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The Impact of Military Expenditures on Economic Growth in the Pre-revolutionary Iran

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INTRODUCTION

> I told the Shah that if the Army budget were increased we could do little if anything for agriculture, education or public health. He said, "Very well, then; we'll have to postpone those things."

This incident occurred in 1943, a year after the Shah had succeeded his father and was recounted by A. C. Millspough (1946:17), then financial advisor to the Iranian government.

By the 1970s, however, the Iranian government was denying the relevance of the "guns versus butter" tradeoff for the country. The Shah posed the problem differently, "What is the use of having an advanced industry in a country which could be brought to its knees when faced with any small event? Asked on a subsequent occasion whether the desire for maximum national power implicit in such defense expenditure was compatible with the efforts to achieve maximum economic development, he replied, "It is not only compatible but essential. The one is worthless without the other.There is no economic power without military power."(1)

On the other hand, defense expenditures in particular have been cited by several observers(2) as having had a detrimental impact on the country's economy, thus, in part contributing to internal tensions that ultimately resulted in the revolution.

The existing literature on this period in Iran's history is, unfortunately, largely anecdotal, with little or no attempt to empirically determine the links between military expenditure and various economic performance indices. Furthermore, from a theoretical point of view, a logical case could be made either way that the likely net impact of military expenditures was negative or positive.(3)

Classical economic theory, for example, would predict on the basis of resource allocation, that defense will decrease investment or civilian consumption and thus reduce growth or welfare. The military burden would have to be justified on the basis of other social welfare gains such as an increase in collective security. Keynesian theory, on the other hand, could claim that in the presence of inadequate effective demand the operation of the multiplier would imply an increase in national product resulting from additional defense expenditure; thus there could be some economic justification for military spending. If the economy operates with substantial excess capacity, then additional demand and output would raise capacity utilization, thereby increasing the rate of profit and possibly accelerating investment. Whether in the short and long run the former or latter effect dominates will determine the final outcome of defense on the country's economic performance (Değer and Smith, 1985:49). Clearly, the impacts of military expenditure will also vary from sector to sector. The sections that follow attempt to throw some light on this interesting and controversial topic through quantifying the impact of Iran's defense expenditures on the main sectors of economic activity.

SCOPE OF DEFENSE EXPENDITURES

Iran's defense expenditures exhibited marked differences before and after the 1973-74 oil price increases, with military purchases rising from $5.9 million in FY 1972 to $5.8 billion in FY 1977.[4] A large portion of this expenditure was on weapons acquisitions from the United States.[5]

In 1963-73, Iran's defense expenditures averaged an annual growth rate of 22.7 percent and comprised an average 10.6 percent of its GNP. Yet this was not more than the average percentage of GNP devoted to military expenditures by countries in the Middle East (10.7 percent). In fact, Iran spent less on military expenditures than Iraq (14.2 percent), Israel (32 percent), Jordan (14.2 percent), Saudi Arabia (15 percent), Syria (15.7 percent) and Egypt (22.8 percent). Although Iran's post-1973-74 defense spending accelerated and consumed 29.4 percent of the government budget in 1975-76 and around 27 percent in 1976-77, allocations to the domestic programs were more than double that amount (ACDA, 1974).

Budget presentations (Table 1) were always in terms of broad areas of disbursement i.e., there were no references to construction of military industries. Careful scrutiny of the budgets of this period reveals for example that under the heading of public affairs in 1976, $1.7 billion was allocated for government buildings and construction -- a 66 percent increase over the previous

year.[6] Most of this was for fixed capital investments with about 70 percent of the $1.7 billion for military construction activity -- new air and naval bases, expansion of army buildings, plus housing and related infrastructure. The Military Industries Organization received $106 million for expansion of the electronics industries, vehicle assembly, and son on. Thus the final total military expenditure was around $9.5 billion in 1977. All in all, indirect and hidden military expenditures may have raised allocations in this area to between 15 and 18 percent of GDP.

Table 1 - Iran: Defense Expenditures

(under defense allocation in general budget: $ million)

	1974/75	1975/76	1976/77
Supply, production renovation	3,500	5,192	4,834
Personnel	812	1,095	1,877
Maintenance	493	613	764
Special Operations	653	636	658
Other	43	64	64
Total	5,501	7,600	8,197

SOURCE: Ministry of Finance

Note: Exchange rates 1974/75, $ = 67.50 rials; 1975/76, 1976/77, $ = 69.4 rials.

Another cost that is hidden in the budget is the salaries for foreign technicians. Because the country's arms purchases were largely for extremely advanced weapons, a requirement was simultaneously generated for many thousands of skilled technicians to maintain, repair, support and operate the equipment. For example, fifteen skilled technicians were needed to keep one F-14 aircraft in combat-ready condition -- and Iran ordered eighty of these planes. Other specialists were needed to perform crucial logistics, communications and intelligence functions. Normally, this involved contracting with U.S. arms firms to perform backup services on the equipment they sold to Iranian forces. Thus, Grumman deployed some 1,000 U.S. technicians to Iran to maintain the eighty F-14s (Albrecht, 1979: 157-179).

Not only did the Shah order vast quantities of America's most advanced weapons, he was also acquiring capability to produce them in Iran. Under a multibillion dollar industrialization program, the Shah commissioned U.S. arms firms to build entire weapons factories from scratch in Iran. Bell Helicopter was building a factory to produce Model-214 helicopters in Isfahan, and Hughes was building a missile plant in Shiraz. These and several other ventures (Race and Class, 1979: 96) represented a large share of U.S. industrial involvement in Iran and were key links in the Shah's efforts to develop modern high technology industries.[7]

Concentration on numbers of dollars spent, however, tends to obscure other elements in the picture. The amounts quoted involve weapons on order -- large one-time purchases with high capital costs, which realistically should be spread over a number of years. Up to 50 percent of the dollar figures quoted in these purchases involved software, e.g., building airfields and communications networks, training engineers, maintenance technicians, electronic experts and air traffic controllers; and staffing language schools. They also include the cost of spare parts, handling crating, test and evaluation services, as well as assistance in manpower planning and logistical services. In many cases, they also involved basic infrastructural additions -- airfields, ports, harbors -- which have significant visible benefits for the civilian sector of the economy, not to mention the less quantifiable technology transfer spinoffs of technical training programs and the like (Chubin; 1978: 267).

CROSS SECTION ANALYSIS OF THE IMPACT OF DEFENSE EXPENDITURES

Did Iran's military build-up especially after 1973 have an adverse affect on growth? While common sense would seem to point in that direction, recent research has indicated that growth in developing countries is not necessarily harmed by defense expenditures. As noted, a number of studies have found a positive relationship between defense expenditures and growth (Looney and Frederiksen, 1986; Looney, 1986; Frederiksen and Looney, 1985 a; Frederiksen and Looney, 1985 b; see also Ball, 1985 for an alternative interpretation). In a statistical examination of forty-four countries and using data for the 1950-65 period, Benoit (1973: xix) concluded that:

> The big surprise of this study was the finding that the evidence does not indicate that defense has had any net adverse effect on growth in developing countries...

> The crucial evidence in this matter was the finding that the average 1950–65 defense burdens (defense as a percent of national product) of 44 developing countries were *positively* not inversely correlated with their growth rates over comparable time periods: i.e., the more they spent on defense, in relation to the size of their economies, the faster they grew — and vice versa. This basic correlation was strong enough so that there was less than one chance in a thousand that it could have occurred by accident.[8]

However, when investment as a percent of GDP and bilateral aid receipts as a percent of GNP were included in the regression equation, the contribution of defense, though still positive in sign, was no longer statistically significant.

It may well be that these inconclusive results simply stem from the fact that the usual perception of the role of defense expenditures is through their direct impact; i.e., the guns versus butter analogy. If on the other hand, we view developing countries like Iran largely as disequilibrium systems, then it is more logical to argue that the actual environment in which defense expenditures take place will determine whether their ultimate impact on the economy is positive. For example, the prime determinant in the relationship between growth and defense spending could simply be the overall financial resource constraint faced by the individual country and the manner in which authorities respond to that constraint;; i.e., a country that is resource constrained (faces some combination of lagging taxes, reduced private and government savings, reduced borrowing power overseas, or export shortfalls), and hence faces a reduction of its public sector budget, will probably sacrifice expenditures on high growth development programs to maintain defense expenditures.

This is likely for two reasons. First, governments usually find it more expedient for political reasons to curtail capital investments (new infrastructure programs, for example) rather than expenditures on the current account. Second, given that a defense establishment exists, several interest groups often find it economically advantageous to maintain the status quo. These groups might include high ranking officers, military contractors, and certain politicians. More often than not, military expenditures have been frozen while highly productive development programs were forced to bear the brunt of the deflationary policies (Barnaby, 1978: 23). In short, defense expenditures are likely to be asymmetric — difficult to cut back but easily expanded. Thus, a resource constrained country, *ceteris paribus*, should show a negative and statistically significant relationship between growth and defense spending.

The reverse is true for countries that have a relative abundance of financial resources; i.e., have an elastic supply of tax revenues and high inflows of foreign exchange (either through balance of payments surpluses or aid). These countries are better able to afford the growth-oriented capital expenditure programs concomitant with maintaining, or even increasing, defense programs.

More formally, one would expect a negative relationship to exist between defense expenditures and economic growth in those developing countries which are predominantly characterized by:

(1) A high population growth requiring increased amounts of public services;
(2) Migration toward cities due to rising aspirations;
(3) A public administration which is of limited efficiency, especially in the collection of taxes and a tax system which is inflexible in generating revenue and is regressive;
(4) Exports that are limited in number and are comprised largely of products whose markets are expanding relatively slowly (as a result, there is inelasticity and instability in the country's external purchasing power);
(5) Shortages of government revenue which create bottlenecks in the supply of social overhead capital and skilled labor;
(6) Little or no capacity for the home production of manufactured products, especially engineering products (thus, manufactures amount to a significant proportion of imports);
(7) A capital market which is imperfectly competitive (so that overall savings rates are low);
(8) Chronic balance of payments difficulties due to (4) and (6) above, with the result of direct import controls (such controls on imports imply reducing imports to the size of export receipts which, in turn, creates shortages, bottlenecks, and reduced growth);
(9) An urban-industrial society which needs substantially more infrastructure than previously due to urbanization and industrialization;
(10) Lagging revenues which often result in substantial delays in the provision of government services, severely prejudicing the growth of the industrial sector;
(11) High urbanization rates requiring more government attention to the construction of low income housing, urban transportation, etc. (these investments have a high capital output ratio);
(12) Lagging government investment in social infrastructure which severely increases social tensions in the cities and hampers the smooth growth of industry;

(13) A large external debt which has been built up as a result of past government deficits and balance of payments deficits (additional borrowing becoming increasingly difficult, thus reducing the size of the current account deficit);
(14) A defense establishment which has developed political influence and is capable of preventing cutbacks in military expenditures during budgetary crises;
(15) An industrial structure characterized by relatively few linkages between defense expenditures and the rest of the economy;
(16) A relatively small export sector, which when combined with (3), (5), (6), (8), (10), (12) and (15) means a reduced internal capacity to transform;
(17) Increased external and internal tension, forcing an increasing proportion of government expenditures to defense;
(18) Reduced aid flows stemming from political and economic frictions with its donor countries;
(19) A high population growth, increasing credit facilities, and a growing aspiration of the population which reduces the savings rate.[9]

It is quite possible that growth can be constrained if only several of the more critical factors are present. For example, defense expenditures could conceivably limit growth if they reduced the country's ability to change its productive structure to meet the changing patterns of internal and external demand. Although this problem is not likely to be quite as serious in a slowly developing economy, rapid growth requires large increases in the supplies of machinery and equipment, raw materials, and other manufactured goods that are typically imported by developing countries. The more rapid the rate of growth, the larger the reallocation of labor and capital away from traditional patterns will have to be to prevent bottlenecks. If this reallocation is not sufficiently swift, shortages of imported goods will provide a further limit to growth quite apart from the investment limitation. This import limit reflects the inability of the economy to provide the composition of output from domestic sources plus imports — that is, that which is required by its level of income, rate of investment and pattern of domestic demand (Chenery, 1971). In cases of acute shortages of imported goods, the economy will be unable to transform potential savings into investment because of insufficient supplies of investment goods. The case of India in the late 1950s and early 1960s is often cited where as much as 50 percent of its defense programs occurred directly at the expense of civilian investment allocation (Dagli, 1969).

EMPIRICAL RESULTS

A number of conceivable proxy indicators for the availability of financial resources could be used to test the resource constant hypothesis. The selection of variables was based largely on the availability and comparability of data between countries. The main source of data was the World Bank (International Bank for Reconstruction and Development, 1978). Nine variables were selected to import availability.[10] *A priori* each should have an effect on the defense burden-growth relationship as shown in Table 3.

As an initial step, a cluster analysis.[11] was performed with the above nine variables for 37 of Benoit's original sample of 44 countries.[12] Four groups were identified (Table 2). The first group, of which Iran was a member (Group I, n = 24), was characterized by a high growth in foreign exchange earnings, a high import elasticity, a low debt-servicing ratio, a low incremental capital output ratio, a high current account deficit/GDP ratio, and a low ratio of civilian expenditures to government revenues.

The second group of countries (Group II, n = 9) was quite the opposite. These countries were characterized by a low growth in foreign exchange earnings, a high debt service ratio, a low current account deficit as a percent of GDP, a high percent of government revenues spent on civilian consumption, and a low import elasticity. A third group of countries (Group III: Iraq, Burma, Syria) seem to fall between Groups I and II. As Table 6 indicates, the means of some variables are higher than for Groups I and II, while the means of other variables are either lower or in between the means for Groups I and II. Group IV consisted of just Vietnam which has a number of extreme values and can clearly be considered a special case.

Sharp differences also exist between the two largest groups (Groups I and II) for a number of other macroeconomic variables (Table 3). Overall, Groups I and II differed significantly and consistently on the basis of a wide variety of macroeconomic indicators indicative of resource availabilities and constraints. To confirm the placement of our sample of countries into Groups I and II, a discriminant analysis was performed to determine the probability of correct grouping. The placement of the countries from the cluster analysis was used as the basis for the initial classification. All countries were correctly classified at the 100 percent probability level, except the Dominican Republic which had a probability of 88 percent of correct placement.

Table 2 - A Comparison of Means Between Groups

		Cluster Analysis Variables									
		SAV	PERCAP	EXPGRO	EXGDP	PCONS	ICOR	CIVCON	IMPGDP	DEFGDP	DEBTS
Cluster Analysis Excluding Per Capita Income											
GROUP	I	56.5		9.5	20.7	68.0	2.2	67.3	1.5	-4.8	7.9
	II	85.2		6.4	23.5	69.4	2.3	38.1	0.0	0.1	3.8
	III	84.8		4.7	14.6	73.3	3.5	85.2	0.9	-1.2	11.0
	IV	53.0		0.8	9.6	79.7	3.9	130.4	5.3	-9.6	2.9
Cluster Analysis Including Per Capita Income											
GROUP	I	66.8	354.6	7.6	19.0	73.3	2.0	72.5	1.3	-3.7	7.2
	II	62.8	857.5	7.5	20.2	62.4	3.8	67.5	1.3	-2.7	10.1
	III	55.6	3010.0	12.2	24.4	59.1	2.4	78.0	1.3	-14.0	22.5
	IV	71.5	1712.5	8.6	15.8	65.6	4.0	67.1	1.2	-2.5	7.0

Table 3 - Other Macroeconomic Indicators

Country	Average Annual Growth				
	GDP	DEF	CIVGDP	IMP	INV
GROUP I					
Malaysia	4.99	7.95	5.00	3.6	9.2
Nigeria	4.21	10.51	3.75	8.0	12.1
Greece	6.21	-0.33	6.58	9.5	7.8
Spain	6.10	2.72	6.20	13.2	16.5
Guatemala	4.73	4.62	4.73	5.6	11.2
El Salvador	4.95	6.37	4.95	6.2	9.6
Honduras	3.75	3.21	3.75	8.0	10.2
China (Taiwan)	8.76	16.50	8.12	18.6	14.0
Thailand	5.86	6.56	5.85	11.2	15.9
Venezuela	6.64	9.13	6.65	6.4	10.2
S.Africa	4.84	12.11	4.77	7.2	12.5
S. Korea	5.66	-2.50	6.23	20.9	17.1
Iran	4.73	14.85	4.51	14.4	7.8
Yugoslavia	8.09	-0.47	8.68	10.4	8.0
Dominican Rep.	4.07	-5.50	4.28	9.7	12.0
Ecuador	4.63	9.60	4.81	8.7	1.8
Egypt	6.46	10.87	6.17	6.1	14.9
Costa Rica	4.85	15.34	4.85	10.0	11.6
Tunisia	5.52	-2.59	5.68	6.4	13.5
Israel	10.70	11.66	10.47	11.2	10.6
Jordan	9.01	8.5	10.70	5.3	10.0
Colombia	4.53	7.21	4.50	5.4	1.3
Chile	3.50	-1.21	3.63	5.7	5.2
Turkey	5.74	6.24	5.72	7.2	10.2
MEAN	5.77	6.29	5.86	9.1	10.6

Table 3 - Cont'd: Other Macroeconomic Indicators

Country	Average Annual Growth				
	GDP	DEF	CIVGDP	IMP	INV
GROUP II					
India	3.38	2.46	3.20	1.0	6.2
Mexico	6.13	3.24	6.15	5.9	6.4
Brazil	5.35	5.97	5.16	9.3	2.9
Argentina	3.24	-1.10	3.37	2.2	0.6
Sudan	5.00	13.4	4.92	1.6	3.4
Peru	5.24	3.35	5.25	7.8	5.8
Philippines	5.10	3.73	5.12	4.5	9.9
Morocco	2.43	12.77	2.20	4.4	6.9
Tanzania	3.08	32.00	2.90	6.5	5.7
MEAN	4.33	7.08	4.25	4.8	5.3
GROUP III					
Iraq	6.75	14.91	6.39	4.2	1.2
Syria	5.50	9.86	4.97	7.1	3.1
Burma	5.10	8.39	4.93	-5.6	9.8
MEAN	5.78	11.05	5.43	1.9	4.7
GROUP IV					
Vietnam	5.34	26.5	3.00	15.6	7.2
OVERALL MEAN	5.41	6.77	5.36	7.7	8.7

Table 3 - Cont'd: Other Macroeconomic Indicators

Country	PUBSAV (% GDP)	GOVSAV (% REV)	AID (% GDP)	DEFN (% GDP)	INVEST (% GDP)
GROUP I					
Malaysia	20.1	6.8	0.46	2.68	14.47
Nigeria	30.4	20.2	1.86	0.56	11.93
Greece	14.3	8.7	3.27	5.21	20.68
Spain	34.6	29.6	0.89	3.26	20.03
Guatemala	17.1	22.7	0.89	0.89	11.01
El Salvador	13.2	23.4	0.71	1.41	12.58
Honduras	8.8	13.4	0.04	1.24	14.33
China (Taiwan)	22.0	-4.6	5.23	11.42	17.96
Thailand	11.7	23.3	0.91	3.38	17.37
Venezuela	33.9	33.4	-0.35	1.88	23.96
S. Africa	26.7	20.1	-0.17	1.23	20.03
S. Korea	18.9	10.8	7.88	5.32	13.17
Iran	47.8	32.1	1.07	4.00	15.25
Yugoslavia	71.3	11.5	0.60	8.76	35.85
Dominican Rep.	17.4	-19.3	2.87	4.23	14.49
Ecuador	16.9	7.8	0.34	2.11	14.10
Egypt	-8.2	-33.8	2.97	6.90	16.60
Costa Rica	8.3	6.5	1.96	0.32	18.08
Tunisia	14.6	16.8	10.22	1.78	21.10
Israel	-15.3	-4.7	9.97	6.08	29.51
Jordan	-55.3	-33.7	24.70	16.75	14.97
Colombia	22.8	30.0	0.04	1.59	18.04
Chile	-4.4.	16.9	0.83	2.69	10.80
Turkey	34.5	22.9	2.15	4.38	13.22
MEAN	16.8	10.9	3.31	4.09	17.48

Table 3 - Concl'd: Other Macroeconomic Indicators

Country	PUBSAV (% GDP)	GOVSAV (% GDP)	AID (% GDP)	DEFN (% GDP)	INVEST (% GDP)
GROUP II					
India	13.4	7.6	1.22	2.46	12.32
Mexico	13.5	0.5	0.12	0.75	17.25
Brazil	12.1	4.3	0.53	2.63	16.43
Argentina	-0.1	-0.7	0.01	2.49	19.47
Sudan	-23.6	3.2	2.10	1.59	12.38
Peru	3.0	-1.9	0.21	2.70	22.39
Philippines	5.8	-10.3	1.34	1.59	11.11
Morocco	11.0	-3.1	2.54	3.84	12.88
Tanzania	2.6	7.4	-5.53	2.11	12.20
MEAN	4.2	0.8	0.28	2.24	15.16
GROUP III					
Iraq	45.4	16.0	1.28	5.93	16.45
Syria	-18.5	-14.0	1.85	7.04	16.95
Burma	15.5	42.5	1.34	6.61	18.06
MEAN	14.1	14.8	1.49	6.53	17.15
GROUP IV					
Vietnam	-61.5	-151.2	14.34	10.20	10.33
OVERALL MEAN	11.4	4.4	2.72	4.55	16.70

As a next step using Benoit's methodology and both his data and time frame (1950-1965), linear regression equations were estimated for Groups I and II with civilian economic growth (CIVGDP) as the dependent variable, and investment as a percent of GDP (INVEST), receipts of bilateral aid as a percent of GDP (AID), and the average annual defense expenditure as a percent of GDP (DEFN) as the independent variables. The estimated equations for both groups are as follows ("t" values appear in parentheses):

Group I:

$$\text{(1) CIVGDP} = 1.77 + \underset{(6.11)}{0.16}\ \text{INVEST} + \underset{(3.07)}{0.12}\ \text{AID} + \underset{(3.77)}{0.22} \qquad r^2=0.89$$

Group II:

$$\text{(2) CIVGDP} = 4.72 + \underset{(1.92)}{0.15}\ \text{INVEST} + \underset{(1.46)}{0.19}\ \text{AID} + \underset{(-3.52)}{1.22}\ \text{DEFN} \qquad r^2=0.76$$

The most striking result and one which supports the resource constraint hypothesis is that for Group II — the resource abundant group of which Iran was member — the coefficient of DEFN is positive and statistically significant at the 99 percent level of confidence. On the other hand, the coefficient of DEFN for Group II — the resource constrained group — is negative and also statistically significant at the 99 percent level. Furthermore, there is a sharp difference between these results and those obtained by Benoit (1978: 274) which were:

$$\text{(3) CIVGDP} = 1.14 + \underset{(5.57)}{0.21}\ \text{INVEST} + \underset{(2.30)}{0.13}\ \text{AID} + \underset{(1.34)}{0.11}\ \text{DEFN} \qquad r^2=0.61$$

The coefficient for DEFN in equation (3) is not statistically significant, and the r^2 value is lower than those obtained in equations (1) and (2).

The linear equation was also estimated for Group I excluding the Dominican Republic due to its relatively low probability of correct classification. For this group (Group IA, n = 23), the estimated equation is:

Group IA:

$$\text{(4) CIVGDP} = 1.89 + \underset{(6.12)}{0.15}\ \text{INVEST} + \underset{(3.11)}{0.12}\ \text{AID} + \underset{(4.03)}{0.23}\ \text{DEFN} \qquad r^2=0.90$$

As expected, the r^2 value is slightly higher as is the t value for the DEFN coefficient. These results imply that in relatively non-resource constrained countries, either defense expenditures contribute to growth directly or, more likely, that these countries are able to maintain development programs which contribute to growth while maintaining defense programs. On the other hand, in resource constrained countries, the results imply that defense expenditures do not contribute to growth or, more likely, that defense expenditures continue at the expense of the highly productive development programs which hinders economic growth.

By grouping on the basis of, for example, military regimes (which fall into both of our groups), it is understandable why previous attempts have failed to identify any consistent relationship between defense and growth. One might argue, however, appropriate classification is the level of economic development. As a test of this proposition, per capita income (PERCAP) was added as a tenth variable to the cluster analysis. This procedure resulted in a very different set of countries in the two larger groups. Using the same regression variables as above, the estimated equations for the two large groups are:

High Income Group:

$$\text{(5)}\quad \underset{(3.1)}{0.17}\ \text{INVEST} + \underset{(2.7)}{0.32}\ \text{AID} + \underset{(0.7)}{0.10}\ \text{DEFN} \qquad r^2=0.82$$

Low Income Group:

$$\text{(6)}\quad \text{CIVGDP} = 1.4 + \underset{(2.1)}{0.17}\ \text{INVEST} + \underset{(1.3)}{0.09}\ \text{AID} + \underset{(1.7)}{0.17}\ \text{DEFN} \qquad r^2=0.54$$

As can be seen, the coefficient of DEFN, while positive, is not statistically significant in either equation, and the r^2 values are lower than for the equations reported above.[13]

A TEST OF CAUSALITY

Benoit examined several alternative hypotheses to explain his correlation between the growth in defense spending and the growth in the economies. First, he doubted whether the correlation could be spurious. Second, he believed that no systematic bias existed in the data. Third, Benoit felt that there was little evidence to suggest economic growth caused the expansion in defense; i.e., changes in burdens occurred at random and were not correlated with increases in

government revenues. Indeed, he felt that variations in defense expenditure seemed to be best explained by strategic considerations. Benoit's final assertion was that defense spending must have some positive effect on government growth, coupled with the influence of international economic aid and domestic investment, although "The statistical evidence is highly ambiguous — it neither lends strong support to our hypothesis nor does it really undermine it. General and qualitative considerations derived from our research led us nevertheless, to suppose that the hypothesis is likely to be correct (Benoit, 1973: 24).[14]"

To statistically determine if the relationship was, in fact, from defense expenditures to growth rather than vice versa, a two stage estimation procedure was employed. A number of independent variables not directly related to growth were selected and regressed on defense expenditures. The variables were consistent with our theoretical model and included the resources gap (savings minus investment) as a percent of gross domestic investment (REGAP), the capital inflow (new import of goods and services) as a percent of GDP (INF), government expenditure as a percent of GDP (GOVEX), non-tax revenues (OR), and government consumption expenditures (GCONS). The estimated equations for our two groups were:

Group I:

$$\text{(7) DEFN} = -2.77 + \underset{(4.3)}{0.23}\ \text{REGAP} - \underset{(0.8)}{0.01}\ \text{INF} - \underset{(2.0)}{0.01}\ \text{GOVEX} + \underset{(2.4)}{0.01}\ \text{OR} + \underset{(1.0)}{0.04}\ \text{GCONS} \qquad r^2=0.64$$

Group II:

$$\text{(8) DEFN} = -1.25 - \underset{(0.3)}{0.28}\ \text{REGAP} - \underset{(1.8)}{0.19}\ \text{INF} + \underset{(2.7)}{0.12}\ \text{GOVEX} + \underset{(2.1)}{0.03}\ \text{OR} + \underset{(1.0)}{0.18}\ \text{GCONS} \qquad r^2=0.84$$

Both equations yield relatively high r^2 values. Government expenditures (GOVEX) are statistically significant for both groups although the signs are opposite. These results support our earlier hypothesis: countries in Group I tend to spend additional funds on non-defense items, while the opposite is true for countries in Group II.

Using the estimated values for defense expenditures from the above equations (DEFN1), regression equations were reestimated with CIVGDP as the dependent variable. The results were as follows:

Group I:

$$(9)\ \text{CIVGDP} = 1.45 + \underset{(5.8)}{0.07}\ \text{INVEST} + \underset{(2.6)}{0.14}\ \text{AID} + \underset{(2.3)}{0.22}\ \text{DEFN1} \qquad r^2=0.83$$

Group II:

$$(10)\ \text{CIVGDP} = 4.07 + \underset{(2.3)}{0.20}\ \text{INVEST} + \underset{(0.6)}{0.08}\ \text{AID} + \underset{(3.0)}{1.30}\ \text{DEFN1} \qquad r^2=0.69$$

These results tentatively confirm the Benoit thesis on the direction of causality, and do not, other than slightly lower t values, deviate from the original least squares estimates.

TIME SERIES ANALYSIS

While the above analysis appears to suggest that the relationship between military expenditure and economic growth may have been complementary over the 1950-65 period, cross section analysis by itself cannot conclusively prove this linkage.

For one thing, results based on cross sectional designs are somewhat limited in their ability to confirm causal relationships. To tackle questions such as the impact of military spending on economic performance, we need dynamic analysis to determine:

(1) The nature and time phasing of the impacts on the economy associated with military expenditures, and
(2) Any posssible over time changes in the parameters of this relationship.

It is hypothesized that over time military expenditures may have contributed to the Iranian economy directly, through direct contributions to Gross Domestic Product, and indirectly, through spread or carry-over effects. The indirect contribution to growth embraces Hirschman type linkages and can broadly be considered as a sequence of multiplier accelerator mechanisms. Theoretically, indirect contributions (or spread effect) can continue to accrue long after a specific military expenditure has occurred.[15] The overall impact of military expenditures

on the Iranian economy is assumed to have had many determinants including technology, the extent to which investment opportunities generated were taken advantage of by domestic entrepreneurs, the ability to attract foreign factors, and so on. Obviously, neither the timing pattern exhibited by, nor the relative sizes of military expenditures direct and indirect contribution to growth need to be fixed and could conceivably have varied between subperiods. Provided that investment and demand opportunities generated by the growth of military expenditures are exploited and bottlenecks are not a constraint in growth, the model predicts that Iranian economic growth could be positively stimulated by military expenditures.

To determine the direct impacts of military expenditures on the pre-revolutionary Iranian economy, sectoral value-added over the period 1959–77 was regressed on military expenditure. To improve the specifications of the regression and obtain less biased estimates, non-oil income and gross domestic product were added as control variables (the results presented in Table 4 only include the most significant control variable).

To test for structural changes associated with the 1973 oil price increases and the subsequent stepped-up level of defense expenditures, two dummy variables, DUMAX and DUMBX, were added to the regression equation. DUMAX was formed by multiplying real military expenditures by 0, 1959-1973 and 1, 1974–77. DUMBX was formed by multiplying real military expenditures by 0, 1959-74 and 1, 1975-77.[16] Clearly, a *priori* it is not possible to speculate whether increased oil revenues had an immediate impact (DUMAX) or a lagged (DUMBX) impact on the military expenditure-sectoral output relationship, hence both variables were independently introduced into the regression equation. The results with the dummy contributing most to the regression equation are presented in Table 4.

The dummy variables test for any possible change in the impact of military expenditures on output associated with the oil boom. That is, a positive sign indicates that the post oil boom relationship was positive, i.e., increased military expenditures contributed to sectoral growth during this period, while a negative sign indicates that the stepped up expenditures out of the post-1973–74 oil boom preempted resources needed for the sector's expansion.

Table 4- Iran: Direct Impact of Military Expenditure on Sectoral Output, 1959-1972

(Constant Price)

Equation Sector	Independent Variable: Military Expenditure	Non-oil Income	GDP	RHO	Statistics: r^2	F	DW
(1) Agriculture	1.45	-0.12		-0.07			
	(4.20)	(-2.49)		(-0.27)	0.934	61.58	2.05
(2)	1.82		-0.07	0.32			
	(5.07)		(-3.52)	(1.20)	0.877	28.64	1.08
(3) Manufacturing	0.05	0.50		-0.21			
	(1.68)	(2.15)		(-0.77)	0.989	364.63	1.91
(4)	0.27		0.04	-0.52			
	(1.44)		(3.19)	(-2.12)	0.994	731.68	2.28
(5) Construction	0.70	-0.06		0.23			
	(3.59)	(-2.43)		(0.85)	0.805	16.52	1.93
(6)	0.78		-0.03	0.39			
	(3.62)		(-2.58)	(1.48)	0.749	11.98	1.78
(7) Water and Power	-0.05	0.03		-0.49			
	(-1.44)	(6.07)		(-1.93)	0.995	757.58	2.69
(8)	-0.05		0.01	-0.10			
	(1.04)		(4.44)	(-0.35)	0.983	245.28	2.05
(9) Trade	0.79	-0.05		0.33			
	(5.26)	(-2.66)		(1.22)	0.931	54.39	1.80
(10)	0.85		-0.03	0.49			
	(5.10)		(-2.78)	(1.96)	0.896	34.37	1.55
(11) Ownership of Dwellings	0.34	-0.02		0.17			
	(3.47)	(-1.32)		(0.61)	0.914	52.76	1.97

Table 4 -Cont'd: Iran: Direct Impact of Military Expenditure on Sectoral Output, 1959-1972

(Constant Price)

Equation Sector	Independent Variable: Military Expenditure	Non-oil Income	GDP	Statistics: RHO	R^2	F	DW
(12)	0.35		0.01	0.19			
	(3.24)		(1.25)	(0.67)	0.926	49.81	1.94
(13) Transportation and	-0.07	0.04		0.02			
Communication	(-1.23)	(4.42)		(0.09)	0.976	162.97	1.80
(14)	-0.09		0.02	-0.35			
	(-2.24)		(6.75)	(-1.31)	0.914	600.32	2.07
(15) Banking	0.30	0.02		0.82			
	(3.60)	(1.45)		(4.92)	0.857	24.09	1.13
(16)	0.35		0.01	0.80			
	(2.84)		(1.81)	(4.61)	0.880	29.32	1.42
(17) Private Services	0.47	-0.02		0.32			
	(3.95)	(-1.53)		(1.38)	0.908	39.52	1.81
(18)	0.85		-0.03	0.49			
	(5.10)		(-2.78)	(1.97)	0.895	34.33	1.55
(19) Public Services	0.95	-0.01		0.66			
	(3.34)	(-0.19)		(3.08)	0.843	21.56	1.40
(20)	0.86		-0.03	0.49			
	(5.10)		(-2.78)	(1.97)	0.896	34.30	1.55

Table 5- Iran: Direct Impact of Military Expenditure on Sectorai Cutput, 1959-1977

(Constant Price)

Equation Sector	Independent Variables							Statistics		
	Military Expenditure	Military Expenditure Lagged	Non-oil Income	Gross Domestic Product	DUMAX	DUMBX	RHO	r^2	F	DW
(1) Agriculture	0.38			0.02	-0.28		-0.71			
	(5.73)			(3.97)	(-6.84)		(-4.15)	0.985	260.16	2.86
(2) Manufacturing		0.24		0.04	-0.0		-0.66			
		(11.64)		(24.96)	(-0.51)		(-3.68)	0.998	2528.08	2.24
(3) Construction		0.11		0.01	-0.05		-0.58			
		(6.54)		(6.12)	(-4.31)		(-2.94)	0.976	166.51	2.24
(4) Water and Power	0.09		0.01			-0.03	-0.67			
	(5.20)		(4.20)			(-4.33)	(-3.77)	0.997	1495.67	2.37
(5) Trade	0.05		0.02		0.03		-0.54			
	(5.20)		(11.88)		(6.67)		(-2.67)	0.998	2392.41	2.05
(6) Ownership Dwellings	0.05			0.01	-0.02		-0.67			
	(2.13)			(7.40)	(-1.50)		(-3.76)	0.992	517.07	2.01
(7) Private Services	0.08		0.03		-0.06		-0.22			
	(2.16)		(5.52)		(-2.73)		(-0.94)	0.988	356.03	1.94
		0.19		0.04	-0.03		-0.19			
(8) Public Services		(4.68)		(11.23)	(-1.21)		(-0.80)	0.989	381.98	1.98
				0.02		0.07	0.65			
(9) Banking	0.11			(9.31)		(5.26)	(0.24)	0.995	841.30	1.91
	(6.58)				0.03		-0.54			
(10) Transportation and Communication		0.05	0.02		(6.67)		(-2.67)	0.998	2392.40	2.05
		(5.20)	(11.88)							

NOTES: Economic data: Bank Markazi Iran, *Annual Report* (various issues), Military data from Sockholm International Peace Research Inctitute, *World Armaments and Disarmamant*, SIRPRI yearbook, various issues (Philadelphia: Taylor & Francis) contant price military expenditure derived by deflationary current price military expenditures by the Bank Market consumer price index. Estimates made using Cochrane-Orcutt iterative istimation procedure to correct for serial correlation.

The results (Table 5) indicate that:

(1) In general, military expenditure had a positive direct impact on sectoral output growth;
(2) Military expenditure had an immediate and positive direct impact on agriculture, construction, water and power, trade, ownership of dwellings, private services and banking;
(3) Military expenditures had a delayed but positive impact on manufacturing, transportation and communication;
(4) In most cases, the link between military expenditures and sectoral output was more direct than that between sectoral output and income (measured either as non-oil income or total GDP).

As noted above, one of the main limitations of cross sectional analysis is its inability to identify the timing of impacts. In particular, the empirical economic development literature[17] has shown that many impacts of government expenditures demonstrate a distributed lag relationship, i.e., the impact of specific expenditures on incomes tends to decline over time in some type of decay scheme with the first year's impact the greatest, declining in subsequent years. Operationally, estimates utilizing Koyck distributed lag schemes of the form

$$yt = a + by_{t-1} + cx$$

are used to measure both the direct and distributed impacts of certain expenditures (x) on output (y).

The results (Table 6) for the period as a whole are as follows:

(1) They confirm the distributed lag form of impact produced by military expenditures on most of the individual facets of the Iranian economy.
(2) As with the direct impact estimates, the distributed lag formulations indicate the generally negative impacts on sectoral output of real goods produced by marginal increases in military expenditures after 1973-74.
(3) In addition, the distributed lag formulations indicate that the output of services was stunted by marginal increases in military expenditures in the post-oil boom years.
(4) In general, the incremental expenditures associated with oil price and revenue increases tended to have a negative impact on sectoral output of goods.
(5) This negative impact was immediately felt (DUMAX) in agriculture, construction and private services, while it was felt after a lag (DUMBX) by water and power.

Table 6 - Iran: Distributed Lagged Impact of Military Expenditures on Sectoral Output, 1959-1977

(Constant Price, billion rials)

Equation Sector	Independent Variables: Lagged Sector Output	Independent Variables: Military Expenditures	DUMAX	DUMBX	RHO	Statistics: r^2	Statistics: F	Statistics: DW
(1) Agriculture	0.28	0.45	-0.30		-0.64			
	(1.72)	(4.57)	(-4.37)		(-3.49)	0.971	135.99	2.61
(2) Manufacturing	0.93	0.16		-0.07	-0.52			
	(10.41)	(2.55)		(-2.18)	(-2.52)	0.998	1801.2	2.44
(3) Construction	0.66	0.04			-0.38			
	(3.93)	(2.93)			(-1.71)	0.929	92.08	2.03
(4)	0.41	0.16	-0.09		-0.58			
	(2.55)	(3.87)	(-3.03)		(-2.95)	0.966	114.36	1.95
(5) Water and Power	0.39	0.11		-0.04	-0.76			
	(2.60)	(5.48)		(-5.58)	(-4.93)	0.999	1154.13	2.39
(6) Transportation and	0.63	0.08			-0.49			
Communication	(6.37)	(5.61)			(-2.33)	0.999	1286.67	2.14
(7)	0.62	0.11		-0.02	-0.60			
	(7.84)	(7.17)		(-2.82)	(-3.10)	0.997	1329.92	2.31
(8) Banking	0.68	0.11			0.38			
	(6.14)	(3.98)			(1.73)	0.984	437.66	2.12
(9)	0.65	0.18		-0.06	0.02			
	(8.28)	(7.28)		(-4.18)	(0.08)	0.996	1119.36	1.95
(10) Trade	0.90	0.04			-0.44			
	(7.49)	(1.96)			(2.05)	0.982	380.23	2.08

Table 6 -Cont'd: Iran: Distributed Lagged Impact of Military Expenditures on Sectoral Output, 1959-1977

(Constant Price, billion rials)

	Independent Variables					Statistics		
Equation Sector	Lagged Sector Output	Military Expenditures	DUMAX	DUMBX	RHO	r^2	F	DW
(11)	0.61	0.19	-0.10		-0.68			
	(4.08)	(4.08)	(-3.53)		(-3.85)	0.993	535.38	2.58
(12) Ownership of Dwellings	0.70	0.08		-0.04	-0.54			
	(3.25)	(2.05)		(-2.10)	(-2.66)	0.989	365.46	2.37
(13) Private Services	0.95	0.02			-0.41			
	(7.69)	(1.47)			(1.89)	0.985	467.48	2.08
(14)	0.74	0.11	-0.06		-0.64			
	(6.33)	(3.60)	(-3.23)		(3.43)	0.993	604.22	2.64
(15) Public Services	0.97	0.18	-0.11		-0.46			
	(7.86)	(2.02)	(-2.12)		(-2.13)	0.992	508.65	2.44

NOTES: See Table 5

(6) Marginal increases in post-oil boom military expenditures with the exception of private services tended to have a positive impact on services, the impact was immediate in the case of trade, transportation and communications but lagged with regard to banking;
(7) Marginal increases in military expenditures associated with the post-1973–74 oil boom do not appear to have affected the overall sectoral relationship with regard to manufacturing, ownership of dwellings and public services.

In general, therefore, the results obtained by regressing military expenditures on sectoral output indicate a generally positive relationship over the 1959-77 period with evidence that the stepped-up levels of expenditure after 1973-74 tending to reduce the strength of this impact on the production of tangible goods (but not services).

To test this hypothesis that a generally favorable relationship existed between military expenditures and sectoral output, military expenditures were regressed on sectoral output for the post-oil boom years (1955-72). The results (Table 6) indicate that:

(1) In general, a strong positive relationship existed between sectoral output and military expenditures over this period;
(2) In only one sector, transportation and communication was the impact of military expenditures statistically significant and negative.

The distributed lag, direct impact and cross sectional analysis, therefore, provide a similar picture of the generally positive impacts of defense expenditures on Iran's economic growth.

CONCLUSIONS

In sum, military expenditures in pre-revolutionary Iran seem to have aided economic growth by their net direct and indirect contributions; i.e., the real economic costs imposed by the military on the country appear to have been reduced to the extent that, in addition to the direct Keynesian demand-creating stimulus to income, the expenditures provided the training, construction, technological and industrial spillovers that contributed over time to economic growth.[18] Both the cross section and time series analysis described above are consistent with the conclusion.

How long these effects would have continued to be present had the revolution not occurred is impossible to determine. However, given the apparent negative impacts of marginal increases in military expenditures after 1973-74, military expenditures if continued at their 1977 levels for several more years might have reached the point of negative net impact on overall growth.

While there are grounds to question whether the country's defense expenditure did, in fact have an adverse affect on growth, results of the type obtained in this study need to be carefully qualified. While the findings indicate that in all likelihood Iranian defense expenditures had a positive effect on growth as measured by gross domestic product, they do not show what rate of growth would have been achieved if billions of dollars had been spent directly on development programs rather than weapons. The fact the military expenditure increased human capital (low level skills mostly) only proves that not all military expenditure was wasted from a growth viewpoint. This is all that can be claimed statistically.

On a more fundamental level, there needs to be a clear distinction made between economic growth and economic development. The results imply only that economic growth was not negatively affected by military expenditures. Development (as a more broadly based measure of the increase in living standards of the majority of the population) may well have been adversely affected by the levels of military expenditures undertaken, particularly after 1973. Manoucher Parvin and Amir Zamani (1977)[19] have convincingly demonstrated that there was a serious deterioration of the income distribution in Iran during this period:

In 1352 (1972) the share of the lowest 60 percent of the urban households was almost equal to that of the top 5 percent of the urban families. While the lowest decile had an expenditure share of 1.5 percent, the highest decile claimed about 36 percent of the total urban consumption expenditures. These figures clearly point to an even worse distribution of expenditures in urban areas compared to that of rural centers. But more importantly, they cast serious doubt on the nature of the whole last two decades. It seems that the beneficiary of the growth was merely a narrow layer of the population while bypassing the majority of the people. And indeed some segments of the population (about 40 percent of the rural households) experienced impoverishment and deterioration in their standard of living (Parvin and Zamani 1979: 49-50).

Clearly, for some countries, lower military expenditures lead to more resources being released which can be used for the improvement of the socio-economic conditions of the masses. The opposite is also true; there exists a negative tradeoff. However, for other countries, the relationship could become

more complex. It is possible to have higher military expenditures and more social development, but growth may suffer. On the other hand, a militarized society such as pre-revolutionary Iran may suppress entitlements, helping growth in the process, but not achieving development for society at large. While beyond the scope of this paper, future research may find that this latter pattern completes our understanding of the impact of military expenditures on pre-revolutionary Iran.

NOTES

1. Quoted in Chubin (1978:268). See also the interviews granted by the Shah to *Business Week* (1975); *Kahan International* (1976) and *The Middle East Economic Digest* (1976).
2. Cf. Rizvi (1979); McDermott and Whitley (1979); P. Z. and Silk (1979). A much more sophisticated version is also implicit in the writing of Halliday (1979a: chap,4; 1978; 1979b; 1979c). Also see, Walton (1980).
3. An excellent survey of the literature of the defence growth debate is given in Chan (1985).
4. Data are from U S. Arms Control and Disarmament Agency (ACDA) (1974). See also Pryor (1978).
5. Details of these sales are given in: U.S. Military Sales to Iran (1976) and United States Arms Policies in the Persian Gulf and Red Sea Areas: Past, Present, and Future (1977). For an excellent overall assessment of American arms sales to Iran, see Gates (1980).
6. For the details of the budgets and an interpretation of their implications, see Moran (1978/79).
7. In actuality, however, Iran produced only a very small proportion of the arms and ammunition that its military forces acquired. An excellent survey of the Iran defence industries is given in Schulz (1986).
8. See also Benoit (1978).
9. This is an extension of the original structuralist theory of development as outlined by Seers (1962). For the general problems of adjustment in developing countries see the survey by Nugent and Yotopoulos (1979).
10. See Appendix for a description and source of each variable used in this paper.
11. A description of cluster analysis is beyond the scope of this study. For an excellent discussion of the method, see Anderberg (1973).
12. Seven countries (Sri Lanka, Indonesia, Ghana, Kenya, Uganda, Pakistan, and Zambia) were excluded from the analysis due to lack of data.
13. The countries were also clustered using exclusively a broader based set of social indicators from the World Tables: 1976 (caloric intake, energy used per capita, infant mortality, life expectancy, urbanization, percent of population in schools, percent of population in agriculture, and physicians per 1000

inhabitants). Again our regression results with two groups (higher and lower levels of development) on the effect of defense on growth were statistically insignificant.

14. For an interesting discussion of this problem see Dorfman (1972) and Benoit (1972).
15. A similar method was applied by Metwally and Tamaschke (1980) to examine the impact of oil exports on economic growth in the Middle East.
16. A similar structural change was modelled in El Mallakh and Kadhim (1974).
17. Cf. Koyck (1954). A description of the interpretation of these estimates is given in Metwally and Tamaschke (1980).
18. An interpretation originally hypothesized in Neuman (1978).
19. Similar results are reported in Looney (1981).

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APPENDIX
Variables Used in the Analysis

Variable	Symbol	Source	Time Period
Civilian GDP	CIVGDP	Benoit	Average Annual Growth, 1950-65
Bilateral Aid Receipts	AID	„	Average percent of GDP, 1950-65
Investment	INVEST	„	
Private Savings	SAV	World Bank	Average percentage of Gross Domestic Investment 1960-73
Export Growth	EXPGRO	„	Average Annual Real Percent Growth, 1960-73
Exports	EXGDP	„	Average percent of exports in current price GDP, 1960-73
Private Consumption	PCONS	„	Average percent of private consumption in current price GDP, 1960-73
Incremental Capital-Output Ratio	ICOR	„	Average investment to GDP ratio, 1968-73
Import Elasticity	IMPGDP	„	Rate of growth of current imports to current GDP, 1960-73
Civilian Consumption	CIVCON	„	Percent of general government total revenue 1965
Balance of Payments Deficit	DEFGDP	„	Current account as percentage of GDP, 1965
Debt Service	DEBTSV	„	1965
Resource Gap	REGAP	„	Average percentage of imports (constant prices) minus export (Capacity to export to gross domestic income) 1960-73
Capital Inflow	INF	Chenery	Capital Inflow (net import of goods and services) as percent of GDP, 1965
Government Consumption	GCONS	„	Government consumption as percent of GDP, 1965
Government Expenditure	GOVEX	World Bank	Total current government expenditures as a percent of GDP, 1965
Defense Expenditures	DEFN	Benoit	Defense as a percent of GDP, average 1950-65

APPENDIX
Continued

Variable	Symbol	Source	Time Period
Non-tax Revenue	OR	World Bank	Percent of general government total revenue, 1965
Government Savings	GOVSAV	"	As percent of Revenue, 1965
Growth of Gross Domestic Product	GDP	Benoit	Annual percentage change, 1950-65
Growth of Defense Expenditures	DEF	"	" " " " " " " "
Growth of Imports	IMP	World Bank	Average annual growth, 1960-73
Growth of Investment	INV	Benoit	Average annual growth, 1950-65
Public Savings	PUBSAV	World Bank	As a percent of GDI, 1960-73

SOURCES: Emile Benoit, *Defense and Economic Growth in Developing Countries* (Lexington, Mass.: Lexington Books, 1973); International Bank for Reconstruction and Development, *World Tables:* 1976 (Washington: International Bank for Reconstruction and Development, 1978); Hollis Chenery and Moses Syrquin, *Patterns of Development: 1950-70* (London: Oxford University Press, 1975).

ÖZET

İran Devriminin kökenindeki nedenler henüz tam bir açıklığa kavuşmamıştır. Bir iddiaya göre savunma harcamaları ekonomi üzerinde gittikçe artan olumsuz bir etki yaparak devrimle sonuçlanan sosyal gerginliğin artmasına katkıda bulunmuştur. Bu makalenin amacı bu tartışmalı konuyu aydınlatabilmek için İran'daki savunma harcamalarının değişik ekonomik sektörler üzerindeki etkilerinin sayısal bir analizini yapmaktır.

Savunma harcamalarının nicel açıdan incelenmesi bizi savunma sektörüne yapılan tahsislerin doğrudan ve dolaylı katkılarından ötürü ekonomik büyümeyi olumlu biçimde etkilediği yönünde bir sonuca götürmektedir. Örneğin askeri harcamaların ülkeye yüklediği reel ekonomik maliyetlerin geliri arttırıcı yönde talebi genişleterek ve buna ek olarak eğitim, inşaat, teknoloji ve endüstri alanında

ekonomik dışsallıklar yaratarak zaman üzerinde ekonomik büyümeye katkı yaptığı anlaşılmaktadır. Gerek kesit gerek zaman serisi bazındaki veriler bu sonuçla bağdaşmaktadır.

Eğer devrim olmasaydı bu etkiler ne kadar kalıcı olabilirdi sorusunu cevaplamak imkansızdır. Ancak 1973-74'den sonra savunma harcamalarındaki marjinal artışların azalan katkısı göz önünde tutulduğunda, yıllık harcamalar birkaç yıl daha 1977 düzeyinde kalsaydı büyümeye olumsuz bir katkı yapabilirdi şeklinde bir sonuca varılabilir.

Ekonomik büyüme ve ekonomik gelişme kavramlarının farklı olduğunu düşünürsek yukarıda vardığımız sonuçları bir ölçüde ihtiyatla karşılamak gerekebilir. Sonuçlar sadece ekonomik büyümenin savunma harcamalarından olumsuz yönde etkilenmediğini göstermektedir. Gelişmeyi daha geniş anlamda nüfus çoğunluğunun yaşam standardında bir artış olarak tanımlarsak bunun özellikle 1973'den sonraki savunma harcamalarından olumsuz yönde etkilendiği söylenebilir.

Açıktır ki devrim öncesi İran gibi militarize olmuş bir toplum ayrıcalıkları yok ederek büyümeye yardım edebilir fakat toplumun büyük kesimi açısından gelişmeyi başaramayabilir. Bu makalenin kapsamı dışında kalmasına rağmen gelecekteki araştırmalar bu tür bir ilişkinin devrim öncesi İran'daki askeri harcamaların etkisini anlamamıza yardımcı olabilir.