

EFFECTS OF FOREIGN THREATS  
ON  
MILITARY EXPENDITURE: TURKEY-GREECE CASE

The Institute of Economics and Social Sciences  
of  
Bilkent University

by

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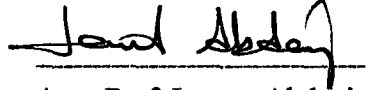
In Partial Fulfillment of the Requirements for the Degree of  
MASTER OF BUSINESS ADMINISTRATION

in

THE DEPARTMENT OF MANAGEMENT  
BILKENT UNIVERSITY  
ANKARA

July 2004

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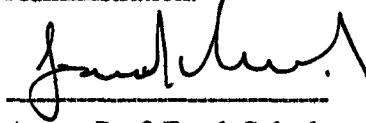
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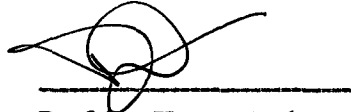
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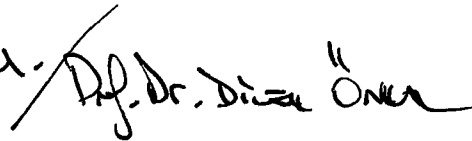


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## ABSTRACT

### EFFECTS OF FOREIGN THREATS ON MILITARY EXPENDITURE: TURKEY-GREECE CASE

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July 2004

This thesis analyzes the effects of foreign threats on military spending and mainly, it researches the rivalry between Turkey and Greece. Granger Causality (1987) is used as methodology and data covers the time period 1977-2003. The model is based on the studies, which researches arms race. There is no agreement reached in literature, which researches the arms race between these two countries, although many studies accept that the foreign threat is one of the determiners of demand for military expenditure. The results indicate that Turkey military spending is Granger caused by Greek military expenditures, which represents perceived foreign threat.

Keywords: Military Expenditure, Greece, Turkey, Granger Causality

## ÖZET

### DIŞ TEHDİDİN SAVUNMA HARCAMALARI ÜZERİNE ETKİSİ: TÜRKİYE- YUNANİSTAN ÖRNEĞİ

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Yüksek Lisans , İşletme Bölümü

Tez Yöneticisi: Yrd.Doç.Dr. Levent AKDENİZ

Temmuz 2003

Bu çalışma, dış tehdidin savunma harcamaları üzerine etkisini ve özellikle Türkiye-Yunanistan konusunu incelemiştir. Bu çalışma ile, Granger Causality methodoloji olarak kullanılmış ve data 1977-2003 tarihlerini kapsamaktadır. Model, silahlanma yarışını araştıran çalışmalara dayanmaktadır. Birçok çalışma, dış tehdidin savunma harcamalarının belirleyici unsurlardan biri kabul etmekle birlikte, iki ülke arasındaki silahlanma yarışı konusunda literatürde bir fikir birliğine ulaşamamıştır. Sonuçlar, Türkiye'nin savunma harcamalarının, algılanan tehdidi temsil eden Yunanistan askeri harcamaları ile Granger ilişkisi olduğunu göstermektedir.

Anahtar Kelimeler: Savunma Harcamaları, Türkiye, Yunanistan, Granger Nedenselliği

## ACKNOWLEDGEMENTS

I would like to thank to Asst. Prof. Levent Akdeniz for his matchless helps and his invaluable supports during preparation of this thesis. I, also, thank to my wife and my son for their supports and patience.



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## CHAPTER 1

### INTRODUCTION

Defense spending has crucial importance for every nation because it is highly related with the issues such as to survive on earth or disappear in the dark corner of the history. In this point of view, these expenditures have not been carefully studied and their existence has not been argued enough until late 1980s. But after early following the appearance of new world power order which ceased the historical rivalries, the high defense spending expenditure caused ardent arguments in many democratic countries. Because, nowadays, most people agree on what UN Committee for Development Planning stated, "The single and the most massive obstacle to development is the worldwide expenditure on national defense activity" (see Jolly 1978). Similar to UN Committee, UNICEF reported, "If it was possible to allocate resources to fundamental development issues, such as health and education, the world we live would confront fewer social and environmental problems and less

destructive conflicts and wars.”<sup>1</sup> In the same report, it is figured that the industrialized countries have spent more for health and education whereas they have decreased military expenditure 40% as a percentage of GDP since 1960. But in developing countries, health expenditures stay lower than military and education expenditures, although military expenditures show a declining trend. The trade-off among health and education expenditure -in other terms these are the opportunity cost of defense spending- and military expenditure, although there are also different arguments such as concluded in Sezgin and Yıldırım’s study<sup>2</sup> (2002), and the governments’ choices and policies about national security and economic development (Heo 1998) are the issues which will be argued more in near future.

Military expenditure is defined by SIPRI (The Stockholm International Peace Research Institute) similar to NATO’s;

Military strength is an output and military expenditure is input, which consists of the total cost of personnel and military equipment. Military expenditure includes current and capital expenditure on the armed forces, including peace keeping forces, defense ministries and other government agencies

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<sup>1</sup> <http://www.unicef.org/sowc96/8military.htm>

<sup>2</sup> A study was made by Sezgin and Yıldırım (2002) and by applying Seemingly Unrelated Regression (SUR) estimation and by using data represent years between 1924 and 1996, they found that there is negative trade-off between defense and health while this trade off positive between defense and education and the trade-off is more clear between education and health spending in budget components.

engaged in defense projects, paramilitary forces when judged to be trained, equipped and available for military operations and military space activities. This should include personnel, operation and maintenance, military research and development, military construction, procurement and military aid.<sup>3</sup>

The reasons why it is important to study military expenditure in the context of analyzing national security and foreign policy objectives can be listed as below based on the ideas of Deger and Sen (1990):

- The countries' allocation their resources may give a signal about the rule-makers' security approaches and priorities.
- As stated in the definition made by SIPRI and NATO, military expenditures are composed from different components and the countries' choices to rank these components may give a chance to recognize the military capability and their force structure.
- The long-term effects of military expenditure can be analyzed and some results may be obtained in the point of national economy.
- As Richardson (1960) concluded that increase on defense expenditures are the bearer of news of a war because it is a real indicator of arms race between or among the countries.

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<sup>3</sup> <http://projects.sipri.se/milex>

- The governments have difficulties to convince their citizens to need for high military expenditures and the studies and researches about military expenditure may be used as tools.
- To analyze the burden of military expenditure on countries' economic strength may lead other countries to use non-military policy tools. Nowadays, it became increasingly supported that countries are reluctant to see war as a major political tool in World.
- In foreign policy context, countries or governments may demonstrate their approaches to other country or countries by changing military expenditure volume and it may be an indicator of their attitudes.
- Being a member of an alliance is a way to increase security level for a country. To balance the shares among all members of this alliance, military expenditures may be used and the free-riders can be convinced to pay more for it.

Hartley and Sandler (1997) stated that military expenditure can be used to explain many different issues of international affairs, national policies and economic dimensions and whether the economic power of a country is weak or strong, it is a very important problem that countries have to find a solution by following different strategies, for example, they may choose

to be a member of an alliance to get a chance to enjoy with the opportunities of being a free-rider or to follow an independence or neutrality policy to be willing to pay the price, to have nuclear power, to support industry based on military requirements.

Contrary to military expenditure studies' importance, it is difficult to find any reliable and official sources, which provide data around the world and consist of information about this issue to make possible to find out certain conclusions (Collier and Hoeffler 2001). This is the main obstacle that discourages the researchers. It is a conclusion of states' unwillingness to declare each components of the military expenditure because it may be an indicator of force structure. Besides it is difficult to make a dependable study, because the defense industry is under control of governments and the expenses are not stated correctly (Brozaska 1995).

Which type of data will be used in empirical analysis is another difficulty, because there is no consensus whether to use levels of military expenditure or share of military expenditure out of GDP. To use share of data has some statistical advantages, researcher may not confront the difficulties of using exchange rate, inflation, deflators or no need to convert the expenses into a common currency. Jurgen (2002) noted that to

use share data is appropriate, when the research is about the economic effects of military expenditure e.g. the relation between growth and military expenditure. But if the problem is about asserting military threat or evaluating arm race's presence, the stock data is appropriate, because it may give more clues about countries' military capabilities.

In this thesis, it is aimed to come to a conclusion about demand for Turkish military expenditure and mainly, the effects of foreign threats on this expenditure. As stated before, because of lack of dependable data, especially about the undemocratically governed countries, Greece case is chosen and its economic burden on Turkish economy is tried to conclude. Ozyıldırım and Criss (2001: 516) noted, "The welfare of a country depends on the level of consumption and the level of security (which is perceived to be an increasing function of its own weapon stock)". And they also stated that if the hostile attitudes between two nations increase, government leaders choose to allocate more money to arms. In Turkey-Greece case if it is possible to decrease the effects hostility what advantages may be obtained in economic perspective may be concluded or in other words what will be the opportunity cost of increases on rivalry between two countries which are under the condition of facing with severe economic constraints. The other aim of writing this thesis is to

contribute to economics of defense policy in Turkey and how the foreign threats are effective on this subject. And finally, although, Turkish defense spending has a significant effect on the Turkish economy, the determinants of the defense spending have not been extensively investigated. Brauer (2002) indicates that the nature of the demand for Turkish defense expenditure is not clearly known. With this study it is aimed to fill the gap in the Turkish defense economics literature.

The rest of this thesis is organized as follows: Chapter 2 covers the reviews of previous studies about the reasons of defense spending, foreign threat's effects on military expenditure, arms race studies, methods to study on military expenditure and the studies about Turkey-Greek rivalry. In Chapter 3, the world military expenditure, the security concerns of Turkey and the need for Turkish defense expenditure are outlined in the perspective of international affairs. In Chapter 4, the information about the effects of military spending on national economy is given and mainly, the important issues in Turkish economy are chosen like growth, inflation, employment, inequity and industrialization. The information about data (covers the period 1977-2003), methodology (Granger causality) and the results of analysis can be found in Chapter 5. Chapter 6 is the conclusion part of the thesis.



## CHAPTER 2

### LITERATURE REVIEW

#### **2.1. The Factors Which Influence Military Spending**

There are a number of studies to find out the variables on the right hand side of the equation when the demand for military expenditure is on the left hand side. One of the studies was done by Schneidier (1988) and he listed the factors to determine the need for defense spending; international events, government type, public opinion, budgetary limits and economic policies, perception of foreign threat, alliances. According to Ball (1988), it is generally agreed that the level of military expenditure is determined by five factors. He listed them as follows: "The influence of external conflicts, the requirements of internal security, domestic bureaucratic and budgetary factors, the influence of the armed forces themselves, and the role of the major factors such as military coups, regimes and arm sales."

When analyzing the factors that determine US military spending, Looney and Mehay (1995) listed these factors as international wars, especially,

Vietnam and Korean War, (the expected burden of Iraqi and Afghanistan may be added for an updated study), administrations and electoral cycle, public opinion, congress, perception of Soviet threat, arms control agreements, rivalries between army and navy, alliances.

Dunne and Perlo-Freeman (2003) noted that expenditure of neighbors for reasons other than military threat may influence the countries' military spending. For example; emulation might be a reason for the behaviors which seem as rivalry. This may be another explanation when in the absence of real signals of military need; governments choose to follow policies on the behavior of their neighbors.

Collier and Hoeffler (2002:2) stated, "The level of military expenditure is strongly influenced by the expenditure of neighbors." According to their research military expenditure is influenced by both external and internal threats. If the political power of military is on the core of governing, it may, also, increase the spending. The other important issue is that military expenditure increase when the financial resources are available. Besides, the need of security, military expenditure is affected from the lobbying of interested parties, and the financial resources available to the government. They calculated that countries spend 3.4% of GDP on defense on average but the variation is between 0.1% and 46%.

In their research, Collier and Hoeffler (2002) determine the military expenditure of neighbors by averaging five years period of GDP and used the data for the period 1960-90. In their regression, they find that governments are sensitive to the level of military expenditure spend by neighbor countries when determining their own. According to Dunne and Perlo-Freeman (2003), there is an exception here; if there is no indicator of military need, when the country's government considers the other countries' behaviors as arrogant, they tend to increase their military expenditures basic need from other reasons be influenced by the expenditure of other countries. According to researchers, population is seen as a factor that determines demand for military expenditure and they assumed that countries with larger populations feel them in security from external threat and they spend less military expenditure.

In addition to security needs, lobbying may influence military expenditure. Hoeffler and Collier (2003:6) stated, "The most evident beneficiary of military expenditure is the military itself." In this point of view, they estimate that greater the political power of the military interest, the higher would be military expenditure. After using Polity III measure (Jagers and Gurr 1995) of the degree of democracy, which rates the

general openness of political institutions on a scale of 0 (low) and 10 (high); they saw that the variable and the coefficient is significant. They concluded that a fully democratic society spend two percent of GDP less than a society which has undemocratic structure, controlling for other characteristics.

The third part, which affects the military spending, is ability to pay. Actually, increase on per capita income cause higher military spending, but less than proportionately. In fact, security appears to be luxury. The share of GDP devoted to military spending strongly increases the level of per capita income. Military expenditure is analyzed under the title of government expenditure and increase in income causes increase on total government expenditure as a share of GDP. So, it can explain the relation between the income and military expenditure. Sandler and Hartley (1995) explain same relation; when the GDP of a country increases; this country will have "both more resource to produce and greater means to provide protection."

There are many different explanations why some countries are eager to spend a large amount of money to defense issues when the others are reluctant to pay for it. But three motives are believed to be common in the scope of international affairs (Castillo *et al.* 2001). First, the countries

which enjoy with a good economic growth and to be role-player in foreign affairs in future they make greater defense spending; secondly, the countries which are under threats of other countries increase military expenditure in order to be in safe; and finally, the countries which follow aggressive foreign policies pay much money for the military not to give possibility to be in domestic chaos. According to first hypothesis (ambition hypothesis), there is a considerable relationship between the economic power of a country and the defense expenditures; because it is suggested that countries' desire to be safe and to seek power are much related with their military capabilities. The main reasons for this hypothesis can be explained with the behaviors of the countries according to their approaches to common assumptions in international affairs; the world's lack of central authority which can protect countries from the aggressive behaviors of neighbor countries, no certainty about the intentions of other countries, desires to keep a certain amount of military capability to threaten other countries, the effects of states' wealth over foreign policy. In the same perspective, all countries try to obtain extra economic and military power, because as modeled by Smith (1980), aggregate social welfare is a function of security and civilian output, and security is formed by the volume of military purchases and the strategic

environment and it is considered that it includes other countries' military expenditure. The second hypothesis is fear hypothesis and it states that military spending can be determined by the countries' level of security. States perceive threat by analyzing the aggregate economic and military capabilities of neighbor countries; geographic attributes of the countries, military technologies and ideologies of the neighbor countries (the offense-defense balance) and the aggressive behaviors that the neighbor countries show. The third hypothesis is the legitimacy hypothesis and the policy-makers have a tendency to increase military expenditures because they try to deflect domestic problems. Castillo *et al.* (2001) concluded that "Compared with the importance of defense expenditures, it is surprising to see that the last two hypotheses have not been examined enough by the authorities" in their study.

## **2.2. Ways to Analyze the Effects of Foreign Threats on Military Expenditure**

In many studies, factors which have effects on desire to pay more for military spending are used in various ways and in different forms. Researchers tried to get a conclusion by evaluating their importance and following the aim of their research. Especially, foreign threat is accepted

as inevitable one all among these factors. Because of the difficulty to measure foreign threat as a quantitative way, most studies assume that the other countries' pay for security may show the density of threat.

Generally, to evaluate the effects of foreign threats on military spending, researchers follow three ways, to observe the route of arms race if there is, to emphasize the effects of foreign threats when determining the demand for military expenditure and an alternative model, game theory.

The definition of arms race made by Intriligator and Brito (1990:59) can be a good example to recognize the effects of foreign threats on military expenditure. They define arms race as, "Dynamic process of interaction between countries and their acquisitions of weapons". Richardson (1960), who worked on the mathematical models of arms race among countries, was the pioneer of these studies (Majeski and Jones 1981). He assumed that there are three motives which cause the nation whether it increase or decrease its preparation for war or spending for defense. 'Revenge and hostility', an independent of existing armaments, 'fear' causes positive effect on expenditure and 'economic policies' has negative effects because the countries have tendency to economize the expenditure. Richardson model was criticized by a number of researchers or they use these models after making some modifications. Majeski and Jones (1981) noted that

empirical applications of this model were unsatisfactory. Smith *et al.* (2000) wrote these disadvantages as;

“Regressions estimating dynamic linear reaction functions between the military expenditures of the two countries tend to show wrong signs, lack of cointegration, or extreme sensitivity to minor features of the specification such as the choice of dummy variables or exact definitions of the data, which are themselves subject to serious measurement difficulties.”

In the other study, made by Chang, Tsai and Lai (2001) which is about the effects of anticipated foreign military threat on arms accumulation and they concluded that when the country's utility function is separable between consumption and the weapon stocks, the military expenditure will increase and be permanent, at the same time realization of the foreign threat. But if the consumption and the weapon stocks are inseparable, and then it is difficult to say expenditure will increase or decrease.

The other perspective is to determine the demand for military expenditure when evaluating the effects of foreign threats on defense spending. In this view, there are a lot of studies are made and researchers try to find the burden of the rivalry policies on budget and the effects on economy. Hartley and Sandler (1990) compiled the studies about ten different



countries' the demand for military expenditures after categorizing them by following different characteristics such as developed or developing nations, alliances which they are member, regional conflicts, whether they have nuclear forces and the policies they follow.

To find out the economic burden of rivalries and arm races on military expenditures by applying game theory, a few study were made by researchers and one of them which was done by Smith *et al.* (2000) was summarized in Turkey-Greece case part.

### **2.3. Turkey-Greece Case**

Until now, many researchers have chosen Turkey-Greece case to get conclusion about threats and military expenditures, because their international relations follows a zigzag route, one day is good and another bad, their histories also consist many interesting stories that is worth of dealing with and more importantly, their policy-makers tend to explain the high defense spending on the base of neighbor's hostile actions. But unfortunately, there is no consensus whether the military spending of these two countries are affected each other or not. Studies report different conclusions such as there are unilateral, bilateral, no causality, because of

each deploys different methodology and using different data covering different time period.

In Greek part of the issue, a study is done by Georgiou, Panayotis T. Kapopoulos and Lazaretou (1996). In this study the authors used three models which are based on the works of McGuire (1977), Desai&Blake (1981) and a vector autoregression specification. They found that there is a little validation that two countries adjust their military expenditures according to another's, or in another terms, there is no significant arm race between two countries after applying these models. They concluded, "Rivalry could take many other forms such as periodic exchanges of bellicose rhetoric; economic, political and diplomatic maneuvering; lobbying with existing alliances; political, historical and cultural propaganda."

Another study was done by Kollias (1996) who investigates how sensitive the Greek military expenditure is according to the Turkey's threats. He modeled Greek demand for military expenditure and he used Engle-Granger cointegration methodology. He concluded that Greek military expenditure is highly affected by Turkey's military capabilities in the long run and "less affected by joint defense policies vis-à-vis a common enemy" and probably this is the outcome of Greece's weakness on the

geographically small size and deficiency to counteract in population. And his other conclusion that as long as the disputes between two countries continue, it can be expected that Greek military expenditure will stay higher compared to other NATO and EU member countries.

Dunne, Nikolaidou and Smith (1999) stated that there is no arm race between two countries after applying ECM and VAR models and they also add that there is some evidence of cointegration in Greece and Turkey. They note that it is hard to say that there is arm race between countries in the long run and the results what they have found are "difficult to interpret and extremely sensitive to minor features of the specification."

Kollias and Paleologou (2002) reported that there is arm race between two countries according to the results of the causality methodology employed by Hendry and Ericsson and Davidson *et al.* They used the data which covers the time period 1950-1999. According to the significance of the Wald test, they concluded, "Greek defense spending is not autonomous rather its size of Turkish Military expenditure to larger extent than Turkish military expenditure depends on Greek defense spending."

In the study done by Kollias and Makrydakis (1997), the authors found that there was a systematic arms race between countries but only until the date 1985 when the second structural break occurs.

One of the studies was done by Majeski and Jones (1981) about Arms Race Modelling. In this study, the authors made a complete work by asserting an alternative model to Richardson model, which may not give satisfactory results. Because they note that the changes in nation's military expenditure's effects of military threat and economic burden may distribute more than definite numbers of years. They adopted 'statistical causality analysis' which can be adopted in economic time series. They examine twelve dyads which are proposed as the members of mutual arm races. Among these dyads, Turkey and Greece are classified in interdependent armament processes because their casual relationship based on the  $S^*$  test of is greater than .75 probability. When applying three staged Pierce-Haugh procedure (1977), in the second stage they calculate the cross correlations between the residual series for each dyads and the lag is found as -2,-1 and 0 in the results of statistical tests, for Turkey-Greece case. According to authors, Turkey-Greece defense expenditure does not show an ordinary interaction pattern and they respond to other's current expenses instantaneously. This behavior may be based on the need

to follow other's attributes and give importance to arms. This capability may be the result of achieving policy-making process.

The gaps in the literature about comparison of Turkey-Greece defense economics was tried to be filled by Brauer (2001). In his articles, he presented a broad literature review and he criticized existing studies. According to Brauer, Greece and Turkey's military expenditures tended to move together until 1985 and this race if there were and finished after then. Brauer (2002) suggested in the long run "Turkish defense spending can be determined by other factors such as NATO commitments, fears of Islamic fundamentalism, desire to suppress Kurdish militants."

Sezgin and Yıldırım (2002) evaluated which variables contribute the determination of the demand for Turkish military expenditure. They used ARDL (Autoregressive distributed lag approach to cointegration) methodology which is outlined in Pesaran and Shin (1999) for the period 1951-1998. The results of this study suggest that Turkish defense expenditure is mainly determined by the defense expenditure of the allies (NATO) and that of the enemies in the short run. However Greek defense spending does not have any significant effect on Turkish demand for defense spending in the long run contrary to the spending of NATO.

Smith *et al.* (2000) used a game theoretical method, to estimate the strategies followed by Greece and Turkey over the period 1958-1997. To find out the arms race between countries, which treats as “a simple repeated two by two game like Prisoners’ Dilemma”, they try to observe whether Turkey or Greek is the leader or follower in arm races under the conditions of playing tit- for-tat hypothesis or vice versa. But Likelihood Ratio tests rejected this hypothesis. To determine their probabilities of high share or low shares of military spending independently mixed strategy case applied and Likelihood test accepted this case. But authors conclude that the results were not satisfactory to state that there is “a traditional action-reaction type arms-race in which military expenditure is a response to an external threat represented by the other countries military spending.”

## CHAPTER 3

### TURKISH MILITARY EXPENDITURE

#### **3.1. World Military Expenditure**

After World War II, bipolar world power system appeared and countries placed one side of the alliances, either NATO or WTO, if they do not want to follow independency policy in international affairs. The tension between these blocks made the countries be in alarmed for war, sometimes in war. Their economy was burdened with high defense expenditures and mainly alliances determined the size of expenditures. For example, in the beginning of 1980s, the NATO Defence Planning Committee invited its members to make a real increase of military expenditure by 3% per year, although few countries approached this invitation positively but expenditure in the small countries in the southern flank, Greece and Turkey, increased rapidly, at least until the late 1980s

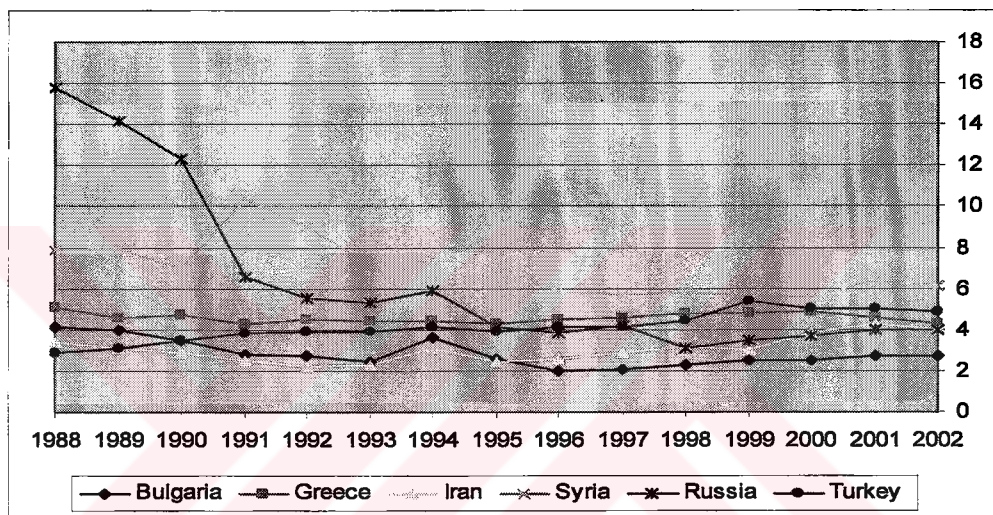
(Deger and Sen 1990). Military expenditure continued to rise significantly for most countries, at least until 1986-1987, although the lion's share of this increase was taken up by the USA. After the walls breached down, it was expected that the military expenditures all over the world would follow a decreasing trend and the payments for guns showed also, a reducing trend almost in every country. Actually NATO's military expenditures decreased from 4.5% to 2.6 in late 1990s. But after 1998, because of the regional conflicts and war on terrorism, the trend changed its way and military expenditure began to increase and according to SIPRI report in 2003:

It increased by 6% in real terms to \$ 794 billion in current prices. This is the 2.5% of world GDP and \$128 per capita. The current level of military expenditure is 14% higher in real terms than it was at the post-cold war low of 1998, but it is still 16% below its 1988 level, when world military expenditure was close to its cold war peak.

After 11 September 2001 events, USA's defense expenditure increased sharply and war on terrorism makes the countries spend more for security instead of cold war policies. Middle East countries also increase military spending due to expectations of their public. On the other hand, after the conflicts on the wane in Balkans, the countries tend to decrease defense expenditures and in this point of view, it may be expected to a decreasing trend in Greek spending.



After Gulf War in 2003, because its burden is not accounted yet, it seems that the spending will increase more around the world and Turkey's will. Turkey's security is still under the threats of terrorism both internationally and nationally and foreign policies followed by its neighbors. Figure 1 presents the military expenditure as a share of GDP in the region.



**Figure 1. Military Expenditure as a Share of GDP in the Region**

Source: Adapted from SIPRI Yearbook 2003

### 3.2. Turkey's Defense Expenditures

Turkey's defense burden is one of the highest in NATO member countries. Turkey military expenditure has some important characteristics. For example, unlike the world's decreasing trend, Turkish military expenditure has been continuously increasing (Sezgin and Yıldırım 2002).

In 2002, defense expenditure of Turkey reached TL 13641 trillion amounting to 4.9 % of GDP, whereas the NATO average was 2.1%. Moreover, Turkey is also one of the leading arms importing countries in the world. But it may be accepted that it is not an abnormal number after dealing with its geographic position and conflicts around it. Its location is in the unstable area. Its neighbors are Iraq, Iran, Syria, Greece, Bulgaria and the Former Soviet Union countries. Turkey is, also, located in the center of five important regions and these are;

- Mediterranean Region which is the intersection of various important sea routes,
- Middle East region which has the biggest petroleum reserves,
- Black Sea region which surrounded by important countries in terms of their histories, economies, cultures and military efficiencies. The Bosphorous and Dardanelle can be argued in this region which are the gate of these countries which try to contact with other countries in the world,
- Balkans which may be accepted as the heart of European continent but one of the most unrest
- Caucasus region which have natural energy sources.

As stated below, in the history of the country, Turkey is an important role player in the world's security order in terms of its strategic location. After Turkish Republic was established in October 29, 1923, by the helps of incredible efforts of Great Turkish Leader, Mustafa Kemal Atatürk, and Turkey tried to be a member of respectful countries all over the world. Actually, it had found a place in this arena mostly in those days. But after World War II, the new bi-polar world order was not willing to see Turkey as a role-player in international affairs. (Gönlübol 1996). The "Truman Doctrine" changed this attitude and U.S foreign policy-makers started to support military forces of Turkey and Greece (Kongar 1999). This Doctrine was based on political area and later; it was followed by "Marshall Aid" in economical area. But Turkey was still alone against Russian threats, because it was isolated from other international institutions like OECD, established in 1948 and NATO, established in 1949 until February 18, 1952. After paying the price, the Turkish martyr ratio was the second highest in UN troops following U.S. numbers in Korean War (Kılıç 1956); Turkey was invited to be a member of international organizations e.g. NATO and OECD. After being NATO member, Turkey tried to enforce its security by constituting Regional Treaties. In 1953, Turkey, Greece and Yugoslavia established a "Mutual Friendship Treaty" in Ankara. The second attempt

was “Baghdad Treaty” which was signed by Turkey, Iraq, Pakistan, and U.K. and U.S. accepted to be observer position. But these attempts made Turkey and Russian relations worse. Until Cyprus crisis, Turkey was seen as a speaker of NATO policy in Middle East and Caucasus. According to the Kongar (1999), Cyprus became the determiner in Turkish Foreign policy after 1964, mostly because of the attitudes of developed countries against Turkish actions on Cyprus.

Until 1989, the time that Russia started to follow Perestroika and Glasnost Policies, Turkey became a military and economy post for U.S. and European countries. In this period, Turkey was face to face with other threats and conflicts in the region in addition to disputes with Greece.

Nowadays, Turkey wants to guarantee its security by being a member of European Union. But Turkey’s efforts to integrate with European Communities are not supported enough, so, this desire is not expected to be achieved in near future.

After 1990s, world’s power share changed in the advantage of USA, but conflicts arouse all different regions of the world and unfortunately, Turkey has placed in the core of these conflicts; because of its geo-strategic and geo-politic location. On the contrary to expectations about Turkey’s

importance will decrease, last fifteen years have not passed very easy for Turkey to establish a security circle around it. It is acceptable when it is thought that Turkey has a glamour history and it desires to place in world power equilibrium.

**Table 1. Turkey's Military Expenditures**

| Years           | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999  | 2000 | 2001 | 2002  | 2003  |
|-----------------|------|------|------|------|------|------|------|------|------|-------|------|------|-------|-------|
| % of GDP        | 3,50 | 3,80 | 3,90 | 3,90 | 4,10 | 3,90 | 4,10 | 4,10 | 4,40 | 5,40  | 5,00 | 5,00 | 4,90  | N/A   |
| US \$ (Million) | 6373 | 6551 | 6891 | 7618 | 7462 | 7652 | 8567 | 8926 | 9352 | 10326 | 9994 | 9161 | 9748  | 9888  |
| TL (Trillion)   | 1388 | 2365 | 42,3 | 77,7 | 157  | 303  | 612  | 1183 | 2289 | 4168  | 6248 | 8844 | 13641 | 17473 |

Source: SIPRI Yearbook 2004

### **3.3. Turkey's International Affairs with Neighbors**

#### **3.3.1. Turkey-Armenia Relations**

Armenia, with Greece, has declared Turkey as a "Strategic Enemy" (Manisalı 1994). The problems with this country were based on the hostilities between the Ottoman and Russian Emperor and according to the Russian Policies, Armenians were tried to be nationalized in order to weaken Ottomans' strength in the region. In that time, Turkish Army had to fight against the Armenian militants in different fronts.

After Turkish Republic was established, there were no big problems happened with Armenians until 1975. But after that year, ASALA which was an Armenian Terror Organization made many terrorist activities against Turkish Embassies in different countries until 1984 to finalize their mission.

The relations between these two countries became worrying when the Armenia attacked Azerbaijan in 1993 and occupied 20% of the country and these assaults continued until the Azerbaijan improved its relations with Russia. The relations cannot be expected to be on road until the Armenia gives up its desires to establish a “Big Armenia” and imperialist policies against Azerbaijan. The ‘on-called genocide during World War I’ claim is another big problem which disturbs Turkey in international affairs.

### **3.3.2. Turkey-Russia Relations**

Turkey-Russia relations showed different trends in history, generally hostility could be observed. When these two were empire, the power balance changed time by time in advantage of other one’s. But Russian government’s contributions have been stated in various history books during Turkey’s Independence War and about one decade after war. Until

World War II, the escalation continued but after war, Russians behaviors turned to be a hostile attitude. Because Russians tried to achieve their historical desires, they follow a policy to reach Southern countries and seas, so, Turkey was perceived as the main obstacle in front of this desire. After the communist-governed Russia fell down, the relations between Turkish Republic and Turkish based countries in former Soviet Union became the main problem in the relations. Russian's desire on controlling sea-roads, Turkey-Armenia relations and both countries' efforts to penetrate to Balkans, bi-lateral accusation about terrorist activations can be stated as problems between these two countries. Russia's powerful army with nuclear guns, according to Öznal (1992), the number of nuclear guns approached to ten thousand, causes a great impact on Turkey's threat perception.

### **3.3.3. Turkey-Syria Relations**

Syria was one of the satellite countries of the Soviet Union in cold war period. And Turkey-Syria relations were, mainly, shaped in accordance with Turkey-Russia relations. Syria still insists on perceiving Hatay case unsolved, actually finished in 1939. The other problem has been appeared from the Middle-East Region's main fear, deficiency in water. To persuade

Turkey to proportionate more water for itself, Syrian government followed a policy to secure PKK terrorist leader and militants in its lands. But after the Turkey's pressure, they gave up this policy and a possibility of war was lasted. Following the invasion in Iraq, USA put pressure on Syria for the reason of feeding terrorist activities in its lands and the relations between Turkey and Syria turned to normal way, because Syria does not want to be isolated. But if Syria would recover its international reputation which was destructed in Gulf War II, then, it can be expected that the problems rise about water and Hatay again.

#### **3.3.4. Turkey-Iraq Relations**

The basic problems with Iraq were similar to Syria. Iraq started nuclear programs (Taşhan 1994) during Iran-Iraq war and it became a big threat in the region when Saddam Hussein on the rule. But after Gulf War, the country try to struggle with the internal conflicts and it is expected that the new order in the country would not establish as USA considers also. This period may bring many unexpected problems for Turkey. The PKK/KONGRA-GEL militants, still, stay in Eastern Iraq and USA is reluctant to take action against them. The militants also declared that they give up cease-fire after July 1, 2004 and this potential problem which



remained unsolved will cause headache again for Turkey in near future.

The politics of Kurdish groups also bother Turkey, because the lack of authority in the region and their traditional militarist tendencies (Wallerstein 1998) and it can be expected that these unrest groups cause a big headache for Turkey.

### **3.3.5. Turkey-Iran Relations**

Turkey-Iran relations have followed a smooth trend and after the treaty which was signed in 1639, there has been no border changes (Başdoğan 1985). Secularist Turkish Republic always leaves a gap in the relations with this country; because Iran's foreign policy is based on exportation of regime, Humeynism. Because of the economic burden of the war against Iraq during 1980 and 1988, Iran's military capabilities are not efficient to be a threat for Turkey. But its tendency to support terrorist activities in its lands cannot be met with pleasure in the perspective of Turkey.

### **3.3.6. Turkey-Bulgaria Relations**

In history the relations with Bulgaria have been followed a normal route until the time Bulgaria's attempts to apply assimilation policy to Turkish citizens in its borders. More than three hundred thousand of them were sent to Turkey (Gönlübol 1996). After the communist regime left the

government, Turkish-Bulgaria relations came on the route and in near future, no threats from this country are perceived.

### **3.3.7. Turkey and Greece Relations**

#### **3.3.7.1. The Brief Story of Relations**

Both two countries are located in Balkan territory and past 15 years proved that turmoil and instability was the main character of this territory. Both two countries are the important players in the region and after corruption of bi-polar world order; both countries arrange their security concerns on national conflicts and regional disputes or rivalries (Kollias 1996). Kollias (1996) notes, "the strategic interaction between the two countries has two contradictory aspects: they are state-to-state adversaries, while they are NATO member countries."

The milestone in the relations between two countries was the Lausanne Peace Treaty and after then, these countries relations based on mutual friendship especially, by the helps of Turkish President Mustafa Kemal Atatürk and the Greek Premier Venizelos (Brauer 2002). Although there were problems like the rights of minorities, both leaders did not give up their policies against each other.

In 1952, both nations joined NATO after participating in Korean War. Greece was more eager to join NATO, because they had already defeat communists after a five-year civil war between the years, 1944 and 1949. But, in 1963, after gaining independence from Britain, Cyprus became the biggest problem between two countries. Cyprus experienced its first session of trouble in that year. In 1964, Turkish widespread action was prevented by the 'brutal diplomatic note' written by US President Johnson (Krebs 1999). This was followed by a second round in 1964; as a result of Greece send troops to island in 1965, and the peace maintained by the efforts of Greek and Turkish speaking committees. 1967 was the year there was a conflict on Cyprus for the third time since its dependence. But after Turkey's threatens to intervene militarily, Greece agreed to withdraw its troops. In summer of 1974, a Greek-inspired coup led not only to a Turkish invasion of the northern part of the island but also to the fall of the Greek military dictatorship in Athens. Brauer (2002) summarizes the conclusion of Turkey's military action on island as, "In the consequence of the invasion, Turkey now holds about 40 percent of the island's territory and 17 percent of the population live in northern Cyprus. Turk-Cypriots declared an independent Turkish Republic of Northern Cyprus (TRNC) on 15 November 1983, an entity recognized only by Turkey."

Not only is Cyprus a problem but also there are other problems. For instance; oil exploration in the Aegean Sea in March 1974, made the period from 1970 to 1980, was eventful. There are four other primary areas of dispute between Greece and Turkey (Brauer 2002). These are;

1. Disputes over the extent of territorial waters in the Aegean,
2. Disputes over the extent of territorial airspace,
3. Disputes over continental shelf rights,
4. Disputes over Greek militarization of certain Aegean islands.

#### **3.3.7.2. The Comparison of Military Expenditures**

When the data compiled from various SIPRI yearbooks, it can be observed that the years between 1950 and 1966, mainly, both countries defense expenditures show a downward trend, although there are small peaks in years 1954, 1961 for Turkey and in years 1952, 1956 for Greece (Figure 2). In years between 1960 and 1967, Greek military expenditure was lower than Turkey's, on average 4% of GDP while Turkey's was 4.6%. But in 1967, Greek's line interacted with Turkey's and both decreased to 4% until the 1974. Both Greek and Turkish military expenditures in terms of percentage of GDP experienced with sharp increase in 1975, after when Turkey took the almost half of island, Cyprus. (Georgiou *et al.* 1996)

**Table 2. Key Statistics of Turkish and Greek Defense Spending**

|        | 1951-1970 |          |        | 1971-1980 |          |        | 1981-1990 |          |        | 1991-2002 |          |      |
|--------|-----------|----------|--------|-----------|----------|--------|-----------|----------|--------|-----------|----------|------|
|        | $\mu$     | $\sigma$ | $\rho$ | $\mu$     | $\sigma$ | $\rho$ | $\mu$     | $\sigma$ | $\rho$ | $\mu$     | $\sigma$ | P    |
| Turkey | 4,68      | 0,38     |        | 4,95      | 0,84     |        | 4,22      | 0,76     |        | 4,34      | 0,57     |      |
|        |           |          | 0,33   |           |          | 0,69   |           |          | 0,56   |           |          | 0,61 |
| Greece | 4,82      | 0,82     |        | 5,50      | 1,09     |        | 6,29      | 0,93     |        | 4,53      | 0,21     |      |

$\mu$  mean value of the variables

$\sigma$  standard deviation

$\rho$  cross-correlation coefficient

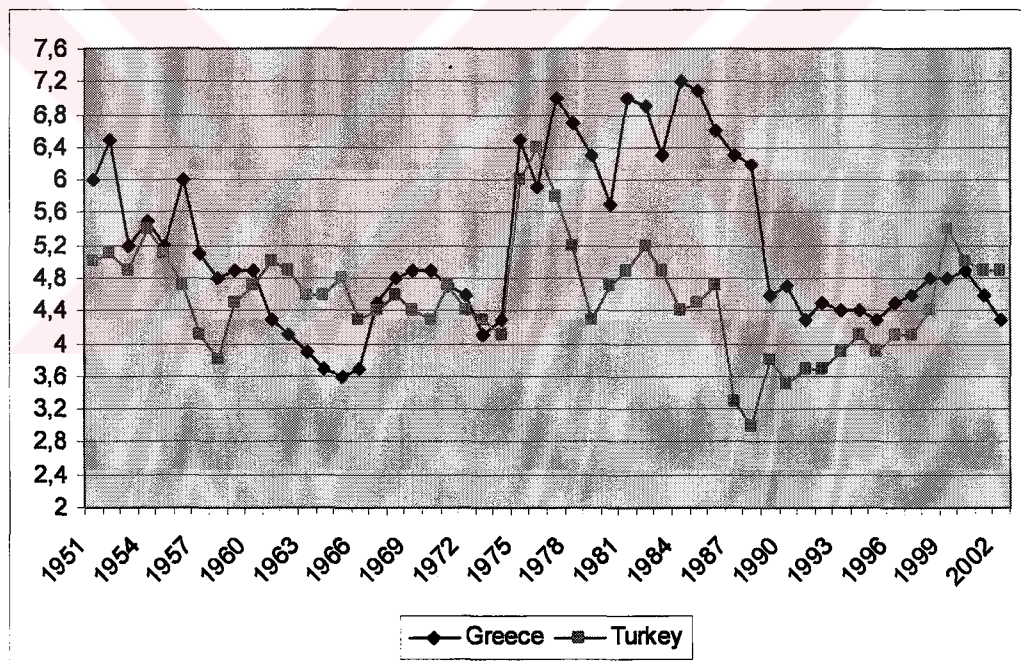
Source: Adapted from SIPRI Yearbook, various years

Greek defense spending stayed above 6%, except in year 1980 until 1986 after Turkey's military action against Greek-Cypriots' brutal behaviors. Indeed, its average 6.3% in the 1980s, compared with 5.5 in the 1970s, while the standard deviation fell from 1.09% in the 1970s to 0.93 % in the 1980s. Cross-correlation coefficient for 1970s, 80s and 90s have a positive large value and is strongly significant. This may be indication of the existence of an arm race between the two countries, mainly in 1980s and 90s.

The other results can be observed in terms of government style. Turkish democracy movements are cut down because of military actions in the years 1960-1961, 1971-1973 and 1980-1983. As a result of first military intervention to democratic stalemate, Turkish military expenditure

increased about 0.5% percent. Between 1967 and 1974, Greece was governed by military dictatorship. It can be observed that there is same upward trend for Greece and when the military junta takes the control of government.

The lines again follow the same path until 1985. After 1988, Greek military expenditure stayed almost same while Turkey's continue to rise. After 2000, Turkish military expenditure exceeds Greek's, in terms of percentage of GDP.



**Figure 2. Turkish and Greek Military Expenditure as a Share of GDP, 1951-2002**

Source: Adapted from various years SIPRI Yearbooks

## CHAPTER 4

### EFFECTS OF MILITARY SPENDING ON ECONOMY

After the Cold War was ended, the economists put more efforts to evaluate the consequences of countries' defense policies. Lapidus (1993) emphasizes how military expenditures affects negatively the nation's possible development and he counts them as; military expenditure absorbs scientific and engineering efforts from other more productive economic areas, prevents investments for Research and Development studies in other technologies, makes slower infrastructure investment and increase budget deficits when interest rates are high. In other words, defense spending decreases productivity growth. Great Turkish Leader Mustafa Kemal Atatürk emphasized the challenge in balancing the military expenditures and national economy in these words; "Every modern state must consider its economy before its army and navy. But the size of internal and external threats on Turkish Republic can not be neglected. Otherwise, national economy and the other national assets can not be defended."

The effects of military spending can be analyzed in different macro economic issues but five important issues are summarized in this thesis, because they are also seen as the drawbacks of Turkish Economy. Actually, contrary to growth-military spending studies, it is difficult to find detailed studies in defense spending effects on inflation, inequity, unemployment and industrialization.

#### **4.1. Military Spending Effects on Growth**

The relationship between the military spending and growth is intensively researched in recent years. But there is no consensus reached about the relationship between the defense spending and the effects of defense spending on growth.

One of the earlier studies about the defense-growth relationship was done by Benoit (1973) in 1972. Benoit concluded that there is a positive correlation between military expenditure and economic growth after making a correlation analysis among 44 Less Developed Countries. He was followed by other scholars like Weede (1983), Kennedy (1983), Atesoğlu and Muller (1993) and Biswas (1993) who supported Benoit's conclusion (Candar 2003). According to authors who believe that the military spending has a positive effect on growth, military spending



stimulate aggregate demand and purchasing power, besides its helps on technological improvements, research and development studies and modernization and deployment.

But there are people who assert opposite idea like Deger (1986). These scholars believed that military expenditure affects economic growth in negative way because this spending has two different types of opportunity cost. When governments spend more money for security, they can allocate less money for public in terms of health and education.

Secondly, to finance military expenditures governments increase taxes on private sector and it reduces the portion of private investment. Deger (1986) noted that "Theoretically, however, there is no clear-cut prediction of the direction of causation between military expenditures and economic growth. On one hand, defense spending may retard growth through what is generally referred to as an investment "crowding-out" effect, or a displacement of an equal amount of civilian resource use." On the other hand, Deger (1986) accepts that the positive effects of military spending on growth through "Keynesian-type aggregate demand effects." Smith and Deger's (1983) study supported this idea; they developed a model to examine the interaction of military expenditure, savings and growth estimated from cross-sectional data for 50 LDCs (Less Developed

countries). They concluded that military expenditure has small positive effect on growth through modernization effects and larger negative effects through savings. They also said that the similar conclusion made for OECD countries. Military spending can affect economic growth either negatively, through a crowding out of investment, or positively, through an expansion of aggregate demand.

Third group of the arguments can be summarized as there is no significant relationship between military expenditure and growth. They supported this idea because they believe that military expenditures affect growth positively or negatively according to the economic conditions of a country in a certain period of time. (Biswas and Ram 1986). In their study, Dakurah *et al.* (2001) evaluated the casual relations between defense spending and economic growth in 62 developing countries by using Granger Causality methods. And the conclusions are diverse as the literature, which was written on this subject there were in unidirectional causality 23 countries and bi-directional causality in 7 countries.

Military spending can affect economic growth either negatively, through a crowding out of investment, or positively, through an expansion of aggregate demand. According to Brauer (2001), inconsistency in the

studies is a result of applying different econometric techniques, using different sample size or using different economic models.

#### **4.2. Military Spending Effects on Inflation**

As stated in the part of defense expenditures effects on economic growth, there is also no consensus about the defense spending effects on inflation and there were a few studies on the literature about this issue. Adolph Wagner was one of the earlier researcher and he found that the increase on defense expenditures during wartime and it stays same after the war, because the situation happen like this, after war, the countries face with the high inflation (Celik 1999). H.C. Adams also agreed with Wagner and he concluded that high government expenditures cause price increases (Erginay 1984). When Benoit (1972) studied about the relationship between the growth and defense spending, he also found that high defense spending has a small effect on prices but it is not completely harmful effect and this small change has a positive effect by forcing production capacity to product more (Reich 1972). But Şimşek (1989) contradicts this assertion if the military expenditure is met with the increasing tax and budget deficit sources in these cases, military expenditure causes inflation. Melman stated that the military expenditures are mainly, unproductive expenditures and because of this

reason their economic burden is higher than other budget expense factors (Karaçay 1995). According to Melman, the military expenditures use the same sources with other sectors, and it helps to increase prices because of high demand but low supply situation. Ward, Davis and Chain (1993) supported Melman's studies and in their study on Taiwan, they found that generally military expenditures have a positive effect on the economy, but causes price increases.

Actually, if the country tries to meet military expenditures from tax increases or from budget deficits, it is expected that military spending will cause inflation so; the statistical researches will give different conclusions in different economies.

#### **4.3. Military Spending Effects on Employment**

There are a few studies in the defense economics literature to find out the relation between the military spending and employment. Sweezy and Baran (1975) made a research about this issue and they found that after World War II, the defense expenditures during war, created a huge employment source and they concluded that these expenses prevent the US from a big economic crisis. Szymanski's studies supported this conclusion and in his research which covers the period 1950-68 and 18 OECD

countries, he found the military spending reduce unemployment but prevents growth (Chan 1986).

But Smith (1977) stated that there is positive correlation between the unemployment and military spending, after his research consist 8 developed countries in 1973. Chester (1978) proved Smith's assertion in USA sample but he was failed to find any correlation in other countries in his research. For Turkey, a study was done by Yıldırım and Sezgin (2002). They stated that the existing studies are not unilateral on the effects of military spending on employment.

Two opposite impacts can be observed; one is that the military expenditures increase the number of employed people all around the country as a conclusion of deploying jobless people for military operations or supporting duties or as a conclusion of increasing demand for unemployed people in national economy related to the military spending. And the second one is that the military expenditure increases the number of people unemployed due to effects of technological improvements if the army spends money for new weapon systems which need less labor force. In this study Sezgin and Yıldırım (2002) concluded, "The change in military expenditure has a negative and significant effect on employment."

#### **4.4. Military Spending Effects on Inequity**

Indeed, there are a lot of studies made about the relations between the inequity and unionization and the democratic governing policies. Hamid and Galbraith (2003) prepared a paper and they concluded that there is a significant and positive but weak effect on inequality. In another words when the military expenditures are decreased, the income inequality could be reduced. But it is clear that effect of GDP and income is stronger than this relationship. The authors indicated that there may three important effects of military spending on inequality. First one is interested with when the military spending is increased, the allocation of scarce sources will be captured and the other social issues like education and health care will be portioned less and it will reduce the special advantages based on these social issues. Second effect is a result of tax policy. Because the military expenses are feed by taxes, they noted, "It may cause disproportionate on the middle-class' income". Lastly, in point of social view, the military spending may be used against social groups, which are stick to the egalitarian values, in some countries. One note has to be added here; when the military is basically based on human power then, it may be expected that military spending in such armies may deploy more labor

and this help to reduce inequality and if the army follows technological improvement scope then the military spending in these types of armies will cause inequality.

#### **4.5. Military Spending Effects on Industrialization**

Defense industry has both positive and negative effects on national industry. It has a locomotive effect on industry because it the increases improvements on future technology, it encourages the investment almost in every sector and enforces them to enlarge production capacity. It helps to prevent bottlenecks of over capacity problems and many drawbacks in money flows because it demands different branches of industry firms. Defense industry uses high quality products and it encourages all industry firms to improve quality standards of goods.

On the other hand, it misleads firms to make waste production. The employment on defense industry can not be canalized other sectors because it is difficult to deploy these experienced work force in other production areas and it is very difficult to adapt the defense industry on the technological changes (Şimşek 1989).

## CHAPTER 5

### METHODOLOGY AND RESULTS

#### 5.1. Methodology and Data

In this thesis, Granger (1987) causality methodology is applied. It is always kept in mind what Stavrinou (1992) said; "Granger causality is different from its philosophical construct, because it is an economic construct." Granger causality makes it available to see how much of the  $y$  variable can be explained by past values of  $y$  and if the lagged values of  $x$  are added whether the explanation is improved. If the lagged  $x$  helps to predict  $y$ , it can be said, " $y$  is Granger-caused by  $x$ , but that does not mean that  $y$  is the effect or the result of  $x$ ."

And in this thesis, it is searched that whether the lagged Greek Defense expenditure or in other terms perceived Greek threats helps to predict Turkish Defense expenditure.



In this study, the data about military expenditures were taken from SIPRI, which is considered as a reliable source, and data covers the period between 1977 and 2003. Military expenditures of two countries are in constant 2000 US dollars and they were transformed to logarithmic values. These data about military expenditure includes personnel (current and retired, social services), operations and maintenance, military research and development, military construction, procurement and military aid.

Before Granger causality approach, the Augmented Dickey-Fuller (ADF) Unit Root Test (Dickey-Fuller 1981) is applied to test whether the variables are stationary and order of integration.

## **5.2. Unit Root Tests**

If the basic statistical properties of time series remain constant, these series are accepted as stationary. But if time series are non-stationary, this causes one of the problems in econometric analysis, because they may reduce the dependability of the results of regression. To overcome with this problem, one may take the difference of the series until the series become stationary. In this study, Augmented Dickey-Fuller (ADF) unit root test is used to test the variables' properties.

When performing the ADF unit root test, three regressions are conducted; both trend and constant, only constant and finally neither constant or trend. But the best results obtained from the regression, which includes trend and constant for Turkish military expenditures and trend for Greek military expenditures. The other important issue is the choice of lag. The lag length is much related with the number of observations and to save the degrees of freedom, it should be small. When selecting lag length, Akaike Criterion is chosen, starting from 1, different lag lengths are used. In this thesis lag length is chosen 1 is according to results of Akaike Criterion because it was the smallest one.

In Dickey-Fuller tests, regression can be determined as;

$$y_t = \mu + \rho y_{t-1} + \varepsilon_t,$$

where  $\mu$  and  $\rho$  are parameters and  $\varepsilon_t$  is assumed as white noise. By adding lagged difference terms of the dependent variable  $y$  to the right-hand side of the regression, ADF controls higher-order correlation.

$$\Delta y_t = c + T + \alpha y_{t-1} + \beta_1 y_{t-1} + \beta_2 y_{t-2} + \dots + \beta_i y_{t-i} + \varepsilon_t$$

where,

$\Delta y_t$  : Change in  $y$

$c$  : Constant

$T$  : Trend

$\alpha$  : Coefficient

$\beta$  : Coefficient

$t$  : Period (year)

And the hypothesis is:

$H_0$  :  $\alpha = 0$  (null hypothesis is that the series is integrated of order one, non-stationary)

$H_1$  :  $\alpha < 0$  (alternative hypothesis is that the series is integrated of order zero, stationary)

ADF unit root test is conducted in level, first difference and second differences; the results are given in Table.3. Turkish military expenditure variable qualify as I (0) i.e. stationary while Greek military expenditure have unit root in level. But Greek military expenditure is stationary in I (1), stationary.

**Table 3. Unit Root Test Results in Levels and First Differences.**

|                    | Turkish Miley (log) |              |              | Greek Miley (log) |              |              |
|--------------------|---------------------|--------------|--------------|-------------------|--------------|--------------|
|                    | I(0)                | I(1)         | I(2)         | I(0)              | I(1)         | I(2)         |
| ADF Test Statistic | <b>-4,71</b>        | <b>-7,38</b> | <b>-7,20</b> | <b>-2,06</b>      | <b>-5,35</b> | <b>-6,69</b> |
| 1% Critical Value* | -4,37***            | -4,39***     | -4,42***     | -3,72             | -3,73***     | -3,75***     |
| 5% Critical Value  | -3,60**             | -3,61**      | -3,62**      | -2,99             | -2,99**      | -3,00**      |
| 10% Critical Value | -3,24*              | -3,24*       | -3,25*       | -2,63             | -2,63*       | -2,64*       |

Note: \* = 10, \*\*5%, \*\*\*=1%, level, respectively. The reported values are obtained from Eviews version 4.0.

### 5.3. Cointegration Test

By conducting cointegration test, it could be determined that whether group of two or more series are cointegrated or not. As Engle-Granger (1987) proposed that a linear combination of two or more non-stationary series may be stationary. "The stationary linear combination is called the cointegrating equation and may be interpreted as a long-term equilibrium relationship among the variables."

Cointegration requires non-stationary data series of the same order integration. In this study Johansen's Full Information Maximum Likelihood is used as estimating the cointegrating regression and test of integration between variables involved. The results are given in Table 4. According to results, the variables are in cointegrated; Johansen's trace statistic confirms that there is no cointegration between variables. When conducting cointegration test, five deterministic trend cases which are considered by Johansen is followed. The results on the table are based on the forth case, the level data  $y_t$  and the cointegrations have linear trends.

**Table 4. Johansen Cointegration Test Results.**

| Hypothesized No. of CE(s) | Eigenvalue | Max-Eigen Statistic | 5 Percent Critical Value | 1 Percent Critical Value |
|---------------------------|------------|---------------------|--------------------------|--------------------------|
| None **                   | 0,640046   | 26,5663             | 18,96                    | 23,65                    |
| At most 1                 | 0,249257   | 7,4540              | 12,25                    | 16,26                    |

Trend Assumption 4 and lags interval (in first differences)

\*(\*\*) denotes rejection of the hypothesis at the 5%(1%) level

Max-eigenvalue test indicates 1 cointegrating equation(s) at both 5% and 1% levels

#### 5.4. Granger Causality

Final step in the empirical study is to reach the results of causality. Direction of the causality is determined by the test of the significance of the groups of variables  $\alpha_1$  and  $\beta_1$  that have been estimated with the least of squares method.

Granger causality is used by Eviews version 4.0. Software, which runs bivariate regression of the form for all possible pairs of (*lgr*, *ltr*)

$$lgr_t = \alpha_0 + \alpha_1 \Delta lgr_{t-1} + \dots + \alpha_i \Delta lgr_{t-i} + \beta_1 ltr_{t-1} + \dots + \beta_i ltr_{t-i} + u_t$$

$$ltr_t = \alpha_0 + \alpha_1 ltr_{t-1} + \dots + \alpha_i ltr_{t-i} + \beta_1 \Delta lgr_{t-1} + \dots + \beta_i \Delta lgr_{t-i} + \varepsilon_t$$

where,

$\Delta lgr_t$  : the first difference of the log of Greek military expenditure

$ltr_t$  : the log of the level of Turkish military expenditure

$lgr_t$  : the log of the level of Greek military expenditure

$u_t$  : disturbance term ( normally and interdependently distributed )

The null hypothesis is that the Greek military expenditure does not Granger cause Turkish military expenditure in the first regression and that Turkish military expenditure does not Granger cause Greek military expenditure in the second regression. In order to reach reasonable beliefs about the longest time over which one of the variables could help to

predict the other, different lag lengths are picked. The results are given in Table 3. for lag 3 and according to F-statistics it can be concluded that Turkish defense expenditures Granger caused by the Greek military spending or perceived Greek threats. The null hypothesis that Greek military expenditures Granger caused by Turkish military expenditure is also rejected. Moreover, Greeks' threat perception is more significant.

**Table 5. Causality Test Results Based on Granger Model**

**(Sample period 1977-2003)**

| Null Hypothesis:                         | Critical value of F | F-Statistic | Probability |
|------------------------------------------|---------------------|-------------|-------------|
| GREMILEX does not Granger Cause TURMILEX | 4,24                | 2,50        | 0.09681     |
| TURMILEX does not Granger Cause GREMILEX |                     | 2,67        | 0.08279     |

Note: The reported values are obtained from Eviews version 4.0.

## CHAPTER 6

### CONCLUSION

In this study, the effects of foreign threats on military expenditure are searched by using Granger Causality. Even though, there is no agreement in previous studies about arms race between these countries, the test results can be inferred that there is a respective hypothesized relationship between Greek and Turkish military expenditure. In addition to significant F statistics at 10%, the probabilities of both null hypotheses are low. This means that the lagged values of Greek military expenditures jointly have a statistically significant impact on Turkish defense spending, and the lagged values of Turkish military expenditure jointly have a statistically significant impact on Greek military expenditure. So, Granger feedback ( $X \leftrightarrow Y$ ) exists between Greek military expenditure and Turkish military expenditure.

Last events also supported the results. For example, Turkish Defense Minister Vecdi Gonul and his Greek colleague Spilios Spiliotopoulos declared that Turkey and Greece agreed on reducing defense expenditures in May 17, 2004. Both countries have a desire to improve the bilateral

relations and fight against all countries' mutual enemy, terrorism. Turkey's decision to cancel buying new helicopters and tanks, which were cost up to \$ 10 billion and Greece's action not to buy 300 armored personnel carriers can be accepted as the strong proofs in the way of mutual friendship. (Anadolu Agency, 17/05/04)

But this effort cannot be accepted as a signal about relations without any problems. In April 24, 2004, in the referendum to vote to reunite Cyprus, Greek Cypriots did not support UN plan. If the plan was approved both sides find a chance to be European Union member. As stated in Turkey-Greek relations, Cyprus was the biggest problem and it would be solved and a new era might be started in international affairs of two countries. It seems that it will be difficult to find better solutions in near future. This may be an indicator that suspicious from other will continue and although the leaders of two countries declare peace messages to their people. When the other problems are considered, it can be expected that Turkish and Greek defense spending continue to follow its trend.

Reduction in Turkey's defense expenditure may not last forever. Turkey's geographic importance and location in the center of regional conflicts urge Turkey to pay much money for arms. Lastly, Kurdish militants announced that they have started to make terrorist activities again and Islamic terrorists



continue to threaten Turkish Security internally. If Turkey is able to find frank friends to fight against terrorism, to follow a sustainable foreign policy and reduction in military might be easier. After Former Soviet Union split into different countries, many people thought that Turkey's strategic role lost its importance. But during the Gulf War in 1991, and US interventions to Afghanistan or Iraq in last two years proved that Turkey is the key factor in terms of its geographic characteristics, cultural potential and arbitrator capabilities among religions. Middle East Project is a very good example for this assertion and U.S. wants to see Turkey in applications of the Project, which was launched in February 1998. According to this program, three activities are targeted; to respond quickly to current affairs, to establish a peace process in the region. Turkey is the one, which controls all area at any time and strength of Turkish Army makes Turkey a respectful strategic partner in war or peacetime in this project or some other.

Contrary to its importance and power, it is very surprising to see Turkey out of European Union. The past, present and future of Turkey shows that Turkey deserves positive approaches from people around it. In the world where war has not been stopped and Turkey's threat perceptions to its security continue, it would not be expected to see reduction in military expenditure whatever its cost.

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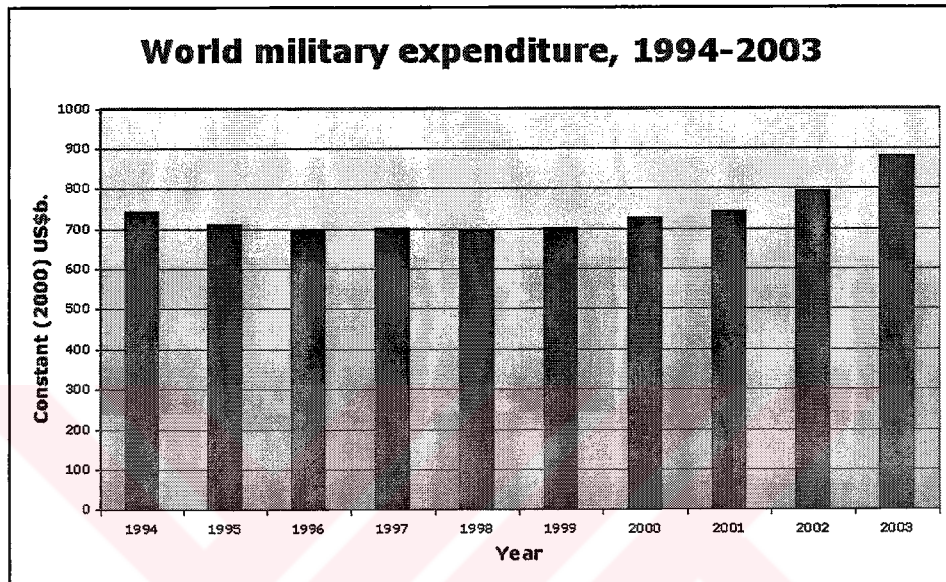
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## APPENDIX A. World Military Spending



Source: Copied from SIPRI Yearbook 2004

## APPENDIX B. Major Spenders (2003)

### Military expenditure: in MER dollar terms

| Rank | Country          | Level (\$b.) | Per capita(\$) |
|------|------------------|--------------|----------------|
| 1    | Usa              | 417,4        | 1419           |
| 2    | Japan            | 46,9         | 367            |
| 3    | UK               | 37,1         | 627            |
| 4    | France           | 35,0         | 583            |
| 5    | China            | 32,8         | 25             |
|      | Sub-total top-5  | 569,1        |                |
| 6    | Germany          | 27,2         | 329            |
| 7    | Italy            | 20,8         | 362            |
| 8    | Iran             | 19,2         | 279            |
| 9    | S.Arabia         | 19,1         | 789            |
| 10   | South Korea      | 13,9         | 292            |
|      | Sub-total top-10 | 669,3        |                |
| 11   | Russia           | 13,9         | 91             |
| 12   | India            | 12,4         | 12             |
| 13   | Israel           | 10,0         | 1551           |
| 14   | <b>Turkey</b>    | <b>9,9</b>   | <b>139</b>     |
| 15   | Brazil           | 9,2          | 51             |
|      | Sub-total top-15 | 723,8        |                |
|      | World            | 879,0        |                |

MER: Market Exchange Rate

Source: SIPRI 2004 Yearbook

## APPENDIX C. Data Set

| Years                                                             | TURKEY                                                |                                              | GREECE                                                              |                                                   | US.<br>inflation<br>GDP<br>deflator<br>annual |
|-------------------------------------------------------------------|-------------------------------------------------------|----------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------|-----------------------------------------------|
|                                                                   | Turkey<br>MILEX<br>Current Price<br>(TL)<br>(billion) | TL-<br>US\$<br>Exchange<br>Rate<br>(Average) | Greece<br>MILEX<br>Current Price<br>(Drachma/<br>Euro)<br>(million) | Drachma-<br>US\$<br>Exchange<br>Rate<br>(Average) |                                               |
| 1977                                                              | 49,78                                                 | 25,7                                         | 67,738                                                              | 35,70                                             | 6,43                                          |
| 1978                                                              | 66,24                                                 | 33,2                                         | 77,861                                                              | 37,65                                             | 7,11                                          |
| 1979                                                              | 93,68                                                 | 46,4                                         | 89,791                                                              | 41,07                                             | 8,37                                          |
| 1980                                                              | 203,71                                                | 86,5                                         | 96,975                                                              | 43,40                                             | 9,19                                          |
| 1981                                                              | 313,07                                                | 110,3                                        | 142,865                                                             | 55,4                                              | 9,33                                          |
| 1982                                                              | 447,79                                                | 169,1                                        | 176,270                                                             | 63,88                                             | 6,19                                          |
| 1983                                                              | 556,74                                                | 224,0                                        | 193,340                                                             | 94,40                                             | 3,96                                          |
| 1984                                                              | 803,04                                                | 364,9                                        | 271,922                                                             | 106,6                                             | 3,72                                          |
| 1985                                                              | 1234,55                                               | 518,3                                        | 321,981                                                             | 124,85                                            | 3,2                                           |
| 1986                                                              | 1867,99                                               | 669,4                                        | 338,465                                                             | 140,9                                             | 2,23                                          |
| 1987                                                              | 2477                                                  | 855,7                                        | 393,052                                                             | 138,12                                            | 3,04                                          |
| 1988                                                              | 3789                                                  | 1.420,8                                      | 471,82                                                              | 141,7                                             | 3,42                                          |
| 1989                                                              | 7158                                                  | 2.120,8                                      | 503,032                                                             | 162,1                                             | 3,83                                          |
| 1990                                                              | 13866                                                 | 2.607,6                                      | 612,344                                                             | 158,2                                             | 3,91                                          |
| 1991                                                              | 23657                                                 | 4.169,9                                      | 693,846                                                             | 182,1                                             | 3,64                                          |
| 1992                                                              | 42320                                                 | 6.887,5                                      | 835,458                                                             | 190,5                                             | 2,44                                          |
| 1993                                                              | 77717                                                 | 10.986,0                                     | 932,995                                                             | 229,1                                             | 2,39                                          |
| 1994                                                              | 156724                                                | 29.704,3                                     | 1,052,760                                                           | 242,2                                             | 2,07                                          |
| 1995                                                              | 303000                                                | 45.673,5                                     | 1,117,377                                                           | 231,6                                             | 2,18                                          |
| 1996                                                              | 612000                                                | 81.083,6                                     | 1,343,000                                                           | 240,7                                             | 1,95                                          |
| 1997                                                              | 1183000                                               | 151.429,0                                    | 1,511,000                                                           | 272,9                                             | 1,96                                          |
| 1998                                                              | 2289000                                               | 260.040,1                                    | 1,725,000                                                           | 295,3                                             | 1,25                                          |
| 1999                                                              | 4168000                                               | 417.581,0                                    | 1,853,000                                                           | 305,7                                             | 1,45                                          |
| 2000                                                              | 6248000                                               | 623.749,0                                    | 5921*                                                               | (1.084)                                           | 2,1                                           |
| 2001                                                              | 8844000                                               | 1.222.921,1                                  | 5986*                                                               | (1.117)                                           | 2,38                                          |
| 2002                                                              | 13641000                                              | 1.504.598,0                                  | 6085*                                                               | (1.060)                                           | 1,16                                          |
| 2003                                                              | 17473000                                              | 1.495.307,0                                  | 6309*                                                               | (0.885)                                           | 1,23                                          |
| * Greek current MILEX in EURO / ( ) US Dollar- Euro exchange rate |                                                       |                                              |                                                                     |                                                   |                                               |

Sources: SIPRI Yearbook, Various Years, (MILEX); OECD Electronic Database (Drachma-US\$ Exchange Rate); World Bank 2003 (US Inflation GDP Deflator); SIS (Turkish Lira-US \$ Exchange Rate).