THE IMPACT OF DEFENSE EXPENDITURES ON THE ECONOMY AND THE ECONOMIC CONSEQUENCES OF DISARMAMENT

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CONTENTS

INTRODUCTION

The aim of this study is to find out the relations between the defense expenditures and the economic growth and to discuss some possible economic and social consequences of disarmament. As understood clearly from this statement, this study may have been broken down into two major parts.

In the first part, some major economic variables such as investment, foreign aid etc. and their relations with defense expenditures have been examined. Along this study investment has been received much more interest than the others, because of the fact that most of the growth and development theories have treated investment as the prime engine of growth. Also, by examining the tables and the figures illustrating the amount, the composition, the share and the changing pattern both of economic growth and defense expenditures; some important conclusions which have canalized and controlled the development line of our study have been obtained.

In the second part, our efforts have been concentrated in explaining the problems caused by disarmament and the policy implications dealing with this problem .

Unfortunately, the data I have had to use may sometimes have some obvious limitations. Because such studies might have been inhibited by the negative attitude of many social scientists toward military matters and by the obstacles created by the secracy and distortion covering much of the basic information in this field. Therefore, the books related to defense and military matters have not been printed and published enough and those printed are not satisfactory in many respects and are far behind to give precise information about the unquestioned importance of defense sector. As a result, bec use of the limitations mentioned above, I have sometimes been restricted to use the up-dated and undetailed data which have made some conclusions rather general and need to be supplied by detailed studies.

PART I

THE CONCEPTION AND THE GENERAL EVALUATION OF DEFENSE EXPENDITURES

Since the earliest times of the history of mankind, a considerable amount of human and material resources have been used in different manners to sustain their own existence and to get a comparative advantage on others. Yet we are still trying to make do with a system of international relations based on a much earlier order, each trying to dictate its own interest, to ignore prior agreements when inconvinient and to be surrounded only by its own judgment in international disputes.

Protection of life and property against external agression and internal lawnessness is clearly essential for a progressive and productive economy. Each national defense force is seen by its rivals not as a protection, but as a potential anemy; there is, therefore, a continued struggle to achieve a margin of superiority in military force. And, the resultant arms races end by creating much larger defense forces on both sides than necessary

with no actual gain in security - just the apposite, in fact.

The arms races and the continuing increases in defense expenditures in the world today are not only among the superpowers - U.S.S.R. and U.S.A - but also among the less developed countries which see each other as potential opponents. This continuous arms race between these nations results in the contemporary revolotion in military technologies which creates an ununderstandable strange position of being militarily dependent upon their opponents. Nations which formerly were familiar only with infantary weapons now maintain nuclear - capable jet bombers, supersonic fighter-interceptors, surface-to-air missiles, submarines, destroyers etc.

We will not talk about the main features of current military revolution here. As Emile Benoit has remarked, "the Hiroshima bomb was thousands of times more powerful than earlier weapons, and the first hydrogen bomb a thousand times stronger than that. These nuclear explosives, of continuously improving efficiency, were then incorporated into missiles capable of delivering havoc at least forty times more quickly

than World War II planes." (1). As understood clearly from these statements, military revolution has been occuring very rapidly, the effectiveness of the weapons of all kinds has been raised dangerously all over the world. So, these can face mankind with a fearful thermonuclear catastrophe.

Let us look at the war industry with the eye of an economist. The first thing that an economist asks himself when he examines an industry is, "What commodity does it produce and whence comes the demand for this commodity?" It is a legitimate question for the economist, therefore, to ask what commodity the war industry produces, and whence comes the demand for it.

In order to understand what the war industry is, how it works and interacts with each other in the accual world, let us analize Kenneth E. Boulding's theory which starts with an imaginary model.

He begins by looking simply at the physical consequences of the war industry over, shall we say,

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(1) Emile Benoit, "Interdependence on a Small Planet", Disarmament and World Economic Interdependence, (ed. by Emile Benoit), Columbia University Press, New York, 1967, p. 15.

a hundred year . He claims that war industry's activity is somewhat sporadic and there are times ("peace") in which it seems to do very little except develop potential. Then, in times of activity, during wars, it devotes itself to diminishing the durability of capital.In his model, the human person is also included as capital and is said to be diminished by the activity of the war industry (2). There is an observer from outer space who did not have the advantage of understanding the human organism might conclude that the principal aim of the world war industry was to prevent the undue accumulation of capital. According to this observer, the main interest of the human race was not enjoyment but the accumulation of capital. Thus, production would be regarded as the fundemantal human activity, and the world war industry would be seen as a device for augmenting consumption by the destruction of capital in order to prevent overaccumulation and the diminution of production which might follow.

The basic fallacy of the theory is the assumption that mankind is both homogeneous and rational which seem

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(2) Kenneth E. Boulding, "The World War Industry as an Economic Problem", Disarmament and the Economy, (ed. by Emile Benoit and Kenneth E. Boulding), Harper and Row, New York, 1963, p. 5.

attractive to the obverver who would soon find that this is not so. A second tentative hypothesis is that mankind is in fact divided into two social species; the producers whose main interest is the accumulation of capital and the increase in its durability and the destroyers whose main interest is the decumulation of capital and lessening of its durability. To overcome the difficulty, the destroyers are supported by the producers, that is, the concept of threat is introduced. In this way, the destroyers are able to compel the producers to feed, clothe and house them because the destroyers control the means of destruction and are able to threaten the producers with further destruction of their beloved products (3).

This is essentially the exploitation theory that Karl Marx, his apprentices and some other Marxist writers use this stationary two-sector model with surplus to explain the battlenecks of the Capitalism and the reasons of collapsion of this system (4). The producers produce

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(3) İbid., p. 6.

(4) Sencer Divitcioğlu, Değer ve Bölüşüm, İ.Ü. Yayınları, İstanbul 1976, pp. 49-52.

a surplus of products beyond what they need to sustain themselves. The destroyers are able to take this surplus away from the producers and sustain themselves with it, and because they can sustain themselves, they can produce the means of destruction by which they can coerce the producers into yielding up a certain proportion of their produce. As understood, this has all the elements of a stable social system. In this system, the producers and destroyers are not independent social groups. At times, large numbers of producers, join in the destroyers organization; and at other times, large numbers of destroyers go back to being producers. The destroyers' perceive praise and adulation from the producers. Even though the support of the destroyers comes from the quasi-coercive institution known as taxation, the system which coerces the producers into paying taxes is usually not part of the organization of the destroyers. The police and the courts, in fact, are not part of the military organization.

Kenneth E. Boulding goes one step further, and introduces the notion of the nation into his model. According to him, a common language, skin color, religion, wealth, marriage customs or any other variable we might mention are not reasons for the partition of the nations; but a historical process are. He thinks

of the division of the world war industry into firms for which he uses the term "military organization", then the armed forces of each nation constitute a firm and these firms define a nation (5).

At this stage, he has compared and contrasted the military organization with the firm in non-war industry. There are, as he has mentioned, many similarities arising out of the fact that both military organizations and firms are organizations. They both have a hierarchial structure, communication system, consist of or are broken down into departments and subdepartments, develop elaborate rules and procedures etc. The financial and accounting procedures of the two are likewise very similar with one exception that the firm has to purchase labor in the open market, whereas a military organization usually employs conscript labor. This can be thought of as a form of taxation; but the fact that the soldier does not usually have the right to quit makes certain important differences in the organization. The great difference from the economic point of view comes from the source of the revenue. In the case of the firm, revenue comes almost entirely

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(5) K.E. Boulding, op. cit., p. 6.

from the sale of commodities on the open market; in the case of the military organization, the revenue comes from a budget allocation from government, that is financed from the sources of government revenue, -taxation or the crcation of money (6). The product which the military organization is selling is a psychological product called national security. Because of its very nature it is hard to put a price on it, simply becouse we do not know its quantily. The only thing we know is the quantity of money that is expended in this respect. Another obvious difference between the military organization and the firm is that the firm is supposed to be a profit-making institution, whereas the military organization is in some sense non-profit.

In my opinion, the last two differences between the firm and the military organization that Kenneth E. Boulding has mentioned does not work in the way that he claimed. Infact, there are a considerable number of military organizations managed to operate just like the firm in the open market, and also there are firms that only some part of their activities are directed to produce military goods that the defense sector

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(6) K. E. Boulding, op. cit., p. 8.

producing rockets, airplanes, tanks etc. The price that the government pay contains profit for the firm. When we have introduced the foreign trade, we will find some firms in the defense sector of some developed countries, selling their produced military products not only to their government but also to the government of their countries. We can easily conclude that there is a profit factor involved in their activities.

However, we remember that Kenneth E. Boulding's model is a closed model and the military organizations in his model define a nation, we will see that this model is consistent under these assumptions (7). In fact the good which the military organization is selling is a public good whose price, to some extent, is supposed to be the quantity of money that is expended. This is the most important and basic characteristic of public good (8).

Another and the most important difference between the military organization and the firm that Kenneth E. Boulding has mentioned is that the main demand for the

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(7) K.E. Boulding, op. cit., p. 6.

(8) Orhan Şener, Kamu Ekonomisi, Eren Basımevi, İstanbul, 1980, p. 58.

product of the military organization is provided by the existense of another and competing military organization. Firms compete with each other in the provision of commodities to a common market whereas military organizations compete only against each other. War industry produces its own demand, which no single commercial industry is able to do. The only justification for the existence of a military organization is the existence of another military organization in some other place (9) It is the distinguishing characteristic of the military organization which separates it from such intitutions as police forces and courts of justice which are, like the military organization, essentially budget-oriented organization. A police force is not justified by the existence of a police force in another town, that is, by another institution of the same kind.

The actions of one military organization will be received and will produce reactions in other military organizations. In this sense, this situation seems to be one of oligopolistic interaction. Kenneth E. Boulding have developed the theory of the interaction of military

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(9) K. E. Boulding, op. cit., p. 10.

organizations in his book Conflict and Defense. In the simplest model, each military organization is producing something called strength. The strength fuction of each military organization is drawn by the isovis lines, that is, contours of equal strength for any given military organization (10). Therefore between the military organizations at different points in the field, a boundary of-equal strength somewhere between them can be drawn. If one military organization increases its home strength, the boundary of equal strength is pushed away from it toward the other military organization. If this process goes on, there will come a point at which the boundary of equal strength function can passe through the location of the other military organization and the letter is no longer unconditionally viable. But for each military organization there is a maximum home strength which depends on the nature of the military techniques and on the amount of economic resources devoted to the military organization and on the size of a nation (11). This concept is likely analogous to the concept of minimum avarage cost in the theory of the firm. Thus, an increase

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(10) K.E. Boulding, op. cit., p. 11.

(11) K.E. Boulding, op. cit., pp. 12-15.

in the home strength does not result in an indefinite expansion of the area of dominance, just as the price cut under monopolistic competition and heterogeneity of its output does not give the firm the whole market, becouse there is an optimum point of heterogeneity of product.

Although the above theory thows a great deal of light on the nature of the present world crisis, the technical change in weapons and in means of transportation and the technical change in organization make it irrelevant to the developed world facts. We are moving into a situation in which almost any nation can destroy any other and any notion can not dominate an area around it sufficient to make it unconditionally viable.

At this point, the economic theory does not seem to have much comparative advantage, although some insights may be derived from regarding the exchange of threats as analogous to the exchange of negative commodities. The analogy, however, is not a close one. Exchange is successful insofar as it is done; deterrence is succesful only insofar as something is not done.

A. The General Impact of Defense Expenditures on the Economy

The level of military expenditures in relation to total national expenditures provides a first rough indication of the impact of them on the economy. The very fact that defense expenditures in both the developed and the less developed countries have been a significant fraction of their gross national products and an even larger share of total government expenditures.

Emile Benoit made a study deals with the relation between 1950 and 1965 in 44 developing countries and in his sample he found an avarage defense burden which is measured by the anual avarage ratio between defense expenditures and GDP, both at current prices, of 3.6 per cent in the first half of the sixties, and in the later part of the sixties had a higher avarage burden than the avarage for developed countries, exclusive of the superpowers (12). In the United States, annual expenditures on goods and services for national defense

(12) Emile Benoit, Defense and Economic Growth in Developing Countries, Lexington Books, London, 1973, p. 112.

in the 1955-1960 period have consistently accounted for about 9-10 per cent of GNP in current dollars and have constituted about 86 per cent of total Federal purchases of goods and services (See Appendix - I). Thus, according to the information given above, we can easily conclude that national defense expenditures have constituted about 2-10 per cent of GNP and have also accounted for about 30-85 per cent of total government expenditures of goods and services.

There are also a large number of persons who are engaged in military occupations. Military personnel as a percentage of total and economically active population also gives us some clues about the impact of defense sector on the economy (See Appendix - II). In this table, these estimates do not include civilian personnel in the defense agencies, an in defense production. The United States Bureau of Labor Statistics estimated that in 1963 there were just under 3 million employees in defense production in private economy. The total is about 6.7 million, 9 per cent of all employment in the economy, if the 3 million are added to the military and civilian personnel in the defense establishment itself (13).

After defining the amonunt, the share of defense

(13) Roger E. Bolton, "Defense Spending: Burden or Prop?", Defense and Disarmament, (ed. by Roger E. Bolton), Prentice-Hall Inc., 1966, p. 6.

expenditures in relation to GNP and government expenditures, let us examine the effects of defense expenditures on the economy in general. At this point, I want to mention that there is a common-sense impression that defense expenditures are inherently wasteful, in this study we also try to indicate some favorable effects of defense spending on growth besides the negative effects. For example, Emile Benoit made a study that deals with the relation between defense programs and the rate of economic growth between 1950 and 1965 in 44 developing countries and has found that the avarage defense burdens of 44 developing countries were positively, not inversely, correlated with their growth rates i.e.the more they spent on defense, the faster they grew - and vice versa (14). And He has consantrated his efforts in explaning this positive correlation between defense burdens and growth rates. In my oppinion, this positive correlation does not prove that the net effect of defense expenditures on the economy is potive. There must be some other variables that makes it positive. In developing countries, in addition to the domestically produced resources to support their defense and investment programs, some may have and accually have supplementary

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(14) Emile Benoit, op. cit., p. 70.

resources obtained from external sources by way of official gifts and loans, receipts of long term foreign investments, and earnings on military transactions. Thus, these external resources obtained from abroad enable these countries to maintain high defense levels without reducing their investment rates and other components of GNP. In this way, these countries enable to achieve high growth rates despite their high defense burdens. Also, only by considering the positive correlation between defense burdens and growth rates to decide wheher or not defense expenditures stimulate growth rates makes us arrive an incorrect result. The defense burdens and the growth rates both increase simultaneously over time, but I think they are independent from each other. And we also know that most of the countries tend to maintain a stable share of the national income or of the budget on defense under normal conditions, but only tend to rise whenever there is a rise in the perceived level of military risk.

Moreover, variations in defense burdens both between countries and within individual countries may reasonably be explained by variations in military requirements as envisaged by military planners. As a result, drawing any hard, concrete conclusions from the positive correlation found between defense burdens

and growth rates about the couse-effect relationships among these variables is quite difficult because of the strong and complex interrelations between the independent variables. The country studies which Emile Benoit prepared also shows the complexity and the diversity of defense development relationships in developing world (15). Mexico, for example, with its low defense burden and high growth rate, proves that heavy defense expenditures are not necessary for rapid economic progress. Argentina, on the other hand, with its low growth rate and medium defense burden, shows that a low growth rate is not necessarily attributable to unnecessary defense spending. South Korea illustrates how very heavy defense burdens may be combined with rapid economic progress if adequately supported by outside assistance.

Roger E. Bolton made a study which evaluates the dependence of regions on defense demand between 1952 and 1962 in the United states. The below table shows his findings about the correlation between the impact of defense and the rate of growth actually achieved in personal income (16).

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(15) Emile Benoit, op. cit., pp. 267-310.

(16) Roger E. Bolton, op. cit., p. 22.

The importance of Defense Demand in Various Regions

Region	Contribution of Defense Income: To Current Personnel Income 1962 (Percentage of income)	Contribution of Defense Income: To Growth in Personnel Income 1952-62 (Percentage of Growth)	Growth rates, 1952-62 (Percentage per year): Total Personnel Income	Growth rates, 1952-62 (Percentage per year): Per Capita Personnel Income
	(1)	(2)	(3)	(4)
New England	22	13	4.8	3.4
Middle Atlantic	16	-3	4.6	3.3
East North Central	12	-21	4.3	2.6
Weast North Central	13	8	4.5	3.5
South Atlantic	23	13	5.7	3.6
East South Central	16	9	4.7	4.6
Weast South Central	19	11	4.7	3.1
Mountain	23	27	6.3	2.7
Pasific	34	21	6.4	3.1

Source: Roger E. Bolton, Defense Purchoses and Regional Growth.

When we compare columns 2 and 3, we can easily see that regions benefitted from defense seemed to grow more rapidly in total income than other regions. Comparison columns 2 and 4 shows us that there is almost no relationship between defense impact and growth in per

capita income. In general Roger E. Bolton's study points out that defense demand stimulated growth in total activity in certain regions, but that it induced large population increases as well (17).

In my opinion, defense spending can be thought of as a net situmulas for some regions and occupations and also for some nations, but not merely replacing some other activity. An increase in defense expenditures can only be made by throwing away some human and material resources of all kinds from alternative uses which may be more productive than defense. Thus, this will retard the growth rate to achieve its normal level.

We now pas to an exposition of the effects of defense expenditures on the economy. These effects can be divided into two major categories. One is the negative growth effect of defense expenditures into which we can introduce the factors preventing the growth rate to grow. The other is the positive effect of defense into which we can introduce the stimulating factors of defense expenditures on growth.

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(17) Roger E. Bolton, op. cit., p. 23.

B. Negative Effects of Defense Expenditures on the Economy

The present level of military expenditures not only represents a grave political danger but also imposes a heavy economic and social burden on most countries. The effects of defense expenditures on the economy not only depend on the size, the share and the composition of them, but also on the working conditions of the civilian sectors in these countries. And, the effects are likely to vary from country to country, depending on differences in their economic and social systems and on the levels of economic development that they have reached. In this connection, for the purpose of our study, the countries will be classified as the developing and the developed; and the defense expenditures as military personnel and weapon procurement.

Emile Benoit and Harold Lubell in their article mentioned that the proportion of the economically active population in the defense forces was by no means insignificant, with most countries in the range of 2

to 3.5 percent in 1964 (18). But these estimates did not involve civilian personnel in the defense agencies, and in defense production.

Roger E. Bolton mentioned that almost one third of all defense costs are composed of wages and salaries (including subsistence and other allowances to military personnel) (19).

Defense Establishment Employees: 1955, 1960, 1963

Year	Active-Duty Military Personnel	Civilian Employment	T o t a l
1955	2,935,100	1,180,100	4,115,200
1960	2,476,400	1,047,000	3,523,400
1963	2,699,700	1,058,000	3,757,700

Source: U.S. Civil Service Commission, Monthly Report on Federal Employment.

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(18) Emile Benoit and Harold Lubell, "The World Burden of National Defense", Disarmament and World Economic Interdependence, (ed. by Emile Benoit), Columbia University Press, New York, 1967, p. 48.

(19) Roger E. Bolton, op. cit., p. 6.

The above table shows us the defense establishment employees in 1955, 1960 and 1963 in the United States. In addition to the amount of the defense establishment employees, The United States Bureau of Labor Statistics estimated that in 1963 there were just under 3 million employees in defense production in private industry. If this 3 million are added to the military and civilian personnel in defense establishment, the total for 1963 is about 6.7 million (20).

Emile Benoit's study for 44 developing countries in 1950 and 1965 period indicates that for the sample as a whole the armed forces absorb about seven per cent per thousand of the population and about twenty per thousand of the labor force (21).

Census statistics on the education of Armed Forces personnel in the U.S. in 1960 points out that the percentage distribution, by educational level, both of armed forces personnel and of employed male civilians are quite similiar to each other (22).

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(20) Roger E. Bolton, op. cit., p. 11.

(21) Emile Benoit, op. cit., p. 101.

(22) Roger E. Bolton, op. cit., pp. 6-7.

The statistics about the size, the distribution and the characteristics of military personnel given above helps us to understand the importance and the magnitude of their negative effects on the economy. The negative effects of defense manpower certainly exists, but is difficult to measure and is somewhat complex. This negative effects of defense manpower shows itself in two complemantary ways. On the one hand, there is a cost of drawing away such a large number of persons of above avarage productivity becouse of sex, age, superior health and vigor, from civilian occupations where they may work to produce civilian goods and services. On the other hand, a considerable amount of investment in money terms or in other terms should be concentrated in their training. These are the cost of defense manpower on the economy.

A rough estimation of the civilian value of military personnel can be obtained by multiplying the number of military personnel by what they might earn if employed as civilians. Emile Benoit in his study estimated it by multiplying the number of soldiers by the avarge earnings in manufacturing per man taking into account their aducational levels (23).

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(23) Emile Benoit, op. cit., pp. 105-106.

The cost of transporting, maintaining and training a soldier may often exceed the cost of training required for satisfactory performance in an industrial job. The resources now serving the needs of armed forces personnel to some extent can be treated as the negative effects of armed forces. We know that the training of a soldier does significantly add to their productivity in civilian jobs once they leave military. But, at this moment we are only interested in the negative aspects of defence forces and we will examine them later.

When military programs have the highest priority, the most talented technical and administrative personnels are mostly absorbed into those programs from civilian occupation. This would lower the avarage productivity in the civilian industries.

As mentioned, the second and largest category of defense purchases is the procurement. This includes payments to private firms or to state economic enterprises for military equipment, supplies and services, construction, and research and development. As understood clearly from the definition of the procurement it mostly absorb resources from the investment program. In short, military procurement is primarily at the expense of investment

programs. We know that investment, one of the most discussed subjects in the economic theory, plays the key role in the analysis of economic development, growth and periodical cycles and can be treated as the primary engine of growth. It may be assumed that the decline in investment will result in a lower growth rate in future.

Defense programs may absorb resources by purchasing domestic construction or domestically produced equipment or stocks or by using foreign exchange that would otherwise have been used to import such equipment stocks or technical services. Here, I want to mention that defense procurement is only a part of the economic activities in the country and can not be analized in isolation from the economic development that the country have reached. Developed nations in occordance with their development levels can produce their complicated military equipment indigenously and are the sellers of them; wheras the developing countries generally can not produce these equipments and are the buyers of them. For reasons of security, several of the developing countries have tried to break away from direct import. For example, Egypt had decided to produce aircraft and missiles indigenously in 1962. But this program will have had to

be abandoned in spite of the high investment they represent (24). The reason behind the failure of this effort is that the less developed countries are normally less efficient in the organization of industrial programs, development costs as well as production costs per unit tend to be far higher.

The negative effect of defense on the investment exist but is difficult to measure. On the one hand, defense expenditures divert and absorb resources that would otherwise have gone into investment. On the other hand, a reduction in investment will adversly effect output. The defense expenditures absorb a much smaller fraction of total resources than investment (25). Thus, even a large percentage increase in defense expenditures would be expense of only a small percentage of investment. However, the last sentence is misleading in expressing the negative effect of defense on the investment program. There is a special factor that makes investment more

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(24) John H. Hoagland and John B. Teeple, "The Economics of Regional Arms Races", Disarmament and World Economic Interdependence, (ed. by Emile Benoit), Columbia University Press, New York, 1967, pp.141-143.

(25) Emile Benoit, op. cit., pp. 267-310.

sensitive to changes in defense expenditure. To the extent that defense uses industrial-type resources such as manufactured goods other than foods, construction, foreign exchange etc., it may have to get them considerably from the investment program. In the countries where much of the defense expenditure consists of industrial-type resources, we would expect that an increase in defense program would be at the expense of investment. And at the other extreme, in the countries where the defense program is not capital-intensive we would expect that even a large increase in defense expenditure might have only small effects on investment. In addition, if the available industrial-type resources and foreign exchange is used for purposes other than investment, the effects of defense spending on investment would be small.

As understood, we have been interested in investment in the sense of civilian investment. But the defense program itself contains an investment component such as construction of military roads, airfields, ships, etc, which enter into the total of gross capital formation. But now, we have concentrated our efforts in analizing the negative effects of defense spending. We will examine them under the headline of positive effects of defense spending. And we also know that defense investment programs compete particularly for

the industrial-type resources required by civilian investment.

It will be remembered that a rise in defense spending also would bring about a decline in the investment rate, then this would in turn result in a loss of annual output.

There is another negative effect of defense spending that might be called productivity effect arises from the fact that the government sector in general and the defense sector in particular, show little or no measurable productivity increases. Thus, shifts of resources from non-governmental activities to defense sector would therefore tend to reduce the rate of productivity and of growth. We know that some part of defense spending go into the construction and other capital items, but this does not make them produce measurable productivity increases. Most government services do not give rise to a salable product which provides on automatic measure of the value of the output. So, the government sector is usually carried in the national accounts at only the total costs of the inputs (26).

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(26) Ronalt N. Mc Kean, Efficiency in Government Through Systems Analysis, John Wiley and Sons, Inc., London, 1958, p. 166.

Another aspect of defense spending is that it absorbs scarce and precious resources and the economic value of these resources is seriously understated by the government's ability to use monetary controls, taxation and the power of monetary issue to obtain investable resources less than their rate of return in alternative private uses.

The effects of defense spending that reduces the capital base and the productivity effect of reducing the growth of productivity have continuing adverse annual effects on future output and productivity as long as the higher defense level is maintained.

As Emile Benoit mentioned that Defense expenditure was equal to 3.7 % of the sample countries' gross capital formation, a third of their economic aid receipts, and 20 % of their imports of machinery (27). And we know that the deficiencies of them are often the bottlenecks for development, the absorbtion of such resources in defense program may have an heavier adverse effects than that of guessed ratio of total defense to GDP.

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(27) Emile Benoit, op. cit., p. 16.

There may be some other additional negative effects of defense spending. For instance, a shift in governmental attention from economic to military problems may be possible and inevitable as defense programs become more important and this may result in a takeover of political power by the military. Another kind of loss which results from the inflation of military budgets is that the peculiarly deleterious effect of heavy national taxation which modern military expenditures have caused (28). The continuance year after year of such heavy taxation for partly unproductive ends has a repressive influence on the general economic activity of a nation, which is not only persistent but actually cummulative in its effect.

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(28) P.J. Noel Baker, Disarmament, The Hogarth Press, London, 1927, pp. 12-13.

C. Positive Effects of Defense Expenditures on the Economy

There is a common sense impression that defense expenditures are inherently waseful so that they could not contribute anything to the national economies. But defense sector makes some positive contributions to the civilian economy regardless of whether or not these contributions could balance off the negative ones.

In the fist place, defense programs directly contribute various valuable inputs into the civilian economies. A brief evaluation of the composition of defense expenditures in the countries illustrates that a considerable amount of defense expenditures are similar to those produced in civilian economies. (See Appendices III, Iv.) A basic fact about the structure of the defense budged concluded from the appendices is that the greater part of the defense budget is spent for products and services which differ either not at all or not fundamentally from the products

used in the civilian economy. These can be viewed as substitutes for civilian goods and services that reduce the amount of such goods and services that the civilian economy needs to provide to maintain a given standard of living, thereby facilitating saving and investment from the civilian sector of the economy.

The defense programs of most countries make some tangible contributions to civilian economies by feeding, clothing, and housing a number of people who would otherwise have to be fed, housed and clothed by the civilian economy.

Especially, educational programs which gives some elements of general education to its recruits in defense establishment in less developed countries may improve the productivity of military personnel after demobilization. The very fact that the military in less developed countries takes its recruits mostly from agricultural areas, the importance of educational programs provided by military proves itself in improving the productivity level of military personnel. Defense program may make its recruits win some rudimentary but important industrial and urban skills and attitudes such as: following and transmitting precise instructions;

living and working by the clock; noticing and reading the signs; spending and saving money; using transportation; working with, repairing, and maintaining machinery; listening to radio; etc.

In most less developed countries like Turkey, the military takes its recruits from the agricultural areas and these recruits are mostly distributed to the military establishment that is mostly far from their own towns and villages. So, the recruits coming from almost all over the country come together and their interactions with themselves, and with already located persons and the environment provide them some new attitudes and a good understanding of the problems of the country to change and to develop their ways of life after demobilizations. The military establishment in developed countries may often appears to be as rather tradition-bound, but in less developed countries may be seen and treated as an important source of modernization. It is a more effective machanism in destroying unquestioned acceptance of local custom and tradition, in substituting a national for local, in promoting a common language and in introducing a host of modern ideas and interests.

Defense programs engage in a variety of public works such as roads, airfields, ports, communication

networks etc. which may sooner or later be used by civilians. Especially in less developed countries the military contribution to civilian relief and rehabilitation after natural disasters may be quite important. It also engages in scientific and technical activities such as hydrographic studies, mapping, meteorology, forestry projects, coast guard, border guards, soil conservation etc. which would otherwise have to be performed by civilian personnels.

Especially less developed countries have recived a considerable amount of defense related and economic aids from the developed countries because of the strategic and other reasons. These enable them to maintain larger defense forces without reducing their growth rates.

Some observers belive that a rise in defense activity in anticipation of a military attack may situmulate economic growth. There is considerable testimony that there was a heightened sense of self-sacrifice and a greater willingness to make sacrifices of personal interests and to follow governmental leadership during the military erises experienced in many countries all over the world. Such situations might have an energizing effect is believed to be true by some

behavioral psychologists (29).

The positive contributions of defense expenditures do accually exist, but difficult to measure and sometimes impossible. Thus, it is not possible to make a direct comparison between the magnitudes of the negative and positive effects and to have a direct measure of the net effects.

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(29) Baran Tuncer, Ekonomik Gelişme ve Nüfus, Hacettepe Üniversitesi Yayınları, Ankara, 1976, p. 106.

PART II

THE ECONOMIC AND SOCIAL CONSEQUENCES OF DISARMAMENT

Before starting to examine disarmament impact or discussing economic adjustment to it, we have to know what we mean by disarmament and what should be its precise economic contents. As Emile Benoit has put it, there are some conceptual differences between disarmament and arms control which sometimes have been treated as the same concept. "...Arms race may be broadly defined as comprising international agreements to stabilize or limit armaments by changing their composition or deployment or inhibiting their further development, in order to reduce the likelihood of accidental or unintended wars or to limit the scope or destructive effects of war... Under some circumstances, arms control may involve an increase in national military capabilities... Disarmament, on the other hand, implies a major reduction

in national military capabilities and defense expenditures, leaving only residual, minimal, or purely defense capabilities in national hands." (30).

Kenneth E. Boulding has stressed that the bargaining is a prominent system element in the achivement of disarmament and that the dilemma of disarmament is a situation familiar in game theory under the title of "The Prisoner's Dilemma." (31).

	ARM	DISARM
ARM	-1 , - 1	-2,2
DISARM	2, - 2	1,1

This dilemma can be best understood by the help of the above table. Suppose there are two countries, Column and Row. Each may either arm or disarm which give us four possibilities. In each box, the fist figure is Column's payoff and the second one is Row's payoff.

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(30) Emile Benoit, "The Disarmament Model", Disarmament and the Economy, (ed. by Emile Benoit and Kenneth E. Boulding), Harper and Row, New York, 1963, pp. 28-30.

(31) Kenneth E. Boulding, op. cit., pp. 18-24.

According to the table if both arm, the payoffs are -1 to each, the cost of the armament. If both disarm, the payoffs are +1 to each, the economic benefit of disarmament. If one arms and the other disarms, the total payoffis zero, but the distribution is in fovar of the one that arms. Thus, the lower-right-hand box, is unstable under the conditions of nearsighted unilateral action and the two parties always end up in the top left-hand corner. And Kenneth E. Boulding claimed that disarmament can only be achieved if both parties are long-sighted, and that the absence of an organization in international relations makes the achievement of mutual disarmament difficult in spite of the mutual gain.

Although, the general and complete disarmament has not been achieved any yet, many of the countries of the world today has realized that the general and complete disarmament under strict international control the most urgent need in international life (32).

As we know, millions of men and women are employed today in building, maintaining and devoloping weapons;

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(32) U.N., Economic and Social Concequences of Disarmament, Vol. 2. New York, 1962, pp. 17-260.

learning how to use these weapons; and standing by, prepared to use these weapons. Others are engaged in producing, maintaining, improving the services required for the support and operation of modern weapons. Still others are engaged in manufacturing metarials for weapons production, supply, and supporting these activities. And these activities also require large amounts of precious natural resources.

Economically, disarmament means that manpower and natural resources no longer demanded for these activities become available to society for other purposes. It is generally agreed that the diversion to peaceful purposes of resources now absorbed by military expenditures can be of benefit to all countries and lead to improvements in the social and economic conditions of all mankind. But, we also know that defense production furnishes employment for millions of people and is a chief cause of prosperity of whole industries, regions and occupations. Without it, would these resources find employment elsewhere? Some assumes that they would, but there is also the fear that they would not. Thus, if the resources can not be easily transfered, disarmament will mean distress for those sectors dependent on defense production and because all parts of the economy are linked together

for others as well.

As understood clearly from the above statements, disarmament can be seen as a process in which the diversion of resources now serving military need will occur. However, the conversion process is likely to involve certain transitional problems for all countries depending on differences in their economic and social systems and on the level of economic development that they have reached.

In the first place, reductions in defense demand can depress the economy if they are not offset by private demand or by other government demand. An aggregate offset, however, is not sufficient to provide a smooth conversion in the case of disarmament. Trouble can arise if the product composition of new demand is much different from that of the defense demand, and if the resources are not easily convertible from one kind of production to the other. If the newly freed resources available are appropriate only for producing X-a certain kind of weapon - then stimulating the demand for Y - some consumer good - will not solve the problem. The result will be the worst possible combination: unemployment along with inflation. Since, not only will the resources formerly

producing X now go unemployed, but the demand for Y may exceed production capacity. And such excess demand will show itself more in inereased prices than in increased production.

Everyone knows that some of the resources currently employed in defense production are so specialized they largely depend on defense production for current employment. The concentration of these resources in particular geographical regions intensifies the problem. Here, we can distinguish two kinds of specializations. One is industrial specialization, which refers to firms, industries, and occupations specialized in defense. The other is regional specialization, which refers to the direct or indirect dependence of many firms in a region, regardless of their products, on military demand. Mobility and reconversion are the most difficult when both types of specialization are present. Moraover, the quicker the the transition we demand after reductions in defense spending, the greater the structural problems will be.

Before concentrating our efforts in analizing various categories of defense spending and the related questions of structural problems caused by disarmament. I want to mention that not all firms and employees involved in

military production will have an appreciable adjustment problem as Gilpatric, the Deputy Secretary of Defense, mentioned in 1963.

"A basic fact about the structure of the defense budget and the kind of economic impacts that flow from it is that the greater part of the defense budget is spent for products and services which differ either not at all or not fundamentally from the products used in the civilian economy or for products and services which, although clearly for "military" end use, employ technologies and skills which have ready applications in nondefense markets... A reasonable estimate might be $ 10 billion as the "hard-core" military sector of the economy which would be hard to change over to civilian uses, as against $ 40 billion which is either civilian in nature to begin with or reasonably convertible to nondefense uses." (33).

Whether or not this is too optimistic an appraisal gives us some clues to understand the importance and the magnitute of disarmament and the structural problems possibly generated by disarmament.

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(33) Roger E. Bolton, op. cit., p. 9.

A. Structural Problems Caused by Disarmament

As we mentioned the structural problem of disarmament arises from the fact that some of the resources currently employed in defense production are so specialized they largely depend on defense production and that these are sometimes concentrated in particular geographical regions. In this connection we further distinguished two kinds of specialization: Industrial specialization and regional specialization.

1. Structural Problems Caused by Industrial Specialization

Let us consider various categories of defense expenditures and the question related by industrial specialization. The resources released by disarmament may be broadly indicated as including among others: conscripted military personnel, professional military personnel, civilian employees in defense establishment;

materials and productive capacity in different brances of production in defense related agencies which is generally called procurement.

We know that military personnel refers to the enlisted men and officiers who will return to the civilian labor force. Increasingly complicated weapons require special skills to operate and maintain as well as to manufacture. The studies about the trends in educational level of armed forces personnel and in occupations both in developed and in less developed countries shows that the trends in military occupations partly parallel those in civilian fields (34). The basic changes which have been occurring in the composition of military procurement have altered significantly the type of manpower required by the firms producing for the defense market. Here, the principal problem is the transfer of complex scientific and management skills of the weapon designers to other creative programs when these skills are no longer needed. Although, this specialization may create structural problems, the potential job-seekers will at least have had education

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(34) U.N., op. cit. , pp. 217-221, and R.E. Bolton, op. cit. , pp. 9-11.

and training in some area of modern technology. In many countries, there are a large number of conseripted personnels in the armed forces and they come from every parts of economy. Wether or not disarmament occurs, they will return their earlier works, or they will try to find job after demobilization. The relative youth of these personel should help to make them adaptable if the economy expand.

There are also some civilian employees in the armed forces. In many cases, their present occupations are much similar to those in the civilian sector or in other parts of gover nment.Therefore, most of them would probably find adjustment relatively easy, if these sectors expand. However, there are exceptions; some employees work at very specialized trades in industrial type establishments others lack adaptability because of age.

The second and largest category of defense purchases is procurement. As we know this includes payments to private firms or to the state economic enterprises for military equipment, supplies and services, construction and reseach and development. In the developed countries which maintain and produce their defense requirements and sell to other countries the

importance and the magnitude of structural problems generated by industrial specialization is more obvious than those in the developing countries which usually can not produce their own defense needs.

A classification of defense contracts in the U.S.A. in 1964 and in the U.K. in 1965 clearly indicate us the importance of aircraft, missiles and electronics systems. (See Appendices III, V) The U.S. Bureau of Labor Statistics estimated that 95 per cent of the employees in the ordnonce industry and about 90 per cent of those in the aircraft industry were engaged in defense production in 1963. 50 per cent or more of the employees in the communications equipment, electronic components and ship-building industries were so engaged. About 80 per cent of the employees in these 5 industries combined were estimated to be engaged in defense production (35). In addition, there are some individual firms which are dependent on defense orders for most of their business. In the U.S. 72 per cent of the value of the military prime contracts awarded in 1962 went to 100 companies and institutions. Within this amount, 7 major industry groups accounted for over 90 per cent of the total -

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(35) Roger E. Bolton, op. cit., p. 15.

aircraft, electrical and electronics equipment, oil refining, construction, automobiles, rubber and ship-building in that order (36).

The relative importance of defense work to each of these industries and to the companies in these industries also causes some additional structural problems. For example, some companies may rank high as defense suppliers but their military sales may be quite small in occordance with the industry's output and the reduction in defense sales would only involve marginal adjustment problems. In contrast, some companies may rank low as defense suppliers but their military sales may be quite important. In this respect, according to Murray L. Weidenbaum the heart of the adjustment problem would center on these industries: ordnance, aircraft, ship-building, and electronics (37). His claim may likely be accepted when we think of that the civilian demand alone may not be enough for supporting the present volume of production in these areas. Moreover,

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(36) Murray L. Weindenbaum, "Problems of Adjustment for Defense Industry", Disarmament and the Economy, (ed. by Emile Benoit and Kenneth E. Boulding), Harper and Row, New York, 1963, pp. 72-74.

(37) Murray L. Weindenbaum, "Transferability of Resources to Civilian Use", Defense and Disarmament, (ed. by Roger E. Bolton), Prentice-Hall Inc., 1966, p. 105.

today, most of the material needs of defense consists of specialized equipment which is produced in special facilities built for this porpose. For example, four fifths or more of the equipment of the armies at the outbreak of World War I consisted of standard peacetime goods produced in ordinary peacetime production facilities. But now in the developed countries about 90 or more percent of the meterial needs of defense consists of specialized equipment produced in special facilities (38). Of the large defense industries, electronics would seem to have the best chance of maintaining present levels of activity after disarmament. A firm's general competence may be applied to newer products. But certain kinds of electronic equipment usable only by military would, of course, find no market. Difficulty is certain for ship-building, weapons and ammunition firms, because their products are very much less in demand for civilian use. The producers of tank-outomotive equipment would perhaps face little difficulties, because their skills and capacity are to some extent transferrable to civilian automobile and truck production.

The other items in the classification of defense contracts are generally similar to those produced for

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(38) Ibid, p. 105.

consumer and private investment demand and many of them would require no special fabrication or specification. But, again there is the regional problem: suppliers are located in regions where defense installations or contractors are the major buyer in the market.

Research and development are also important in defense procurement especially in the developed countries. Of the value of prime contract granted in fiscal year 1964 in the U.S. 20.3 per cent were for research development and somewhere between 50 per cent and 60 per cent of total R & D expenditures is financed by defense agencies (39). The fact that many reseach areas and many development projects may have both military and civilian applications leads to several difficult problems in measuring the impact of defense effort on research and development. One problem is that defense support of reseach often is a subtitute for, not an addition to, nondefense support. The second problem is that much of the work on the prime contract will be subcontracted, and the reseach and development work is usualy done on the potential subcontractor's own financing.

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(39) Richard R. Nelson, "The Impact of Arms Reduction on Research and Development", Defense and Disarmament, (ed. by Roger E. Bolton), Prentice-Hall Inc., 1966, p. 141.

And the thrid problem arises from the effect of rising demand upon the supply of R ⅋ D. This encourages the people train in sciences and engineering related directly to research and development. This, in addition, also effect the type of science and engineering training graduate students.

In the US., the Department of Defense financed much of the R ⅋ D work done in goverment facilities (75 per cent of the work), in industry (50 per cent of the work), and in universities and other nonprofit institutions. (25 per cent of the work). Moreover, of the Department of Defense's industrial reseach and development spending, more than 50 per cent goes to the aircraft and parts industry and about 20 per cent to the electronic industry (40). In the case of disarmament, the Department of Defense's support to this industries will decrease because a large proportion of the Department of defense's support is closely tied to specific weapons systems. Thus this would create structural problems in terms of industry and trained personnel. Today, in the U.S., the Soviet Union, and many States in Europe, the most creative and imaginative scientific and management

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(40) Ibid., p. 147.

skills have been drawn to the production of advanced defense weapons. The principle problem, here, is the transfer of complex scientific and management skills of the weapon designers to the other creative programs (41). Moreover, in the U.S., it is estimated that approximately 50 per cent of the engineers and scientists in defense work are in research and development, while in nondefense work the figure is only 25 per cent in 1962 (42). The weapons, atomic, and space industries provide imaginative managers, scientistis, and technical personnel with an excellent working environment and a satisfactory salary and most important an oppurtunity to create. Thus, the more educated and trained critical personnels have been channaled in defense agencies rather than in non defense industries. But I believe that all difficulties can be handled over time by using the appropriate palicies making the released resources available for nondefense reseach and development, because reseach and development is one ot the fastest-growing activities in the developed countries and the employment of scientists and engineers is growing at a

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(41) Ludek Urban, "Some Effects of Disarmament on Research and Development", Disarmament and World Economic Interdependence, (ed. by Emile Benoit), Columbia University Press, New York, 1967, p. 168.

(42) Richard R. Nelson, op. cit., p. 146.

faster rate than that of any other occupational group. This will make the transition problem easy.

2. Structural Problems Caused by Regional Specialization

As mentioned earlier, the regional specialization refers to the direct or indirect dependence of many firms in a region, regardless of their products, on military demand. In this case, suppliers may find adjustment difficult because they are located in regions where defense installations or contractors are the major buyers in the market. In this connection, we want to mention that the company assembles the final product does not produce all the value. But, it is important to note that the firms involved in final assembly may be more specialized and thus find adjustment more difficult to shifts in demand. On the other hand, the products of parts and materials suppliers are mostly not different from the products needed to satisfy civilian needs.

The employment in defense procurement as a percentage of industrial and of non agricultural employment provides first estimate of the degree of regional specialization in a region. The second criterion is the ratio of payments to the armed forces and civilian employees in defense industries as a percentage of total personal incomes in the region.

A summary of wages and salaries in the four defense-related industries and in the Federal defense related agencies in the year 1960 in U.S.A. shows that their impact is greatest, relatively, in Alaska and Hawaii, where 29 and 22 per cent of these State's personal income is from these sources. Next, in order is the State of Virginia, with 15 per cent; and then Washington, Maryland, the District of Columbia, and New Mexico, with 11-12 per cent; and California, Kansas, South Carolina, Georgia and Utah, each with 9-10 per cent (43). Unfurtunetely, we have no available data about the regional distribution of defense industries in the less developed countries. But, when we consider that most of the developing countries can not produce their own defense weapons and are mostly the buyers of

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(43) U.N., op. cit., p. 205.

these weapons and that their defense related industries are not very specialized and not very complex, we can casily conclude that the problems possibly caused by regional and industrial specialization can easily be handled. Thus, we can say that the structural problems caused by regional and industrial specialization are mostly the problems of developed countries, which are the producers of very specialized weapons.

There are also some areas dependent on defense which have a limited comparative advantage in goods and services which would have a growing demand after disarmament. In short, some areas have achieved their present level of economic development only because of their defense history. At fist side, the adjustments problems may seem to be more serious. But the defense support for them has been usually long-term in nature. There are long-term investments in housing and in commercial and public facilities. Thus, the capital formation of the past makes new industries attract. In

fact, these areas will have an easier time attracting non defense industry if they had not been developed at all.

But, the problem will remain. Some capital and labor will be overspecialized, and the attraction of others industries will be difficult because ot their limited natural advantages in row meterials, transportation, etc.

B. Policy Implication for Disarmament

As mentioned earlier, it is important to distinguish between the two basic problems of disarmament. The fist is to maintain aggregate economic demand despite more or less substaintial declines in demand from the defense sector. The second is to minimize the hardships and waste the freed resources from disarmament.

The two problems are related to each other and must be treated simultaneously. In solving these problems, some economists have advocated that government intervention would not be necessary and some others have seen it necessary. In this study, government intervention will be received a vital role in dealing with the problems of adjustment since I belive that the market mechanism itself is not sufficient for providing a smooth diversion of resources into civilian uses.

In the case of maintaining the aggregate demand the problem is to translate the unmets needs of society

into the kind of economic demand which will take up the slack caused by disarmament. There may be a number of actions singly or in combination (44). They may be

1. Reduction in taxes

2. Monetary policies

3. Increases in transfer payments

4. Increases in government purchases.

Determination of precise combination of measures to support aggregate demand is clearly a complex process which requires advance planning, continuing evaluation of economic developments and of economic impacts. As mentioned, the success of any program chosen in maintaining aggregate demand will also be dependent on the success of parallel policies to deal with any structural problems.

At every step, there will be the problem of making choices, of maintaining the most appropriate balance

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(44) R.E. Bolton, op. cit., pp. 37-38.

between numerous possible cources of action, each of which will have a different impact on the economy. Let's analize each of these possible actions in the above sense.

An important and obvious tool for maintaining the aggregate demand is the reduction in taxes-both in personal taxes and in corporative taxes. Such reduction in taxes would, of couree, make more funds available to individuals and businesses. Some of these funds would go into investment, others would go into consumption. It is important to note that reduced defense demand exactly matched by tax cuts will not result in the maintainace of total demand, because some of tax relief will not be spent on goods and services and will be saved by recipient. Thus, the impact of tax cuts, in this way, will be diminished. In the case of corporative tax cuts, the firm may not use this profits-tax reductions for investment. Some parts of this tax cuts may be used as dividends to stockholders, who are in general higher-income people and whose consumption fraction is somewhat lower than the avarage. So, in insuring a rise in investment, the corporative tax-cuts alone may not be effective when we ignore the fact that investment may rise only after other demands put pressure on present capacity. Thus, this policy can be used an the preference

for investment versus consumption only if we were right that the funds available to firms would be invested in real capital goods.

Transfer payments, by supporting income levels, they would have a stabilizing effect on aggregate demand. Although the same amount of transfer payments to the very poor and of federal spending on advanced civilian reseach will keep federal activity large, the transfer payment give rise to private consumption and will have an equalizing effect on income distribution but the other is only investment and probably will not effect the income distribution. But, on the other hand, government purchases of goods and services will directly increase demand while transfer payments may not because some part of it will be soved.

Another policy is the monetary policy. Policies to increase liquiality, to reduce reserve requirements and to lower interest rates may be seen as a stimulant to the economy. And, sole reliance on monetary policy would not appear to be a wise strategy for some reasons. (45). Especially in the case of excess capacity, the

(45) Warren Smith, "Monetary and Fiscal Adjustments to Disarmament", Disarmament and the Economy, (ed. by Emile Benoit and Kenneth E. Boulding), Harper and Row, New York, 1963, pp. 131-156.

response in investment to reductions in the interest rate is not strong.

Another policy in maintaining aggregate demand is to expand government expenditures which would require no increse in the deficit, for these purchases automatically become demand. The direct effect of a tax reduction is to employ resaurces for consumption or investment, while the direct effect of government spending is to employ resources on production of public goods and services.

As mentioned, disarmament also create some structural problems which causes difficulties of easy transfer of defense resources into other sector. The problem, here, is to hasten the transition itself and is to prevent waste of resources which can make the transition slowly (46). In this problem, preventing waste of resources is likely depend on the hastening the transition. That is, the faster the transition is, the shorter the period of waste will be. However, there is a minimum period of time which may be shorter or longer dependent on the specialized nature of defense resources.

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(46) Emile Benoit, "Economic Adjustments to Disarmament", Disarmament and the Economy, (ed. by Emile Benoit and Kenneth E. Boulding), Harper and Row, New York, 1963, pp. 285-300.

Actually, every economy is continously experiencing structural changes as a result of technological developments, the introduction of new products and services, the population development and other factors. As a result, increasing emphasis of firms on the trends and prospects both in their own market and in the economy as a whole, as a basis for their production programs, will be most helpfull in meeting the conversion problems.

One approach, as in the case of maintaining aggregate demand, is to do nothing leaving the accomplishment of goals to the market mechanism will be of great assistance, it will also have some deficiencies such as the resistance to physical movement from the defense dependent regions and to the resistance to accepting lower wages. The market, in practice, work slowly and imperfectly in solving many of the problems caused by regional and industrial specialization of defense resources. As a result, large number of people remain in pockets of poverty while the nation economic prosperity in general. The very fact that many employees in defense are educated and mobile does not eliminate the problem. In addition, there is a secondary impact at work. The suppliers of row

material and parts to final essemblers and local businesses selling consumer goods to the employees in defense production may find adjustment very difficult because of the lack of education and geographical mobility of employees in these firms.

As mentioned earlier there is a second problem called inflation resulting from sectoral shifts in the composition of demand. In the strong demand sectors, this inflation may be the normal result of bidding up prices when supply can not be increased fast enough. And this situation may even be worse, that is, because resources move only slowly, the inflation in strong-demand sectors may be substantial. In addition, since the prices are very slow to move downward, the avarage level of prices also rises.

Another approach is the government intervention. Direct government buying or subsidies are ways to facilitate movement and to support resources and industries which find adjustment difficult. In this connection, as many economists agree, the government support should not be perpetual but temporary, gradually declining over the period of time and must be conditional on the efforts of industries in adjusting their operations to the

disarmament.

In the case of firm, for example, the payments should not be used to subsidize specific products which demand for them much more less and the choice of new product should be left to the firm. These actions will help firms to develop new line of production based on their own decisions on an analysis of the market both in the short run and in the long run.

In the case of workers in defense which are not suited to any industry, government can use various retraining and reallacation programs to aid their adjustment (47). In addition choice of the retraining programs and of the affected firms from disarmament involves some prediction of what skills and of what goods and services will be useful in the future.

There are plenty of domestic and international projects which could absorb excess productive capacity. The possible list of areas where these released resources would be usefully spent are: Space, education,

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(47) U.N., op. cit. , p. 221.

urban renewal, urban transit, public health, the relief of economically depressed areas, the conversion of natural resources, and the overall improvement of human environment through a variety of research and development projects (48).

In the case of disarmament, the forward-looking policy of adjustment problem is not essentially one of finding a place for the released resources, but rather, a once-in-a lifetime opportunity to apply some highly valuable, specialized resources to carefully selected alternative uses in which they could contribute more effectively to the highest-priority needs of mankind.

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(48) Hubert H. Humphrey, "The Economic Oppurtunities following Disarmament", A Warless World, (ed. by Arthur Larson), Mc Graw-Hill Book Company, Inc., London, 1963, p. 83.

C O N C L U S I O N

In this study, we have tried to evaluate the effects of defense expenditures on the economy; and the economic and social consequences of disarmament, depending on the economic development of the countries.

The very fact that defense expenditures in both the developed and the developing countries have been a significant fraction of their GNPs and an even larger share of total government expenditures. The effects of defense expenditures can be divided into two major categories. One is the negative growth effect of defense and the other is the positive growth effect of defense. Since we are not able to measure the gross positive growth effects of defense expenditures directly, it is not possible to make a direct comparison between the magnitudes of the gross positive and negative effects, and thus to have a direct measure of the net effects. In my opinion,defense expenditures may be thought of as a net situmulas for some regions, but not merely

replacing some other activity.

Disarmament is a process in which the diversion to peaceful purposes of resources now absorbed by military expenditures occurs. If the resources that the disarmament frees are transferred to other uses, disarmament will be a great boon. But if the resources can not be casily transferred,disarmament will mean distress for those sectors dependent on defense production and because all parts of the economy are linked tagether for others as well.

In the process of disarmament, two basic problems of adjustment will emerge: the general loss of demand caused by defense reductions; and the structural problem of matching the resources formerly devoted to defense to the new composition of demand.

These two problems, while different in mature, are interconnected and must be attacked simultaneously. Mobility and reconversion are the most difficult when both industrial and regional specialization are present. Since the market mechanism itself is not sufficient for providing a smooth diversion of resources, government intervention would be necessary.

Determination of precise combination of measures to support aggregate demand and structural problems is clearly a complex process which requires advance planning, continuing evaluation of economic development and of economic impact.

There are, of course, plenty of domestic and international projects which could absorb excess productive capacity released by disirmament. However, the forward-looking policy of adjustment is not essentially one of finding a place for the released resources, but, rather, a once-in-a lifetime opportunity to apply some valuable, specialized resources to carefully selected alternative uses in which they could contribute more effectively to the highest-priority needs of mankind.

A P P E N D I C E S

I. Gros National Product, Federal Government Purchases of Goods and Services and National Defense Purchases in the U.S. (1955-1960).

II. Military personnel and Population (in Thousands of persons and percent)

III. Military Prime Contract Awardg, by Program: 1964 in the U.S.

IV. Regrouping of Indian Defense Estimates (1966-1967).

V. Estimated Net Expenditure on Production, Supplies and Research, in the U.K. (1965-1966).

APPENDIX - I

	1955	1956	1957	1958	1959	1960
				(Billions of current dollars)		
Gross National Product	397.5	419.2	442.8	444.5	482.2	504.4
Federal purchases of goods and services . .	45.3	45.7	49.7	52.6	53.5	52.9
National defense	39.1	40.4	44.4	44.8	46.2	45.5
National Defense as a percent of GDP	9.8	9.6	10.0	10.1	9.6	9.0
National Defense as a percent of Federal purchases	86.3	88.2	89.3	85.2	86.3	86.0
Gross National Product	449.6	459.1	467.6	459.9	491.0	504.4
Federal purchases of goods and services . .	54.5	52.2	54.2	55.7	54.9	52.9
National Defense	47.0	46.1	48.4	47.5	47.4	45.5
National Defense as a percent of GDP	10.5	10.0	10.3	10.3	9.7	9.0
National Defense as a percent of Federal purchases	86.3	88.2	89.3	85.2	86.3	86.0

SOURCE: US Department of Commerce, Office of Business Economics.

APPENDIX - II

	(1)		(3)	(4)	(5)	(6)
					Military personnel as percentage of	
	Year	Military Personnel	Year	Total popul.	Economically active popul.	Total popul.	Economically active popul.
NATO countries						
Belgium	1964	110a	1963	9,328	3,694	1.2	3.0
Luxembourg	1964	6a					
Canada	1964	124a	1963	18,857	6,658	0.7	1.9
Denmark	1964	52a	1960	4,585	2,094	1.1	2.5
France	1964	684	1964	48,133	19,910	1.4	3.4
Germany (FR)	1964	430a	1963	57,458	26,993	0.7	1.6
Greece	1964	162a	1961	8,388	3,639	1.9	4.5
Italy	1964	480a	1963	51,506	20,134	0.9	2.4
Netherlands	1964	124a	1960	11,462	4,169	1.1	3.0
Norway	1964	37a	1960	3,591	1,406	1.0	2.6
Portugal	1964	108a	1960	8,889	3,424	1.2	3.2
Turkey	1964	480a	1960	27,755	12,993	1.7	3.7
United Kingdom	1964	434	1951	40,225	23,213	0.9	1.9
United States	1964	2,685	1963	189,278	75,712	1.4	3.5
Warsaw Pact countries							
Czechoslovakia	1964	270a	1963	14,004	6,338	1.9	4.3
Poland	1964	317a	1960	29,406	13,907	1.1	2.3
U.S.S.R.	1961	3,000	1959	208,827	108,995	1.4	2.8
Other countries							
Sweden	1963	80a	1960	7,495	3,244	1.1	2.5
Switzerland	1964	48a	1960	5,429	2,512	0.9	1.9
Yugoslavia	1964	296a	1961	18,549	8,340	1.6	3.5
Argentina	1962	130b	1960	19,971	7,599	0.7	1.7
Brazil	1963	222b	1950	51,944	17,117	0.4	1.3
Mainland China	1960	3,200		686,400	..	0.5	..
Australia	1964	86	1961	10,508	4,225	0.8	2.0
India	1964	867a	1961	439,235	188,676	0.2	0.5
Indonesia	1964	412a	1961	96,319	32,709	0.4	1.3
Israel	1963	70b	1963	2,381	843	2.9	8.3
Japan	1964	246	1963	96,160	47,650	0.3	0.5
Pakistan	1964	253a	1961	90,283	30,206	0.3	0.8
U.A.R.	1964	130a	1960	25,841	7,769	0.5	1.7

Source: International Labor Office, Yearbook of Labor Statistics 1964.

APPENDIX : III

Program		Value (in millions of dollars)	Percentage of Total to Business Firms for Work in the U.S.
Intragovermental		562	
Work outside U.S.		1,326	
Educational an nonprofit Institutions		688	
Business firms for work in the U.S.		26,221	100
Major hard goods			
Aircraft	6,067		23.1
Missile systems	5,579		21.3
Ships	1,485		5.7
Tank-automotive	745		2.9
Weapons	221		.8
Ammunition	661		2.5
Electronic and communications equipment	2,918		11.1
Services	1,800		6.9
All other			
Subsistence	579		2.2
Textiles, clothing, and equipage	262		1.0
Fuels and lubricants	788		3.0
Miscellaneous hard goods	1,054		4.0
Construction	1,360		5.2
All awords of less than $ 10,000	2,710		10.3
Total		28,796	

Source: U.S. Department of Defense, Military Prime Contract Awards and Subcontract Payments or Commitments, July-Septemder 1964 (Washington, D.C. : Office of the Secretary of Defense, 1964).

APPENDIX : IV

PAY AND ALLOWANCES	(2,660)	.....	29.0
Armed Forces	1,970		
Reserves, cadets, etc.	55	.....	22.1
Civilian employees	635	.....	6.9
GOODS AND CONSTRUCTIAN	(5,331)	.....	58.1
1. Military equipment (inc. R ⊄ 0)	2,659		
2. Food	703		
3. Clothing	62		
4. Construction, maintenance and land	1,217		
5. POL	427		
6. Other goods, net	263		
SERVICES	(831)	.....	9.0
1. Communications, etc.	34		
2. Travel (Personel)	184		
3. Transportation (stores)	130		
4. Refuse removal, hat weather charges, etc.	20		
5. Training and education	18		
6. Medical services	284		
7. Other	161		
TRANSFERS	(266)	.....	2.9
1. Pensions and gratuities	239		
2. Other	27		
OTHER	95	.....	1.0

TOTAL DEFENSE ESTIMATES Rs. 9,183 million

Source: DEFENSE SERVICE ESTIMATES, 1967-68
(Goverment of India, New Delhi, 1967)

APPENDIX : V

Aircraft and equipment	226
Electronics	135
Guns, armour and ammunition	124
Motor transport	61
Shipbuilding and ship repair	146
Other	51
Total armaments and engineering products	743
Works and buildings	213
Food	56
Clothing	15
Petroleum products	44
Other fuels	19
Total works, buildings and supplies	348
Research and development	
Ministry of Aviation: -	
at own establishments	40
work by industry etc.	175
Navy Department	27
Army Department	15
Total research and development	257

Source : Defense Estimates 1965-66 : H.C. 78.
and Civil Estimates 1965-66 : H.C. 104.

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