

UNIVERSITY OF ECONOMICS, PRAGUE
Faculty of International Relations

M.A. Economics of Globalization and European
Integration
Academic Year 2013 – 2014



Military Expenditure in European/NATO Countries

A Comparative Study from 1989 to 2013

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Acknowledgements

I would like to sincerely thank Dr. Ian Jackson for his time, guidance and valuable recommendations which he provided me as the supervisor of this dissertation.

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Introduction

After the break-up of the Soviet Union and the end of the Cold War, there prevailed a belief that keeping a significant military force will no longer be necessary and that European democratic countries with developed market economy need not fear major armed conflicts anymore. This led to a significant military budget and military investment downsizing known as the Peace Dividend.

As a result of the geo-political and socio-economic events in early 1990s there were two opposing views on global security. First one of them was the view of American political scientist Francis Fukuyama who predicted that thanks to the worldwide spread of democracy the mankind will experience so called “End of History” or in other words the end of all international conflicts (Fukuyama, 1992). On the other hand Samuel P. Huntington claimed, in his book *Clash of Civilizations* that the danger of armed conflicts will be still present and only the cause for war will change from ideology, which was formerly represented by the West and the East, to cultural and religious reasons. According to Huntington the future conflicts will take place on the fault lines among different cultures and religious groups (Huntington, 1996). At present, approximately twenty years after both studies, the development of the international relations and global security favors more the skeptical view of Samuel Huntington.

It is obvious that an international security is still a very important issue and its significance cannot be underestimated by any European nation. The ultimate goal of every country should be to develop a defense strategy that would enable it to protect its sovereignty, territorial integrity, security of its citizens within national borders and abroad and also the country's interests. In order to achieve such a goal national military forces must be well organized, trained and funded to keep their equipment up-to-date and to remain battle-ready to deter any possible threats and fulfill international commitments.

The main objective of this dissertation is to assess a development of military expenditure (MilEx) in European/NATO countries from 1989 to 2013 and carry out a comparative study of observed trends in this time period.

The dissertation comprises of two parts. The first section deals with theoretical approaches to defense spending and related issues. The first chapter provides an overview of motives that European countries might have to keep their military expenditure on the reasonable level and what impact it may have on growth of their economies. The second chapter discusses the economics of alliances and particularly the theory of burden sharing among member countries. The third chapter explains process of disarmament and its economic aspects

including the theory of peace dividend. Finally, the fourth chapter sheds some light on the issue of terrorism and on both economic implications of terrorism and counter-terrorism.

The second section is devoted to an applied analysis and comparative study of military expenditure in EU/NATO countries from 1989-2013. The aim of the fifth chapter is to give background to the applied part by presenting methodology and the researched group. The sixth chapter provides a general overview of military expenditure and its development within the EU/NATO sample and identifies Belgium, Poland and Greece as countries featuring unique long-term trends – namely low, optimal and high military expenditure. The goal of the seventh chapter is to compare patterns in the military expenditure of mentioned countries and shed some light on the distribution of defense spending within each country according to its purpose. After the assessment of all findings, the eighth chapter is devoted to confirmation or denial of following hypotheses:

- I. Since the year 2000, defense burden of EU/NATO countries complies on average with the threshold of 2% of GDP as required by the Alliance.
- II. Downward trend of military expenditure (in absolute value) in EU/NATO countries has changed after September 11, 2001.
- III. Downward trend of military expenditure as a % share of GDP in EU/NATO countries has changed after September 11, 2001.
- IV. The United Kingdom contributes more resources to military expenditure (in absolute value) than any other European country.
- V. The category of military investment to R&D and procurement has a decreasing trend in Belgium, Poland and Greece since 2009.

I. Theoretical approaches

CHAPTER ONE:

Military spending in Europe

From the beginning of the 21st century and especially after the 9/11/2001 terrorist attacks the military expenditure of European countries was rising steadily until its peak in 2009 (SIPRI, 2014). Since the outbreak of economic and financial crisis in 2008 European countries and governments were facing a need of fiscal austerity which had obviously a considerable impact also on the amount of resources that was being used for defense purposes.

This development is in the contrast with global trends. According to the Stockholm International Peace Research Institute (SIPRI) military expenditure has increased in all regions of the world outside the West (Freeman and Solmirano, 2014). However, are diminishing military budgets really a problem for the European community? Does it affect Europe's security and its defense capabilities? What impact might this have for already weakened economy and its defense technological and industrial base? To find out more we need to look at motives that might be a driving force behind the defense spending and also on the impact of military expenditure on growth.

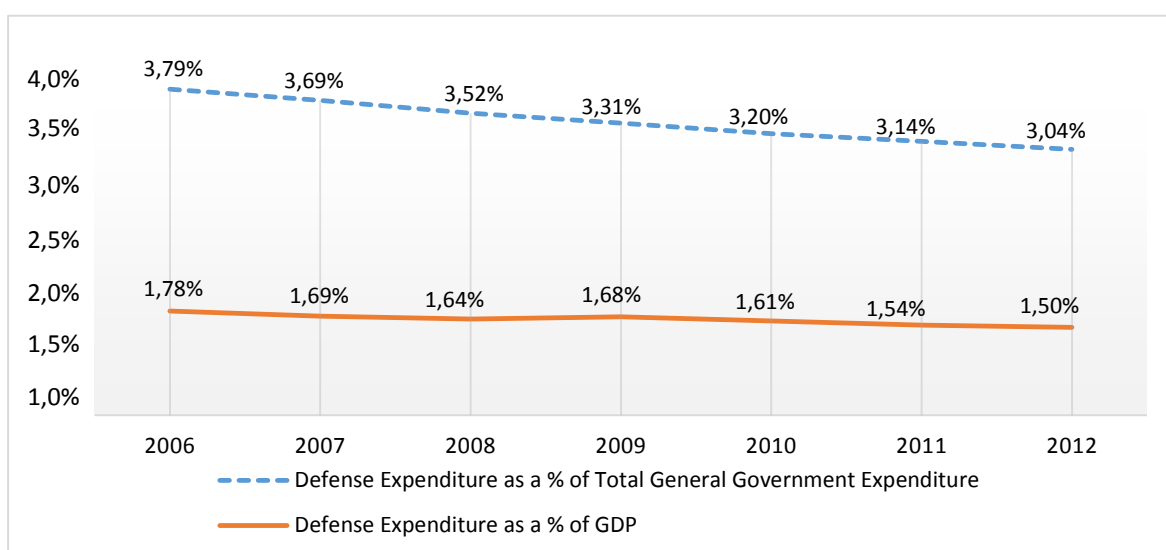
1.1 Motives for military spending in the EU

With its gradual enlargement the European Union can be considered to be one of aspiring global players with population over half of a billion and GDP of \$17.35 trillion in 2013 (World Bank, 2014). According to the European Security Strategy (ESS) adopted in 2003 the EU “*should be ready to share in the responsibility for global security and in building a better world*” (EEAS, 2003, pg.1)¹. This initiative brings many challenges for European planners and with the United States increasingly focusing on their foreign affairs in the Pacific region, EU-countries should tend to work together as one unit to become even more self-reliant and credible to meet their aspirations.

¹ EEAS = European Union External Action Service

As mentioned previously, the Europe's security environment has undergone significant changes since the end of the Cold War. The global geopolitical environment became very complex with the rise of new superpowers as China or India on one hand and number of asymmetric conflicts in Africa and Middle East on the other. A necessity to address these new circumstances pose a burden to financial, human and informational resources that are, due to the fiscal austerity in recent years, difficult to acquire. The **Figure 1.1** shows the downward trend of defence expenditure in European countries between 2006 and 2012. This trend is likely to continue in near future (SIPRI, 2014).

Figure 1.1: Defense expenditure in EU countries in 2006 - 2012.



Source: European Defence Agency (2014)

The European Union and its allies must not only try to influence and resolve conflicts in their neighboring regions but also act on their own “back-yard”. A crisis in Ukraine and Russian military intervention in Crimea in 2014 was a reminder that peace and stability cannot be taken for granted even within Europe. Despite all attempts to align European defence strategy European countries still failed to act decisively and coherently when it came to direct aggression on sovereign European country.

Bloomberg (2014, editorial) notices that “*In 2011, the U.S. and the European Union had roughly the same number of men and women under arms, but the U.S. spent about four times as much equipping them to fight – about 102,000 euros (\$142,000) per soldier, compared with 24,000 euros in the EU.*” To pursue its goal of security and to lead by an example European community should always use a political dialogue and diplomacy at the first place.

Nevertheless for the EU to be a credible and respectable actor at the world stage it cannot afford to let even its defense capabilities to vanish and, when situation calls for it, be afraid to use them as a solution of last resort.

Not only Europe's security is endangered by reduced military budgets. Until comparatively recently, European defense industries were very successful on domestic and also international markets. Due to the economic crisis and public spending cuts, European defense industries now face the threat of losing its competitive advantage in favor of North-American companies and emerging Asian industries. According to European Commission's Communication on the European Defence and Security Sector (2013, pg. 7) *"between 2005 and 2010 there was a 14% decrease in European R&D budgets down to €9 billion; and the US alone spends today seven times more on defence R&D than all 27 EU Member States together"*.

In addition, European market remains fragmented and uncoordinated. Defense industries are organized mostly on national levels with governments trying to protect individual firms against each other rather than engaging in a common strategy to avoid a costly duplication of research and counter the international competition. As a result of that, European defense sector finds itself in downward spiral of higher costs, supplying market with uncompetitive products and losing its cutting-edge research that could otherwise create additional spill-over effects and provide thousands of jobs in other branches of the economy as well. Since the defence industry is the major industrial sector this represents very unpleasant situation which cannot be sustainable if the EU aspires to remain a leading center for innovation and manufacturing.

To serve as a proof of a current development in Europe we can recall the last military involvement of European states in Libya in 2011. The intervention showed not only dissonance among some European states in pursuing common strategy and acting as "United States of Europe" (Germany rejected any involvement) but maybe more importantly highlighted a lack of crucial military capabilities and sophisticated weaponry in hands of the EU's military. Even though European countries played a leading role in Libya politically they still had to ask the United States' armed forces to provide them with necessary equipment as precision-guided bombs, tanker aircraft or tomahawk missiles to get the task done. This invokes a question whether the EU takes its security and future role as a global actor seriously and whether this could possibly motivate other states (e.g. Russia) or groups to take advantage of European non-uniformity, unpreparedness and perhaps unwillingness to take decisive action when necessary.

1.2 Military expenditure and economic growth

Global military outlays in 2013 accounted for 2.4 % of the world GDP which is \$1,747 billion (SIPRI, 2014). This is why research on effect of military spending on growth has attracted attention of many scholars in the past. There is plenty of papers that examine how defense spending affects the overall performance of an economy and also many points of view on how the research should be conducted.

Historically military spending was considered to be an impediment to economic growth². Emile Benoit is regarded to be the first who proposed that high military expenditure must not necessarily lead to the growth stagnation. In his work “Growth and defence in developing countries” (1978) he discovered a positive relationship between the military expenditure (measured as share of GDP dedicated to defense) and growth (measured as growth of civilian product) for forty-four less-developed countries in period from 1950 until 1965. His findings ignited a vivid discussion and activity among researchers who tried to tackle the issue of military spending and growth from many possible angles and either aimed to find shortcomings of Benoit’s methodology or came up with their own studies.

Some of the studies extend Benoit’s model using the same sample of countries but with further hypotheses. Frederiksen and Looney (1983) confirm that high military expenditure has a positive effect on growth in the sub-sample of 24 countries that are resource abundant while the opposite is true for the sub-sample of 9 resource-constrained countries – both results statistically significant at 99% level but constrained with a relatively small samples.

Other research carried out by Landau (1993) suggests that defense spending has an initial positive effect on economic performance but once the level of military spending gets too high this effect is actually reversed and becomes negative. It also finds an empirical evidence that higher level of expenditure is associated with greater efficiency in developing countries. The reason for that appears to be greater external threats (measured as defense expenditure of neighboring country) which motivates the home economy to be more productive in order to support its own defense capabilities.

On the contrary there is plenty of literature that shows exactly the opposite findings and either none or negative relationship between military expenditure and economic growth. Ward and Davis (1992) conduct a research for a case of the USA and time period of 1948-1990. They

² This idea has already been presented in Adam Smith’s *Wealth of Nations* (1776) and stated that military expenditure is in principle a deadweight loss to the economy because it encourages an inefficient allocation of resources to production of goods and services which can be consumed only by military and no one else. This traditional view lasted for almost two hundred years.

find that a defense burden in this period has had a net negative impact on the economy even though it was able to generate spin-off benefits in form of externalities for the private sector of the economy.

In their study on “Military expenditure, threats and growth” (2006) Aizenman and Glick conclude that the relation between defense spending and growth also depends on the level of corruption. Their results suggest that higher military expenditure under influence of rent seeking behavior reduces growth. This conclusion is also confirmed by findings of Pieroni (2009) who, in addition to previous study, accounts for re-allocative influence of government expenditure between civilian and military sectors. He shows negative relationship between the share of military expenditure and growth for countries with significantly high defense burden. By contrast, insignificant relation between defense spending and growth is valid for countries with low share of defense expenditure.

Lastly, I would like to mention the research by Kollias and Paleologou who “*investigate the relationship between growth, investment and military expenditure in the case of the European Union-15*” (Kollias and Paleologou, 2010, pg. 228) with the application of fixed panel, random coefficient and vector auto regressive models to examine the relation between the three surveyed variables. The results of their study does not highlight any relation between the share of military spending and either investment or growth.

Even though these empirical studies helped to explain some interesting consequences of military expenditures on economic growth they still failed to deliver results of general validity and did not lead to a consensus among researchers that would once and for all answer the question whether military expenditure promotes or hampers economic growth. Finding the answer could obviously invoke some serious policy implications for European countries in the future. For example, if defense spending promotes growth, then the defense burden could be used as a policy instrument to stimulate the economy in periods of underconsumption and unemployment, be a source of positive externalities in form of social infrastructure (roads, communication networks) and also generate spin-offs that could be later applied in civilian industry as we can already observe within some industries in America.

If the opposite is true and military spending has negative effect on the economy of particular country, then direct reallocation of resources from military to civilian sector might be growth-promoting (Sandler and Hartley, 1995).

It's important to note that it would be myopic for a country to address all defense related issues on its own. Large but especially smaller countries with similar values desire to align together to accomplish their specific goals. Next chapter discusses the theory of military expenditure from a broader perspective of alliances.

CHAPTER TWO:

Economics of alliances

Alliance is defined as “the relationship that results from a formal agreement between two or more nations for broad, long-term objectives that further the common interests of the members” (Department of Defense, 2014, pg.12). In the context of this thesis “long-term objectives” of military alliances can be specified as collective security and greater joint power to achieve interests of allied countries either by political or military means. Stephen Walt, American professor of international affairs, goes even further and identifies five general reasons for alignment (Walt, 1990):

Table 2.1: Forming alliances

Balancing	States align together to mitigate the external threat posed by opposing countries
Bandwagoning	A state aligns with a country that is a source of the biggest threat
Ideology	Countries with similar ideology are more likely to become allies
Foreign Aid	A country providing an aid to other states is more likely to form an alliance with them
Penetration	The more access a country has to the political system of another state, the greater chance is for them to ally.

Source: The Origins of Alliances (Walt, 1990)

Creation of pacts and military alliances has been important in the strategy of individual countries for centuries but became most pronounced in the 20th century and especially during the Great War and then the Second World War. Existence of alliances also contributed to creation of the Iron Curtain after the WW2 which represented division of Europe into two “blocks” with different ideology – on one side the United States as a member of the North Atlantic Treaty Organization (NATO) supporting the European Economic Community and on the other the Soviet Union as a leader of the Warsaw Pact and the Council for Mutual Economic Assistance.

Currently the EU and NATO share the majority of its members, common values and interests and continue with a further reinforcement of their strategic partnership. This also

require member countries to participate in the collective defense by a commitment to provide military capabilities in a response to an attack against one or several allies according to Article 5 of the Washington Treaty³ and also by investing a minimum share of 2 % of their GDP into defense in order to maintain and modernize those capabilities for future deployment. As it is shown later, European countries are lagging behind this second commitment.

To have a better insight into what a membership in military alliance mean for defense expenditure of its member states we need to look at some theoretical background first.

2.1 Burden sharing and Pure Public Good model

The first to develop an economic theory of alliances were Olson and Zeckhauser (1966) who considered a defense (deterrence) to be a *pure public good* among allied countries. From the theory of public good we know that it features *non-rivalry* and *non-excludability* of the good being consumed. This definition in our case implies that firstly, “consumption of defense” is advantageous for all allies in the same way without decreasing consumption benefits for either of them. Secondly, a provider of the deterrence (the strongest country) cannot exclude consumers from its consumption at a reasonable cost⁴.

In the context of alliances a property of non-rivalry also means that benefits arising from mutual defense (e.g. deterrence by nuclear weapons) are equally shared among member countries independently of the number of participating members. In other words “*there is no reason to limit the size of a group sharing the good*” (Sandler and Hartley, 1999, pg. 29).

On the other hand presence of non-excludability provides an opportunity for *free-riding*. Since alliances are bound by an agreement to collective security and a respectable provider cannot deny its consumption to any other ally, this may induce some member countries to contribute less to the mutual defense and free-ride on commitments of others. Generally, this signifies that level of military expenditure in the whole alliance will be allocated sub-optimally because a sum of marginal benefits arising from mutual defense will not equate the sum of marginal costs for individual allied countries (Sandler and Murdoch, 2000).

The assertion of defense being a public good inevitably leads to two further implications. First one of them is the “*exploitation hypothesis*” (Olson, 1965) which claims that “*burdens for defending the alliance will be shared unequally, with the larger wealthier allies contributing*

³ Article V of the Washington Treaty has been used only once after 9/11/2001 terrorist attacks in the USA.

⁴ For example, the costs of leaving the alliance (= exclusion of other countries from consumption of deterrence) would be much higher than letting other allies to use it for free.

relatively more to the defense” (Sandler and Hartley, 1995, pg. 91). Second, in order to limit the a sub-optimality attribute of burden sharing, allied countries might enhance their cooperation and work towards a “tighter” institutional structure by establishment of collective or central authority that would take over a responsibility for crucial defense decisions (Sandler and Forbes, 1980) and possibly help to coordinate military spending of member countries to mitigate inefficiencies.

The way countries contribute to the mutual burden of their alliance depends on various aspects. As described earlier on the example of free-riding, countries not always comply with all principles and commitments which have been agreed during a foundation of alliance. There have been several studies devoted to assessment of ally’s military expenditure as the corresponding demand for defense in the regime of pure public good. (Murdoch and Sandler, 1984; Sandler and Hartley, 1995).

Following demand equation is derived from a country’s welfare maximization problem with respect to a budget and defense outlays constraints. Moreover we assume a role of single decision maker (e.g. Department of Defense) who is responsible for allocation of resources. The ally’s demand function has a following form (Sandler and Hartley, 1999):

$$\text{DEF} = f(\text{PRICE, INCOME, SPILLINS, THREATS, STRATEGIC})^5$$

Let me present some intuition behind this equation. Let’s assume that unequal rise of wages in public and private sector contributed to relative rise in the price of defense. As predicted by law of downward sloping demand a rising price will influence a consumer to buy more of nondefense good which will result in smaller demand for defence. In the contrary, an increase in nation’s income (purchasing power) or greater anticipated threat is expected to increase consumer’s demand for defense. In a case of pure public good, the rise in spillins (defense expenditure) of one allied country will induce other allies to free-ride and decrease their demand for defense if all other variables are unchanged. Finally, the change in the strategic doctrine may increase or decrease demand for defense depending on the nature of this doctrine. (Sandler and Hartley, 1999).

⁵ DEF = military expenditure in real terms
 INCOME = national income of decision maker
 THREAT = enemy’s defense spending

PRICE= relative price of defense good to nondefense good
 SPILLINS = defense outlays of the other allies
 STRATEGIC = changes in military doctrine of the alliance

2.2 Joint Product Good model

Since the model of a pure public good has a limited use in a real world scenario it is desirable to provide some explanation of its more applicable version – the *joint product good* model. In the contrary to the former, the joint product good model allows for multiple outputs (e.g. not just deterrence) to arise from defense expenditure. An investment to the advanced weaponry can, for example, deter a potential adversary and at the same time reduce a number of troops killed in action (KIA) during a deployment in foreign country.

Another important feature of this model is that benefits of military expenditure are at least partially rival and excludable among allies which means that the defense spending outputs can be defined as *impurely public* or *purely private goods* (Conybeare and Sandler, 1990). Given the previous example, an access to the specific equipment (MRAP vehicles, UAVs)⁶ might be a subject to rivalry as there is just a limited number of it. As a result of shortage a rivalry over its usage may arise among allied forces. Generally speaking, the joint product model allows defense spending outputs to carry out three functions (Knorr, 1985):

Table 2.2: Features of joint product good

Output function:	Type of good:	Example:	Output benefits:
Deterrence	Public	Nuclear weapons	Non-excludable/rival
Protection	Impurely public	Conventional forces	Partially-excludable/rival
Private or ally-specific goals	Purely private	Specific equipment to reduce number of KIAs	Purely-excludable/rival

Source: Knorr (1985); Author

When deciding about the amount of military spending every country is motivated to some extent by *private goals*. As we can see in the **Table 2.2**, in the case of purely private good, the specific equipment helps his provider to achieve a private goal of limiting the number of KIAs.

⁶ **MRAP** = mine resistant ambush protected personnel carrier
UAV = unmanned aerial vehicle

Nevertheless, country's private goals may have various specific forms: UAVs can monitor border areas and illegal immigration or be used for traffic monitoring and police surveillance. MRAPs may be deployed during civil unrests and natural disasters. In all these cases defense output is making his provider better off but all benefits of military expenditure are contained within the territory of providing country. In other words these benefits are non-excludable for the citizens of country providing the output (military equipment) and at the same time partially or purely excludable/rival for other allied countries.

“Generally, a defense activity may give a rise to diverse benefits that vary in their degree of publicness depending on technological, strategic and other considerations.”(Sandler and Hartley, 1999, pg. 35). Thus, advanced weaponry may be considered as impurely public tool among allies when it is deployed to save lives of soldiers on the battlefield, as purely private good when it assists the law-enforcement in the providing country and finally, as a public good within the alliance when it contributes to overall degree of deterrence.

There are some important implications of joint product model that complete the theory of burden sharing. The model implies that, in contrary to the public good model, the economic size of an ally is not important factor and the “exploitation” does not take place in a presence of impurely public and private goods. The intuition is clear. When there is a high ratio of excludable benefits to total benefits then even smaller countries, which could otherwise free-ride on their allies, have to spend sufficiently enough to meet their own defense goals (e.g. Israel).

The second implication concerns the issue of sub-optimality. Countries which do not contribute enough to the mutual defense can be excluded from the consumption of its benefits. Consequently, resource allocation within the alliance can be augmented in order to be optimal⁷.

Third, the size of an alliance in the joint product good model is not an important factor as long as it concerns only the case of purely public and a private good. However alliance size restrictions become relevant in the case of impurely public good since there is rivalry over its usage. Differences in demand for defense in both models were demonstrated by Sandler and Murdoch. The joint product model's demand for defense can be described as following (Sandler and Murdoch, 2000):

$$\underline{ALLDEF = f(PRICE, FULL, SPILLINS, THREAT, STRATEGIC)^8}$$

⁷ **Optimal allocation of military resources** = marginal benefits of military expenditure equal its marginal cost.

⁸ ALLDEF = alliance wide defense spending

An intuition behind the demand equation was properly explained in the case of pure public good model. The only difference is an addition of a term *FULL* that represents the value of country's income plus the amount of defense outlays of other allies.

A demand equation for alliance wide defense spending can be also adjusted for the case of the single pure public good (deterrence) in the regime of joint product good model. The demand equation becomes (Sandler and Hartley, 1999):

$$\underline{ALLDEF = f(PRICE, FULL, THREAT, STRATEGIC)^9}$$

The term *SPILLINS* does not appear in the separate argument anymore. The difference between two above equations can be used to test the significance of ally's military spending on the amount of defense expenditure of researched country.

Regarding the mutual burden sharing the NATO has undergone a different stages of its development. During the Cold War and military doctrines of Mutual Assured Destruction (1949-66) and Flexible Response (1967-91) spending in the Alliance reflected more a theory of pure public good model. Wealthier countries (e.g. the U.S., the U.K. and France) were accountable for the biggest portion of military spending and smaller countries enjoyed non-excludable benefits in form of nuclear deterrence.

After the split of the Soviet Union and the dissolution of Warsaw Pact, NATO had to adopt a new Strategic Concept which was able to incorporate a strategic weapons disarmament and address a new challenges concerning European economic and military security on the brink of 21st century. During last twenty-five years burden sharing gained more features of a joint public good model with multiple outputs being produced by the Alliance with different degree of rivalry and excludability.

Creation of strong alliances or change of international relations towards a more peaceful environment may create conditions in which countries can afford to reassess their security strategy and reduce their arms stocks and military budgets in favor of other sectors of the economy as we could witnessed in early 1990s in Europe. Implications of such policies are discussed in the next chapter.

⁹ FULL = income + value of defense spillins
PRICE, SPILLINS, THREATS, STRATEGIC explained in section 2.1

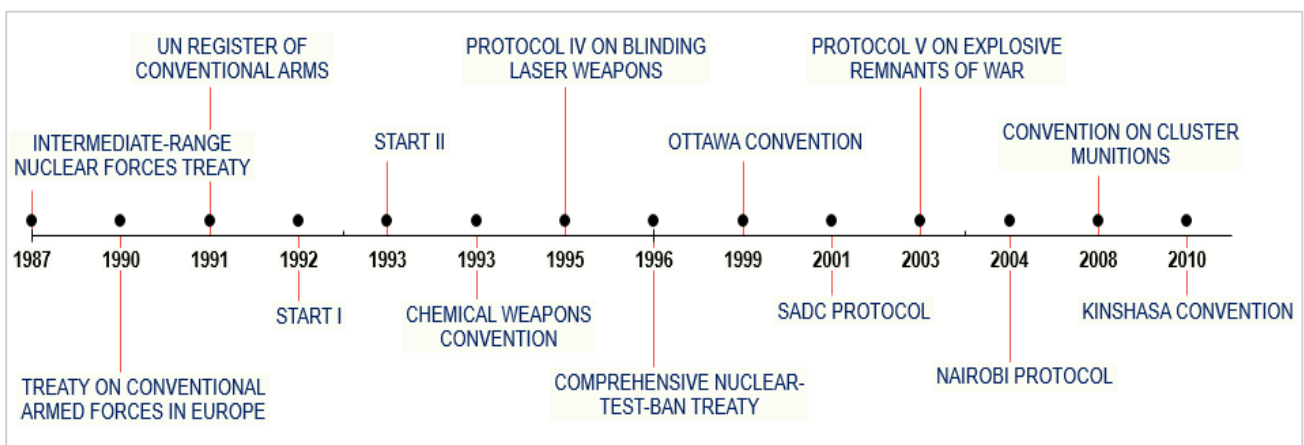
CHAPTER THREE:

Economics of disarmament

The end of a rivalry between the United States, Soviet Union and their allies at the end of the 1980s brought about also an end to the arms race and military overspending that was characteristic for national economies since 1947. This sudden change in international relations allowed countries to cut back their defense expenditure and reallocate money to the public sector of the economy, such as healthcare or education, where they were expected to be used more efficiently. However, an abrupt decrease in demand for military output was also a serious issue for companies which were heavily dependent on military contracts (Melman, 1974) and had to adjust their production in order to be more competitive and survive in the conditions of hard budget constraint – without a government support.

Due to a democratization of formerly communist countries in Central and Eastern Europe, prospects of peace and falling military expenditure, there was no reason for countries to keep an excessive stock of military equipment. This facilitated a way for series of international arms control agreements (**Figure 3.1**) which were mainly focused on two general objectives – ban or disarmament of specific conventional weapons and non-proliferation of weapons of mass destruction (WMD)¹⁰.

Figure 3.1: Selected disarmament treaties 1987 – 2013



Source: UNODA (2014)

¹⁰ **INF Treaty** (1987) banned production of inter-mediate and short-range nuclear weapons in the former Soviet Union and the USA.

START I (1992) **START II** (1993) limited a number of strategic nuclear weapons to 3,500 units for both the USA and Russian Federation (UNODA, 2014).

There were also treaties specially designed to limit and control the possession and proliferation of small arms and other weapon technologies¹¹.

Even though it is clear that disarmament and decreased threat of war benefits society from the social point of view, the economic side is much more interesting because there is no easy answer to the question whether a disarmament and decreased military spending are inevitably good for the economy. The aim of this chapter is to provide a notion of economic implications of disarmament and closely portray benefits and challenges that countries have to cope with as a consequence of resource reallocation from military sector.

3.1 Economic implications of disarmament

There is no general conclusion under which circumstances is disarmament favorable for economic performance. When deciding whether to enhance the military spending or rather invest to the civilian sector, countries take into account many variables like threat to the national security, strategic interests, overall economic performance or commitments to their allies. Naturally, a country will not invest to the civilian goods when its own security is in jeopardy but it might do so when there are prospects of peace and no reasons for military build-up. Economic assessment of disarmament and identification of potential benefits and drawbacks induced by reallocation of resources from military to public sector of the economy attracted a lot of interest among economists.

Keynesians perceived military spending to be a part of aggregate demand and treated defense outlays as a form of a policy instrument to stimulate the economy in period of underemployment. Government increase of defense spending would ideally result in higher production output and lower unemployment (Schmidt, 1987). However, a longer period of overspending may also cause inflationary pressures and have an adverse effect on balance of payments (Smith and Smith, 1983) which signifies the temporary effectiveness of such a stimulus. Policies which are characterized by extensive military spending in order to promote economic growth may be also referred as *Military Keynesianism* (Custers, 2010). In the contrary, disarmament and uncompensated decrease in military expenditure in the recessionary environment may worsen the unemployment. Therefore there is a need to develop economic policies which would be able to compensate for economic disruptions caused by disarmament and boost the aggregate demand (Benoit and Boulding, 1963).

¹¹ SADC Protocol, Nairobi Protocol, Convention on cluster munition, Kinshasa Convention

The Neo-classicists perceive military expenditure more as opportunity costs that reflect the scarcity of resources. Governments cannot use them both in military and civil sectors at the same time but have to sacrifice one for another. This trade-off is known as “*guns versus butter trade-off*” (Sandler and Hartley, 1995).

As we can see in **Figure 3.2**, a decrease in military expenditure, depicted as a movement from the point “D₀” to “D₁”, increases the amount of resources being available for public sector (point “P₁”). In the real world scenario, however, sudden changes in disposable resources and demand patterns between both sectors are likely to cause temporary adjustment costs in form of underemployment of production factors and unemployment. The figure 3.2 shows this fact by a movement of resources through the point “U”, where “U” stands for underemployment of capital and labor.

Figure 3.2: “Guns vs. Butter”

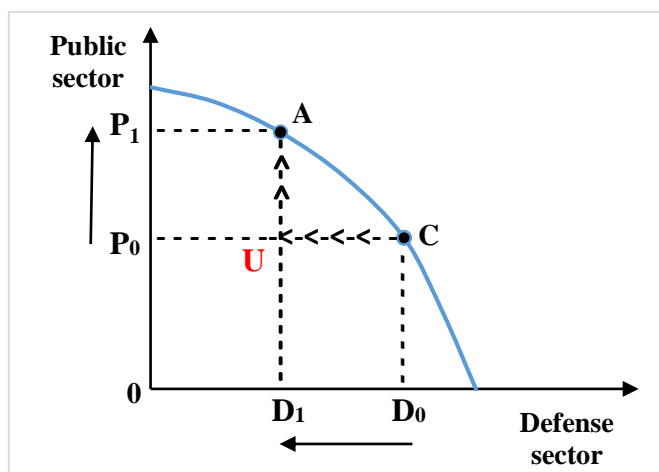
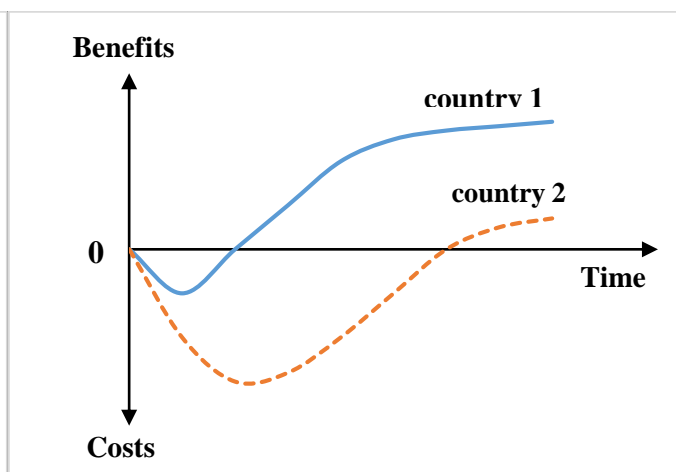


Figure 3.3: Impact of disarmament



Source: Sandler and Hartley, the Economics of Defense (1995).

Since a disarmament incorporates both initial costs and potential long-term benefits, it can be understood as an investment to the future development. Nevertheless all investments carry the risk of being non-profitable. The same logic is valid in the case of disarmament.

The **Figure 3.3** shows two possible scenarios of the development after a disarmament process took place. Initially, adjustment period caused by resources reshuffling has a negative impact on both countries with costs being higher than benefits. During this period, companies have to struggle with changes in the market structure and the economy must bear the costs related to disarmament (e.g. weapons dismantling, environmental issues). Country 1, depicted by a blue line, represents a successful disarmament with relatively short adjustment period which is followed by a period of enhanced welfare. This may be the case of effective policy

that accomplished an efficient redistribution of resources and contributed to growth. In comparison, Country 2 is left with large adjustment costs which may harm the growth for several years and bring only a minimum benefits. The total net welfare attained by disarmament may be in this case even negative. This scenario represents a recessionary economy that relies only on market forces without proper stimulus policy (Intriligator, 1992).

3.2 Defense cuts and a Peace dividend in Europe

As the theory predicts, a clever management of disarmament may give a rise to long-term benefits due to the fact, that more money is pumped to the public sector of the economy where it can be used more efficiently and generating long-term growth. Resources which become available to the government's budget once the country disarm are called the "*Peace dividend*". However, there are several empirical issues connected to the peace dividend problem¹². The process of acquiring a peace dividend is more complex than just a simple reallocation of money from one place to another. It requires difficult decision-making and planning of the government which has to estimate where and how will be "new" resources employed in order to have the best positive welfare effect.

In contrary to the general methodology that assessed the process of acquiring the peace dividend at once, Brommelhorster and Dedek (1998) divide it instead into three steps: In the first step, country gains the *resource dividend* that arises from direct savings on military expenditure but is, at the same time, reduced by costs of elimination of defense assets as weaponry or military bases. During the second step, resources from military sector are reallocated to the civilian one to achieve the *product dividend* which is the potential consequence of higher productivity and efficiency in the non-military sectors. However, Braddon notes that "*to achieve the dividend goal, at the micro level there would need to be evidence that the civil sector operates with higher productivity levels than the defense sector and, from a macroeconomic perspective, that private investment levels would increase as a result of reductions in public expenditure*" (Braddon, 2000, pg. 34). The third step completes the whole process by capturing the *welfare dividend* that is achieved as there are more skilled and healthier workers as a result of investments to education and public health.

¹² As I have already discussed in the **subchapter 1.2** the relationship between the military expenditure and the level of economic performance still remains fuzzy with different results given for different sets of countries and time periods.

The post-Cold War period in Europe was ideal for testing the theory of military expenditure and existence of a peace dividend. There has been a study carried out by European Commission to analyze the regional impact of defense expenditure cuts and its economic significance in the European Union in 1992. The study found that 19 regions within the EU were significantly dependent on defense industry, 31 regions were assessed to be dependent on employment by the military and 23 regions were said to be dependent on defense-related activity (European Commission, 1992). In several cases, some regions as Cumbria, Essex, Lancashire, Avon (United Kingdom); Bretagne, Aquitaine, Centre (France); Bremen, Oberbayern, Schleswig-Holstein (Germany) or Madrid (Spain) have been marked as highly vulnerable to defense cuts (**Table 3.1**).

Table 3.1: Regions vulnerable to reduction of defense spending in 1992

** = highly vulnerable * = vulnerable						
		Vulnerability to defense cuts		Appearance in dependence rankings ¹³		
NUTS II ¹⁴		Defense industries	Military	A	B	C
UK	Cumbria	**		1		11
UK	Essex	**		2		
D	Bremen	**	**	3		18
F	Bretagne	*	*	4		16
F	Aquitaine	*	*	5		23
UK	Lancashire	**		6		
I	Liguria	**		7		
F	Provence-Alpes-Cote d’Azur	**	*	8	31	19
F	Centre	**		9		
F	Ile-de-France	*	**	12		
D	Oberbayern	**	**	14		
UK	Cornwall, Devon	**	*	15	15	12
F	Basse-Normandie		**	16		
F	Haute-Normandie		**	17		
UK	Avon, Gloucestershire, Wiltshire	**	**	18	22	20
UK	Hampshire, Isle of Wight		**	19	10	9
GR	Stereia Ellada	*		23		
D	Trier		**		9	10
D	Koblenz		**		12	15
D	Lüneburg		**		13	17
E	Madrid	**	**		14	14
D	Rheinhessen-Pfalz		**		16	21
D	Unterfranken		**		17	
D	Schleswig-Holstein	**	**		20	22
UK	Berkshire, Buckinghamshire, Oxfordshire		**		26	
F	Lorraine		**		30	

Source: The European Commission (1992)

¹³ **Ranking A** = Defense industrial dependence

Ranking B = Military dependence

Ranking C = Dependence based on total defense-related employment

¹⁴ **NUTS** = Nomenclature of Territorial Units for Statistic

Also former Eastern bloc countries, which relied on military-dominated economy, were facing a considerable economic instability due to the disarmament process and economic transition in 1990s. This period typically featured adjustment period, whose effectuality differed in particular countries according to their ability to implement necessary reforms and overcome problems with transformation to a market-led economy.

Both experience in the West and East proved that expectations of a peace dividend to arise after the Cold War were overoptimistic. Securing the peace dividend in relatively smooth and rapid way has turned out to be more problematic due to the costs of higher unemployment, economic consequences arising from lower income, additional costs of weapons-stock elimination and many others.

In addition to the economic perspective, individual states need to consider the interrelationship of disarmament and security as well. In order to keep the level of security at the acceptable level countries come into mutual disarmament agreements which assure that no country will gain any strategic advantage during the disarmament process and therefore facilitate systematic weapons reduction on all sides.

Even though thorough disarmament may be effective way to reduce tensions among states that share common values (e.g. historical, cultural, religious, economic etc.) it may make countries vulnerable to other threats which are not confined by any borders and international agreements. In the 21st century, those threats are represented mainly by global terrorism whose effects on economy are closely described in the next chapter.

CHAPTER FOUR:

Economics of terrorism

The international environment of the post-Cold War era has been marked by a dramatic change of security among European states. There was no longer a prompt need to defend a territorial integrity and the existence of individual nations against one another in the classical inter-state conflict. Instead, new challenges of the state security arose in form of weapons proliferation, drugs trafficking, illegal immigration or organized crime.

In addition to that, EU and NATO countries had to learn how to react to new type of asymmetric conflicts unfolding on the European periphery and also to increasing threats of terrorist attacks which, due to modern information technologies and interconnected world, become an effective instrument of getting attention among various militant groups across the globe. The issue of terrorism and its economic and political consequences for the world's society has become even more important on the beginning of the 21st century, after the attacks on the World Trade Center in New York in 2001 resulting in the Global War on Terrorism announced by the George W. Bush administration.

There is no unified international consensus on definition of terrorism since distinct government agencies and institutions use different terminology (Schmid, 2011). For our purposes we can content with defining terrorism as *“the unlawful use of violence or threat of violence, often motivated by religious, political, or other ideological beliefs, to instill fear and coerce governments or societies in pursuit of goals that are usually political.”* (Department of Defense, 2014, pg. 257).

The prospect of terrorist attacks or the attack itself can have a serious economic effects on the economy in various forms. The focus of this chapter is to describe costs of terrorism from micro- and macroeconomic point of view and discuss the relevance of counter-terrorism measures in Europe.

4.1 Economic effects of terrorism

Regarding economic effects of terrorism we can differentiate between two types of costs that terrorism inflicts on society – direct and indirect.¹⁵ In order to assess impacts of terrorism at the *micro-economic* level we need to distinguish between three types of economic agents, nominally households, companies and the government.

With regards to *households*, it is difficult to precisely estimate costs of terrorism since there is no relevant literature that would analyze impact of terrorist events on this sector. (Schneider, Brück and Meierrieks, 2011). However, some studies aim to evaluate these costs expressed as the fall in life satisfaction and welfare which are the result of fear from terrorist threat. Frey et al. (2009) use an interaction between terror and welfare indicators from the Eurobarometer to measure the degree of fear among population of individual countries. Results show significant negative impact of terror on surveyed life satisfaction for France, Ireland and the UK. Additionally, fear and other psychological effects may temporarily change consumer behavior and influence consumption of certain types of goods.¹⁶

The *private sector* of the economy is vulnerable to both direct and indirect costs of terrorism. Direct costs arise mostly from the fact that a companies operate in regions prone to terrorist activity such as Africa or Middle East where there is an increased danger of being exposed to the additional costs caused by property damage or ransom fees for abducted employees and seized property (Schneider, Brück and Meierrieks, 2011). Indirect costs are being perceived in this case more as a product of globalized economy with possibility of fast transmission of market distortions, inefficiencies and increased risk (e.g. business, operational risk, etc.) caused by a terrorist aggression. Furthermore, unfavorable prospects of security influence adversely the stock market and companies may face a slump in price of their shares as a result of expected or already performed terrorist attack. Nevertheless Sandler and Enders (2008) argue that, in the case of a single attack, these distortions have relatively short-term effects with minimal long-term consequences.

¹⁵ **Direct costs** are associated with an immediate impact of the terrorist act itself which includes loss of lives, property damage, destruction of infrastructure and interruption of commercial activity.

Indirect costs are bound with the economic adjustment before or after the attack and influence also a wider population which was not hit directly by the attack. These costs may arise from a need of increased security measures, higher insurance premiums, higher unemployment, fall in gross domestic product or lower inflow of foreign direct investment (Sandler and Enders, 2008).

¹⁶ Eckstein and Tsiddon (2004) and Enders and Sandler (2006) registered a notable increase in demand for durable goods in the aftermath of the terrorist attacks in Israel and the US respectively.

In the case of the *public sector* (government), the direct costs of terrorism are in most cases considered to be relatively small¹⁷. However, costs associated with preemptive and consecutive measures introduced by the government to mitigate impacts of terrorist attack might be significant. The former may include development of crisis-management plans, emergency policies for military and health sectors or establishment of special intelligence units. The latter aim both to support the victims in the aftermath of terrorist event but also to stabilize the economy by monetary and fiscal adjustments such as tax cuts, stimulus packages or introduction of rebates (Baily, 2001).

From the *macro-economic* perspective, assessment of economic implications of terrorism focuses mainly on its relation to the growth of the economy, trade and foreign direct investment patterns.

With respect to *economic growth*, implications of terrorism depends on the size and maturity of the economy being hit by the attack and also on the frequency of individual terrorist events. Since large economies (e.g. Germany, the US) are capable to absorb the costs of terrorist act with a help of other sectors of the economy, the resulting impact on growth is expected to be insignificant in the long-run (TTSRL, 2008)¹⁸. In the contrary, smaller-scaled economies, which cannot freely diversify their economic activity and reallocate capital and labor from afflicted industry, have shown a negative impact of terrorism on their economic performance (Blomberg et al., 2004; Gaibullov and Sandler, 2008).

Especially in countries which have to face sustained threat of terrorist attacks, such as Israel, Iraq and formerly Spain, the development of GDP can be seriously retarded¹⁹. In addition, anticipated prospects of terrorist activity naturally leads to the raise in defense expenditure whose effects on growth were explained previously in **section 1.2**.

Terrorist activity may directly affect *international trade* by targeting specific goods (e.g. oil) or infrastructure needed for trading activity (e.g. pipelines, refineries). Indirect effect of terrorism on trade are higher transaction costs imposed by delays at security checkpoints or interruption of trade in areas with unfavorable safety conditions. Economic impact of terrorism on trade was surveyed by Nitsch and Schumacher (2004) who found out a significant decline in trade among countries affected by terrorist activity in 1960 – 1993.

¹⁷ **Direct public costs** of terrorism arise from destruction of public infrastructure such as government buildings, publicly organized transportation (e.g. buses, airlines) and military property (Schneider, Brück and Meierrieks, 2011).

¹⁸ **TTSRL** = Transnational Terrorism, Security, and the Rule of Law (see references).

¹⁹ Eckstein and Tsiddon (2004) estimate the per capita GDP of Israel to be 10% lower than it would have been without terrorist attack in previous years.

The effect of terrorism on *foreign direct investment* (FDI) is perceived to be negative as the unstable economic environment, uncertainty and potential threats diminish expected returns of the investment (Abadie and Gardeazabal, 2008) and therefore make companies to settle somewhere else. Empirical study carried out by Enders and Sandler (1996) found a negative relationship between the terrorism and FDI for France and Greece in period 1975 – 1991.

4.2 Counter-terrorism

As described previously the existence of terrorism is linked with undesirable consequences for the economy. The last financial crisis pointed out some significant economic vulnerabilities of the European Union such as interdependency within the common market, predisposition of financial market to economic disturbances or potential uncertainty caused by non-uniform decision-making of European leaders. These all can eventually contribute to the spread of negative economic effects when act of terror hits one or several European economies. To avoid such a negative outcome, individual countries and the Union as a whole has to develop counter-terrorism measures that would mitigate impacts of terrorist activity and that would be, at the same time, both politically and economically feasible. In general, governments can counter the threat of terrorism either defensively or proactively.

Defensive policies are designed to increase a difficulty of successful terrorist strike by placement of additional security personnel on the ground or installment of surveillance and security technology such as CCTV or metal detectors (Enders and Sandler, 2006). The resulting effect of defensive policy should be a deterrence of prospective perpetrators. As noted by Schneider, Brück and Meierrieks (2011) however, an increase in security measures may only induce terrorists to prefer different tactics or change their targets which in fact does not mitigate terrorist activity. In order to mitigate further impacts of terrorism, Frey and Luechinger (2008) suggest to introduce set of complementary measures, which would imply decentralization of polity and the economy and diffusion of media attention²⁰.

Proactive policies, on the other hand, target directly the terrorist's infrastructure and tries to eradicate causes of terrorist activity. The former pursue to disrupt the terrorism by capturing individual perpetrators with the use of intelligence and state of the art technology, attempt to

²⁰ **Decentralization** of polity and economy makes them less vulnerable to terrorist attacks and more substitutable in case of a destruction. Since the impact of terrorist act is mitigated, perpetrators are less willing to commit the attack. (Frey and Luechinger, 2008).

Diffusing media attention contributes to limiting of terrorist's propaganda, diminishing their utility from committed attacks and may possibly mitigate the support and financing from potential sympathizers (Frey and Luechinger, 2008).

cut off the sources of terrorist's financing or employ pre-emptive strikes. (Schneider, Brück and Meierrieks, 2011). The latter aim rather to undermine the legitimacy of terrorism and increase the opportunity costs of violence²¹ (Frey and Luechinger, 2008). Nevertheless, the identification of roots of terrorism is very complex on the global scale and therefore unsuitable for universal policy recommendation.

Counter-terrorism is in general perceived to impose a considerable burden to national economy since it causes reallocation of public spending to the defense sector. There, according to Heller (2009), might be these resources used ineffectively because excessive spending on security measures such as border protection causes additional costs (e.g. transaction, transportation costs) and does not deliver desired result of enhanced security.²² Despite these costs of counter-terrorism European countries tend to overspend on security policies rather than finding cheaper and economically more viable solutions via tighter and comprehensive international cooperation.

In recent history, Europe has been a target of both domestic and international terrorism. Due to the further radicalization of various religious and nationalistic groups and European involvement in troubled regions (e.g. Afghanistan, Mali, Iraq) there are prospects that the EU will have to cope with another terrorist attacks in the future.

Terrorism could be probably the biggest challenge for European security in near future. Moreover, interdependent European economy is vulnerable to both direct and indirect impacts of terrorism. Therefore, the common goal of all member states should be to work closely on development of cost-effective counter-terrorism policy that would confine spread of the terrorist movements but does not pose an inadequate burden for economies of European countries.

The next chapter offers an introduction to the applied part of this dissertation which is devoted to a study of military expenditure of European-NATO countries in 1989-2013.

²¹ To increase the **opportunity costs of violence** signifies to make the non-violent activity more attractive than the violent one. In practice, it means that people should be offered credible opportunities to promote their interests by other means than violence (e.g. political dialogue, reforms).

²² As noted by NATO Review (April, 2008) "*Making some targets 'harder' simply encourages terrorists to shift their focus. Terrorists can observe how governments change potential targets and then attack accordingly*".

II. Applied part

CHAPTER FIVE

Introduction to the applied part

The purpose of the fifth chapter is to provide a background for the applied part of this dissertation. The focus is especially given to description of methodology and introduction of a researched group.

5.1 Methodology

The research is based on a cross-national comparative study of military expenditure (MilEx). This method has been chosen with regard to the wide sample of countries which feature dissimilarities in their history, economic development, security prospects and other variables that could therefore significantly influence the level of defense spending. Moreover, quantitative aspect of this research is ideal for testing hypotheses presented in the Introduction of this dissertation.

Data on military expenditure reflects an amount of resources that is being used by the military sector. Even though a level of military expenditure (input) cannot be translated directly to the level of defense capabilities or security (output) it is well-suited for comparison to be made between countries and over time which is a goal of this dissertation. The value of military spending is measured either in current Dollars to serve as a development indicator or as a share of gross domestic product (GDP) to measure the burden of defense expenditure on individual economies (SIPRI, 2014).

The main source of data for this research is the database of the Stockholm International Peace Research Institute (SIPRI)²³. The secondary source of data are international statistics such as NATO defense expenditure statistics, Defense Data Portal of European Defence Agency (EDA) and the World Bank Database.

As the purpose of this study is to compare military expenditure in different European/NATO countries it is desirable to apply the commonly-used definition of military

²³ SIPRI collects data on defense expenditure directly from national governments primarily from their official publications such as national budget documents, defense white papers and public finance statistics published by national institutions (e.g. ministries of defense, central banks).

expenditure in this region, explicitly the one employed by SIPRI and NATO²⁴. According to SIPRI (2014), the military expenditure include spending on the all armed forces (including military and civil personnel, peace-keeping forces, retirement pensions and social services for members of military and their families), paramilitary forces, defense ministries and other government agencies, military operations and maintenance, procurement, military R&D, constructions and military aid.

5.2 Characteristic of researched group

The research is concerned with development of military expenditure in European Union and NATO countries during the period from 1989 to 2013. The focus of this dissertation is primarily on countries that are both members of the EU and the NATO (referred to as EU/NATO) which constitutes a sample of 22 nations²⁵. However, in order to achieve comprehensiveness of this study, it is desirable to supplement it also by statistics of EU-only²⁶ and NATO-only members²⁷. Additionally, Iceland has been excluded from the NATO-only sample due to data insufficiency (**Figure 5.1**).

At present day, the European Union consists of 28 countries (22 of them also member of NATO) with population of over 505 million, GDP of \$ 17.350 billion and about 20 % of global exports and imports in 2013 (Eurostat, World Bank, 2014). That makes the European Union one of the major global actors.

With regards to security issues, both defense and military budget decision-making of EU countries are still in hands of individual states. However, progress has been made with framing the European Security and Defense Policy (ESDP)²⁸, European Defense Agency (EDA) and other initiatives designed to coordinate and strengthen the defense sector of the European Union.

The NATO remains the most important military alliance for European countries although there is demand for creation of common military forces of European Union.

²⁴ Difference (insignificant for purposes of this study) between SIPRI and NATO definition of military expenditure is that SIPRI does not include demobilization, destruction of weapons and conversion of arms production facilities in its defense expenditure statistic.

²⁵ Belgium, Denmark, France, Italy, Luxembourg, the Netherlands, Portugal, the United Kingdom, Greece, Germany, Spain, the Czech Republic, Hungary, Poland, Bulgaria, Estonia, Latvia, Lithuania, Romania, Slovakia, Slovenia and Croatia.

²⁶ Austria, Cyprus, Finland, Ireland, Malta and Sweden.

²⁷ Albania, Canada, the United States, Norway and Turkey. (Iceland excluded).

²⁸ In 2009, ESDP has been renamed as the Common Security and Defense Policy (CSDP) by the Lisbon Treaty.

A map of Europe and its surrounding regions, color-coded to show membership in the European Union (EU) and the North Atlantic Treaty Organization (NATO). The legend indicates three categories:

- EU member only:** Dark blue.
- NATO member only:** Orange.
- Member of both:** Purple.

The map shows that most Western and Central European countries are members of both organizations (purple). Some Eastern European countries are EU members only (dark blue). Russia, Turkey, and several countries in the Balkans and Eastern Europe are NATO members only (orange). Iceland, Switzerland, and Norway are not members of either organization and are shown in grey.

Following chapter describes general trends and perform a cross-national comparison of military expenditure in EU/NATO countries.

CHAPTER SIX:

Military spending of EU/NATO countries in 1989-2013

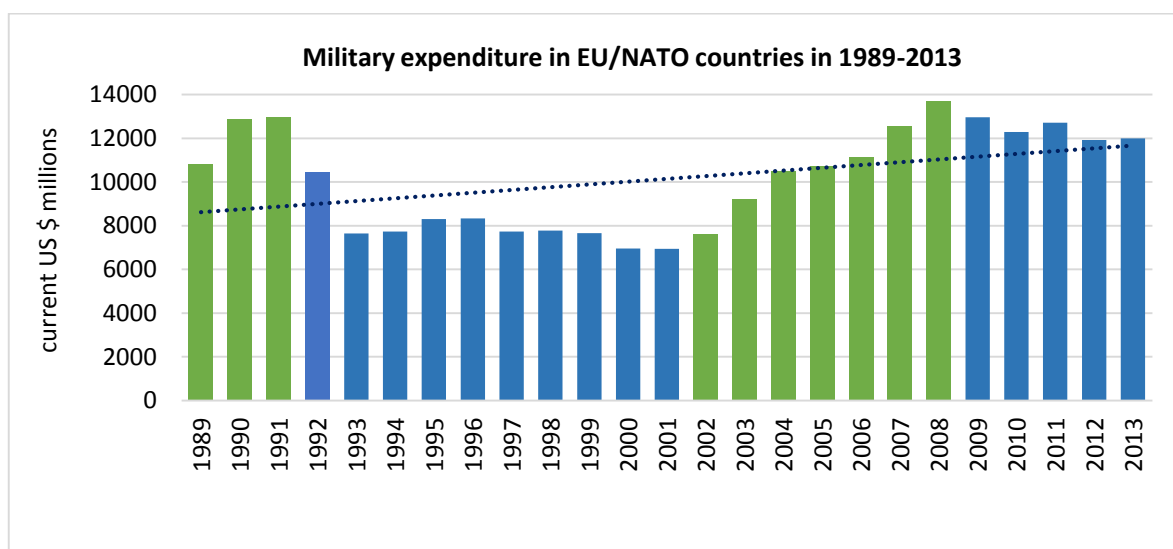
The main objective of this chapter is to carry out a study of military expenditure in European/NATO countries within 1989-2013 time period and closely describe observed trends. The secondary objective is to perform cross-national comparison among sample countries and identify three countries which are featuring specific patterns in their defense spending – particularly low, optimal and high military expenditure according to the NATO standard.

The chapter is divided in two subchapters. Firstly, I analyze general trends of military expenditure in EU/NATO countries in the 1989 – 2013 time frame and secondly, I focus on cross-national comparison of defense spending in individual groups of countries.

6.1 General trends

When we look at **Figure 6.1** we can observe that since 1989, on average, military expenditure in absolute value has had a rising trend and reached its peak in 2008 with \$ 13.7 billion spent on defense (expressed in current US – Dollars).

Figure 6.1: Defense spending in numbers

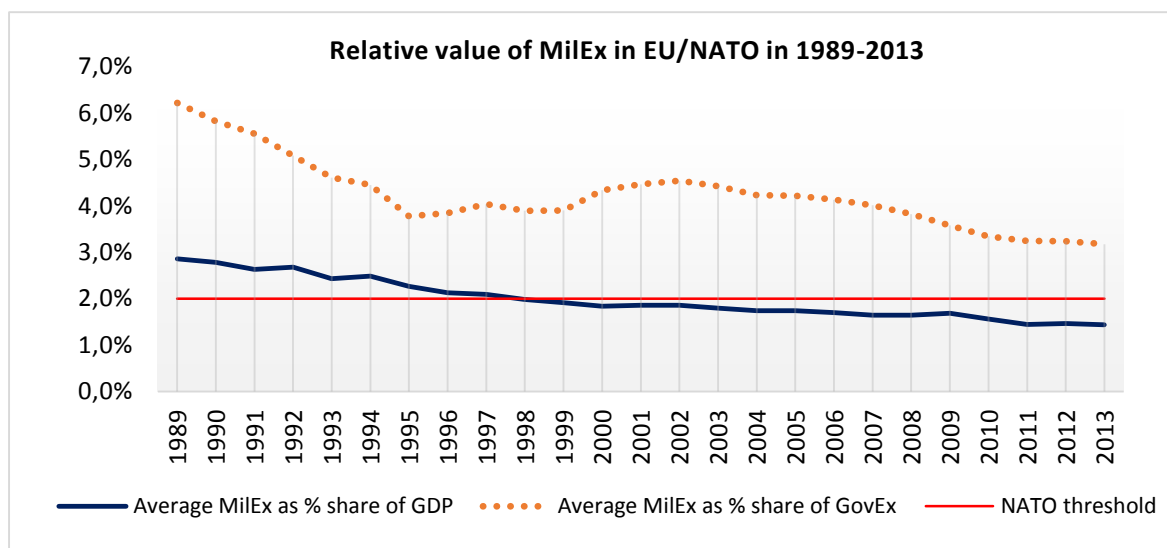


Source: SIPRI, the World Bank (2014)

There were two periods of relative higher spending (depicted by green color). The first one could be described as “reverberation” of the Cold War, where nations were still adjusting their defense spending to more peaceful international environment that was expected to follow. The second increase between 2002 and 2008 could be understood as a reaction to a threat of terrorism after 9/11/2001 attacks in the United States and the effect of European involvement in Afghanistan, Iraq and other missions.

Nevertheless, the most common way to capture a development of defense expenditure is to put it into relation with GDP or overall government expenditure (GovEx). The result is shown in **Figure 6.2**. It proves that even though the MilEx has increased in absolute value from 1989 to 2013, its relative value has dropped on average from 2.9 % of GDP in 1989 to 1.4 % of GDP in 2013.

Figure 6.2: Lagging behind the commitment

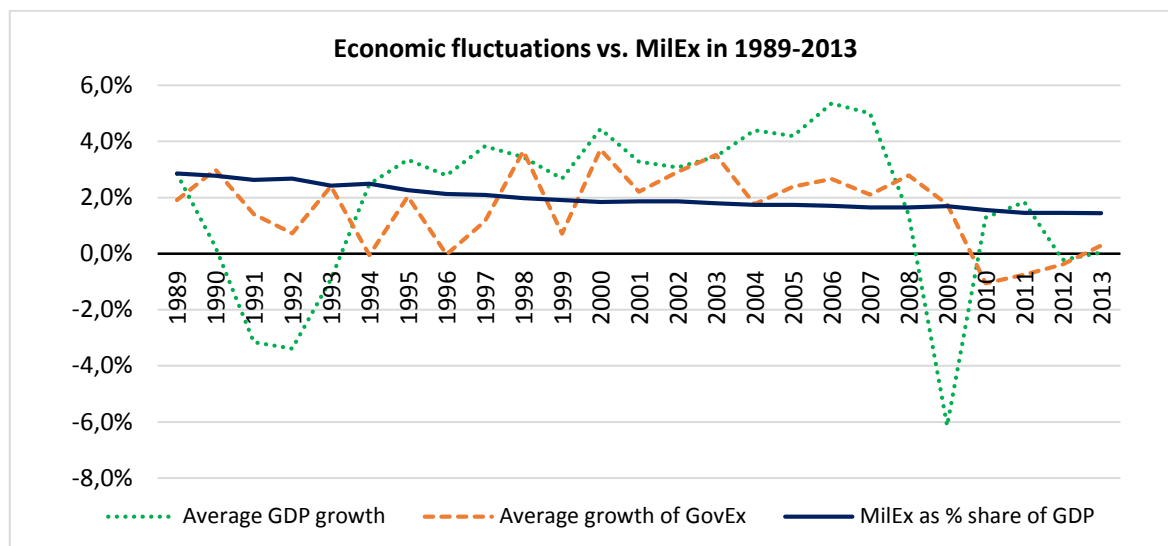


Source: SIPRI, the World Bank (2014)

More-importantly, though, results show non-compliance by EU/NATO countries with the agreement to keep their defense spending at least at the 2 % level of their GDP. According to obtained data, the NATO threshold (depicted by the red line) has been crossed already in 1998 and since then, EU/NATO countries are lagging behind on this given commitment. Similarly, we can notice a diminishing share of MilEx on overall government expenditure which signifies the reallocation of resources from military to public sector of the economy and gradual disarmament. This trend is most apparent between years 1989 and 1995 when the share of MilEx on GovEx decreased by 2.4 % on average.

I was also curious whether a cyclical economic fluctuations influenced a level of defense burden in economies of EU/NATO countries. In order to find out I have compared a growth of their GDP, growth of GovEx and the % share of MilEx on GDP. The outcome is evident in the **Figure 6.3**.

Figure 6.3: Military spending and the economy



Source: SIPRI, the World Bank (2014)

In the surveyed period, we could have witnessed two major recessions. The first took place in early 1990s as a consequence of transition of former Eastern-bloc countries towards market-led economy and the second was a result of Global Financial Crisis sparked in 2007. In the graph we can observe impact of both crises on the average GDP growth (green dotted line) and average GovEx growth (orange dashed line).

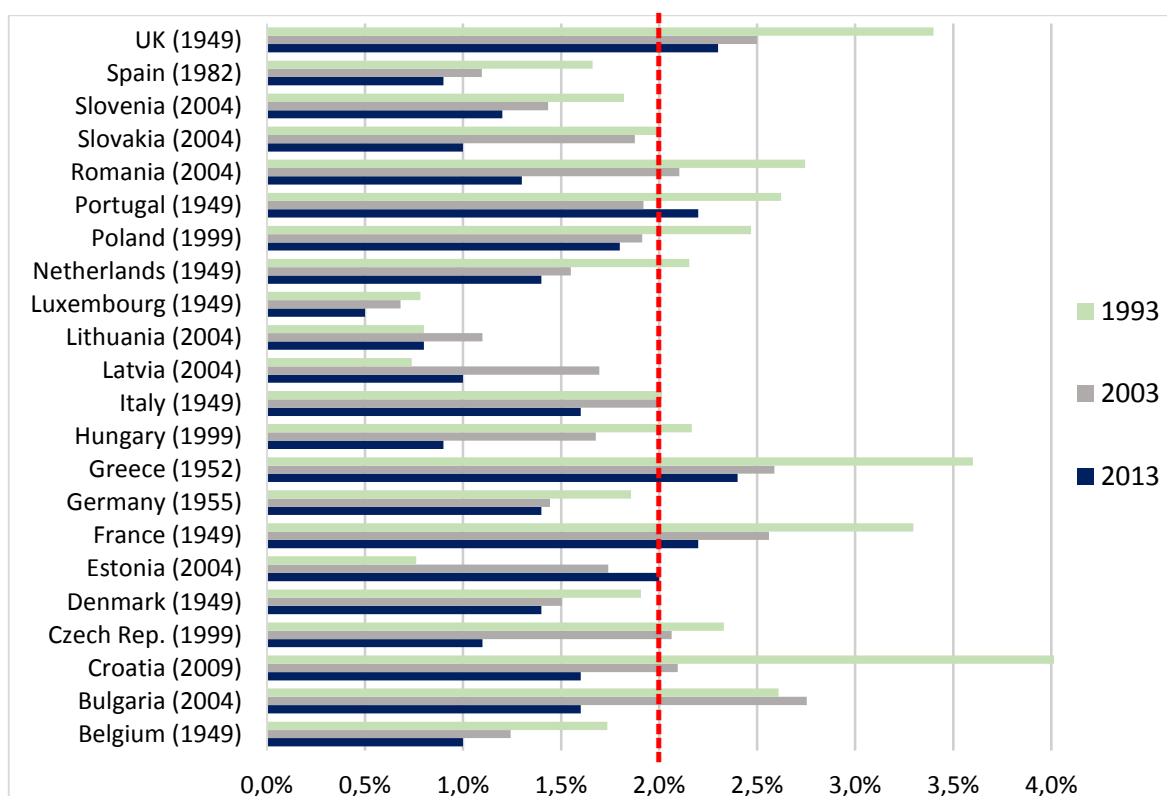
Despite the fact that there is a significant effect on both GDP growth and GovEx growth during the economic downturn, the data does not provide any evidence of relative change in MilEx caused by economic fluctuation in this period.

6.2 Cross-national comparison

In order to assess the MilEx internationally, it is desirable to compare MilEx in its relative value, that is, as % share of GDP in individual countries. That way, we can control for nations' specifics, such as economic size, that would otherwise make our comparison (in absolute value) biased.

The **Figure 6.4** presents an overview of MilEx in all 22 EU/NATO countries in years 1993, 2003 and 2013. Out of the sample of 22 countries, 18 of them have decreased their military spending between 1993 and 2003, confirming the overall trend of falling defense spending. Moreover, all countries except Portugal and Estonia have lowered their military expenditure in the last decade. In 2013, only 5 countries, namely the United Kingdom, Portugal, Greece, France and Estonia complied with the NATO commitment to spend at least 2 % of their GDP on MilEx. In addition, more than a half of countries was already below 1.5 %.

Figure 6.4: MilEx as % share of GDP in EU/NATO countries



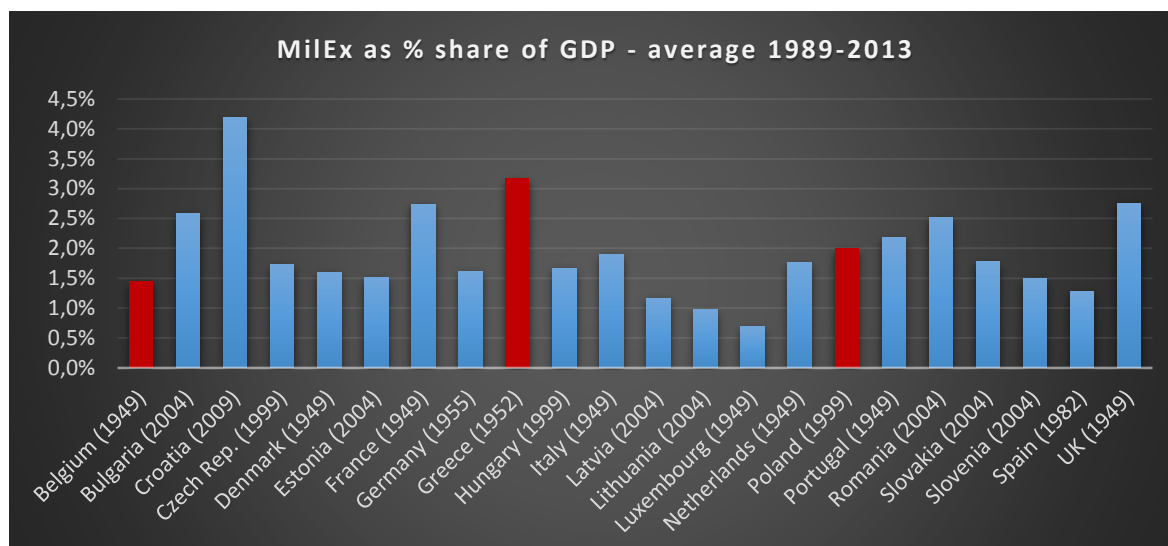
Source: SIPRI (2014)

According to data, countries admitted to NATO before 1989 tend to spend slightly more on MilEx than relatively “new members” of the Alliance. The “old members” of NATO spent in 2013 on average 1.57 % of their GDP on military. In the contrary, results for the newly-admitted countries show in the same year the average share of 1.3 % of GDP used for military purposes.

The partial objective of this chapter was also an identification of three countries which can be characterized by overall low, optimal and high defense expenditure in surveyed period.

For this purpose I have constructed the **Figure 6.5** that presents an average MilEx as % share of GDP of every country in the EU/NATO sample in 1989-2013 and therefore can more easily identify long-term pattern in MilEx.

Figure 6.5: Identification of high/optimal/low spending country



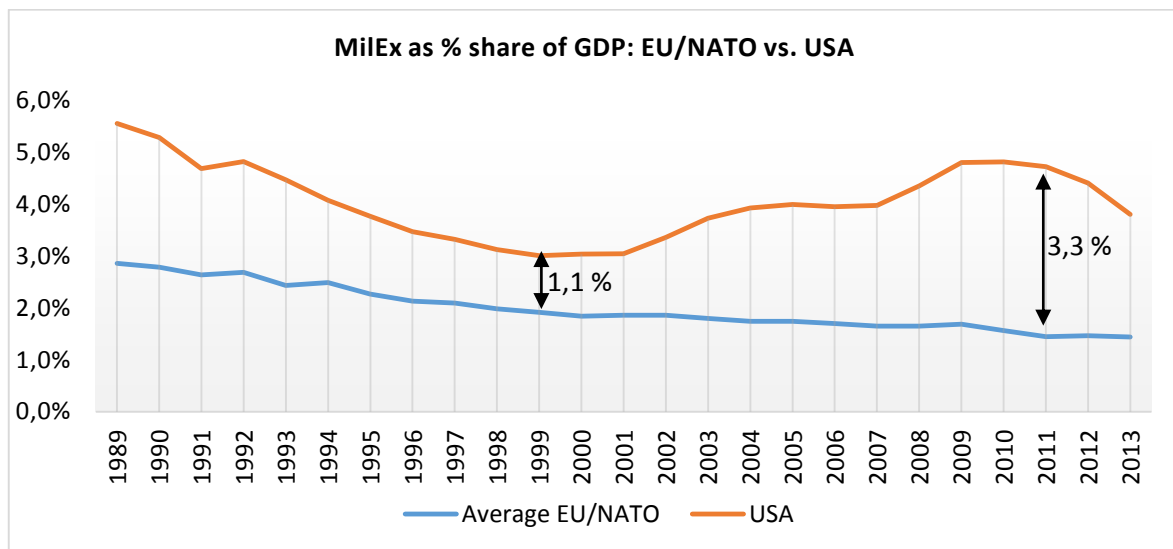
Source: SIPRI (2014)

Nevertheless, interpretation of average values has to be put into broader context, as in case of Croatia, which has been at war from 1991 to 1995 and its MilEx reached extreme value of 11.1 % of GDP in 1994. However, development of Croatian MilEx in the last decade suggest, that the period of overspending in 1990s was rather an exception than a long-term trend in Croatian defense spending. For this reason it cannot be marked as a country with overall high military spending. Similarly, Luxembourg cannot be objectively marked as a country with low MilEx since it does not have a proper military force. According to NationMaster (2014), its active military personnel consists of only 1,057 members. These facts obviously makes any comparison unreliable.

After consideration of similar specifics I have decided to pick countries which show a constant development of their MilEx in the whole period 1989-2013 and therefore can be really marked as countries with low, optimal and high defense spending. As a low-spending country I have identified Belgium with average defense spending of 1.4 % of GDP. The optimally-spending country is Poland with average MilEx reaching exactly 2 % of its GDP and finally, Greece may be marked as a country with relative high MilEx reaching on average 3.2 % of GDP. These will be further investigated in the chapter seven.

When we look at a comparison of European-NATO countries and the United States in the **Figure 6.6** we can come to two important conclusions. First of all, the US are bearing significantly higher defense burden in the whole surveyed period. Moreover, EU/NATO countries as a whole are free-riding on the commitments of the US for the joint-security within the Alliance because, on average, they are not able to maintain the agreed level of military expenditure. The most notable difference between the EU/NATO and the USA is in 2011 when the difference in relative value of the US-MilEx and the average of EU/NATO-MilEx reached 3.3 %.

Figure 6.6: Comparison of EU/NATO and USA



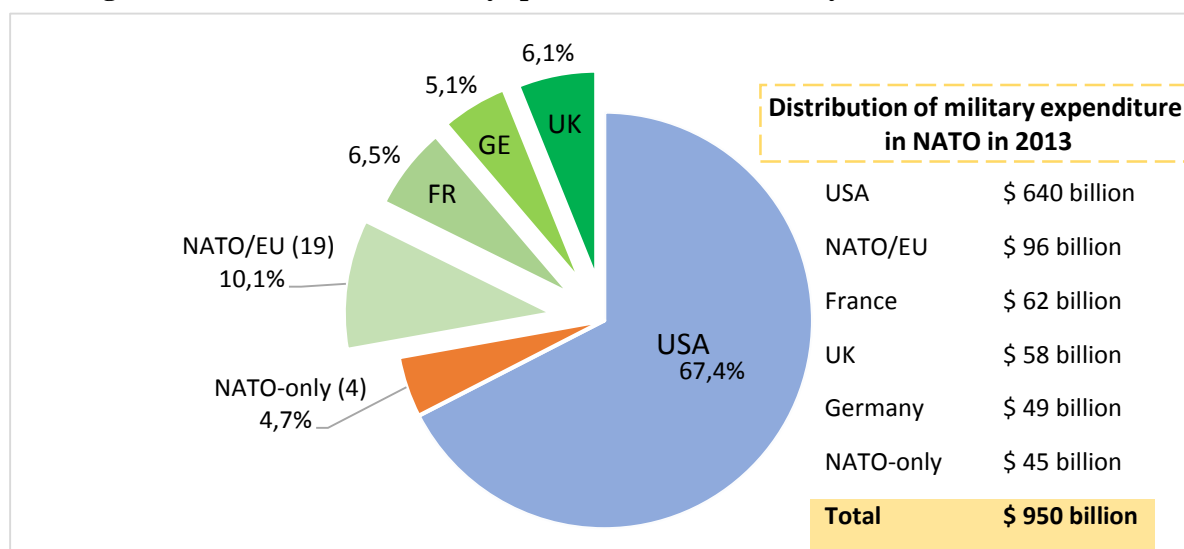
Source: SIPRI (2014)

The second conclusion can be derived from the trend of both MilEx curves. From 1989 to 2000 both the EU/NATO and the USA experienced relative decrease in their MilEx. However, after the terrorist attack in New York and Washington in 2001, the MilEx of the US began to rise again until it peaked in 2009 with the relative value of 4.8 % of GDP. This sudden increase in MilEx can be perceived as a reaction of the US-government to the change of the security prospects and following War on Terror that has begun in 2001. In the contrary to the development in the US, the average EU/NATO countries proceeded with the downward trend of their military expenditure. In 2011 it has reached its average lowest level with only 1.4 % of GDP spent on defense.

If we want to assess the distribution of MilEx in NATO in absolute value we can look at the **Figure 6.7**. The biggest spender among NATO countries were the United States with the share of 67.4 % on total spending in 2013. This was approximately equal to the amount of USD 640 billion.

European members of NATO have spent together about 25.8 % (green-shaded area). However more than a half from this portion was spent by France, UK and Germany alone. The smallest portion of MilEx was provided by non-EU countries namely by Canada, Norway, Turkey and Albania. All NATO members have spent together approximately USD 640 billion in 2013.

Figure 6.7: Which NATO country spend the most on military?



Source: SIPRI (2014)

The next chapter is devoted to the comparative analysis of defense expenditure and description of its peculiarities in Belgium, Poland and Greece.

CHAPTER SEVEN:

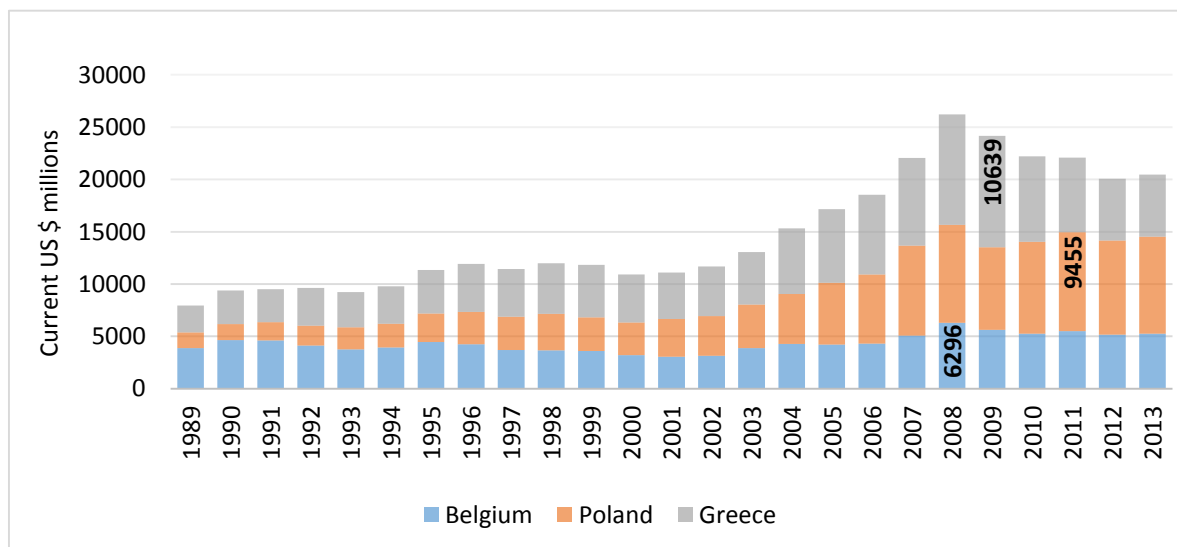
Comparative analysis of defense spending in Belgium, Poland and Greece

The main goal of the seventh chapter is to compare development of military expenditure in Belgium, Poland and Greece in 1989-2013. A subsequent task is to look at the distribution of overall military expenditure by different categories and describe findings for each country.

7.1 General comparison

Once we look at the military expenditure of Belgium, Poland and Greece in absolute value we can clearly see how important defense outlays in each country are (**Figure 7.1**). For instance, Poland started as a country with the lowest military spending in absolute value reaching only USD 1494 million in 1989. In 2013, however, it is the biggest spender with USD 9257 million spent of defense which signifies approximately 620% increase in the surveyed period. The reasonable defense expenditure in Poland is induced on one hand by several negative experience with its neighbors in the past and relatively realistic perception of threats by Polish officials and on other hand by close cooperation of Polish military with NATO which is perceived as assurance of Polish security.

Figure 7.1: Absolute value of MilEx in Belgium, Poland and Greece



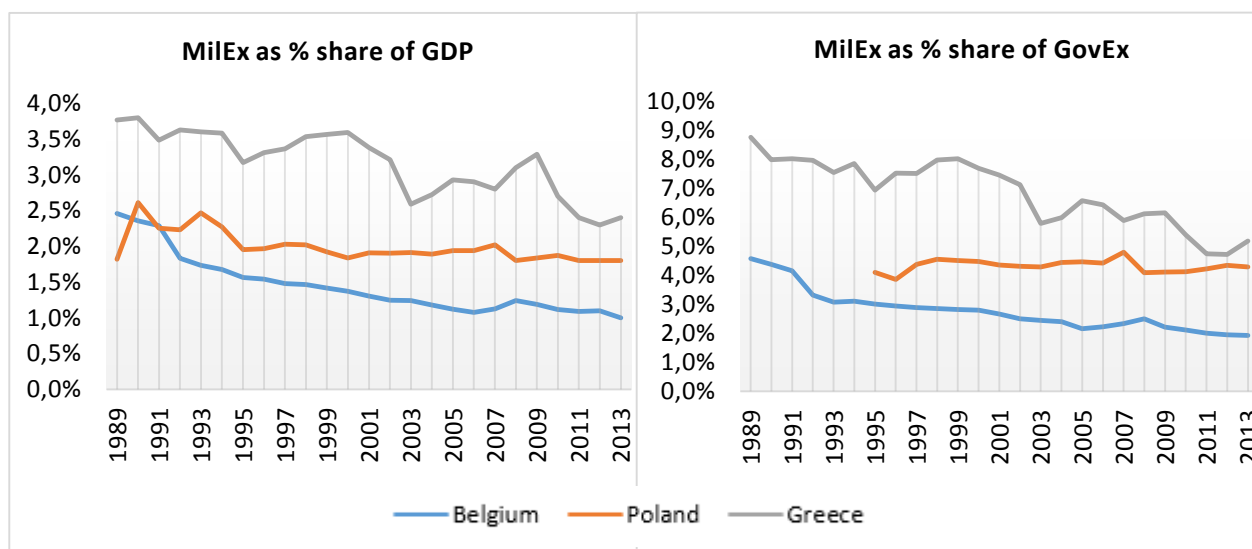
Source: SIPRI (2014)

The opposite development is visible in the case of Belgium which started as a country with the highest spending of USD 3881 million in 1989 but ended at the last place with only 36% rise in defense outlays and the sum of USD 5264 million spent in 2013. Belgium is located in the center of European Union and therefore it is very unlikely that it would have to face an open aggression as during the World War II. Belgium can be seen as an example of free-riding among the NATO countries.

Defense expenditure in absolute value in Greece is characteristic by its increasing trend from 1989 until 2009. Greece has been for many years involved in dispute over the Cyprus and demarcation of borders in Aegean Sea with Turkey (another NATO member), which resulted in local arms race between both countries and significant defense burden posed on public finances. The defense overspending in Greece has been reduced by austerity measures of Greek government resulting from the Sovereign-debt crisis in 2009. Since then, Greek military expenditure was falling every year to reach USD 5939 million in 2013, which is 44% drop in only 4 years.

Figure 7.2 shows defense expenditure in researched countries in relative value, which is, as % share of GDP and % share of overall government expenditure. In the case of Belgium all findings are with compliance with overall trend in EU/NATO countries showing the fall in relative value of military expenditure to 1 % of GDP in 2013 and marking Belgium as the low-spending country.

Figure 7.2: Relative value of MilEx in Belgium, Poland and Greece



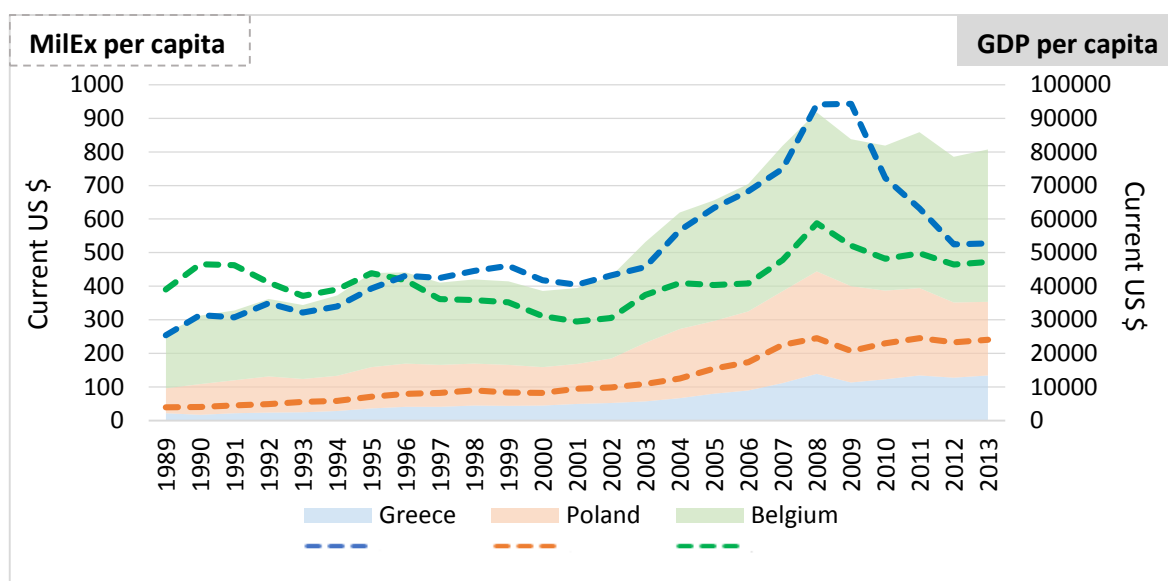
Source: SIPRI (2014)

In comparison with Belgium, Poland can be presented as optimally-spending country according to NATO standard. Since 1995 (4 years before admission to NATO), Polish military expenditure was hovering around 2 % threshold with the average value reaching exactly 2 % in the surveyed period. Moreover, MilEx as % share of GovEx in Poland has even risen from 1995 on, reaching on average 4.3 %.

Regarding Greece, percentage shares of MilEx on GDP and GovEx are well-above average of EU/NATO countries although closing the gap steadily since 1999. Greek MilEx has reached its minimum in 2011 with relative value of 2.4 % of GDP and 4.7 % of GovEx but allowing Greece to be referred to as high-spending country.

The next comparison has been made between MilEx and GDP per capita. As we can recognize in **Figure 7.3**, both statistics in each country show almost matching development when compared to each other in absolute value. From 1989 to 2005, there is an increasing trend of both MilEx and GDP per capita in all countries. However, the economic recession of 2008-2009 resulted in the slump of both figures which, in the case of MilEx per capita, continued until 2012.

Figure 7.3: MilEx and GDP per capita in Belgium, Poland and Greece



Source: SIPRI, the World Bank (2014)

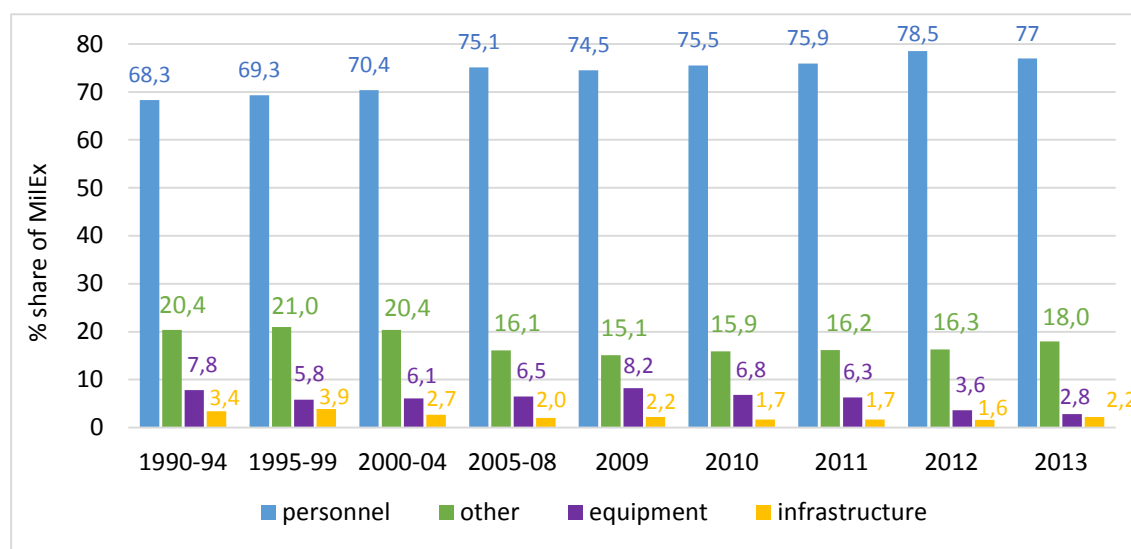
Considering individual states, Greece is the country with the lowest per capita GDP (blue-shaded area) but interestingly, also the one with the highest military expenditure for each person (blue-dashed line). According to data, every Greek spent an amount of USD 527 on military in 2013. Belgium, in per capita terms, has the biggest output and the second biggest MilEx

compared to Greece and Poland with every Belgian spending USD 472 on defense in 2013. Poland has been marked as an optimally-spending country considering relative value of MilEx on total GDP. In absolute per capita terms though, it is the lowest-spending country with only USD 240 spent by every Pole in 2013.

7.2 Defense expenditure breakdown

As we have already compared general trends of defense expenditure in Belgium, Poland and Greece, we can move on to comparison of country-specific distribution of MilEx. Individual categories are based on NATO definition of military expenditure and incorporate spending on personnel, equipment, infrastructure and other items ²⁹(NATO, 2014).

Figure 7.4: MilEx breakdown in Belgium



Source: NATO, 2014

Belgium has been previously marked as a low-spending country according to its relative value of MilEx. When we look at **Figure 7.4** we can observe that Belgian military use every year on average 73.8 % of its resources on personnel expenses. Approximately 17.7 % of “other” expenditure is every year devoted to operational deployment, maintenance and R&D associated with activities of Belgian military and the rest of 8.5 % is distributed to cover the costs of military equipment and infrastructure.

²⁹ **personnel** = military and civilian expenditure and pensions

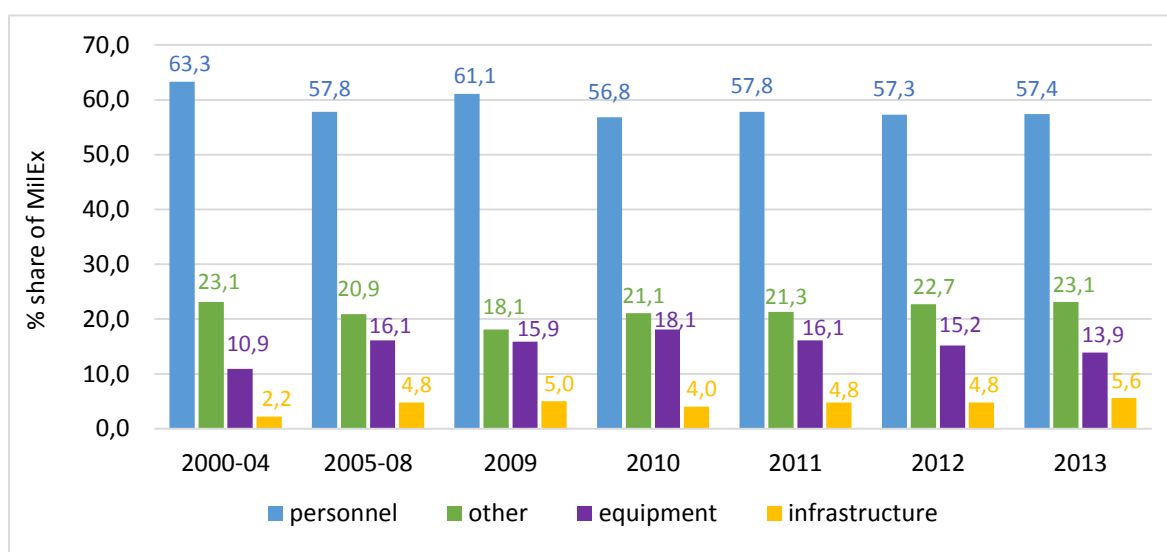
equipment = equipment expenditure and R&D devoted to major equipment

infrastructure = NATO common infrastructure and national military infrastructure

other = operations and maintenance, other R&D and other expenditure not mentioned previously

A breakdown of MilEx in **Poland**³⁰ shows the same composition of individual categories as in case of Belgium, however Polish military devotes more than twice as much resources from its military budget to equipment and infrastructure. The share of personnel expenses on overall MilEx is in the case of Poland 58.8 % on average. Poland is also the biggest relative contributor to national and NATO military infrastructure, spending on average four times more than Greece and twice as much as Belgium. Graphical interpretation of findings for Poland are depicted by the **Figure 7.5**.

Figure 7.5: MilEx breakdown in Poland



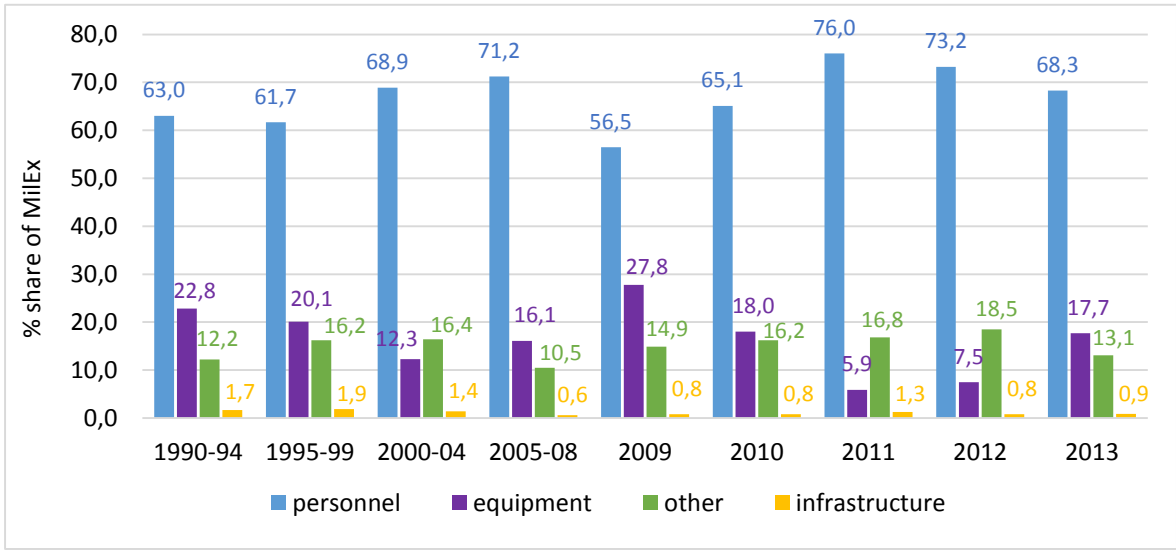
Source: NATO, (2014)

Even though percentage share of individual categories was observed to be without major changes in Belgium and Poland, **Greek** defense sector has been over the surveyed years subject to several temporary changes in the distribution of military expenditure. The only category of MilEx that has been relatively unchanged is the infrastructure, which however, received on average only 1.1 % of total Greek defense spending and therefore is insignificant from overall perspective. The biggest relative changes are visible in spending on equipment which reached its maximum in 2009 with the share of 27.8 % on overall Greek MilEx but plummeted two years later to its recorded minimum share of 5.9 % on total MilEx.

³⁰ Data on MilEx distribution by category are in the case of Poland available only for period 2000-2013.

The **Figure 7.6** shows a breakdown of MilEx in Greece.

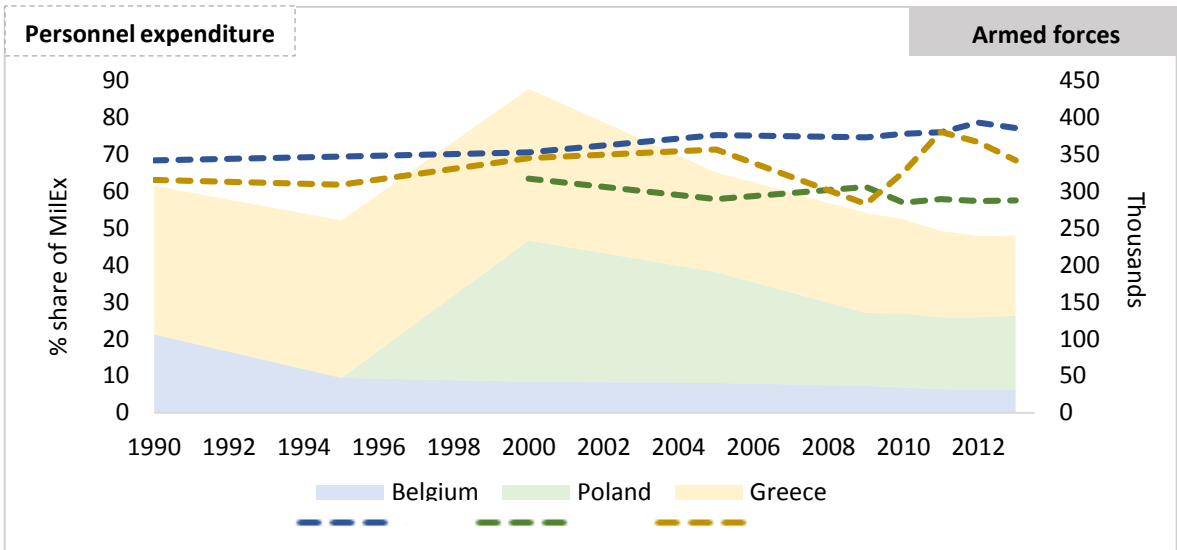
Figure 7.6: MilEx breakdown in Greece



Source: NATO (2014)

The analysis of individual categories of defense expenditure in surveyed countries also pointed out interesting features of military spending in Europe. First, the **Figure 7.7** puts into relation development of personnel expenditure (dashed-lines) and a number of armed forces (shaded areas).

Figure 7.7: Struggle between quality and quantity

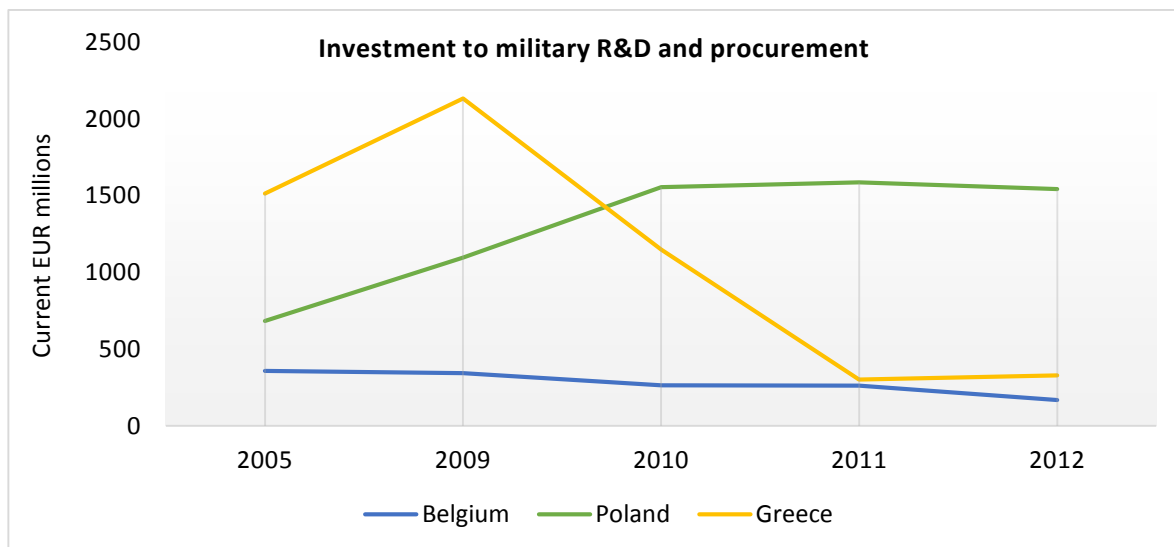


Source: NATO (2014)

The comparison shows that while a number of soldiers in surveyed countries is constantly dropping the share of expenditure on military personnel is increasing. Ultimately it means that there is more money spent on one soldier. These findings suggest that countries put more effort to build smaller but well-equipped forces rather than rely on overwhelming numbers.

Second, the **Figure 7.8** depicts expenditure on military R&D and procurement and its trend in recent years. Among surveyed countries, Greece used to spend the most resources on military investment until 2009 when it reached its peak with the absolute value of EUR 2133 million. However, cuts in Greek military expenditures led to 85% slump in investment between 2009 and 2012. Data for Belgium show gradual decrease of investment to military R&D and procurement which complies with the general trends of Belgian MilEx.

Figure 7.8: Decreasing investment to defense?



Source: NATO (2014)

Poland is the only country that increased its investment to both R&D and procurement in military sector and is now well ahead of Belgium and Greece with EUR 1543 million spent in 2012.

After evaluation of defense expenditure data attention can be drawn back to hypotheses which have been suggested in the Introduction. Following chapter shows the results.

CHAPTER EIGHT:

Hypotheses assessment

This chapter presents an assessment of hypotheses that has been suggested in the Introduction and their validity surveyed in the applied part of this dissertation. After evaluation of data I can conclude that:

- I. The hypothesis about compliance of EU/NATO countries with NATO 2% threshold since 2000 has been **denied** – on average, EU/NATO countries spend less than 2 % of their GDP on defense.
- II. The hypothesis claiming the change in downward trend of MilEx in absolute value in EU/NATO countries after 2001 has been **confirmed** – since 2001 MilEx has on average an upward trend among surveyed countries.
- III. The hypothesis claiming the change in downward trend of MilEx as a % share of GDP in EU/NATO countries after 2001 has been **denied** – on average, there is a declining portion of MilEx on GDP in the whole researched period.
- IV. Thy hypothesis about the United Kingdom contributing more resources to MilEx than any other European country has been **denied** – The most resources to defense (in absolute value) is contributed by France which has spent approximately USD 62 million on MilEx in 2013.
- V. Thy hypothesis suggesting a decreasing investment to military R&D and procurement in Belgium, Poland and Greece after 2009 has been **denied** – in Poland, military investment has a rising tendency in the watched period.

Conclusions

The issue of military expenditure is currently a vibrant topic among European policy-makers who have to make hard choices between spending in the civil or the military sector of the economy. Since the military sector is often perceived by general public as very inefficient, every decision to increase military expenditure at the expense of a public sector is for policy-makers difficult to vindicate. This fact led in the past to gradual decrease of defense expenditure in almost all NATO countries whose majority is now spending on military purposes less than 2 % of their GDP, with some countries even approaching 1 %.

The main objective of this dissertation was to assess and compare the military expenditure of European – NATO countries from 1989 to 2013. However, before moving to the study itself there had to be firstly some light shed on theoretical approaches to military spending. In particular I have focused on economic implications of alliances, disarmament and terrorism, which are compelling topics for today's European economy. The applied section was divided into analysis of defense expenditure in EU/NATO states as a whole and separate comparison of Belgium, Poland and Greece as countries that featured low, optimal and high military expenditure.

During assessment of my research I have come across several findings. Even though military expenditure of EU/NATO countries increased in absolute value in the watched period, its relative value as % share of GDP has been proven to be decreasing. Surveyed European countries are henceforth free-riding on commitment of the United States toward NATO which still can be marked as the main source of deterrence according value of defense spending.

Concerning comparison of Belgium and Poland, both countries have very similar structure of military expenditure devoting annually the biggest portion of defense budget to personnel expenditure, maintenance and operational expenses. Greece differs with relatively high portion of resources going annually to equipment expenditure. The investment to R&D and procurement has been shown recently to be decreasing in Belgium and Greece which is in contradiction with results for Poland where we can observe exactly opposite trend.

In the light of recent events in Ukraine, relatively unpredictable behavior of Russian government and the rising threat of the Islamic State, European leaders will have to find a way to ensure the sovereignty and security of European countries. A European demand for defense

is on the rise and once again policy-makers might use this fact to influence public opinion in favor of increased defense spending.

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