Attila Balla:

Factors Influencing Defense Expenditures

PHD Thesis

(Abstract)

BACKGROUND

The fundamental question behind the analysis of defense spending is: how much money is enough for defense. The answer to this question is a function of at least two other questions: how threatened a government (or a society) feels and how much security that government (or country) can afford. Therefore, the determinants of defense spending stem from a combination of security policy (dealing with threats to vital national interests) and fiscal policy (the allocation of societal resources).

A country's allocation for defense spending – whether directly or through various budgetary instruments – is always the result of arbitrary political decisions. The personnel strength of the armed forces, weapon platforms and equipment, as well as other defense components initially rely on military doctrine. This choice, in turn, is usually based on the politician's perception of current or expected threats or on their desire to achieve designated goals by projecting the country's military and economic power.

The estimated military strength of a potential enemy (if any), the country's geographical neighbors, economic constraints, end of conflicts, forced disarmament (Iraq), and severe political changes also have to be taken into consideration. In Russia and Germany, for instance, economic constraints were the driving forces for further defense cuts. In China, the defense

reduction process began before the end of the Cold War, and was due to changes in policy, which stated that overall economic modernization was required first.

OBJECTIVES

The subject of this thesis is the dynamics of national military spending, and specifically focuses on the determinants of military spending. It analyzes the factors determining defense expenditures in general, and in particular for the case of Hungary. Special emphasis is given to the factors related to the membership in military alliances, and the issue of conscript versus all voluntary militaries since these topics are two of the most debated subjects in relation to Hungarian defense expenditures.

In the pursuit of national security, countries dedicate a large share of their resources to the purpose of enlarging and maintaining the defense sector. It seems valuable to investigate in detail the determinants of these spending levels to explain why such a substantial proportion of the limited national resources are often spent on defense. Several factors will be hypothesized as explanatory factors of the defense budget and its changes over time. The potential factors have been deduced and constructed from various country studies and international comparative studies of defense spending.

Recently the Hungarian society tends to attach growing importance to (a) the financial consequences of the political and military decisions (i.e. the level of defense expenditures) and (b) what happens to taxpayers' money. This thesis presents and discusses the basic facts and figures of Hungary's defense spending during 1975-1999. It also provides a model of Hungarian defense spending.

THE RESEARCH QUESTIONS

This thesis attempts to answer the following research questions:

1. Why can't the market determine the optimal level of defense expenditures, i.e. what is the justification for the government's active involvement in the defense sector?

2. What are the most appropriate measures of defense expenditures?

3. What are the significant independent variables influencing the level and tendency of defense expenditures?

4. Are the tendencies observed in Hungary comparable to the rest of the world and what are the Hungarian specifics?

SCOPE, LIMITATIONS AND ASSUMPTIONS

All types of studies of military spending are limited by the availability of information, and would benefit from an upgrade in the quality and comprehensive coverage of the data on which they are based. During the 1980s and 1990s, research institutes have been striving for more transparency, accuracy and availability of military expenditure data worldwide. The results so far are not promising. Institutions like the US Arms Control and Disarmament Agency (USACDA), the International Institute for Strategic Studies (IISS), the Stockholm International Peace Research Institute (SIPRI) and the International Monetary Fund's Government Finance Statistics have been producing military expenditures series for about the last thirty years. However, they themselves have often recognized the very uneven quality of their data.

Researchers consistently employ one series or another, stating that the absolute military expenditure figures and tendencies between series are approximately the same. This is clearly false on both counts. Tendencies vary between series (except when they use one another's data), and the absolute expenditure figures can often vary as much as 300% between sources for a given country. Because the developers of data sets on military expenditures use different definitions, criteria, estimation procedures, and reporting resources, one can obtain very divergent analytic results from these sets.

In the case of Hungary, one faces particular difficulties trying to find a reliable, comparable long-term time series of defense expenditures data, because of significant changes in statistical and accounting methods, and the structure of the state budget. Moreover, the true extent of the Hungarian defense spending was, as in all other Warsaw Pact states, a closely guarded secret, deliberately confusing running costs with equipment, procurement and hidden subsidies. Furthermore, the officially concocted Ministry of Defense (MOD) figure sometimes contradicted the data available from the Ministry of Finance (MOF.).

With respect to the model of Hungarian defense expenditures (see Chapter 6), it should be noted that estimates could be examined under two scenarios: using current policies, or using alternative policies. The forecast in the thesis explicitly assumes stability of the fundamental tendencies over time. If there are major changes, such as diplomatic realignments, outbreak of new conflicts, or a sudden change in ideological make-up of governments, relationships will probably change and the results of the forecast will no longer match actual future levels of defense spending.

METHODOLOGY

The overall purpose of this thesis is to analyze the determinants of military spending at the macro-level. No single approach was selected, but the overall emphasis is empirical and qualitative.

The primary technique utilized in this thesis is descriptive analysis of historical trends. The study contains references to models found in the literature using mainly to types of quantitative techniques: (1) regression analysis and (2) over-time trend analysis. There are two general approaches applied by scholars to derive the models for estimation (regression or trend equations). One of them uses tight theoretical specifications, deriving the equation from constrained maximization of welfare functions. This approach is very characteristic to the scholars of the public choice school. The other, more empirical, approach involves beginning from very general equations, which

allow for a variety of functional forms, dynamic effects, economic and strategic influences and political factors; then searching for restricted versions.

Regression analysis and trend analysis, however, are not the only techniques applied to analyze the relationship between military spending and other political and economic variables. Leontief and Duchin analyzed the impact of alternative levels of defense expenditures on individual regional economies and on the world economy as a whole using an input-output (or inter-industry) model. Another methodological approach can be found in Deger and Sen. Examining India's and Pakistan's defense expenditures they try to model an arms expenditure process between two adversaries using a differential game model.

ORGANIZATION OF THE THESIS

This thesis consists of six chapters following the introduction. Chapter 1 describes why defense is considered a market failure and why governments take the provision of defense in their hands. Chapter 2 gives an overview of the methodology and the different approaches found in the literature of defense expenditures. Chapter 3 defines defense expenditures, while Chapter 4 gives a list of its possible alternative measures. Chapter 4 also introduces the notion of Purchasing Power Parity and its applicability in the defense sector. Chapter 5 examines in detail the independent variables, i.e. the factors influencing defense expenditures. Special emphasis is given to the comparison of the conscript and voluntary militaries. Chapter 6 contains a statistical model of the Hungarian defense expenditures. Chapter 7 summarizes the scientific results and findings of the thesis.

RESULTS AND FINDINGS

The thesis achieves the following new scientific results:

- Mapping, grouping and analysis of the definition, measures and influencing factors of defense expenditures and their application to Hungary.

- Design and estimation of a statistical model for the Hungarian defense expenditures.

- The application of the PPP concept for the defense sector and the comparison of the NATO countries' defense expenditures using the PPP concept and market exchange rates.

- Comparison of the conscript and all voluntary militaries' costs using economic theory and the adaptation of the analysis for the Hungarian case.

THE MAJOR FINDINGS OF THE THESIS ARE AS FOLLOWS:

The major findings are grouped according to the new scientific results described above.

Notion of defense expenditures, its measurement and the influential factors

Most analysts operationalize the concept of defense burden by dividing a country's total defense budget by its GDP. There is, however, no shortage of alternative measures, such as defense spending per capita, defense spending as a percentage of the government's total budget, the rate or amount of change of defense spending. Naturally, the impact of economic, political, and other variables on defense spending (even the ranking of the countries according to their defense burden) is quite different, depending on which of these measures is used in an analysis.

Defense expenditures are determined by a combination of economic, political and military variables. The economic factors are the obvious starting

point in most studies on public expenditures. The national income and its growth rate represent important determinations of defense spending.

Evidence suggests that economic strength is a factor contributing to the determination of military spending, but not the only one. Another significant driving force behind military spending is the power and leverage of the armed forces relative to other national actors. Countries with powerful armed forces tend to spend heavily on the military.

The degree of transparency in military procurement, and other budgetary considerations are also important. The more transparent the procurement process becomes the less likely the military budget will be inflated.

The size of the military budget is conditioned by geo-strategic concerns both at the regional and international levels. Finally, increases in military expenditures reduce the availability of funds for socio-economic development projects. In short, increased military spending seems to adversely affect efforts for economic development and thus should be contained.

Both rich and poor countries in times of crisis temporarily increase their military outlays, sometimes to unsustainable proportions of the national product. In many cases outlays fall once the immediate crisis is past. The proportion of GDP allocated to military spending in different countries and regions of the world can be expected to rise and fall periodically in response to the development of interstate or regional crisis as well as the overall level of worldwide tension.

Several factors contributed to the decline of Hungarian defense expenditures in late 1980s and early 1990s. With the end of the Cold War, the collapse of the Soviet Union and fairly consolidated foreign relations within the region, it became increasingly difficult for the military to claim additional resources for its traditional role of combating an external enemy. The power of the military to claim scarce resources compared to the bargaining power of competing interest groups significantly declined.

In addition to these political factors, economy has been the primary force driving Hungarian defense expenditures. It was found that during the 90s defense expenditures were expanded and shrank in line with the general trends of the economy.

The model of the Hungarian defense expenditures

The tendencies observed in Hungary are similar to the ones described in the international literature. The behavior of the defense expenditure per GDP ratio justified the preliminary expectations. The selected independent variables explained 86.4% of the variance in the dependent variable.

Purchasing power parity

The conversion of the military expenditures of different countries into comparable units is a significant challenge. The official exchange rates may be very biased for different (economic, political) reasons and, because of differences in purchasing power; a dollar in one nation may buy a higher 'real' level of defense than in another. As it is suggested in the thesis, a possible solution can be the use of a purchasing power parity (PPP) measure, either on GDP level or a specialized defense sector PPP.

The comparison of the NATO countries' defense expenditures using PPPs gives a more favorable picture about the Hungarian defense expenditures.

Conscript versus all voluntary militaries

Transforming a conscript military into an all-voluntary force impacts a wide range of actors in the society. It is misleading to concentrate only on the budget of the MOD. The transformation increases the countries gross national income, positively impacts the countries average wealth, and consequently reduces the indirect costs of defense.

APPLICATION OF THE FINDINGS

The findings of this thesis can be applied in the following areas:

- The results of the PPP analysis can support the Hungarian position in the NATO burden sharing process

- The results of the conscript vs. all military force analysis can be applied in the ongoing debate about the future transformation.

- The knowledge of the factors influencing defense expenditures can help the MOD in the fight for scarce government resources.

- The results can be incorporated in the curricula of the National Defense University's and the Budapest University of Economics' Defense Economics Departments.

FINAL CONCLUSIONS

The criticisms concerning the military reform in Hungary have often been truthful and appropriate, however it shouldn't be forgot that the task facing Hungary and other Eastern-European countries is historically almost unprecedented. It is therefore unwise to expect progress in defense reform to exceed the progress made in general democratic and economic reform.

Even so, Hungary has done a lot in the short time since 1990. Our invitation to NATO is a clear indication that the country has convinced our allies that it would not be simply a user of collective security but also would a provide real contribution.