Military conversion in post-conflict countries: Determinants, impact, and a case study on policy implications for Colombia

By

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A mis papas y Catalina: gracias por el amor y apoyo incondicional.

A Leidy, Cristina y Abuela Elvira: gracias por todos los recuerdos, alegrías y el amor incondicional que me brindaron. Intentaré honrarlas cada día replicando su alegría.

Summary

This dissertation examines the determinants and the impact of military conversion on conflict recurrence in post-conflict countries. The dissertation also aims to identify some of the main elements needed to design a public policy addressing conversion processes. Military conversion is the process of transferring military resources to civilian activities. This process could appear after the end of an internal war. Based on existing theoretical and empirical studies, I develop a new empirical framework that allows me to identify that democratic regimes could lead to the onset of a military conversion process, while the US military aid variable could reduce the likelihood of starting a conversion process. Likewise, I test the effect of military conversion on the risk of conflict recurrence. The empirical evidence shows that the reduction of the military expenditure could prompt the probability of conflict recurrence. Additionally, the Colombian case study complements the findings on conversion determinants in a post-conflict society, specifically how the persistence of defence and security threats and economic growth affect the onset of military conversion process. Besides those findings, the Colombian case study provides evidence about the reallocation of less-used military resources to new or existing military roles. The use of less-used military resources for fulfilling any military role could reverse conversion processes in the short term. Additionally, I identify the future and feasible conversion alternatives in Colombia according to the dual use of some military resources (e.g., military bases).

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1. Introduction

The end of an internal conflict leads to several challenges for a post-conflict society, one of which is to define the future uses of its military resources. A national government seeks to allocate the military resources in a post-conflict setting in response to the remaining sources of violence and to eliminate the possibility of conflict recurrence. The future uses can include new and remaining military uses but also civilian ones. The option of civilian uses for former military resources is the result of the process known as military conversion.

In this dissertation I want to expand the research on military conversion by addressing three questions: what determines the onset of military conversion process, how it affects conflict recurrence and what are the expectations about military conversion in the post conflict stage in Colombia. The aim of this dissertation is to analyse the determinants and the impact of the onset of the military conversion process in post-conflict societies after the end of an internal conflict. The motivation is to identify which factors determine the national government's decision for allocating military resources to civilian uses. The identification of these factors also could indicate public policy guidelines about the efficient use of public resources and funds during the post-conflict stage. In the case of the impact, the dissertation focuses on the effect of the onset of the military conversion process on the likelihood of the renewal of the internal conflict. Likewise, the majority of previous military conversion studies have focused on cases in developed countries; therefore, research on conversion in post-conflict societies could be complementary due to the fact that most post-conflict countries are developing countries. This dissertation also studies the determinants of conversion and the future allocation possibilities of military resources in Colombia, a country where a post-conflict period is ongoing.

Colombia is an interest case of study because has one of the most sophisticated armed forces in Latin America, an important level of institutional strength and the oldest ongoing conflict with a rebel force, 56 years. Moreover, the peace process negotiation between the Government of Colombia and the Colombian revolutionary armed forces, people´s army (FARC EP) led to the sign of a peace agreement between Colombian government and FARC in 2016.

Over the years FARC-EP as a revolutionary army evolved from a rural guerrilla to a more sophisticated one. The principal sources of funding of FARC-EP were the kidnapping and drug trafficking, these funding sources generate a change in the strategic actions, aspirations and expectations of the FARC as a rebel army.

Meanwhile Colombian army strengthened and evolved in their tactics, number of military personnel, technical and human capacity. One inflexing point in Colombian internal conflict started in 1999. The military aid initiative supported by US called “Plan Colombia” contributed to a strong change of goals, methods and military strategy. Also, the Colombian government and the Colombian tax payers, through special wealth taxes devoted exclusively to defence sector, contribute to the improvement and modernization of the Colombian armed forces between 2002-2015. Thus, the military effectiveness against rebel groups contributed to the onset of peace negotiations with the main guerrilla groups FARC and ELN.

The challenge for the Colombian state is to take advantage of the enhanced military capabilities, most of them related to counterinsurgency roles, by defining new military roles and allocating military resources in a post-conflict scenario. Colombia will face new defence and security threats, some of them derived from the previous conflict, then studying the

determinants of the onset of military conversion and its impact on the likelihood of conflict recurrence makes relevance as a research agenda.

Most of the academics that have written or study military conversion, agreed about the fact that conversion must have a deeper understanding of the (i) political economy of organized violence in society, (ii) the causes and effects of the investments into the military and security sector, and particularly (iii) the vested economic interests of the armed forces and defence industries (Von Boemcken, 2017: 14) However this is not the main focus on the current peace and conflict research now a day.

In my dissertation I tried to have the above-mentioned focus. This introduction is the first chapter, it describes the evolution of the concept of conversion and his relationship with the concepts of Security Sector reform (SSR) and Disarm, Demobilization and Reintegration (DDR) processes. In the second chapter, I do a quantitative exercise using a panel data set of all countries that have military forces aiming to identify the determinants of the onset of military conversion process, I design the onset of military conversion index (OMCI) that helps to measure the level of simultaneous confidence in the onset of military conversion by country and year. In the third chapter, I estimate the impact of military conversion on conflict recurrence using a panel data set that contains all countries that have experience a post conflict period. Finally, the fourth chapter considers Colombia as a study case to understand the expectations and visions of the Colombian stakeholders about expectations of use of military resources and possibilities of military conversion processes. The study case relies on a qualitative exercise of analysing semi structured interviews that I did in Bogotá Colombia during July and august of 2015.

I found empirical evidence that having a democratic regime increases the likelihood of the onset of a military conversion process (second chapter). In the third chapter, I found that the military expenditure has a negative statistical relationship with the conflict recurrence. In my fourth chapter, I found that a post-conflict society could choose between a military conversion process and the definition of new military roles for using the existing military resources. Also, the uncertainty about the future makes difficult to differentiate general from individual motivations for conversion in a post-conflict society, for example the ministry of defence could pursue bureaucratic interests to protect his current resources will create new military roles or participate in existing internal security ones.

I contribute to the defence economics literature by (i) developing a new index for measuring conversion and by providing empirical evidence on the determinants and the impact of the military conversion process. The onset of military conversion index (OMCI); (ii) Identifying different military conversion confidence cases by each country for the period between 1970 and 2007; (iii) The literature in military conversion has presented multiple case studies, but not a cross-country estimation, to the best of my knowledge, this dissertation provides the first quantitative model to estimate the determinants of the onset of military conversion using a global dataset and considering security, economic and political factors.

1.1 The concept of conversion and its relationship with DDR and SSR

1.1.1 The evolution of the concept of conversion

Military conversion is a concept tied to the Cold War. The systematic analysis of conversion emerged in the second half of the twentieth century in academic literature because of the need of developed countries to reuse military capabilities in the civilian sector after World War II (Jesulic, 2006: pp.345-347) and the concern about the arms race between the United States and the Soviet Union. The end of the Cold War generated more interest in conversion research due to the expected peace dividend that could potentially be derived from the disarmament and the application of military conversion processes. The expectation of the peace dividend was not fully fulfilled, and so the conversion research has stopped growing in recent decades.

Defence economics research generated the initial concept of military conversion. The earliest definition only focuses on the transformation of military companies into civilian ones (Melman, 1970, 1974). Brzoska (2000b, p.134) summarizes two levels of analysis in conversion of the defence industry in the literature: conversion of the firm and conversion of the resources (e.g., personnel, capital, land). The firm-level conversion analysis has produced most of the studies in military conversion. These studies have focused on the technical and economic conditions that could generate efficient productive activities from former military industry (e.g. Dumas, 1982; United Nations, 1991a, 1991b; Clark, 1994). Likewise, the majority of firm conversion research corresponds to case studies focusing on developed countries (e.g. Lee, 2011; Alexeev & Sikorra, 1998).

The process of resource conversion is a refined definition of conversion. Interest in it has surged due to the limitations of the firm-level approach, for instance, “the assumption of a simple and static model of production centred on the firm” (Brzoska, 2000b: p.134). This assumption discards the possibility of partial conversion, i.e. the conversion of some resources within the firm and not the whole firm. The firm-level approach also prevents analysis of the cases of companies that produce both military and civilian goods (i.e. diversification). The resource conversion definition covers the possibility of partial conversion and adopts one of the main features of modern production: the constant reallocation of factors of production (Brzoska, 2000b: 134).

The study of disarmament and the peace dividend in developed countries and Eastern Europe after the end of the Cold War adopted the resource conversion definition (e.g. Laurence & Wulf, 1995; Knight, Loayza & Villanueva, 1996; Rockoff, 1998; among others). Using the resource definition, the military conversion process could apply to the resources used in military operations (i.e. personnel, equipment and military bases). Thus, the military conversion becomes a process to obtain the peace dividend. Intriligator (1996: 2-3) summarizes how the peace dividend should be understood as the outcome of a type of investment. The initial costs are those related to the transformation and shift of labour and capital from military to civilian productive activities in the short term, i.e. the military conversion process. The benefits, expected in the long term, will be the revenues from the continuous use of the former military resources in other economic activities.

The literature on military conversion grew continuously during the 1990s. One of the main contributors was the Bonn International Center for Conversion (BICC). This think tank extended the application of the resource conversion definition. BICC led multiple studies on six dimensions of conversion (e.g. the Conversion Survey annual review of global

disarmament and conversion published from 1996 to 2004). The six dimensions correspond to each type of military resource, military expenditure, the military industry and military research and development (Laurence and Wulf, 1995). BICC's research agenda focused on the analysis and identification of a considerable number of military conversion processes in different countries.

The boom of the military conversion concept ended in the 2000s. The main causes were the negative perception of the adverse impacts of disarmament, the "War on Terror" after the 9/11 attacks, and the difficulty of obtaining the peace dividend (Brzoska, 2007; von Boemcken, 2017). As a result, there are now less academic articles dedicated to analysing military conversion processes than in the 1990s (von Boemcken, 2017: 6) and different national governments have discarded the possibility of military conversion programmes. However, Security Sector Reform (SSR) literature sometimes mentions military conversion as one of the main activities in a reform agenda (e.g. Wulf, 2004; UNDP, 2002). Also, some case studies about the closure of military bases have used the military conversion concept (e.g. Myrttinen, 2003; Havlick, 2007; Paloyo et al., 2010).

Currently, the military conversion concept is not popular in the literature, but the conversion process is still happening. One case is the potential allocation of military resources to civilian activities after the end of an internal war. A post-conflict society must allocate public funds between many priorities and needs, and therefore the military conversion process could be an allocation alternative either to obtain new public funds or to reallocate idle public goods (i.e. former military resources). However, a post-conflict society could not choose to start a military conversion immediately after the end of the conflict due to the risk of conflict recurrence and the remaining defence and security threats.

In my dissertation I use the resource-reuse military conversion definition, i.e. conversion is the process of reusing former military resources in civilian activities (Brzoska, 1999a, 2000a). Following the resource-reuse definition, the onset of the military conversion process starts when a national government decides to reduce the use of any military resource (Brzoska, 2000a). The resource-reuse definition thus allows for measuring the levels and the change of the freed military resources (military conversion potential) that may be used in civilian activities at country level (Brzoska, 2000a).

1.1.2 The relation between DDR and SSR

The study of military conversion in post-conflict societies aims to contribute to the Security Sector Reform (SSR) and defence economics research fields. The SSR aims to help to achieve the stabilization of a post-conflict society through changes and reforms to all public organizations responsible for security (e.g. the military forces). The SSR agenda includes some recommendations related to the use of military resources that could generate the onset of military conversion, such as: demobilizing and reintegrating surplus security personnel, professionalization of military forces (i.e. possibility of voluntary military service), changing military roles (e.g. dissociating the military from an internal role) and improving the management of security expenditure (Ball, 1998; Hendrickson & Karkoszka, 2005). Then, the identification of possibilities of conversion and its determinants could lead to the incorporation of some guidelines in the international donor aid SSR protocols for the post-conflict countries. For instance, it could result in the inclusion of commitments to improve the efficiency of the use of military resources. Likewise, the empirical evidence of the impact of military conversion on the risk of conflict renewal indicates which public policy guidelines could generate adverse conditions for the peace scenario.

The Disarm Demobilization and Reintegration (DDR) literature is more focused into actions to reintegrate and deal with the rebels and the communities affected by conflict violence. The rebels in a DDR process are a key actor since the main goal is to reintegrate them into the legal life. One type of reintegration is to become part of the national army, as Angola and Mozambican cases, that were successful (Knight 2010). This case is the opposite situation to the onset of a military conversion process because military personnel and the associated expenditures are increased. In contrast, the SSR aims to demobilize and reintegrate surplus of military personnel.

The SSR and the DDR initiatives are complementary because both seek stability on the security conditions in a post-conflict society. However, the implementation of SSR and DDR seem not linked for all cases due to the DDR programs only consider military personnel when a peace agreement determines provisions for the demobilization and reintegration of government armed forces personnel, for instance, El Salvador and Guatemala cases. An uncertain situation arises when a conflict end without defining DDR and conversion initiatives for both rebels and military personnel.

DDR and SSR, through conversion processes, have a common goal to reintegrate to civilian activities to armed personnel. The military personnel could be allocated to other military roles inside the military branches, while rebels could go back to the civilian life immediately if there is not a provision for integrating them to the national armed forces. Both, without a clear post-conflict conversion or reintegration policy, risk to be cooptated to participate in illegal activities and become new violence threats (UN, 2010).

1.2 Overview of the Chapters

1.2.1 Chapter 2: Determinants of the Onset of Military Conversion

In the second chapter, I identify the main determinants of the onset of military conversion. I design a quantitative exercise to test, following the literature, if war termination, security risks, national income, political regime type and US military aid influence the government's decision for reducing the use of military resources. Although the focus of the dissertation is post-conflict societies, I estimate logistic and ordered logistic regression models including all countries that have had military forces during the period 1970-2007 to avoid selection bias. The main theoretical references are the military conversion literature, studies on the demand for military expenditure and military personnel. Among the several determinants, the chapter explores hypotheses associated with post-conflict countries: the involvement in a conflict reduces the likelihood of military conversion, while a long period of stable security conditions after the termination of a war in a country has the opposite effect.

Different events could lead to the onset of a military conversion process. The most notorious cases of military conversion have been identified at the end of either a regular or an irregular war, e.g. the end of World War II or the conflict termination in South Africa (Brzoska, 2007). Other events could also guide towards a military conversion process, such as disarmament settlements (Laurence & Wulf, 1995), the end of a military intervention (Brzoska, 1999a), defence restructuring processes (Manigart, 2006; Jelusic 2006), institutional reforms (e.g. Security Sector Reform initiatives, see Brzoska & Heinemann-Grüder, 2004), and programmes for the replacement of obsolete resources (Laurence & Wulf, 1995). A common feature of all those events is the oversupply of some military resources. Likewise, each one of those events could produce a different magnitude of the available former military resources and dissimilar durations for the conversion processes.

The evidence of the onset of military conversion associated with those events comes from the quantity variation of the military resources. I develop the OMCI, which is an index that allows the identification of the level of simultaneous confidence in the onset of military conversion. The index considers the simultaneous variation between military expenditure, military personnel and the type of recruitment by year and country. The OMCI generates several conversion measures that are used as dependent variables in the quantitative models. Overall, the two hypotheses stated in the chapter cannot be proved with the available measurements of the conflict variables. However, the results state that the effects of US military aid and the presence of democratic forms of government are among the most robust predictors of the onset of military conversion. This result was obtained after the adjusting the models in order to correct the endogeneity issue.

1.2.2 Chapter 3: How Does Military Conversion Affect Conflict Recurrence?

The third chapter aims to provide empirical evidence on the impact of military conversion on the likelihood of conflict recurrence in post-conflict societies. Military conversion is likely to affect both the willingness and opportunity of actors involved. Following the literature on conflict recurrence, the military conversion could affect the risk of conflict renewal through two opposite mechanisms that influence the government and the rebels' attitudes: deterrence and economic benefits (Collier & Hoeffler, 2006).

The deterrence mechanism indicates that if the government reduces the military resources the former rebels will have high victory expectations, and then the onset of a military conversion process will increase the probability of conflict recurrence. In contrast, the economic-benefits mechanism refers to how the military conversion generates economic benefits, because the transference of military resources to civilian activities improves

economic growth. In this instance, the income and development improvement could relieve discontent and then reduce the risk of conflict renewal.

I estimate several logistic regression models using the model structure presented in Rustad & Binningsbø (2012) and including the military conversion variables derived from the OMCI in the second chapter. The sample includes 94 post-conflict countries from 1971 to 2006. The findings indicate the military expenditure could increase the likelihood of conflict recurrence, however the other military conversion measurements do not show any statistically significant relationship with the likelihood of conflict recurrence. The evidence of the deterrence mechanism is obtained when the conflict recurrence model includes the military expenditure variable.

1.2.3 Chapter 4: Military conversion in Colombia

The fourth chapter aims to identify the expectations for military conversion and the possibilities of new uses for military resources in Colombia during the post-conflict stage. The civil conflict in Colombia between the Colombian government and FARC rebels ended in 2016. Colombian military forces and police are currently planning and executing a transformation process ("Colombian Armed Forces 2030") to determine the future roles and uses of military capabilities. This might also lead to the reallocation of oversupplied military resources to civilian use.

I use a military budget decision-making process model and some concepts from bureaucratic theory to identify the factors that affect the key policy-making groups' decisions on military budget. Empirically, I mainly rely on interviews with different stakeholders and experts on defence and security in Colombia that have been conducted in 2016.

The Colombian case study contributes to our understanding that a post-conflict society could choose between the military conversion and the allocation of military resources to new or existing military uses. The reallocation of military resources to new uses could be related to the need to reduce the conflict recurrence risk and to counter other violence sources. The results indicate that the Colombian experts' perception is that a military conversion process is not viable in the short term in Colombia due to the risk of conflict recurrence and the presence of non-state armed groups. Therefore, the military forces will reallocate the existing military resources to other military roles. In contrast, the expectation of military conversion appears in the medium term to the long term, under the assumptions of the absence of conflict recurrence and that the military forces counter effectively the remaining defence and security threats. Finally, in accordance with experts' perceptions, the feasible possibilities of military conversion are the reorganization of the military bases and the reallocation of public funds from the military sector to other public sectors, because those resources have dual use (i.e. civilian and military use).

Chapter 2. On the Determinants of Military Conversion, 1970-2007

2.1 Introduction

Each time a government decides to reduce or downsize military resources to free resources for civilian use, we talk about military conversion (Brzoska, 1999a). For example, military conversion occurs when there is a demobilization of military personnel. The global reduction of regular military personnel in the last four decades, from 24.9 million people in arms in 1970 to 19.7 million in 2007,[1] shows that many countries have pursued conversion processes, with some of them implementing a planned defence restructuring, while others have completed reintegration of former military personnel into civilian jobs. Not surprisingly in light of this background, the literatures on defence economics, political science, and sociology have extensively studied military conversion[2] (Jelusic, 2006: 346-347).

Despite the global importance of military conversion, with its various impacts on governments' resources for civilian purposes and other sectors of the administration, we know surprisingly little about the determinants behind it. While there are studies that focus on military industry (e.g., see Gleditsch et al., 2000), there is no work focusing on a broad and comprehensive set of military conversion phenomena besides these issues. In fact, to the best of my knowledge, there is no systematic study developing and making use of a quantitative data that would allow for controlling a broad set of determinants and inferring more generalizable conclusions. This paper aims to address these shortcomings (also highlighted by Brzoska, 2000b), namely that military-conversion studies are largely

[1] According to the Correlates of War Project (CoW).
[2] Alternative terms in the literature are "defence conversion," "economic conversion," "arms conversion" or simply "conversion."

descriptive and based on case studies, while lacking comparative and generalizable conclusions.

Since the 2000s, the number of studies on conversion has decreased,[3] mainly because of two reasons: first, the limited success of peace-dividend benefits to certain countries, as described by Brzoska (2007); and, second, the linkage of the concept of conversion to the wider concept of Security Sector Reform (SSR), where it has been included as one of the strategies, but not the only one (see also Wulf, 2004; Brzoska & Law, 2007).

The aim of this chapter is to identify the main determinants that are likely to lead to governments' military disarmament and demobilization. Its main contribution is taking stock of the empirical evidence behind military conversion and to significantly further our understanding of the factors that influence the likelihood of military conversion. My work focuses on the period from 1970 to 2007, which enables me to consider the main conversion events generated by the end of the Cold War and the adoption of all-volunteer forces in an increasing number of countries. Theoretically, my work is based on various streams in the literatures on military conversion (e.g., BICC, 1996; Manigart, 2006), defence restructuring processes (e.g., Jelusic & Selby, 2000; Manigart, 2006) and the demand for military labour (e.g., DeBoer & Brorsen, 1989; Kim, 1991). I derive a set of main determinants behind military conversion from these studies, eventually focusing on war termination, restructuring processes to armed forces for improving military efficiency and/or effectiveness, economic constraints or countries' political regime type.

[3] During the 2000s, closure of military bases is one of the few conversion topics to have continuously attracted some attention, though.

Empirically, I contribute to earlier work by introducing the Onset Military Conversion Index (OMCI) as a tool for measuring the beginning of a military-conversion process. The OMCI identifies three cases (high, medium and low) of confidence in military conversion. I use the OMCI as the dependent variable in the estimation of a binary time-series-cross-section (BTSCS) model. A key result is that a more democratic regime tends to be associated more strongly with military conversion.

The remainder of the chapter is structured as follows. The next section is the literature review in which I first define the concept of military conversion and how the use of military resources is coherent with disarmament and demobilization as the onset of a conversion case. Afterwards, I derive a set of hypotheses about the factors that might influence governments' decisions on reducing military power. The third section is the research design, focusing on the new demobilization index for the period 1970-2007. The fourth section comprises the quantitative analysis and the robustness checks. The final section contains the conclusions and remarks on the future research agenda.

2.2 Conversion as a Political Decision: A Theoretical Discussion of Determinants

2.2.1 The Concept of Conversion

Military conversion is the process of transferring military resources to the civilian sector for re-use (i.e. use for civilian purposes), as discussed by Moller (1994), Intriligator (1996) and Brzoska (1999b). An example of re-use is the allocation of military helicopters to civilian activities. This approach is known as "the resource re-use view of conversion" and it is the most used in empirical studies during the 1990s (Brzoska, 1999a, 2000a, 2007) because its main focus is on the available resources for civilian use when there are reductions in armaments, demobilization or demilitarization.

The military conversion process has three stages. The first is the onset of the process when a national government decides to reduce the allocation of its productive resources to the military. The second stage is the governmental decision on how to reallocate the former military resources. Usually, a national government faces four alternatives (Lawrence & Wulf, 1995): to design a planned conversion programme led by the government or to trust in the free market mechanism of resource allocation; to leave specific resources, such as land and equipment, idle; to allocate the resources to a new military use; or to eliminate the resources. The third and final stage only occurs when the government makes a planned conversion programme; this stage includes the activities for guaranteeing the successful re-allocation of resources in the civilian sector. The aim of this chapter is to understand which factors determine the likelihood of the onset of military conversion, the first stage of the process, using the resource re-use definition.

2.2.2 The Conflict as Determinant of Military Conversion

The military-conversion literature points to some determinants of the onset of military conversion. First, events of demobilization of regular military personnel and reduction of military expenditures have appeared throughout history. Examples include the United States after notable wars and military interventions (e.g., Davidson, 1994[4]), the former USSR and European countries during the post-Cold War period (e.g., GAO, 1997) and the reductions originated by the end of the internal armed conflicts in Central American countries (e.g., BICC, 1996a,b). Moreover, some institutions, such as the Bonn International Center for Conversion, (BICC, 1996: 36), and authors such as Moller (1994), Davidson (1994) and

[4] Davidson (1994) describes demobilization events of World War I (WWI), World War II (WWII), the Korean War and the Vietnam War.

Jelusic (2006), argue that the termination of a war and the inherent post-war reconstruction situation are key determinants of the onset of military conversion.

The motivations to reduce the size of military forces in a post-war situation could thus be related to the fulfilment of disarmament agreements relating to either international initiatives or after a peace accord or a military victory, the necessity of public resources for reconstruction tasks and the changes in roles and missions of the armed forces (BICC, 1996; Brzoska, 2000a: 16; and Jelusic, 2006).

However, the internal and external security perceptions of the government constrain the scale and immediacy of the reduction of military resources. For instance, in the case of a high security threat, the government has to maintain high levels of military allocations (Goertz & Diehl, 1986; Looney, 1994; Brzoska et al., 1995: 22). Then, the onset of military conversion could not be immediate, but will take a long period to appear, in which time the national security threats must have been diminished and the perception of security itself improved.

The theoretical reasoning implies that the decision regarding the downsizing of the military apparatus is more likely to happen in a post-war period without a high security risk. Other situations, such as the involvement or the expectation of involvement in any new type of conflict, imply a lower probability of military conversion.

The literature on the demand for military resources shows how a national government considers the involvement or the risk to be involved in a conflict for the allocation of military resources. One of the most known references is the work of Smith (1980), who includes the international security conditions in the demand function for military expenditures. DeBoer &

Brorsen (1989) and Kim (1991) follow the idea of Smith (1980) for developing a demand function for the military-labour model. Their empirical results show that the involvement in an international conflict increases the demand for military resources. This leads to the formulation of the following hypotheses:

H1: The involvement in a conflict reduces the likelihood of military conversion.

H2: A long period of stable security conditions after the termination of a war in a country increases the probability of military conversion.

2.2.3 Control Variables: Alternative Determinants of the Onset of Military Conversion Process.

I also consider other determinants from the conversion literature as factors that could affect the information set of the government when making decisions related to designing and executing different internal policies.

There is the wealth of a country (BICC, 1996: 36). Mainly, the occurrence of demobilization and, generally, the reduction of military expenditures are associated with an economic recession in a country, i.e. a strong contraction of fiscal revenues or an external debt crisis. Brzoska (2007) mentions how some countries have substituted military expenditure with public external debt payments. Some cases collected in the literature are Argentina, Brazil and Peru during the 1990s (BICC, 1996a: 29) and Spain and Greece after the financial crisis of 2007-08 (Slijper, 2013).

A high level of wealth has a contradictory effect. Brzoska (2007) points out that a conversion programme should start and develop during a period with good economic conditions in order to be successful. High wealth countries have developed military conversion programmes (e.g., conversion programmes in United States, Germany, United Kingdom, among others). This is because the government has to fund all the activities (training, education programmes, unemployment insurances, etc.) that allow the transfer of military resources to civilian activities. Also, spending on the military may be a way to increase government spending. Nevertheless, the other argument indicates that military conversion is more likely to occur when there is an economic recession. The impact of wealth on the onset of military conversion could be either positive or negative. Also, it could depend on the flexibility of armed forces for substituting military labour with other military resources.

The political regime as a determinant of military expenditures has been extensively studied in the literature using different concepts as a framework. This could help us to understand how the type of political regime affects the decision of starting a military-conversion process. According to Töngür, Hsu & Elveren (2015), there tends to be a negative relationship between democracy and military spending (Goldsmith, 2003; Yildirim & Sezgin, 2005; Mullugian, Gil & Martin, 2004; Eloranta & Andreev, 2006). As a general result, democracies spend less on defence than non-democratic states. This could also be extended to an understanding of the conversion process.

Finally, a high level of urban population could be associated with a demand by citizens for the demilitarization of society, which will increase the chances of military conversion. Jelusic (2006: 353) mentions that the public mood regarding the armed forces is becoming more indifferent. Also, Jelusic (2006) addresses how new job opportunities in urban areas disincentives enrolment in military activities.

2.3 Disarmament and Demobilization Events: Onset of a Conversion Process

2.3.1 Onset of Military Conversion Index (OMCI)

I identify cases of disarmament and demobilization through the design of the Onset of Military Conversion Index (OMCI).[5] This index is designed to distinguish the country-year cases in which shrinking military resources could be related to the onset of military conversion. The military conversion definition that I use for the OMCI is the re-use concept outlined by Brzoska (1999a: 133; 2000a: 17-18).

The rationale behind the OMCI is the identification of all cases of simultaneous military-resource reductions over a long period of time. Once all the cases are identified, it is possible to categorize the cases defining levels of simultaneous confidence in the onset of military conversion. This identification process follows a similar procedure as "The BICC Conversion, Disarmament, Demobilization and Demilitarization (BIC3D) Index"[6] (BICC, 1996; BICC, 2004).

The BIC3D index covers the period 1994-2002. However, the BIC3D index has considerable constraints that do not enable it to be used in econometric models that consider measurement of conversion over a long period. Some constraints are the difficulties experienced in updating the data each year and impediments to comparison with previous calculations of the same index (BICC, 2004: 169).

[5] Another recent index is "The Global Militarization Index (GMI)" intends to measure demilitarization as the reduction of all military efforts in a society (Grebe, 2014; Grebe & Mutschler, 2015).
[6] The BIC3D was composed of four components for measuring the available resources for conversion: military expenditure, military personnel, weapon holdings and employment in arms production.

The ideal index should include components of each type of military resource; unfortunately, the information by country is neither available nor complete. Using the most complete information available, this chapter aims to contribute to providing a long time series of a measurement of conversion. In order to fulfil that objective, the OMCI includes three variables associated with the reduction of military resources over a longer period of time: the growth rate of military expenditures, the growth rate of military personnel and the type of recruitment at country-year level. The military spending includes all type of financial funds for either operating the current military resources and acquiring new resources. Besides, military spending is the most up to date data variable for most of the countries.

A reduction of the growth rate of military expenditure gives a general signal of imminent transference of financial resources to civilian activities. When this reduction is analysed simultaneously with the growth rate of the military personnel, it is possible to determine if the reduction of military expenditure is explained by the downsizing of military manpower or by the decrease in the quantity of the other military resources. The OMCI index also allows us to infer the type of resources that are available for conversion.

The simultaneous analysis of the growth rate of military personnel and military expenditure in the OMCI is reinforced by the inclusion of the type of recruitment variable. For instance, according to Manigart (2006) and Jelusic (2006), during a change from a conscription force to an all-volunteer force, the military personnel size is reduced. The recruitment systems chosen could signal if the military personnel are in greater demand by the corresponding national government. I am aware that the decision-making process of military planning has its own stages. It is important to stress the fact that the decision process could affect simultaneously the different types of military resources. I expand the arguments about it in the fourth chapter using Colombia as a study case.

I designed the OMCI in two steps using three datasets, I use Correlates of War-National Material Capabilities for identifying the variation of military personnel and military expenditure (1970-1987), then I use SIPRI military expenditure dataset to complete the series (1988-2007) and Nathan Toronto's Military Recruitment dataset to distinguish the changes in the type of recruitment by country.

The first step distinguishes for each variable in each country-year whether there was (1) a decrease of the variable's values compared to the previous year and (0) an increase or no change of the variable. The type of recruitment variable maintains its original coding because it is a binary variable that indicates (1) volunteer recruitment (associated with professional armed forces, less personnel) and (0) conscription (associated with mass armed forces, more personnel). The second step is the identification of each simultaneous case. This is reached through the aggregation of all types of variation found for each country-year observation. It leads to the identification of eight possibilities that produce the index cases with a scale from zero (0) to three (3), as shown in Table 2.1. These index cases are classified as the level of simultaneous confidence in the onset of military conversion: (0) no confidence in military conversion, (1) low confidence, (2) medium confidence, and (3) high level of confidence. Each possible outcome value of this index is linked to disarmament, demobilization or rearm cases, as seen in Table 2.1.

Table 2.1: Onset of Military Conversion Index (OMCI) cases

No.	Military personnel	Military expenditure	Type of recruitment	Index Case	Evidence scale	Case description	% Sample
1	1	1	1	3	High	**Disarmament and Demobilization** Less military personnel in all-volunteer force Reduction military expenditures	3.50%
2	1	1	0	2	Medium	**Disarmament and Demobilization** Less military personnel in conscription force Reduction military expenditures	7.53%
3	1	0	1	2	Medium	**Demobilization** **Substitution** of military labour by capital or other inputs/(1) Increase or stable military expenditures	4.51%
4	1	0	0	1	Low	**Demobilization** **Substitution** of military labour by capital or other inputs/(1) Increase or stable military expenditures	8.62%
5	0	1	1	2	Medium	**Disarmament (Not direct demobilization)** **Substitution** between military inputs, not includes labour/(1) Reduction military expenditures	13.37%
6	0	1	0	1	Low	**Disarmament (Not direct demobilization)** **Substitution** between military inputs, not includes labour/(1) Reduction military expenditures	17.58%
7	0	0	1	1	Low	**Rearm** More or stable military personnel in all-volunteer force Increase or stable military expenditures	18.67%
8	0	0	0	0	Null	**Rearm** More or stable military personnel in conscription force Increase or stable military expenditures	26.22%

Note: Grey marked cases will be used as dependent variable in BTSCS models.
(1) Possibility could be associated with restructuring of armed forces process.
The name of each case is based on Brzoska (2000a).
Self construction.

For instance, case analysis allows a better understanding of the government decision process related to the downsizing of military personnel or disarmament, because it is possible to recognize which cases have the potential to be directly related to the onset of military conversion, given that the demobilisation event is simultaneous to other events or conditions that encourage the transferences of military resources to productive activities in the civilian sector.

The disarmament and demobilization cases, possibilities 1 and 2 in Table 2.1, could be associated with the simultaneous event of the reduction of military personnel and military expenditure. These indicate a general reduction of military resources and could be interpreted as strong evidence of the onset of military conversion derived from disarmament.

Unlike those cases, the demobilization cases, possibilities 3 and 4 in Table 2.1, might be related to partial reduction of use of military personnel due to a defence restructuring process, in which case there will be the likely substitution of use between military labour and military capital while military expenditure is stable (i.e. remains unchanged) or increased. Evidence of conversion is less than in the case of simultaneous disarmament and demobilization.

The disarmament and not direct demobilization cases, possibilities 5 and 6 in Table 2.1, provide weaker evidence of conversion. In these cases, the reduction of military expenditures is not directly explained by variation in military personnel. It is only possible to infer that there were reductions of use in the other military resources; meanwhile the size of military personnel could be either boosted or not modified. The remaining cases are the rearm cases. These appear when military personnel and military expenditure could be increasing at the same time. Evidence of conversion is minimal.

The rearm cases and a disarmament and not direct demobilization case are associated with null or low evidence of the onset of military conversion respectively. None of the rearm cases could be related to reduction of military resources. This allows us to discard these cases as accurate dependent variables for measuring the onset of military conversion.

The disarmament and demobilization and (only) demobilization cases classified as high and medium evidence of the onset of military conversion, highlighted in grey in Table 2.1, do have direct information relating to the reduction of military personnel or the reduction of military expenditures and, following the rule of simultaneity, for making the assumption that there is stronger evidence of the onset of military conversion derived from disarmament and demobilization than in other cases. These last cases, alongside the completed OMCI (i.e.

aggregated and the disaggregated version of the OMCI), would be used as a dependent variable for measuring the onset of military conversion.

2.3.2 Data

I have compiled time-series cross-sectional (TSCS) data using the country-year as the unit of analysis for 198 countries for the period 1970-2007. In total, 6,655 observations are included in the data[7] (see Table 2.5 in the appendix 2.1). However, only 5,723 observations from 170 countries (see Table 2.5 and Table 2.6 in the appendix 2.1) have been used for estimating empirical models due to missing values on some of my covariates or as I dropped countries without a standing military[8] (see Table 2.5 in the appendix 2.1).

The main variables for the dependent variable of the study are: military personnel, military expenditures and type of recruitment. The military personnel[9] data come from the Correlates of War-National Material Capabilities dataset, which guarantees global coverage and a low number of missing values (less than 2% of the observations). The military expenditure series corresponds to data collection from COW (1960-1987), see Sarkees & Wayman (2010), and SIPRI (1988-2007);[10] this series also has an acceptable coverage by country (less than 5% of observations are missing). The type of recruitment is taken from the Nathan Toronto's Military Recruitment dataset (where less than 4% of observations are missing).

[7] The number of observations is constrained by the initial year when each country is recognized as a state in the international system. Some countries have disappeared and others have emerged due to several political changes. For instance, new Eastern European countries emerged after the end of the Cold War. This explains why the panel is unbalanced.
[8] The observations pertaining to 27 countries were dropped due to these factors.
[9] Civilian personnel that works for either the armed forces or military industry is not included in this variable.
[10] Unification of the military expenditure data was made by Bove & Brauner (2011).

The main explanatory variables are those related to the involvement, intensity and the termination of either an interstate or an intrastate conflict. These variables allow us to determine whether international and national security conditions influence the likelihood of the onset of military conversion. The involvement in an interstate or an intrastate conflict is measured by two separate categorical variables. Each variable takes two values: the value (1) when the country participates in at least one interstate or intrastate conflict episode respectively, in that year; and (0) otherwise. The UCDP/PRIO Armed Conflict Dataset[11] (Gleditsch et al., 2002) is the source for these variables; for the purposes of this chapter, the information is adapted to country-year format.

The intensity measurement is given by two different approaches for each type of conflict. The intrastate conflict intensity is the number of annual battle fatalities, using data from the Battle Deaths Dataset 1946–2008 collected by Lacina & Gleditsch (2005). In the case of interstate conflict intensity, I rely on the sum of the militarized interstate disputes in which each country participated by year, since the series for interstate fatalities is not available. Data is derived from the Militarized Interstate Dispute Dataset collected by Jones et al. (1996).

Controlling for the end of a conflict consists not only of the single year of conflict termination episode, but also of the number of years since the conflict ended. In order to make this calculation, I use the data from the UCDP Conflict Termination Dataset by Kreutz (2010) for counting how many years had passed since the end of either an interstate conflict or intrastate conflict for each country and each year.

[11] Version 4-2009.

The political regime is another covariate included in the empirical exercise. This variable is extracted from the Polity IV Project (Marshall et al., 2014). Additional control variables are GDP per capita and urban population. GDP per capita is included as a comparison of national wealth between countries, using data from Gleditsch (2002). Finally, urban population data come from the National Material Capabilities dataset produced by the Correlates of War dataset. The descriptive statistics of all used variables in the estimated models are included in Table 2.2. Additionally, their definitions and number of missing values, is presented in Table 2.7 in the Appendix 2.1.

Table 2.2: Descriptive statistics of variables used in TSCS models

Variable name	Obs.	Mean	SD	Min	Max
Onset of military conversion index (OMCI) - Variables					
Military personnel	4966	178	455	0	4,750
Military expenditures	4966	8,182,835	40,100,000	0	463,000,000
Type of recruitment	4966	0.40	0.49	0	1
Any evidence OMC/(1)	4966	0.74	0.44	0	1
Medium and High evidence OMC/(1)	4966	0.29	0.45	0	1
High evidence OMC/(1)	4966	0.04	0.18	0	1
OMCI/(2)	4966	1.06	0.81	0	3
Control variables					
Interstate conflict	4966	0.03	0.18	0	1
Number of years after interstate conflict	4966	15.11	10.48	0	38
Militarized interstate dispute	4830	0.69	1.29	0	27
Intrastate conflict	4966	0.16	0.37	0	1
Number of years after intrastate conflict	4966	12.55	11.00	0	38
Logarithm Battle fatalities of intrastate conflict	4710	0.74	2.12	0	11
Revised Combined Polity Score	4821	0.82	7.46	-10	10
Logarithm Gross Domestic Product per capita	4965	8.42	1.25	5	13
Logarithm Urban population	4966	7.32	2.41	0	14

Note: (1) Onset of Military Conversion. (2) Onset of Military Conversion Index.

2.4. Results: Checking the Hypothesis of Determinants of the Onset of Conversion

Due to the ordinal nature of the dependent variables, I use ordinal logit models and employ temporal corrections as suggested by Carter & Signorino (2010). I also present the results using a less stratified approach, i.e. a binary dependent variable that receives a value of 1 if conversion occurred (medium and high-level military conversion as defined above) and 0

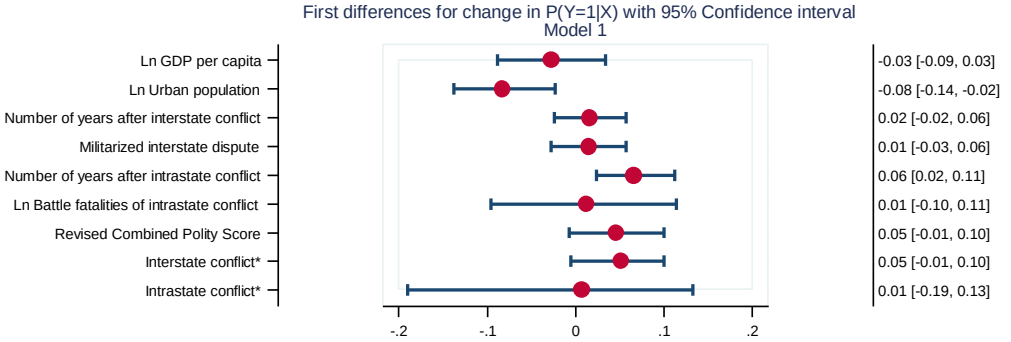
otherwise. I also follow Carter & Signorino (2010) here to model temporal dependence by including a variable counting the number of years elapsed since the last conversion process (if any) and in squared and cubic terms. I present the results in Table 2.3, Figure 2.1 and Figure 2.2.

Table 2.3: Models BTSCS and Ordinal Logit - Lagged control variables

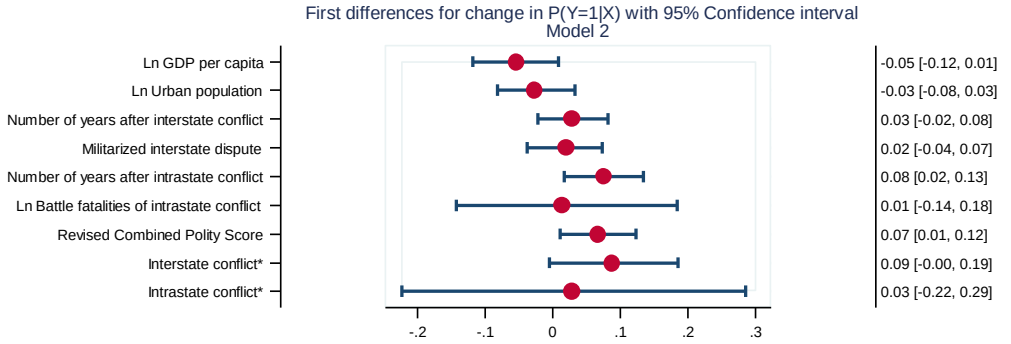
	Model 1 Logit BTSCS Cases (1,2,3)	**Model 2 Logit BTSCS Cases (2,3)**	**Model 3 Logit BTSCS Case (3=High)**	**Model 4 Ordinal Logit Index (0,1,2,3)**
Interstate conflict	0.374	0.348	0.169	0.339
	(0.22)*	(0.19)*	(0.37)	(0.20)
Number of years after interstate conflict	0.005	0.006	0.014	0.002
	(0.01)	(0.01)	(0.01)	(0.01)
Militarized interstate dispute	0.037	0.033	0.159	0.047
	(0.05)	(0.04)	(0.04)***	(0.06)
Intrastate conflict	0.112	0.104	0.401	0.005
	(0.52)	(0.52)	(0.98)	(0.57)
Number of years after intrastate conflict	0.019	0.014	0.029	0.018
	(0.01)***	(0.01)**	(0.01)**	(0.01)*
Battle fatalities of intrastate conflict	0.019	0.013	-0.011	0.028
	(0.08)	(0.07)	(0.14)	(0.08)
Revised Combined Polity Score	0.018	0.018	0.031	0.027
	(0.01)*	(0.01)**	(0.01)**	(0.01)*
Log GDP per capita	-0.068	-0.089	0.047	-0.103
	(0.08)	(0.05)*	(0.09)	(0.08)
Log of Urban Population	-0.109	-0.023	0.097	-0.077
	(0.04)***	(0.03)	(0.06)	(0.03)*
t	-1.447	-0.427	-0.234	
	(0.14)***	(0.04)***	(0.08)***	
t2	0.357	0.029	0.01	
	(0.05)***	(0.00)***	(0.01)*	
t3	-0.021	-0.001	0	
	(0.00)***	(0.00)***	(0.00)	
Constant	2.435	0.334	-4.119	
	(0.69)***	(0.45)	(0.82)***	
cut1				
Constant cut1				-2.128
				(0.70)*
cut2				
Constant cut2				-0.155
				(0.70)
cut3				
Constant cut3				2.282
				(0.67)*
Obs.	4450	4450	4450	4450
Log Pseudo Likelihood	-2357.83	-2430.37	-609.18	-5165.31
Wald $\chi 2$	168.23	336.52	93.41	36.89
Prob>$\chi 2$	0.00	0.00	0.00	0.00
Pseudo R2	0.09	0.09	0.09	0.01

Note: Robust standard errors clustered on country are in parentheses below the coefficient estimates.
Two-tailed tests * p<0.10, ** p<0.05, *** p<0.01.

Figure 2.1: First differences estimates calculated using simulated parameter values Model 1 and 2

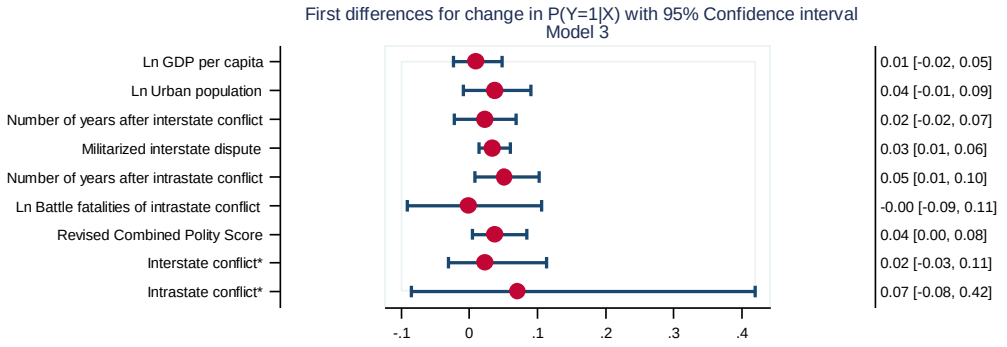


Notas:
First differences represent a change from 1 SD below the mean to 1 SD above it.
Variables with a * are discrete - FD is a change from 0 to 1.

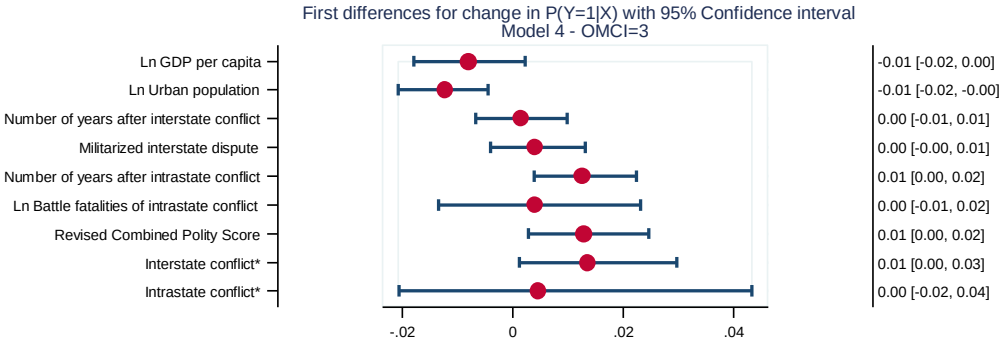


Notas:
First differences represent a change from 1 SD below the mean to 1 SD above it.
Variables with a * are discrete - FD is a change from 0 to 1.

Figure 2.2: First differences estimates calculated using simulated parameter values Model 3 and 4 (OMCI=3 for ordered logit model)



Notas:
First differences represent a change from 1 SD below the mean to 1 SD above it.
Variables with a * are discrete - FD is a change from 0 to 1.



Notas:
First differences represent a change from 1 SD below the mean to 1 SD above it.
Variables with a * are discrete - FD is a change from 0 to 1.

The models have been estimated using temporally lagged variables,[12] since a government's decision on military conversion is likely made during the planning stage for the next fiscal year, considering the previous year's information.

The OMCI cases used for estimating different models are presented in Table 2.3. The first model includes all levels of simultaneous confidence of the onset of military conversion, except null level; Model 2 considers high and medium confidence cases; and the third model only includes high confidence cases. The influence of the state of international and national

[12] Estimated results of models with control variables without any transformation were also obtained. These results are reported in Table 2.9 in the appendix 2.3.

security conditions, as addressed in hypothesis 1, is tested through the inclusion of variables for both types of security. All of the included variables for evaluating that hypothesis are expected to have a negative impact on the likelihood of military conversion, because any major risk on either international or national security should imply more demand for military resources.

The international security conditions of each country are measured by their involvement in an interstate conflict, and the intensity is given by the number of militarized interstate disputes in which the country participates.[13] National security conditions are controlled by the involvement in an intrastate conflict and the intensity is measured through the logarithm number of battle fatalities for that type of conflict. None of the national security state variables is statistically significant. In fact, the obtained coefficients for the number of battle fatalities (ln) are negative in some models, and positive in others. In the latter case this seems atypical and it is difficult to relate to interpret this finding in a straightforward manner. The signs of some international security state variables are statistically significant, but all of them have positive signs. Involvement in an interstate conflict presents a more consistent pattern across the models, because the sign is statistically significant in three (Models 1, 2 and 4 in Table 2.3) of the four models. In order to interpret the coefficients of the model, I calculated the first difference estimates, (King et al. 2000): see Figure 2.1. The probability of military conversion increases by 1 (Model 4), 5 (Model 1) and 7 (Model 2) percentage points when a country becomes involved in an interstate conflict.

[13] All variable definitions are included in Table 2.7 in the appendix 2.1.

The positive coefficient of involvement with an interstate conflict could be explained by the possibility of substitution of military labour by military equipment that allows better defence and offensive missions during an interstate war. Also, it could demonstrate that the use of the military personnel could differ according to the type of conflict. This reasoning is made by Kim (1991: 13-14, 17), as referenced above, when he describes the US reaction to the USSR rearmament process and the high possibility of war.

The militarized interstate dispute variable shows the same behaviour, but only for the model that considers the high confidence cases of military conversion (Model 3). In fact, the likelihood of the onset of military conversion increases by 9 percentage points when the militarized interstate disputes item varies from its minimum to its maximum[14]. This is an atypical result. It could also be related to the technological change that characterizes interstate wars in the last decades. In the other models, this variable has the expected negative sign, but none of those coefficients is statistically significant.

The expectations of stable security conditions are measured by the number of years after interstate and intrastate conflicts. This allows us to consider hypothesis 2, that a long period of improvement of the security conditions in a country increases the probability of downsizing military resources, and then increases the chances of the onset of a military conversion process. The number of years after intrastate conflict variable sign is statistically significant and positive for all models. Furthermore, this variable shows the highest likelihood of an increase in the onset of military conversion, 10 percentage points in Models 1 and 2, when changed from the minimum (e.g., 0 years after intrastate conflict) to the maximum (e.g., 38

[14] When the substantive effect of the "militarized interstate dispute variable" is calculated using one standard deviation increases from the mean, the likelihood of the onset of military conversion increases by 3 percentage points. The effect is less than the other calculated effect (9 percentage points).

years after intrastate conflict). It could be interpreted that, after the end of a civil war episode, evidence of no intrastate conflict recurrence in the long term encourages the onset of military conversion. Then, a government may adjust its military capability by reducing some types of military resource and take advantage of freed public resources after demobilizations. In contrast, all the coefficients obtained for the number of years after an interstate conflict are not statistically significant and negative.

The type of political regime positively influences the likelihood of military conversion. According to the literature (e.g., Goldsmith, 2003) in more democratic regimes there will be more possibilities of conversion. This argument is supported by the estimated signs in all models (all statistically significant and positive). Then, the probability of occurrence of conversion is higher by 1 percentage point (Models 3 and 4) and by 6 percentage points (Models 1 and 2) in the democracies, as opposed to the anocracies. Also, it could possibly be argued that autocracies seem more reluctant to reduce military personnel than democracies.

The logarithm of GDP per capita is only statistically significant when there is medium and high confidence for the onset of military conversion, as in Model 2, and the negative sign is expected according to the literature because an increment in national wealth reduces the probability of occurrence of military conversion, given that a government could demand more military personnel and could for it. In this case, the likelihood of the onset of military conversion is 12 percentage points lower than when the logarithm of GDP per capita reaches its maximum. In the other estimated models (Models 1, 2 and 4), the logarithm of GDP per capita sign is also negative, but not statistically significant.

The last covariate is the logarithm urban population. The sign of the coefficient is negative which is counterintuitive with the theoretical arguments exposed in Section 2.2.3. There are two possible explanations. First, with the assumption being that the government has fewer incentives to reduce the volume of military resources when there is a greater urban population, because there are fewer chances of recruiting new personnel in the short term, given that men within an urban population prefer mostly skilled jobs, and the society is in favour of professionalization of the armed forces. Second, currently most of the population either lives or plans to migrate to urban areas, therefore, the probability of having a city as a conflict area arises, as a result changing military role or reducing the personnel is not a feasible strategy, forcing armies to return to the cities (Vautravers, 2010).

The cases of OMCI that include all the levels of confidence, Models 1 and 4, provide statistically significant and negative signs. In substantive terms, the chances of conversion drop by 2 percentage points (Model 4) to the extreme of 23 percentage points (Model 1) if the logarithm of urban population changes from its minimum value to its maximum. However, the models that consider more confidence in military-conversion onset, Models 2 and 3, show no statistically significant results.

2.5. Addressing Endogeneity and Adjusted Models

Endogeneity is potential problem in the estimated models. I use the estimation of separated three stages least squares models to test the endogeneity. The nature of the data and the nature of the conflict could make possible to have endogeneity. The endogeneity comes from the relationship among conversion, conflict and years after the conflict. A first potential route of endogeneity is after the end of a conflict, it is possible that a military conversion stars and the effectiveness of conversion process could guarantee more peace years. A

second route is when an ongoing conversion process, as result of that process, the military forces could weaken and rebels or potential external foes could take advantage and start a new conflict, then peace years decrease. A final route is after years of the conflict end, a conversion process starts, but the conversion could weaken the military capabilities that a new conflict could arise.

I address the issue of endogeneity following the article Gizelis, et. al. (2010). I estimated two separated three stages least squares models. One of these estimates the relationship among conversion, intrastate conflict and years after civil war. The other estimates the same relationship, but for the case of interstate conflict.

The estimation results using the intrastate conflict confirms the endogeneity among number of years after intrastate conflict, the onset of military conversion and the intrastate conflict, according to the equation 3 of the Table 2.10 of the Appendix 2.3. In the interstate case, Table 2.11, the endogeneity also appears in the equation which describes the onset of military conversion (second route). In addition, the short-term pattern of the conversion is only statistically significant in the interstate model.

The endogeneity problem affects the results of the estimated models. It becomes necessary to estimate new models that address this problem. I chose as an alternative to exclude some variables that could lead to endogeneity. First, I tested the main four models, discussed in the previous section, excluding the dichotomous variables that indicates if there is an interstate or an intrastate conflict. However, the endogeneity problem remains among the number of annual battle fatalities, the sum of the militarized interstate disputes, conversion and peace years.

An additional source of the endogeneity could be the measurement of the number of annual battle fatalities and the sum of the militarized interstate disputes. For example, the existence of an internal conflict is explained by a minimum number of casualties (twenty-five conflict deaths) according to the UCDP/PRIO Armed Conflict Dataset, then the conflict could explain the casualties and vice versa generating the endogeneity issue. Then, I decided to exclude all the variables related to the involvement and intensity of either an interstate or an intrastate conflict. As a result, it is not possible to test the first hypothesis of this paper because the inclusion of any conflict variable generates endogeneity.

The remaining set of covariates only address the second hypothesis of this chapter. I estimate the main four models using this new set and including the US military aid variable (The US is the biggest military donor to developed and developing countries)[15]. The military aid could reduce the likelihood of the onset of military conversion because the recipient country could need additional military expenditure and other military resources for using either the donated equipment or services (Collier & Hoeffler, 2007; Langlotz & Potrafke, 2016). I used the Foreign Aid Explorer dataset from the U.S. Agency for International Development – USAID.

The results show that the second hypothesis is only proved by the Model 1, Table 2.4. Then, the intuition that the number of years after the ending of a conflict increase the likelihood of the onset of military conversion processes is not supported by most of the estimations. Nevertheless, other covariates do influence the conversion probability, such as type of

[15] The US military aid corresponds to the US funds allocated to military and security activities in other countries. Those funds include both financial resources and technological support for different programs, such as: military education and training, acquisition of military equipment, excess defence articles (donations), among others.

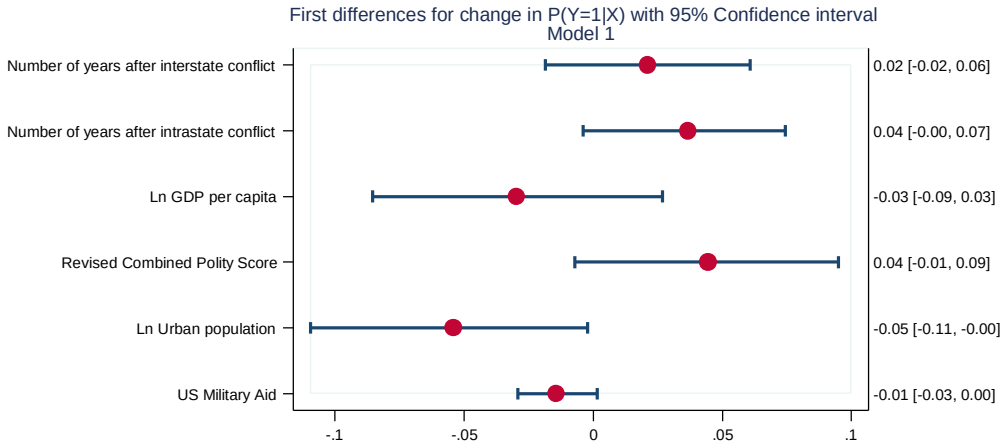
political regime (all models), urban population (Models 1 and 3) and military aid (Models 1, 3 and 4).

Table 2.4: Adjusted Models BTSCS and Ordinal Logit - Lagged control variables - Endogeneity correction

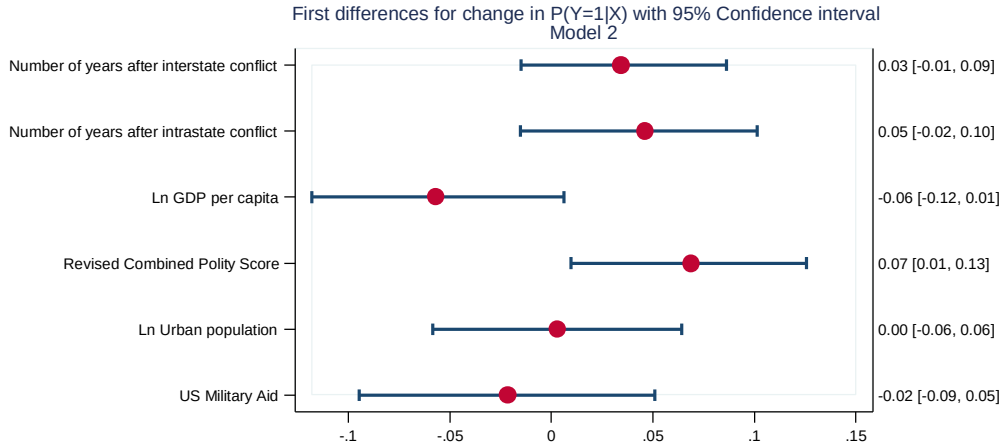
	Model 1 Logit BTSCS Cases (1,2,3)	**Model 2 Logit BTSCS Cases (2,3)**	**Model 3 Logit BTSCS Case (3=High)**	**Model 4 Ordinal Logit Index (0,1,2,3)**
Number of years after interstate conflict	0.006	0.007	0.011	0.004
	(0.01)	(0.01)	(0.01)	(0.01)
Number of years after intrastate conflict	0.011	0.009	0.019	0.011
	(0.01)*	(0.01)	(0.01)	(0.01)
Revised Combined Polity Score	0.019	0.018	0.031	0.027
	(0.01)*	(0.01)**	(0.01)**	(0.01)**
Log GDP per capita	-0.074	-0.093	0.011	-0.107
	(0.07)	(0.05)*	(0.08)	(0.08)
Log of Urban Population	-0.071	0.001	0.184	-0.044
	(0.04)**	(0.03)	(0.07)***	(0.03)
US Military Aid	-0.000	-0.000	-0.000	-0.000
	(0.00)*	(0.00)	(0.00)**	(0.00)*
t	-1.209	-0.439	-0.221	
	(0.13)***	(0.04)***	(0.07)***	
t2	0.239	0.031	0.009	
	(0.04)***	(0.00)***	(0.01)*	
t3	-0.011	-0.001	0	
	(0.00)***	(0.00)***	(0.00)	
Constant	2.329	0.329	-4.078	
	(0.65)***	(0.44)	(0.81)***	
cut1				
Constant cut1				-2.044
				(0.68)***
cut2				
Constant cut2				-0.084
				(0.68)
cut3				
Constant cut3				2.338
				(0.66)***
Obs.	4822	4822	4822	4822
Log Pseudo Likelihood	-2574.41	-2636.98	-668.54	-5616.92
Wald $\chi 2$	.	.	65.64	.
Prob>$\chi 2$	.	.	0.00	.
Pseudo R2	0.08	0.09	0.08	0.01

Note: Robust standard errors clustered on country are in parentheses below the coefficient estimates.
Two-tailed tests * p<0.10, ** p<0.05, *** p<0.01.

Figure 2.3: First differences estimates calculated using simulated parameter values Model 1 and 2 - Endogeneity correction

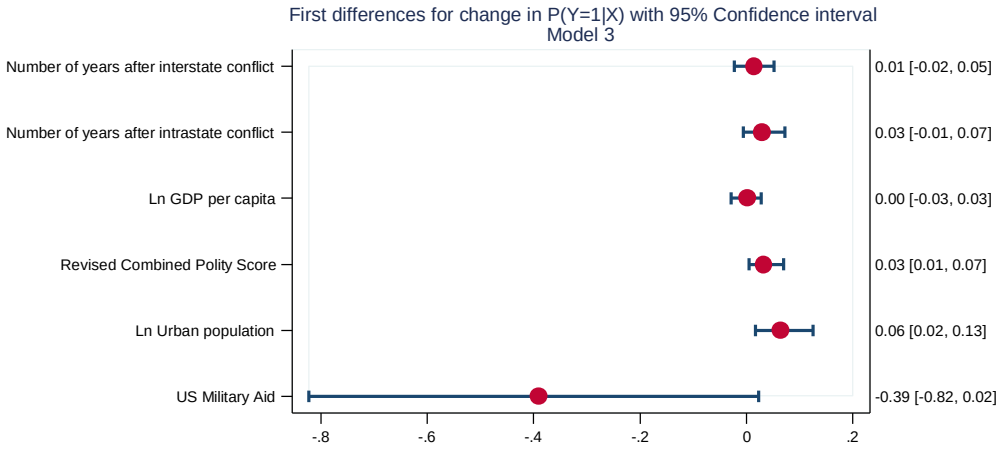


Notas:
First differences represent a change from 1 SD below the mean to 1 SD above it.
Variables with a * are discrete - FD is a change from 0 to 1.

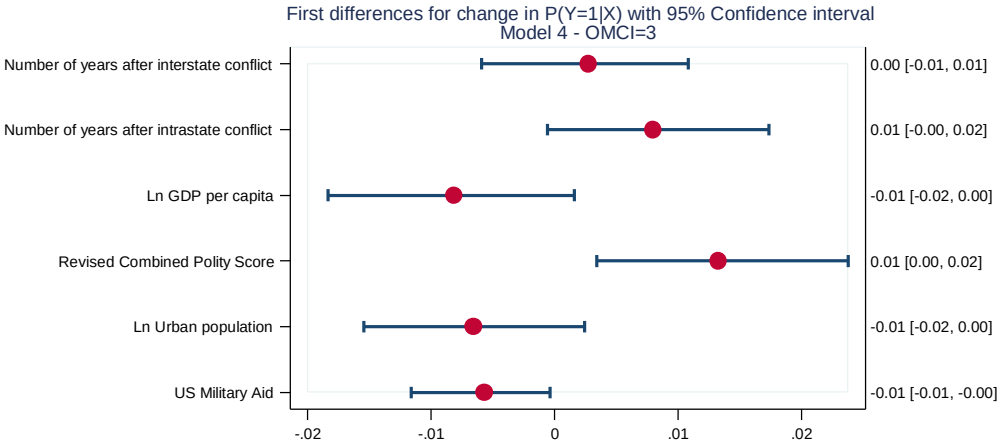


Notas:
First differences represent a change from 1 SD below the mean to 1 SD above it.
Variables with a * are discrete - FD is a change from 0 to 1.

Figure 2.4: First differences estimates calculated using simulated parameter values Model 3 and 4 - Endogeneity correction



Notas:
First differences represent a change from 1 SD below the mean to 1 SD above it.
Variables with a * are discrete - FD is a change from 0 to 1.



Notas:
First differences represent a change from 1 SD below the mean to 1 SD above it.
Variables with a * are discrete - FD is a change from 0 to 1.

The type of political regime is statistically significant for all estimated models. Its positive sign indicates that a democratic regime could be more prompt to start a military conversion process than an autocratic regime. In terms of the first difference for change, the probability of the onset of conversion is increased by 7 percentage point in the Model 3 which includes the medium and high levels of confidence of the onset of military conversion. In contrast, the probability of the onset of conversion increases less than the previous case in the other models, see Figure 2.3 and Figure 2.4.

The urban population estimates show mixed results. This variable is only statistically significant in Model 1 and 3, but with opposite signs, Table 2.4. The negative sign (Model 1) indicates that a government avoids starting a military conversion process when there is any evidence of disarmament or demobilization. According to Figure 2.3 and Figure 2.4, the likelihood of the onset of military conversion is 5 percentage points lower than when the logarithm of urban population ranges its maximum.

The positive sign (Model 3) shows if the urban population increases, the odds of military conversion process rise as well. This last effect is associated with either a population demand for demilitarization or an ongoing military reform. The military reform could imply simultaneous disarmament and demobilization (Jesulic, 2006) given that in Model 3 the dependent variable captures the cases of high level of confidence of military conversion. The probability of starting a military conversion process is 6 percentage points higher in the maximum of the logarithm of urban population, see Figure 2.3 and Figure 2.4.

The estimation results presented in the Table 2.4 confirms that the US military aid reduce the likelihood of the onset of military conversion and is statistically significant in three of four of the estimated models (Models 1, 3 and 4), Table 2.4. The maximum of military aid only

reduces the probability of the onset of military conversion by 1 percentage point in Model 1 and 4, Figure 2.3. However, a higher effect is observed in Model 3; the likelihood of military conversion reduces 39 percentage points when the military aid reaches its maximum, Figure 2.4. The last case highlights the potential impact of military aid on the onset of military conversion in countries which face high levels of disarmament and demobilization.

Nevertheless, the military aid variable could generate an endogeneity problem due to this variable could be included in the military expenditure of each recipient country. The military expenditure is one of the components of the OMCI as this variable provides the dependent variables used for each estimated model. The undetermined chi2 statistic is the evidence of potential endogeneity.

2.6 Robustness checks.

The robustness checks contribute either to confirm or to discard the results of the adjusted models (those which address the endogeneity problem). In this section, I present some estimations of the adjusted models that includes additional covariates (Tables 2.12 and 2.13 of Appendix 2.3), lagged variables (Tables 2.15 and 2.16 of Appendix 2.3) and an alternative dependent variable (Table 2.17 of Appendix 2.3).

The additional covariates are the square term of the revised combined polity score and the predicted probability of interstate war. The inclusion of the nonlinear effects of regime type does not show any change in the four estimated models. All the main estimation results remain the same as the adjusted models presented in the Table 2.4.

The inclusion of the preferred estimate of the predicted probability of an interstate war (Nordhaus, et al., 2012)[16] change some results from the adjusted models, Table 2.13 of the Appendix 2.3. First, the second hypothesis of this Chapter, which is when the number of years after the ending of a conflict increases the likelihood of the onset of military conversion process increases as well, is fulfilled in most of the estimated models. The number of years after interstate conflict is positive and statistically significant in the Models 1, 2 and 4, while in the case of the intrastate conflict, the years after termination of the conflict is statistically significant across all models. This result could be related to the availability of better information sets for the government about the external threats and the possibilities of converting military resources. Second, the military aid becomes non-significant and the other results obtained in the previous section remain unchanged. Third, although the preferred estimate of the predicted probability of an interstate war contributes to fulfil the mentioned hypothesis, the covariate itself is non-significant for any model and the sign is counterintuitive for three of the four models. The exception is the sign of the Model 3 which represent the strongest cases of confidence of military conversion.

The estimation of the adjusted models including higher lags of the control variables show two types of results. The first estimation includes five years[17] lagged control variables that is to some extent the approximation of medium-term information, Table 2.15 of the Appendix 2.3. The results remain unchanged compared to the adjusted models presented in Table 2.4. In the case of the inclusion of a long-term lag (ten years), results change the impact of some covariates on the likelihood of the onset of military conversion in the Model 3 (high level of confidence of military conversion). The years after the ending of an external conflict

[16] For this model, the analysed period is 1971-2000 because the preferred estimate of predicted probability of interstate war is only available for those years.
[17] The selection of the number of the years tries to mimic the average term length of the incumbent government.

becomes statistically significant and has a positive sign which supports the second hypothesis of this Chapter. However, the number of the years after the ending of an internal conflict shows a negative and significant influence on the likelihood of starting a military conversion process. This last result could be related to the necessity of substituting military resources (i.e. acquiring more military equipment than hiring military personnel) for fulfilling other type of military roles (e.g. external roles).

The final robustness check is the use of another dependent variable, Table 2.17 of the Appendix 2.3. I estimated the four adjusted models using the military spending in percentage of the GDP ("military burden") as a component of the OMCI, then I replaced the military expenditure in absolute terms with the military spending in percentage of the GDP for the index calculation. Most of the estimated results coincide with the results derived from the estimation of the adjusted models. One intuition could be that the variation of the military expenditure mirrors the variation of the military burden in most of the countries.

2.7 Conclusions and Future Research Agenda

The military conversion process as an empirical phenomenon has been presented throughout history as part of post-war reconstruction and it will appear each time that a national government or rule of a country decides to downsize the military resources, such as the military personnel. The onset of military conversion could be associated with the reduction of the use of a military resource, as in the case of demobilization of military personnel. According to the military conversion literature, the government decision to reduce military personnel is driven by the demand for military labour, military conversion and the restructuring of armed forces.

The theoretical and empirical connection between military conversion and the restructuring of armed forces processes offers another less explored research option: to design military conversion programmes as tools that make the restructuring of armed forces more efficient (i.e. substituting military personnel by military equipment) and that could contribute to finding better uses for scarce resources.

This paper proposes the Onset Military Conversion Index (OMCI) as an instrument that allows the identification of different cases of disarmament, demobilization and rearm that can be associated with the starting point of a military conversion process. This index identifies the simultaneous events of variation of military personnel, military expenditure and the type of recruitment established in each country and each year. Disarmament cases are associated with levels of confidence of the onset of military conversion. These correspond to the values of the OMCI and are used as dependent variables in the estimated models presented in this paper. The OMCI index has the advantage of including longer and comparable data series. Furthermore, the OMCI uses simultaneously the variations of military expenditure, military personnel and type of recruitment to create a rank of confidence in the onset of military conversion. These variables are regularly reported and updated which ensures that the index could be calculated for a long span of time.

The simultaneous test of the two-hypothesis stated in this Chapter is not possible due to the presence of endogeneity. The involvement in a conflict, or the expectation to be involved in one, is related to the number of years after the ending of a conflict and the conversion itself, see Table 2.10 and 2.11 of the Appendix 2.3. I decide to discard the test of the hypothesis that states the involvement in a conflict reduces the likelihood of military conversion because the test of several combinations of the conflict measurement variables leads to the presence

of endogeneity. Then, I adjust the models to test the influence of peace years (number of years after a conflict) on the onset of military conversion.

The adjusted models do not give evidence to support the second hypothesis stated in this Chapter. Then, there is not statistical evidence of the relationship between peace years and the onset of military conversion, see Table 2.4. However, the adjusted models provide evidence of other determinants of the likelihood of starting a military conversion process, such as the political regime, the urban population and the US military aid.

The statistical evidence across the adjusted models shows that if a country is ruled by a more democratic regime, there are more chances of the shrinking of military resources and the associated occurrence of the onset of a military conversion process. The empirical exercise shows weak statistical evidence that as countries become wealthier, as measured by GDP per capita, the probability of reduction of military resources will be lessened. A counterintuitive result from the estimations is the sign of urban population covariate. Two of the four estimated models show a statistically significant relationship between the onset of military conversion and urban population, but one presents a negative influence on military conversion while the other supports the opposite relationship. Theoretically, it is argued that there is a lack of incentives for the urban population to enrol in military activities, then the population could demand the onset of military conversion processes, however, the opposite result could be explained because the increase of urban population during the studied period could increase the probability of facing a conflict in city (Vautravers, 2010).

The US military aid shows a negative and statistically significant relationship with the onset of military conversion in three of the four adjusted models. The military aid could be used to acquire additional military equipment, to extend the working life of the existing equipment and to train existing personnel. Then, receiving military aid stimulates an intense use of military resources reducing the changes to develop military conversion processes.

The future research agenda includes an extension of the OMCI index in order to include information of other types of military resources (e.g., military exports and imports as proxy of military equipment); the use of instrumental variables that could solve the endogeneity issue in order to test simultaneously the hypothesis stated in this Chapter; the design of a variable that could test the influence of political and/or budget cycles in government decisions relating to the downsizing of military resources; the inclusion of a proxy variable that measures the impact of prices associated with military labour and other military inputs; and the extended analysis of the interaction between the restructuring of armed forces and the military conversion process. Likewise, there is an extent research agenda related to the study of the further stages of the military conversion process (e.g. the influence of market conditions on the reallocation of former military resources in civilian activities, the success of government conversion programmes). This agenda might help the policy-makers to understand the conditions that promote the onset of a military conversion process, and patterns of reallocation of military resources.

Appendix 2.1 Datasets, variables and sample description

Table 2.4: List of datasets used for building conversion panel dataset

Abbrev.	Database name	Period of study	Adapted from	Website	Main variables
COW-NMC-v4.0	Correlates of War National Material Capabilities	1816-2007	Bove and Nistico (2012)	http://www.correlatesofwar.org/	Military expenditure/(1), military personnel
COW-MID-v4.0	Correlates of War Militarized Interstate Disputes	1816-2010	Own adaptation from original dataset	http://www.correlatesofwar.org/	Military disputes
TMB	The Military Balance	1970-2007	Böhmelt and Pilster (2011 and 2012) and Own adaptation	http://www.iiss.org/	Military expenditure/(2), military personnel/(3)
Recruitment	Military Recruitment Data Set	1816-2007/(4)	Toronto (2007)	http://fmso.leavenworth.army.mil/	Type of recruitment
UCDP-CT	UCDP Conflict Termination Dataset	1946-2009	Own adaptation from original dataset	http://www.pcr.uu.se/research/ucdp/datasets/	Conflict termination cases and outcomes
PRIO	Battle Deaths Dataset	1946-2008	Own adaptation from original dataset	http://www.prio.org/Data/Armed-Conflict/	Battle fatalities
Polity IV Project	Polity IV Project -Political Regime Characteristics and Transitions	1800-2013	Own adaptation from original dataset	http://www.systemicpeace.org/polity/polity4.htm	Political regime
WB-WDI	World Bank World Development Indicators	1960-2013	Bove and Nistico (2012)	http://data.worldbank.org/data-catalog/world-development-indicators	Economic variables
USAID	Foreign Aid Explorer: The official record of U.S. foreign aid	1946-2017	Own adaptation from original dataset	https://explorer.usaid.gov/data.html	Military aid
Gleditsch	Expanded GDP data (version 6.0)	1950-2011	Own adaptation from original dataset	http://privatewww.essex.ac.uk/~ksg/exptradegdp.html	GDP per capita

Notes: (1) Bove and Nistico (2012) elaborate a military expenditure series in constant terms using COW data. (2) Collection and edition series of military expenditure in progress.
(3) Böhmelt and Pilster (2011 and 2012) elaborate military personnel series by service using TMB reports. (4) Original database covers up to 2005. Updated to 2007 self-construction.

Table 2.5: Conversion dataset – sample size

Analysis period			1970-2007
Number of years (T)			38
Number of countries all period (N)			198
Potential number of observations (T*N)			**7524**
Number of observations initial "conversion" database/(1)			**6655**
Dropped Observations - Country does not have military forces or continuous missing values			
Case	**# Countries**	**# Observations in sample**	**List of countries not included**
38 observations	14	532	Maldives Samoa Liechtenstein San Marino Andorra Kiribati Mauritius Monaco Nauru Tonga Costa Rica Panama Haiti Iceland
34 observations	1	34	Grenada
33 observations	2	66	Comoros Sao Tome and Principe
32 observations	1	32	Seychelles
30 observations	2	60	Solomon Islands Dominica
29 observations	2	58	St. Lucia St. Vincent and the Grenadines
28 observations	1	28	Vanuatu
25 observations	1	25	St. Kitts and Nevis
17 observations	2	34	Federated States of Micronesia Marshall Islands
14 observations	1	14	Palau
1 observation	1	1	Montenegro
Other cases		48	
Number of dropped countries			**28**
Number of dropped observations			**932**
Number of countries "conversion" dataset			**170**
Number of observations "conversion" dataset /(2)			**5723**

Notes: (1) Number of observations of state members of the international system according to their year entry.

(2) Number of observations used for descriptive tables and estimation of models.

Table 2.6: List of countries included in the estimations

Afghanistan	Eritrea	Moldova	Turkey
Albania	Estonia	Mongolia	Turkmenistan
Algeria	Ethiopia	Morocco	Uganda
Angola	Fiji	Mozambique	Ukraine
Antigua & Barbuda	Finland	Myanmar	United Arab Emirates
Argentina	France	Namibia	United Kingdom
Armenia	Gabon	Nepal	United States of America
Australia	Gambia	Netherlands	Uruguay
Austria	Georgia	New Zealand	Uzbekistan
Azerbaijan	German Democratic Republic	Nicaragua	Venezuela
Bahamas	German Federal Republic	Niger	Vietnam
Bahrain	Germany	Nigeria	Yemen
Bangladesh	Ghana	North Korea	Yemen Arab Republic
Barbados	Greece	Norway	Yemen People's Republic
Belarus	Guatemala	Oman	Yugoslavia
Belgium	Guinea	Pakistan	Zambia
Belize	Guinea-Bissau	Papua New Guinea	Zimbabwe
Benin	Guyana	Paraguay	
Bhutan	Honduras	Peru	
Bolivia	Hungary	Philippines	
Bosnia and Herzegovina	India	Poland	
Botswana	Indonesia	Portugal	
Brazil	Iran	Qatar	
Brunei	Iraq	Republic of Vietnam	
Bulgaria	Ireland	Romania	
Burkina Faso	Israel	Russia	
Burundi	Italy	Rwanda	
Cambodia	Ivory Coast	Saudi Arabia	
Cameroon	Jamaica	Senegal	
Canada	Japan	Sierra Leone	
Cape Verde	Jordan	Singapore	
Central African Republic	Kazakhstan	Slovakia	
Chad	Kenya	Slovenia	
Chile	Kuwait	Somalia	
China	Kyrgyzstan	South Africa	
Colombia	Laos	South Korea	
Congo	Latvia	Spain	
Croatia	Lebanon	Sri Lanka	
Cuba	Lesotho	Sudan	
Cyprus	Liberia	Suriname	
Czech Republic	Libya	Swaziland	
Czechoslovakia	Lithuania	Sweden	
Democratic Republic of the Congo	Luxembourg	Switzerland	
Denmark	Macedonia	Syria	
Djibouti	Madagascar	Taiwan	
Dominican Republic	Malawi	Tajikistan	
East Timor	Malaysia	Tanzania	
Ecuador	Mali	Thailand	
Egypt	Malta	Togo	
El Salvador	Mauritania	Trinidad and Tobago	
Equatorial Guinea	Mexico	Tunisia	

Table 2.7: List of variables

Stata name	Variable name	Definition	Source	Missing	% Missing
Onset of military conversion index (OMCI) - Variables					
milper	Military personnel	Number of military personnel; in thousands.	COW-NMC-v4.0	63	1.10%
milexc	Military expenditures (constant terms)	Military expenditures by country collected by COW (1960-1987) and SIPRI (1988-2007). SIPRI data are in constant 2008 USD and COW data are in constant with 2005 as base year, using the US CPI.	SIPRI-COW (Bove)	250	4.37%
recruit_e	Type of recruitment	Method of recruitment. 1 = volunteer recruitment; 0 = conscription.	Toronto	204	3.56%
Control variables					
gdp_per	Gross Domestic Product per capita	Real GDP per capita, 2005 prices. GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.	Gleditsch	1	0.02%
upop	Urban population	Population living in cities with population greater than 100,000; in thousands.	COW-NMC-v4.0	5	0.09%
d_inter	Interstate conflict	Interstate armed conflict occurs between two or more states. 1 = At least the country participates in one interstate conflict episode in that year; 0 = no participation.	UCDP-AC	4	0.07%
yacex	Number of years after interstate conflict	Cumulative number of years after external conflict. It becomes 0 when the country participates in an external conflict (d_inter=1).	UCDP-AC	0	0.00%
inter_dispute	Militarized interstate dispute	Militarized interstate disputes are united historical cases of conflict in which the threat, display or use of military force short of war by one member state is explicitly directed towards the government, official representatives, official forces, property, or territory of another state. The sum of the militarized interstate disputes in which each country participated by year.	COW-MID-v4.0	177	3.09%

Table 2.7: List of variables (cont.)

Stata name	Variable name	Definition	Source	Missing	% Missing
Control variables					
d_intra	Intrastate conflict	Internal armed conflict occurs between the government of a state and one or more internal opposition group(s) without intervention from other states. 1 = At least the country participates in one intrastate conflict in that year; 0 = no participation.	UCDP-AC	4	0.07%
yac	Number of years after intrastate conflict	Cumulative number of years after internal conflict. It becomes 0 when the country participates in an internal conflict.	UCDP-AC	0	0.00%
bdeadbes	Battle fatalities of intrastate conflict	The deaths resulting directly from violence inflicted through the use of armed force by a party to an armed conflict during contested combat. Contested combat is use of armed force by a party to an armed conflict against any person or target during which the perpetrator faces the immediate threat of lethal force being used by another party to the conflict against him/her and/or allied fighters.	PRIO	290	5.07%
polity2	Revised Combined Polity Score	The modified version of the POLITY variable that facilitates the use of the POLITY regime measure in time-series analyses. The POLITY score is computed by subtracting the AUTOC score from the DEMOC score; the resulting unified polity scale ranges from +10 (strongly democratic) to -10 (strongly autocratic).	Polity IV Project	259	4.53%

Notes: n/a not applicable.

Appendix 2.2 The Onset of Military Conversion Index (OMCI) calculation description.

Each country by each year could have only one of the three levels of confidence in the onset of military conversion. The comparison between the minimum value (zero) and the maximum value (three) of the OMCI helps with the interpretation of the index.

The “zero value” case or null level of confidence in the onset of military conversion. This is the Finland case in 2007, because there is no evidence of the reduction of any military resource, as follows: Military expenditure growth rate was positive (11%), then it contributes zero to the OMCI; military personnel growth rate was positive (3.5%), then it contributes zero to the OMCI; and conscription was the type of recruitment, then it contributes zero to the OMCI. The Finland OMCI for 2007 is zero.

The “three value” case or high level of confidence in the onset of military conversion. Kenya case has evidence of the simultaneous reduction on military resources in 2000, as follows: Military expenditure growth rate was negative (17%), then it contributes one to the OMCI; military personnel growth rate was negative (8%), then it contributes an additional one to the OMCI; and the type of recruitment was voluntary, then it contributes other one to the OMCI. Then, the Kenya OMCI is three in 2000.

Along the time series, each country could experience different levels of confidence in the onset of military conversion. Then, the OMCI shows the temporal and country variation. Table 2.8 presents the frequency of the OMCI cases by country during the period 1970-2007.

Table 2.8: Cases of the Onset of Military Conversion Index (OMCI) by country

Country	Null	Low	Medium	High	Country	Null	Low	Mediur	High	Country	Null	Low	Medium	High
	0	1	2	3		0	1	2	3		0	1	2	3
Afghanistan	6	9	3	1	Czech Republic	2	7	5	0	Jamaica	0	18	16	3
Albania	8	22	7	0	Czechoslovakia	8	9	5	0	Japan	0	15	21	1
Algeria	18	17	2	0	Democratic Republic of the Congo	0	11	19	5	Jordan	12	21	3	1
Angola	6	9	8	1	Denmark	11	18	8	0	Kazakhstan	3	8	3	1
Argentina	10	15	9	3	Djibouti	0	9	16	3	Kenya	0	24	10	3
Armenia	7	6	0	0	Dominican Republic	5	13	17	2	Kuwait	17	16	3	1
Australia	1	13	17	6	Ecuador	16	16	3	0	Kyrgyzstan	7	7	1	0
Austria	18	12	7	0	Egypt	21	13	3	0	Laos	7	16	4	0
Azerbaijan	7	8	0	0	El Salvador	6	15	14	2	Latvia	10	5	0	0
Bahamas	0	6	3	2	Equatorial Guinea	0	6	7	0	Lebanon	9	15	7	2
Bahrain	0	26	10	0	Eritrea	5	4	3	0	Lesotho	0	14	14	0
Bangladesh	0	17	17	0	Estonia	7	7	1	0	Liberia	0	11	14	0
Barbados	0	6	10	0	Ethiopia	6	17	10	4	Libya	11	17	5	0
Belarus	5	4	3	0	Fiji	0	13	17	0	Lithuania	8	7	0	0
Belgium	7	16	9	5	Finland	16	17	4	0	Luxembourg	0	26	11	0
Belize	0	14	10	0	France	5	17	14	1	Macedonia	9	3	2	0
Benin	11	13	0	0	Gabon	0	8	15	2	Madagascar	14	15	4	0
Bolivia	20	12	5	0	Gambia	0	6	11	0	Malawi	0	11	17	0
Bosnia and Herzegovina	3	8	3	1	Georgia	6	3	4	0	Malaysia	0	18	18	1
Botswana	0	16	12	0	German Democratic Republic	15	3	1	0	Mali	9	18	2	0
Brazil	19	14	4	0	German Federal Republic	9	9	2	0	Malta	0	14	16	2
Brunei	0	12	8	0	Germany	1	10	5	0	Mauritania	14	15	4	0
Bulgaria	16	13	8	0	Ghana	0	15	17	5	Mexico	21	14	2	0
Burkina Faso	6	21	8	2	Greece	14	18	5	0	Moldova	5	8	2	0
Burundi	0	20	15	0	Guatemala	20	13	4	0	Mongolia	13	20	4	0
Cambodia	2	8	10	1	Guinea	9	10	2	0	Morocco	22	15	0	0
Cameroon	4	18	14	1	Guinea-Bissau	9	8	0	0	Mozambique	10	15	7	0
Canada	0	17	10	10	Guyana	9	10	11	1	Myanmar	2	16	14	5
Cape Verde	6	10	0	0	Honduras	13	10	13	1	Namibia	0	9	8	0
Central African Republic	11	8	2	0	Hungary	7	22	8	0	Nepal	0	18	18	1
Chad	15	22	0	0	India	0	19	16	2	Netherlands	7	15	12	3
Chile	19	12	6	0	Indonesia	15	17	5	0	New Zealand	2	15	16	4
China	10	23	4	0	Iran	17	14	4	0	Nicaragua	5	13	13	4
Colombia	22	13	2	0	Iraq	13	15	3	0	Niger	14	10	2	0
Congo	0	16	16	1	Ireland	0	22	9	6	Nigeria	0	15	16	6
Croatia	2	9	4	0	Israel	16	16	5	0	North Korea	17	14	2	0
Cuba	12	16	3	0	Italy	11	14	12	0	Norway	19	11	7	0
Cyprus	15	20	2	0	Ivory Coast	18	16	3	0	Oman	0	15	18	3

Table 2.8: Cases of the Onset of Military Conversion Index (OMCI) by country (cont.)

Country	Null	Low	Medium	High
	0	1	2	3
Pakistan	0	18	17	2
Papua New Guinea	0	15	13	3
Paraguay	19	16	2	0
Peru	13	15	9	0
Philippines	9	11	11	6
Poland	13	17	7	0
Portugal	9	17	11	0
Qatar	0	19	6	1
Republic of Vietnam	0	3	2	0
Romania	14	19	4	0
Russia	14	16	7	0
Rwanda	0	16	20	1
Saudi Arabia	0	23	11	3
Senegal	17	17	3	0
Sierra Leone	0	11	9	4
Singapore	27	9	1	0
Slovakia	4	8	2	0
Slovenia	2	8	3	0
Somalia	1	14	5	1
South Africa	10	11	14	2
South Korea	19	15	3	0
Spain	10	14	12	1
Sri Lanka	0	20	14	3
Sudan	9	17	9	1
Suriname	0	10	12	1
Swaziland	0	1	1	0
Sweden	14	18	5	0
Switzerland	16	15	6	0
Syria	20	12	5	0
Taiwan	13	22	2	0
Tajikistan	8	6	1	0
Tanzania	14	18	5	0
Thailand	22	12	2	1
Togo	9	13	2	0
Trinidad and Tobago	0	20	10	0
Tunisia	20	16	1	0
Turkey	16	13	8	0
Turkmenistan	6	6	3	0
Uganda	0	13	22	2
Ukraine	3	7	5	0
United Arab Emirates	0	17	14	3
United Kingdom	0	6	21	10
United States of America	0	14	10	13
Uruguay	0	19	15	3
Uzbekistan	9	3	1	0
Venezuela	18	19	0	0
Vietnam	7	11	6	0
Yemen	7	7	2	0
Yemen Arab Republic	12	7	1	0
Yemen People's Republic	14	5	0	0
Yugoslavia	10	16	8	0
Zambia	0	13	20	2
Zimbabwe	11	12	11	2

Appendix 2.3 Robustness checks.

Table 2.9: Models BTSCS and Ordinal Logit - Level control variables

	Model 1 Logit BTSCS Cases (1,2,3)	Model 2 Logit BTSCS Cases (2,3)	Model 3 Logit BTSCS Case (3=High)	Model 4 Ordinal Logit Index (0,1,2,3)
Interstate conflict	0.075	0.139	0.071	0.045
	(0.30)	(0.17)	(0.41)	(0.21)
Number of years after interstate conflict	0.001	0.002	0.011	-0.002
	(0.01)	(0.01)	(0.01)	(0.01)
Militarized interstate dispute	0.046	0.039	0.168	0.049
	(0.05)	(0.04)	(0.04)***	(0.05)
Intrastate conflict	-0.064	0.091	0.635	0.067
	(0.48)	(0.50)	(0.79)	(0.46)
Number of years after intrastate conflict	0.019	0.015	0.03	0.015
	(0.01)***	(0.01)***	(0.01)**	(0.01)**
Battle fatalities of intrastate conflict	0.053	0.008	-0.054	0.013
	(0.08)	(0.07)	(0.13)	(0.07)
Revised Combined Polity Score	0.021	0.022	0.035	0.024
	(0.01)*	(0.01)***	(0.01)**	(0.01)***
Log GDP per capita	-0.089	-0.12	0.017	-0.102
	(0.08)	(0.05)**	(0.09)	(0.06)*
Log of Urban Population	-0.109	-0.023	0.098	-0.051
	(0.04)***	(0.03)	(0.06)	(0.03)*
t	-1.43	-0.43	-0.237	-1.509
	(0.14)***	(0.04)***	(0.08)***	(0.13)***
t2	0.348	0.031	0.01	0.361
	(0.05)***	(0.01)***	(0.01)*	(0.04)***
t3	-0.02	-0.001	0	-0.021
	(0.00)***	(0.00)***	(0.00)	(0.00)***
Constant	2.659	0.651	-3.874	
	(0.69)***	(0.46)	(0.87)***	
cut1				
Constant cut1				-2.461
				(0.55)***
cut2				
Constant cut2				-0.33
				(0.54)
cut3				
Constant cut3				2.165
				(0.52)***
Obs.	4449	4449	4449	4449
Log Pseudo Likelihood	-2353.69	-2436.53	-611.18	-4941.94
Wald $\chi 2$	168.83	348.84	95.57	254.34
Prob>$\chi 2$	0.00	0.00	0.00	0.00
Pseudo R2	0.09	0.09	0.09	0.06

Note: Robust standard errors clustered on country are in parentheses below the coefficient estimates.
Two-tailed tests * p<0.10, ** p<0.05, *** p<0.01.

Table 2.10: Models Three-Stage Least Squares intrastate conflict, years after the intrastate conflict and conversion 1971-2007

Variable	Coeffients	Std. Error	z	P>z
Onset of military conversion index (OMCI)				
Lagged Intrastate conflict	-205.683	488.505	-0.420	0.674
Lagged Number of years after intrastate conflict	3.365	6.763	0.500	0.619
Lagged Onset of military conversion index (OMCI)	-2.104	7.186	-0.290	0.770
Lagged Interstate conflict	-17.367	31.653	-0.550	0.583
Lagged Number of years after interstate conflict	-2.193	3.533	-0.620	0.535
Lagged Militarized interstate dispute	-0.514	0.710	-0.720	0.470
Lagged Battle fatalities of intrastate conflict	38.309	84.651	0.450	0.651
Lagged Logarithm Gross Domestic Product per capita	-8.317	13.140	-0.630	0.527
Constant	59.752	81.150	0.740	0.462
Lagged Intrastate conflict				
Onset of military conversion index (OMCI)	-0.017	0.014	-1.190	0.235
Lagged Revised Combined Polity Score	0.002	0.001	2.390	0.017**
Constant	0.138	0.016	8.760	0.000***
Lagged Number of years after intrastate conflict				
Onset of military conversion index (OMCI)	5.001	0.433	11.550	0.000***
Lagged Intrastate conflict	-14.150	0.487	-29.050	0.000***
Lagged Logarithm Urban population	0.370	0.069	5.400	0.000***
Constant	6.120	0.741	8.260	0.000***
No. Observations	4438			
	RMSE	Chi2	P	
Equation 1	35.945	637.090	0.000	
Equation 2	0.327	6.160	0.046	
Equation 3	10.019	970.180	0.000	

Table 2.11: Models Three-Stage Least Squares interstate conflict, years after the interstate conflict and conversion 1971-2007

Variable	Coeffients	Std. Error	z	P>z
Onset of military conversion index (OMCI)				
Lagged Interstate conflict	-8.181	0.974	-8.400	0.000***
Lagged Number of years after interstate conflict	0.051	0.009	5.420	0.000***
Lagged Onset of military conversion index (OMCI)	0.323	0.018	17.640	0.000***
Lagged Intrastate conflict	-0.564	0.134	-4.220	0.000***
Lagged Number of years after intrastate conflict	-0.011	0.006	-1.920	0.054*
Lagged Militarized interstate dispute	0.262	0.037	7.130	0.000***
Lagged Battle fatalities of intrastate conflict	0.048	0.016	3.000	0.003**
Lagged Logarithm Gross Domestic Product per capita	-0.072	0.016	-4.470	0.000***
Constant	0.858	0.192	4.470	0.000***
Lagged Interstate conflict				
Onset of military conversion index (OMCI)	0.001	0.007	0.140	0.887
Lagged Revised Combined Polity Score	-0.002	0.000	-6.640	0.000***
Constant	0.031	0.008	3.770	0.000***
Lagged Number of years after interstate conflict				
Onset of military conversion index (OMCI)	4.815	0.659	7.300	0.000***
Lagged Interstate conflict	-142.862	4.705	-30.360	0.000***
Lagged Logarithm Urban population	0.651	0.085	7.680	0.000***
Constant	8.781	0.968	9.070	0.000***
No. Observations	4438			
	RMSE	Chi2	P	
Equation 1	1.738	1203.910	0.000	
Equation 2	0.173	44.900	0.000	
Equation 3	24.265	1064.570	0.000	

Table 2.12: Models BTSCS and Ordinal Logit including square term of regime type - Endogeneity correction

	Model 1 Logit BTSCS Cases (1,2,3)	Model 2 Logit BTSCS Cases (2,3)	Model 3 Logit BTSCS Case (3=High)	Model 4 Ordinal Logit Index (0,1,2,3)
Number of years after interstate conflict	0.008	0.008	0.012	0.006
	(0.01)	(0.01)	(0.01)	(0.01)
Number of years after intrastate conflict	0.01	0.008	0.017	0.01
	(0.01)*	(0.01)	(0.01)	(0.01)
Revised Combined Polity Score	0.018	0.018	0.027	0.025
	(0.01)	(0.01)**	(0.01)**	(0.01)**
Log GDP per capita	-0.105	-0.106	-0.033	-0.143
	(0.08)	(0.06)*	(0.09)	(0.08)*
Log of Urban Population	-0.07	0.002	0.183	-0.042
	(0.04)*	(0.03)	(0.07)***	(0.03)
US Military Aid	-0.000	-0.000	-0.000	-0.000
	(0.00)*	(0.00)	(0.00)**	(0.00)*
Revised Combined Polity Score (square term)	0.003	0.001	0.004	0.003
	(0.00)	(0.00)	(0.00)	(0.00)
t	-1.208	-0.439	-0.222	
	(0.13)***	(0.04)***	(0.07)***	
t2	0.24	0.031	0.009	
	(0.04)***	(0.00)***	(0.01)*	
t3	-0.011	-0.001	0	
	(0.00)***	(0.00)***	(0.00)	
Constant	2.422	0.375	-3.92	
	(0.65)***	(0.45)	(0.79)***	
cut1				
Constant cut1				-2.153
				(0.68)***
cut2				
Constant cut2				-0.19
				(0.68)
cut3				
Constant cut3				2.233
				(0.66)***
Obs.	4822	4822	4822	4822
Log Pseudo Likelihood	-2572.53	-2636.66	-668.00	-5612.98
Wald $\chi 2$	.	.	67.47	.
Prob>$\chi 2$	.	.	0.00	.
Pseudo R2	0.08	0.09	0.08	0.01

Note: Robust standard errors clustered on country are in parentheses below the coefficient estimates.
Two-tailed tests * p<0.10, ** p<0.05, *** p<0.01.

Table 2.13: Models BTSCS and Ordinal Logit including the preferred estimate of predicted probability of interstate war

	Model 1 Logit BTSCS Cases (1,2,3)	**Model 2 Logit BTSCS Cases (2,3)**	**Model 3 Logit BTSCS Case (3=High)**	**Model 4 Ordinal Logit Index (0,1,2,3)**
Number of years after interstate conflict	0.021	0.015	0.013	0.015
	(0.01)***	(0.01)***	(0.02)	(0.01)*
Number of years after intrastate conflict	0.018	0.015	0.04	0.019
	(0.01)**	(0.01)**	(0.02)**	(0.01)**
Revised Combined Polity Score	0.027	0.023	0.03	0.035
	(0.01)**	(0.01)***	(0.02)**	(0.01)***
Log GDP per capita	-0.107	-0.1	0.045	-0.122
	(0.08)	(0.06)*	(0.08)	(0.08)
Log of Urban Population	-0.078	-0.003	0.199	-0.051
	(0.04)**	(0.03)	(0.08)**	(0.04)
US Military Aid	-0.000	-0.000	-0.000	-0.000
	(0.00)	(0.00)	(0.00)*	(0.00)
Predicted probability of interstate war	0.672	0.261	-0.16	0.716
	(0.65)	(0.63)	(1.44)	(0.88)
t	-1.074	-0.432	-0.211	
	(0.14)***	(0.04)***	(0.08)***	
t2	0.209	0.03	0.008	
	(0.04)***	(0.01)***	(0.01)	
t3	-0.01	-0.001	0	
	(0.00)***	(0.00)***	(0.00)	
Constant	2.301	0.232	-4.61	
	(0.68)***	(0.47)	(0.92)***	
cut1				
Constant cut1				-1.926
				(0.70)***
cut2				
Constant cut2				0.057
				(0.69)
cut3				
Constant cut3				2.464
				(0.66)***
Obs.	4050	4050	4050	4050
Log Pseudo Likelihood	-2136.41	-2222.06	-574.78	-4701.96
Wald $\chi 2$	.	.	75.25	.
Prob>$\chi 2$	.	.	0.00	.
Pseudo R2	0.08	0.09	0.10	0.02

Note: Robust standard errors clustered on country are in parentheses below the coefficient estimates.
Two-tailed tests * p<0.10, ** p<0.05, *** p<0.01.

Table 2.14: Models Linear Probability Model (LPM) with country and year dummies

	Model 1 Linear Probability Model (LPM) Cases (1,2,3)	Model 2 Linear Probability Model (LPM) Cases (2,3)	Model 3 Linear Probability Model (LPM) Case (3=High)	Model 4 Linear Probability Model (LPM) Index (0,1,2,3)
Any evidence OMC - Lagged 1 year	0.053			
	(0.03)**			
Medium and High evidence OMC - Lagged 1 year		0.059		
		(0.02)***		
High evidence OMC - Lagged 1 year			0.104	
			(0.05)**	
Onset of military conversion index (OMCI) - Lagged 1 year				0.115
				(0.02)***
Constant	0.761	0.42	0.22	1.627
	(0.34)**	(0.37)	(0.12)*	(0.60)***
Number of years after interstate conflict	-0.002	-0.003	-0.001	-0.007
	(0.00)	(0.00)**	(0.00)*	(0.00)**
Number of years after intrastate conflict	0.001	0.001	0.000	0.002
	(0.00)	(0.00)	(0.00)	(0.00)
Log GDP per capita	-0.015	-0.007	0.006	-0.017
	(0.03)	(0.03)	(0.01)	(0.05)

Table 2.14: Models Linear Probability Model (LPM) with country and year dummies (Cont.)

Revised Combined Polity Score	0.005	0.003	0.000	0.007
	(0.00)*	(0.00)*	(0.00)	(0.00)*
Log of Urban Population	0.001	0.002	0.000	-0.006
	(0.02)	(0.02)	(0.00)	(0.03)
US Military Aid	0.000	0.000	-0.000	0.000
	(0.00)	(0.00)	(0.00)	(0.00)
2. Country	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)
20. Country	0.014	-0.058	-0.065	-0.128
	(0.04)	(0.04)	(0.01)***	(0.07)*
40. Country	-0.25	-0.384	-0.291	-0.964
	(0.10)**	(0.10)***	(0.04)***	(0.17)***
42. Country	-0.093	-0.044	-0.239	-0.399
	(0.09)	(0.10)	(0.03)***	(0.15)**
51. Country	0.016	-0.029	-0.213	-0.305
	(0.13)	(0.13)	(0.04)***	(0.21)
52. Country	0.065	-0.17	-0.294	-0.498
	(0.22)	(0.22)	(0.04)***	(0.36)
70. Country	-0.475	-0.434	-0.296	-1.16
	(0.05)***	(0.06)***	(0.03)***	(0.10)***
90. Country	-0.432	-0.38	-0.288	-1.116
	(0.11)***	(0.12)***	(0.04)***	(0.19)***
91. Country	-0.305	-0.182	-0.275	-0.807
	(0.11)***	(0.11)	(0.04)***	(0.19)***
92. Country	-0.135	-0.091	-0.225	-0.5
	(0.14)	(0.16)	(0.05)***	(0.24)**
93. Country	-0.073	-0.057	-0.208	-0.328
	(0.12)	(0.12)	(0.04)***	(0.20)*
100. Country	-0.509	-0.449	-0.291	-1.228
	(0.06)***	(0.07)***	(0.03)***	(0.12)***
101. Country	-0.403	-0.506	-0.293	-1.19
	(0.06)***	(0.07)***	(0.03)***	(0.11)***
110. Country	-0.199	-0.101	-0.255	-0.671
	(0.18)	(0.19)	(0.05)***	(0.30)**

Table 2.14: Models Linear Probability Model (LPM) with country and year dummies (Cont.)

115. Country	0.02	0.058	-0.258	-0.309
	(0.14)	(0.14)	(0.04)***	(0.22)
130. Country	-0.412	-0.458	-0.302	-1.162
	(0.08)***	(0.09)***	(0.03)***	(0.14)***
135. Country	-0.302	-0.286	-0.302	-0.876
	(0.07)***	(0.08)***	(0.03)***	(0.13)***
140. Country	-0.452	-0.406	-0.292	-1.106
	(0.06)***	(0.06)***	(0.03)***	(0.10)***
145. Country	-0.495	-0.385	-0.285	-1.148
	(0.10)***	(0.11)***	(0.04)***	(0.18)***
150. Country	-0.429	-0.431	-0.288	-1.144
	(0.12)***	(0.12)***	(0.04)***	(0.20)***
155. Country	-0.408	-0.34	-0.293	-1.05
	(0.07)***	(0.07)***	(0.03)***	(0.12)***
160. Country	-0.241	-0.233	-0.236	-0.705
	(0.06)***	(0.06)***	(0.03)***	(0.10)***
165. Country	0.057	-0.03	-0.218	-0.262
	(0.09)	(0.09)	(0.03)***	(0.15)*
200. Country	0.014	0.231	-0.071	0.154
	(0.03)	(0.03)***	(0.01)***	(0.04)***
205. Country	0.033	-0.126	-0.147	-0.303
	(0.10)	(0.09)	(0.02)***	(0.16)*
210. Country	-0.172	-0.161	-0.238	-0.586
	(0.06)***	(0.06)***	(0.02)***	(0.09)***
211. Country	-0.145	-0.186	-0.188	-0.57
	(0.08)*	(0.08)**	(0.02)***	(0.13)***
212. Country	0.048	-0.215	-0.298	-0.57
	(0.22)	(0.22)	(0.04)***	(0.35)
220. Country	-0.114	-0.158	-0.288	-0.572
	(0.04)***	(0.04)***	(0.02)***	(0.07)***
225. Country	-0.352	-0.358	-0.299	-1.03
	(0.09)***	(0.09)***	(0.03)***	(0.15)***
230. Country	-0.205	-0.193	-0.286	-0.704
	(0.04)***	(0.04)***	(0.02)***	(0.08)***
235. Country	-0.201	-0.268	-0.313	-0.815
	(0.08)**	(0.08)***	(0.03)***	(0.14)***
255. Country	-0.079	-0.269	-0.335	-0.695
	(0.04)**	(0.04)***	(0.02)***	(0.07)***

Table 2.14: Models Linear Probability Model (LPM) with country and year dummies (Cont.)

260. Country	-0.396	-0.406	-0.293	-1.042
	(0.03)***	(0.03)***	(0.02)***	(0.06)***
265. Country	-0.584	-0.385	-0.294	-1.261
	(0.08)***	(0.07)***	(0.03)***	(0.13)***
290. Country	-0.253	-0.316	-0.294	-0.887
	(0.07)***	(0.07)***	(0.03)***	(0.11)***
305. Country	-0.412	-0.336	-0.298	-1.058
	(0.07)***	(0.07)***	(0.03)***	(0.12)***
310. Country	-0.09	-0.287	-0.295	-0.722
	(0.08)	(0.08)***	(0.03)***	(0.13)***
315. Country	-0.205	-0.247	-0.292	-0.799
	(0.09)**	(0.08)***	(0.03)***	(0.14)***
316. Country	-0.165	-0.302	-0.335	-0.744
	(0.08)**	(0.08)***	(0.03)***	(0.14)***
317. Country	-0.308	-0.438	-0.333	-1.063
	(0.11)***	(0.11)***	(0.03)***	(0.18)***
325. Country	-0.255	-0.243	-0.312	-0.824
	(0.03)***	(0.03)***	(0.02)***	(0.06)***
339. Country	-0.106	-0.303	-0.29	-0.769
	(0.13)	(0.13)**	(0.04)***	(0.22)***
343. Country	-0.601	-0.434	-0.328	-1.387
	(0.12)***	(0.13)***	(0.03)***	(0.21)***
344. Country	-0.122	-0.287	-0.334	-0.771
	(0.10)	(0.11)***	(0.03)***	(0.17)***
345. Country	-0.17	-0.257	-0.295	-0.759
	(0.09)*	(0.09)***	(0.03)***	(0.15)***
346. Country	-0.43	-0.529	-0.322	-1.443
	(0.14)***	(0.15)***	(0.05)***	(0.24)***
349. Country	-0.179	-0.434	-0.335	-0.871
	(0.12)	(0.12)***	(0.03)***	(0.20)***
350. Country	-0.329	-0.417	-0.31	-1.067
	(0.07)***	(0.07)***	(0.02)***	(0.13)***
352. Country	-0.377	-0.482	-0.3	-1.155
	(0.11)***	(0.11)***	(0.03)***	(0.19)***

Table 2.14: Models Linear Probability Model (LPM) with country and year dummies (Cont.)

355. Country	-0.327	-0.286	-0.292	-0.938
	(0.09)***	(0.09)***	(0.03)***	(0.15)***
359. Country	-0.376	-0.45	-0.321	-1.137
	(0.12)***	(0.13)***	(0.04)***	(0.20)***
360. Country	-0.262	-0.378	-0.292	-0.949
	(0.08)***	(0.08)***	(0.03)***	(0.14)***
365. Country	-0.297	-0.32	-0.308	-0.896
	(0.05)***	(0.05)***	(0.03)***	(0.08)***
366. Country	-0.414	-0.507	-0.331	-1.281
	(0.11)***	(0.11)***	(0.03)***	(0.19)***
367. Country	-0.622	-0.578	-0.33	-1.52
	(0.10)***	(0.11)***	(0.03)***	(0.18)***
368. Country	-0.497	-0.585	-0.33	-1.412
	(0.09)***	(0.10)***	(0.03)***	(0.16)***
369. Country	-0.23	-0.247	-0.327	-0.803
	(0.06)***	(0.07)***	(0.03)***	(0.11)***
370. Country	-0.308	-0.235	-0.323	-0.977
	(0.09)***	(0.09)**	(0.03)***	(0.14)***
371. Country	-0.442	-0.575	-0.326	-1.403
	(0.11)***	(0.12)***	(0.04)***	(0.19)***
372. Country	-0.498	-0.348	-0.324	-1.057
	(0.11)***	(0.12)***	(0.04)***	(0.19)***
373. Country	-0.434	-0.534	-0.327	-1.266
	(0.11)***	(0.12)***	(0.04)***	(0.19)***
375. Country	-0.359	-0.413	-0.297	-1.086
	(0.08)***	(0.08)***	(0.03)***	(0.14)***
380. Country	-0.306	-0.389	-0.298	-1.006
	(0.06)***	(0.06)***	(0.03)***	(0.11)***
385. Country	-0.453	-0.364	-0.315	-1.138
	(0.08)***	(0.09)***	(0.02)***	(0.14)***
390. Country	-0.25	-0.342	-0.313	-0.931
	(0.08)***	(0.08)***	(0.02)***	(0.13)***
402. Country	-0.398	-0.544	-0.292	-1.281
	(0.24)	(0.24)**	(0.05)***	(0.39)***
404. Country	-0.531	-0.528	-0.287	-1.286
	(0.17)***	(0.17)***	(0.05)***	(0.28)***

Table 2.14: Models Linear Probability Model (LPM) with country and year dummies (Cont.)

411. Country	0.082	-0.011	-0.298	-0.269
	(0.15)	(0.15)	(0.04)***	(0.25)
420. Country	0.049	0.181	-0.285	-0.274
	(0.25)	(0.26)	(0.06)***	(0.40)
432. Country	-0.321	-0.528	-0.3	-1.165
	(0.14)**	(0.15)***	(0.05)***	(0.24)***
433. Country	-0.41	-0.443	-0.298	-1.136
	(0.11)***	(0.12)***	(0.04)***	(0.19)***
434. Country	-0.431	-0.542	-0.287	-1.291
	(0.13)***	(0.14)***	(0.05)***	(0.23)***
435. Country	-0.328	-0.368	-0.282	-0.973
	(0.16)**	(0.17)**	(0.05)***	(0.27)***
436. Country	-0.551	-0.492	-0.303	-1.348
	(0.15)***	(0.16)***	(0.05)***	(0.25)***
437. Country	-0.359	-0.399	-0.286	-1.07
	(0.12)***	(0.12)***	(0.04)***	(0.20)***
438. Country	-0.349	-0.393	-0.29	-1.084
	(0.14)**	(0.15)***	(0.05)***	(0.23)***
439. Country	-0.089	-0.257	-0.244	-0.662
	(0.15)	(0.15)*	(0.05)***	(0.25)***
450. Country	0.09	0.065	-0.278	-0.224
	(0.15)	(0.15)	(0.05)***	(0.25)
451. Country	0.037	0.053	-0.122	-0.144
	(0.14)	(0.15)	(0.04)***	(0.24)
452. Country	0.065	0.059	-0.159	-0.094
	(0.12)	(0.12)	(0.04)***	(0.19)
461. Country	-0.344	-0.414	-0.285	-1.06
	(0.15)**	(0.16)**	(0.05)***	(0.26)***
471. Country	-0.045	-0.111	-0.269	-0.481
	(0.13)	(0.14)	(0.05)***	(0.22)**
475. Country	0.024	0.031	-0.154	-0.156
	(0.10)	(0.11)	(0.04)***	(0.16)
481. Country	0.082	0.213	-0.217	-0.051
	(0.13)	(0.12)*	(0.03)***	(0.20)
482. Country	-0.53	-0.417	-0.283	-1.219
	(0.15)***	(0.16)**	(0.05)***	(0.26)***

Table 2.14: Models Linear Probability Model (LPM) with country and year dummies (Cont.)

483. Country	-0.315	-0.511	-0.299	-1.146
	(0.14)**	(0.15)***	(0.05)***	(0.23)***
484. Country	0.106	0.056	-0.26	-0.202
	(0.12)	(0.12)	(0.04)***	(0.20)
490. Country	0.067	0.17	-0.138	0.013
	(0.13)	(0.14)	(0.05)***	(0.22)
500. Country	0.059	0.089	-0.24	-0.153
	(0.14)	(0.15)	(0.05)***	(0.23)
501. Country	0.075	-0.142	-0.21	-0.343
	(0.12)	(0.12)	(0.04)***	(0.20)*
510. Country	-0.325	-0.388	-0.292	-1.013
	(0.12)***	(0.13)***	(0.05)***	(0.21)***
516. Country	0.071	-0.076	-0.276	-0.366
	(0.19)	(0.19)	(0.06)***	(0.31)
517. Country	0.086	0.054	-0.254	-0.195
	(0.17)	(0.17)	(0.05)***	(0.28)
520. Country	0.043	-0.283	-0.244	-0.49
	(0.14)	(0.14)**	(0.04)***	(0.22)**
522. Country	0.047	0.118	-0.238	-0.108
	(0.14)	(0.14)	(0.04)***	(0.23)
530. Country	-0.126	-0.192	-0.199	-0.524
	(0.13)	(0.14)	(0.05)***	(0.22)**
531. Country	-0.449	-0.331	-0.328	-1.11
	(0.16)***	(0.17)*	(0.05)***	(0.27)***
540. Country	-0.113	-0.135	-0.256	-0.591
	(0.11)	(0.12)	(0.04)***	(0.19)***
541. Country	-0.254	-0.305	-0.285	-0.888
	(0.14)*	(0.16)*	(0.05)***	(0.25)***
551. Country	0.07	0.142	-0.229	-0.128
	(0.12)	(0.13)	(0.04)***	(0.20)
552. Country	-0.198	-0.138	-0.237	-0.637
	(0.11)*	(0.11)	(0.04)***	(0.18)***
553. Country	0.015	0.066	-0.282	-0.283
	(0.15)	(0.16)	(0.05)***	(0.25)
560. Country	-0.186	-0.083	-0.241	-0.553
	(0.07)***	(0.07)	(0.03)***	(0.12)***

Table 2.14: Models Linear Probability Model (LPM) with country and year dummies (Cont.)

565. Country	-0.022	-0.171	-0.322	-0.544
	(0.14)	(0.15)	(0.04)***	(0.23)**
570. Country	0.01	-0.058	-0.284	-0.411
	(0.18)	(0.18)	(0.05)***	(0.29)
571. Country	0.005	-0.091	-0.29	-0.481
	(0.16)	(0.16)	(0.04)***	(0.27)*
572. Country	0.054	-0.507	-0.298	-0.916
	(0.25)	(0.24)**	(0.05)***	(0.40)**
580. Country	-0.34	-0.369	-0.276	-1.016
	(0.14)**	(0.15)**	(0.05)***	(0.24)***
600. Country	-0.469	-0.494	-0.304	-1.258
	(0.09)***	(0.09)***	(0.04)***	(0.16)***
615. Country	-0.371	-0.412	-0.291	-1.062
	(0.09)***	(0.09)***	(0.04)***	(0.16)***
616. Country	-0.395	-0.439	-0.292	-1.15
	(0.11)***	(0.11)***	(0.04)***	(0.19)***
620. Country	-0.271	-0.384	-0.31	-0.92
	(0.09)***	(0.09)***	(0.03)***	(0.15)***
625. Country	-0.159	-0.203	-0.258	-0.653
	(0.12)	(0.13)	(0.04)***	(0.20)***
630. Country	-0.413	-0.396	-0.315	-1.076
	(0.07)***	(0.07)***	(0.03)***	(0.11)***
640. Country	-0.387	-0.305	-0.3	-0.971
	(0.06)***	(0.06)***	(0.03)***	(0.10)***
645. Country	-0.298	-0.415	-0.315	-1.034
	(0.08)***	(0.08)***	(0.03)***	(0.13)***
651. Country	-0.49	-0.438	-0.304	-1.236
	(0.10)***	(0.10)***	(0.04)***	(0.17)***
652. Country	-0.451	-0.374	-0.305	-1.112
	(0.10)***	(0.11)***	(0.04)***	(0.18)***
660. Country	-0.001	-0.004	-0.177	-0.208
	(0.10)	(0.11)	(0.03)***	(0.17)
663. Country	-0.23	-0.374	-0.265	-0.889
	(0.11)**	(0.11)***	(0.04)***	(0.19)***
666. Country	-0.402	-0.382	-0.301	-1.119
	(0.12)***	(0.10)***	(0.03)***	(0.19)***

Table 2.14: Models Linear Probability Model (LPM) with country and year dummies (Cont.)

670. Country	0.125	-0.11	-0.244	-0.286
	(0.07)*	(0.07)	(0.02)***	(0.12)**
678. Country	-0.456	-0.43	-0.292	-1.212
	(0.14)***	(0.14)***	(0.04)***	(0.24)***
679. Country	-0.44	-0.496	-0.316	-1.171
	(0.12)***	(0.13)***	(0.05)***	(0.21)***
680. Country	-0.576	-0.471	-0.293	-1.353
	(0.13)***	(0.13)***	(0.04)***	(0.22)***
690. Country	-0.279	-0.371	-0.296	-0.989
	(0.12)**	(0.12)***	(0.03)***	(0.20)***
692. Country	0.104	-0.217	-0.317	-0.508
	(0.15)	(0.15)	(0.03)***	(0.24)**
694. Country	0.135	-0.308	-0.329	-0.448
	(0.12)	(0.12)**	(0.03)***	(0.20)**
696. Country	0.114	0.017	-0.224	-0.18
	(0.10)	(0.09)	(0.03)***	(0.16)
698. Country	0.105	0.084	-0.238	-0.19
	(0.22)	(0.22)	(0.04)***	(0.36)
700. Country	-0.166	-0.167	-0.272	-0.687
	(0.13)	(0.13)	(0.05)***	(0.22)***
701. Country	-0.345	-0.322	-0.332	-1.005
	(0.12)***	(0.12)***	(0.03)***	(0.20)***
702. Country	-0.524	-0.479	-0.322	-1.288
	(0.13)***	(0.14)***	(0.04)***	(0.22)***
703. Country	-0.388	-0.483	-0.324	-1.237
	(0.12)***	(0.13)***	(0.04)***	(0.21)***
704. Country	-0.657	-0.45	-0.328	-1.364
	(0.10)***	(0.11)***	(0.04)***	(0.18)***
705. Country	-0.166	-0.344	-0.339	-0.737
	(0.09)*	(0.09)***	(0.03)***	(0.14)***
710. Country	-0.213	-0.429	-0.309	-0.92
	(0.09)**	(0.09)***	(0.04)***	(0.15)***
712. Country	-0.296	-0.399	-0.284	-0.994
	(0.13)**	(0.14)***	(0.04)***	(0.22)***
713. Country	-0.241	-0.441	-0.297	-0.993
	(0.06)***	(0.06)***	(0.03)***	(0.11)***
731. Country	-0.385	-0.432	-0.299	-1.134
	(0.10)***	(0.10)***	(0.04)***	(0.17)***

Table 2.14: Models Linear Probability Model (LPM) with country and year dummies (Cont.)

732. Country	-0.451	-0.438	-0.302	-1.156
	(0.05)***	(0.05)***	(0.03)***	(0.10)***
740. Country	0.032	0.024	-0.27	-0.219
	(0.03)	(0.03)	(0.02)***	(0.05)***
750. Country	-0.025	-0.105	-0.257	-0.392
	(0.08)	(0.09)	(0.04)***	(0.14)***
770. Country	0.018	-0.052	-0.26	-0.331
	(0.08)	(0.09)	(0.04)***	(0.14)**
771. Country	0.014	-0.055	-0.301	-0.386
	(0.10)	(0.11)	(0.04)***	(0.17)**
775. Country	0.072	0.035	-0.156	-0.143
	(0.11)	(0.12)	(0.04)***	(0.20)
780. Country	0.043	-0.056	-0.211	-0.288
	(0.11)	(0.11)	(0.04)***	(0.18)
790. Country	0.06	-0.02	-0.256	-0.275
	(0.15)	(0.15)	(0.05)***	(0.24)
800. Country	-0.533	-0.466	-0.285	-1.265
	(0.07)***	(0.08)***	(0.03)***	(0.13)***
811. Country	0.019	-0.001	-0.248	-0.331
	(0.12)	(0.13)	(0.04)***	(0.21)
812. Country	-0.154	-0.33	-0.298	-0.853
	(0.15)	(0.15)**	(0.05)***	(0.24)***
816. Country	-0.284	-0.278	-0.314	-0.877
	(0.11)***	(0.11)**	(0.04)***	(0.18)***
817. Country	0.041	0.496	-0.273	0.139
	(0.23)	(0.19)***	(0.04)***	(0.37)
820. Country	0.061	0.003	-0.268	-0.265
	(0.08)	(0.08)	(0.03)***	(0.14)*
830. Country	-0.587	-0.453	-0.301	-1.333
	(0.08)***	(0.08)***	(0.03)***	(0.13)***
840. Country	-0.183	-0.058	-0.146	-0.412
	(0.08)**	(0.09)	(0.03)***	(0.14)***
850. Country	-0.307	-0.341	-0.288	-0.921
	(0.08)***	(0.09)***	(0.04)***	(0.15)***
900. Country	-0.024	0.035	-0.17	-0.194
	(0.03)	(0.03)	(0.01)***	(0.06)***
910. Country	0.014	-0.052	-0.238	-0.299
	(0.15)	(0.15)	(0.04)***	(0.24)
920. Country	-0.003	-0.011	-0.204	-0.3
	(0.09)	(0.08)	(0.02)***	(0.14)**
950. Country	0.008	0.023	-0.291	-0.349
	(0.14)	(0.14)	(0.04)***	(0.22)

Table 2.14: Models Linear Probability Model (LPM) with country and year dummies (Cont.)

1972. Year	0.000	0.000	0.000	-0.182
	(.)	(.)	(.)	(0.08)**
1973.year	0.097	0.054	0.009	-0.015
	(0.05)*	(0.04)	(0.02)	(0.07)
1974.year	0.126	0.044	0.000	-0.018
	(0.04)***	(0.04)	(0.01)	(0.08)
1975.year	0.135	0.134	0.019	0.103
	(0.05)***	(0.05)***	(0.02)	(0.08)
1976.year	0.15	0.048	0.01	0.012
	(0.05)***	(0.05)	(0.02)	(0.08)
1977.year	0.217	0.126	0.03	0.198
	(0.06)***	(0.04)***	(0.02)	(0.09)**
1978.year	0.138	0.032	0.02	-0.015
	(0.06)**	(0.04)	(0.02)	(0.08)
1979.year	0.275	0.074	0.023	0.184
	(0.06)***	(0.05)	(0.02)	(0.09)**
1980.year	0.26	0.115	0.024	0.205
	(0.06)***	(0.05)**	(0.02)	(0.08)**
1981.year	0.288	0.119	0.007	0.216
	(0.06)***	(0.04)***	(0.02)	(0.09)**
1982.year	0.235	0.114	0.027	0.181
	(0.06)***	(0.05)**	(0.02)	(0.09)**
1983.year	0.313	0.174	0.066	0.353
	(0.06)***	(0.04)***	(0.02)***	(0.09)***
1984.year	0.375	0.28	0.055	0.509
	(0.06)***	(0.06)***	(0.03)**	(0.10)***
1985.year	0.392	0.261	0.008	0.444
	(0.06)***	(0.06)***	(0.02)	(0.10)***
1986.year	0.267	0.101	0.031	0.174
	(0.05)***	(0.05)**	(0.02)	(0.09)*
1987.year	0.183	0.098	0.023	0.109
	(0.06)***	(0.04)**	(0.02)	(0.09)
1988.year	0.314	0.304	0.066	0.498
	(0.06)***	(0.06)***	(0.03)**	(0.10)***

Table 2.14: Models Linear Probability Model (LPM) with country and year dummies (Cont.)

1989.year	0.379	0.226	0.047	0.438
	(0.06)***	(0.06)***	(0.03)*	(0.10)***
1990.year	0.321	0.222	0.058	0.394
	(0.06)***	(0.06)***	(0.03)**	(0.11)***
1991.year	0.359	0.233	0.045	0.446
	(0.06)***	(0.07)***	(0.03)*	(0.11)***
1992.year	0.346	0.283	0.071	0.495
	(0.06)***	(0.06)***	(0.03)**	(0.11)***
1993.year	0.327	0.203	0.024	0.344
	(0.06)***	(0.06)***	(0.02)	(0.10)***
1994.year	0.317	0.183	0.081	0.37
	(0.07)***	(0.06)***	(0.03)***	(0.11)***
1995.year	0.236	0.138	0.037	0.239
	(0.06)***	(0.06)**	(0.02)	(0.10)**
1996.year	0.238	0.204	0.042	0.281
	(0.06)***	(0.06)***	(0.03)	(0.11)***
1997.year	0.369	0.226	0.056	0.448
	(0.06)***	(0.06)***	(0.03)**	(0.11)***
1998.year	0.351	0.187	0.063	0.387
	(0.07)***	(0.07)***	(0.03)**	(0.12)***
1999.year	0.383	0.293	0.104	0.57
	(0.07)***	(0.07)***	(0.03)***	(0.12)***
2000.year	0.443	0.377	0.122	0.712
	(0.06)***	(0.07)***	(0.04)***	(0.12)***
2001.year	0.401	0.365	0.08	0.619
	(0.07)***	(0.07)***	(0.03)**	(0.12)***
2002.year	0.308	0.155	0.072	0.31
	(0.07)***	(0.07)**	(0.03)**	(0.11)***
2003.year	0.247	0.143	0.048	0.227
	(0.07)***	(0.06)**	(0.03)	(0.12)*
2004.year	0.37	0.29	0.065	0.523
	(0.07)***	(0.08)***	(0.03)**	(0.13)***
2005.year	0.312	0.175	0.058	0.327
	(0.07)***	(0.08)**	(0.03)*	(0.14)**
2006.year	0.166	0.113	0.032	0.101
	(0.07)**	(0.07)	(0.03)	(0.13)
2007.year	0.174	0.088	0.071	0.136
	(0.07)**	(0.07)	(0.04)**	(0.13)
Obs.	4613	4613	4613	4810
Prob>F	.	.	.	.
R2	0.291	0.253	0.142	0.378

Table 2.15: Models BTSCS and Ordinal Logit including lagged variables (five years)

	Model 1 Logit BTSCS Cases (1,2,3)	Model 2 Logit BTSCS Cases (2,3)	Model 3 Logit BTSCS Case (3=High)	Model 4 Ordinal Logit Index (0,1,2,3)
Number of years after interstate conflict - lagged 5 years	0.000	0.000	0.008	0.001
	(0.01)	(0.01)	(0.01)	(0.01)
Number of years after intrastate conflict - lagged 5 years	0.005	0.001	0.000	0.007
	(0.01)	(0.01)	(0.01)	(0.01)
Revised Combined Polity Score - lagged 5 years	0.016	0.014	0.013	0.023
	(0.01)	(0.01)*	(0.01)	(0.01)**
Log GDP per capita - lagged 5 years	-0.025	-0.042	0.105	-0.054
	(0.07)	(0.05)	(0.08)	(0.07)
Log of Urban Population - lagged 5 years	-0.095	-0.009	0.154	-0.052
	(0.03)***	(0.02)	(0.05)***	(0.03)*
US Military Aid - lagged 5 years	-0.000	-0.000	-0.000	-0.000
	(0.00)***	(0.00)***	(0.00)**	(0.00)***
t	-1.117	-0.465	-0.314	
	(0.13)***	(0.04)***	(0.07)***	
t2	0.208	0.033	0.014	
	(0.04)***	(0.00)***	(0.01)***	
t3	-0.009	-0.001	0	
	(0.00)***	(0.00)***	(0.00)*	
Constant	2.358	0.341	-3.828	
	(0.64)***	(0.41)	(0.69)***	
cut1				
Constant cut1				-1.882
				(0.66)***
cut2				
Constant cut2				0.113
				(0.65)
cut3				
Constant cut3				2.511
				(0.63)***
Obs.	4292	4292	4292	4292
Log Pseudo Likelihood	-2222.43	-2361.22	-619.65	-5016.93
Wald χ2	.	.	86.01	.
Prob>χ2	.	.	0.00	.
Pseudo R2	0.08	0.10	0.10	0.01

Note: Robust standard errors clustered on country are in parentheses below the coefficient estimates.
Two-tailed tests * p<0.10, ** p<0.05, *** p<0.01.

Table 2.16: Models BTSCS and Ordinal Logit including lagged variables (ten years)

	Model 1 Logit BTSCS Cases (1,2,3)	Model 2 Logit BTSCS Cases (2,3)	Model 3 Logit BTSCS Case (3=High)	Model 4 Ordinal Logit Index (0,1,2,3)
Number of years after interstate conflict - lagged 10 years	-0.001	0.006	0.024	0.003
	(0.01)	(0.01)	(0.01)**	(0.01)
Number of years after intrastate conflict - lagged 10 years	0	-0.01	-0.019	-0.003
	(0.01)	(0.01)	(0.01)*	(0.01)
Revised Combined Polity Score - lagged 10 years	0.022	0.01	0.02	0.024
	(0.01)**	(0.01)	(0.01)*	(0.01)**
Log GDP per capita - lagged 10 years	-0.025	0.011	0.188	-0.018
	(0.08)	(0.05)	(0.09)**	(0.08)
Log of Urban Population - lagged 10 years	-0.116	-0.029	0.119	-0.071
	(0.04)***	(0.02)	(0.05)**	(0.03)**
US Military Aid - lagged 10 years	-0.000	-0.000	-0.000	-0.000
	(0.00)***	(0.00)***	(0.00)	(0.00)***
t	-1.128	-0.44	-0.251	
	(0.16)***	(0.04)***	(0.07)***	
t2	0.222	0.03	0.009	
	(0.05)***	(0.00)***	(0.01)	
t3	-0.01	-0.001	0	
	(0.00)***	(0.00)***	(0.00)	
Constant	2.653	0.129	-4.182	
	(0.70)***	(0.44)	(0.78)***	
cut1				
Constant cut1				-1.919
				(0.69)***
cut2				
Constant cut2				0.111
				(0.68)
cut3				
Constant cut3				2.512
				(0.66)***
Obs.	3592	3592	3592	3592
Log Pseudo Likelihood	-1792.13	-2022.68	-538.30	-4201.91
Wald χ2	.	.	105.86	.
Prob>χ2	.	.	0.00	.
Pseudo R2	0.07	0.10	0.12	0.01

Note: Robust standard errors clustered on country are in parentheses below the coefficient estimates.
Two-tailed tests * p<0.10, ** p<0.05, *** p<0.01.

Table 2.17: Models BTSCS and Ordinal Logit including military spending in percentage of the GDP as component of the dependent variable

	Model 1 Logit BTSCS Cases (1,2,3)	**Model 2 Logit BTSCS Cases (2,3)**	**Model 3 Logit BTSCS Case (3=High)**	**Model 4 Ordinal Logit Index (0,1,2,3)**
Number of years after interstate conflict	0.007	0.009	0.01	0.003
	(0.01)	(0.01)*	(0.01)	(0.01)
Number of years after intrastate conflict	0.015	0.01	0.007	0.013
	(0.01)**	(0.01)*	(0.01)	(0.01)*
Revised Combined Polity Score	0.015	0.018	0.036	0.024
	(0.01)	(0.01)**	(0.01)***	(0.01)**
Log GDP per capita	-0.04	-0.006	0.027	-0.015
	(0.08)	(0.05)	(0.07)	(0.08)
Log of Urban Population	-0.045	0.002	0.212	-0.014
	(0.04)	(0.03)	(0.06)***	(0.04)
US Military Aid	0.000	-0.000	-0.000	-0.000
	(0.00)	(0.00)***	(0.00)**	(0.00)***
t	-1.029	-0.389	-0.238	
	(0.21)***	(0.04)***	(0.06)***	
t2	0.195	0.023	0.01	
	(0.11)*	(0.01)***	(0.00)**	
t3	-0.005	0	0	
	(0.02)	(0.00)***	(0.00)	
Constant	2.064	-0.231	-4.045	
	(0.72)***	(0.46)	(0.74)***	
cut1				
Constant cut1				-1.471
				(0.72)**
cut2				
Constant cut2				0.598
				(0.71)
cut3				
Constant cut3				2.957
				(0.69)***
Obs.	4319	4319	4319	4319
Log Pseudo Likelihood	-2012.85	-2553.30	-779.51	-5087.80
Wald $\chi 2$	.	.	83.15	.
Prob>$\chi 2$	.	.	0.00	.
Pseudo R2	0.05	0.09	0.10	0.01

Note: Robust standard errors clustered on country are in parentheses below the coefficient estimates.
Two-tailed tests * p<0.10, ** p<0.05, *** p<0.01.

Chapter 3. How Does Military Conversion Affect Conflict Recurrence?

3.1 Introduction

Peace is fragile after an internal armed conflict. Empirical evidence shows that more than 50 percent of all intrastate conflicts have recurred after World War II (Quinn et al., 2007). It seems that it is difficult to settle internal wars completely. As a result, an extensive conflict recurrence literature has appeared (e.g., Walter, 2004; Quinn et al., 2007; Kreutz, 2010; Mason et al., 2011; Rustad & Binningsbø, 2012; Haer & Böhmelt, 2016). The literature has identified multiple factors that influence the risk of conflict recurrence, following the structure of the theoretical concepts of willingness and opportunity.

This article aims to extend the discussion of which factors affect the risk of conflict renewal in post-conflict societies. Specifically, the aim of this chapter is to determine empirically if military conversion, i.e. the transference of military resources to civilian uses, affects the likelihood of conflict recurrence. The role of military resources and military capability appears to be underestimated in existing articles on conflict causes and conflict recurrence. Furthermore, the influence of military conversion on the establishment of a stable peace setting is either ambiguous or indeterminate.

Military conversion is defined as the reduction of the use and the quantity of military resources (Brzoska, 1999). In fact, conversion should be more likely when a war ends, i.e. during a post-conflict period, because the government can use the freed financial resources in order to either accomplish economic recovery or to begin military reform that changes the

allocation and the uses of military resources. In some cases, however, the reduction of military resources is not given “by default” in a post-conflict country.

In this chapter, I argue that military conversion has two opposite effects on conflict recurrence (see also Collier & Hoeffler, 2006; Intriligator, 1996). First, if conversion damages the deterrence effect of the government over former rebels. The dissidents perceive an opportunity to acquire idle or old military resources (e.g., to recruit retired military personnel) and use them for restarting the war. The government military forces also might avoid confronting rebels until the government guarantees that military resources will be newly increased (Quinn et al., 2007; Mason et al., 2011). Second, at the same time, military conversion could improve the economic conditions that reduce the opportunity and mitigate the willingness of using violence by the insurgent groups. These simultaneously opposite effects of military conversion on conflict recurrence might lead to an overall insignificant net effect. In order to confirm that intuition empirically, I test individually a group of disaggregated military conversion measures, based on the Onset of Military Conversion Index presented in the second chapter, as covariates in the period 1971-2007. Additionally, I calculate the predictive power of the military conversion variables used, following the in-sample and the out-of-sample procedures (Ward et al., 2010). The results emphasize that (a) military conversion as such is associated with statistically insignificant coefficient estimates, but (b) adding these variables to the model improves our ability to predict conflict recurrence substantially in-sample and out-of-sample.

This chapter is structured as follows: the first section presents a brief definition of willingness and opportunity as the main categories of causes of conflict recurrence. The second section focuses on the role of military conversion on conflict recurrence. This section ends by formulating the hypothesis of this research. In the third section, I describe the dependent

variable and the military conversion measures as well as the controls. The fourth section presents the results, while the final section provides conclusions and proposes implications for a future research agenda.

3.2 Conflict Recurrence: Willingness and Opportunity

Existing conflict recurrence literature is extensive. It has extended progressively the theoretical and empirical evidence of which factors could affect the likelihood of a renewed war. The theoretical framework is largely based on the analysis of the factors that prompt the onset of an internal conflict and its main characteristics. It also incorporates the study of structural conditions in a post-conflict environment, such as how insurgency capacity evolves after the termination of a civil war and the incentives of the former combatants to return to fight (Quinn et al., 2007; Walter, 2004).

The analysis of the causes of civil war is one of the reference points for studying conflict recurrence, for example intergroup competition and conflict as a result of ethnic, religious or political motives or the presence of accentuated political, economic or social inequalities (Regehr, 2013). The intuition behind this line of thought is that some of these causes might persist after the conflict is "officially" terminated. The continuity of those causes could generate a conflict trap (Collier & Sambanis, 2002). The conflict could recur because the causes of civil war are worse after the end of the conflict than at the onset stage (e.g., the conflict worsened the economy and political stability, then there could remain low level of development at post-conflict stage that could motive the conflict renewal).

From the perspective of the conflict traps and the causes of a civil war as causes of conflict recurrence, a standard approach in the literature is to divide the causes of civil war into two

groups, according to the rebels' motives, the government response, structural settings, and constraints for either going to or resuming war: willingness and opportunity. The former corresponds to the economic, political and social inequalities that "provoke relative deprivation that would contribute to the willingness of people to instigate violence" (Böhmelt & Koubi, 2014: 19, based on Davies, 1962; Gurr, 1970), also known in the literature as grievances, and the latter contains the factors that generate atypical income opportunities for rebellion, also known in the literature as greed, or also impose structural constraints on rebels' incentives (Collier & Sambanis, 2002; Collier & Hoeffler 2004; Fearon & Laitin, 2003; Haer & Böhmelt, 2016: 411, based on Starr, 1978: 368).

Grievances and opportunities have to happen simultaneously when a conflict breaks out or recurs (Walter, 2004; Cederman et al., 2013; Böhmelt & Koubi, 2014; Buhaug et al., 2014). The objective of the rebels is to agree a type of solution to the grievances with the incumbent regime or to embark on an overthrow in order to address the grievances themselves (Walter, 2004: 373). Exclusion and repression against some groups of the population originate grievances. Examples of marginalisation include ethnic or religious hatreds, political repression, political exclusion and economic inequality (Collier & Hoeffler, 2004), inequalities of wealth distribution between groups[18] (Böhmelt & Koubi, 2014) and exclusion of ethnic groups from political participation (Cederman et al., 2013; Buhaug et al., 2014). That said, the organization and operation of an insurgency is only feasible if rebels have opportunities to access resources and financial funding (Collier & Hoeffler, 2004), and if their individual perspective is that they will obtain higher benefits as a consequence of fighting (Quinn et al., 2007), because it appears to them to be the only tool for improving their personal situation (e.g., Walter, 2004).

[18] The inequalities that exist between groups are also described as horizontal inequalities (Böhmelt & Koubi, 2014).

The sources of opportunity for initiating and sustaining rebellion are diverse (Collier & Hoeffler, 2004; Rustad & Binningsbø, 2012): access and control of atypical sources of finance (e.g., derived from extortion of natural resources, or funds received from diasporas or external governments); atypically low opportunity costs of resources (e.g., low wages stimulate the recruitment of new rebels, cheap military equipment); and the presence of a weak government (e.g., fragile military capacity) eases the rebel groups' growth.

The willingness and opportunity factors have been analysed theoretically and tested empirically in a considerable number of studies. Most of the findings suggest that opportunity factors have a greater influence on either the onset or the recurrence of an internal conflict than the rebels' motivations.[19] As a result, the literature has focused more on opportunity theoretical arguments; nevertheless, new theoretical and empirical approaches for testing the interaction between grievances and opportunities have been appearing in recent years (e.g., Cederman et al., 2013; Böhmelt & Koubi, 2014; Buhaug et al., 2014).

3.3 Other Approaches to Identify the Determinants of Conflict Recurrence

The conflict recurrence is also explained by the causes the transformation in the conflicts. The transformation of a conflict could be a starting point, from a different perspective, for studying conflict recurrence. Togashi (2015) defines five types of conflict transformation: (i) contextual (ii) structural (iii) actors' transformation (iv) issue transformation (v) personal and group transformation.

[19] The empirical studies have also evidenced that opportunities are easier to measure than grievances.

The contextual transformation means a change in the social, regional and international contexts in which the conflict is embedded, one example of these is the remaining internal conflict after the end of the Cold War (Togashi, 2015). The structural transformation requires a change in the relationship between the dominant and weaker parties. For example, in Colombia, the strategic and operational change of strategy of the military forces since the 2000´s generated the weakening of the FARC structures because of the military effectiveness. This factor changes the attitude of the rebels regarding the continuation of the conflict.

The actor's transformation consists on a change on the leadership of one of the parties or the adoption of new goals, values or beliefs. These will make that one of the parties seek peace by abandoning violence. The fourth transformation is an issue transformation, it is when a new issue arises or the issue that is the source of a conflict loses relevance. As a transformation, this is directly related to the actor transformation and to the context and structure of a conflict.

The fifth transformation is a personal and group transformation, consists on a change of attitude toward the conflict by the main leaders. Examples of this is when a guerrilla leader decides to offer reconciliation or a highly oppressive government leader decides to include opponents in his government.

Additionally, some key aspects are the role of the political leaders, the duration of the conflict and the type of ending of the conflict. These three aspects are related to the concepts of opportunity and grievances. However, other aspects like the multiple sovereignty influences the conflict recurrence (Mason, et. al. 2011; Togashi, 2015). The effect of the type of ending

of the conflict and the rules of political participation for rebels after the conflict have been also studied as a recurrence of conflict determinants.

After the termination of the conflict, it is common to find power sharing and the reassurance of autonomy between the parties involved in the conflict, for example Collier (2008) states that a higher autonomy could be correlated to a lower risk of conflict recurrence. In contrast, Walter (2004) points out that a government who negotiates territorial partition becomes more vulnerable, leaving an opportunity for a new conflict. In the case of military victory as the conflict ending, a key point is who is the winning part. Quinn, et. al. (2007) shows that in a rebel victory the risk of peace failure is higher than the one observed with a government victory.

3.4 Military Conversion on Conflict Recurrence: The Effect of Military Resource Usage on Willingness and Opportunity

Other improvements in the literature of conflict recurrence pertain to an extension of the discussion on opportunity factors. One factor is the allocation of military resources. This element is essential both prior and during the internal conflict, as well as in the post-conflict period. Both the rebel groups and the government's military forces need military resources in order to counteract its rival and to obtain its objectives, respectively. The government has the alternative of allocating military resources to civilian activities. The transfer of military resources to civilian activities is known in the literature as military conversion (Brzoska, 2000a), and this relates to any reduction in the use of military resources (Brzoska, 1999). Hence, military conversion is not restricted to the reduction of military expenditures. Military conversion might also occur when a government decides to restructure the military forces and reform the security sectors in its entirety.

Collier & Hoeffler (2006) provide one of the first studies about the relationship between military conversion and the risk of conflict recurrence. They analyse how military expenditure affects the resumed conflict risk during the first decade after the fighting has ceased. Then, they identify three mechanisms for explaining how government and rebels might react to a variation of military resources and how this affects the possibility of a renewal of war.

The three mechanisms are deterrence, economic-benefits and signalling. These mechanisms lead to opposite effects on conflict recurrence. The deterrence mechanism intuitively implies that if the government continuously increases military resources for its armed forces, i.e. there is no military conversion, the prospect of military success for rebels is low (i.e. less opportunities for rebels) and the probability of conflict recurrence is reduced. For instance, this effect could be stronger after a government military victory than following other outcomes of conflict, because the military forces have been effective against insurgent groups. Also, the expectation of a high risk of reversion of conflict in the short term and the military lobby, i.e. the influence applied to the government decision-making process, feed the demand for more military resources during the post-conflict stage (Collier & Hoeffler, 2006: 90).

Other theoretical and empirical evidence supports the deterrence effect on the risk of conflict recurrence. Specifically, the inclusion of expected utility into the analyses improves the rational choice explanations of individual's decisions to participate in a rebel group. Quinn et al. (2007) present an agency framework to analyse how former combatants might estimate the costs and benefits of resuming war versus maintaining peace. This helps to describe the context when it is likely that an internal war may reappear, as conflict only recurs when at least one of the sides perceives that the benefits of renewed fighting exceed the costs (Haer & Böhmelt, 2016: 410-411).

The decision of returning to a war also depends on "dual sovereignty." This opportunity condition refers to an opposition group maintaining its organizational and armed capacity, and the popular support that it might use to initiate and sustain an armed threat (Quinn et al., 2007: 173). The deterrence effect aims to weaken the dual sovereignty condition in order to obtain a stable peace setting. The disappearance of the dual sovereignty condition is a means that could provide stable peace settings. Quinn et al. (2007) find that the greater size of the military has a deterrent effect, as former and potential rebels may anticipate a lower probability of victory and more costs if they decide to return to the war (i.e. less opportunity incentives for rebels). Additionally, Mason et al. (2011) and Haer & Böhmelt (2016) find the same effect of military personnel on military recurrence.[20]

The type of military recruitment by official armed forces (i.e. conscription or voluntary) could influence the risk of conflict renewal because the rebel organizations require rebels and the military compete against insurgency to recruit personnel. A voluntary military service could be associated with military conversion due to armed forces demand less personnel (Manigart, 2006; Jelusic, 2006), and the deterrence effect could be affected. For instance, Walter (2004) proposes to consider onset determinants, but adds other characteristics of the previous conflict, information on the outcome of the conflict, and the individual incentives to fight. The latter set of influences indicates that the rational choice becomes one approach for modelling the factors that stimulate the individual decision of joining a rebel group.

[20] The empirical findings have shown that the results seem to vary, sometimes a lot, with the used data sets and the applied definitions of key variables (e.g., conflict, conflict recurrence and outcome). Kreutz (2010) presents a new conflict termination database and replicates previous models, using that data, including Walter (2004) and Quinn et al. (2007). The results based on Kreutz's (2010) new data differ from the original findings of Quinn et al. (2007); only the findings about the presence of peacekeeping and peace durations remain the same.

Walter (2004: 374) argues that rebel recruitment directly affects the renewal of war[21]. This is a necessary condition, because any intrastate conflict recurrence requires rebel organizations to recruit and to remobilise individuals in order to create and strengthen the insurgent military capability. The individual decision of joining a rebel group is based on personal cost calculations, e.g., the potential and current benefits of belonging to a rebel organization offset the risk of death. Further factors could accelerate enlistment decisions: dissatisfaction with the current personal situation; the perception that using violence is the only feasible way for improving the personal situation; and/or the acceptance of the risk for political preferences. This approach highlights the prevalence of opportunity factors for determining the risk of conflict recurrence and how grievances might influence them. However, the establishment of a voluntary military service could have indeterminate effect on the risk of conflict recurrence. The effect could be positive because if the military will demand less personnel, then rebel organizations have a higher supply of young men for recruitment. In contrast, if an all-volunteer force could be more effective against any illegal armed organization, then the rebel's risk of death is high and there will be fewer incentives to become a rebel fighter.

The literature on the causes of conflict has also considered the military resources among the set of opportunity factors related to deterrence mechanism. Military conversion is not mentioned as such, but the effect of conversion on the onset or the recurrence of a civil war could be deduced from variation in the quantity of military resources. For instance, a weak government military capability becomes an opportunity for rebels (Collier & Hoeffler, 2004: 569). Likewise, Fearon & Laitin (2003) argue that state weakness provides the opportunities

[21] Empirically, infant mortality rate is used as a proxy for the conditions that affect the decision of joining a rebel group. Walter (2004) obtains empirical support for the relationship between individual choice and the risk of recurrence.

and the conditions that explain accurately the creation and operation of an insurgency, which then increases the risk for civil war. Insurgency might flourish because a weak government does not have the capacity for addressing the recruitment of rebels and countering insurgent threats.

Weak military capability is associated with a low per capita income, thus adverse economic conditions could lead to an ineffective government response to situations that might ease the insurgency activities, e.g., scarce local knowledge of population, difficulty of distinguishing rebels from non-combatants, access to isolated zones (Fearon & Laitin, 2003: 80-81). As a result, if military conversion is associated with less use of military resources, the onset of conversion could generate a higher conflict renewal risk. On a similar note, Fearon & Laitin (2003) demonstrate how dispersed population and mountainous terrain generate military advantages that might be associated with the opportunity for rebels to initiate or resume fighting.

The economic-benefits mechanism is based on the peace-dividend concept (Collier & Hoeffler, 2006). That is to say, the idea that transferences of military resources to civilian activities, i.e. military conversion, generates economic benefits (Intriligator, 1996), and these benefits then reduce the chances of conflict recurrence (e.g., economic benefits could solve some grievances related to income inequality and low level of development). However, this economic effect is not immediate and it could take a long time, because most of the military resources need a transformation in order to be included in productive activities (Intriligator, 1996: 4; Brzoska, 1999; Brzoska, 2007). Meanwhile, the risk of a restart of the war is higher in the short term than following a long period of peace.

One intermediate outcome of the economic-benefits mechanism seems certain, while the other outcome appears indeterminate. Empirical results demonstrate that better economic conditions, i.e. a high GDP per capita, negatively influence the risk of restarting a civil war (Fearon & Laitin, 2003; Collier & Hoeffler, 2004, 2006; Quinn et al., 2007). However, the reduced military resources have showed mixed results in terms of generating economic benefits in different countries (Brzoska, 1999, 2007). The economics benefits do not appear immediately in all cases because there are short-term associated costs with a shrinking military, e.g., the unemployment of former military personnel (opportunity for rebel organizations of recruiting young men with war experience), a deterioration in local economic conditions due to closure of military bases (i.e. either generate or deepen grievances). Particularly, the impact of reduced military resources on economic conditions could be understood as an investment process, where there are adjustment costs in the short term due to the transformation of resources before they can be utilised in civilian activities, while the economic benefits appear after the utilization in the medium or long term (Intriligator, 1996: 5).

The signalling mechanism applies when the outcome of an internal conflict is a peace settlement (Collier & Hoeffler, 2006). The motivation and the strategy of rebels vary according to government decisions related to military spending. The allocation of government military resources becomes a signal of government intentions to either fulfil or renege on a settlement, because rebels realize the existence of an emerging time-consistency problem. This consists of the possibility that the government might either change the settlement to its own advantage or even renege on it completely, as this option might be costless, taking advantage of the weak military capability of rebels during the post-conflict period. For instance, the former insurgents could be motivated to rebel again if the peace agreement includes some measures to cut military expenditure, but the government

fails to meet these compromises, thus the former rebels could think that the government may fail any other compromise (Collier & Hoeffler, 2006: 91-93).

According to this mechanism, the conflict will not recur when rebels use the military spending as a signal of the government's intentions of fulfilling the settlement and the government decides to make military conversion and the rebels also maintain their peace compromise (Collier & Hoeffler, 2006). This is likely to happen as some settlements do in fact include aspects of military reform. In this case, the government has the initiative of maintaining the peace, but it should avoid naivety regarding the former rebels' new opportunity, i.e. the weaker government military capability. Then, the government could also use military conversion as part of a military reform, e.g., the movement from conscription to an all-volunteer force, to increase the level of military efficiency and effectiveness (Manigart, 2006); meanwhile, in this scenario, the government fulfils the settlement and is also able to respond to any renewed insurgency.

As previous work has shown, military capability, driven by more military resources, could reduce either the risk of conflict or the recurrence of the war. The mechanisms that describe the impact of military conversion on the risk conflict recurrence identify two opposite effects. Military capability is usually seen as a deterrence tool that increases the projected costs for rebels (Quinn et al., 2007). However, most post-conflict societies face the simultaneous challenge of guaranteeing economic recovery and avoiding the reappearance of the internal conflict in the short term (Collier et al., 2008). Governments might decide to reduce military expenditure in the post-conflict environment to free resources and use them in other civilian areas and for policies that might stimulate economic growth, i.e. applying the peace dividend logic. In that sense, the reduction of military resources might also reduce the risk of war

renewal. Likewise, the perceptions of the rebels and governments change in different ways with the signals of military conversion.

The use of military resources becomes an indicator of the government expectations about the possibility of conflict recurrence. During the first years after the end of the conflict, military conversion will not be enough to solve the grievances that originated the conflict making the economic-benefits mechanism weak. Instead, the weakening of military capabilities could motive former rebels to initiate a new conflict because they perceive good chances of improving their situation through the conflict, then the deterrence mechanism remains as a possible outcome. A special case is the inclusion of military conversion provisions in a peace agreement, but since this an exceptional case of the conflict ending possibilities, this signalling mechanism could be discarded. As a result, I argue that:

H1: Evidence of the onset of a military conversion process increases the probability of conflict recurrence.

3.5 Research Design

The aim of this paper is to test empirically whether the onset military conversion affects the likelihood of conflict recurrence in post-conflict societies. To this end, I use data from Rustad & Binningsbø (2012) and the military conversion data introduced in the second chapter. The former refers to a database that comprises post-conflict-year cases and variables associated with the risk of conflict renewal; the latter provides different military conversion variables.

Specifically, Rustad & Binningsbø's (2012) dataset identifies post-conflict-year cases based on the UCDP/PRIO Armed Conflict Dataset version 4-2007 (Gleditsch et al., 2002; Harbom

& Wallensteen, 2007). The UCDP/PRIO dataset provides conflict-year episodes that fulfil the definition of an armed conflict, i.e. "a contested incompatibility that concerns government or territory or both, where the use of armed force between two parties results in at least 25 battle-related deaths in a year" (Harbom & Wallensteen, 2007: 632). Rustad & Binningsbø (2012) use the episode start and episode end dates in order to identify on-going conflicts and those that have terminated. Ultimately, this allows the coding of the post-conflict-year observations.

I have merged the Rustad & Binningsbø (2012) database with the military conversion data from the second chapter. These latter data are available for the period 1971-2006. Due to missing values on some conversion variables,[22] the resulting database contains 2,842 post-conflict years. These correspond to 228 conflict episodes in 94 countries.[23]

3.5.1 Dependent Variable: Conflict Recurrence

The dependent variable is conflict recurrence. This is a categorical variable that indicates whether conflict restarts (peace failure[24]) or not in a given year (Rustad & Binningsbø, 2012: 539). This variable identifies when an internal conflict breaks out again, according to the conflict definition and the information included in the UCDP/PRIO Armed Conflict Dataset and the codification criteria of Rustad & Binningsbø (2012).[25]

[22] There are two sources of missing values: the countries without active military forces (i.e. Costa Rica, Haiti and Panama) and the country cases with no available information of military expenditures and type of recruitment.
[23] According to Rustad & Binningsbø (2012a: 1-2), their dataset contains 284 conflict episodes (166 conflicts) in 101 countries between 1946 and 2006.
[24]Rustad & Binningsbø (2012) use the peace failure definition in order to estimate piecewise exponential survival models.
[25] In the majority of conflict recurrence empirical studies, the conflict recurrence is measured through a categorical variable. However, the number of cases and their distribution among countries varies by the definition of conflict, the criteria for identifying the transition between post-conflict to conflict and the period of analysis.

The data available for this chapter contains 96 cases of conflict recurrence, from a total number of 2,842 post-conflict years, over the period 1971-2006. These occur in 49 countries and 40% of the cases are identified in India, Myanmar, Iran, Iraq, Ethiopia and Indonesia. Meanwhile, the majority of conflict renewal cases have been identified since 1990.

3.5.2 Explanatory Variables: Military Conversion

Military conversion pertains to the transformation of military resources into primary resources that could be used in civilian activities (Intriligator, 1996; Brzoska, 1999). The origin of conversion is the reduction in any military resource, e.g., the reduction in military spending and armaments, demobilization, or closure of military bases, etc. (Brzoska, 1999: 133). According to this definition, I use the Onset of Military Conversion Index (OMCI), see the second chapter, and create a set of military conversion variables that capture the reduction of resources in military activities.

The OMCI identifies the onset of military conversion by country over the period 1971-2007. This classifies the variation of military expenditures and military personnel and the type of recruitment in each country-year. Conversion occurs when at least one of the index components is reduced or the type of recruitment change from conscription to voluntary military service. Thus, the OMCI has four values on an ordinal scale according to the number of reduced components and the type of recruitment, the scale represents the level of simultaneous confidence in the onset of military conversion: null (i.e. none of the components has been reduced), low (i.e. only one component has been reduced), medium (two components have been downsized) and high (all components have been downsized).

All levels of confidence of military conversion have been identified over the period of analysis. All countries are characterized by at least one case of any level of confidence of military conversion. Likewise, cases of medium confidence level of conversion have been identified each year across all countries. In contrast, a high level of confidence of conversion characterizes 36 countries and almost 50% of those cases occurred in Myanmar, Nigeria, the Democratic Republic of the Congo, Ethiopia, and India.

Focusing on the OMCI, its individual components, and theoretically relevant groups within that index, allows me to define eleven distinct military conversion variables. Specifically, the OMCI which is an ordinal variable (i.e. from 0 to 4 levels of confidence of military conversion); three different binary variables are created for each level of confidence of military conversion (i.e. low, medium and high); one dichotomous variable groups the medium and high levels and another categorical variable identifies any level (i.e. it is coded as 1 if the level of confidence of conversion is different from 0 and it could be interpreted as the binary version of the OMCI index). These covariates indicate whether the effect of military conversion on the risk of conflict recurrence varies according to the strength of conversion.

In addition, three dichotomous variables are defined from each one of the components of the OMCI index. Likewise, military expenditure and military personnel variables are also included to compare the estimation results using the dichotomous variables and the data without any transformation. The first dichotomous variable is decreased military spending. It identifies all post-conflict year cases with a negative growth rate of military expenditure, using the military expenditure information collected in the Correlates of War (period 1971-1987) and SIPRI data sets (period 1988-2006).[26] This variable could capture two opposite

[26] Bove &Brauner (2011) elaborate this data series in constant USD.

effects. The first is whether the military expenditure is a signal of government intentions of keeping peace for the former rebels in a post-conflict situation, mainly after a peace settlement, and the cuts in military spending may therefore contribute to avoiding the return of war (Collier & Hoeffler, 2006). The second is the impact on the deterrence effect of the government over former rebels, the cuts in military expenditure may induce to the dissidents to restart the war because they perceive the opportunity to defeat the military forces. The second dichotomous variable is decreased military personnel, using data from the Correlates of War (CoW). This variable distinguishes among the demobilization events in all post-conflict cases. Army size has a deterrent effect on potential rebels. They perceive lower costs of fighting and a higher probability of victory when the government reduces the size of the armed forces; therefore, this could stimulate their initiative for restarting war (Quinn et al., 2007: 180; Mason et al., 2011: 179). The third variable measures whether a voluntary recruitment system does exist or not. This item identifies post-conflict cases where military forces have either volunteer recruits (i.e. it is coded as 1) or conscripts (i.e. it is coded as 0), using data from Toronto (2007). A voluntary army requires fewer personnel than a conscription force, but volunteer military personnel should be more skilled and better paid. These conditions lead to two possible opposite effects, subject to the dissidents' attitude. One effect is that a small army and the rising labour supply of young people could stimulate former rebels to reorganize an insurgent group and to come back to war. The opposite effect is that an all-volunteer force could be more effective; hence, the dissidents abandon attempts to renew the armed conflict because the chances of victory are low.

The variation of the individual components of the OMCI index has been identified in most of the post-conflict countries during the period 1971 to 2006. Reduction of military spending has occurred, in at least one post-conflict year, in 92 of the 94 countries (the exceptions are Senegal and Chad). Meanwhile, at least one case of demobilization of military personnel

has been registered in 85 countries and the voluntary recruitment system has been used once in at least 51 countries. Table 3.1 presents the descriptive statistics of the military conversion variables.

3.5.3 Control Variables: Alternative Determinants of Conflict Recurrence

The set of control variables corresponds to the main factors associated with the likelihood of conflict recurrence in the literature. Rustad & Binningsbø (2012) collected the data and defined this group of control variables in order to determine the relationship between natural resource conflicts and conflict recurrence. I use these variables for estimating an extended logit model that also includes the military conversion variables. These factors could be classified in three categories (Quinn et al., 2007: 182-183): the characteristics of the previous internal conflict, the outcome of the conflict and the post-conflict environment.

The first category comprises five variables that try to capture the influence of elements of the foregoing civil war on the possibility of conflict recurrence. The first variable is the case of the natural resource conflict dichotomous variable. Rustad & Binningsbø (2012) created this variable in order to identify which post-conflict cases are associated directly with a previous natural resource conflict, i.e. the natural resources are considered in a conflict as either a funding opportunity for rebels (Collier & Hoeffler, 2004), or as the motive of rebellion, because of the disagreements regarding the distribution of the related revenues, or as an aggravation factor that creates new grievances. The rationale is that the natural resource conflicts are more likely to recur (Rustad & Binningsbø, 2012: 532).

Another control variable associated with the previous conflict is ethnic fractionalization. The data comes from a study by Wimmer, Cederman & Min (2009). It corresponds to the linguistic fractionalization variable[27] that serves as a proxy for ethnic diversity (Rustad & Binningsbø, 2012: 539). This factor is associated with a high likelihood of conflict recurrence, because either the ethnic groups could quickly remobilize personnel at low cost, or these groups could be easily targeted for repression (Quinn et al., 2007: 179), among other reasons related to ethnic wars.

The conflict duration, the other conflict in country dichotomous variable and the internationalized conflict dichotomous variable are the remaining three variables relating to the previous conflict that might affect the risk of conflict renewal. All these variables are contained in the UCDP/PRIO Armed Conflict Dataset version 4-2007 (Gleditsch et al., 2002; Harbom & Wallensteen, 2007). The duration of the conflict, measured in days, has a negative impact on the likelihood of conflict recurrence due to the fact that a longer time generates uncertainty with respect to the cost of a renewed conflict and the probability of victory (Quinn et al., 2007: 178-179). Likewise, an internationalized conflict, i.e. the intervention of a foreign state, also reduces the chances of conflict recurrence because this type of intervention could augment the duration of conflict (Regan, 2000). In contrast, the involvement in another internal conflict, i.e. there is an ongoing conflict against another rebel group, would increase the probability of the renewal of war, because former rebels might take advantage of the organization of other rebels' groups.

The second category contains dichotomous variables that differentiate how each conflict episode ended. The dichotomous variable named victory identifies the cases when either

[27] The measure records the probability that two randomly drawn individuals in a country belong to different ethnolinguistic groups and has values between 0 and 1 (Rustad&Binningsbø, 2012a: 5)

the government or the rebels obtained a military victory that ended the conflict episode. This outcome of the conflict reduces the likelihood of conflict recurrence because it implies the destruction of the military apparatus and organization of the defeated side (Quinn et al., 2007: 176). In contrast, the dichotomous variable named peace agreement distinguishes the conflict episodes that have ended through a peace settlement. The effect on the probability of renewing the civil war is positive due to the time-consistency problem (Collier & Hoeffler, 2006: 92), as any of the sides involved could break the settlement because one side perceives that the other will not fulfil all the commitments. Also, each side could keep part of its organizational and military capacity (Quinn et al., 2007: 176). These dichotomous variables are created using the outcome variable from the Conflict Termination Dataset version 2.0 (Kreutz, 2010).

The last dichotomous variable of the second category, the participation of a UN peacekeeping corps, indicates if the termination of the conflict involved the presence of UN personnel. This variable is based on the online information of the United Nations peacekeeping operations. According to Quinn et al. (2007), this factor reduces the chances of a recurrent conflict, mainly in a setting with a peace agreement, because the presence of UN personnel guarantees the fulfilment of the settlement, e.g., demobilization, and the security of the former rebels.

The third category corresponds to the variables of the post-conflict environment, GDP per capita and population.[28] These variables are from the Penn World Tables (Heston, Summers & Aten, 2006), supplemented by Gleditsch (2002). The improvement of the wealth and income conditions of a country, measured through GDP per capita, is associated with the

[28] These two variables are transformed to a logarithm form.

reduction of the conflict recurrence likelihood, because the citizens will have fewer incentives to participate in rebel groups and to support the armed rebellion (Collier & Hoeffler, 2004; Fearon & Laitin, 2003; Quinn et al., 2007; Mason et al., 2011). In contrast, a large population could increase the number of potential rebel recruits which could induce a greater risk of conflict renewal (Collier & Hoeffler, 2004; Fearon & Laitin, 2003). The descriptive statistics of these variables are in Table 3.1.

Table 3.1: Descriptive statistics of conflict recurrence and control variables

Variable name	Obs.	Mean	SD	Min	Max
Conflict recurrence	2842	0.03	0.18	0	1
Control variables					
Natural resource conflict	2842	0.31	0.46	0	1
Conflict duration (ln)	2842	5.48	2.66	0	9.77
Victory	2842	0.49	0.50	0	1
Peace agreement	2842	0.11	0.31	0	1
GDP per capita (ln)	2600	7.92	0.99	5.82	10.34
Population (ln)	2600	10.17	1.73	5.97	14.07
Ethnic fractionalization	2657	0.50	0.28	0.00	0.90
Other conflict in country	2842	0.23	0.42	0	1
UN peacekeeping	2842	0.11	0.32	0	1
Internationalized conflict	2842	0.15	0.36	0	1
Onset of Military Conversion Index (OMCI)	2842	1.16	0.82	0	3
Any level of conversion	2842	0.77	0.42	0	1
Medium and high conversion	2842	0.33	0.47	0	1
Low conversion	2842	0.44	0.50	0	1
Medium conversion	2842	0.29	0.45	0	1
High conversion	2842	0.05	0.21	0	1
Cut military spending	2842	0.43	0.50	0	1
Downsizing military personnel	2842	0.25	0.44	0	1
Voluntary recruitment system	2842	0.47	0.50	0	1
Military expenditure	2842	16,800,000	67,000,000	1,389	463,000,000
Military personnel	2842	443	916	1	4,750

3.6 Results

The empirical analysis is largely based on the survival models in Rustad & Binningsbø (2012). Unlike these authors, however, I employ logistic regression models and the focus is

not on the impact of resources on conflict recurrence.[29] Instead, I seek to shed light on the relationship between military conversion and the likelihood of conflict recurrence. As a result, new potential influences of conflict renewal are tested and the robustness of previous empirical findings is contrasted. Likewise, analyses of the predictive power of the estimated models complement the interpretation of the main results. Due to the binary nature of the dependent variable, i.e. conflict recurrence, logistic regression models are suitable for estimating the influence of military conversion on the likelihood of resumed fighting. I adjust the model with the temporal corrections suggested in Carter & Signorino (2010).

Table 3.2, Table 3.3 and Table 3.4 present the estimation results of twelve estimated logit models. These correspond to the main estimation in Rustad & Binningsbø (2012), which I complement with each military conversion variable and the components of the OMCI which are continuous variables (i.e. military expenditure and military personnel). These variables are included independently to address concerns over multicollinearity. As I mentioned previously, due to missing values, the sample of post-conflict years used in my models is smaller than in Rustad & Binningsbø (2012).

The military expenditure sign is statistically significant and negative in Model 10, Table 3.4. The result supports the deterrence mechanism and discards evidence of the signalling mechanism. A high military expenditure deters the rearm and the reorganization of the former rebels. Then, military conversion will increase the risk of conflict renewal. Specifically, the likelihood of the conflict recurrence decreases by 1 percentage point when military expenditure is changed from the minimum (e.g., $1 million in 2005 constant dollars, Gambia in 1982) to the maximum (e.g., $463,000 million in 2005 constant dollars, Russia in 1988).

[29] I estimate logistic regression models using the set of variables from the model 2 presented in Rustad & Binningsbø (2012).

However, according to Table 3.2 and Table 3.3, none of the other military conversion variables is statistically significant at conventional levels. Therefore, there is evidence that the onset of military conversion increases the likelihood of conflict recurrence, this result is explained by the variation of the military expenditure and confirms the proposed hypothesis.

Most of the other military conversion variables derived from OMCI also have a negative sign. These are the OMCI (Model 1), the dichotomous variables associated with the medium and/or high levels of military conversion (Models 3, 5, and 6), the dichotomous variable of the cut in military spending (Model 7), the dichotomous variable that identifies the downsizing of military personnel (Model 8) and the military personnel without any transformation (Model 11). Following only the estimated sign of these variables, medium and high levels of confidence of military conversion and notorious shrinkage of military expenditures and/or military personnel may lead to less risk of return to war. The finding is opposite to the military expenditure (Model 10) and the military personnel (Model 11), i.e. according to negative and not statistically significant sing, effect on the likelihood of conflict recurrence.

One interpretation is that the low military capacity of the government for fighting against insurgency causes a weak deterrence effect (Quinn et al., 2007), because of the reduction of the use of military resources, where the desired motive had been to avoid conflict. Other analyses indicate that former rebels perceive the reduction in military inputs as a signal of the government's goodwill in order to respect their lives and the commitments made in a peace settlement context (Collier & Hoeffler, 2006). An indirect result could be that the freed military resources are incorporated in productive activities that stimulate economic growth, i.e. the peace dividend (Intriligator, 1996); then the general improvement in income lowers the incentives to enrol in a rebel group.

The remaining military conversion variables, according to their positive signs, actually point to other opposite effect: for instance, the dichotomous variables on any level, the low level of military conversion and the dichotomous for Voluntary recruitment system. The weak evidence of military conversion might not eliminate the intention of coming back to war for both the government and ex-rebels. Meanwhile, the voluntary recruitment system may reduce the quantity of young soldiers and gives the opportunity to the former rebels of incorporating more potential recruits in order to restart the conflict. This stimulus to insurgency recruitment may lead to the increase of the risk of conflict recurrence (Walter, 2004).

In terms of statistical significance and interpretation, the findings for the controls obtained with logit estimations do not differ from those obtained with the reference model, Rustad & Binningsbø (2012: 540). The military victory and the presence of other intrastate conflicts in the country affect the likelihood of civil war recidivism. Given that those results are systematic in all the estimated logit models, the simulated first difference estimates (King et al. 2000), indicates that the probability of the conflict recurrence falls by almost 2 percentage points, when military victory was the outcome of the previous conflict. This result supports the idea of Mason et al. (2011) that a victory, mainly a rebel's victory, eliminates the condition of multiple sovereignty, and therefore there will not be an armed threat for the incumbent regime. However, the likelihood of a conflict renewal increases by 1.5 percentage points if there is at least one other active internal conflict in the country. That being said, the item on ethnic fractionalization becomes statistically significant and positively influences the risk of conflict recurrence (Models 1-9). Then, according to the simulated first differences, the probability of conflict recurrence increases by 1.2 percentage points. This result is in line with theoretical arguments (e.g., Ellingsen, 2000) that multiethnicity may prompt violence,

due to its contribution to augmenting the dispute for the government between minority and dominant groups.

Table 3.2: Logit models – The Impact of the military conversion on conflict recurrence – Models 0-5

	Model 0 (§)	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Natural resource conflict	0.13	0.13	0.14	0.13	0.14
	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)
Conflict duration (ln)	-0.08	-0.08	-0.08	-0.08	-0.08
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Victory	-0.85	-0.84	-0.86	-0.84	-0.85
	(0.32)***	(0.32)***	(0.32)***	(0.32)***	(0.32)***
Peace agreement	-0.04	-0.04	-0.03	-0.04	-0.04
	(0.49)	(0.48)	(0.49)	(0.48)	(0.49)
GDP per capita (ln)	-0.06	-0.07	-0.06	-0.07	-0.06
	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)
Population (ln)	-0.11	-0.11	-0.11	-0.11	-0.11
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Ethnic fractionalization	0.97	0.98	0.96	1.00	0.99
	(0.48)**	(0.48)**	(0.49)**	(0.47)**	(0.48)**
Other conflict in country	0.71	0.72	0.70	0.70	0.67
	(0.32)**	(0.32)**	(0.32)**	(0.32)**	(0.33)**
UN peacekeeping	-0.39	-0.37	-0.39	-0.36	-0.36
	(0.43)	(0.43)	(0.43)	(0.42)	(0.42)
Internationalized conflict	-0.35	-0.36	-0.35	-0.36	-0.37
	(0.40)	(0.39)	(0.40)	(0.39)	(0.40)
t	-0.09	-0.09	-0.10	-0.09	-0.09
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
t2	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
t3	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
The Onset of Military Conversion Index (OMCI)		-0.08			
		(0.13)			
Any level of conversion			0.17		
			(0.27)		
Medium and high conversion				-0.24	
				(0.26)	
Low conversion					0.30
					(0.24)
Constant	-1.01	-0.90	-1.17	-0.93	-1.19
	(1.24)	(1.25)	(1.28)	(1.25)	(1.27)
Obs.	2537	2537	2537	2537	2537
Log Pseudo Likelihood	-345.68	-345.51	-345.52	-345.20	-344.77
Wald $\chi 2$	64.71	66.43	75.63	74.91	93.31
Prob>$\chi 2$	0.00	0.00	0.00	0.00	0.00
Pseudo R2	0.08	0.08	0.08	0.08	0.08

Note: Robust standard errors clustered on country are in parentheses below the coefficient estimates. Two-tailed tests * p<0.10, ** p<0.05, *** p<0.01.
(§) Model 0 corresponds to the logistic regression estimation using only the original estructure of the model presented in Rustad & Binningsbø (2012).

Table 3.3: Logit models– The Impact of the military conversion on conflict recurrence – Models 5-9

	Model 5	Model 6	Model 7	Model 8	Model 9
Natural resource conflict	0.13	0.14	0.14	0.13	0.13
	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)
Conflict duration (ln)	-0.08	-0.08	-0.08	-0.08	-0.09
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Victory	-0.85	-0.84	-0.85	-0.85	-0.87
	(0.32)***	(0.32)***	(0.32)***	(0.32)***	(0.32)***
Peace agreement	-0.04	-0.04	-0.03	-0.04	-0.03
	(0.48)	(0.49)	(0.48)	(0.49)	(0.49)
GDP per capita (ln)	-0.07	-0.07	-0.06	-0.06	-0.05
	(0.10)	(0.10)	(0.10)	(0.11)	(0.11)
Population (ln)	-0.11	-0.11	-0.12	-0.11	-0.12
	(0.08)	(0.08)	(0.08)	(0.09)	(0.08)
Ethnic fractionalization	0.98	0.96	0.98	0.97	0.95
	(0.48)**	(0.48)**	(0.48)**	(0.48)**	(0.49)*
Other conflict in country	0.70	0.73	0.73	0.71	0.71
	(0.33)**	(0.32)**	(0.31)**	(0.32)**	(0.32)**
UN peacekeeping	-0.38	-0.38	-0.39	-0.38	-0.39
	(0.42)	(0.43)	(0.43)	(0.43)	(0.43)
Internationalized conflict	-0.35	-0.36	-0.36	-0.35	-0.34
	(0.39)	(0.40)	(0.40)	(0.39)	(0.40)
t	-0.09	-0.09	-0.10	-0.09	-0.10
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
t2	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
t3	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Medium conversion	-0.13				
	(0.25)				
High conversion		-0.58			
		(0.66)			
Cut military spending			-0.29		
			(0.20)		
Downsizing military personnel				-0.07	
				(0.29)	
Voluntary recruitment system					0.14
					(0.21)
Constant	-0.98	-0.96	-0.83	-1.03	-1.15
	(1.25)	(1.24)	(1.25)	(1.27)	(1.28)
Obs.	2537	2537	2537	2537	2537
Log Pseudo Likelihood	-345.54	-345.14	-344.87	-345.65	-345.51
Wald $\chi 2$	68.81	71.91	76.89	65.19	68.67
Prob>$\chi 2$	0.00	0.00	0.00	0.00	0.00
Pseudo R2	0.08	0.08	0.08	0.08	0.08

Note: Robust standard errors clustered on country are in parentheses below the coefficient estimates. Two-tailed tests * p<0.10, ** p<0.05, *** p<0.01.

Table 3.4: Logit models– The Impact of the military conversion on conflict recurrence – Models 10-11

	Model 10	**Model 11**
Natural resource conflict	0.10	0.10
	(0.22)	(0.22)
Conflict duration (ln)	-0.09	-0.09
	(0.06)	(0.06)
Victory	-0.89	-0.90
	(0.32)***	(0.32)***
Peace agreement	-0.05	-0.04
	(0.49)	(0.49)
GDP per capita (ln)	-0.04	-0.06
	(0.11)	(0.10)
Population (ln)	-0.07	-0.02
	(0.09)	(0.12)
Ethnic fractionalization	0.83	0.81
	(0.49)*	(0.50)
Other conflict in country	0.68	0.69
	(0.32)**	(0.32)**
UN peacekeeping	-0.39	-0.40
	(0.43)	(0.43)
Internationalized conflict	-0.33	-0.29
	(0.39)	(0.40)
t	-0.10	-0.10
	(0.06)*	(0.06)*
t2	0.00	0.00
	(0.00)	(0.00)
t3	0.00	0.00
	(0.00)	(0.00)
Military expenditure /(§)	-0.00	
	(0.00)*	
Military personnel /(¥)		-0.00
		(0.00)
Type of recruitment		
Constant	-1.44	-1.73
	(1.33)	(1.55)
Obs.	2537	2537
Log Pseudo Likelihood	-344.88	-345.10
Wald $\chi 2$	74.10	69.06
Prob>$\chi 2$	0.00	0.00
Pseudo R2	0.08	0.08

Note: Robust standard errors clustered on country are in parentheses below the coefficient estimates.
Two-tailed tests * p<0.10, ** p<0.05, *** p<0.01.
(§) The value of the coefficient is -7.59e-09.
(¥) The value of the coefficient is -3.51e-04.

3.6.1 Robustness Checks

Additionally, I estimate two robustness checks, one related to the effect on conflict recurrence of having UN peacekeeping operation in two different types of conflict ending (i.e. peace agreement and victory); the other one considers the influence on conflict renewal of military reform implementation derived from a peace agreement commitment, see Table 3.7, 3.8 and 3.9.

In the case of the interaction between the peace agreement conflict ending and UN peacekeeping operation, the results are statistically significant for all twelve estimated models. The negative sign of the coefficient indicates that the post-conflict scenario which combines the presence of UN peacekeeping operation under peace agreement settlement reduces the likelihood of conflict recurrence, Table 3.7. In contrast, when conflict ends with a victory the effect of having a UN peacekeeping operation does not affect the probability of conflict renewal, Table 3.8.

The last robustness check is the inclusion of the military reform implementation derived from a peace agreement in the twelve estimated models. I use the data from Peace Accord Matrix Implementation Dataset from University of Notre Dame (Joshi, et. al., 2015). This variable does not have effect on the probability of conflict renewal, Table 3.9.

3.6.2 Predictive Power of the Estimated Models.

Following Ward et al. (2010), Gleditsch & Ward (2013), among others, I also examine the predictive power of my core variables when they are either included or excluded. This approach complements the statistical significance analysis, because this concept is not

sufficient in itself to predict accurately new cases of conflict recurrence. In contrast, the predictive power calculation helps to check the inference veracity of the models and measures the individual contribution of each control variable to the predictive power. I calculate the predictive power of my core variables by assessing the rise in prediction accuracy when including each of the military conversion variables. I rely on in-sample predictions and out-of-sample forecasts.

The in-sample prediction focuses on the area under the Receiver Operator Characteristic (ROC) curve. This curve is a type of classifier that compares four groups of predications: true positives, false positives, false negatives and true negatives (Ward et al., 2010: 366). The comparison between the rate of false positive and the rate of true positive provides the rule of prediction power. A model increases its prediction capacity if there are more true positives. Then, the ROC curve area increases its size. The ROC curve area becomes the statistic of the prediction power. It has a range between 0.5 (random guess case or null prediction power) and 1 (perfect prediction power).

Most of the military conversion variables increase the prediction power of the estimated models. Table 3.5 shows that all models reach an average area under the ROC curve (AUC) of about 0.73. This prediction power value shows slight prediction improvements in the Models 3, 4, 6, 7, 9, 10, 11 and 12.

Table 3.5: In-sample exercise. ROC curve area for each estimated logit model

Model	ROC Area
0	0.7322
1	0.7325
2	0.7325
3	0.7335
4	0.7347
5	0.7325
6	0.7343
7	0.7369
8	0.7321
9	0.7334
10	0.7338
11	0.7352

The out-of-sample forecast allows us to evaluate the ability of the model to make predictions, using data that has not been used for estimating the model in the first place. If the model reaches a good rate of prediction using different datasets, it implies that the model captures the correct specification, i.e. the right relationship between the dependent variable and the control variables (Ward et al., 2010: 370). However, most of the time, there is not any other available dataset for country-year observations. Ward et al. (2010) propose a cross-validation exercise by re-estimating the models using only a subset of the available country-cases, which they have described as the 4-fold cross validation exercise.

This iterative procedure has seven steps (Ward et al., 2010: 370): all of the observations are randomly divided into four segments; three segments are then pooled together, and this is the training set which is used to re-estimate the model. The remaining segment, known as the test set, is kept aside from the estimation of the model and it is used for evaluating the predictive power of the model estimated with the training set; the trained model generates the prediction that is applied to the test set. According to these predictions, it is possible to calculate the AUC for the test set. The previous steps are then repeated four times, with each repetition having a different combination of the segments of the data; the completed

procedure is iterated ten times, using different random partitions of the dataset; finally, the average of the AUC obtained in the ten iterations is calculated: this corresponds to the out-of-sample predictive power value of the completed model.

The prediction power of each model is lower than 0.7 and smaller than all the in-sample values. In particular, the dichotomous variable for a high level of conversion (0.6811) and the dichotomous for medium and high conversion (0.6774) have the highest AUC values, as shown in Table 3.6. The main finding is that those variables correspond to the factor that may reduce the likelihood of conflict recurrence, according to their estimated negative sign. This may be an indication of the strong military conversion levels that could affect the prediction of the recurrence of wars.

Table 3.6: Out-of-sample exercise. ROC curve area for each estimated logit model

Model	Military conversion variable	ROC Area
0	Base model	0.6783
1	OMCI	0.6746
2	Any level of conversion	0.6723
3	**Medium and high conversion**	**0.6774**
4	Low conversion	0.6766
5	Medium conversion	0.6685
6	**High conversion**	**0.6811**
7	Cut military spending	0.6745
8	Downsizing military personnel	0.6680
9	Voluntary recruitment system	0.6753
10	Military expenditure	0.6682
11	Military personnel	0.6736

3.7 Conclusions and Future Research Agenda

The military conversion process and the risk of conflict recurrence are inherent to a post-conflict setting. The allocation of military resource influences the economic conditions and the government military capability that is decisive for avoiding the restart of an internal war. This enables the relationship between conversion and conflict recurrence to be identified.

Collier & Hoeffler (2006) distinguish three mechanisms (deterrence, economic-benefits and signalling) which explain how the reduction of military resources could affect the likelihood of conflict renewal. These mechanisms lead to opposite and simultaneous effects of conversion on the risk of conflict renewal, e.g., less deterrence, because of military conversion, increases the risk of conflict recurrence; meanwhile the economic-benefits and the signalling might reduce that risk.

The empirical evidence confirms the deterrence mechanism. The military expenditure is statistically significant. The positive relationship between military expenditure and the likelihood of conflict recurrence indicates that the onset of military conversion, i.e. the reduction of the use of military resources, could increase the risk of conflict renewal. The former rebels could take advantage of weak military forces for resuming the civil war and they have better opportunities to succeed (Collier & Hoeffler, 2006; Quinn et al., 2007; Mason et al., 2011). Likewise, the finding complements Collier & Hoeffler (2006) results. The logistic model includes a military expenditure variable by year, while Collier & Hoeffler (2006) estimate several probit models using a variable which corresponds to the average over five year periods of the military expenditure as a proportion of GDP.

The other empirical results do not show any evidence of the deterrence and economic-benefits mechanisms. None of the military conversion variables is statistically significant. Nevertheless, the new conversion variables improve the predictive power of the logit models that describe the conflict recurrence. The economic-benefits mechanism is not feasible for all cases. The military conversion process could start when the government decides to reduce the use of military resources, but the transformation of the military resources could not continue due to economic and technical constraints. The former military resources could remain as idle asset and there won't be any economic benefit of not using them (Brzoska, 2007).

The results of estimation, based on Rustad & Binningsbø (2012), confirm that ethnic fractionalization and other conflict in a country increases the risk of conflict recurrence, while military victory reduces the likelihood of a restarted internal war. The ethnic fractionalization is a constant source of grievances that could motive the reorganization of the rebels. Likewise, the remaining other conflict provide one alternative to the former rebels for coming back to the war. In contrast, the military victory reduces the opportunities for rebels due to the weakening of armed capability, military victory result coincides with previous studies (e.g., Walter, 2004; Quinn et al., 2007; Kreutz, 2010).

Future alternatives or extensions to the research topic are the design of a signalling mechanism model only for peace agreements cases, the use of other conversion variables, the estimation of a survival model which identifies short and long-term impacts, and the estimation of the logistic models using different datasets and time periods. The design of an empirical model only for peace agreements cases could be one alternative to test the signalling mechanism, due to the logistic models, presented in this chapter, do not provide empirical evidence of that mechanism. The selection bias and a small sample would be

some difficulties of the signalling mechanism model estimation. However, the analysis of peace agreement cases could contribute to identify how the military conversion cases derived from the military sector reform (e.g., downsizing program for government troops) included in the peace settlements and the degree of implementation of those reforms affect the conflict recurrence.

The use of other conversion variables would also extend the empirical evidence on the determinants of conflict recurrence. I design and use a set of military conversion variables based on the variation of two main resources used during any internal war: military expenditure and military personnel. The extension to the research is to include data on military equipment, military bases and military industry. Systematic data on those military resources is scarce for the majority post-conflict societies during the period 1971-2007. The alternatives are to identify proxy variables (e.g., military imports as proxy of military equipment) and to use small data samples due to these kinds of data are not available all post-conflict countries, nor for a long period of study. An additional possibility is to include other proxy variables related to military reform, such as the transference of military personnel to police, the partial substitution of military service by an alternative service (e.g., social services, environmental protection services), among others.

The logistic models do not identify the short and long-term impacts. The estimation of a survival model would contribute to determine the impact of military conversion on the peace stability in different time horizons. This type of model would need the adjustment in the dependent variable and the addition of other control variables in accordance with the requirements of survival methodology. Likewise, the possibility of identifying long-term impacts could contribute to test the extent of the economic-benefits mechanism and to identify how the conflict recurrence risk evolves over time. This type of evidence may help

to support public policy decisions related to Security Sector Reform and the allocation of public funds.

Finally, the sensibility tests could provide evidence of the “stability” of the results. The estimation of the logistic models using variables from other datasets and different time periods would contribute to check the sensibility of the results. The alternatives could be to estimate models using the outcome of conflict variable used by Quinn et al. (2007) and military variables from other data sources (e.g., military expenditure data from U.S. Department of State). Additionally, estimates from logistic models of conflict recurrence which consider other time periods may be compared with other empirical evidence from the literature.

Appendix 3.1 Robustness checks

Table 3.7: Logit models including the interaction term between UN peacekeeping and peace agreement– Models 0-4

	Model 0 (§)	Model 1	Model 2	Model 3	Model 4
Natural resource conflict	0.136	0.142	0.134	0.14	0.135
	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)
Conflict duration (ln)	-0.092	-0.097	-0.09	-0.092	-0.093
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Victory	-0.91	-0.931	-0.909	-0.923	-0.918
	(0.31)***	(0.31)***	(0.31)***	(0.31)***	(0.31)***
Peace agreement	0.293	0.313	0.287	0.296	0.296
	(0.49)	(0.50)	(0.49)	(0.49)	(0.49)
GDP per capita (ln)	-0.062	-0.049	-0.063	-0.054	-0.058
	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)
Population (ln)	-0.106	-0.107	-0.106	-0.108	-0.107
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Ethnic fractionalization	0.862	0.829	0.879	0.87	0.863
	(0.49)*	(0.50)*	(0.49)*	(0.50)*	(0.49)*
Other conflict in country	0.699	0.68	0.685	0.658	0.686
	(0.31)**	(0.32)**	(0.31)**	(0.32)**	(0.32)**
UN peacekeeping	0.194	0.204	0.197	0.209	0.196
	(0.38)	(0.38)	(0.38)	(0.38)	(0.38)
Internationalized conflict	-0.34	-0.325	-0.346	-0.342	-0.336
	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)
t	-0.087	-0.089	-0.086	-0.086	-0.087
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
t2	0.003	0.003	0.003	0.003	0.003
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
t3	0	0	0	0	0
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
UN peacekeeping*Peace Agreement	-1.58	-1.64	-1.561	-1.585	-1.59
	(0.93)*	(0.94)*	(0.93)*	(0.94)*	(0.94)*
The Onset of Military Conversion Index (OMCI)	-0.067				
	(0.13)				
Any level of conversion		0.194			
		(0.27)			
Medium and high conversion			-0.212		
			(0.26)		
Low conversion				0.296	
				(0.24)	
Medium conversion					-0.109
					(0.25)
Constant	-0.905	-1.176	-0.922	-1.169	-0.967
	(1.25)	(1.28)	(1.25)	(1.27)	(1.25)
Obs.	2537	2537	2537	2537	2537
Log Pseudo Likelihood	-344.043	-343.948	-343.773	-343.293	-344.064
Wald $\chi 2$	68.281	79.645	75.844	94.984	70.22
Prob>$\chi 2$	0	0	0	0	0
Pseudo R2	0.084	0.084	0.085	0.086	0.084

stered on country are in parentheses below the coefficient estimates.
)-tailed tests * p<0.10, ** p<0.05, *** p<0.01.
) the logistic regression estimation using only the original estructure
model presented in Rustad & Binningsbø (2012).

Table 3.7: Logit models including the interaction term between UN peacekeeping and peace agreement– Models 5-9 (cont.)

	Model 5	Model 6	Model 7	Model 8	Model 9
Natural resource conflict	0.142	0.142	0.135	0.138	0.107
	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)
Conflict duration (ln)	-0.092	-0.094	-0.094	-0.1	-0.099
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Victory	-0.906	-0.921	-0.922	-0.952	-0.955
	(0.31)***	(0.31)***	(0.31)***	(0.31)***	(0.31)***
Peace agreement	0.294	0.304	0.304	0.336	0.293
	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)
GDP per capita (ln)	-0.064	-0.054	-0.053	-0.03	-0.029
	(0.10)	(0.10)	(0.11)	(0.11)	(0.11)
Population (ln)	-0.106	-0.117	-0.106	-0.112	-0.065
	(0.08)	(0.08)	(0.08)	(0.08)	(0.09)
Ethnic fractionalization	0.845	0.862	0.846	0.809	0.709
	(0.49)*	(0.49)*	(0.49)*	(0.50)	(0.50)
Other conflict in country	0.711	0.714	0.692	0.69	0.665
	(0.32)**	(0.31)**	(0.32)**	(0.32)**	(0.32)**
UN peacekeeping	0.199	0.189	0.209	0.233	0.201
	(0.38)	(0.38)	(0.38)	(0.38)	(0.38)
Internationalized conflict	-0.343	-0.339	-0.33	-0.308	-0.311
	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)
t	-0.087	-0.088	-0.087	-0.089	-0.097
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
t2	0.003	0.003	0.003	0.003	0.003
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
t3	0	0	0	0	0
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
UN peacekeeping*Peace Agreement	-1.59	-1.593	-1.615	-1.698	-1.62
	(0.93)*	(0.93)*	(0.94)*	(0.93)*	(0.94)*
High conversion	-0.563				
	(0.67)				
Cut military spending		-0.284			
		(0.20)			
Downsizing military personnel			-0.077		
			(0.29)		
Voluntary recruitment system				0.192	
				(0.21)	
Military expenditure					-0.00
					(0.00)*
Constant	-0.952	-0.812	-1.015	-1.179	-1.434
	(1.24)	(1.26)	(1.26)	(1.26)	(1.34)
Obs.	2537	2537	2537	2537	2537
Log Pseudo Likelihood	-343.653	-343.379	-344.114	-343.846	-343.334
Wald $\chi 2$	74.822	79.438	67.671	72.399	77.314
Prob>$\chi 2$	0	0	0	0	0
Pseudo R2	0.085	0.086	0.084	0.085	0.086

Note: Robust standard errors clustered on country are in parentheses below the coefficient estimates. Two-tailed tests * p<0.10, ** p<0.05, *** p<0.01.

Table 3.7: Logit models including the interaction term between UN peacekeeping and peace agreement– Models 10-11 (cont.)

	Model 10	**Model 11**
Natural resource conflict	0.102	0.138
	(0.23)	(0.23)
Conflict duration (ln)	-0.099	-0.1
	(0.06)	(0.06)
Victory	-0.959	-0.952
	(0.31)***	(0.31)***
Peace agreement	0.294	0.336
	(0.50)	(0.49)
GDP per capita (ln)	-0.055	-0.03
	(0.10)	(0.11)
Population (ln)	-0.018	-0.112
	(0.12)	(0.08)
Ethnic fractionalization	0.707	0.809
	(0.51)	(0.50)
Other conflict in country	0.673	0.69
	(0.32)**	(0.32)**
UN peacekeeping	0.168	0.233
	(0.38)	(0.38)
Internationalized conflict	-0.268	-0.308
	(0.40)	(0.40)
t	-0.094	-0.089
	(0.06)	(0.06)
t2	0.003	0.003
	(0.00)	(0.00)
t3	0	0
	(0.00)	(0.00)
UN peacekeeping*Peace Agreement	-1.575	-1.698
	(0.94)*	(0.93)*
Military personnel	-0.00	
	(0.00)	
Type of recruitment		0.192
		(0.21)
Constant	-1.67	-1.179
	(1.54)	(1.26)
Obs.	2537	2537
Log Pseudo Likelihood	-343.641	-343.846
Wald $\chi 2$	72.734	72.399
Prob>$\chi 2$	0	0
Pseudo R2	0.085	0.085

Note: Robust standard errors clustered on country are in parentheses below the coefficient estimates.
Two-tailed tests * p<0.10, ** p<0.05, *** p<0.01.

Table 3.8: Logit models including the interaction term between UN peacekeeping and victory– Models 0-4

	Model 0 (§)	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Natural resource conflict	0.119	0.126	0.118	0.126	0.118
	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)
Conflict duration (ln)	-0.087	-0.091	-0.086	-0.088	-0.089
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Victory	-0.914	-0.927	-0.914	-0.923	-0.921
	(0.32)***	(0.32)***	(0.32)***	(0.32)***	(0.32)***
Peace agreement	0.024	0.031	0.023	0.026	0.026
	(0.50)	(0.51)	(0.50)	(0.51)	(0.50)
GDP per capita (ln)	-0.067	-0.054	-0.067	-0.057	-0.062
	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)
Population (ln)	-0.104	-0.106	-0.104	-0.106	-0.105
	(0.09)	(0.08)	(0.09)	(0.09)	(0.09)
Ethnic fractionalization	0.919	0.897	0.935	0.932	0.922
	(0.51)*	(0.52)*	(0.51)*	(0.52)*	(0.51)*
Other conflict in country	0.718	0.699	0.701	0.674	0.701
	(0.32)**	(0.32)**	(0.32)**	(0.33)**	(0.33)**
UN peacekeeping	-0.57	-0.583	-0.557	-0.551	-0.571
	(0.54)	(0.55)	(0.53)	(0.54)	(0.53)
Internationalized conflict	-0.311	-0.305	-0.317	-0.321	-0.308
	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)
t	-0.092	-0.094	-0.09	-0.09	-0.092
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
t2	0.003	0.003	0.003	0.003	0.003
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
t3	0	0	0	0	0
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
UN peacekeeping*Victory	0.724	0.693	0.719	0.685	0.716
	(0.88)	(0.89)	(0.88)	(0.88)	(0.88)
The Onset of Military Conversion Index (OMCI)	-0.086				
	(0.13)				
Any level of conversion		0.162			
		(0.27)			
Medium and high conversion			-0.239		
			(0.26)		
Low conversion				0.301	
				(0.24)	
Medium conversion					-0.133
					(0.25)
Constant	-0.89	-1.152	-0.927	-1.187	-0.971
	(1.24)	(1.28)	(1.24)	(1.27)	(1.24)
Obs.	2537	2537	2537	2537	2537
Log Pseudo Likelihood	-345.247	-345.287	-344.944	-344.535	-345.292
Wald $\chi 2$	68.528	77.108	76.916	95.172	70.744
Prob>$\chi 2$	0	0	0	0	0
Pseudo R2	0.081	0.081	0.082	0.083	0.081

Note: Robust standard errors clustered on country are in parentheses below the coefficient estimates.
Two-tailed tests * p<0.10, ** p<0.05, *** p<0.01.

Table 3.8: Logit models including the interaction term between UN peacekeeping and victory– Models 5-9 (cont.)

	Model 5	Model 6	Model 7	Model 8	Model 9
Natural resource conflict	0.126	0.125	0.119	0.122	0.091
	(0.23)	(0.23)	(0.23)	(0.23)	(0.22)
Conflict duration (ln)	-0.087	-0.09	-0.09	-0.094	-0.095
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Victory	-0.908	-0.929	-0.923	-0.941	-0.963
	(0.32)***	(0.32)***	(0.32)***	(0.32)***	(0.32)***
Peace agreement	0.023	0.036	0.029	0.041	0.021
	(0.50)	(0.50)	(0.50)	(0.51)	(0.50)
GDP per capita (ln)	-0.067	-0.056	-0.057	-0.04	-0.031
	(0.10)	(0.10)	(0.11)	(0.11)	(0.11)
Population (ln)	-0.104	-0.115	-0.104	-0.109	-0.062
	(0.09)	(0.08)	(0.09)	(0.08)	(0.09)
Ethnic fractionalization	0.902	0.915	0.905	0.885	0.762
	(0.51)*	(0.51)*	(0.52)*	(0.52)*	(0.53)
Other conflict in country	0.729	0.735	0.709	0.708	0.682
	(0.32)**	(0.31)**	(0.32)**	(0.32)**	(0.32)**
UN peacekeeping	-0.568	-0.589	-0.573	-0.588	-0.594
	(0.54)	(0.54)	(0.54)	(0.55)	(0.54)
Internationalized conflict	-0.316	-0.306	-0.302	-0.289	-0.278
	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)
t	-0.092	-0.093	-0.092	-0.094	-0.102
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)*
t2	0.003	0.003	0.003	0.003	0.004
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
t3	0	0	0	0	0
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
UN peacekeeping*Victory	0.706	0.751	0.715	0.719	0.767
	(0.88)	(0.88)	(0.89)	(0.89)	(0.89)
High conversion	-0.58				
	(0.65)				
Cut military spending		-0.295			
		(0.20)			
Downsizing military personnel			-0.071		
			(0.29)		
Voluntary recruitment system				0.141	
				(0.21)	
Military expenditure					-0.00
					(0.00)*
Constant	-0.961	-0.821	-1.023	-1.141	-1.453
	(1.23)	(1.25)	(1.26)	(1.27)	(1.33)
Obs.	2537	2537	2537	2537	2537
Log Pseudo Likelihood	-344.893	-344.594	-345.395	-345.261	-344.591
Wald $\chi 2$	75.655	80.152	67.268	70.397	75.695
Prob>$\chi 2$	0	0	0	0	0
Pseudo R2	0.082	0.083	0.08	0.081	0.083

Note: Robust standard errors clustered on country are in parentheses below the coefficient estimates.
Two-tailed tests * p<0.10, ** p<0.05, *** p<0.01.

Table 3.8: Logit models including the interaction term between UN peacekeeping and victory– Models 10-11 (cont.)

	Model 10	**Model 11**
Natural resource conflict	0.083	0.122
	(0.22)	(0.23)
Conflict duration (ln)	-0.096	-0.094
	(0.06)	(0.06)
Victory	-0.973	-0.941
	(0.32)***	(0.32)***
Peace agreement	0.032	0.041
	(0.51)	(0.51)
GDP per capita (ln)	-0.058	-0.04
	(0.10)	(0.11)
Population (ln)	-0.007	-0.109
	(0.12)	(0.08)
Ethnic fractionalization	0.747	0.885
	(0.54)	(0.52)*
Other conflict in country	0.689	0.708
	(0.32)**	(0.32)**
UN peacekeeping	-0.604	-0.588
	(0.54)	(0.55)
Internationalized conflict	-0.236	-0.289
	(0.40)	(0.40)
t	-0.099	-0.094
	(0.06)*	(0.06)
t2	0.003	0.003
	(0.00)	(0.00)
t3	0	0
	(0.00)	(0.00)
UN peacekeeping*Victory	0.753	0.719
	(0.88)	(0.89)
Military personnel	-0.00	
	(0.00)	
Type of recruitment		0.141
		(0.21)
Constant	-1.743	-1.141
	(1.54)	(1.27)
Obs.	2537	2537
Log Pseudo Likelihood	-344.821	-345.261
Wald $\chi 2$	70.199	70.397
Prob>$\chi 2$	0	0
Pseudo R2	0.082	0.081

Note: Robust standard errors clustered on country are in parentheses below the coefficient estimates.
Two-tailed tests * p<0.10, ** p<0.05, *** p<0.01.

Table 3.9: Logit models including military reform implemented after peace agreement – Models 0-4

	Model 0 (§)	Model 1	Model 2	Model 3	Model 4
Natural resource conflict	0.134	0.141	0.133	0.141	0.133
	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)
Conflict duration (ln)	-0.08	-0.084	-0.079	-0.08	-0.081
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Victory	-0.852	-0.868	-0.853	-0.863	-0.86
	(0.32)***	(0.32)***	(0.32)***	(0.32)***	(0.32)***
Peace agreement	-0.033	-0.025	-0.033	-0.029	-0.03
	(0.49)	(0.50)	(0.49)	(0.49)	(0.49)
GDP per capita (ln)	-0.073	-0.059	-0.073	-0.062	-0.067
	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)
Population (ln)	-0.113	-0.114	-0.113	-0.115	-0.113
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Ethnic fractionalization	1.001	0.978	1.016	1.01	1.004
	(0.48)**	(0.49)**	(0.48)**	(0.49)**	(0.49)**
Other conflict in country	0.706	0.687	0.69	0.663	0.69
	(0.32)**	(0.33)**	(0.32)**	(0.33)**	(0.33)**
UN peacekeeping	-0.353	-0.373	-0.342	-0.345	-0.357
	(0.42)	(0.42)	(0.41)	(0.41)	(0.41)
Internationalized conflict	-0.346	-0.337	-0.352	-0.354	-0.342
	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)
t	-0.093	-0.095	-0.092	-0.092	-0.093
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
t2	0.003	0.003	0.003	0.003	0.003
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
t3	0	0	0	0	0
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Military reform implemented	-0.081	-0.077	-0.078	-0.073	-0.079
	(0.19)	(0.19)	(0.20)	(0.20)	(0.19)
The Onset of Military Conversion Index (OMCI)	-0.083				
	(0.13)				
Any level of conversion		0.167			
		(0.27)			
Medium and high conversion			-0.236		
			(0.26)		
Low conversion				0.303	
				(0.24)	
Medium conversion					-0.13
					(0.25)
Constant	-0.856	-1.131	-0.89	-1.157	-0.94
	(1.24)	(1.28)	(1.24)	(1.27)	(1.24)
Obs.	2537	2537	2537	2537	2537
Log Pseudo Likelihood	-345.456	-345.478	-345.153	-344.726	-345.498
Wald $\chi 2$	66.703	75.331	75.179	93.287	68.772
Prob>$\chi 2$	0	0	0	0	0
Pseudo R2	0.08	0.08	0.081	0.082	0.08

Note: Robust standard errors clustered on country are in parentheses below the coefficient estimates.
Two-tailed tests * p<0.10, ** p<0.05, *** p<0.01.

Table 3.9: Logit models including military reform implemented after peace agreement – Models 5-9 (cont.)

	Model 5	Model 6	Model 7	Model 8	Model 9
Natural resource conflict	0.142	0.141	0.134	0.138	0.108
	(0.23)	(0.23)	(0.23)	(0.23)	(0.22)
Conflict duration (ln)	-0.079	-0.082	-0.082	-0.086	-0.087
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Victory	-0.847	-0.864	-0.862	-0.879	-0.895
	(0.32)***	(0.32)***	(0.32)***	(0.32)***	(0.33)***
Peace agreement	-0.032	-0.022	-0.028	-0.018	-0.041
	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)
GDP per capita (ln)	-0.074	-0.062	-0.062	-0.046	-0.039
	(0.10)	(0.10)	(0.11)	(0.11)	(0.11)
Population (ln)	-0.113	-0.124	-0.113	-0.118	-0.073
	(0.08)	(0.08)	(0.08)	(0.08)	(0.09)
Ethnic fractionalization	0.982	0.998	0.988	0.97	0.852
	(0.49)**	(0.49)**	(0.49)**	(0.49)**	(0.49)*
Other conflict in country	0.717	0.723	0.698	0.697	0.672
	(0.32)**	(0.31)**	(0.32)**	(0.33)**	(0.33)**
UN peacekeeping	-0.355	-0.367	-0.358	-0.37	-0.37
	(0.42)	(0.42)	(0.42)	(0.42)	(0.42)
Internationalized conflict	-0.349	-0.343	-0.336	-0.323	-0.317
	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)
t	-0.093	-0.095	-0.094	-0.095	-0.103
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)*
t2	0.003	0.003	0.003	0.003	0.004
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
t3	0	0	0	0	0
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Military reform implemented	-0.081	-0.077	-0.08	-0.079	-0.068
	(0.19)	(0.19)	(0.19)	(0.19)	(0.19)
High conversion	-0.583				
	(0.66)				
Cut military spending		-0.289			
		(0.20)			
Downsizing military personnel			-0.07		
			(0.29)		
Voluntary recruitment system				0.139	
				(0.21)	
Military expenditure					-0.00
					(0.00)*
Constant	-0.923	-0.792	-0.992	-1.117	-1.401
	(1.23)	(1.24)	(1.26)	(1.27)	(1.33)
Obs.	2537	2537	2537	2537	2537
Log Pseudo Likelihood	-345.088	-344.825	-345.598	-345.468	-344.843
Wald $\chi 2$	72.39	77.599	65.265	68.432	74.254
Prob>$\chi 2$	0	0	0	0	0
Pseudo R2	0.081	0.082	0.08	0.08	0.082

Note: Robust standard errors clustered on country are in parentheses below the coefficient estimates. Two-tailed tests * p<0.10, ** p<0.05, *** p<0.01.

Table 3.9: Logit models including military reform implemented after peace agreement – Models 10-11 (cont.)

	Model 10	**Model 11**
Natural resource conflict	0.101	0.138
	(0.22)	(0.23)
Conflict duration (ln)	-0.088	-0.086
	(0.06)	(0.06)
Victory	-0.909	-0.879
	(0.32)***	(0.32)***
Peace agreement	-0.027	-0.018
	(0.50)	(0.49)
GDP per capita (ln)	-0.063	-0.046
	(0.10)	(0.11)
Population (ln)	-0.019	-0.118
	(0.12)	(0.08)
Ethnic fractionalization	0.836	0.97
	(0.51)	(0.49)**
Other conflict in country	0.678	0.697
	(0.33)**	(0.33)**
UN peacekeeping	-0.383	-0.37
	(0.42)	(0.42)
Internationalized conflict	-0.274	-0.323
	(0.40)	(0.40)
t	-0.1	-0.095
	(0.06)*	(0.06)
t2	0.004	0.003
	(0.00)	(0.00)
t3	0	0
	(0.00)	(0.00)
Military reform implemented	-0.076	-0.079
	(0.19)	(0.19)
Military personnel	-0.00	
	(0.00)	
Type of recruitment		0.139
		(0.21)
Constant	-1.688	-1.117
	(1.54)	(1.27)
Obs.	2537	2537
Log Pseudo Likelihood	-345.057	-345.468
Wald $\chi 2$	69.108	68.432
Prob>$\chi 2$	0	0
Pseudo R2	0.081	0.08

Note: Robust standard errors clustered on country are in parentheses below the coefficient estimates.
Two-tailed tests * p<0.10, ** p<0.05, *** p<0.01.

Chapter 4. Military conversion in Colombia

4.1 Introduction

Colombia's military is unique in Latin America in certain ways. The Colombian military and internal security expenditure amounted to 3.5 percent of GDP in 2015[30] (SIPRI, 2016), more than any other country in the region.[31] The military forces and the national police have the second largest number of personnel in the region with at least 455,000 active members in 2015[32] (IISS, 2015).

The relatively large resources allocated to the Colombian military have resulted from the Colombian civil conflict, which has been ongoing since 1964. Currently, the conflict remains active between the Colombian state and the ELN guerrilla group, however several other guerrilla and illegal armed groups have been demobilized or eliminated.[33] Most importantly, the Colombian state and the FARC guerrilla group signed a peace agreement in November 2016 to end more than 50 years of conflict. Each military branch[34] has combined its classic roles with counter-insurgency and skills against drug trafficking to improve the internal security conditions. The national police have also faced internal security threats, while continuing as a security branch to prevent and control common criminality. Special national

[30] The Colombian Ministry of Defence points out that the police expenditure amounted to 0.89 percent of the GDP in 2015 and the remaining percent is the military forces expenditure (MDN, 2015b: 47).
[31] SIPRI includes the Colombian military and the police expenditure in this figure. Also, the figure corresponds to $9,871 million dollars in 2015 constant dollars, the second largest of the region after Brazil in terms of absolute military expenditure.
[32] 297,000 military personnel and 159,000 police personnel (IISS, 2015).
[33] This is a list of either demobilized or eliminated illegal armed groups. Guerrilla groups: "*Movimiento 19 de abril (M-19)"; "Ejército de Liberación Popular (EPL)"; "Partido Revolucionario de Trabajadores (PRT)"; "Movimiento Armado Quintín Lame (MAQL)"; "Corriente de Renovación Socialista (CRS)"; "Ejército Revolucionario Guevarista (ERG)*". Illegal paramilitary groups: *"Autodefensas Unidas de Colombia (AUC)"*.
[34] The military forces (army, navy and air force) and national police make up the Colombian armed forces, according to the Colombian constitution. However, they are not referred to officially as armed forces; instead the official name is "Public Force" (*Fuerza Pública* in Spanish).

police units[35] have also been training and equipping themselves as a military force to counter the guerrilla groups and other non-state armed groups.

In this chapter I want to identify the expectations for military conversion and the possibilities of new uses for military resources in Colombia during the post-conflict stage. I adapt a military budget decision-making process model and some concepts from bureaucratic theory to identify the factors that determine military budget decisions and the key policy-making groups' attitudes toward it. I design a questionnaire to conduct semi-structured interviews. The questionnaire contains three sections, first section covers the expectations about the short term, it is the first years of post-conflict scenario (2016-2020), second section covers medium term expectations (2020-2030) and the final section covers the long-term conversion scenario (after 2030). The design of the questionnaire was based using the official documents of the transformation processes of Colombian armed forces. The three sections include different scenarios about the economic and security conditions in a post-conflict scenario as some variables tested in the second chapter. Colombian army performs actions mainly in rural territories, then I asked about the new possible roles of the military personnel in a post conflict period. Also following the analysis made in the third chapter, I include in the interview the expectations about conflict recurrence under a short-term scenario.

I interviewed twenty military-sector and civilian experts who have been involved in the military budget decision-making process in Colombia. The aim of the doing interviews was to identify the expectations and possibilities of the reduction of military resources and the

[35] The national police have several special units that can make joint operations with the military forces, e.g., the COPES (*Comando de Operaciones Especiales)* and JUNGLA units have participated in some major military operations against guerrilla groups and drug trafficking bands.

associated military conversion process in the expected post-conflict period. Also, to know from different stakeholders their perception about the determinants and impact on conflict recurrence of conversion studied in the second and third chapter.

Colombia presents a unique case for conversion studies because it is a developing country and stable democracy. A post-conflict country could reorganize the military forces and the different institutions. The military conversion has been studied mainly after the end of Cold War focusing in Eastern European countries and developed countries. However, in the last decades, the countries that have faced DDR, SSR and conversion processes are young nations with unstable democracies and institutions. In particular, the sub-Saharan countries have a military context in which there are no permanent and stable military branches because countries have experienced different armed formation in a small number of years (SIPRI, 2006). As a contrast, Colombia has maintained a democratic regime most of the 207 years of history as a republic. Yet as the sub-Saharan context, Colombia case presents a scenario where there are not clear limits between military branch or the police to provide internal and external security. The separation of roles and responsibilities between police and military is blurred since the police has not enough capacity to fight and contain rebel groups. Likewise, the lack of police capacity has been fulfilled by the army.

It is expected that the disarmament process of FARC will be completed by the second term of 2017.[36]When peace eventually emerges, it will be necessary to reconsider the armed forces' roles and resources. Since 2011, the military and the national police have been in the process of designing the transformation process of the armed forces to identify the future security and defence roles and scenarios. At the same time, academic researchers, think

[36] There is also an incipient peace process between the Colombian government and ELN.

tanks and politicians have started to discuss the possibility of security sector reform in the post-conflict period.

There is also some resistance to the idea of security sector reform. Some representatives of the armed forces[37] expect to either keep or even increase the current level of military resources to fulfil current and future roles. The consensus among the main stakeholders is that that military budget cuts and the downsizing of military personnel cannot be implemented immediately due to the risk of conflict recurrence and the new security threats (MDN, 2015b; Santos, 2015; Acero, 2015). Meanwhile, academic sectors and a portion of civil society expect the reduction of military resources due to the need to enhance the national police and to re-allocate more public funds to civilian peacebuilding initiatives inside Colombia in the post-conflict phase (Schultze, 2012; Leal, 2014).

Since the main non-state armed group FARC no longer poses a military threat, the budget for counterinsurgency operations can be reduced and the military forces could therefore face budget cuts. Alternatively, they could reallocate existing military resources to counter and to deter new and the remaining defence and security threats (e.g., ELN, FARC dissidents, drug trafficking organized armed groups, among others). The military branches also have an incentive to keep their current level of military resources to preserve their bureaucratic power. Any reallocation of existing military resources will involve transaction costs, and some military resources cannot be transferred to the new military responsibilities. As a consequence, the military must decide what to do with the under-utilised military resources. The preferred alternative by military branches is to keep these resources as idle assets, but

[37] For instance, current Colombian President Juan Manuel Santos, the Minister of Defence (civilian) Luis Carlos Villegas and the Chief of Staff of the Colombia Army General Alberto José Mejía have argued in public speeches that there will not be any cut in military budget and military personnel during the transformation process of the armed forces.

the storage costs and the perception of inefficient use of public funds could make this option unfeasible over time. Especially, since the transition of the military forces into new roles may require additional investments.

An alternative is to reallocate military resources into civilian activities, i.e., employ a military conversion process (Moller, 1994; Sandler & Hartley, 1995; Intriligator, 1996; Brzoska, 1999a). Until now conversion has not been considered a relevant policy option in Colombia, but following the end of the conflict with FARC it becomes a feasible alternative to avoid the inefficient use of former military resources. The aim of this paper is to identify the determinants of the onset of military conversion in Colombia and to ascertain the future allocation possibilities of military resources during the post-conflict period, following some guidelines provided by the transformation process of armed forces (CGFM, 2015; MDN, 2015b).

The reminder of the paper is as follows: this introduction is the first section; the next section depicts the main elements of the transformation process of the Colombian Armed Forces – “Plan 2030”. The third section summarizes the theoretical concepts of the military conversion from the initial government’s decision of reducing the use of military resources. The fourth section describes the military budget cycle and the basic notions of bureaucratic theory to identify the main policy-making groups, their incentives and the determinants of the allocation of public funds to the military sector. The fifth section presents the research design, the description of fieldwork and the data collection. The sixth section presents the results of comparative analysis of the interviews with security and defence experts. My conclusions and discussions are in the final section.

4.2 The Transformation Process of Colombian Armed Forces – "Plan 2030"

The transformation process of the Colombian armed forces, "Plan 2030", is the defence and security sector initiative to explore how to respond to the security scenario at the end of the civil conflict between the government and the FARC guerrilla group. It defines as its main objectives to modernize the armed forces to face effectively any security threat during a post-conflict period, as well as to improve the budget sustainability and efficiency of expenditure and to reform the doctrine and education of military personnel. To achieve these goals, the military forces and the national police should redefine and allocate roles, missions and resources (CGFM, 2015; MDN, 2015b: 63-73).

The transformation process has been ongoing since 2011. At that time, military forces and national police started to look at their security strategy against guerrilla groups, terrorism organizations and other criminal groups in Colombia. Each military branch and the national police established the "Committee on Innovation and Strategic Review (CRE-I)"[38]to define new strategies and revise the internal and external threats. As a result, military forces and police defined their security plans for the period 2011-2014, "*Espada de Honor"*[39] and "*Corazón Verde"*[40] respectively, which considered the form to operate and the need for a continuous revision of strategy and security threats (MDN, 2012).

The peace negotiations between the Colombian government and FARC, which have become official since September 2012, intensified the transformation process. The peace talks agenda does not include either military or security sector reform (República de

[38] Abbreviation in the Spanish Language for "Comité de Revisión Estratégica e Innovación". This committee was composed of military and police officers, and civilian personnel of the Ministry of Defence of Colombia.
[39] Translated to English as "Honour Sword".
[40] Translated to English as "Green Heart".

Colombia & FARC-EP, 2012). This was one of the Colombian government's conditions to continue with the peace negotiation.[41] Instead, the Colombian government has pointed out repeatedly that their own military forces and national police will define their reforms through the transformation process to adapt them to a security scenario without FARC (Santos 2013, 2015). The intensification of the transformation process has generated a CRE-I Committee each year since 2013 (EJC, 2016a, 2016b). Thus, the transformation process has advanced by updating the expected security and defence scenario, stimulating the interoperability and joint operations, adjusting military doctrine (e.g., new army doctrine manuals), defining new roles (e.g., environmental protection), administrative reforms (e.g., reform of army chief of joint staff structure) and adapting new programmes and methodologies to improve the effectiveness and efficiency of the military and police resources.

Three main programmes and methodologies support the transformation process: capabilities planning, sustainability and efficiency of expenditure, and doctrine and education reform (CGFM, 2015). Arguably, the capabilities planning and the sustainability and efficiency programmes could reduce the rent-seeking problem identified in the military and police budget decision-making process. The ministry of defence and the other policy-making groups could collect more information regarding the defence and security cost function and improve the measurement of the military output. In the case of doctrine and education reform, it will contribute to adapting the military personnel to new military tasks.

The Ministry of Defence has led this programme on capabilities planning methodology and the sustainability and efficiency of expenditure to establish a long-term planning process in

[41] García (2007) points out that in previous peace negotiations between the Colombian state and FARC (1984-1987; 1991-1992; 1998-2002), the guerrilla group had always demanded armed forces reform as a topic of the negotiation agenda.

the defence and security sector (MDN 2011, 2014b).[42] The first initiative integrates the current and future security needs and roles; and the second reflects budget constraints. As a result, the military forces and the national police have identified a set of feasible roles and missions that the armed forces could execute in future scenarios and the required resources (MDN, 2014a; CGFM, 2015).

The sustainability and efficiency of expenditure programme promotes the efficient reallocation of military and police resources (MDN, 2011; CGFM, 2015). This programme complements the capabilities planning methodology because it provides analysis tools (e.g., logistic information systems) and quantitative exercises (e.g., unit cost exercises, life cycle costing of military equipment) for making resource allocation to the existing and new armed forces capabilities.

The education and doctrine initiative has as its main objective the professionalization of the armed forces personnel. Military and police will be able to adapt to the new roles and missions and increase their effectiveness using either advanced academic or technical formation (MDN, 2015a). Likewise, the availability of skilled personnel could contribute to the technological modernization of the armed forces and the justification of the current troop and police size. Meanwhile, the doctrine upgrade will provide manuals with new procedures according to the new and remaining roles.

Each military branch and the national police presented the complete transformation plan at the end of 2016, because of the fifth version of the CRE-I exercise and the cumulative

[42] The adoption of the capabilities planning methodology has been based on different international experiences (e.g., USA, Australia and UK).

findings of previous exercises. However, the execution of the transformation process is conditional on the full implementation of the peace agreement.

4.3 Conceptual Framework of Military Conversion

The reduction of the military budget due to a change in the defence and security threats has two impacts on the functioning of the military sector: fewer possibilities to acquire new military resources and less use of the current stock of resources.[43] The reduction of use of any military resource starts a military conversion process (Brzoska, 1999a). Following that decision, the government chooses what to do with the discarded resources. The government has four alternatives (Laurence & Wulf, 1995): to keep the resources as idle, to allocate the resources to a new military use, to establish a military conversion programme or to eliminate the resources.

The conversion process only continues if the government chooses either the third or the fourth alternative, and ends successfully when the former military resource is used in a civilian activity. However, this process could fail. The resource might not be incorporated in a non-military use and the resource could be inactive. Idle resources could lead to unwanted consequences for any country as they represent the loss of public resources or there is a possibility that the former military resources will be used in illegal activities (e.g., the recruitment of former soldiers in illegal armed groups) see Brzoska, Kingma & Wulf (1995).

[43] The reduction of use of military resources could also generate a lower operational level than the previous year, because the military budget cutting does not allow the military branch to cover the previous operating and maintenance costs.

The first two alternatives do not start a conversion process, but they show how it is possible to either postpone or reverse the transference of former military resources to other civilian activities. In the first alternative, the government prefers to keep the former military resources as idle (Brzoska, 2007). This decision comes after the government has discarded the possibility of a new use of the former military resources, i.e. the use in a new or existing military role, and it was not possible to sell, to transfer or to donate the resources. The high expected costs of any transference or any new use, as well as technical and institutional constraints, can explain why this alternative is chosen.

The second alternative represents a reversal of the military conversion process, because the government allocates the discarded military resources to new or existing military uses. This possibility always remains while the government keeps the discarded resources as idle assets (Laurence & Wulf, 1995). The government and the military forces determine the new uses according to the national defence and security needs. The need to save public funds, uncertainty about the defence and security threats or concern about illegal use of former military resources due to the low likelihood of successful conversion could influence the new allocation of the discarded military resources to new or existing military activities. In the short term, the use of those resources in new military activities could generate new costs (e.g., training in the new roles) and low efficiency levels.

The third alternative is conversion narrowly defined. A government can establish a military conversion programme when it is necessary to transform features of former military resources. The transformation aims to dispose of transformed resources that could be employed in a civilian activity, e.g., the educational training for military personnel or the cleaning of a military installation. This government intervention needs new public funds in order to carry on the transformation tasks. The transformation is not instantaneous, nor

successful for all cases. The government faces the associated costs and risks, no matter the final result. The government's expectation is to have economic and social benefits after the former military resource has been used in a civilian activity. Sometimes obtaining benefits from the use of the transformed resource could take a long period of time, due to the high transformation costs.

Another method of conversion is the market allocation of former military resources. This choice can eliminate some of the conversion costs and risks faced by the government. In this case, the government trusts that the market will allocate efficiently the former military resources and avoids the investment of new public funds. The government could sell the equipment to the private sector, including the scrapping of conventional weapons, military facilities, military bases' land or military industry installations. Meanwhile, the released military personnel are expected to be incorporated in the labour market without government action. The necessary condition is that there is enough demand for the former military resources. However, if the private sector neither demands, nor purchases all of the former military resources, then some of them could become idle and the government will not be able to collect and allocate them again.

The last alternative is to eliminate the former military resources. The conversion can be postponed to the end of the life cycle of the idle assets, because the government will want to wait until their total depreciation to avoid any extraordinary disposal costs. The material recycling of the obsolete military resources could be considered as a late conversion process.

4.3.1 The Set of Possibilities of Military Conversion

The identification of the types of military resources helps to identify the set of possibilities of military conversion. There are six dimensions of conversion associated with each type of military resource and the production of military equipment (Laurence & Wulf, 1995; Brzoska, 1999a, 2007). Four dimensions correspond to the main economic inputs or commodities used mainly to provide the defence and security service: personnel (i.e. labour), equipment (i.e. capital), military bases (i.e. land and installations) and military expenditure (i.e. public funds allocated to the military sector). The remaining dimensions are related to the production of military goods and they are the military industry and military research and development.

The features of each military resource determine the duration and the feasibility of the conversion process. The conversion could be quick and feasible through market allocation when a resource has a potential dual use (i.e. military and civilian application) and high marketable features, e.g., a military engineer or military airfield (Sandler & Hartley, 1995). A direct sale or an immediate hire are possible for those resources without any transformation. In contrast, a longer conversion time and technical difficulties are expected when a military resource is highly specialized, e.g., paratroopers or submarine yards (Sandler & Hartley, 1995); then it would be necessary to undertake a military conversion programme in order to complete the transformation of those specialized resources. After transformation, it is possible to use those resources in civilian activities.

The hiring of ex-military members for public or private civilian jobs, i.e. reintegration or conversion, could be a long and difficult process. The military personnel[44] have diverse profiles and skills, but not all military aptitudes are dual in nature. The transference of most of the former military personnel to civilian jobs is not automatic; retraining and educational programmes (e.g., demobilization, disarmament and reintegration, otherwise known as DDR initiatives) are necessary in order to guarantee the learning process of new skills by this workforce, so they could apply for civilian jobs. The duration and the focus of the retraining and educational programmes depend on the discharged or veteran military personnel's educational background and the conditions of the labour market. In the case of a high demand by the labour market for low skilled manpower, the reintegration process could be accelerated. In contrast, the group of technical and highly educated former military personnel (e.g., aircraft pilots, medical doctors, engineers, etc.) may have a greater likelihood of getting civilian jobs without a proper reintegration programme, due to their high degree of qualification and experience.

The military equipment[45] has technical and economic constraints that reduce the possibilities of finding a civilian use for this type of resource. The transformation of a weapon could be expensive and not technically feasible due to its unique specifications. In the case of a surplus of military equipment, the government and its military forces prefer to store the weapons, to allocate them to a new use, to export the obsolete material or to keep the equipment as idle assets. The conversion possibilities are limited, as there are only a few cases of dual military equipment, e.g., helicopters, trucks (transportation equipment) or

[44] The military personnel could be classified in three main categories: commissioned officers, non-commissioned officers and soldiers.

[45] The two main standard categories of military equipment are the mass destruction weapons and the conventional weapons. The former are nuclear and chemical weapons and the latter category includes heavy equipment (e.g., armoured vehicles, artillery, aircraft, warships, etc.) and light weapons (e.g., small arms, landmines, etc.).

satellites and radars (communications equipment). Furthermore, the weapons destruction or disabling could only become an option of conversion when the storage and other associated costs are higher than the disposal cost.

The former military bases and installations[46] could have multiple new civilian uses. The main input of the closed military facilities is the land. The land is dual, marketable and does not depreciate as it is considered to have an infinite useful life. The possibilities of conversion of a military base are numerous; however, the high costs of dismantlement and adequacy,[47] military strategic considerations and the local negative economic impact (i.e. low local average income and high unemployment in the location of the military facility), may reverse the conversion decision for this type of resource. The potential dual use or the privileged location of a military complex could generate revenues that compensate the costs of its transformation. In contrast, the highly-specialized military facilities located in isolated areas could present more difficulties for conversion than those located in urban developed areas, because the base closure could affect the economic conditions of the people who live near to the military installation. The government could then be faced with opposition to any conversion decision.

The conversion of the military expenditure is the transference of funds allocated to military forces to fund other public civilian activities. The government chooses to make this type of transference in order to obtain non-military goals through the activities of other public civilian sectors. The public funds can be used immediately without any transformation; conversion

[46] A simple classification of military bases includes military buildings, fixed installations, military housing and land used for military activities. Moreover, there could be many different types of military base according to which military branch owns it and its main operational mission. A formal and general definition of a military base is difficult to find (Laurence & Wulf, 1995).

[47] The main costs come from the activities of dismantlement of the military installation (e.g., management of dumped munitions, removal of special waste, etc.) and the adequacy of the land (e.g., cleaning up any contamination of soil and water, soil excavation, etc.).

could be quick. However, in some cases the government could be tempted to use the free public resource in order to pay for old expenses, such as external debt or internal deficit (Brzoska, 2007). This would not be a proper conversion process, because the public funds are not invested in new civilian activities and old expenses could correspond to previous military purchases. An additional constraint to this type of conversion is the military budget inflexibility. The maintenance of the stock of military assets and the payment of long-term benefits, e.g., military pensions, explains that rigidness.

The transformation of the military industry to civilian production is a complex process.[48] The exceptional case is that a military production facility could be used immediately in the production of civilian goods, e.g., an avionics factory. In most of the cases, the conversion of a military factory could require several simultaneous types of transformation. The main transformation could be the re-equipment and retraining of the productive inputs, the design and the implementation of a new production process, the adaptation of former military research and development inputs and facilities to the new production process and the production of civilian goods. High investment and high costs emerge from these transferences. The company challenge is to sell the new civilian goods in a competitive market. A successful conversion process is completed when the former military company generates profits. The military companies have preferred the diversification of their production (i.e. to produce both military and civilian goods) and the generation of spin-off (to sell military goods adapted to civilian uses), due to the difficulty in obtaining profits in the short term.

[48] The bulk of literature about military conversion analysis relates to the conversion of military production plants. Moreover, the initial military conversion concept only includes the transformation of military production plants to civilian companies.

4.4 The Budgetary Decision-Making Process and the Bureaucratic Theory

A rent-seeking problem emerges from the public budget allocation. Each public bureau is motivated to keep information relating to its private operation in order to maximize its budget. The state, through different policy-making groups, tries to minimize the rent-seeking behaviour using different approaches to obtain the information about the functioning and the changing of each public bureau. The allocation of the public funds will partly depend on how the policy-making groups can determine the accurate need for resources of each public bureau.

The national government decides on the allocation of public funds to the military and the use of military resources each year. Within the government, different policy-making groups participate in the budgetary decision-making process. Some groups formulate the demand for military resources (i.e. military branches and the ministry of defence) in accordance with national security needs; meanwhile the other groups impose economic and institutional constraints (i.e. the presidency and the congress). The involved groups could also bring to the table their own institutional and bureaucratic interests.

The budgetary decision-making process combines the preferences, the constraints and the goals of the different policy-making groups in a representative government. In this paper, the budgetary decision-making process is an extension of the model proposed by Majeski (1983). The model mirrors the Colombian institutional organization. The extension corresponds to the inclusion of the bureaucratic interests of policy-making groups in the analysis (Niskanen, 1971; Dunne, Pashardes & Smith, 1984).

The budgetary model includes six policy-making groups. The six groups are each of the military branches (i.e. army, navy and air force), the presidency, the congress and the ministry of defence. Each group participates in different stages of the budget cycle. The decisions of each group could either affect or be affected by the decision of the other policy-making groups.

The budget cycle starts when each military branch defines their budget request using two criteria: the expected threats to internal and external security and its own bureaucratic interests. The military branches provide the defence and security services using the available military resources that either deter or diminish the defence and security threats. The presence and expectation of threats will determine the initial requirement of military budget. Following this idea, the absence of external and internal threats could mean that the government could reduce the military expenditure, and vice-versa.

Other determinants influence the decision process on military expenditure. For example, Grindle (1987) points out that the military forces are an important actor in Latin-American domestic politics. The military become politically active through the civilian support. Mainly, the military are important to the establishment because they provide the public good known as defence and security. This responsibility gives them bargaining power.

Military could interact with the policymakers putting pressure into them to guarantee additional public budget. It is also difficult to address if a type of government or political party have assigned certain military budget or if the current budget is a result of the negotiation between the current government and the treasury authority.

The political cycle could affect the military spending. In times of elections social programs, as education and health, are more sensitive to the voters in comparison to military expenditures programs. Tufte (1978) points out that the economic benefits to the electorate are tuned to correspond into the electoral cycle, this also applies for the defence spending (Bove, et. al., 2017 and Mintz, 1988). Bove, et. al. (2017) study the trade-off between military and social spending at election times. The main findings are: (i) this trade-off is larger when nations without conflict are studied. (ii) The national security is important for voter choices and (iii) the military expenditure could be higher during right administrations.

Mintz (1988) also analyses how the defence spending is related to the political cycle. For that, Israel case shows how the military spending could be affected through the political cycle. This country is an atypical case because is going through an apparently unsolvable conflict. There are political benefits of allocating public funds to military spending, given that the defence and security represents political leadership.

Bove and Nisticó (2014) study a panel data of military spending finding that democratic governments spend more than parliament ones. One possible explanation is that military spending is a used as private good by the incumbent president and it could be used for re-election purposes. Other identified factors that influence the military spending are the occurrence and severity of the conflicts, as I test in the second chapter.

The model makes two additional assumptions. The first assumption is that each military branch competes against the other services to obtain more public funds. The second assumption is that each military branch will try to obtain at least the same level of military budget as the previous year.

The bureaucrat's interests complement the military branches budget requirements. Each military branch seeks pecuniary and nonpecuniary goals in terms of management. The goals are the ease of making changes and the ease of managing the bureau (Mueller, 2003). By reaching these goals, the members of the bureau could obtain perquisites of the office, public reputation, patronage, the possibility of increasing salaries or the ability to hire more military personnel, etc. The assumption is that each military branch seeks to maximize the size of the allocated budget to guarantee access to privileges for bureau members. Accordingly, each military branch expands the budget request beyond the point that allows them to counter the defence and security threats (Niskanen, 1971).

The lack of complete information prompts a rent-seeking problem. Not all policy-making groups have the same access to information. The knowledge of military operations and security threats provides a full information set to the military forces that is not completely known to the other policy-making groups. For instance, only military branches have full information about the cost function of the defence and security service, and other policy-making groups have difficulties in measuring the output produced in the military activities. The other groups also cannot fully supervise the amount and for how long the public funds are needed. The information advantage of the military branches allows them to try to maximize their budget (Mueller, 2003), not only to combat defence and security threats but also to pursue their own public bureau objectives.

The budget request has a limit. The economic authorities of the government set budget ceilings for the military branches before the onset of the budget cycle (Majeski, 1983). The ministry of defence defines the official military sector budget request in compliance with budget ceilings and the coherence between the demand for military resources of each military branch and the expected security threats. The former constraint is totally known, but

the latter could not be completely identified because of the rent-seeking problem. The ministry of defence faces the rent-seeking problem through an incrementalism strategy (Lindblom, 1959). Thus, the official budget request will correspond to the military branches request with some marginal changes with respect to the previous approved yearly budget.

The incrementalism strategy allows the ministry of defence to fulfil its duty of issuing the official budget request by balancing financial and technical constraints. Likewise, the ministry of defence can use the incrementalism criteria, e.g., marginal changes based on historical appropriations, to solve budget disputes between the military branches.

The presidency participates in the following stage of the budget cycle. Its role is to revise and adjust the official military sector budget request in order to present an adjusted request to the congress. In most of the cases, the presidency delegates this task to the ministry of finance and other governmental entities.[49] The presidency considers the official budget request and the expected fiscal deficit to determine the adjusted budget figure.

The rent-seeking problem also appears in this stage of the process. The presidency will assume that military branches have overestimated their request due to their bureaucratic interests, but it is not possible to distinguish exactly how much corresponds to the bureau's desired privileges due to the rent-seeking problem. Simultaneously, the military sector competes against other public bureaus for budget. The presidency could prioritize the allocation of public funds among the public bureaus according to the needs in each area,

[49] In Colombia, the National Planning Department (*Departamento Nacional de Planeación*) checks and approves the investment section of the military forces budget request. This section corresponds to the funds for new procurements, constructions and major equipment maintenance.

the relative costs of each public programme, the budgetary inertia originated by previous commitments and the resources availability (Dunne, Pashardes & Smith, 1984).

In the case of the military sector, the presidency assumes that the need for resources in that area is included in the military branches budget request, but cannot identify the defence and security costs function. The identification of the budgetary inertia (e.g., salaries, pension and health care payments, housing subsidies, maintenance of recreational facilities, etc.) becomes one alternative for identifying a portion of the military branches budget request that corresponds to their bureaucratic interests. This portion will be allocated to previous commitments that must be fulfilled, but not all the new bureaucratic interests can be identified.

The remaining criterion for adjusting the budget request of military branches is the availability of public funds. This criterion corresponds to a presidency's incrementalism strategy to control the rent-seeking problem that comes from the previous stage of the budgetary decision-making process. The fiscal deficit measures the availability of public funds. The presidency must balance the budget request of the public bureaus, the future expenditures, with the future national revenues (Majeski, 1983). The possibility of allocating more public funds to the bureaus depends on the feasibility of either increasing or maintaining the fiscal deficit.

Here, I assume that the presidency seeks to maximize economic growth to improve the re-election chances of the incumbent politicians and their party (i.e. political business cycle). A high rate of economic growth allows higher public expenditure, then the electorate will receive a better provision of public goods and the presidency will set a fiscal deficit goal in accordance with the aim of winning the next election depending the stage of the political

cycle. In case of low growth rate, the presidency may feel compelled to reduce the fiscal deficit by generating cuts in the bureaus' budget. An exemption appears when the presidency determines a public sector as a priority, e.g., the defence and security sector; then the cuts to this sector could be less than to the others. Thus, the expected fiscal deficit will determine the adjusted military branches budget request.

The congress receives the adjusted military sector budget request in the following stage of the budgetary cycle. The interaction between the presidency and the congress is relevant due to the congress being dependent on the information regarding the military branches, as the initial rent-seeking problem remains, and the presidency will pursue approbation of the adjusted budget request without any change.[50] The adjusted budget is the primary reference for discussing and deciding the appropriation of public funds to the military forces.

The evaluation of the fiscal impact of the adjusted budget request can also affect the decision on appropriation. The congress seeks to maximize the re-election chances of its members, and so therefore the congressmen try to allocate budget to the public sectors that can benefit them electorally. The revision of the fiscal impact helps them to understand the economic and social impacts of the future budget execution. The incrementalism approach attempts to solve the constrained information problem that the congress faces during the adoption of the budget. In the military sector case, any major investment in military resources that affect the electors' interests could generate an additional criterion for evaluating the final allocation of public funds. The end of this stage is when the congress issues a law with the official appropriation of the public funds allocated to military forces.

[50] The congress could be less information dependent when there are military specialist groups as regular congressional staff.

The ministry of defence seeks to maximize the budget execution in the final stage of the budget cycle. The distribution of the budget among the military branches and the execution supervision are the main tasks of the ministry of defence. The maximization of the budget execution will allow the military branches to justify higher future requested appropriations, because the military sector will demonstrate its capability to use public funds for providing public services and to avoid the presence of idle public funds.

The appropriation approved by the congress is the limit of public resources that the ministry of defence and military branches can spend. The congress could punish the ministry of defence and military branches in future budget appropriations if the spending exceeds the authorized appropriation. However, the spending limit can change during the fiscal year due to unexpected fiscal policy changes. The budget cycle ends when the fiscal year finishes. The execution of budget and the operational fiscal year results could be complementary information used for the policy-making groups in the next budget cycle.

The military branches and the ministry of defence are the key stakeholders in the military budget decision-making process. The knowledge and forecast of defence and security threats and the issue of the official military sector budget request influences all other policy-making groups' decisions. The rent-seeking problem gives the opportunity to the military branches of maximizing the military budget to satisfy their bureaucratic interests. The maximization of budget execution could give more influence on the allocation of any surplus of public funds during each fiscal year to military defence than the other ministries.

The presidency and the congress use the incrementalism strategy to compensate the potential rent-seeking attitude of the military branches. The interests of these stakeholders determine the incrementalism criteria which define the approved military budget. The

economic growth and the revision of the fiscal impact of the budget allocation define the marginal changes applied to the official military sector budget request. The presidency and the congress will have less influence on the determination of the military budget if they do not incorporate technical groups that analyse military topics, as a strategy for controlling the rent-seeking problem.

In this paper, I analyse the case of an expected reduction of the military budget due to a change in the defence and security threats and consider if this change in the resource allocation could generate a military conversion process in Colombia. This case starts when all policy-making groups within the budgetary process know there is a change in the set of threats, i.e. that the FARC guerrilla group will disappear as a non-state armed group, but the policy-makers are not able to determine all the consequences of the change. All policy-making groups face the uncertainty of how to counter the set of defence and security threats during the post-conflict period. The bureaucratic decision-model outlined above provides a framework to identify the position of various stakeholders in Colombia in the debate on military conversion.

Some policy-making groups can anticipate the effect of change on the determinants of the allocation of public funds and will try to protect their interests. To be specific, the military branches are expected to keep their military resources and public funds to avoid the loss of operational capabilities and the bureaucratic benefits of their members. The main concern of the military branches is to define new military uses for their allocated resources, in order to be able to combat new and remaining threats, and to keep their current military capabilities to reduce the conflict recurrence risk.

The other policy-making groups (i.e. the ministry of defence, the presidency and the congress) will also seek to avoid the conflict recurrence risk and to guarantee the improvement of internal security conditions, during the post-conflict period. The ministry of defence will support the military branches budget request, arguing the need for military resources to deter any type of threat. Likewise, the ministry of defence will consider the competition among the public bureaus for public funds in order to maximize the military budget request.

The stability of internal security is one of the main goals of the presidency and the congress. The expectation of military budget cutting will be low in the short term, because the presidency and the congress will not try to make any considerable changes to the military budget request that could affect security stability. A turning point emerges in the medium term when a continuous period of security stability could lead to proposals of change in the allocation of public funds for military forces. The other public bureaus representing the electorate's interests, through the presidency, and the congress, will present alternatives for transferring public funds from the military sector to other public sectors.

The presidency and the congress are expected to consider either transferring some public funds and military resources to the national police or allocating them to other civilian uses, i.e., a military conversion process. The former choice would solve the need for more resources in citizen security tasks, while the latter choice would generate new public funds for the other public sectors. These types of transferences are only feasible under a stable security scenario and if the presidency and the congress have enough information about the functioning and the military sector function cost, i.e., an effective control of the rent-seeking problem that comes from the private information of the military sector. A possible outcome is that the military branches and the ministry of defence will only support the transference of

military resources to other civilian sectors if the military sector receives compensation, e.g., new resources for modernization programmes, and the bureaucratic interests are protected.

4.5 Expectation of Military Conversion in Colombia - Interviews with Experts

4.5.1 Research Design

In my research I rely on qualitative information from interviews with Colombian security and defence experts, i.e. military personnel, civilians and academic researchers, who either work for government security entities involved in the military and police budgetary decision-making process or undertake research on security topics. The aim of the exercise was to obtain and analyse the expectations, the possibilities and the limitations of establishing a military conversion process during the post-conflict period in Colombia. Also, the analysis of the key stakeholder's positions enables me to identify the preferences and the incentives involved in the military resources allocation in countries with a similar military sector structure.

I have designed a questionnaire of 24 questions as my interview instrument. It is based on the public documents of the transformation process of Colombian armed forces and related academic articles.

The questionnaire has three sections in accordance with the main time periods of the application of the transformation process. The structure of the questionnaire's sections allows a comparison of the military conversion expectations, ranging from a short-term to a long-term scenario. The questionnaire was my guide to conduct a semi-structured interview. I use the technique of inverted funnel it is I start the three scenarios with the closed questions and end with the open-ended ones (Harrell, et. al., 2009), the idea was to make the

respondents more comfortable with the questions before asking for broader topics. I also use the tunnel method since I have limited time and I want to have comparable answers across the three scenarios. I include some questions in the form of subjective probabilities to avoid the bias that the wording of the Likert scale could provide (Delavande et. al. 2011).

The first section ("Perspective of future military force planning - Plan Fuerzas 2030") covers the description, the expectation of the military resources and the impact over the first years of the transformation process (2016-2020). This section helps to identify the influence of two main determinants of the military and police budget decision-making process on the chances of military conversion in the short term: the expected defence and security threats and the economic growth. Likewise, the section includes questions about the level of the interviewees' knowledge about the armed forces' reform initiatives, the possibility of conflict recurrence if the military resources are reduced and the current and new military uses of the existing military resources.

The second section ("Expectation of military conversion during the post-conflict stage 2020-2030") establishes a post-conflict scenario for the medium term. The scenario has two assumptions related to the determinants of the budget decision process: less security threats, i.e., demobilization of all guerrilla groups and elimination of the presence of drug criminal gangs in isolated areas of the country, and a stable economic growth rate. The scenario's assumptions seek to explore how the military conversion expectations are affected by better internal security conditions and stable economic growth. Moreover, the section includes questions about the possibilities of the use of military resources in civilian activities and the likelihood of a change in the system of military service. As a result, the information obtained by this section of the questionnaire contributes to understanding how

a more stable post-conflict situation could lead to the reduction of military resources and the possibilities of military conversion.

The final section ("Expectation of military conversion after 2030") corresponds to the long-term expectations. The post-conflict scenario is more optimistic, and anticipates the following criteria: "demobilization of all guerrilla groups, drug criminal gangs have been reduced, the transnational criminal activities and border control seem the most demanding roles in terms of military resources; and there has been a stable level of economic growth". The definition of that scenario aims to consider whether more years of peace and stability could influence the expectations of the reduction of the use of military resources and the substitution of conscription with a volunteer military force.

4.5.2 Description of Fieldwork

The interviews were conducted in Bogotá (Colombia) between July and August 2016.[51] The location corresponds with the central office of the Ministry of Defence, the headquarters of military forces and the main offices of other governmental entities. I use two sampling criteria. Initially, I use judgment sampling, I contact previous policymakers and actors that are recognized as expert in the defence and security sector. After they accept to make the interview, I apply the snowball sampling technique to increase the number of participants. Participants were recruited through email, phone and Skype calls, or personal contact. In total, I held 20 interviews with experts who had at least four years' experience in security and defence topics.

[51] The last interview was held in the first week of August, before the definitive cease-fire between the FARC and Colombian government (on the 29th August 2016) and the plebiscite for ratifying the peace agreement (on the 2nd October 2016).

Either working or researching experience was the main selection criteria for choosing interviewees. Most of the interviewees currently work within a government entity that participates in the military and police budget decision-making process and in the transformation process (note that there is at least one interviewee for each military branch). Likewise, the interviewed academic researchers have a long-held research agenda in Colombian civil conflict and military forces.

The selected type of interview was a semi-structured interview, which is often used in policy research (Harrell et. al., 2009). The semi-structured interview engages interviewer and respondents in a formal face to face interview, the questionnaire serves as a guide of the topic and the list of questions that must be covered, but the interviewer could follow a different topic trajectory if he feels appropriate (Bernard, 1988). The semi-structured interview is the best type of interview if there is only one chance to meet the respondent, like in my case, but also if different interviewers will be send out into the field.

The semi-structured interviews differ from a survey since they could combine open-ended questions together with quantitative questions. Usually open-ended questions allow understanding more about the process or scenario asked while frequencies allow to have better data to present (Robert wood Johnson foundation, 2017; Opdenakker, 2006).

Face to face interview also have the advantages of social cues it is to capture not only the answers of the respondents but also his body language, this is of importance when the respondent is seen as an irreplaceable person (Opdenakker, 2006). This was my case since every one of the 20 respondents will have a different perspective. However, the semi-structured faced to faced interviews could lead to a bias because of the visibility between respondent and interviewer. The bias consists that the interviewer could cause a disturbing

effect in which he guides the interviewee into a special direction. I took special care in being aware of this effect and tried to avoid any body language sign of acceptance or reprobation of an answer (Opdenakker, 2006).

The interview protocol was the following: I arrived at the agreed location, I introduced myself as a PhD student of the department of Government of the University of Essex, I presented a summary of the three chapters of my thesis, I explained that the main goal was to obtain the respondent perspective as an expert on security and defence sectors. After that, I asked them to sign the interview consent in which they declare which degree of anonymity they will like to have: full anonymity, medium then I could refer to them by their job position/title and the institution for which they work, no anonymity, I could use their full names during the article and if they authorized me to make the interview.

Each interview provides unique details about the transformation process due to the open questions included and the interviewee's perception, as related to his/her current job position. Nevertheless, most of the questions related to the expectations regarding the use of military resources and military conversion, and in this case the responses could be compared because those questions were closed. Finally, the average duration of each interview was one and a half hour and it was only possible to record those interviews outside of military units due to security protocols.

After I organized the interviews material in an excel file, I did the descriptive statistics of the closed questions. I classify the answers derived from the open-ended questions according to the topic and type of answer (e.g. what are the main technological changes that Military Forces Should consider during the transformation process). Then I linked the answers obtained with my chosen theoretical framework and contrast the respondents' perception

with secondary data, mainly the official documents about the transformation of the military forces and the reports made by the think thanks.

4.6 Results

The aim of this section is to identify the determinants of military conversion and the allocation possibilities of military resources in Colombia, during the expected post-conflict scenario, using the Colombian security and defence experts' perceptions. I present the information obtained from the interviews through frequency tables and graphs. I complement the information analysis with quotes from interviewees. The analysis focuses on the comparison between the perceptions of two groups: the military sector experts group, i.e. ten interviewees who work (or have worked) at any military branch or the ministry of defence; and the civilian experts group, i.e. ten current (or former) officials from government agencies involved in the military budget decision-making process together with academic researchers. The composition of the groups is an attempt to mirror the main policy-making groups that participate in the military budget decision-making process.[52]

4.6.1 Perspective of Future Military Force Planning

The change in the defence and security threats determines the allocation of public funds to the military sector and the further possibilities of military conversion. All the stakeholders recognize a new security setting after the disappearance of the FARC guerrilla group as a non-state armed group. The interviewees identified the remaining defence and security threats in the post-conflict period, as shown in Table 4.1 and Table 4.2.

[52] The academics are included in this group because the congressmen who were contacted did not accept the invitation to be interviewed.

The stakeholders agree that Colombia will continue to face internal and external security threats also during post-conflict. The uncertainty comes from how the remaining threats will transform and how the military forces could counteract them. A former member of a Colombian defence and security agency summarizes the certainty about the remaining security threats and the complexity about their evolution: “threats are clear and will persist many years, in fact they will persist until 2030 and beyond, the difficulty is to determine which ones will be more intense than the others at each period”.[53]Both interviewee groups identify five main internal security threats that relate to the long internal armed conflict, as outlined in Table 4.1. The main remaining threats are illegal economic activities (drug trafficking and illegal mining[54]) and non-state armed groups (FARC dissidents, the drug trafficking organized armed groups and ELN).

Table 4.1: Internal security threats in Colombia - Expected post-conflict stage[55]

Internal	Military sector experts		Civilian experts	
	Freq.	Percentage	Freq.	Percentage
Drug Trafficking	8	80	7	70
Illegal Mining	7	70	5	50
FARC Dissidents	8	80	3	30
Drug trafficking Organized Armed Groups	3	30	5	50
ELN	3	30	5	50
Urban Criminality	3	30	3	30
Criminality	2	20	3	30
Social Protests	2	20	1	10
Smuggling	2	20	1	10
Citizen Security Threats	3	30	0	0
Natural disasters	1	10	1	10
Cybercrime	2	20	0	0
Extortion	0	0	1	10
Climate Change	0	0	1	10

[53] Original quote in Spanish: “Las amenazas son claras y van a mantenerse por muchos años, incluso van persistir hasta 2030 o más allá, la dificultad es determinar que amenazas serán más intensas en cada período”.
[54] The interviewees also reported smuggling and extortion (with lower frequency than the other internal security threats) as other illegal economic activities that could affect the internal security.
[55] Information obtained from question number 3 of the questionnaire used in this research, see Appendix 4.1.

The dispute for the control of illegal economic activities could be the new source of conflict in Colombia. Many experts fear that the remaining non-state armed groups will seek to take control of FARC's illegal activities during the post-conflict era. Several experts pointed out that they expect disputes for illegal economic activities among the new and remaining non-state armed groups to lead to an increase in criminality within rural and urban areas (30 percent of the interviewees of both groups stress the relevance of criminality as an internal security threat, see Table 4.1).

According to the consulted experts, the Colombian state has two alternatives for neutralizing the remaining internal security threats: to use military operations in coordination with the national police against non-state armed groups and to develop interagency programmes for eliminating illegal economic activities and the associated criminality. The role of the military branches will be different for each alternative. The military branches will continue to lead the operations against the non-state armed groups that maintain military organization and capabilities. In contrast, the military forces will also participate in (i.e. providing transport services or security protection) the interagency programmes against illegal economic activities, which are led by other government entities, e.g., eradication of coca crops or the closure of illegal gold mines.

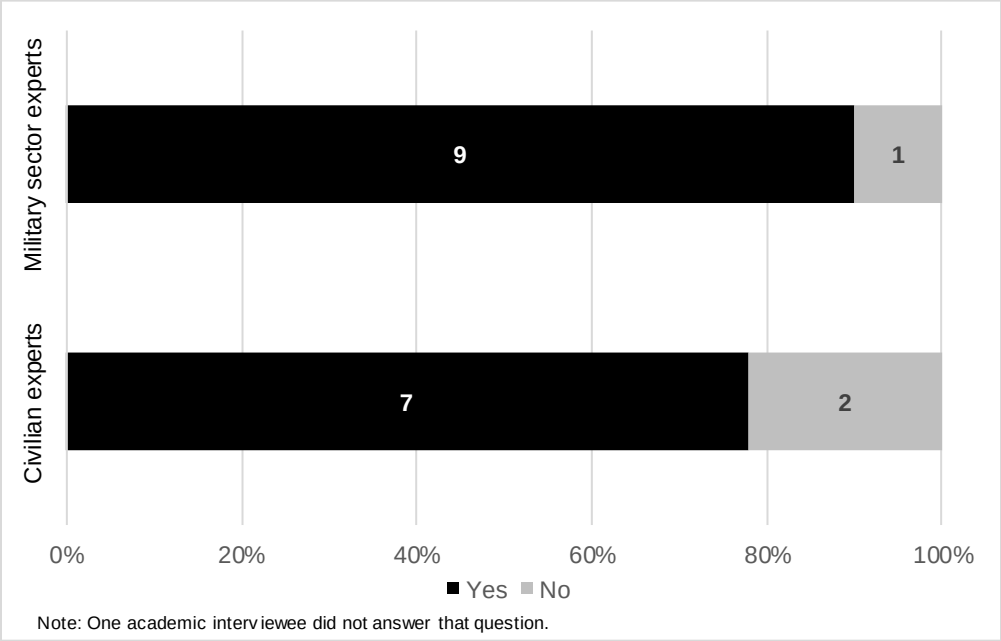
The fight against non-state armed groups will require the continuous use of military resources. An important finding is that the military sector group experts are more concerned about FARC dissidents[56] than the other non-state armed groups (80 percent of the military sector interviewees, see Table 4.1). The military sector interviewees worry about the transformation of the FARC dissidents into a criminal organization without a political

[56] The official estimation of the number of FARC dissidents amounts to 400 fighters, almost 6 percent of the FARC members registered in the DDR programme by May 2017 (El Tiempo, 2017a).

ideology, which seeks to control illegal economic activities in former FARC-controlled isolated areas. Likewise, the military sector experts point out that the growth of the number of FARC dissidents could increase the risk of conflict recurrence.

The interviewed military and civilians have comparable perception of the risk of conflict recurrence. 90 percent of the military sector interviewees and 78 percent of the other interviewees consider that the likelihood of conflict recurrence increases if the government reduces the military resources within five years following the onset of the post-conflict phase, as demonstrated in Figure 4.1. Military and civilian interviewees both mentioned that the FARC dissidents could reorganize as a guerrilla group again if the military forces do not have the suitable capabilities and resources for combating them. In that scenario, the FARC dissidents could use funds from drug trafficking and illegal mining either to recruit or to assassinate demobilized FARC members, which means the failure of both the DDR process and the implementation of the peace agreement. An academic researcher and a member of a Colombian defence and security agency were alert to the possibility of an alliance between FARC dissidents and ELN that could renew the internal conflict, if the military forces do not have a deterrence capability against rebel groups. In contrast, two civilian interviewees, who do not consider a risk of conflict recurrence, mentioned that the FARC could not come back to war because the peace agreement defines actions that hinders the reorganization of the armed structures.

Figure 4.1: Do you believe that an earlier reduction of military resources (five years or earlier from the onset of post-conflict) will increase the likelihood of conflict renewal?[57]



The interviewees in the civilian experts group believe that the organized armed groups involved in drug trafficking and the ELN could pose a greater risk than FARC dissidents during the post-conflict period (50 percent of the civilian experts, see Table 4.1). The drug trafficking organized armed groups[58] are criminal groups that have been integrated by former paramilitaries and that did not demobilize during the previous peace process between the Colombian state and paramilitary groups.[59] They control a portfolio of illegal activities (mainly drug trafficking) within some areas in Colombia. The main concern is the possibility of violent events led by drug trafficking organized armed groups against civilians, armed forces personnel and peace agreement implementation programmes established to keep control over illegal economic activities. The national police have had the responsibility to counter

[57] Information obtained from question number 12 of the questionnaire used in this research, see Appendix 4.1.
[58] The Colombian government has identified three main drug trafficking organized armed groups: "*Clan del Golfo*" also known as "*Autodefensas Gaitanistas de Colombia*", "*Los Pelusos*" and "*Los Puntilleros*". The Colombian government denominated these groups as criminal gangs ("Bandas criminales – Bacrim"). Since 2016, these groups are denominated as organized armed groups ("Grupos Armados Organizados – GAO"), according to the Colombian Ministry of Defence.
[59] The peace process between the Colombian government and illegal paramilitary groups ended in 2006.

these illegal armed groups; however, several civilian experts agree that the military forces must use air bombing attacks against the drug trafficking organized armed groups, due to these groups having military organization and capabilities. The Colombian ministry of defence authorized air bombing attacks against the drug trafficking organized armed groups in May 2016 (MDN, 2016), and since then there have been reports of some air bombing raids against those non-state armed groups (El Tiempo, 2017a).

The ELN is the remaining guerrilla group after the demobilization of the FARC. Attempts to take over the territorial control of former FARC-controlled areas will generate violent disputes between the ELN, the drug trafficking organized armed groups and military branches, according to most of the consulted experts. The ELN retain their political motivations, but this group also pursue control of illegal economic activities to fund their functioning as an illegal armed group. Although a peace negotiation process between the Colombian government and the ELN started in March 2017, the military branches have the presidential order to carry out military operations against the ELN because there has not been any bilateral ceasefire agreement during the negotiation. An observation by an academic interviewee provides a balanced perspective about how the military branches will counter the ELN: “the military forces are adapting their operations to neutralize the ELN’s violent actions, because the counterinsurgency operations were more concentrated against FARC in the last years.”[60]

Both groups of experts also identified a set of emergent internal security threats. The interviewees from the military sector group pointed out that citizen security threats, social

[60] Original quote in Spanish: “Las Fuerzas Militares están adaptando sus operaciones para neutralizar las acciones violentas del ELN, esto porque las operaciones contrainsurgencia estaban más concentradas contra las FARC in los últimos años”.

protests and cybercrime are other relevant security threats (at least 20 percent of military experts mentioned those threats, see Table 4.1). According to the experts, the citizen security threats (e.g., street crime, domestic violence, juvenile delinquency, etc.) are expected to increase during the post-conflict era due to the increase in urban criminality and the difficulties in the reintegration process of the ex-FARC members, while the social protests could become more frequent in former conflict areas. In contrast, the civilian experts group mentioned natural disasters and climate change as other internal security threats, as these natural events could affect more people, generating disputes for humanitarian help or basic resources during the coming years (10 percent of civilian experts gave that prediction, see Table 4.1).

The expected external security threats will remain in the long term. The most frequent expected external security threats, according to the experts, are the ones associated with maritime border disputes, i.e. with Nicaragua and Venezuela, and those associated with transnational crime (at least 40 percent of the interviewees of both groups reported those threats, see Table 4.2). Although, several interviewees mention that those threats will be invariant, the risk of war is low.

Colombia and Nicaragua have had a maritime boundary dispute in the Caribbean Sea since 1980. The International Court of Justice (ICJ) expanded disputed maritime limits in favour of Nicaragua in 2012 and determined that both countries should define a new boundary line through a bilateral treaty, according to the ICJ guidelines. Since then, Colombia and Nicaragua have not defined the new boundary line. Instead, there have been an increasing number of border incidents and the expectation is that each country will try to increase their navy presence to avoid the exploitation of natural resources on the disputed maritime line. Likewise, a member of a Colombian defence and security agency indicated that Nicaragua's

maritime claims could have motivated the revision of boundary lines on the Caribbean between various countries (e.g., Panama, Jamaica and others) and Colombia.

Colombia and Venezuela have also had several border issues. The maritime boundary dispute for the Gulf of Venezuela/Coquivacoa[61] between Colombia and Venezuela derives from after the independence of each country in 1830 (Vega, 2012). The lack of a definite maritime borderline has caused the different governments of each country to use the maritime claim for political rewards and sometimes threaten to use military force. According to some military sector interviewees, the incumbent Venezuelan government could try to escalate the military tension between the two countries to divert attention away from its current internal economic and political instability.[62] The instability of the Venezuelan government could also generate a humanitarian crisis that affects Colombian security at the border areas (30 percent of the civilian experts describe that possibility, see Table 4.2). Either the violent government repression or an unexpected coup d'état could generate a migration flow that could affect the security at Colombia's border areas. In that case, the military forces would control the security at border areas and distribute humanitarian aid to forced migrants. Another border issue is the trespassing of the terrestrial boundary by non-state armed groups which escape from the Colombian military forces' operations and take advantage of weak border control to participate in transnational crime activities. As a result, Colombia must maintain a preventive presence of its military forces alongside the maritime and terrestrial boundary.

[61] Each nation gives a different name to the disputed zone at the Caribbean Sea.
[62] For example, the Venezuelan government issued the Decree 1787 in May 2015 that defines unilaterally the maritime boundary borders with Colombia and indicates the presence of Venezuelan military forces in the disputed area. The decree does not have any international effect, but it does affect the diplomatic relations between Colombia and Venezuela.

Transnational crime is a growing external security threat (50 percent of military sector experts and civilian experts mentioned this threat, see Table 4.2). The Colombian non-state armed groups and criminal gangs use transnational crime activities for generating revenues (e.g., drug trafficking, illegal human trafficking, smuggling, etc.) and obtaining inputs for doing their illegal activities (e.g., illegal arms trafficking, smuggling of fuel and chemical inputs to produce illegal drugs, etc.). The geographical characteristics of Colombia's terrestrial boundaries hinder the security control by Colombian security forces. The experts also highlight illegal migration as a new external threat (30 percent of interviewees of each group, see Table 4.2). Some civilian experts asserted that most of the cases of illegal migration in Colombia are associated with transnational crime activities. The non-state armed groups and other criminal groups receive revenues[63] for participating in international smuggling of migrants' networks, thus Colombian territory is a transit point for illegal migrants travelling towards the US. Likewise, the civilian experts reported an emergent transnational activity, the transit of members of international terrorism groups via Colombian territory (30 percent of civilian experts, see Table 4.2). A civilian expert mentioned that there have been few detected cases of transit of international terrorists, but the concern remains because the international terrorist organizations could take advantage of the illegal migrant routes.

[63]The revenues could come from a direct payment by the illegal migrant or the use of the illegal migrant as a drug trafficking mule.

Table 4.2: External security threats in Colombia - Expected post-conflict stage[64]

External	Military sector experts		Civilian experts	
	Freq.	Percentage	Freq.	Percentage
Venezuela	6	60	4	40
Nicaragua	5	50	6	60
Transnational crime	5	50	5	50
Illegal migration	3	30	3	30
Ecuador	2	20	1	10
N.A	2	20	0	0
Venezuela (Humanitarian crisis)	1	10	3	30
Transit of members of international terrorism groups	1	10	3	30
Panama	1	10	0	0
Non-substantial	0	0	2	20

The expectation of multiple defence and security threats and the risk of conflict recurrence determine a lower chance of cutting the military budget at the early stage of post-conflict in Colombia. As a result, the military conversion process could also be discarded in the short term. The interviews reveal that both military and civilian stakeholders coincide in agreeing the main remaining defence and security threats. Most of the consulted experts agree there is a necessity to maintain military operations against the non-state armed groups, to guarantee the peace agreement implementation and to reduce the conflict recurrence risk.

Stakeholders are uncertain about how the state must regulate illegal economic activities to avoid the growth of criminal violence. Following the military budget decision-making process, a rent-seeking behaviour by military branches could appear if the policy-making groups are not able to identify how the use of military resources contributes in interagency programmes against illegal economic activities, such as drug trafficking and illegal mining. The private information problem could lead to only marginal changes in the military budget.

The other determinant of the allocation of public funds to military branches is the economic growth in accordance with the military budget decision-making process. The economic

[64] Information obtained from question number 3 of the questionnaire used in this research, see Appendix 4.1.

growth rate has fallen in Colombia, from 4.3 percent in 2014 to 1.9 percent in 2016 (Banco de la República, 2017). The main cause has been the fall of the oil price. All public bureaus have faced budget cuts due to the reduction in government revenues.

The experience of recent years has influenced the expectations of the interviewees. Most of the military sector interviewees (8 of 10) expect there will be a probability equal or greater than 50% of cutting military resources if there is a low or a negative economic growth rate, as shown in Figure 4.2. Several military sector experts said that the military budget cuts have affected the funds for new acquisitions and the operational and maintenance costs. The latter could reduce the use of military resources and generate the onset of a military conversion process.

The civilian experts (5 of 8) also consider a probability equal or greater than 50% of cutting military resources if there is a low or a negative economic growth rate (Figure 4.2). An anonymous civilian expert also pointed out the possibility of transference of military budget to the other public bureaus, because the investment section (i.e. the budget for procurement, construction and high-level maintenance) of the defence and security budget has been reduced in the last three years, while this type of budget has been increased for the education sector.

The moderate military conversion process has also been a result of the change in the Colombian government priorities for the period 2015-2018. The Colombian government announced that the investment section of the education budget ($4,299 million in 2014 constant dollars) will be higher than the same section of the military budget ($2,500 million in 2014 constant dollars) for the first time in recent decades, following the government plan for 2015-2018 (DNP, 2015). Likewise, the moderate case of military conversion could remain

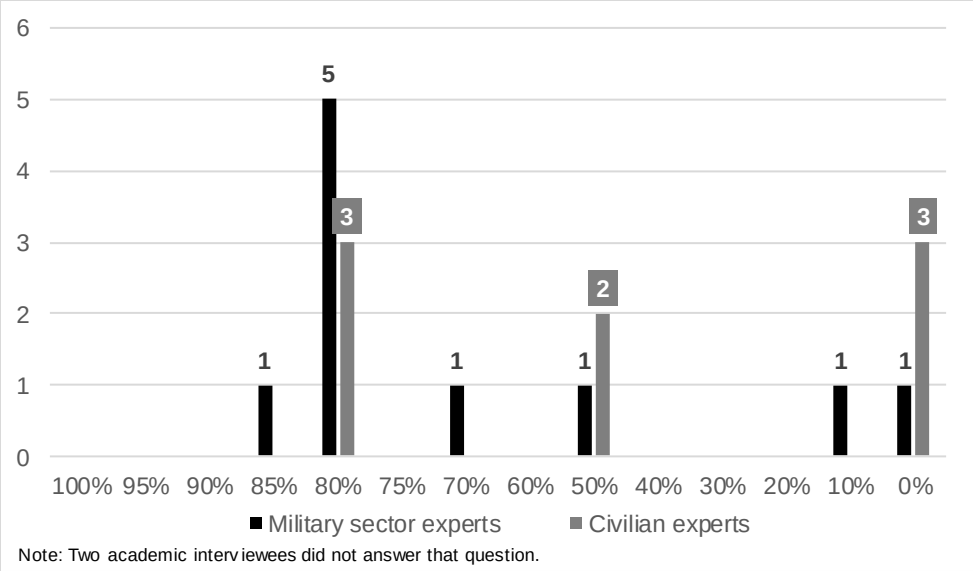
until 2019, because the projected investment section of the military budget for 2019 could grow less than the investment budget allocated to the education public sector (DNP, 2016).

The presidency has decided to transfer some public funds from the military sector to other public sectors because of the scarcity of public funds, due to the low economic growth and the priority need of other public sectors (Dunne, Pashardes & Smith, 1984). The finding contradicts the result of low expectations of military conversion obtained through the analysis of the expected defence and security threats during the post-conflict period. It is important to assert that the transferred funds come only from the budget for new acquisitions and constructions; the presidency could consider that military forces could operate effectively against the current defence and security threats using the current stock of military resources. Likewise, the presidency could know more about the impact of the reduction of military operations against FARC on the use of the existing military resources. The adverse economic scenario also provides the opportunity for identifying the defence and security cost function, obtaining more private information about the operation of military forces and reducing the rent-seeking behaviour in the military budget decision-making process.

The perception of the effect of a military budget cut on the transformation process of the Colombian armed forces is contradictory, when the views of the military sector experts and civilian experts are compared. For example, a civilian expert highlighted that the military branches and the ministry of defence must accelerate the transformation of military forces due to the need to efficiently use and reallocate resources to guarantee an effective operation. Instead, several military experts said that a low economic growth defers the evolution of the transformation process, because military forces could not develop the procedures and capabilities for complying with the new roles. Further, the current operation

and maintenance of military capabilities is affected and there could be unexpected security risks.

Figure 4.2: Probability of cutting military resources in case of low or negative economic growth rate[65]



The expected variations of the military resources allow me to determine other possibilities regarding the military conversion process in the short term. The expectations about military spending coincide with the expectations of both expert groups regarding the effect of a low or negative economic growth rate on the cutting of the military budget. The finding suggests that the expected economic growth will determine the change in the military spending in the short term. 80 percent of the military sector experts expect less military spending in the short term; while 56 percent of the civilian experts predict no change in the military spending (see Table 4.3).

[65] Information obtained from question number 14 of the questionnaire used in this research, see Appendix 4.1.

The expectations about military spending determine the majority of the expectations about the variation by type of military resource (i.e. personnel, equipment and military bases). Both groups of experts coincide in their view that military personnel will not increase in the short term (Table 4.3). The expectations on military equipment and military bases are different between military and civilian experts. Most of military sector experts expect a reduction in the military equipment, while the military bases will not change, as shown in Table 4.3. The absence of a special procurement plan, for the first time in thirteen years,[66] and the cut in the investment section of the defence and security budget could explain the expectations about military equipment and military bases.

Interestingly, the majority of civilian experts do not expect reduction in any type of military resource (Table 4.3). Compared with the military experts, more civilian experts believe that the Colombia military will be able to retain their budget at current levels or even to increase it (e.g., 44 percent of the civilian experts predict an increase of military equipment). Some civilian and military sector interviewees point out that the military budget is inflexible, i.e. it is not possible to reduce the budget in the short term because it should cover all previous commitments, like the wages and pensions of military and police personnel, and then any cutting will affect initially the incorporation of new armed forces personnel (no expert considers it possible to increase personnel) and the acquisition of new infrastructure and equipment.

The budget inflexibility imposes a limit for reducing the military spending. A member of a Colombian government agency said, “there is a limit for reducing military spending due to

[66] There were three special procurement plans funded with a special wealth tax (“Impuesto al patrimonio”) between 2002 and 2015.

its inflexibility and currently the limit is near to being reached".[67] As an anonymous civilian interviewee asserted, "the current downsizing of military spending is affecting the operational performance of military forces. Specially, the impact corresponds to the use and the maintenance of recent acquired equipment and their associated capabilities".[68]

The expected reduction of the military budget has evidenced that the military forces have decided to stop and store some types of equipment. Any military resource, in contrast to military spending, will not reduce in the short term. As a consequence, the military conversion process is discarded for the military personnel, military equipment and military bases, in accordance with the expectations of the military and civilian experts. The military branches prefer either to reduce the level of operations, keeping some resources idle, or to define new military uses for the military resources.

Table 4.3: Expectation of current military resource variation[69]

Group	Ranking	Spending		Personnel		Equipment		Bases	
		Freq.	Perc.	Freq.	Perc.	Freq.	Perc.	Freq.	Perc.
Military sector experts	No change	2	20	5	50	3	30	6	60
	Less	8	80	5	50	5	50	3	30
	More	0	0	0	0	2	20	1	10
Civilian experts	No change	5	56	6	67	5	56	5	56
	Less	3	33	3	33	0	0	2	22
	More	1	11	0	0	4	44	2	22

Note: One academic interview ee did not answ er that question.

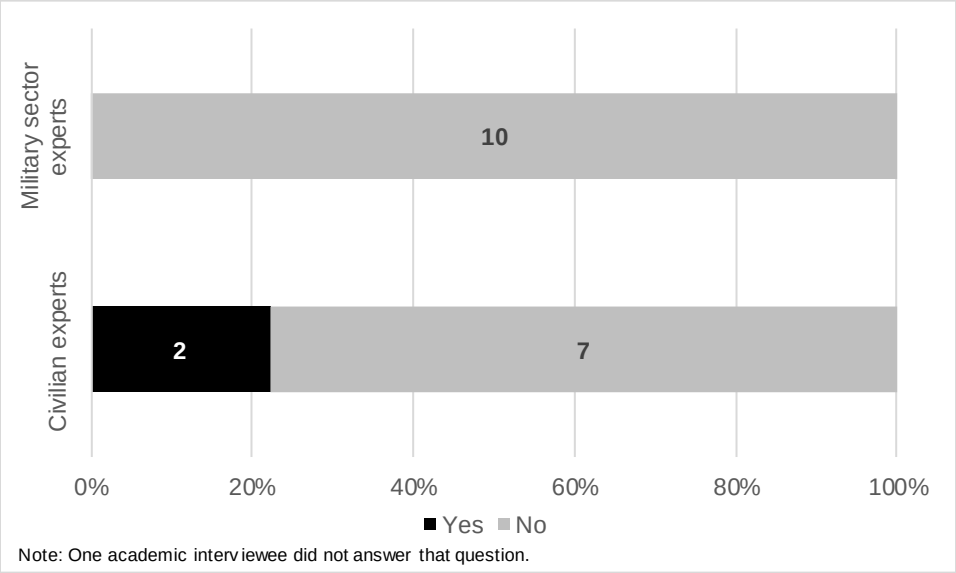
The reallocation of the existing military resources into new and remaining military tasks is one alternative for fulfilling the military forces' responsibilities, given the expectation that any type of military resource will not increase in the short term. Nevertheless, all military sector

[67] Original quote in Spanish: "Existe un límite para reducir el gasto en defensa debido a la inflexibilidad de dicho gasto y actualmente el límite está cerca de ser alcanzado".
[68] Original quote in Spanish: "La reducción actual del gasto en defensa está afectando el desempeño de operaciones militares. Especialmente, el impacto corresponde al uso y el mantenimiento del equipo (militar) recientemente adquirido y las capacidades asociadas a este".
[69] Information obtained from question number 6 of the questionnaire used in this research, see Appendix 4.1.

experts and most of the civilian experts agree that the reallocation of current military resources would be insufficient to fund the future activities of armed forces, as shown in Figure 4.3. Several military sector experts and civilian experts indicated that the military forces require new equipment and additional funds for operating and maintenance costs associated with fulfilling the new military roles and closing some technological gaps. The need for new military resources could change the reducing trend of the military budget. Military conversion processes are less likely if new acquisition plans start.

The transformation process of the Colombian armed forces has also promoted the reallocation of resources through the programmes of capabilities planning and sustainability and efficiency of expenditure (MDN, 2015a). As a result, both military and civilian experts recognize that the reallocation of military resources is a necessary process for improving the efficiency of military spending. For instance, a member of a Colombian defence and security agency pointed out that a technical exercise of military forces' capabilities planning has identified some possibilities of reallocating resources to the prioritized roles, but the reallocation has not been done. However, a civilian expert specified that the impact and the magnitude of the reallocation of military resources depend on the reorganization of military roles and the restructuring of military forces.

Figure 4.3: Is the reallocation of current military resources enough for funding the future activities of armed forces?[70]



The identification of the future military roles of the Colombian armed forces indicates the new military use of brand-new and existing military resources. The quest for new military uses for existing resources minimizes the possibility of the onset of a military conversion process in Colombia. The military sector experts and civilian experts identified a list of future roles for military forces, as shown in Table 4.4. The list of roles comprises more of the existing military roles than new ones. The actions that still need to be taken against the remaining defence and security threats explain why predominantly existing roles have been identified. Most of the military sector interviewees and civilian experts indicated military roles associated with the implementation of the peace agreement, because these roles will contribute to reducing the conflict recurrence risk and improving security in the post-conflict regions. Additionally, the experts also identified military roles that either require new technology (i.e. military equipment and skilled personnel) or generate training and additional funding requirements for the military forces.

[70] Information obtained from question number 7 of the questionnaire used in this research, see Appendix 4.1.

The humanitarian process of mine clearance is the role that needs more new resources, according to 90 percent of both military sector experts and civilian experts, as shown in Table 4.4. The role consists of identifying and destroying anti-personnel mines located in Colombian rural areas. FARC and ELN have installed anti-personnel mines to attack the military personnel since the mid-1970s and Colombia has become the second highest country, after Afghanistan, in terms of victims of anti-personnel mines (CNMH & Fundación Prolongar, 2017).[71] The Colombian military forces have undertaken humanitarian demining operations since 2004 in military bases and some municipalities, following the signing of the Ottawa Treaty by the Colombian government[72] (CNMH & Fundación Prolongar, 2017).

The peace agreement implementation will intensify the number of humanitarian demining operations, because the Colombian state and FARC determined the establishment of a humanitarian demining programme (República de Colombia & FARC-EP, 2016). The army[73] has established a brigade for humanitarian demining, which has been formed by transferring military personnel, up to 5,000 men in 2016 (CNMH & Fundación Prolongar, 2017), to perform humanitarian demining operations (i.e. a new military use of personnel).[74] The humanitarian demining programme will also require new equipment and it will be complemented by the participation of demobilized FARC members and civilians from international NGOs.

The presence of anti-personnel mines affects the development of the other peace-building programmes defined in the peace agreement. The civilian experts mentioned the issue of

[71] The number of civilian and military victims has risen to 11,440 people between 1990 and mid-2016.
[72] The destruction of the landmines installed for the protection of military bases ended in 2010.
[73] The navy has also established a battalion for humanitarian demining, for operating in the areas under the responsibility of the marine infantry. Transferred navy personnel will be included in the battalion.
[74] The number of transferred army personnel to humanitarian demining could be up to 10,000 men (El Tiempo, 2015).

land restitution (33 percent of civilian experts, see Table 4.4) as an interagency programme which must be supported by military forces. The land restitution is a government interagency initiative that seeks to guarantee the return of displaced people who were forced by conflict violence to leave their properties. The military forces must eliminate the anti-personnel mines located in the properties to guarantee the safe return of the conflict victims.

Both military and civilian experts concur about the need for additional military resources in the operations against drug trafficking and illegal mining (at least 50 percent of the consulted experts, see Table 4.4). The military forces will use existing and additional resources for intensifying the military operations[75] against the non-state armed groups (FARC dissidents, ELN, Drug trafficking Organized Armed Groups) and criminal gangs, which control these illegal economic activities. Likewise, military personnel participate in tasks of forced eradication of coca crops, which is an activity of the government interagency programme against the production of illegal drugs. The forced eradication task is a priority in the fight against cocaine production, according to a former member of a Colombian defence and security agency, because the coca crop hectares have increased continuously in recent years.[76]

The operations against illegal mining aim to stop the illegal exploitation of minerals. The national police lead the interagency effort against illegal mining. The military forces support the interagency operations for closing illegal mining sites, destroying and seizing mining machinery and capturing the people who control the illegal activity. Since 2015, the army has transferred military personnel to two brigades to work against illegal mining (EJC, 2015).

[75] The military operations against drug-trafficking include the destruction of cocaine laboratories, interdiction of illegal drug shipments, and the seizing of cocaine, among others.
[76] The coca crop hectares reached a historical maximum (188,000 hectares) in 2016, according to the US Office of National Drug Control Policy (ONDCP) (Insight Crime, 2017).

The brigades seek exclusively to contribute to the actions against illegal mining. The consensus among the experts is to increase the military effort against illegal mining, but the strategy, the type of equipment and the operations are under revision because of the low effectiveness of preventing the emergence of new sites of illegal exploitation of minerals (Rubiano, 2017). Additionally, some military experts indicated that environmental protection (20 percent of military sector experts, see Table 4.4) as a new military role could contribute to preventing new illegal mines emerging in protected natural areas (e.g., natural parks[77]).

The military sector experts pointed out the need for military resources in integral action activities (at least 20 percent of military sector experts mentioned those roles, see Table 4.4). The military forces have defined integral action activities such as the set of civil-military operations (e.g., public infrastructure constructions, free medical consultation, etc.) performed in conflict areas, following counterinsurgency doctrine, for supporting the local population where other government institutions have not had a continuous presence (Suarez, 2010). In accordance with the experts' opinion, in the short term the military forces could quickly support some peacebuilding initiatives using the construction capabilities of the army engineers[78] in post-conflict areas. Likewise, a military sector expert and an academic researcher highlighted that the army have started a series of workshops with local communities, academics and the United Nations Development Programme (UNDP) to define new military roles for supporting peacebuilding, local governance, and development tasks. The new military roles could lead to an increase in the involvement of the army in citizen and coexistence security duties.

[77] Some of the high mountain battalions of the Colombian army (activated for blocking certain FARC terrestrial routes) have started to do environmental protection roles, such as reforestation of native plants and tasks to prevent the disappearance of native crops in mountain areas, e.g., the environmental tasks in the Sumapaz natural park, which is Bogota's main water reserve.

[78] In the last ten years, the army engineers have built public infrastructure (e.g., municipality roads, bridges, parks, schools, coliseums) following government policy to develop isolated conflict areas in Colombia.

Some civilian experts also indicated the possibility of the involvement of the military forces in citizen security duties (22 percent of the civilian experts, see Table 4.4). Those civilian experts argue that the military forces could support the national police to prevent the growth of urban criminality during the post-conflict period. Nevertheless, the involvement of the military forces in citizen security duties will generate competition for public funds between the national police and military branches. A source of the rent-seeking behaviour comes from the distribution of future internal security roles between military forces and national police, because the military forces could seek new responsibilities to keep their budget and military resources; as an anonymous interviewee said, "the army is trying to participate in many new roles, it seems as a strategy for keeping its resources, but it might create distortions, like military personnel becoming involved in urban security tasks".[79]

Other civilian experts also mentioned the waterway security role as another internal security role which could need additional resources (Table 4.4). The marine infantry have been in charge of the waterway security role due to the fact that the non-state armed groups have had control over many rivers in isolated conflict areas. The future discussion needs to consider whether it is necessary to share the waterway security role and the resources between the national police and the marine infantry.

Military functions that require new technology will increase military spending and could reduce the possibilities of starting military conversion processes. The reallocation of existing military equipment is not feasible because the military branches have never had the

[79] Original quote in Spanish: "El Ejército está tratando de participar en muchos nuevos roles, esto parece una estrategia para conservar sus recursos, pero se surgir distorsiones, por ejemplo, el personal militar estaría encargado de tareas de seguridad ciudadana".

technology that is needed. Both military sector experts and civilian experts agree in pointing out the need for brand-new equipment and the recruitment of highly skilled personnel to external defence roles (cyber defence, border control and external defence, see Table 4.4). Cyber defence is a relatively new military role in Colombia. The second cyber defence and cyber security policy was issued in 2016.[80] One of the main aims of the policy is to improve the cyber defence capabilities for protecting critical infrastructure i.e. operations for countering and preventing cyber-attacks against power networks, defence systems, ocean ports, oil refineries, etc. (Mintic et al., 2016). Most of the military sector interviewees and civilian experts indicated that the implementation of the new cyber defence policy will need brand-new military resources (60 percent of both groups of experts, see Table 4.4).

The military forces could return to the classic defence roles during the post-conflict era. Some military sector experts and civilian experts indicated that the military branches could require new equipment for border control and external defence roles (at least 10 percent of the experts, see Table 4.4). The border control is an interagency role in which the military forces support intelligence, surveillance and reconnaissance operations across the boundary lines. The military forces have not achieved complete border control coverage[81] over all land and maritime boundaries, coastlines and air space.[82] According to some military sector experts, each military branch could acquire new multipurpose equipment (e.g., radars, sonars, communication and intelligence equipment, drones, etc.) to close the border control coverage gap. Likewise, the improvement in border control capability could counter the transnational activities and complement external defence capabilities.

[80] The Colombian cyber defence and cyber security system was established in 2011.
[81] Colombia has 6,672 km of land boundaries shared with five countries, 3,208 km of coastline (Caribbean Sea 1,760 km, North Pacific Ocean 1,448 km), 12 nautical miles of territorial sea, 200 nautical miles of exclusive economic zone and 200 miles of continental shelf (CIA, 2017).
[82] One case is the air space control dispute between Colombia and Panama. The latter country has controlled the air space over the Colombian maritime area at the Caribbean Sea and Pacific Ocean border since the 1950s (Ramirez, 2006).

The modernization of the external defence capabilities will require the replacement of some conventional arms systems. Some military sector experts and civilian experts coincided in the need for new equipment for the external defence role to maintain a minimum deterrence capacity (10 percent of the experts of both groups, see Table 4.4), due to the high degree of obsolescence of some arms systems. In Colombia, replacement of the conventional arms systems has been made when the equipment has become totally obsolete, i.e. it is no longer technically or economically feasible to do an overhaul of the equipment. As a member of a Colombian defence and security agency said, "no matter whether the transformation process continues or the new security setting, military forces must renew some conventional arms systems because otherwise it will be totally obsolete".[83] The renewal of some conventional arms systems will generate a certain increase in military spending in the medium to long term because of the acquisition of new systems and the disposal costs of the obsolete equipment. The additional effect will be the reduction of possibilities of conversion of military spending.

The peacekeeping operations are one of the military roles which will need new or existing military resources and could generate training and additional funds for the military forces, according to some experts (10 percent of military sector interviewees and civilian experts mentioned that role, Table 4.4). Some experts pointed out that the main motivations of the Colombian government for participating in peacekeeping operations are to find a new military use for military personnel, to obtain new financial funds to cover salaries and to gain access to interoperability training. Colombia and the United Nations signed a new agreement in 2015 that allows the participation of Colombian armed forces' personnel and

[83] Original quote in Spanish: "No importa si el proceso de transformación continua o el nuevo escenario de seguridad, las Fuerzas Militares deben renovar algunos de sus equipos estratégicos porque de otra forma se dispondrá de equipos totalmente obsoletos".

equipment in the UN Peacekeeping Capability Readiness System[84] (República de Colombia & UN, 2015). The transference of military personnel to a peacekeeping role is expected, because the Colombian government has committed to sending three battalions to peacekeeping missions, reaching 5,000 deployed troops by 2018 (Providing for peacekeeping, 2017). Additionally, the military forces will need financial funds for establishing their own training schools for the personnel who will be deployed in peacekeeping missions, according to one member of a Colombian defence and security agency.

Both military sector and civilian interviewees considered that the training of foreign military personnel will not require new military resources (Table 4.4), but the military personnel transferred to this military role will increase during the post-conflict phase. The training of foreign military personnel by Colombian armed forces has intensified in the last decade through cooperation between Colombia and the US (Tickner, 2014; Arriata, 2016). The US government has provided the funding for the military training courses led by Colombian armed forces personnel in counterinsurgency, anti-drug trafficking operations, anti-kidnapping groups and anti-organized crime (Lindsay-Poland & Tickner, 2016). Some of the experts interviewed mentioned that Colombia seeks to be considered the regional leader for military training and to strengthen diplomatic ties with Central America and the Caribbean; while the US wishes to develop a regional programme against drug trafficking and transnational crime. The continuity and expansion of training of foreign military personnel will depend on the cooperation funds given by the US in the short term. If the US cooperation

[84] Colombia has sent several military officers and police agents to some peacekeeping missions since 1990 (e.g., some police officers and agents are deployed in the MINUSTAH operation in Haiti), but there was not a formal agreement for sending military troops and military equipment. Likewise, Colombia has participated in the Multinational Force and Observers (MFO) campaign in the Sinai Peninsula (the border between Israel and Egypt) since 1982. This peacekeeping force is outside the framework of the United Nations.

ends, Colombia must increase its military spending if it wants to continue in its role of training foreign military personnel.

Table 4.4: Future military roles that need more new and existing military resources[85]

Task	Role	Military sector experts		Civilian experts	
		Freq.	Perc.	Freq.	Perc.
Post-conflict regions	Humanitarian demining	9	90	8	89
	Operations against illegal mining	6	60	6	67
	Operations against drug trafficking	5	50	6	67
	Environmental protection	2	20	1	11
	Response to disasters and climate change	2	20	1	11
	Rural security	1	10	1	11
	Development tasks	1	10	0	0
	Integral action	2	20	0	0
	Territorial Control	1	10	0	0
	Road construction	1	10	0	0
	Land restitution	0	0	3	33
	Operations against Drug trafficking OAG	0	0	1	11
	Protection for demobilized FARC guerrillas	0	0	1	11
	Operations against FARC Dissidents	0	0	1	11
	Urban Intelligence	0	0	1	11
	Citizen Security	0	0	2	22
	Waterway security	0	0	1	11
Strategic technology	Cyber defence	6	60	6	67
	External defence	1	10	1	11
Border control	Border control	2	20	1	11
International security cooperation	Peacekeeping operations	1	10	1	11
	Training foreign military personnel	0	0	0	0

Note: One academic interviewee did not answer that question. OAP is Organized Armed Groups.

The transference of resources and the change of roles from the military forces to the national police could generate quasi-military conversion cases (i.e. transferences of military resources to police activities, note that not all police activities are civilian-based) during the post-conflict period. Most of the interviewed experts mentioned multiple proposals for adjusting the allocation of resources and responsibilities. The diversity of proposals shows the rent-seeking behaviour of the military branches and the police for either keeping or increasing their budget and resources, and the uncertainty about how to coordinate military and police efforts for combating the remaining defence and security threats.

[85] Information obtained from questions number 8 and 9 of the questionnaire used in this research, see Appendix 4.1.

The military sector experts preferred a change of roles (80 percent of military sector experts, see Figure 4.4) rather than the reallocation of resources (50 percent of military sector experts) between military forces and the national police during the post-conflict phase. In contrast, the civilian experts' opinion about the need for reallocating both resources and roles is almost unanimous (90 percent of civilian experts, see Figure 4.4).

The reallocation of military budget and the transference of military personnel to the national police are the main possibilities for quasi-military conversion.[86] Both military sector experts and civilian experts are cautious about the magnitude of the potential transferred resources and the onset of the transference of resources in the short term, because of the risk of unexpected effects on internal security. The civilian experts mentioned that the need for more police personnel during the post-conflict period could motivate the reallocation of military budget and the transference of military personnel. The transference of army soldiers and the increase of police conscripts are some alternatives for increasing the police personnel, according to a civilian expert. Nevertheless, the transference of personnel will not be immediate. A member of a Colombian defence and security agency pointed out that the education requirements prevent the immediate transference of professional soldiers to the national police, i.e. most professional soldiers have not yet finished their upper secondary education, while all police agents must have completed at least the secondary education level. There will be a necessity for special educational and police formation training for transferring military personnel to the police.

The current Colombian government has not yet transferred any military personnel or any other military resource to the police. Some military experts indicated that the current

[86] Only one military sector expert mentioned a few possibilities of reallocating military equipment (e.g., intelligence equipment) and military bases to the police.

alternative for the government is to increase the police budget and police personnel, while the military resources do not decrease, under a stable fiscal situation. Additionally, a civilian expert and some of the other military sector experts (40 percent of those experts, Figure 4.4) declared that both the military and the police need more resources because of the remaining defence and security threats. The report of a special governmental commission about the future of the police confirms that perception, as there is a planned annual growth of police personnel to create 5,000 new police agents a year from 2017 to 2028 (to create a total of 50,000 new police agents), without any transference or reduction of military personnel (El Tiempo, 2017b). The possibilities of quasi-military conversion are low considering those guidelines.

The adjustment in the military and police roles could generate reallocation of both military and police resources. Almost all the interviewed experts agreed for the need to revise and reallocate some military and police roles during the post-conflict era to improve efficiency of the use of public funds and enhance effectiveness against internal security threats. The dilemma is whether to complete the demilitarization of the police and to exclude the military forces from police roles or to improve the current coordination between military forces and the police.

The revision of the rural security role is the top priority for both groups of experts. One main responsibility of the armed forces during the post-conflict period is to guarantee stable security conditions in the former FARC-controlled zones to eliminate any possibility of conflict recurrence and the spread of criminality. A civilian expert pointed out that one main concern is how the police must now patrol areas where the military forces used to patrol. The initial proposal from the government is to generate coordinated operations between military units and special rural police units (e.g., mounted police groups, known as

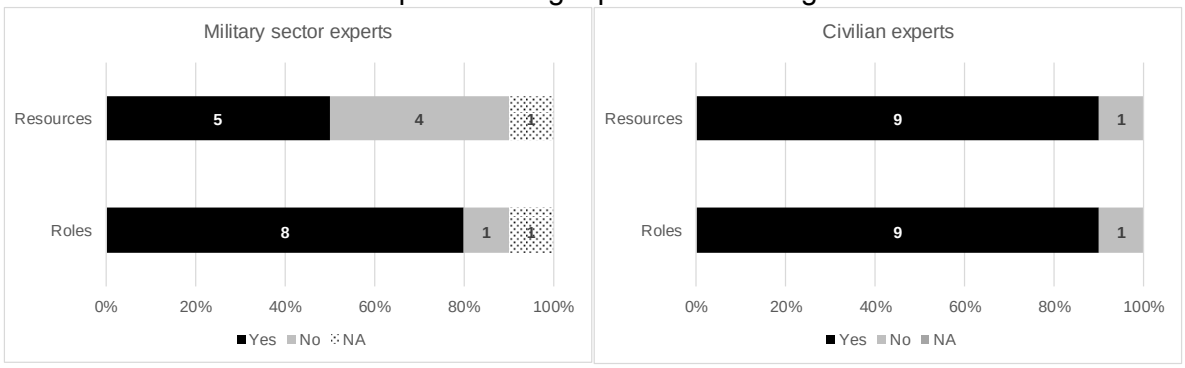
“Escuadrones de carabineros”) for the rural security role (El Tiempo, 2017c). As a result, it is not expected that the police will be exclusively in charge of the rural security role, and so therefore the transference of military personnel or other military resources to the police for performing the rural security is discarded in the short to medium term.

The military forces have had some police responsibilities in the last few decades. Some military sector experts mentioned three police roles that have been undertaken by military forces: waterway control, coast guard activities and citizen security. The navy provides the waterway control and guard the coast using the marine infantry and the coast guard units, respectively. The national police do not have the capabilities for doing these roles, therefore the possibility of any transference of military resources to the police for these roles is discarded. The citizen security role has been a police responsibility, but the army is considering participating in citizen security operations with some special army units that have been developed for urban missions (e.g., anti-kidnapping groups -Gaula-, Urban Counter-Terrorism Special Forces Group -AFEUR-, military police battalions, etc.), according to a member of a Colombian defence and security agency. The duplication of citizen security units between the army and the police could generate resources inefficiency and eliminate possibilities of quasi-military conversion.

The military sector experts asserted that other adjustments must be made in interagency roles (e.g., operations against drug-trafficking, operations against illegal mining, protection of strategic infrastructure, among others). The coordination between military forces and police in interagency operations has increased in the last decade. Some military sector experts also mentioned that the military forces involvement in interagency roles will increase after the demobilization of FARC; then it will be important to define which security branch leads each type of operation and the allocation of some resources. One example of a future

allocation decision is to define whether the police units with military capabilities (e.g., JUNGLA anti-drug trafficking units) remain within the police force or are allocated to the military branches. The expectation is that military branches will use more military resources in interagency roles.

Figure 4.4: Do you agree with the reallocation of roles and resources from military forces to the police during a post-conflict stage?[87]



The expectation about the onset of military conversion is sensitive to the set of defence and security threats in the medium term. Most of the civilian experts (7 of 10) and half of the military sector experts considered a probability higher than 50 percent of the onset of military conversion in the medium term (i.e. in the year 2022, after five years of the onset of the peace agreement implementation) under a scenario with better internal security conditions and stable economic growth (see Figure 4.5). The security assumptions are the successful demobilization of the FARC and ELN guerrilla groups, which influence a low risk of conflict recurrence, while the drug trafficking organized armed groups are active in only isolated areas of the country.

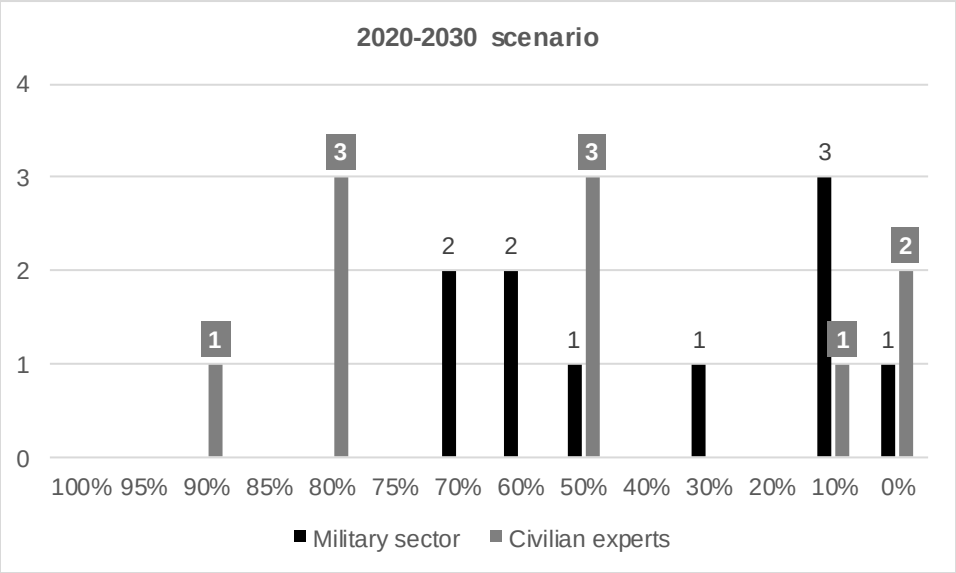
[87] Information obtained from question number 11 of the questionnaire used in this research, see Appendix 4.1.

4.6.2 Expectation of Military Conversion During the Post-Conflict Stage 2020-2030

Following the logic of the budgetary decision-making process, a positive change in the set of defence and security threats, including the disappearance of all guerrilla groups, could lead to a scenario with less use of military resources. Some civilian experts' opinion coincides with the logic of the budgetary decision-making process. They expect military budget cuts due to the downsizing of military personnel, mainly the reduction of army personnel, under the scenario. According to those experts, the determinants of military conversion under the scenario will be the demobilization of all guerrilla groups, the need for increasing the police budget, the substitution of military personnel by military equipment in several roles and the definition of more specialized roles for military forces. A civilian expert highlighted that a stable level of economic growth will provide more public funds for acquiring military equipment that could substitute military personnel in some specific roles (e.g., drones could replace the military personnel used for surveillance of strategic infrastructure, such as pipelines, hydroelectric power stations, and bridges, among others).

The military sector experts are more cautious about the possibility of the onset of military conversion under the scenario. Some of the military sector experts, who considered there to be a low probability of cutting military resources under the scenario, argued that the military budget inflexibility limits the potential for budget cuts and the public opinion will remain in favour of the use of military forces against threats.

Figure 4.5: Probability of military resources cutting (onset of conversion), 2020-2030[88]



The feasibility of military conversion is different for each type of military resource. The interviewees were consulted about which type of military resources is more viable for conversion to civilian uses under the assumption of military resources being cut in the medium-term scenario. The perceptions about the feasibility of military conversion contribute to identifying several possibilities for conversion for each type of military resource.

Military expenditure is the resource that is the most feasible to convert, according to both military sector experts and civilian experts (at least 70 percent of the experts of each group agreed on this point, Figure 4.6). Several military and civilian experts agreed that the direct transference of military expenditure to other public sectors is possible of the medium term, due to the expenditure being in cash and any other sector could access the public funds immediately. Nevertheless, one military sector expert pointed out that the transference could be difficult because the budget inflexibility will remain in the medium term.

[88] Information obtained from question number 16 of the questionnaire used in this research, see Appendix 4.1.

The conversion of the military bases is also feasible in the medium term, according to military sector experts (70 percent of military sector experts, Figure 4.6). In contrast, the civilian experts did not identify many possibilities for the conversion of military bases and they thought the conversion process would not be feasible (50 percent of civilian experts, Figure 4.6). Some civilian experts recognized there was a lack of knowledge about how and which military bases could be converted into civilian constructions. A former member of a Colombian defence and security agency said, “the need for military forces presence in isolated areas will continue to restrict the possibility of conversion of many military bases in the medium term”.[89]

The military sector experts highlighted that some military bases located in urban areas (e.g., army bases in cities such as Barranquilla, Pereira and Ipiales) could be converted into civilian public parks, roads or private buildings, because the location of those military bases affects the expansion of some medium size cities. The military branches’ interest is to sell the land and installations of military bases to obtain new funds that allow them to build new military bases outside urban areas. The presidency and the local authorities share the interest of improving the urban development of those medium size cities. Thus, military conversion will contribute to the replacement of military bases and there will not be a net reduction of military budget.

Other military experts stressed that a general military bases reorganization plan could generate the conversion of military bases. The change of defence and security threats and an emphasis on specialized military roles could determine the spatial reorganization of the military forces under the assumed scenario. Some military sector experts mentioned the

[89] Original quote in Spanish: “la necesidad de presencia de Fuerzas Militares en áreas aisladas continuará restringiendo la posibilidad de conversión de muchas bases militares a mediano plazo”.

reorganization of the integrated communication net ("*Red Integrada de Comunicaciones – RIC*") of military forces as a case that could generate a military conversion process, due to the fact that the net has a potential dual use for civilian communications. However, one military sector expert mentioned that the sale of some military bases could have legal constraints due to poorly defined property rights, as the military forces received donated land only for the purposes of military use.

Military equipment has more constraints for converting to civilian use than the other military resources. Both military sector experts and civilian experts considered that conversion is feasible only for the equipment that has dual use (only 50 percent of both groups of experts considered that this case of conversion is feasible, see Figure 4.6). However, technical constraints, legal obstacles and high costs of transformation required for the new civilian use of former military equipment restrict the possibilities of conversion. For instance, a member of a Colombian defence and security agency pointed out that the difficulties of selling equipment due to the current legislation on the sale of public assets (i.e. restrictions to sell military equipment because it is considered as public asset).

The military sector experts and the civilian experts identified the following dual equipment that could be used in civilian activities with minor transformations: some transport equipment (e.g., transport aircraft, helicopters, trucks, ambulances, among others), some military engineering equipment and the equipment used for rescue operations and natural disasters. However, some military experts pointed out that other public bureaus or the private sector could reject the conversion of military equipment because of the high costs of operation and maintenance. As a result, the possibilities of converting the use of military equipment are at a minimum and the military branches will likely allow the military equipment to become obsolete instead of transferring it to civilian activities.

The reallocation of military personnel to civilian jobs seems a difficult prospect for most of the interviewed experts (70 percent of civilian experts and 50 percent of military sector experts, Figure 4.6). Both military and civilian experts asserted that educational level determines the possibilities of allocating military personnel to civilian jobs. The military personnel who have completed a university education will have more opportunities to get a civilian job than the other personnel, who have only secondary education after their retirement. Some civilian experts highlighted that the conversion process must differentiate between the commissioned officers and non-commissioned officers who have university studies, and the majority of professional soldiers who have not yet completed secondary education. The main concern for the interviewees is the reallocation of professional soldiers to civilian jobs.

The conversion of professional soldiers could only happen after their normal retirement, i.e. when the soldiers have 20 years of service and are able to retire with a pension,[90] in the medium-term scenario. Some military sector experts and civilian experts discarded the early retirement of military personnel by the government, due to the risk of their recruitment by the other non-state armed groups or criminal gangs for illegal activities. The professional soldiers will also have the incentive to complete the full years of service to obtain their pension. Additionally, according to a military sector expert and a civilian expert, the government will not plan to downsize military personnel in the medium-term scenario; instead, the government's decision could be to keep a constant level of military personnel, given the assumption of a stable level of economic growth, and recruit only new personal for replacing the retired troops.

[90] A professional soldier will be on average 38-40 years old when he will retire as a pensioner and start the conversion process.

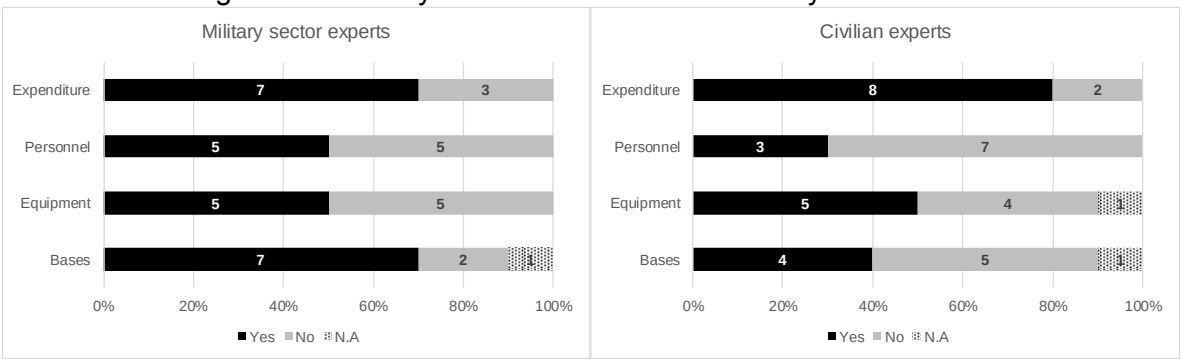
The military personnel will need additional educational training to stand a reasonable possibility of getting a job in the civilian sector, according to both military sector experts and civilian experts. The ministry of defence has developed three retirement support programmes, mainly for professional soldiers, in recent years (MDN, 2015c): a basic education programme (together with the ministry of education) for supporting the soldiers who have not completed their primary or secondary education; a technical education programme (together with the National Service of Learning - SENA, a public education institution) for providing a technical degree or entrepreneurial training to personnel in the last year of service before retirement; and an integral rehabilitation programme for helping disabled personnel to adapt to civilian occupations.

The allocation of military personnel to other security roles could contribute to the future conversion process. A military sector expert indicated that the military personnel transferred to civil-military roles (e.g., humanitarian demining, infrastructure construction, etc.) obtain civilian skills that will ease their future transference to related civilian activities. Other civilian experts mentioned the possibility of the transference of professional soldiers to the national police, when the military personnel have 5 or less years of service, and the allocation of troops to new environmental protection tasks.

A complete and continuous reinsertion programme for military personnel must remain in the medium to long term, according to a former member of a Colombian defence and security agency. The conversion programme must also include the personnel who decide on a voluntary early retirement, e.g., professional soldiers who have already had an early retirement (Suarez, 2016), and provide alternatives for commissioned officers and non-commissioned officers without a university education. The continuity of the programme is necessary because the number of retired military personnel will increase in the medium

term.[91] Additionally, a civilian expert mentioned that most of the civilian jobs for former military personnel will correspond to private security jobs or bodyguard roles, therefore the government must evaluate the success of the retirement support programmes to confirm if the retired personnel have obtained new civilian jobs and how the former military personnel could apply for other civilian jobs demanded by the public and the private sector.

Figure 4.6: Military resources feasible for military conversion[92]



The expected probability of voluntary military service is high in the medium-term scenario. 70 percent of the military sector experts and 60 percent of civilian experts consider that the conscription method could be substituted by a voluntary military service in the medium term, with at least a 50 percent probability under favourable security conditions (Figure 4.7). However, most of the experts added that political and economic constraints and the lobby of military branches could prevent the elimination of conscription.

The change from a conscription force to an all-volunteer force will generate a downsizing of military personnel (Minitart, 2006; Jesulic, 2006), and subsequently the onset of a military conversion process. The high cost of an all-volunteer force, due to the salaries paid to

[91] An exponential increase in the number of retired military personnel is expected from 2021 onwards, due to the special recruitment programmes initiated between 2001 and 2003.
[92] Information obtained from question number 17 of the questionnaire used in this research, see Appendix 4.1.

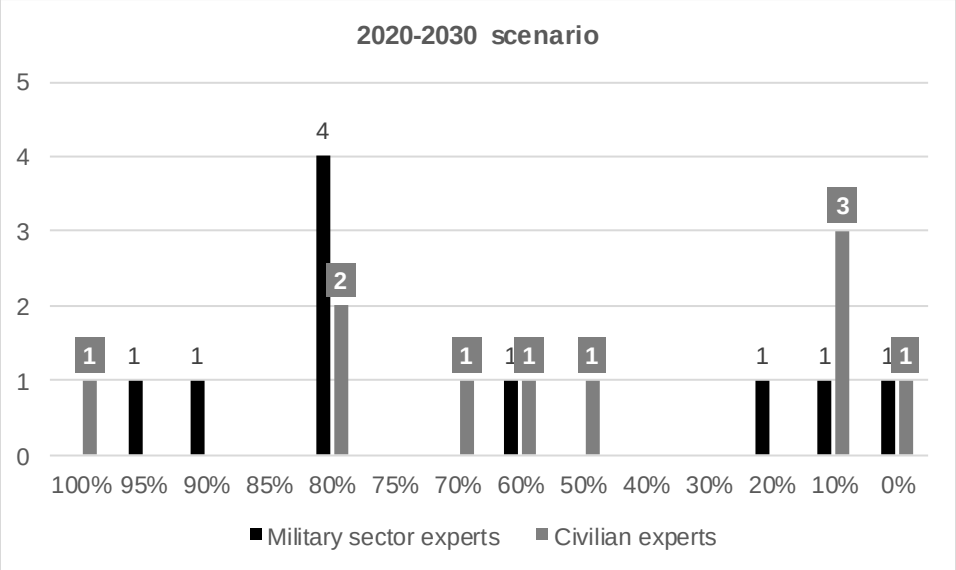
soldiers, determines that the number of military personnel will be lower in an all-volunteer force than a conscript force. Some military sector experts pointed out that the high cost of an all-volunteer force is the main constraint for eliminating conscription. Likewise, other military sector experts highlighted other additional costs of establishing an all-volunteer force, such as the selection process, training, and other benefits offered.

The military sector experts also indicated that the elimination of conscription could have an impact on the effectiveness of military forces. The reduction in troops and the associated military budget cut will affect some military capabilities in which conscripts participate. Then, the military branches will need to adjust many procedures for substituting the conscripts by professional soldiers or military equipment. If not, all essential military capabilities could be adjusted, the transition from a conscription force to an all-volunteer force will take a long time and will not be feasible in the medium term, according to one military sector interviewee.

The civilian experts mentioned that stable internal and external security, the military lobby, and some political ideology may influence the change to an all-volunteer force. The perception of better internal and external security conditions, i.e. the medium-term scenario assuming the demobilization of all guerrilla groups, is a necessary condition for establishing an all-volunteer force, because both Colombian society and the military forces will then be prepared to accept the reduction of military personnel. However, the military branches could use military lobby to influence the policy-making groups' decisions to prevent the elimination of conscription. Additionally, some civilian experts indicated that political leaders could veto any new law proposal that eliminates the conscription, because they consider that the conscription contributes to the formation of citizens.

Some military sector experts and civilian experts mentioned that the gradual substitution of the military service by a social service will be an expected change in the medium-term scenario. The social service will support public activities such as education, health, environmental protection, and response to disasters, among others. The establishment of a social service will be a conversion process of the public funds previously allocated to the military service.

Figure 4.7: Probability of voluntary military service, 2020-2030 scenario[93]



4.6.3 Expectation of Military Conversion After 2030

The expected probability of the onset of military conversion is considered less likely by military sector experts in the long-term scenario compared to the medium term. Although, the long-term scenario includes an additional and improved security assumption that “drug criminal gangs have been reduced”, only 30 percent of military sector experts considered a probability higher than 50 percent of the onset of military conversion in the long term, i.e.

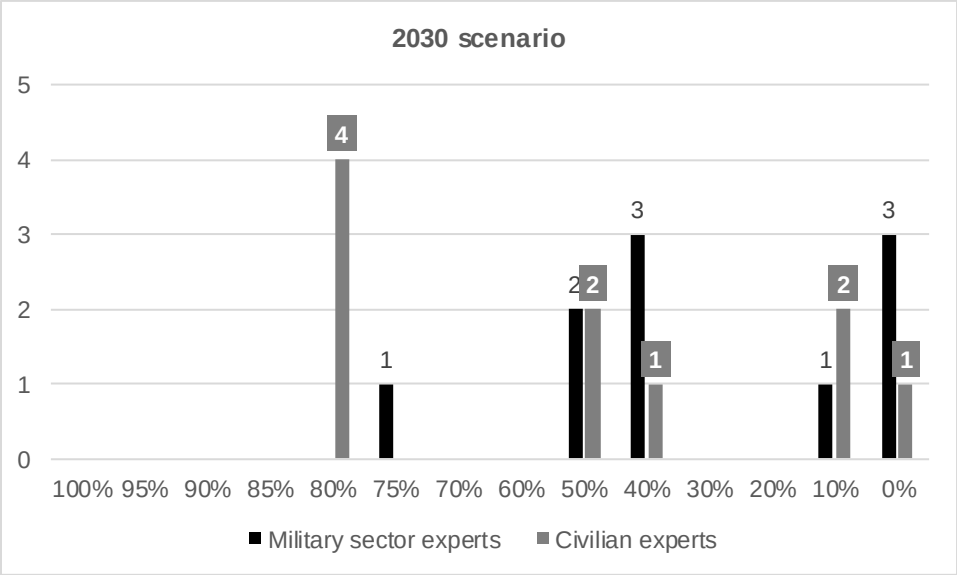
[93] Information obtained from question number 19 of the questionnaire used in this research, see Appendix 4.1.

after 2030 (Figure 4.8). In contrast, the civilian experts' expectations concerning conversion remained, with 60 percent of civilian experts considering a probability higher than 50 percent of military resources being cut in the long term.

The military experts argued that the onset of military conversion is not likely in the long-term scenario because new military resources will be necessary to fulfil the border control role and to counter the transnational crime and other external defence threats. Then, the modernization of the conventional arms systems for external defence and border control will increase the military budget and reduce the possibilities of conversion. The military sector experts also highlighted that the stable level of economic growth will enable the renewal of more military equipment. Additionally, some military sector experts mentioned that the uncertainty about long-term conditions could affect the planning of other military conversion processes in the long term.

The majority of civilian experts considered that a greater number of years of peace and stable internal security will increase the probability of the onset of conversion. However, some civilian experts concurred that the need for renewal of the expensive military equipment could reverse some military conversion processes. The civilians who did not consider there to be a high probability of military resources cutting also mentioned that budget inflexibility will still restrict the military conversion processes if there were not budget reforms in the medium term; they also believed that the illegal economic activities will remain as an internal security threat due to the difficulty of reducing the informality of the labour market, i.e. many people will not have any other job opportunities.

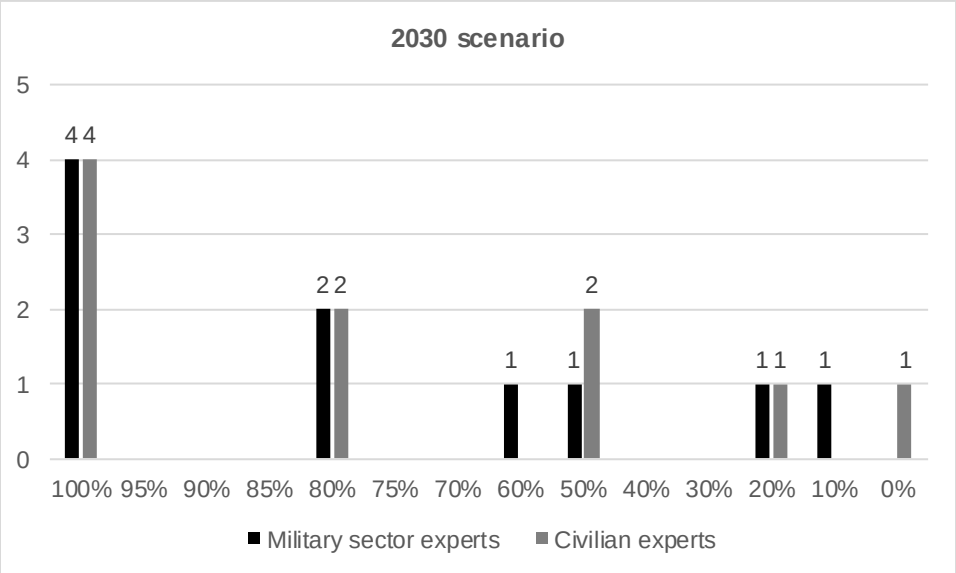
Figure 4.8: Probability of military resources cutting (onset of conversion), 2030 scenario[94]



The majority of both military sector experts and civilian experts considered that voluntary military service could be established in the long term. In each group, 80 percent of the experts consider that it is probable that a volunteer military force will be established, with at least 50 percent probability under the scenario conditions (Figure 4.9). Following the medium-term expectations, more years of peace and a stable security scenario, the experts' expectation about the change to a volunteer military service is reasserted.

[94] Information obtained from question number 22 of the questionnaire used in this research, see Appendix 4.1.

Figure 4.9: Probability of voluntary military service, 2030 scenario[95]



4.7 Conclusion and Discussions

The military budget decision-making process includes six types of policy-making groups that intervene in the decision of the variation of the military budget each year. Each military branch makes a budget request in accordance with the expected defence and security threats and its bureaucratic interests. The knowledge of the defence and security cost function and the expected threats generate a rent-seeking problem. It causes the possibility of requests for budget to fulfil the bureaucratic interests of the military forces, and therefore each military branch seeks to maximize its budget.

The remaining policy-making groups must use an incrementalism strategy to confront the rent-seeking problem and to fulfil their administrative duties. The presidency uses the expected fiscal deficit, using analysis of the expected economic growth and the identification of the inflexible budget, to adjust the official budget request of the military sector. In contrast,

[95] Information obtained from question number 23 of the questionnaire used in this research, see Appendix 4.1.

the congress only tries to understand the possible impact of the execution of the military budget over its electorate. The ministry of defence receives the approved budget appropriation and tries to maximize the budget execution to obtain additional appropriations and to gain bargaining power among the other ministries.

The improvement in the expected defence and security threats and/or a low economic growth rate prompts the decision of a cut in the military budget under the logic of the military budget decision-making process. The reduction of the military budget is the starting point of a military conversion process.

The government could decide among four alternatives for the less-used military resources when the onset of the military conversion process is imminent: to keep the resources as idle, to allocate them to new military uses, to convert or to eliminate. The first alternative means to keep the former military resources in storage as idle assets, but the military forces could choose the second alternative, that is to define a new military use for those resources and thereby reverse the military conversion process. The military forces do not use the former military resources again if the government's choice is either the third alternative, the transference of the former military resources to civilian activities, or the fourth alternative, the destruction of the resource and the generation of additional disposal costs for the government.

The dual features of a resource facilitate the conversion process. Those resources that have a dual use can be converted in a reasonable period of time. In contrast, specialized military resources might not be eligible for conversion due to either the high cost or the technical infeasibility of using the resource in civilian applications.

The military sector experts and the civilian experts do not consider a military conversion process to be viable in the short term in Colombia. The risk of conflict recurrence and the presence of non-state armed groups that could take advantage of the drug trafficking and illegal mining will require the military forces capabilities; therefore, following the budgetary decision-making process, the government will maintain the same level of military budget. Moreover, the execution of the new roles by the military forces will need new military resources.

The only case of military conversion in the short term is the transference of investment budget (i.e. the budget for procurement, construction and high-level maintenance) from the military sector to the education sector which has occurred in the last three years. The reallocation of the investment of public funds is the result of the change in two key determinants in the budgetary decision-making process: the government's priorities in the current presidential term and the economic growth rate (i.e. in this case a continuous, low economic growth rate). Even so, the budget inflexibility restricts the possibility of any additional military budget cuts.

The military branches and the government have chosen the reallocation of less-used military resources to new military uses in the short term. The transformation process of the armed forces has identified the new and existing military roles that will receive reallocated military resources. The military sector experts and the civilian experts agree that humanitarian demining; operations against drug-trafficking; operations against illegal mining and peacekeeping will receive more transferred resources. The experts also agree that the external defence roles (e.g., cyber defence, border control, etc.) will require new military resources. On the other hand, the military sector experts consider that the military forces could use their set of civil-military capabilities (e.g., construction of public infrastructure) to

support some peacebuilding initiatives; while the civilian experts consider it relevant to transfer resources to citizen security and urban intelligence roles. The multiple alternatives of reallocation indicate that only those less-used resources, which could not be transferred to other military roles due to technical and economic constraints, will be stored as idle assets. Following the budgetary decision-making process, the military forces seek to keep their budget defining new military uses for less-used military resources, while the presidency supports the reallocation process to military activities if the military must counter remaining defence and security threats.

The transference of military personnel and other military resources to the police (quasi-military conversion cases) is discarded in the short term. The current government has decided to increase the police budget and personnel without any transference from the military sector, due to the uncertainty about how the military forces and the police must coordinate their operations to counter the remaining internal security threats. Nevertheless, the military sector experts agreed that the allocation of military and police roles must be revised during the post-conflict phase, just as the civilian experts indicated that it is necessary for a revision of the allocation of both resources and roles between the military and police. The adjustment in the military and police roles could generate several changes in the allocation of resources between the two sectors, especially in terms of rural security and citizen security roles.

The expectation of military conversion appears in the medium term to the long term, under the assumption of two key determinants of the military budget decision-making process: better internal security conditions, i.e. less internal security threats, and stable economic growth. The majority of civilian experts consider a high probability of the onset of military conversion in the medium to long term, because the assumptions about the disappearance

of guerrilla groups and other non-state armed groups indicate a stable peace period and the need to reallocate the military resources to other needs. On the other hand, in the medium term the military sector experts expect a limited cut to military resources due to the military budget inflexibility (with a portion of inflexible budget corresponding to the bureaucratic benefits of military branches, like the possibility of hiring more military personnel), but they do not anticipate the onset of military conversion processes in the long term because of the need to acquire new military resources for the external defence roles.

The conversion processes of military expenditure and some military bases are feasible in the medium term because of their dual features. Both military sector experts and civilian experts coincide in their views that the military expenditure, which is cash, could be transferred to any other public sector. Meanwhile, the military sector experts point out that a general military bases reorganization plan and the spatial relocation of some urban military bases could generate conversion cases of military bases.

The transference of military equipment to civilian activities is discarded in the medium term. The experts only identify opportunities of conversion for dual equipment, such as transport equipment, military engineering equipment and the equipment used for rescue operations and natural disasters. The public and private sector could refuse to receive former military equipment due to the high costs of operation and maintenance. Additionally, the military branches prefer to keep military equipment until it becomes obsolete.

The reallocation to civilian jobs of retired professional soldiers is the main military personnel conversion process in the medium term. Both military sector experts and civilian experts identify that professional soldiers have fewer chances of getting civilian jobs than other military personnel because of their low educational levels. The early retirement of

professional soldiers is discarded because of the risk of recruitment of the retired personnel by illegal armed groups. The conversion process of professional soldiers will start after their normal retirement date. The government has developed three retirement support programmes that provide basic and technical education courses for professional soldiers, however there is not yet an evaluation of the success of the programmes and it is necessary to establish a complete and continuous reinsertion programme for all types of military personnel.

Finally, the change from conscription force to an all-volunteer force is considered likely by military sector experts and civilian experts in the medium to long term. The assumption of better internal security conditions determines the expectations about the voluntary military service. The establishment of an all-volunteer force could reduce the number of military personnel and generate the onset of a military conversion process. However, multiple constraints could extend the transition time from a compulsory to a voluntary military service, such as: the high cost of an all-volunteer force, the impact on the military forces' effectiveness, and political and ideological interests.

Appendix 4.1

Questionnaire

Section 1. Perspective of future military force planning - "*Plan Fuerzas 2030*".[96]

1. What do you think will be the main short-term achievement of the transformation process?
2. What is your expectation regarding the duration and permanence of the transformation process?
3. What do you consider the main internal and external defence and security threats during the possible post-conflict period?
4. What are the main technological changes that the Armed Forces should consider (or have considered) during the transformation process?
5. The type of planned force would have to face four main tasks: security in Colombian post-conflict regions, border control, international security cooperation and strategic technology. Please rank in order of importance what task will need the most military resources (from 1-4, with 1 being the most important)?
6. What is your expectation of the following military resources during the transformation process?

Question	**Personnel**	**Equipment**	**Bases**	**Monetary Resources**
Will the quantity change?	Yes No	Yes No	Yes No	Yes No
How so?	Less More No change	Less More No change	Less More No change	Less More No change

[96] This is the programme name in Spanish.

7. In your opinion, is the reallocation of current military resources enough for funding the future activities of armed forces?

   Yes__ No__

8. For which of the following scenarios and roles do you believe the armed forces would **need new military resources**? (Please pick 2 or 3 roles that will require more resources).

Scenario	**Role**
Post-conflict regions	Operations against drug trafficking
	Operations against illegal mining
	Humanitarian demining
	Response to disasters and climate change
	Environmental protection
Strategic technology	Cyber defence
International security cooperation	Training foreign military personnel
	Peacekeeping operations

9. Any other role?

10. What are the main constraints and opportunities for the participation of the Colombian Military Forces in international military operations and peacekeeping operations?

11. Do you agree with the reallocation of roles and resources from military forces to the police during a post-conflict stage? Yes__ No__; Why?
12. Do you believe that an earlier reduction of military resources (five years or earlier from the onset of post-conflict) will increase the likelihood of conflict renewal? Yes__ No__; Why?
13. How has the current economic scenario affected the transformation process of the Military Forces?
14. From 0 to 100, with 0 being not considering any reduction and 100 being absolutely sure that there will be a reduction of the use of military resources. What is the probability that the military resources will be reduced, if there is a low or negative economic growth? Why?
15. Do you consider that the transformation process could improve the economic growth? Yes__ No__; If Yes, How?

Section 2. Expectation of military conversion during post-conflict stage (2020-2030)

"Imagine the following scenario after five years of the end of peace negotiations: all guerrilla groups have been demobilized, some drug criminal gangs remain in isolated areas of the country, and there has been a stable level of economic growth."

16. From 0 to 100, with 0 being not considering any reduction and 100 being absolutely sure that there will be a reduction of the use of military resources. What is the probability that the military resources will be reduced under this scenario? Why?
17. Assuming that there will be less military resources than nowadays, which military resource could be allocated and used for productive civilian activities? Which civilian use could those military resources have?

Personnel	Equipment	Bases	Spending

18. How could military conversion contribute to economic growth and security?
19. From 0 to 100, with 0 being not considering any change and 100 being absolutely sure that military service will be voluntary. What is the probability that there will be a voluntary military service system? Why?
20. What other institutional, economic and security changes would be necessary to establish a voluntary military service system?
21. What do you understand by the term military conversion?

Section 3. Expectation of military conversion after 2030.

"Imagine the following scenario after 2030, ten years or more after the end of the peace negotiation having been completed: all guerrilla groups have been demobilized, drug criminal gangs have been reduced, the transnational criminal activities and border control seem the most demanding roles in terms of military resources; *and there has been a stable level of economic growth.*"

22. From 0 to 100, with 0 being not considering any reduction and 100 being absolutely sure that there will be a reduction of the use of military resources. What is the probability that the military resources will be reduced under this scenario?
23. From 0 to 100, with 0 being not considering any change and 100 being absolutely sure that military service will be voluntary. What is the probability that there will be a voluntary military service system?
24. Do you think that in 2030 the transformation process will be ended? If not, which transformation activities will not be completed by 2030?

Appendix 4.2

Cuestionario en español

Sección 1. Perspectiva de la planeación del futuro de la Fuerzas Militares, "Plan Fuerzas 2030"

1. ¿Cuál cree usted que va a ser el principal alcance a corto plazo del proceso de transformación?
2. ¿Cuál es su expectativa con respecto a la duración y permanencia del proceso de transformación?
3. ¿Cuáles considera las principales amenazas en seguridad interna y externa de Colombia en un escenario de post-conflicto?
4. ¿Cuáles son los principales cambios tecnológicos que afectan a las Fuerzas Militares que deben considerarse (o se han considerado) durante el proceso de transformación?
5. El tipo de fuerza planeada tendría cuatro tareas: seguridad en las regiones de post-conflicto, control de fronteras, cooperación internacional en operaciones de seguridad y tecnología estratégica. Por favor indíquenos en orden de importancia que tarea (escenario) necesitara la mayor parte de recursos militares. (Desde 1 hasta 4, siendo 1 el más importante).
6. ¿Cuál es su expectativa con respecto a los siguientes recursos militares durante el proceso de transformación?

Pregunta	**Personal**	**Equipo**	**Bases**	**Recursos monetarios**
¿Cambio en la cantidad?	Sí No	Sí No	Sí No	Sí No
¿Cuánto?	Menos Más No cambia	Menos Más No cambia	Menos Más No cambia	Menos Más No cambia

7. En su opinión, ¿la redistribución de los actuales recursos militares es suficiente para realizar y cumplir con las futuras tareas de las fuerzas militares?

   Sí__ No__

8. ¿Para cuáles de los siguientes escenarios y roles, usted considera que las Fuerzas Militares necesitarán nuevos recursos? (Por favor seleccione los 2 o 3 roles que van a requerir más nuevos recursos).

Escenario (Tarea)	**Rol**
Seguridad regiones de Posconflicto	Operaciones contra el narcotráfico
	Operaciones contra la minería ilegal
	Desminado humanitario
	Respuesta a desastres y cambio climático
	Protección ambiental
Tecnología estratégica	Ciberdefensa
Cooperación en temas de seguridad internacional	Entrenamiento de personal militar extranjero
	Participación en operaciones de paz.

9. ¿Algún otro rol?
10. En su opinión, ¿cuáles son las principales restricciones y oportunidades de la participación de las Fuerzas Militares Colombianas en operaciones militares internacionales y operaciones de paz.

11. ¿Usted considera necesario la redistribución de roles y recursos de las Fuerzas Militares a la Policía durante el período de posconflicto? Sí__ No__; Por qué?
12. ¿Usted considera que una reducción de recursos militares antes de los primeros cinco años del posconflicto incrementará la probabilidad de una reaparición (recurrencia) del conflicto interno?
13. ¿Cómo ha afectado el actual escenario económico y fiscal el proceso de transformación de las Fuerzas Militares?
14. De 0 a 100, siendo 0 no hay reducción y 100 estando absolutamente seguro que se va a presentar una reducción en el uso de los recursos militares. ¿qué probabilidad de reducción en el uso de recursos militares se presentaría si se mantiene una tasa baja de crecimiento económico?; ¿Por qué?
15. ¿Usted considera que el proceso de transformación podría mejorar la tasa de crecimiento económico? Sí__ No__; En caso que sí, ¿cómo?

Sección 2. Expectativas de conversión militar durante la etapa de posconflicto (2020-2030)

"Imagine el siguiente escenario después de cinco años del fin de las negociaciones de paz: todos los grupos guerrilleros se han desmovilizado, algunos grupos criminales asociados al narcotráfico se mantienen en áreas apartadas del país y se ha mantenido un nivel estable y aceptable de crecimiento económico".

16. De 0 a 100, siendo 0 no hay reducción y 100 estando absolutamente seguro que se va a presentar una reducción en el uso de los recursos militares. ¿Qué probabilidad de reducción en el uso de recursos militares **se presentaría bajo ese escenario**?; ¿Por qué?

17. Suponiendo que se da una reducción en los recursos militares, ¿cuál de los siguientes recursos militares es más fácil de transferir y usar en actividades productivas civiles? ¿Y qué tipo de usos podrían civiles podrían tener?

    Personal militar

    Equipo

    Bases

    Recursos monetarios

18. ¿Cómo podría contribuir en términos económicos y de seguridad la transferencia y empleo de antiguos recursos militares en actividades productivas civiles?
19. De 0 a 100, siendo 0 no hay cambios y 100 estando absolutamente seguro que el sistema de servicio militar va a ser mayoritariamente voluntario. ¿Qué probabilidad se presentaría de que se estableciera un esquema de servicio militar voluntario? ¿Por qué?
20. ¿Qué otros cambios institucionales, económicos y de seguridad serían necesarios para establecer un sistema de servicio militar voluntario?
21. ¿Qué entiende usted por el término de conversión militar?

Sección 3. Expectativa conversión militar después de 2030.

"Imagine el siguiente escenario desde 2030, 10 años o más del fin de las negociaciones de paz: todos los grupos guerrilleros se han desmovilizado, los grupos criminales asociados al narcotráfico se han reducido considerablemente, las actividades de crimen trasnacional y el control de fronteras aparecen como los roles más demandantes de uso de recursos militares, y se ha mantenido un nivel estable y aceptable de crecimiento económico".

22. De 0 a 100, siendo 0 no hay reducción y 100 estando absolutamente seguro que se va a presentar una reducción en el uso de los recursos militares. ¿Qué probabilidad

de reducción en el uso de recursos militares **se presentaría bajo ese escenario**?; ¿Por qué?

23. De 0 a 100, siendo 0 no hay cambios y 100 estando absolutamente seguro que el sistema de servicio militar va a ser mayoritariamente voluntario. ¿Qué probabilidad se presentaría de que **se estableciera un esquema de servicio militar voluntario**? ¿Por qué?

    ¿Considera usted que en 2030 ya se habrá finalizado el proceso de transformación o qué cambios continuarán a largo plazo?

5. Conclusions

The aim of the dissertation is to identify the determinants and the impact of military conversion on conflict recurrence in post-conflict societies. In the second chapter, the empirical evidence shows that the presence of democratic regimes increases the likelihood of the onset of military conversion. In contrast, the involvement in a conflict and the wealth of a country (i.e. measured by GDP per capita) do not have influence in the starting of conversion according to the statistical results. The fourth chapter complements the findings on military conversion determinants using Colombia as a study case. The Colombian defence and security experts' perceptions indicate that the presence of defence and security threats and the economic growth determine the policy-making group decision to reduce the use of military resources.

The Colombian case places a good example of a post-conflict scenario with diverse threats that reduces the probability of starting conversion, also there is an opposite effect caused by a low economic growth rate that could generate provisional military conversion process (e.g., the transference of public funds from military budget to other public sectors). Likewise, the majority of Colombian experts expect the possibility of the reduction of use of military resources and the substitution of conscription by a voluntary military service in the medium term to the long term, under the assumptions of a stable security scenario with less internal security threats (i.e. demobilization of all guerrilla groups and the military forces counter effectively other non-state armed groups).

One of the findings in the second chapter is that the conversion processes are more likely to be discarded at the presence of US military aid flows. The rationality behind is that if a government have more aid funds to use military resources, it will use those resources more intensively than any other situation without aid and the likelihood of starting a military conversion will decrease. Then, during a post-conflict stage or military reform, the military aid could be focus in specific roles rather than in a multipurpose uses agenda in order to allow other military resources to be converted to civilian uses.

The third chapter aims to identify the impact of the onset of military conversion on the likelihood of conflict recurrence. The military expenditure has a negative relationship with the likelihood of conflict recurrence, according to the estimated logistic regression model. The deterrence mechanism may be stronger than the economic-benefits one in the short-term. Since the post-conflict societies face the risk of conflict renewal due to the remaining security threats and the economic benefits from the disarmament are palpable only in the long-term. This explanation coincides with the experts' perceptions on the risk of conflict recurrence in short term, presented in the fourth chapter, if there are cuts in military expenditure and downsizing of military personnel in Colombia.

The fourth chapter extends the analysis on military conversion decision with the identification of alternatives to reallocate military resources to new and existing military roles during a post-conflict period. The analysis relies on the Colombian defence and security experts' perceptions collected with semi-structured interviews. The reallocation of less-used military resources to new or remaining military roles is the reversal of conversion process. The policy-making groups which decide on military budget have individual motivations to choose the reallocation of military resources inside the military sector. All policy-making groups share the motivation of reducing the risk of conflict recurrence and countering any source of

violence. However, the uncertainty on the evolution of defence and security threats hinders the differentiation between general and individual motivations. For instance, the military forces and the ministry of defence could pursue bureaucratic interests, and to protect them, the military could try to create new military roles or to participate in existing internal security roles. Likewise, the presidency could be interested in the efficient use of public assets, then it would be preferred new military uses of less-used military resources than the possibility of having idle assets.

The reallocation of military resources to new and existing military roles is the leading alternative in the early post-conflict period in Colombia, according to the interviews to experts presented in the fourth chapter. Most of resources will be reallocated to existing military roles in order to counter the remaining defence and security threats. The Colombian experts identify roles associated with the implementation of the peace agreement (e.g., humanitarian demining), traditional defence roles (e.g., border control) and the participation in international military operations (e.g., peacekeeping operations).

Colombian military forces have evolved over time, there are arguments to keep and improve the military capabilities since these ones will help to ease the access and the presence to isolated zones to counter the possibility of emergence of new threats (Fearon & Laitin, 2003: 80-81). Also, the existing military capabilities could be used into other roles such as defending borders, tackling new sources of crime and protecting natural reserves.

The military conversion process is a possibility in the medium to the long term for the Colombian experts. However, not all military resources could be transferred to civilian activities. The Colombian experts point out that the military bases and the military expenditure could be transferred to civilian activities due to their dual use features. The

transformation of those resources from their military use to the civilian one could be less expensive than the transformation of military equipment or military personnel; thus, the civilian sector will demand them (e.g. the demand for land of a former military base located in an urban area).

One of the challenges in the post-conflict societies is the regulation of the exploitation of natural resources. Informal exploitation could become a source of crime funding after the sign of a peace agreement and the level of violence could increases because former military personnel are recruited to participate in illegal activities at the border crosses (UN, 2010).

In the case of Colombia former rebels or unemployed military personnel could be recruited by drug cartels or other criminal gangs to collaborate and to operate the logistics of illegal activities, such as: drugs dealing, smuggling and illegal arms and weapons trafficking, illegal mining and fishery. This effect is not only national, also creates a spillover effect in the regions that are closer to the international borders, therefore the crime rates expands at the country level and at the neighbor countries as well. This risk highlights the importance of the design and the implementation of military conversion processes in post-conflict societies.

The limitations and the challenges for future research are related to the improvement of military conversion measurements, the test of additional potential determinants of conversion and the design of quantitative studies following criteria that avoid the selection bias problem. I present in the first chapter the OMCI as a new military conversion measurement. The OMCI contributes to identify disarmament and rearm by country and year for a long-time series using the growth rate of military expenditures and military personnel, and the type of recruitment. Thus, it is possible to estimate diverse quantitative models. The OMCI limitation is that the index does not include the other military resources

(e.g., military equipment, military bases, military industry). One avenue for future research is to design systematic variables for measuring the other military resources.

The test of additional potential determinants of conversion will complement the findings of this dissertation. For instance, the substitution of military personnel by military equipment (e.g., the substitution of military personnel by drones in some surveillance tasks) is another source of conversion. This case is not identified in the dissertation; however, it is becoming a potential conversion case in all countries.

The design of quantitative studies avoiding the selection bias problem is other avenue for future research. This dissertation aims to provide quantitative evidence, to do that I include all available observations in the quantitative models. However, the study of cases could lead to selection bias (e.g., the research on the signalling mechanism of the military expenditure on the risk of conflict recurrence in post-conflict countries that implement a peace agreement).

To conclude, the military conversion processes are still happening. The reallocation of military resources after an internal war will provide opportunities of conversion. Then, the design of conversion processes in post-conflict countries is relevant to avoid conflict recurrence, to design reforms to security sector and to guarantee the efficient reallocation of less-used military resources.

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