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MILITARY EXPENDITURES AND HUMAN CAPITAL DEVELOPMENT: CAN THE ARAB WORLD HAVE BOTH?

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Abstract

The purpose of this paper is to present some recent empirical findings concerning the role of military expenditures in human capital formation. While the analysis involves all of the Arab countries, particular attention was given to the Gulf states.

The main findings of the study indicate that an important aspect of human capital development, improvements in literacy, has proceeded in a somewhat unique manner in the Arab world. For these countries, improvements in literacy have been much more closely associated with the military participation rate than is the case in other parts of the world. While this relationship appears to be weakening somewhat, it is still a dominant factor for these countries.

Introduction

The question of Middle East military expenditures is probably most frequently raised in an international context, relative to such problems or potential problems as the Arab-Israeli dispute or territorial sovereignty in the Horn of Africa. When and if any attention is given to the domestic significance of military expenditures, it tends to focus on the general concerns for the underdeveloped nature of the economies and social structures of these countries. Since most developing countries suffer from capital shortages that hinder rapid economic growth, high levels of military spending are seen in terms of capital diverted from civilian investment to armaments - from butter to guns.¹

However, for the oil exporters, particularly the sparsely populated countries in the Arabian peninsula, the oil price increase of 1973 has for the most part erased the problem of capital shortages. But the ready availability of capital has not removed all obstacles to development. Replacing capital shortages are labor shortages, particularly in technologically oriented skill categories, and these new constraints have proven as troublesome as the previous capital problems.

The purpose of this paper is to examine the role of military expenditures in human capital formation in the Arab world. Have military expenditures affected human resource development in a positive manner? If so, in what sense? Have patterns of military expenditure/human resource development in the Arab world differed significantly from those in other developing countries, and, if this is the case, have these patterns changed over time?

The Importance of Human Resources

The development of human resources or human capital formation is an important policy objective of governments in less developed countries. The main interest shown in the past towards physical capital accumulation leading to high growth rates per se has given way to policies which look at a much wider definition of the capital or wealth of a nation. There are several reasons for this:

1. It is now generally agreed that physical capital (or its change - investment) is only one of a number of inputs that are required for higher national output. Thus even to achieve sustainable high growth rates one needs human capital as an independent factor of production.
2. There may be cross-productivity effects such that better human capital may also increase

the productivity of the physical capital stock.

3. It is increasingly clear that growth and development cannot be automatically equated with each other. The trickle-down effect, whereby higher growth rates would automatically and within the medium term affect the poorer and more deprived sections of society, does not seem to have materialized in many countries.²

One of the major ways in which human capital accumulation can be stimulated in developing countries is through public education expenditure as well as government spending on health and other social services. Clearly, governments are by far the most important agencies in this area and can do much more than private enterprises could ever hope to achieve.

Government initiative in this area has expanded in recent years with Arab countries as a whole increasing their educational expenditures as a percent of GNP from 3.87 in 1974 to 5.08 by 1984. The corresponding figures for non-Arab countries were 3.33 percent and 4.01 percent. Health expenditures have not shown such a dramatic increase, however, increasing in the Arab countries from 1.39 percent of GNP in 1974 to 1.59 in 1984. A similar pattern was observed in the non-Arab countries where health expenditures increased from 1.32 to 1.62 percent of GNP over the 1974-84 decade.

On the other hand, the governments of developing countries also have extremely strong commitments to military expenditure to bolster security and counter threats. Aggregate defense expenditure is almost always state-induced and the consumption of scarce resources to support the military as well as reallocation of valuable inputs into armaments productions must generally be provided for in national budgets. In terms of general magnitudes Arab countries expanded their military expenditures as a share of GNP from 7.87 percent in 1974 to 12.39 percent by 1984. Militarization in the non-Arab countries was not nearly as dramatic, with defense expenditures increasing from 3.01 to 3.72 percent of GNP over the corresponding time period.

Military Expenditures and Budgetary Trade-offs

It is clear that education and health expenditure to foster human capital and defense spending to assure security are both major publicly provided goods in less developed countries and need state participation to function effectively. On the surface, budgetary tradeoffs between defense and allocations to education/health would seem to be straightforward – for a given budget a dollar increase in military expenditure will crowd out an equivalent amount of all other spending, and education and health will be reduced according to their proportion of the total. Recent research has shown that this view of the budgetary process is simplistic and does not conform with the manner in which governments often chose to prioritize expenditures.³

Econometric results reported by Deger⁴ show that there exist a large number of simultaneous channels by which these effects and counter-effects operate and the final causality is not clear cut. Along somewhat different lines, a recent examination of budgetary tradeoffs between third world arms producers and those without an indigenous arms industry⁵ found that when increasing the share of the budget allocated for defense, arms producers tended to increase the share of education, health, roads and other activities likely to increase the overall rate of economic growth. Non-arms producers, however, tended to cut a disproportionate number of growth enhancing allocations to accommodate expansions in the military budget. The net impact for these countries was lower overall growth.

A related issue, and one of significant relevance for the Gulf States in the post 1982 era of fiscal austerity, is the manner in which austerity-driven budgetary cuts are allocated. Anecdotal evidence suggests that officials follow ad hoc rules for making large contractions in a short period of time – cutting new rather than

ongoing projects, new rather than present employment, materials and travel expenses rather than personnel, and favoring ministries that are politically powerful or reducing those that expanded most rapidly in the past.⁶

Along these lines some sectors are often thought to be more vulnerable than others to reductions; social sectors, in particular are usually considered more and defense sectors less susceptible.

In general,⁷ programs once enlarged seem difficult to reduce, particularly if they generate large employment benefits. As to the choice of which sector to cut back, it is often felt that some sectors are more 'vulnerable' than others to reductions. The defense sector, in particular, is usually considered difficult to reduce, while other sectors, particularly the social sectors such as health, education and rural development, are considered vulnerable. The alleged vulnerability of the social sectors is clearly evident in the publications of the World Bank:

In the difficult past few years, budgetary crises have often meant that social services were cut back in the process of unravelling carefully designed programs.⁸

Since many human development programs are publicly funded, they are especially vulnerable when growth is threatened and budgets are under pressure . . . The recurrent costs of social programs, especially salary costs tended to make them a permanent and, therefore, vulnerable part of government budgets.⁹

Quick fix relief through disproportionate cutbacks - for example in education or rural development - may have negative consequences for the entire economy.¹⁰

Many member countries have had to reduce and reorient investment programs to curtail recurrent expenditures and to delay the completion of high priority development projects. Programs in health, education and other social sectors have been particularly vulnerable.¹¹

In the crisis situations confronting African governments, education, training and health programs are continuously in danger of becoming the residual legatees of both resources and of attention by policy-makers.¹²

Despite these rather strongly held views and such extensive circumstantial evidence, little empirical investigation has been made on the vulnerability of different sectors to reductions in public expenditures. One study¹³ that did focus on this problem examined 37 cases of budgetary reductions (countries where real expenditures declined in one or more years). Here vulnerability was loosely defined as:

1. A sector was well-protected if expenditures on it were reduced by less than the percent of reduction in total expenditures.
2. A sector was vulnerable if its percentage of reduction exceeded the average.

In brief, a simple ratio of percentage changes in sectoral expenditures to those in total spending served as the measure of vulnerability. When the ratio had a greater value than one, it indicated that the sector was highly vulnerable, while a value between zero and one indicated low vulnerability with less than proportional reductions in the relevant rate. A negative value indicated that despite overall expenditure reductions, the sector was allowed to expand.

The main findings of this study showed an average decline of 13% in real government expenditures, while the decline for the social sectors was only 5%, producing a vulnerability index of 0.4. By contrast, the index is 0.6 for administrative/defense sectors and over 1.0 for production and infrastructure. In short, social sectors were less vulnerable to cuts than defense and administration, which in turn were considerably less vulnerable than production and infrastructure - a finding quite contrary to the generally accepted view.

The fact that social sectors and defense were both relatively protected suggests that there were high political costs associated with reducing them. On the other hand, countries appeared to have been more willing to cut spending on infrastructure and production which, of course, are likely to have adverse implications for longer term growth prospects, but few early, direct and immediate costs.

This picture has been recently confirmed by McKinlay¹⁴ who found that there

was no evidence that third world military expenditures are responsive to government financial constraints of a short or long term variety.

In this respect, then, we infer that military expenditure has a life largely independent of central financial constraints, indicative therefore on its part of a substantial degree of autonomy.¹⁵

With regard to budgetary priorities, McKinlay found that while a substantial commitment was made by Third World countries to the growth and expansion of education and health expenditure, that commitment was not nearly as high as in the area of military expenditure. In this respect, military expenditure was generally taken to be a higher priority.

Finally, McKinlay found that Third World countries as a whole move their education and health expenditures in a much narrower band than their military expenditure. From this, he again concluded that military expenditure had a greater independence or autonomy of movement. The greater harmony or synchronization between budget size and education/health expenditures could not be explained in terms of the size of education/health as opposed to military expenditure. From this he concluded:¹⁶

We are inclined to that argument that the lower level of synchronization of military expenditure with budget is a reflection again of the greater independence of military expenditure. Third World governments are more inclined to move education and health expenditures in line with overall budget expansions and contractions. This leads us to infer that education-health expenditure is a rather more stable component of general government expenditure than military expenditure, which though of course ultimately entirely constrained by budget expenditure does show greater freedom or latitude in its movement . . . Although military expenditures does seem to attract some special priority and enjoy a greater degree of autonomy, our conclusion suggests that military expenditure is not detrimental to education or health expenditure.

As noted at the beginning of this section, simple zero sum models of budgetary shares are not the appropriate measure of determining the impact that military expenditures have on human capital development in developing countries. Ultimately this impact will depend not just on budgetary priorities, but perhaps more importantly on the degree of simultaneous expansion in the overall size of the economy and the government budget itself.

Another relevant factor involves the manner in which military expenditures are spent – the composition between military hardware and personnel development. In fact, the earliest theorists¹⁷ of the role of the armed forces in the development process argued that one of the most important ways in which the military establishment can contribute to economic progress was to relieve the commonly found shortages of technical and administrative manpower.¹⁸

Here, the acquisition of modern weapons was said to bring with it certain benefits in terms of technology transfer and technical training. It was argued by the theorists that the possession of such weapons made military personnel both more aware of the technological gap between industrialized and developing countries and more likely to act on this awareness than other social groups. The training received by soldiers to enable them to use modern weapons and support equipment was said to provide them with those technical skills that are of particular value for economic development.

It is quite possible in regions such as the Middle East, where educational programs have lagged, that the military also performs a more fundamental task: developing basic skills in literacy. Based on the considerations summarized above the following section attempts to determine the extent to which military expenditures have affected educational/health expenditures and ultimately the development of human capital in the Arab world.

Method of Analysis

In order to determine the relative impact of military expenditures on various facets of socio-economic performance and in particular on human capital development in the Arab World,¹⁹ an assessment²⁰ was made of the change in sixteen measures of social and economic development over the 1974-84 period.

The variables included:

1. *Military*. (a) armed forces per capita, (b) military expenditure per soldier, (c) share of military expenditures in the central government budget²¹ and (d) total military expenditures.
2. *Social Expenditures*. (a) educational expenditures, (b) health expenditures, (c) share of educational expenditures in the central government budget, and (d) share of health expenditures in the central government budget.
3. *Growth Expenditures*. (a) physicians per capita, (b) teachers per capita, (c) school age population per teacher, (d) literacy rate, (e) percentage of school age population in school.

Main Findings

The analysis produced several interesting patterns. For growth over the period as a whole:

1. Overall growth (consisting largely of the growth in income (GNP) and population) was the dominant trend in the data.
2. Human capital development was a clearly defined factor, comprised largely of increases in: (a) the percent of school age population in school, (b) teachers per capita, (c) educational expenditures, and (d) school age population per teacher. Interestingly enough, expanded literacy was not correlated particularly highly with improvements in human capital.
3. The major budgetary trade-offs involving defense, education and health were largely confined to the negative relationship between educational and defense expenditures. This relationship was fairly weak, however.
4. In terms of absolute increases in educational expenditures, there was no trade-off with allocations to defense. In general, however, the three categories of government expenditures examined here (defense, education and health) expanded at somewhat different rates, with little correlation between their patterns of growth over this period.
5. Relative to non-Arab countries, the Gulf states²² (except for Iran) achieved high levels of overall growth. However, Bahrain, Iraq and Kuwait were not able to effectively extend their growth successes to improvements in human capital. The greatest improvements in human capital were achieved by Saudi Arabia and Oman, followed by Iran. However, except for Iran and Iraq, the Gulf states were able to achieve above average increases in health expenditures.

The above average attainment of the Gulf States as a group on the expenditure and growth suggest that they, and perhaps the Arab world as a whole, have differed somewhat from the rest of the world in terms of the nature of the major interrelationships between, growth, education/human capital formation and military expenditures. To test this hypothesis, an additional assessment, this time confined to the Arab World countries as a group, was undertaken. Here the main findings indicated that:

1. In contrast to the situation characterizing developing countries as a whole, the Arab countries expanded each major area of government expenditure at a somewhat similar rate. Government expenditures were in fact the dominant trend in the Arab country data. Interestingly enough, expansion of the public sector was not closely related to overall growth of the economy (GNP).

2. Despite this fact, educational expenditures (as a share of the government budget) appear to have a fairly strong negative relationship with military expenditures. Furthermore, the share of defense expenditures in the government's budget appears to have expanded at the expense of some types of socioeconomic advancement: (a) teachers per capita (but not physicians), and (b) school age children per teacher.
3. However, no negative trade-offs between military expenditures and the overall change in socio-economic progress are apparent. In absolute terms, increases in military expenditures were positively correlated with increased: (a) educational expenditures, (b) teachers per capita, and (c) physicians per capita.
4. The Arab countries do not appear to have developed their human capital in as consistent a manner as developing countries as a whole, i.e., there is no one dimension of the data on Arab countries that can be called an increase in human capital formation. Instead, the percent of school age population in school is largely associated with the expansion in public sector expenditure, and teachers per capita with overall growth and military expenditure.
5. As with developing countries as a whole, expanded rates of literacy were not highly associated with increased levels of funding or teacher/student ratios. In contrast to the developing world as a whole, however, improvements in literacy in the Arab world were fairly closely associated with increases in the military participation rate (the level of military personnel per capita).

As might be imagined because of their numbers, non-Arab countries had more in common with developing countries as a whole than their Arab counterparts. However, several interesting contrasts with Arab countries are apparent:

1. In contrast to their Arab counterparts, non-Arab countries have achieved a fairly uniform expansion in human capital. Put differently, these countries have been able to have fairly uniform expansions in: (a) the percent of school age population actually in school, (b) the numbers of teachers per capita, and (c) the literacy rate.
2. While government expenditures were not closely related to increases in economic activity in the Arab world, non-Arab countries experienced a fairly close relationship between the growth in: (a) educational expenditures, (b) total government allocations and (c) GNP.
3. While both Arab and non-Arab countries experienced stronger budgetary trade-offs between defense and education than defense and health, the non-Arab countries do not appear to have had improved levels of literacy associated with increased military participation rates. Instead, as noted above, literacy in the non-Arab countries is fairly closely associated with other measures of human capital attainment.

To sum up, one of the major indicators of human capital formation in developing countries improvement in literacy, occurred through fairly conventional means in the non-Arab world. For these countries, increased expenditures on education have manifested themselves in more teachers per student and so on, with the ultimate effect of improvements in the overall rate of literacy. The Arab countries have apparently relied more on instruction within the military service to eradicate illiteracy. A corollary to this is that the non-Arab school systems appear to have been relatively more adept at contributing to human capital formation than their counterparts in the Arab world.

In addition to the period as a whole, several distinct patterns associated with

each of the two five year sub-periods are of interest. In terms of growth over the 1974-79 period:

1. For the sample as a whole the dominant factor was, as was the case for the entire period (1974-84), growth. This factor was largely defined in terms of increased income and population.
2. Similarly, human capital formation was again the second major trend in the data. This factor was largely comprised of (a) increases in the percentage of school age population in school, (b) the expansion in central government allocations to education, (c) the increase in teachers per capita.
3. An apparent outcome of increased resources in the educational area was an improvement in the overall rate of literacy, although this relationship may not be particularly strong. (This relationship was, however, considerably stronger than for the period as a whole).
4. During this period, expansion in the government's allocations to education was fairly closely correlated with the overall expansion of the public sector budget.
5. As was the case for the period as a whole, the main budgetary trade-offs were between military and educational expenditures. In contrast, health expenditures (as a share of the government budget) were not affected to any great extent by movements in the other two major areas of public sector allocation.
6. The military participation rate was not correlated with any of the main trends in the data. Increases in the number of soldiers per capita was, however, weakly correlated with human capital formation.

In general, therefore, the pattern that emerges for the 1974-79 period for developing countries was fairly similar to their experience over the entire 1974-84 period.

For the Arab countries during the 1974-79 period:

1. Government expenditures were more closely associated with the overall expansion of the economy than was the case for the period as a whole. In particular, health expenditures (but not allocations to education) were closely associated with both the expansion in GNP and the population.
2. Whereas the three major types of government expenditures, health, education and military, were fairly synchronized over the 1974-84 period, each followed a somewhat independent path during the 1974-79 period. In particular, during 1974-79 there was little similarity in rates of expansion of educational and military expenditures.
3. In terms of budgetary trade-offs, military expenditures expanded at the expense of both health and education. At this time, however, expanded educational expenditures were fairly highly correlated with military expenditures per soldier.
4. As with the period as a whole, improvements in literacy were largely associated with increases in the military participation rate (as opposed to expenditures on education).⁹ These patterns were stronger than over the 1974-84 period as a whole.

As was the case for the period as a whole, several marked contrasts existed during 1974-79 between the Arab and non-Arab countries with regard to expenditure patterns and socio-economic development.

1. In contrast to the Arab countries, military expenditure per soldier was associated with health expenditures (as opposed to educational expenditures).
2. The relationship between educational expenditures and the overall expansion of government expenditures was much closer than was the case for

the Arab countries.

3. Literacy was again more highly correlated with conventional inputs such as teachers, whereas in the Arab countries improvements in literacy were much more closely associated with increases in the military participation rate.
4. In contrast to the period as a whole, however, increased educational expenditures were not associated with educational performance (measured in terms of literacy, teachers per student and the percent of school age students in school).

With regard to the 1979-85 sub-interval:

1. The entire sample of developing countries experienced expenditure/socio-economic development patterns very similar to those experienced during the previous five year interval. For developing countries as a group, it appears that military participation rates are not associated with any aspect of socio-economic progress.
2. One important difference concerns the manner in which educational expenditures impact on human capital. In the earlier period, educational expenditures were highly associated with such performance indices as the percent of school age population in school, teachers per capita and (to a lesser extent) improvements in the rate of literacy. In the latter period, educational expenditures were more closely related to the simple expansion in government expenditures and GNP. At this time, there was little association between expanded government allocations to education and improvements in human capital.

With regard to differences in expenditure and socio-economic performance in the Arab and non-Arab countries:

1. For the Arab countries military expenditures were the dominant dimension in the data. Within this dimension, total government and military expenditures were highly correlated. In contrast, total government expenditures expanded with income (GNP and educational expenditures in the non-Arab States).
2. Although literacy was still associated with the military participation rate in Arab countries, this relationship did not appear as strong as in the earlier period. For the non-Arab countries there was actually a fairly strong negative relationship between literacy and the military participation rate.
3. Human capital formation was, as in the earlier period, a separate dimension in the case of non-Arab countries. However, human capital was no longer an identifiable factor in the Arab world. More specifically, there was little or no relationship in the Arab countries between educational expenditures, teachers, school age participation rates and literacy. In fact, there was a fairly strong negative relationship between improvements in literacy and expanded allocations to education.

Conclusions

The findings presented above indicate that an important aspect of human capital development, improvements in literacy, has proceeded in a somewhat unique manner in the Arab world. For these countries, improvements in literacy have been much more closely associated with the military participation rate than is the case in other parts of the world. While this relationship appears to be weakening somewhat, it is still a dominant factor for these countries.

Having said this, the reason for this pattern is not completely clear. Are the observed improvements in literacy associated with military participation due to some particular success of Arab world militaries in training recruits, or do they

simply reflect deficiencies in the civilian educational systems? Would comparable allocations to conventional schools have produced better attainment towards national literacy and skill improvement? While the results obtained above are suggestive, definitive answers to questions of this sort will have to wait until detailed analysis of the region's military and educational budgets can be undertaken.

In an earlier study, Erich Weede²³ found that in the sixties and seventies, nations with higher skill levels, as indicated by school enrollment ratios, grew faster than others. In addition he found that nations with better social discipline, as indicated by military participation ratios, also grew faster than others. While these patterns were not found in the analysis above, it appears that one important aspect of military participation in the Arab world is its potential to contribute to future growth and development. Put differently, while the conventional analysis that tends to view military and educational expenditures as competing for resources may be correct, in fact, it may be somewhat beside the point at least as far as the Arab world is concerned. In the longer term, the skills learned and the levels of improved literacy gained in military service may pay high dividends in terms of enabling the labor force to play a more direct role than in the past in contributing to national economic growth.

NOTES

1. John Thomas Cummings, Hossein G. Askari and Michael Skinner, "Military Expenditures and Manpower Requirements in the Arabian Peninsula", *Arab Studies Quarterly* (Winter 1980), p.38.
2. Saadet Deger, *Military Expenditure in Third World Countries: The Economic Effects* (London: Routledge & Kegan Paul, 1986), p.112.
3. Deger, op. cit., p.113.
4. Saadat Deger, "Human Resources, Education and Military Expenditures in Developing Countries", paper presented at the 2nd World Congress of Social Economics, Jerusalem, August 1981.
5. Robert E. Looney, "Budgetary Impacts of Third World Arms Production", *International Journal of Public Administration*, (1988), pp.601-623.
6. Cf. N. Caiden and A. Wildavsky, *Planning and Budgeting in Poor Countries* (New York: John Wiley, 1974).
7. A thorough analysis of these conditions are given in R. Goode, *Government Finance in Developing Countries* (Washington: Brookings Institution, 1984).
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12. World Bank, *Sub-Saharan Africa: Progress Report of Development Prospects and Programs* (Washington: International Bank for Reconstruction and Development, 1983).
13. N. Hicks and A. Kubisch, "Cutting Government Expenditures in LDCs", *Finance and Development* (September 1984), pp.37-39.
14. Robert McKinlay, *Third World Military Expenditure: Determinants and Implications* (London: Frances Pinter, 1989).
15. *Ibid.*, p.35.
16. *Ibid.*, p.37.
17. For example, Morris Janowitz, *The Military in the Political Development of New Nations* (Chicago: Phoenix Books, 1964, p.75; and Marion J. Levy, Jr. *Modernization and the Structure of Societies: A Setting for International Affairs* (Princeton, NJ: Princeton University Press, 1966), p.605.
18. This discussion is based on Nicole Ball, 'The Contribution of Military Training to Human Capital Formation in the Third World,' paper presented at the Biennial Conference of the Inter-University Seminar on Armed Forces and Society, 18-20 October 1985, Chicago, Illinois, p.1.

19. 1984 was the latest date for which complete and comprehensive data was available. National income account data is from: Arab Monetary Fund, *National Accounts of Arab Countries, 1974-85* (Abu Dhabi: Arab Monetary Fund, 1987). Social data was from: Ruth Sivard, *World Military and Social Expenditures* (Washington: World Priorities), various issues. Here Arab countries included: Jordan, UAE, Bahrain, Tunisia, Algeria, Saudi Arabia, Sudan, Syria, Somalia, Iraq, Oman, Qatar, Kuwait, Lebanon, Libya, Egypt, Morocco, Mauritania, Yemen Arab Republic, PDR Yemen. For comparison, the results for Iran are presented in the factor scores.
20. The method used was factor analysis. An in depth description of the method, together with a full presentation of the results are given in Robert E. Looney "Military Expenditures, Military Participation Rates, and Human Capital Development in the Arab World", Working Paper, Department of National Security Affairs, Naval Postgraduate School, May 5, 1989. Copies are available from the author upon request.
21. Here defined to include health, education and military expenditures.
22. Based on factor scores which provide an index of the relative ranking of each country in terms of its attainment of each of the major dimensions in the data. Scores above zero indicate greater than average attainment, while negative scores indicate less than average values for that factor.
23. Erich Weede, "Military Participation Ratios, Human Capital Formation, and Economic Growth: A Cross-National Analysis", *Journal of Political and Military Sociology* (Spring 1983), pp.11-20.

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