenditure since Sri Lanka has no military industries. Major aid donors to Sri Lanka have no influence on military expenditure and it seems that they are unhappy about the growing military expenditure in the country (EIU Country Report, No.2, 1987)

In the context of regional reasons, Sri Lanka has no alliance (military) with any other countries in the region. It also has no involvement in military conflicts, regional war or inter-state hostilities with any other country in the region. Although there have been growing tensions between India and Sri Lanka over the ethnic troubles in northern and eastern Sri Lanka, India is unlikely to have expansionist designs on Sri Lanka. Rather it seeks to encourage harmony and peace on the island as recent events of 1987 have shown.

There is a regional economic group¹ on the Indian subcontinent but this group has no common enemy against which to develop a powerful military force in the region. The regional economic group is the South Asian Association for Regional Co-operation (SAARC) and this group is still in the early stage of development. However, it can be assumed that this regional alliance has no influence on the growth of military expenditure in the region.

As noted earlier, we can take only the national reasons as significant in determining the level of defence expenditure in the case of Sri Lanka. Among the three points given vertically in Table 2.4 (political framework, military activity and economic linkages) the first reason (nature of the state) also seems insignificant in the Sri Lankan case. Sri Lanka has had democratic governments since its independence from Britain. All these governments have given the same priority to the military activities.

Under the area 'military activity', given in Table 2.4, internal repression or the vested interests of the military establishment are also not relevant to the Sri Lankan condition. However, civil war (though it is not a full scale civil war in Sri Lanka) is one significant factor which influences the level of military expenditure in the country. Under the third point, i.e., economic linkages all the reasons are important except for the 'influence of the military-industrial complex'. The concept of a military-industrial complex in the case of Sri Lanka is a weak argument as Sri Lanka has no military industry.

The most significant factor determining the level of military expenditure in Sri Lanka is the troubles prevailing in the northern and eastern parts of the island. The development of Tamil separatist organizations in the country, who are presently engaged in a war with the Sri Lankan armed forces, has

contributed considerably to the expansion of military related expenditure. It can be seen from Table 2.5 that the most dramatic increase has taken place in the mid 1980s.

Table 2.5

AVERAGE ANNUAL GROWTH RATE OF REAL
MILITARY EXPENDITURE FOR 5 YEAR PERIODS

period	growth rate %
1965-1969	3.5
1970-1974	14.2
1975-1979	12.6
1980-1984	9.3
1985-1987	69.2*

* Average for the three year period.

(Source: Government Treasury, Sri Lanka and Central Bank of Sri Lanka)

The two highest growth rates, recorded in the periods 1970-74 and 1985-87, reflect national problems experienced during these two periods. As noted earlier, in 1971 Sri Lanka experienced an insurrection against the ruling government. During that year military expenditure recorded an annual growth rate of 91.5 per cent for the first time. The next period which shows a relatively high growth rate is the 1985-87 period in which the Sri Lankan armed forces have been greatly expanded in terms of man power, weapons, vehicles, air craft and other war machinery. There is no doubt that the troubles in the country

have been the major factor in determining the level of military expenditure of Sri Lanka.

Apart from military activities, the next important factor which can affect the level of military expenditure in Sri Lanka is economic activities. With the process of development it is necessary to expand the public services to provide more facilities for the people (for example: health services, education, transport, communication, etc.). From the point of view of Wagner's Law, which implies that military expenditure per capita increases with increased per capita income (Looney, 1986, p.3), it is natural to observe an increase in military expenditure in Sri Lanka. Therefore, even if we do not consider the troubles in the country, there is an independent increase in defence expenditure due to some economic factors. For example, we can show that when the level of government activities rises (with the economic development of the country), the share of the military budget can also go up.

To support the above argument regressions were performed using various macro-fiscal variables as regressors. This analysis was based on the study carried out on Venezuela for the period 1950-82 (Looney 1986, p.130). In the present analysis real military expenditure (MEX) was used as the dependent variable and real government expenditure (GEX), real government debt (GDB), real government consumption (GCO), and real government revenue (GRE) as the independent variables. Real values were obtained by deflating nominal expenditure by the GDP deflator for Sri Lanka (1980=100) (IMF 1985). The results obtained by regressing each variable on real military expenditure are given in Table 2.6 (equations 1-4). Estimates were made using the Cochrane-Orcutt procedure for correcting data for serial correlation. To understand further the responsiveness of military expenditure to movements in macro-fiscal variables, regressions were also performed on the variables in their

logarithmic form (equations 5-8). In this form, the coefficients of the regression equations can be interpreted as elasticities. For example: a 1 percent change in the independent variable produces an x percent change in real military expenditure. It is interesting to note that all the regression coefficients are statistically significant (see table 2.6). In equations 3 and 7, it can be seen how military expenditure has become important in real government consumption. For example, in equation 7, a 1 percent change in real government consumption is associated with a 2.1 percent change in real military expenditure. It can also be observed that government consumption is more significantly related to defence expenditure (and also statistically significant) than any other variable. The coefficient of determination (R^2) also shows 92 percent and 87 percent in equations 3 and 7 respectively. Government debt seems to be weakly related to defence expenditure (though still statistically significant) when compared to the other macro-fiscal variables.

Table 2.6

DETERMINANTS OF SRI LANKAN MILITARY EXPENDITURE

1965- 1987						
MEX	GEX	GDB	GCO	GRE	R ²	DW
Equation						
(Linear)						
1.	0.02 (3.45)	..	..	..	50.6	1.90
2.	..	0.01 (4.86)	..	..	63.3	1.63
3.	..	..	0.17 (16.8)	..	76.2	2.07
4.	..	..	..	0.04 (5.59)	59.0	1.86
(Log Linear)						
5.	0.88 (4.53)	..	..	..	74.7	1.92
6.	..	0.88 (4.93)	..	..	79.1	1.66
7.	..	..	2.10 (12.4)	..	89.5	2.00
8.	..	..	..	1.07 (6.67)	81.2	1.91

Notes: ()=t statistics R²=coefficient of determination

DW = Durbin-Watson Statistics

2.6 Future Trends.

Future trends in the level of defence expenditure in Sri Lanka will mainly depend on the ongoing ethnic problems of the country. If the ethnic problem continues for a long period there is no doubt that defence expenditure will continue its rising trend². It is necessary to point out that, even if there are no ethnic problems, defence expenditure can still increase, but the current high annual growth rate of military expenditure will not continue. The government may have to make higher allocations to the defence sector even after a settlement is achieved to maintain the buildings, equipment, vehicles and other materials including increased recurrent expenditure to pay wages to members of the armed forces. However, once the military activities are over government revenue may also increase due to re-establishing economic activity in the affected area. This may reduce the military burden of the country.

Notes:

1. Countries of the South Asian Association for Regional Co-operation (SAARC): India, Pakistan, Bangladesh, Bhutan, Nepal, Maldives Islands, and Sri Lanka.

2. A peace agreement was signed in July 1987 between the governments of Sri Lanka and India to solve the problem.

CHAPTER 3

ECONOMIC LINKAGES

3.1 Introduction

The continuous allocation of a large proportion of resources to the military sector has raised the question as to whether there is a real economic benefit from increasing military expenditure. In other words, the opportunity cost of military expenditure has drawn the attention of economists to the area of economic development and military expenditure. Though economic theory does not provide any clear prediction of how a change in the military burden will influence economic growth, development or welfare (Deger and Smith, p.49), most of the studies on this subject have their analyses based on various economic theories. Until recently the high growth rate of military expenditure was thought to be a political or social problem by many people. However, with the high levels of military expenditure in the Third World the attention of people concerned with the economic side of the problem has been attracted.

In this chapter an attempt is made to discuss the economic side of defence expenditure and the economic linkages between defence expenditure and other economic activities. The problem of allocation of defence expenditure and the efficiency aspect is discussed in section 3.2. In sections 3.3 to 3.6 an attempt is made to explain the economic linkages between the defence sector and capital formation, human capital, import cost and foreign

exchange, externalities and economic growth respectively.

3.2 Efficient Allocation of Resources

Governments have a problem in allocating scarce resources between the military and non-military sectors of the economy in order to maximize the social welfare of the particular country. Theoretically, the allocation of resources to the defence sector should continue until the additional expected benefits of expenditure are equal to its extra cost. In the case of defence we can assume this extra cost as being the sacrifice of public and private civil goods and services (for example, schools, hospitals, roads etc.) [Hartley and Tisdell, 1981, p.378].

Defence is usually regarded as a pure public good. In this case there is a problem in determining the optimum size of the military budget. For example, it is not easy to find out the benefit of extra military personnel. Generally, various criteria are used to determine a nation's optimum level of defence expenditure. A detailed analysis of the determinants of the level of military expenditure will not be given here as this was discussed in chapter 2 (section 2.5) However, it can be noted that the level of the defence budget, in most cases, depends on non-economic reasons such as political, social and other national reasons (security needs, threat perception etc.). Economic reasons seem to be the least important in determining the level of defence expenditure in most countries (see Table 2.4).

3.3 Capital Formation

Capital is generally regarded as the most important factor for the economic development of a country. Lack of capital formation is one of the serious problems faced by developing countries today and Sri Lanka is no exception. Capital formation mainly takes two forms.

(a) Physical capital

(b) Human capital

Physical capital refers to roads, buildings, machinery etc. and human capital means education, health or on the job training (Yotopoulos and Nugent, 1976, p.127). The effect of capital is interactive and cumulative. Capital, and its role in the process of development, has been widely discussed in traditional economic literature. Capital accumulation leads to increases in income and this may result in increases in savings. An increase in savings leads to additional capital formation.

The purpose of this section is to examine the linkage between defence expenditure and capital formation. It is not intended to describe the economic theory underlying savings and capital formation (For a detailed analysis of saving and capital formation see Yotopoulos and Nugent 1976, ch. 10).

3.3.1 Physical Capital

The growth of national product in a country is achieved through the accumulation of physical and human capital. In the literature on development economics the process of capital

accumulation is given as an increase in income followed by an increase in savings and capital accumulation. The neoclassical approach suggests that savings is a direct determinant of investment, while the Keynesian approach suggests that saving is a function of income and income is a function of investment. Therefore, we can say that saving and investment, as well as the mobilisation of human resources, are important. The role of defence in affecting these variables can also be treated as important (Deger and Smith 1985, p.50). In the area of physical capital formation there are two sides to be examined. These are the supply side and the demand side. Military expenditure can affect capital formation from both the supply and demand sides.

The demand side of military expenditure shows us how it affects the system of resource allocation of the country. In developing countries the problem of scarcity of resources is important. Capital formation for example, can be affected by allocating funds to the military sector. If the funds which would have been used to purchase plant and equipment for use in production are diverted to the military sector it would mean a direct production loss in the civilian sector. On the other hand, production of civilian goods in the military sector may not always be economically profitable (Ball 1983, p.517). As well, an increase in military spending (or any other items of government consumption) may cause a reduction in investment in a country. In developed countries this relationship has been shown as almost one to one (Smith and Smith 1983, p.87). This means an increase of one per cent in the share of output devoted to military spending is associated with a fall of one per cent in the share of output devoted to capital formation. It is necessary to note that this one to one situation may not be true for developing countries (including Sri Lanka) [Deger and Smith 1985, p.50]. Here a situation lower than one to one can be expected.

The supply side (of military expenditure) may be more relevant to developing countries than the demand side. The absence of highly developed financial markets in developing countries has limited the source of supply of new capital. In developing countries financial market activities are very poor. Yotopoulos and Nugent suggest that "...in LDCs, where capital and capital goods markets are relatively imperfect and the financial infrastructure is woefully inadequate, changes in finance costs or in costs of capital goods....may not capture the full significance of the financial constraints" (1976, pp 181-182). The supply of new capital in developing countries is limited to the following sources:

- a) Household savings
- b) Budget surplus of the government
- c) Foreign savings

In the process of capital formation savings is the most significant factor. According to Deger and Smith (1985) "defence expenditure, by providing internal and external security, may change the rate of time preference in favour of saving.....However, if threat perceptions rise and instability increases as a consequence of this additional military spending, then saving will fall or be diverted to unproductive forms such as the hoarding of gold" (p.50).

Household savings can be affected in various ways. An increase in military expenditure can cause governments to reduce some social expenditure. For example, if the government reduces its expenditure on education, health or cuts down subsidies on transport, then people have to increase their consumption

expenditure thus reducing savings. In the case of Sri Lanka, while examining budgetary patterns no trade-offs were found between the defence sector and education, health or economic services. However, there was a negative trade-off between defence expenditure and other government expenditure (see Table 4.2). This trade-off condition may affect the budgetary surplus of the country and can reduce the level of capital formation.

Another factor which may affect capital formation and investment in Sri Lanka is the prevailing absorptive capacity constraints of the country. Generally, developing countries are faced with the problem of absorptive capacity constraints. Once limited available facilities are allocated to the military sector the productivity of the civilian sector will drop. For example, if the prevailing infrastructure or technology are diverted to the military sector (as a result of an increase in defence expenditure), then it may affect the productivity of the non-military sector. It could also lead to a reduction in the demand for new productive capital formation. Deger and Smith (1985) point out that "...tightening of such constraints can produce an absorptive capacity drag which can result in lower investment than would otherwise have taken place" (p.50).

Contrary to the above arguments some point out that an increase in defence expenditure has some positive effects on the level of productivity (Benoit 1973, 1978). These arguments show that increases in defence expenditure can contribute to skill formation, technical and vocational training and the creation of new infrastructural capital. However, arguments that increases in defence expenditure hamper capital formation or create new capital prove that there are economic linkages between defence expenditure and capital formation in a country.

3.3.2 Human Capital

The development of human resources is one of the most important objectives of governments, particularly in developing countries. It has been argued that increases in defence expenditure can adversely affect the level of education expenditure (and health expenditure too) of a country. At the same time, it has also been shown by some that an increase in defence expenditure has advantages for the education and health sectors (Benoit, 1978). It has been pointed out that the civilian sector can derive major benefits from the defence sector such as "educational and medical care as well as vocational and technical specialities" (Benoit 1978, p.276).

The main reason behind the allocation of large amount of resources to the education sector is to improve the human capital formation of the country. The accumulation of human capital will reduce the absorptive capacity constraints of a country. Generally, decisions to make allocations to boost human capital formation are taken on the basis of an evaluation of the social benefits to be gained from the allocation concerned.

Table 3.1 provides data on total government expenditure (TGE), total education expenditure (TEX) and TEX as a percentage of TGE and as a percentage of GDP in Sri Lanka from 1965 to 1986. TEX as a percentage of GDP shows some cyclical patterns but seems to have no considerable fluctuations. For example, from 1965 to 1971 TEX was between 4.08 and 4.72 per cent of GDP. From 1973 to 1977 it was between 3.15 and 3.94 per cent of GDP. From 1978 to 1985 it was between 2.21 and 2.96 per cent of GDP. It is clear that there were no major fluctuations in the level of total education spending in Sri Lanka. In fact, the analysis on budgetary trade-offs between education spending and defence spending in chapter 4 shows positive trade-offs between these two sectors.

Table 3.1

GOVERNMENT EXPENDITURE, EDUCATION EXPENDITURE
AND EDUCATION EXPENDITURE AS A % OF GOVERNMENT
EXPENDITURE AND GDP - SRI LANKA

YEAR	TGE Rs. m	TEX Rs. m	TEX as a % of TGE	TEX as a % of GDP
1965	2399.3	354.5	14.7751	4.72730
1966	2561.6	346.5	13.5267	4.47617
1967	2872.1	363.6	12.6597	4.37124
1968	3284.9	410.2	12.4874	4.13092
1969	3672.0	442.2	12.0425	4.08197
1970	3898.6	512.5	13.1457	4.37922
1971	5396.7	527.0	9.7652	4.39680
1972	5025.7	710.8	14.1433	5.55009
1973	5821.7	602.0	10.3406	3.94366
1974	6886.0	624.5	9.0691	3.15324
1975	7783.0	707.6	9.0916	3.20544
1976	9314.0	910.8	9.7788	3.75464
1977	9760.0	976.6	10.0061	3.33709
1978	18852.9	1139.5	6.0442	2.81504
1979	21521.3	1390.8	6.4624	2.79378
1980	30342.9	1845.7	6.0828	2.96517
1981	31093.9	2020.7	6.4987	2.54698
1982	37899.6	2483.9	6.5539	2.62350
1983	46815.3	2830.9	6.0470	2.48591
1984	53591.8	3108.5	5.8003	2.21974
1985	60173.0	4137.7	6.8763	2.78969
1986	67551.0	4672.2	6.9166	3.00006

Source: Central Bank of Sri Lanka

Deger (1985) has shown the importance of the TEX/GDP ratio in analysing the level of human capital formation of a country. "I assume implicitly that public education spending as a proportion of the national product is a crucial determinant of human capital formation....if this ratio falls, then the rate of growth of human capital may, in all probability, fall too" (Deger 1985, p.43). In the case of Sri Lanka, this ratio has fallen with time. In 1965 the ratio was 4.72 and in 1986 it was 3.00. However, though there has been a slight decrease, no major reduction has taken place during the last 20 years.

3.4 Import Cost and Foreign Exchange

Foreign exchange scarcity is one of the major problems faced by the developing world today. The scarcity of foreign exchange has caused severe problems to the economies of these countries. These problems range from debt servicing difficulties to food scarcity. However, it is surprising to see that some of these countries spend a large amount of foreign resources on importing weapons and military equipment, most of which come from developed countries. The important trend over the last decade has been the diminishing importance of military aid and the consequent pressure on developing countries to pay for their imported military equipment in cash or kind (Deger 1985, p.51). This condition can cause serious repercussions on the economic development of a country. It would be interesting to see the degree to which the importation of military equipment can aggravate the foreign exchange problem of developing countries.

If the capital expenditure component of the military budget shows an increasing trend it generally means that the military sector is increasing its spending on imported armaments and equipment. For example, Table 3.2 shows capital expenditure and recurrent expenditure as percentages of total military

expenditure in Sri Lanka from 1965 to 1987. It indicates that in 1965 the capital expenditure component of total defence expenditure was only 3 per cent. In 1987 this had increased to almost 51 per cent of the total defence budget. This rapid increase in capital expenditure is a result of the near civil war situation in Sri Lanka. Without doubt most of the increased expenditure has been spent on importing weapons, vehicles and other military equipment. In the case of Sri Lanka high expenditure of foreign exchange on arms imports cannot be avoided as the country has no military industries.

Table 3.2

CAPITAL AND RECURRENT COMPONENTS IN THE
TOTAL MILITARY EXPENDITURE OF
SRI LANKA 1965-1987

YEAR	CAPITAL EXPENDITURE		RECURRENT EXPENDITURE	
1965	..	3.0	..	97.0
1966	..	5.3	..	94.7
1967	..	5.0	..	95.0
1968	..	7.9	..	92.1
1969	..	11.5	..	88.5
1970	..	4.9	..	95.1
1971	..	37.6	..	62.4
1972	..	16.6	..	83.4
1973	..	6.5	..	93.5
1974	..	18.1	..	81.9
1975	..	20.9	..	79.1
1976	..	11.3	..	88.7
1977	..	14.9	..	85.1
1978	..	31.4	..	68.6
1979	..	42.2	..	57.8
1980	..	37.5	..	62.5
1981	..	27.5	..	72.5
1982	..	37.6	..	68.4
1983	..	39.7	..	60.3
1984	..	43.5	..	56.5
1985	..	35.4	..	64.6
1986	..	29.3	..	70.7
1987	..	50.9	..	49.1*

* Provisional data

Source: Government Treasury of Sri Lanka.

As far as foreign exchange is concerned, it may be true that a reduction in military imports would not necessarily mean an equivalent increase in investment goods. However, there could be more imports of investment goods if the foreign exchange was not spent on arms imports. On the one hand, if the earned foreign exchange is spent on arms imports it may affect investment as well as consumption because of the reduction in spending on imports and production. On the other, if the money is borrowed from the international capital market and spent on arms imports which have no productivity, this may reduce the economic growth of the country. It may also increase the debt burden of that particular country. As Deger points out, in the latter half of the 1970s the net transfer of debt would have been about 20 to 30 per cent less if debt financed weapons imports had been absent (Deger 1985, p.52).

The important finding of the analysis of import cost and the foreign exchange problem in relation to defence expenditure was that spending of foreign exchange on military imports has a very high opportunity cost. As developing countries have a serious problem of foreign exchange, the economic consequences of spending scarce foreign exchange on imports for the military sector are considerably higher. As spill over benefits to the civilian sector of the economy from the military sector cannot be assumed to be very high, spending of foreign resources to import investment goods could be more beneficial.

3.5 Externalities

The military sector has various external, as well as direct effects on a country. Most of these cannot be quantified. They can be classed in different categories, for example, in addition to the economic there are social and political effects too. As the military sector grows it might affect a country in all these ways. However, only economic effects are discussed here as they are more relevant to the present study.

The most important spin-off effect of the military sector can be given as the 'modernisation' effect. As Benoit points out "....defense programs, though not intended to contribute to the civilian economy, may in fact do so in indirect ways that have not been hitherto adequately recognized" (Benoit 1978, p.276). It has been argued that the transfer of technology from the defence sector to the civilian sector is a very important economic benefit to a country. For instance, as a result of increases in defence spending the military sector grows very fast. As the military sector grows it has increased access to modern technology (communication, transport, etc.) and the technological know how of the military sector may eventually spill over to the civilian sector of the economy. Though this kind of benefit cannot be quantified it can affect the economic development of the country concerned considerably.

It has been said that the military sector can be expected to change people's attitudes favourably towards modern industrial activity, and by improving the society's discipline it (the military sector) will change the country towards a nation building aim (Benoit, 1978). The question that emerges from these views is whether the same modernisation effect can be achieved through development of the civilian sector of the economy. Empirical evidence to support the argument that the

same modernisation effect could have been achieved through investments in civilian institutions can not be given. However, it seems that the economic linkages between defence expenditure and other sectors of the economy are important and these debatable points need to be studied in the counterfactual framework of the country concerned.

Turning to Sri Lanka, most of the spin-off effects do not seem to be relevant. The major reason for a lessening of the effects of external economic benefits from the military sector upon the civilian sector is that the Sri Lankan military is not involved in any manufacturing or industrial activity. They do not produce any military equipment, weapons or other technologically significant goods. Although the armed forces sometimes produce minor equipment for their own use, these products are not capable of making a considerable impact on the civilian sector of the economy. During their war with Tamil separatist guerrillas the military have imported almost all the necessary equipment and only small changes have been made to that equipment so as to render it suitable for the local conditions. Therefore, economic benefits from the military sector to the civilian sector seem not to be considerable in the case of Sri Lanka.

3.6 Economic Growth

So far the economic linkages between various important aspects of an economy have been discussed. Economic growth can be taken as the final point to which all these parts are related. It is not easy to find out how an increase in military expenditure can affect the level of savings, unemployment, investment or the balance of payments of a country. However, all these conditions contribute to the level of economic growth of the country. Therefore, it is important to find out the economic

linkages between economic growth and the level of military expenditure.

The first major problem to be solved in this respect is whether an increase in the economic growth rate causes an increase in defence spending, or vice versa. Most of the evidence suggests that military budgets are determined relatively autonomously and therefore, causation runs from defence to growth (Benoit, 1973, Deger, 1985). As the findings of most of these studies have already been discussed (see chapter 1, literature survey), the intention here is to examine the problem in a more general way.

The level of budgetary allocation to the military sector is increasing annually in most countries. In itself this is evidence of the growing importance of the defence-growth relationship. As has been noted before, economic theory cannot clearly predict how a change in the military burden will influence the level of economic growth of a country. Deger tried to use two economic theories to explain the problem (Deger, 1985). Classical economic theory can offer predictions on the basis of resource allocation. According to classical theory, allocation to the defence sector, can reduce investment or consumption thus reducing economic growth. The level of military expenditure can be justified on the basis of social welfare gains (for example, an increase in collective security). If the Keynesian theory is used to analyse this problem, it can be said that "...in the inadequate effective demand the operation of the multiplier would imply an increase in national products resulting from additional defence expenditure...if the economy operates with.... excess capacity then additional demand and output would raise the capacity utilization..." (Deger 1985 p.49).

The problem here is that the relationship between the level of defence expenditure and economic growth cannot be analysed purely on the basis of econometric analysis or economic theory. One of the main reasons for this is the political and economic instability prevailing in most of the developing countries. As developing countries are the concern here, it is difficult to draw conclusions or make policy recommendations solely on the basis of econometric analyses. Wider issues of socio-economic development are crucial to such countries, even though they cannot be measured in statistical or other terms. This is the main reason for the difference between conclusions reached in various studies on the subject of defence expenditure and economic growth.

CHAPTER 4

BUDGETARY TRADE-OFFS BETWEEN DEFENCE SPENDING AND NON-DEFENCE SPENDING

4.1 Introduction

There is a common belief that higher budgetary allocations to the defence sector means lower allocations to other sectors of the economy concerned. This belief has been widely examined in studies in the area of budgetary trade-offs between the defence and non-defence sectors. A number of studies have been undertaken in this field with reference to developed and developing countries. In most of the studies developing countries, especially Latin American countries have been used, to test hypotheses on the trade-offs between the defence and other sectors [For a comprehensive analysis on this subject see Looney (1986), chapter 5, pp.71-104]. As well as this, there are some studies in which the pattern of trade-offs in Asian countries has been examined[For example: Harris, Kelly and Pranowo (1987) and Pranowo (1986)].

The aim in this chapter is to analyse the budgetary trade-off patterns between the defence variable and other economic variables in the case of Sri Lanka. In section 4.2 the budgetary pattern of the country is examined. The financing problem of defence expenditure is discussed in section 4.3. In section 4.4 a regression analysis is employed to see the effects of defence expenditure on other variables such as education,

health, housing, economic services and other sectors. The empirical results of this analysis is discussed in section 4.4.

4.2 Budgetary Patterns of Sri Lanka

Sri Lanka, like many other developing countries, has been vulnerable to international price fluctuations during the last three decades. The main export items of Sri Lanka (tea, rubber, and coconut) have consistently faced unstable prices in the world market. This unstable condition has severely affected the Sri Lankan economy. The consequences for the budgetary process of the country have been considerable.

Generally, budgetary allocations to various sectors of an economy are made according to national priorities and depend on the availability of resources. The purpose here is to examine the budgetary patterns of Sri Lanka to see whether there have been any major fluctuations in allocations to the defence sector. If there have been no major fluctuations it indicates that defence expenditure has some special pattern. As noted before, allocations to some particular sector means that money will not be available to other sectors of the economy. If the defence sector has no resource constraints it means some other sectors of the economy may have resource constraints. This is a common observation in many developing countries. This problem can be examined by analysing the pattern of defence expenditure as a percentage of government revenue, government expenditure, and so on. This will show how a reduction in government expenditure may affect allocations to the defence sector of the country.

Table 4.1 shows some important budgetary patterns of Sri Lanka. In this table military expenditure and budgetary patterns from 1965 to 1986 are given. Military expenditure (ME) is the actual expenditure of the army, navy, and air force of Sri Lanka

in nominal values. Real military expenditure (RME) is derived by deflating ME with the GDP deflater (1980 = 100) of IMF (1985) for Sri Lanka. Growth rate of real military expenditure (GRME), growth rate of government expenditure (GRGE) and growth rate of government revenue (GRGR) were calculated from the data of annual reports of the Central Bank of Sri Lanka and annual budget estimates of the government of Sri Lanka. Real government consumption (RGC), real government expenditure (RGE) and real government revenue (RGR) were also derived by deflating nominal government consumption, nominal government expenditure and nominal government revenue by the GDP deflater (1980 = 100).

It is clear from Table 4.1 that though there are some cyclical patterns, military expenditure generally seems to have been in a stable position during the last two decades. RME as a percentage of RGE shows a stable pattern from 1965 to 1975 except in 1971 and 1972. During the 1971-72 period defence spending increased as a result of an insurrection against the government. From 1976 to 1982 RME as a percentage of RGE shows some stability except in 1977. In 1977 Sri Lanka witnessed some communal clashes between minority Tamils and majority Sinhalese. The pattern of RME as a percentage of RGE is more or less similar to the patterns of RME-RGC and RME-RGR. The major implication of this analysis is that when there is a reduction in the allocated funds in the government budget, the defence sector still seems to enjoy some stability in their funds position. This means that the defence sector is not so vulnerable to those reductions.

Table 4.1

BUDGETARY PATTERNS OF MILITARY EXPENDITURE - SRI LANKA
1965-1986

YEAR	ME	RME	GRME	GRGE	GRGR	RME AS A % OF		
						RGC	RGE	RGR
1965	60	213.52	8.599	8.6986	2.7815	5.1872	2.50073	3.30396
1966	64	231.88	0.931	9.7358	4.3587	5.5253	2.49844	3.49097
1967	66	234.04	-3.864	0.7910	-2.7866	5.3217	2.29797	3.37630
1968	72	225.00	12.831	10.7460	14.7331	5.1144	2.19185	3.33890
1969	82	253.87	7.538	5.1940	8.5660	5.5741	2.23312	3.28355
1970	89	273.01	91.347	34.7077	0.1087	5.4837	2.28287	3.25245
1971	175	522.39	16.448	-7.4272	44.8616	9.9206	3.24272	6.21670
1972	205	608.31	-38.929	-0.6677	-15.6750	10.8065	4.07903	4.99732
1973	146	371.50	-7.884	-4.7445	-4.4347	7.2421	2.50786	3.61924
1974	167	342.21	6.922	5.6646	-0.7132	6.0882	2.42521	3.48861
1975	191	365.90	-14.354	9.9794	3.7416	7.7016	2.45407	3.75688
1976	178	313.38	8.465	-9.6815	0.4137	5.8921	1.91110	3.10159
1977	224	339.91	25.502	76.3098	59.5565	7.1841	2.29508	3.35028
1978	308	426.59	10.313	-1.0576	-5.5958	7.6181	1.63370	2.63523
1979	392	470.59	1.362	17.4447	-7.9428	8.1701	1.82145	3.07932
1980	477	477.00	-9.756	-15.1697	-4.5122	8.3905	1.57203	3.39058
1981	520	430.46	-5.934	9.7988	-1.1428	8.2409	1.67235	3.20438
1982	543	404.92	57.544	5.7767	21.2216	6.5882	1.43273	3.04909
1983	999	637.93	-1.332	-5.0991	24.0736	10.1021	2.13392	3.96271
1984	1189	629.43	63.217	11.5128	2.6845	9.9623	2.21862	3.15130
1985	1954	1027.34	9.310	7.6215	3.1043	11.7718	3.24730	5.00897
1986	2228	1122.98	126.130	-	-	12.0563	3.29825	5.31045

Source: Central Bank of Sri Lanka, Annual Reports.

Annual Budget Estimates of the Government of Sri Lanka.

Note: see text for the definitions of variables.

4.3 Financing of Defence Spending

Since defence is considered a publicly provided good and a security related activity, the entire allocation to the defence sector has to be provided by the government. Thus, the financing of defence spending is very important. As far as developing countries (including Sri Lanka) are concerned, a higher defence allocation can have effects on the expenditure of other sectors of the economy. There are three possible sources for financing the defence budget of a country:

- a) Increased tax revenue
- b) Borrowing or money creation
- c) Diverting funds from other sectors

These three sources are common for most countries. Generally, sources of tax are limited in countries like Sri Lanka. However, higher taxes are hardly sufficient to make up for the additional expenditure of the country. The next and most practicable source of financing the defence budget is by borrowing or by creating money. It is expected that this source of financing will have high inflationary effects. However, the impact of inflation on the determinants of economic growth is not very clear.

The third source of financing i.e., diverting funds from other sectors, is the most important with regard to budgetary trade-offs. This way of diverting funds can have major effects on other sectors of the economy. Apart from the education and health sectors, there may be some effects on the productive sectors of the economy such as the agricultural sector. According to Deger "agriculture seems to be one of the first

casualties when governments embark on defence expansion" (Deger 1985, p.53). In the study by Faini, Annez and Tailor (1984), it was reported that an increase in the military burden can decrease the share of agriculture in GDP.

In the case of Sri Lanka, we cannot give any quantitative analysis on sources of financing the defence budget due to the unavailability of the necessary data. However, it is probable that the major source of financing for the defence budget comes from borrowing and money creation. Increased tax revenue and diverting funds from other sectors plays a minor role in financing the defence budget of the country.

In Table 4.2 military expenditure as a percentage of budget deficit in Sri Lanka from 1965 to 1986 has been given. A positive correlation between defence expenditure and budget deficit can be found.

Table 4.2

MILITARY EXPENDITURE AS A PERCENTAGE OF

BUDGET DEFICIT- SRI LANKA

YEAR	Military expenditure (in current values)	As a % of budget deficit
1965	60.0	11.5
1966	64.0	9.4
1967	66.0	9.1
1968	72.0	8.5
1969	82.0	8.7
1970	89.0	7.7
1971	175.0	13.2
1972	205.0	12.0
1973	146.0	10.2
1974	167.0	10.4
1975	191.0	7.1
1976	178.0	5.0
1977	224.0	7.3
1978	308.0	4.3
1979	392.0	4.5
1980	477.0	2.9
1981	520.0	3.5
1982	543.0	2.7
1983	999.0	4.6
1984	1189.0	7.5
1985	1954.0	7.6
1986	2228.0	8.3
1987	5187.0*	17.3

* provisional data

Source: Government treasury of Sri Lanka.

4.4 Methodology

The methodology used here to analyse the trade-offs between non-defence spendings and defence spending is similar to several other trade-off studies [Verner (1983), Looney (1986), Pranowo (1986)]. The present study uses time series data of Sri Lanka for the analysis and covers the period 1965-86. The data have been collected from annual reports of the Central Bank of Sri Lanka (various years), Government Finance Year Book of IMF (various years) and Government Annual Budget Estimates of Sri Lanka (various years). As in the previous case, the defence spending data used in this analysis are the actual expenditure of the army, navy, and air force of Sri Lanka. The expenditure on police forces is taken as the expenditure on public order and safety and is included in the category of civil administration. The role of the police forces in the defence of Sri Lanka is ambiguous. In the eastern province of the country police forces are fighting against Tamil separatist guerrillas as a commando force. At the same time they engage in public order and safety maintaining activities in other parts of the country. As the trade-offs between sectors are examined, it is reasonable to place police expenditure under the heading of civil administration.

The total government expenditure is the actual government spending of each year. Education, health and housing expenditure is also the actual expenditure of each year of that particular sector. The expenditure on economic services includes agricultural and fisheries, manufacturing and mining, trade and communication sectors. Civil administration expenditure includes public order and safety and other administrative expenditure. Other expenditure covers all the expenditure not included in the above categories including expenditure on special welfare services and community services. These welfare services are

minor programmes and are not significant. It is also necessary to note that the above expenditure is central government expenditure and does not include local government expenditure on those sectors. In fact, it can be assumed that local government expenditure plays a minor role compared to central government expenditure. This is a reasonable assumption since Sri Lanka does not have a federal government system.

Departing from conventional studies, an attempt has been made to analyse the trade-off patterns between recurrent¹ defence expenditure and other non-defence expenditure and also between capital² defence expenditure and other non-defence expenditure³. The reason for this is to identify the most significant defence expenditure component affecting other expenditure. Generally, capital defence expenditure has considerable fluctuations. For example, a decision to buy a helicopter gunship, patrol craft or some other powerful weapons can increase the level of capital expenditure in a given year. However, it may be assumed that few developing countries can afford to buy these expensive items annually. Therefore, it can be assumed that capital defence expenditure will not exhibit a continuous increase each year. In the case of recurrent defence expenditure the situation is different. Usually there is a gradual increase in recurrent expenditure every year. Payment of wages and salaries and maintenance of buildings and machinery have to be carried out each year. In this case increasing recurrent expenditure in the defence sector may cause trade-off situations with other non-defence expenditure. Therefore, it is necessary to analyse trade-off patterns separately between defence spending (i.e., recurrent defence expenditure, capital defence expenditure and total defence expenditure) and non-defence expenditure. On the other hand, in developing countries the major part of expenditure is recurrent and not capital expenditure. In this context, Sri Lanka is no exception.

As Ball (1985a) noted, the recurrent expenditure component cannot be taken as less important. "...operating costs (personnel plus operations and maintenance expenditure) have tended to absorb a very large share of third-world security outlays. A survey of the security budgets of twenty developing countries between 1951 and 1979 indicates that operating costs accounted for, an average, between 70 and 90 percent of all security spending. Where it was possible to disaggregate operating costs satisfactorily, it was not uncommon to find personnel-related expenditure accounting for more than 50 percent of the entire defence budget" (Ball 1985a, p.7).

Following the work of Verner (1983), Looney (1986), and Pranowo (1986) regression analysis is employed to examine the pattern of trade-offs between the defence sector and non-defence sector of Sri Lanka. By using a regression analysis with non-defence spending as the dependent variable and defence spending as the independent variable (and also some measures of government expenditure as the control variable) the direction and magnitude of the trade-off between defence and other types of government expenditure can be shown (Looney 1986, p.79). One of the major problems associated with trade-off studies is that "...if the budgetary process is an expanding sum game represented by a growing public sector,....a negative trade-off may not be detected between absolute or per capita measures of defence and non-defence expenditures...." (Looney 1986, p.79).

In view of the above problems, the present study uses defence and non-defence expenditure in terms of their percentage shares of the total budget of the government of Sri Lanka. The control variable (total government spending as a share of GDP) used in this model improves the specifications of the regression model and helps to obtain efficient estimates of the budgetary trade-offs.

The following model [based on Verner (1983) and Looney (1986)] will be used to estimate the trade-offs between defence spending and non-defence spending in Sri Lanka. The equation is in linear form and signs of the coefficients represent the expected direction of the relationship. The Ordinary Least Square (OLS) method will be used to estimate the parameters of the model. The OLS method has been chosen to estimate parameters as it gives linear and unbiased estimates, minimum variance and sum of the residuals equal to zero (Salvatore, 1982). It is also simple and easy to handle. The SHAZAM computer program will be used to estimate the model. A routine F test is used to check the relevance of chosen regressors in explaining variation in the dependent variable and estimates are made after adjusting the data using the Cochrane-Orcutt procedure for serial correlation.

The definitions of the variables are as follows:

DS = Total defence spending

RDS = Total recurrent defence spending

CDS = Total capital defence spending

EDS = Total education spending

TGS = Total government spending

HS = Total health spending

HUS = Total housing spending

ECO = Total economic services spending
(economic services have been described
in the text)

CIV = Total civil administration spending

OTH = Total all other expenditures not
included in above categories.

The model is as follows:

$$Y_{1t} = b - b_1 X_{1t} + b_2 X_{2t} + U_1$$

where

Y_1 = non defence spending as a share of total
government spending

(i = education, health, housing, economic services,
civil administration and other expenditure)

b = intercept

X_1 = total defence spending as a share of
total government spending (DS/TGS)

X_2 = total government spending as a share of
GDP (TGS/GDP)

U_1 = disturbance term

4.5 Empirical Results

Table 4.3 summarises the results of the regression analysis of budgetary trade-offs between total defence expenditure and other expenditure in Sri Lanka. Similarly, Table 4.4 and Table 4.5 give the results of trade-off analyses between recurrent defence expenditure and other expenditure (total) and also between capital defence expenditure and other expenditure (total) respectively.

Table 4.3

BUDGETARY TRADE-OFFS BETWEEN TOTAL DEFENCE EXPENDITURE AND
OTHER EXPENDITURE IN SRI LANKA
1965-1986

EQUATION	DEPENDENT VARIABLE	INTERCEPT	INDEPENDENT VARIABLES DS/TGS	TGS/GDP	R ²	DW	F
1.	EDS/TGS	0.15 (5.00)	1.31 (2.38)	-0.22 (3.64)	0.83	2.29	46.26
2.	HS/TGS	0.68 (3.62)	0.60 (1.67)	-0.83 (2.02)	0.64	2.11	17.39
3.	HUS/TGS	0.17 (1.39)	-0.19 (0.89)	-0.14 (0.51)	0.11	1.87	1.29
4.	ECO/TGS	0.19 (5.21)	0.21 (0.29)	-0.22 (-2.70)	0.61	1.85	15.08
5.	CIV/TGS	0.72 (3.36)	-0.96 (-0.27)	0.51 (1.06)	0.05	1.82	0.56
6.	OTH/TGS	0.38 (3.88)	-3.75 (-2.03)	0.80 (3.72)	0.66	2.09	18.39

Notes: R²=coefficient of determination

() = t statistics

DW = Durbin-Watson statistic

F = F statistics

Table 4.4

BUDGETARY TRADE-OFFS BETWEEN RECURRENT DEFENCE EXPENDITURE AND
OTHER EXPENDITURE IN SRI LANKA
1965-1986

EQUATION	DEPENDENT VARIABLE	INTERCEPT	INDEPENDENT VARIABLES		R ²	DW	F
			RDS/TGS	TGS/GDP			
1.	EDS/TGS	0.09 (3.70)	2.60 (5.47)	-0.13 (2.77)	0.92	2.11	102.53
2.	HS/TGS	0.04 (2.17)	1.25 (3.23)	0.04 (0.97)	0.74	1.80	26.80
3.	HUS/TGS	0.19 (1.29)	-0.18 (0.66)	0.02 (0.76)	0.11	1.84	1.12
4.	ECO/TGS	0.15 (3.70)	1.18 (1.44)	-0.16 (1.98)	0.65	1.73	17.74
5.	CIV/TGS	0.08 (2.91)	-0.12 (0.30)	0.04 (0.80)	0.06	1.82	0.61
6.	OTH/TGS	0.54 (5.57)	-7.23 (3.82)	0.51 (2.60)	0.77	1.97	30.96

Notes: R²=coefficient of determination

() = t statistics

DW = Durbin-Watson statistic

F = F statistics

Table 4.5

BUDGETARY TRADE-OFFS BETWEEN CAPITAL DEFENCE EXPENDITURE AND
OTHER EXPENDITURE IN SRI LANKA

1965-1986

EQUATION	DEPENDENT VARIABLE	INTERCEPT	INDEPENDENT VARIABLES		R ²	DW	F
			CDS/TGS	TGS/GDP			
1.	EDS/TGS	0.18 (6.04)	-1.41 (1.20)	-0.19 (2.50)	0.79	1.91	36.14
2.	HS/TGS	0.08 (4.46)	-0.83 (1.12)	-0.06 (1.29)	0.62	2.07	15.26
3.	HUS/TGS	0.003 (0.21)	-0.54 (1.15)	0.02 (0.53)	0.12	1.92	1.24
4.	ECO/TGS	0.19 (5.79)	-2.59 (1.95)	-0.16 (1.72)	0.66	1.70	18.73
5.	CIV/TGS	0.08 (3.44)	0.54 (0.60)	0.22 (0.32)	0.07	1.85	0.75
6.	OTH/TGS	0.31 (3.13)	4.71 (1.15)	0.69 (2.44)	0.61	1.91	14.84

Notes: R²=coefficient of determination

()= t statistics

DW = Durbin-Watson statistic

F = F statistics

There are three major trade-off patterns between total defence spending and non-defence spending in Sri Lanka. It is necessary to note that these results are similar to the results obtained from the previous studies in this field. For example, Pranowo (1986) reported positive trade-offs between the education and defence sectors. In the present study the same positive trade-off results between these two sectors was also found. In the case of the health-defence sectors, Pranowo reported positive trade-offs and this study also found positive trade-offs between these two sectors but which are not significant at the 1 per cent level. In fact, t ratios shown in Pranowo's analysis are only significant at the 10 per cent level for the DS/TGS variable. In other words, the findings of positive trade-offs between defence sector spending and health spending (but not highly significant) are not accidental. However, the form of trade-off between defence and health sectors is taken as no trade-off as it is not significant at the 1 per cent level. The results of total defence expenditure/non-defence expenditure study are shown in Table 4.6.

Table 4.6

FORM OF TRADE-OFFS BETWEEN TOTAL DEFENCE
SPENDING AND NON-DEFENCE SPENDING IN
SRI LANKA

Sector	Form of Trade-offs
Defence-education	positive
Defence-health	none
Defence-housing	none
Defence-economic services	none
Defence-civil administration	none
Defence-other expenditure	negative

The results of total defence spending/non-defence spending show one positive trade-off (defence-education), one negative trade-off (defence-other expenditure) and four no trade-off forms. Positive trade-offs between the defence and education sectors indicate that an increase in defence expenditure is not competitive with education expenditure in Sri Lanka, confirming previous findings (Harris, Kelly and Pranowo 1987). On the other hand, there are negative trade-offs between defence spending and other expenditure. This supports the finding of a stable pattern of defence spending. It can be argued that defence allocations have been competitive with allocations to other expenditure categories but not with the education or health sectors.

In the case of recurrent defence expenditure and non-defence expenditure the results are similar to the total defence expenditure/non-defence expenditure results, except for the

health sector. In this case there are positive trade-offs between defence spending and health spending. This is obvious as both sectors have higher recurrent expenditure components in their total expenditure. Defence-housing, defence-economic services and defence-civil administration show no trade-offs. The results of this analysis are summarised in Table 4.7

Table 4.7

FORM OF TRADE-OFFS BETWEEN RECURRENT DEFENCE
SPENDING AND NON-DEFENCE SPENDING IN
SRI LANKA

Sector	Form of Trade-offs
Defence-education	positive
Defence-health	positive
Defence-housing	none
Defence-economic services	none
Defence-civil administration	none
Defence-other expenditure	negative

The analysis of trade-offs between capital defence expenditure and non-defence expenditure is given in Table 4.8. As has already been noted it is difficult to find any trade-off between capital expenditure categories. This is because the level of capital expenditure is highly volatile in developing countries. The Sri Lankan example exhibits a similar pattern.

Table 4.8

FORM OF TRADE-OFFS BETWEEN CAPITAL DEFENCE
SPENDING AND NON-DEFENCE SPENDING IN
SRI LANKA

Sector	Form of Trade-offs
Defence-education	none
Defence-health	none
Defence-housing	none
Defence-economic services	none
Defence-civil administration	none
Defence-other expenditure	none

Notes:

1. Recurrent expenditure includes expenditure on goods and services, interest payments, subsidies and other current transfers (I.M.F. 1974, p.208).

2. Capital expenditure includes expenditure on acquisition of new and existing fixed capital assets, purchases of stocks, purchases of land and intangible assets and capital transfers (I.M.F. 1974, p.208).

3. Trade-off patterns between defence spending and non-defence spending can also be examined by analysing recurrent defence expenditure and total recurrent non-defence expenditure and also capital defence spending and total capital non-defence expenditure. In this case total government expenditure should be divided into recurrent and capital expenditure separately. In this study total government expenditure as a whole was used (see, Ball, 1985a). A time problem and the limitations of the present study precluded division into the two components.

Chapter 5

METHOD AND ANALYSIS

5.1 Introduction

Most of the studies concerning military expenditure and economic growth have used econometric analysis (mainly regression analysis) to support their arguments. Following the pioneering work by Benoit (1973) and also later studies, the present study employs regression analysis to find out the nature of the relationship between economic growth and military expenditure in Sri Lanka. However, this area of study embodies various controversial issues. These range from the definitional problems of military expenditure to data problems. In section 5.2, some of the problems are discussed, in general, in relation to the field of military expenditure analysis. In section 5.3 the data sources of the present study and related issues are examined. Section 5.4 contains the model for this study. The results of the model are analysed in section 5.5.

5.2 Some Problems in Military Expenditure Analysis

The relationship between economic growth and military expenditure seems more controversial, when the models used by previous researchers are examined. Most of the studies have used the OLS method to estimate a model of the following nature (Joerding, 1986):

$$GRTH = aX + bMIL + e$$

where

GRTH = economic growth rate

X = vector of explanatory variables

MIL = measure of military expenditure

e = error term

In these studies it has been implicitly assumed that military spending is an exogenous variable. Although some economists have expressed their doubt about this implicit assumption (Joerding, 1986), the reason behind the decision to assume that military expenditure is exogenously determined is an important one.

There are economists who do not see military spending as an exogenous variable but rather as an endogenous variable [see, Deger (1981), Deger and Smith (1980), Joerding (1986)]. According to them military spending is (to a certain extent) dependent on the economic performance of the domestic economy of a country. If there are some budgetary problems, then these should affect the level of military spending of that country. However, it seems that in most cases financial constraints do not greatly effect defence spending. Even if they do, their effect is only on a very small scale. This can be taken as one of the major reasons to assume that military spending is an endogenous variable [see, Deger and Sen (1983) for more supportive arguments].

Maizels and Nissanke (1986), supporting the assumption that military expenditure is exogeneous, said that "...the traditional neo-classical approach, which views the role of the

state as balancing the welfare benefits of extra security derived from military expenditure with its opportunity cost in terms of foregone civilian output, appears particularly difficult to apply, if not irrelevant, to the majority of developing countries" (p.1127). Therefore, "almost all the quantitative analysis of the impact of military expenditure on the economic growth of developing countries has taken such expenditure as exogenously given" (Maizels and Nissanke 1986, p.1127). Following the majority of studies in the literature, the present study treats military expenditure as an exogenous variable.

Another problem which is often discussed by researchers is that efficient estimates cannot be obtained by using single equation systems to study the military expenditure-economic growth relationship. According to Deger "...the inter-relationships among defence, growth and other variables are crucial (and) the central concept of interdependence can be captured (by estimating) a simultaneous-equations system based on a properly specified theory" (Deger 1986, p.181). In this case Deger takes military expenditure as an endogeneous variable. However, it should be noted that most of the explanatory power of the relevant equations is provided by dummies for oil-exporting countries and for countries at war in Deger's studies (Maizels and Nissanke 1986).

For the purpose of this study, the single equation system is used to analyse the military expenditure-growth relationship. The reasons for this choice are as follows:

- a) the original model on which the present study is based uses the single equation system;
- b) the time limitation precluding a more comprehensive study using a simultaneous equation system;

- c) the lack of necessary primary data on Sri Lanka in Australia for such a study;
- d) almost all the studies in the literature support the single equations system.

5.3 Data Source and Related Problems

The reliability of military expenditure-related studies has been questioned by many people for various reasons. The major reason behind this problem is related to military expenditure data. It is often thought that individual governments do not publish defence data accurately. Many governments attempt to keep information about their security related outlays from both foreign governments and their own citizens. [It has been observed that Warsaw Treaty countries are among those who most seriously understate their security expenditures (Ball 1984a, p.162)].

According to Ball (1984a) there are various ways used by governments to cover their actual defence related outlays. Ball (1984a) has outlined five of the most common mechanisms;

- a) double book-keeping
- b) use of extra-budgetary accounts
- c) highly aggregated budget categories
- d) military assistance
- e) governmental manipulation

It is also common that in most existing studies researchers have used data published by international organizations such as SIPRI, IISS, IMF, and ACDA (US Arms Control and Disarmament Agency). However, it can be found that these data also frequently differ from institution to institution. The reason for this difference is mainly due to the variation in definitions used by various institutions in explaining defence expenditure. (The definitional problem associated with military expenditure data has already been discussed in section 1.3 of chapter 1)

Table 5.1 gives an example of the differences in security expenditure of one developing country, namely Guyana. This table is a reproduction of (with some modifications) Table 2.2 of Deger and West (1987, p.58).

Table 5.1

COMPARISON OF GUYANESE SECURITY
EXPENDITURE (in million Guyanese Dollars)

YEAR	ACDA	IMF	SIPRI	GGE*
1972	7.0	7.5	7.5	17.4
1973	9.0	10.6	22.5	22.7
1974	16.0	24.8	38.1	32.9
1975	25.0	76.4	78.9	49.6
1976	87.0	86.7	120.0	99.9
1977	61.0	61.9	77.5	67.0

*GGE = Guyanese Government Estimates

Source: Deger and West, 1987, p.58

In the case of Sri Lanka, data published by various organizations on military expenditure differ from each other. However, in the present study an attempt is made to avoid the unreliability problem in data on Sri Lankan military expenditure. To gather accurate data almost all the available sources were examined. The data used in this study were obtained directly from the government treasury of Sri Lanka. The military expenditure data are the actual government expenditure on the army, navy, and air force of Sri Lanka from 1965 to 1986. The expenditure data of police forces are also the actual government expenditure on police forces in Sri Lanka for the same time period. In order to convert nominal military expenditure to real expenditure, a GDP deflator (1980=100) was used. It may be more appropriate to use military price indices to convert nominal military expenditure to real expenditure. However, as it was not possible to obtain a military price index for Sri Lanka, the GDP deflator was employed in this study. It has become common practice to use a GDP deflator in most military expenditure studies. The GDP deflator, used in the present study, is the IMF GDP deflator for Sri Lanka (IMF, 1985). In the case of other data, the major source was the Annual Report of the Central Bank of Sri Lanka. The data on GDP, exports, population growth rate, and capital stock were obtained from the various issues of this report for the period 1965-86. In addition to the Annual Report of the Central Bank of Sri Lanka, Annual Budget Estimates of the Government of Sri Lanka were used to obtain annual expenditure data on education, health, housing, economic overhead, civil administration and other public sectors in Sri Lanka from 1965 to 1985. To obtain real values from the nominal values of those sectoral expenditure data, the GDP deflator (1980=100) was used.

5.4 The Model

The model used in the present analysis is a modified version of Faini, Annez, and Tailor (1984). This macro model, on the impact of arms spending, is based on Keynesian theory. An attempt is made here to provide a brief description of the model. We may begin with the following national account identity.

$$Y = C + I + G + E - M \quad (1)$$

Where Y is income, C is consumption, I is investment, E is exports, M is imports and G can be taken as military spending. For the time being, we assume that other public expenditure is zero.

$$S = Y - C \quad (2)$$

$$S = sY \quad (3)$$

S is savings and the saving function can be shown simply as (3) above. The import function may take the following form.

$$M = m_1 Y + m_2 (I + G) \quad (4)$$

An equal marginal import coefficient for I and G is assumed. This assumption can be relaxed easily. It is also assumed that there is a level of full capacity output, Y^* , which can be related to the existing capital stock. Therefore, a relative utilization rate, u , can be defined as follows:

$$u = (Y^* - Y)/K \quad (5)$$

where K is capital stock.

It may be assumed that investment responds to the level of capacity utilization of the country. However, as far as developing countries are concerned there is a problem associated with absorptive capacity. The investment which will respond to the level of capacity utilization may be restrained by absorptive capacity. Generally, the absorptive capacity has been described as "...the ability of the economy to muster skilled workers, management, key pieces of equipment, and other inputs necessary to carry through investment projects" (Faini, Annez and Tailor 1984). For the purpose of the present study the absorptive capacity limit of a country can be postulated in following way.

$$v = v[(I + G)/K, Y/K, (E - M)/K, G_{-1}/Y_{-1}, \text{population}] \quad (6)$$

According to Faini, Annez and Tailor (p.489), a larger value of v means that capital formation is more difficult. For example, higher levels of investment demand, defence spending, or output (relative to capital stock K) will put pressure on available supplies of capital, skilled labour, and foreign exchange. More available foreign exchange ($E-M$) will have the opposite effect. G_{-1}/Y_{-1} allows for productivity raising effects of military spending with a lag. The signs of the derivatives have been given as:

$$\begin{aligned} v_1 &> 0 \\ v_2 &> 0 \\ v_3 &< 0 \\ v_4 &< 0 \end{aligned}$$

The impact of the scaling variable, population, is undetermined. The investment demand function is assumed to have the following form:

$$I/K = f(u, v). \quad (7)$$

The functional derivatives of both f_v and f_u can be taken as negative. This will capture the absorptive capacity limits and high rate of unutilized capacity of the country which will discourage investment. However, one important thing is that bottlenecks in the economies of developing countries may lead to low overall use of capacity. This may increase public investment to overcome the problem. In that case public investment may have a positive f_u .

The short-run (K and G predetermined) effects of defence spending in the model has been determined by solving (1) through (4) together and giving the reduced form of output as:

$$aY = b(I + G) + E \quad (8)$$

where

$$a = s + m_1, \text{ and}$$

$$b = 1 - m_2.$$

The effects of defence spending can be examined by differentiating equations (5) through (8) (keeping K and E fixed). The solution for the change in output gives $adY = (b/h)dg$, where $h = a[1 - v_1 + v_3m_2] - b[f_v(v_2 + v_3m_1) - f_u]$. The usual macro stability condition is that effects of an income increase on saving (the term multiplied by a in the definition of h) exceed those on investment (the term multiplied by b). When this condition holds, an increase in military spending stimulates output (Faini, Annez and Tailor 1984, p.490). The model solution for investment has been given as follows:

$$dI = \frac{a[v_1 - v_3m_2] + b[f_v(v_2 - v_3m_1) - f_u]}{h} dG \quad (9)$$

"In the numerator, all terms are positive except for $f_v(v_2 - v_3m_1)$. This expression measures the increasing pressure of absorptive capacity limitations that result from an income increase" (Faini, Annez and Tailor p.490). The important point here is that, if this is strong enough, the absorptive capacity drag can make the derivative dI/dG negative. This means growth will be slower as military spending increases. This situation is more common in developing countries than in industrialized countries.

For testing purposes equation (9) has been transformed into growth rates in variables and the share of defence spending in GDP. The original model can be given as follows:

$$Y' = g_0 + g_1E' + g_2P' + g_3\Delta a + g_4\Delta F + g_5K' + g_6(Y/P) + e \quad (10)$$

where

Y' = growth rate of GDP,

E' = growth rate of exports,

P' = growth rate of population,

Δa = change in share of arms spending
in GDP,

ΔF = change in capital inflows from abroad,

K' = growth rate of the country's
capital stock,

Y/P = GDP per capita, and

e = a stochastic error term.

For the purpose of this study the original model has been modified in the following ways:

- a) Two variables have been dropped. [Y/P (GDP per capita) and ΔF (change in capital inflows from abroad)]
- b) Instead of using the variable Δa (change in share of arms spending in GDP) A' (growth rate of arms spending) and Δa have been used in separate regressions.
- c) A trend variable and a dummy variable have been introduced by taking into account technical progress in the economy, periods of communal trouble and periods of normality.
- d) Two separate regressions have been estimated with and without expenditure on police forces in the defence expenditure category.

Hence, for econometric estimation the following two models have been formulated.

$$a) Y' = g_0 + g_1 E' + g_2 P' + g_3 \Delta a + g_4 K' + g_5 t + g_6 (D \Delta a)$$

$$b) Y' = g_0 + g_1 E' + g_2 P' + g_3 A' + g_4 K' + g_5 t + g_6 (D A')$$

where

A' = growth rate of defence spending,

t = trend variable,

D = dummy variable,

$D = 1$ for communal trouble periods, and

$D = 0$ for normal periods.

The role of the police forces in the case of defence of Sri Lanka is ambiguous (see, section 4.3 of chapter 4). In the previous analysis in chapter 4, expenditure on police forces was included under the category of civil administration. However, as noted earlier, the role of the police forces cannot be simply identified with purely law and order maintenance or with combating terrorism. This ambiguous situation is common in most developing countries. To eliminate this ambiguity, an attempt was made to analyse both situations in separate regressions i.e., defence expenditure including police expenditure and excluding police expenditure.

In the original model, changes in capital inflows from abroad and per capita GDP are included as explanatory variables. In the present study, these two variables are excluded. As these variables show some multicollinearity effects, it was decided not to include these two variables in the model. In the preliminary analysis of the present study it was detected that the inclusion of capital inflows from abroad and per capita GDP as explanatory variables may result in biased estimates.

The objective of the introduction of a trend variable in the model is to capture the development trend of Sri Lanka, i.e., technical progress. As it may not be possible to explain this kind of development trend by other variables, the inclusion of trend variable in the model will give more realistic estimates. The inclusion of a dummy variable in the model is even more important. Sri Lanka was experiencing communal clashes from time to time. There was a significant increase in defence expenditure during those troubled periods. To obtain more realistic estimates, it was necessary to distinguish between communal trouble periods and normal peace periods. Therefore, a dummy variable was introduced ($D = 1$ for trouble periods and $D = 0$ for normal periods) into the model. The years in which Sri Lanka experienced internal troubles were 1970, 1971, 1972 (insurrection activities), 1977, 1982, 1983, and 1986 (communal clashes).

In the final analysis, an attempt is made to relate the growth rate of output to changes in exports, population, defence burden and capital stock of Sri Lanka. The data used in the analysis are given in the appendix [GDP, exports, population growth rate (PGR), military expenditure (MEX), capital stock (CPS), GDP deflator (GDPD), and military expenditure including police (MEX+P)]. The equations are in linear form. The OLS method is used to estimate the parameters of the model. A routine F test is used to check the relevance of chosen regressors in explaining variations in the dependent variable. The SHAZAM computer program is used to estimate the model and estimates are made after correcting data using Cochrane-Orcutt procedure for serial correlation.

Table 5.2

RESULTS OF THE EQUATIONS WITH THE VARIABLE OF
CHANGE IN SHARE OF ARMS SPENDING IN GDP.

Variable	Estimated Coefficients	
	(with police)	(without police)
E'	+0.21 (6.60)*	+0.21 (5.86)*
P'	+7.76 (3.30)*	+7.66 (2.89)*
Δa	-11.69 (2.57)*	-13.81 (1.30)
K'	+0.12 (4.00)*	+0.11 (3.48)*
t	+0.28 (2.34)*	+0.29 (2.12)*
D	+0.13 (1.87)	+12.98 (1.15)
R ²	0.88	0.84
F	16.60	13.17
DW	2.14	2.28

Notes:

* significant at five percent level

1. see text for the definitions of the variables

2. t ratios are in parenthesis

Table 5.3

RESULTS OF THE EQUATIONS WITH THE VARIABLE OF
GROWTH RATE OF ARMS SPENDING IN GDP.

Variable	Estimated Coefficients	
	with police	without police
E'	+0.22 (7.57)*	+0.20 (5.29)*
P'	+8.25 (3.37)*	+6.99 (2.43)*
A'	-0.09 (1.67)**	-0.07 (0.74)
K'	+0.11 (4.21)*	+0.12 (3.14)*
t	+0.35 (3.18)*	+0.21 (1.47)
D	+14.25 (2.75)*	+0.07 (0.68)
R ²	0.90	0.82
F	20.88	11.41
DW	2.26	2.11

Notes:

* significant at five percent level

** significant at ten percent level

1. see text for the definitions of the variables

2. t ratios are in parenthesis

Table 5.2 and 5.3 show the results of the four regressions. In Table 5.2 the defence burden variable is taken as the change in the share of arms spending in GDP of Sri Lanka. In this case, two situations were examined performing two separate regressions. First, the defence expenditure is taken as the actual expenditure of the army, navy, and air force of Sri Lanka, i.e. without police expenditure. Second, the defence expenditure is expenditure on the armed forces (army, navy, and air force) plus expenditure on the police force. In Table 5.3 the defence burden variable is taken as the growth rate of defence expenditure of Sri Lanka. As in the previous situation, two regressions were performed to examine the effects of increased defence expenditure on the economic growth of Sri Lanka.

All the variables have expected signs and are, in most cases, statistically significant. Coefficients of determination (R^2) in all four cases show that explanatory power is very high. The Durbin-Watson statistics (DW) indicate the estimates have no serious autocorrelation. Higher values of the F statistics show the relevance of chosen regressors in the model. The most important finding that emerges from the results is that military spending has a clear negative impact on the economic growth rate of Sri Lanka. The adverse effects of defence spending on growth become more apparent when police expenditure was included in the data. However, it is necessary to note that in the case of the change in share of arms spending variable, the size of the parameter did not correspond to expectations (see Table 5.2). For example, the defence burden variable has an unrealistic value of 11.7 (with police expenditure) and 13.9 (without police expenditure). This means a 1 per cent increase in the share of arms spending in GDP will reduce the growth rate by almost 12 per cent or 14 per cent. This seems unrealistic. One possible reason for these high values may be that there is very little variation in part of the data to reflect their impact. However, studies which have used share of arms spending as an explanatory

variable, obtained high values for the defence burden coefficient similar to those reported here. For example, values such as 3.52 (Faini, Annez, and Tailor, 1984), 3.22 (Maizels and Nissanke, 1985) and 3.99, 8.79 and 17.35 (Islam, 1986) are found in the literature. When the change in share of defence spending variable is replaced by the growth rate of defence expenditure variable, it is possible to obtain more realistic coefficients. As expected, exports, population growth rate, and the country's capital stock have shown a positive impact on the economic growth rate of Sri Lanka.

The results of the present analysis are consistent with the findings of most of the other studies in the literature. However, present results lead to a conclusion that is completely opposite to that reached by Benoit (1973, 1978) since it is detected that defence spending has some adverse effects on economic growth of Sri Lanka. Thus these findings do not support Benoit's argument that increased military expenditure may accelerate the growth rate of a country. However, it is possible to support the general argument that the defence burden hampers the economic growth of a country.

In Table 5.2 the defence burden variable which includes police expenditure is significant at the five per cent level. When police expenditure is excluded the t ratios are significant only at the ten per cent level. At this point it is necessary to note that police expenditure cannot be considered directly as part of defence expenditure. In the case of normal day-to-day economic activities of a country, a certain amount of law and order should exist. If there is no protection given to the society, economic activities are certainly disturbed. However, it is impossible to measure the required level of law and order to maintain economic activity, undisturbed, in society. This situation is even more cumbersome when it is a developing country. Therefore, the results which include the police

expenditure as part of the defence expenditure should be viewed with caution.

The appropriateness of the inclusion of a dummy variable and a trend variable in the model was indicated by significant t ratios. In three estimates out of four, t ratios for the dummy variable and the trend variable were significant at the five per cent level. At this point it may be useful to compare the results with the findings of the Indian study by Faini, Annez, and Tailor (1984).

Table 5.4

RESULTS OF THE INDIAN TIME
SERIES STUDY

variables	coefficients
Export growth rate	+ .113
Population growth rate	+5.218
Change in defence burden	-3.520
Capital stock growth rate	-1.826
R^2	0.36

note: all t ratios exceed 1.5

Source: Faini, Annez, and Tailor (1984, p.496)

Our results, in many respects, are close to those of the Indian time series study. One noticeable difference is that in the case of the Indian study the growth rate of capital stock coefficient shows a negative sign whereas in this study a positive sign was obtained which is more realistic.

It can be seen from the results that though there is a negative impact of defence spending on the economic growth of Sri Lanka the magnitude of the impact becomes smaller when police expenditure is excluded. When compared to some other developing countries, Sri Lanka's expenditure on defence related activities is relatively small. The rank order of military burden in 10 developing countries is shown in Table 5.5. According to these statistics the military burden variable for Sri Lanka is in 8th position among 10 countries. However, this does not undermine the finding in this study concerning the negative impact of military expenditure on the economic growth rate of Sri Lanka.

Table 5.5

RANK ORDER FOR MILITARY BURDEN IN
10 DEVELOPING COUNTRIES

Country		Military Burden
Argentina	-	5
Costa Rica	-	10
Venezuela	-	6
South Korea	-	2
Malaysia	-	3
Mexico	-	9
Brazil	-	7
Sri Lanka	-	8
Phillippines	-	4
Peru	-	1

Rank 1 is given to the country with
the highest value of the variable

Source: Deger, S and West, R (ed.) 1987, p.95

Chapter 6

CONCLUSION

There are three questions to be answered with regard to the impact of military expenditure on economic growth.

- a) Will increased military expenditure accelerate the development process or growth rate of a country?
- b) Will increased military expenditure hamper the economic growth rate?
- c) Will increased military expenditure neither help nor hinder the economic growth rate?

Studies on this subject have supported all three arguments. In this study an attempt has been made to examine the growth-defence relationship according to methods which have been used by many researchers. The findings are similar to those in most of the studies on the growth-defence relationship. There are few single country studies and more cross-country studies analysing the growth-defence relationship. This study falls into the single country studies category. In it the defence-growth relationship of Sri Lanka has been examined from three perspectives. They can be summarised as follows:

- a) The nature of budgetary trade-offs between the defence and non-defence sectors.
- b) Economic linkages of defence expenditure.
- c) Defence expenditure and economic growth rate.

In the budgetary trade-off analysis of Sri Lanka it was found that different kinds of trade-off exist between the defence sector and the non-defence sector. These were in the form of positive trade-offs, negative trade-offs and no trade-offs. A notable difference in this analysis, compared to conventional trade-off analysis, was that the trade-offs between the defence sector and non-defence sector were examined by classifying defence expenditure into capital and recurrent defence expenditure. It was observed that defence expenditure is less vulnerable to financial problems (constraints) in the budgetary process of Sri Lanka. This means other expenditure categories generally have more fluctuations than defence expenditure in Sri Lanka.

In the case of economic linkages, it was found that defence expenditure has some very important links with other macro economic variables. Though it was not possible to give clear statistical evidence from Sri Lanka due to lack of available data, there is reason to believe that there are strong economic linkages between the defence variable and other macro economic variables (eg: defence expenditure and savings or capital formation).

The major finding of the present study is that there is a negative impact of defence expenditure on the growth rate of Sri Lanka. An attempt was made to analyse the defence-growth relationship in number of ways. In the case of Sri Lanka, the

analysis of the defence-growth relationship gave similar results in all cases. When police expenditure data is included in the defence expenditure data, the negative impact of the defence burden on the growth rate is very clear and strong. However, when police expenditure is excluded, the magnitude of the negative impact on the growth rate becomes smaller. Although the results of the regressions, which included police expenditure, should be considered with caution, the negative impact of defence expenditure on the growth rate of Sri Lanka is apparent. The findings of Benoit (1973) were not confirmed by the results in this study. However, the empirical evidence in this study supports the conclusion of later researchers, namely that defence expenditure is harmful to the economic growth of a country.

It is also necessary to note the limitations associated with military expenditure analysis. One of the major problems confronted by researchers in this area is the inadequacy of relevant data. Difficulties associated with the gathering of accurate data, and its reliability, have partly prevented detailed time series studies on developing countries. In addition there are other important socio-economic factors which may cause problems in military expenditure studies. The relationship between these socio-economic factors and military expenditure is difficult to quantify. Such external factors may be crucial in determining the costs and benefits of military expenditure.

There are several areas which may be interesting for further studies in the case of military expenditure in Sri Lanka. For example, as Sri Lanka is facing an increasing balance of payments and foreign debt problems, it may be useful to examine the relationship between balance of payments or the country's debt and military expenditure.

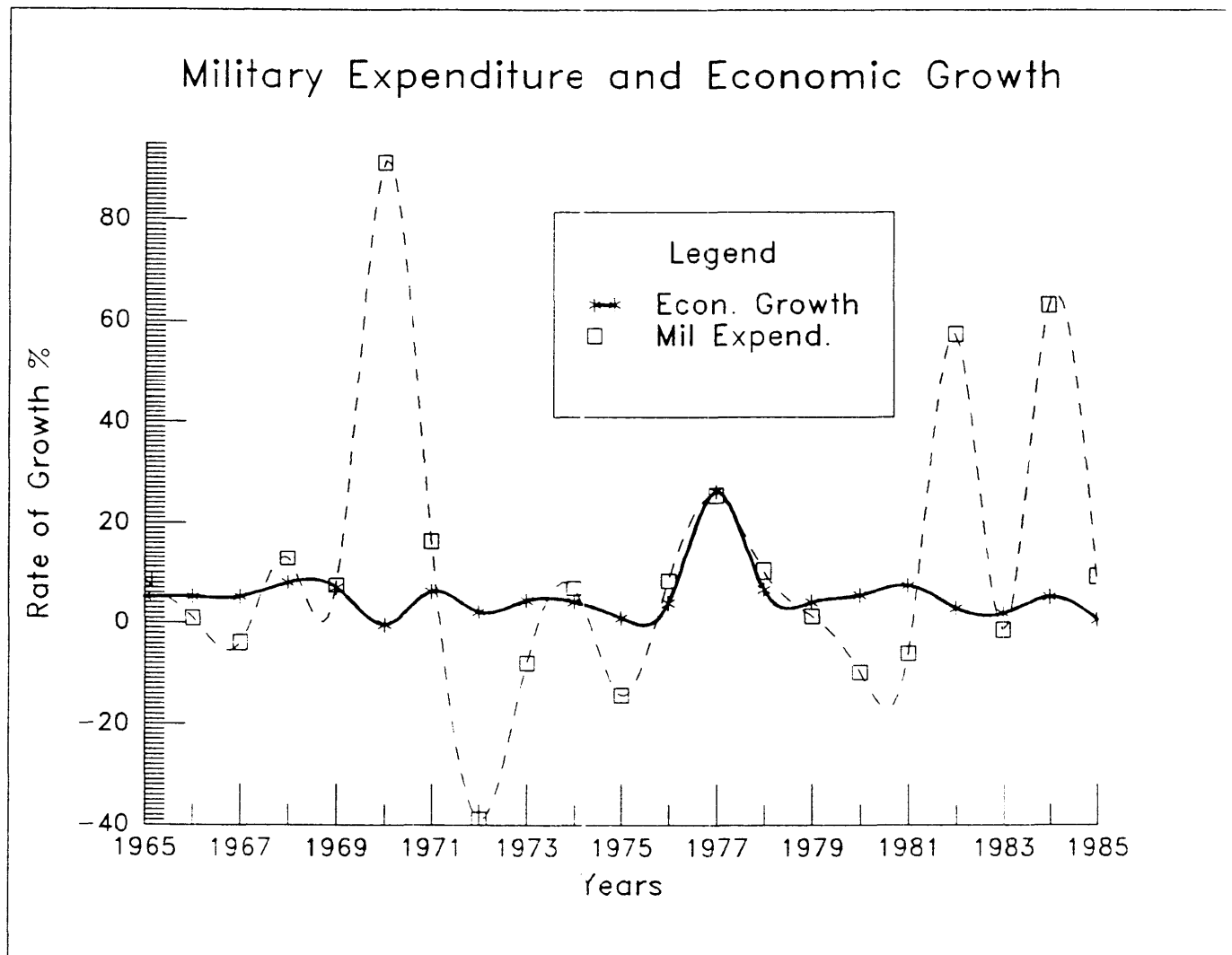


Figure .I: Military Expenditure and Economic Growth

Appendix II

BASIC DATA OF SRI LANKA 1965-1986

YEAR	GDP	EXPORT	PGR	MEX	CPS	GDPD	MEX+P
	Rs. 1000	Rs. 1000	%	Rs. 1000	Rs. 1000		Rs. 1000
1965	7499	1949	2.4	60	1043	28.1	102
1966	7741	1700	2.5	64	1137	27.5	123
1967	8318	1690	2.3	66	1456	28.2	134
1968	9930	2035	2.5	72	1563	32.0	143
1969	10833	1916	2.2	82	2276	32.3	153
1970	11703	2033	2.1	89	2359	32.6	161
1971	11986	2039	2.2	175	2140	33.5	235
1972	12807	2016	2.0	205	2206	33.7	325
1973	15265	2630	1.8	146	2493	39.3	245
1974	19805	3503	1.5	167	2972	48.3	280
1975	22075	3969	1.6	191	2699	52.2	317
1976	24258	4340	1.6	178	4535	56.2	335
1977	29265	6570	1.6	224	5035	65.9	402
1978	40479	13193	1.8	308	8521	72.2	540
1979	49782	15282	2.0	392	12046	83.3	652
1980	62246	17595	1.8	477	20845	100.0	827
1981	79337	21043	1.9	520	22279	120.3	908
1982	94679	21454	1.5	543	30207	134.1	955
1983	113878	25096	1.3	999	35312	156.6	1512
1984	140039	37347	1.3	1139	37427	138.9	1870
1985	148321	36207	1.3	1954	41106	190.2	2770
1986	155737	38303	1.5	2228	42463	198.4	3375

Source: Central Bank of Sri Lanka

IMF (1985)

Government Treasury of Sri Lanka

Bibliography

Alnasrawi,A. (1986).

Economic consequence of Iraq-Iran War. Third World Quarterly Vol.8, (3), 869-895.

Ball, N (1985a),

Security Expenditure and Economic Growth in Developing Countries. Paper prepared for the East-West Conference on North-South Relations. Frankfurt.

Ball,N. (1984a).

Measuring Third World Security Expenditure:A research Note. World Development Vol.12, (2), 157-164

Ball,N. (1985).

The Security Sector,Budget and Development. IDS Bulletin Vol.16, (4), 44-48.

Ball,N. (1983),

Defence and Development:A critique of the Benoit Study. Economic Development and Cultural Change Vol.31, (3), 507-524

- Ball,N. (1984) ,
 Third World Security Expenditure:A Statistical Compendium.
F.A.O. Report ,C 10250-M5 .
- Benoit,E. (1978) ,
 Growth and Defence in Developing Countries. Economic Development and Cultural Change Vol.26, (2),271-280 .
- Benoit,E. (1973) .
Growth and Defence in Developing Countries. Lexington Books,Lexington .
- Biswas,B and Ram,R. (1986).
 Military Expenditures and Economic Growth in Less Developed Countries: An Augmented Model and Further Evidence.
Economic Development and Cultural Change Vol.34, (2), 361-372 .
- Cappelen, A., Gleditsch, N.P. and Bjerkholt, O. (1984) ,
 Military Spending and Economic Growth in OECD Countries.
Journal of Peace Research Vol.21, (4),361-373
- Central Bank of Ceylon (Sri Lanka) (1965-86) ,
Annual Reports. Various Years, Colombo
- Central Bank of Ceylon (Sri Lanka) (1980-85) ,
Review of the Economy. Various Years, Colombo

Chan, Steve. (1985) ,

The Impact of Defence Spending on Economic Performance: A Survey of Evidence and Problems. Orbis Vol.14, (2), 145-154

Dabelko, D. and McCormik, J. (1984) ,

Opportunity Cost of Defence: Some Cross National Evidence. Journal of Peace Research Vol.14, (2), 145-154

David, Lim. (1983) ,

Another Look at Growth and Defence in Less Developed Countries. Economic Development and Cultural Change Vol.31, (2), 377-384

De Silva , K.M. (1977) .

Sri Lanka. A Survey. G. Hunt and Co.(publishers) Ltd, London.

Deger, S (1985) ,

Human Resources, Government Expenditure, and the Military Burden in Less Developed Countries. The Journal of Developing Areas Vol.20, (4), 37-48

Deger, S and West, R (ed.) (1987) .

Defence, Security and Development. Frances Pinter (Publishers), London .

Deger, S. (1986) ,

Economic Development and Defence Expenditure. Economic Development and Cultural Change Vol.35, (1), 179-196

- Deger, S. and Sen, S. (1983) .
 Military Expenditure, Spin-off and Economic Growth. Journal of Development Economics Vol.13, 67-83
- Deger, S. and Smith, R. (1983) ,
 Military Expenditure and Growth in LDCs. Journal of Conflict Resolution Vol.27, (2), 335-353 .
- Dixon, W.J and Moon, B.E (1986)
 The Military Burden and Basic Human Needs. The Journal of Conflict Resolution Vol.30, (4), 660-684
- Doran, H.E and Guise, J.W.B (1984) .
Single Equation Methods in Econometrics: Applied Regression Analysis. University of New England .
- Duchin, F. (1983) ,
 Economic Consequences of Military Spending. Journal of Economic Issues Vol.17, (2), 335-353
- Economist Intelligence Unit (EIU) (1987) .
Sri Lanka, Country Report. No.2, 1987 Economist Intelligence Unit, London.
- Faini, R., Annez, P. and Tailor, L. (1984) .
 Defence Spending, Economic Structure and Growth: Evidence Among Countries and Over Time. Economic Development and Cultural Change Vol.32, (3), 487-498 .

Far Eastern Economic Review (1985-87),

Asia Year Book. Far Eastern Economic Review Ltd. , Hong Kong .

Fisher,W.R. and Burns,R.D. (1964) ,

Armament and Disarmament:The Continuing Dispute..
Wordsworth Publishing Co., California

Frederiksen ,P.C. and Looney, R.E. (1986)

Defence Expenditures,External Public Debt and Growth in
Developing countries. Journal of Peace Research Vol.23,
(4), 329-337

Fredriksen, P.C. and Looney, R.E. (1982)

Defence Expenditure and Economic Growth in Developing
Countries: Some Further Empirical Evidence. Journal of
Economic Development Vol.7,(1),113-126

Gandhi,P.Ved. (1974) .

India's Self-Inflicted Defence Burden. Economic and
Political Weekly 9.Aug.1974 ,1484-1494

Goertz,Gary. and Diehl,P.F. (1986)

Measuring Military Allocations. The Journal of Conflict
Resolution Vol.30,(3),553-581

Gottheil, F.M. (1974) .

An Economic Assesment of the Military Burden in the Middle
East. Journal of Conflict Resolution Vol.18,(3),502-513

- Government of Sri Lanka (1965-86),
Annual Budget Estimates. Various Years, Colombo.
- Harris, G.T, Kelly, M and Pranowo (1988),
 Trade-Offs between Defence Expenditure and Education/Health
 Expenditures in Developing Countries. Journal of Peace
 Research. (in press).
- Harris, Geoffrey.T (1985) .
 The Determinants of Defence Expenditure in the Asian Region.
Journal of Peace Research Vol.23, (1), 41-49 .
- Hartley, K and Tisdell, C (1981) .
Micro Economic Policy. Chicester, Wiley.
- Hunt, J. (1987) ,
 Arms and Economic Growth in the Asia/Pasific Region. Peace
 Magazine, Australia No.4 ,Feb., March 1987.
- International Monetary Fund (1974)
A Manual on Government Finance Statistics (draft).
 Washington, U.S.A.
- International Monetary Fund (1965-86)
Government Finance Year Book. Various Years, Washington
 D.C.
- Islam, R (1986) ,
 Military Expenditure and Economic Growth:A Case Study of
 India.. M.Ec. Thesis University of New England.

- Joerding, W. (1986),
Economic Growth and Defence Spending. Journal of Development Economics Vol.21, 35-40.
- Kaldor, M. (1976),
The Military in Development. World Development Vol.4, (6), 459-482.
- Kennedy, D. (1974),
The Military in the Third World. Duckworth, London.
- Lebovic, J.H and Ishaq, A (1987).
Military Burden, Security Needs, and Economic Growth in the Middle East. The Journal of Conflict Resolution Vol.31, (1), 106-138.
- Looney, R.E (1986),
The Political Economy of Latin American Defense Expenditures, Case Studies of Venezuela and Argentina. Lexington Books, U.S.A.
- Lyttkens, C. and Vedovato, C. (1984).
Opportunity Cost of Defence: A Comment on Dabelko and McCormik. Journal of Peace Research Vol.22, (3), 389-394
- Maizels, A. and Nissanke, M.K. (1986).
The Determinants of Military Expenditure in Developing Countries. World Development Vol.14, (9), 1125-1140.

SIPRI Year Book (1986).

World Armaments and Disarmament. Oxford University Press, New York.

Sabi, H. Shabtai (1975).

Army and Economy in Tropical Africa. Economic Development and Cultural Change Vol. 23, (4), 687-701.

Salvatore, D (1982).

Theory and Problems of Statistics and Econometrics. McGraw-Hill, USA

Smith, Dan and Smith, Ron. (1983).

The Economics of Militarism. Pluto Press, London.

Smith, C. (1984).

Disarmament, Peace Movements and The Third World. Third World Quarterly Vol. 6, (4), 892-910.

Smith, R. (1980).

The Demand for Military Expenditure. Economic Journal Vol. 90, 811-820.

Swan, Bernard (1986)

Peace and Conflict in a Poor Country, Sri Lanka: An Introduction. Occasional Paper No. 3 The Australian Institute of International Affairs.

- Montjoy, A.B. (1983),
 Third World Military Spending. Third World Quarterly Vol.5,
 139-140 .
- Nabe, O. (1983),
 Military Expenditures and Industrialization in Africa.
Journal of Economic Issues Vol.17, (2), 575-587 .
- Nawaz, Shuja (1983),
 Economic Impact of Defence Expenditure. Finance and
 Development Vol.20, (1), 34-35 .
- Pranowo (1986),
The Trade-offs between Defence Expenditure and Non-Defence
 expenditure in Asian Countries. Unpublished diploma
 dissertation U.N.E.
- Rao, P and Miller, R.L (1971),
Applied Econometrics. Wordsworth publishing Co. U.S.A.
- Ross, L.A and Samaranayake, T. (1986)
 The Economic Impact of the Recent Ethnic Disturbances in Sri
 Lanka. Asian Survey Vol.26, (11), 1240-1255.
- Rothschild, K.W. (1977)
 Military Expenditure, Export and Growth. Kyklos No.26 ,
 804-813 .

- Tait, A.M and Heller, S.P (1982).
International Comparisions of Government Expenditure.
 Intrnational Monetary Fund, Washington D.C.
- Terhal,P (1981),
 Guns or Grain:Macro-Economic Costs of Indian Defence,
 1960-1970. Economic and Political Weekly Vol.16 , 1998-2003 .
- The Economist Intelligence Unit (EIU) (1987)
Sri Lanka, Country Report. No.2 , 1987 London .
- Thee,Marec. (1982).
 Third World Armaments:Structure and Dynamics. Bulletin of
 Peace Proposals Vol.13, (2), 113-117 .
- United Nations (1980-85).
National Account Statistics:Main Aggregates and Detailed
 Tables. Various Years , New York .
- United Nations (1980-85).
Year Book of International Trade Statistics. Vol.1 and
 2,Various Years, New York .
- Velenzuela,A. (1985).
 A Note on The Military and Social Science Theory. Third
 World Quarterly Vol.7, (1), 132-143
- Verner, J.G. (1984),
 Budgetary Trade-offs between Education and Defence in Latin
 America. Journal of Developing Areas Vol.18, (4), 77-98 .

Ward, M.D and Mintz, A (1987),

Dynamics of Military Spending in Israel: A Computer Simulation.. The Journal of Conflict Resolution Vol. 31, (1), 86-105.

Weede, E. (1986) .

Rent Seeking, Military Participation and Economic Performance in LDCs.. The Journal of Conflict Resolution Vol.30, (2), 291-314 .

Whynes, D.K. (1979) .

The Economics of Third World Military Expenditure. Macmillan, London .

World Bank (1983) .

World Development Report. World Bank, New York.

Yotopoulos, P.A and Nugent, J.B (1976),

Economics of Development: Empirical Investigations. Harper and Row, New York