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The Economics of Peacekeeping

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Abstract

Since the end of the Cold War, the incidence of civil war has decreased and the use of peacekeeping has increased. This thesis examines some of the factors that influence the demand for peacekeeping missions, in particular the forces prompting civil war, and the supply of peacekeeping, the ability and desire of nations to intervene through peacekeeping missions.

Given the considerable ambiguities associated with peacekeeping, we attempt to integrate third party intervention into traditional bilateral models of conflict and investigate the extent to which conflict models can help the intervening nation develop more effective strategies.

Determining the objectives of the intervening governments is crucial. The second part of this thesis addresses the motivations that interact to produce troop contribution by a diverse pool of participants. Results suggest that at the domestic level the comparative advantage in manpower, the tolerance of casualties and the sustainability of multiple missions, all play a role. At the international level peacekeeping contributions are driven by the global security threat, the proximity to the conflict area and the number of displaced people.

A number of NATO members have suspended compulsory military services, moving to an All-Volunteer Force. Since ending conscription tends to have two opposite effects, fewer soldiers paid higher wages, it is not obvious what the net effect on personnel cost is. We show that while the end of conscription did not reduce the share of spending on personnel, NATO forces are increasingly less reliant on soldiers and more on capital.

The final part of the thesis returns to the demand side. Security incidents in Afghanistan have been rising since 2003. Given the links between anti-government elements in the country and its drug economy, we investigate the interaction between opium prices, alternative measures of income, and insurgency activities in the Afghan provinces. We find that unobservable common channels prevail in determining how income and conflict dynamics interact.

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Chapter 1

Introduction

Since the end of the Cold War, civil wars have prompted humanitarian intervention by the international community: peacekeeping is one particular form of intervention. There has been a shift from peacekeeping as a response to inter-state wars to peacekeeping as a response to civil wars. This is partly because most wars are civil wars rather than inter-state wars and these civil wars tend to last longer than inter-state wars and are seen as damaging not only to the countries concerned, but to their neighbours and to the international community.

There are three dimensions to peacekeeping: demand, the situation that allows for foreign military intervention; supply, the factors determining countries' voluntary contribution to peace operations, and thus the willingness of third party states to provide that intervention, particularly military interventions; and the outcome of the operation, which is determined by the nature of the interaction. This supply-demand distinction is not unambiguous, since every economic transaction has two sides. For instance, Gaibulloev *et al.* (2009) refer to what we would call the supply of peacekeeping, payments for UN and non-UN peacekeeping missions, as the demand for peacekeeping (i.e. how much the contributing governments pay for a particular service they demand, peacekeeping). From the perspective of the countries in conflict we think that the supply of peacekeeping terminology is more appropriate.

Although there is a large scholarly literature on conflict resolution, there are gaps in the quantitative literature on peacekeeping. Theoretically, there are no broadly accepted theories on third party intervention. The bulk of extant research on war focuses on its cause, hoping to learn something about its prevention (Pickering & Kisangani, 2006). With this dissertation, I hope to contribute to the literature on the economics of conflict, by proposing new avenues of research and expanding on others, in particular the interaction between the demand and supply for peacekeeping.

On the demand side, civil wars are a peculiar type of war, usually involving two sides with quite different structures and organisation. On one side, except for failed states like Somalia, we usually have a government, normally able to deploy an organised army with a clear structure of command and use its non-military apparatus to secure domestic and international support. The governments are very often led by "'Big Men"', dictators who tolerate neither opposition nor dissident. They do not usually allow themselves to be voted out of office. In Africa, of some 150 heads of state who had governed in the last 60 years, only six had voluntarily relinquished power (Meredith, 2006). On the other side, we may have insurgents with little formal organisation, composed of non-traditional combatants, such as village militias and child soldiers, and divided into a variety of factions, with no identifiable spokespeople. In such a situation, where there is no apparent leadership, simply identifying clear objectives and common aims can be a problem and the policy problem can involve distinguishing "good" insurgents, with whom one wants to negotiate from the "bad" insurgents with whom one does not. Thus, peacekeeping and conflict resolution in civil wars can be different from that in inter-state wars.

Past research has identified a number of factors that increase the risk of civil war and its severity. Among them is the well-known and often criticised thesis of Collier & Hoeffler (2004), who analyses whether conflict is driven by greed or grievance. There are many other alternative explanations. Horizontal inequalities (Stewart & Brown, 2007), the "environmental scarcity" (Percival & Homer-Dixon, 1998), a weak state capacity (Herbst, 2000), have also been put forward as causes explaining civil wars. Chapter 2 reviews alternative theories of conflict onset and recurrence and evaluates a range of reasons that have been suggested as explaining the impossibility to achieve a settlement. It is crucial to understand which explanation dominates in a particular context, since this has important implications for the selection of appropriate third party interventions. Nevertheless, the standard theories still do not offer a complete picture. For example, theories that conceptualise rebel organisation as social movements see violence as the result of a group' discontent (Gurr, 1970). These approaches tie collective action directly to group motivation. However, they do not focus on how the motivation to fight leads to the formation of rebel organisations. More specifically, they fail to address how the necessary leaders emerge to coordinate and manage recruitment and gather support by addressing the general dissatisfaction among the population. Essential problems such as the armed group cohesion amid the collective action problem, and in particular the role of the leader in mobilising and organising initial recruits, remain unresolved. Chapter 2 discusses the role of leadership in providing selective

incentives and the effects of assassination.

On the supply side, which interventions constitute peacekeeping can be controversial. Invaders always want to restore peace after a conquest, but it is not usually described as peacekeeping. However, peacekeeping following invasion in Iraq and Afghanistan is usually described as peacekeeping because it has UN approval. National militaries have been traditionally conceptualised as defenders of the homeland from outside invasions or to initiate a war of aggression to conquer territory, resources and thus power. For this reason, military operations were often localised around the national borders. Before the Soviet Union collapsed, superpower rivalries limited the scope for international responses to regional conflict. Intervention was constrained by the desire to avoid a direct East-West military confrontation prompted by a conflict between their clients. Thus, the first practical limitation on the use of military power in managing international conflict was the mutual hostility between the US and the USSR, two veto-bearing members of the Security Council. The end of the Cold War has introduced the idea of policing the territories of independent states or protecting the stability of their governments. Partly as a consequence of this new idea, many states started to shift the focus of their armed forces; from one of self-defence to one where troops are projected beyond the national territory, principally in multilateral peace operations. Quoting Kennedy (2006, p.77), " [..]four hundreds years ago Swedish, Danish, Italian and French soldiers hacked and burned their way all over Europe; during the past fifty years they instead have been sending peacekeeping contingents everywhere from the Congo to the Middle East". Western participation is accordingly seen as a shift from national egoism to a higher level of international morality.

On the supply side, we need to explore the the actors and their capabilities; the objectives of those nations intervening in conflicts; the choice set of instruments available to them; the constraints they face when intervening; and the criteria for the success of a mission. Chapter 2 deals with these aspects. In the 1990s, crises in the Balkans, Somalia, Cambodia and elsewhere saw a widespread practice of external intervention with the aim of building sustainable peace. The UN alone experienced an eight-fold increase in the frequency with which it launched new operations, an average of one new mission every six months. SIPRI (2009) provides data on 60 multilateral peace operations that were conducted during 2008. They cover operations that were conducted under the authority of the UN (sanctioned by the UN or authorised by a UN Security Council resolution) and estimate that there were roughly 170,000 people involved in peacekeeping operations in 2008, all military except for 20,000 civilians. About 40% of the peacekeepers were located in Africa. Most states intervene as part of a coalition to reduce the risk and cost of

intervention. In addition to burden sharing, multilateral participation confers also a degree of legitimacy. Peacekeeping missions are mainly sponsored by the UN, but many crises are perceived as best dealt by regional bodies, like the Organisation for Security and Co-operation in Europe (OSCE), which had observers in Georgia, and the African Union, previously called the Organisation of African Unity. UN draws on a variety of countries with problems in term of time, logistics, planning, procurement, training and force effectiveness. NATO members are more homogeneous and this helps promote action when needed. The countries that contribute most of the troops to UN missions are poor, for whom the payments for contributing troops to peacekeeping missions can be a useful source of revenue. The troops they contribute may not be well equipped or well trained. As a consequence, regions with a huge demand for peacekeeping have often a low-quality provision of troops. In 2000, the United Nations Mission in Sierra Leone nearly collapsed when peacekeepers decided to move to into the diamond fields, and the RUF retaliated by seizing 500 Kenyan and Zambian peacekeepers with few difficulties (Meredith, 2006). Indiscipline among peacekeeping troops has also been a cause of concern. Like other factions, ECOMOG troops in Liberia were heavily involved in looting, arms trading and contraband.[1] At worst, peacekeepers can inflict as much suffering on the vulnerable population as the combatants.

The aim of a third party intervention is to reach a peace settlement, a formula negotiated between the conflicting parties, which regulates or resolves their basic incompatibilities. However, when a country is in the midst of a civil war, the primary aim of a conflict resolution is to persuade opposing parties to cease all violent activity. The persuasive power of a third party depends on his ability to reorient the belligerents perception and estimation about their chances of winning; the time required to win; and the payoffs from winning versus accepting a settlement. The intervener improves the attractiveness of a resolution on available terms by increasing the unattractiveness of continued conflict. Moving the belligerents in an intended direction requires a set of instruments. Chapter 2 explores the mediation (e.g. provision of better lines of communication), and traditional peacekeeping (e.g separating the enemies through territorial delineation and with their consent). However, in many cases, conventional instruments are not enough to convince combatants to implement treaties. Even in the best situation, when groups have reached an agreement, the war may resume and an unarmed third party will most likely be powerless. Therefore, coercive instruments, including direct and

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[1]Senior officers supplied factions with weapons in return for looted goods. So notorious did this dealings in cars and scrap metal become that Liberians dubbed it as standing for "'Every Car Or Moving Object Gone"' (Meredith, 2006).

overwhelming military intervention, are explored in greater details throughout the Chapter. This is in part due to the nature of recent missions, which has moved away from traditional principles - such as combatants consent and the use of force in self-defence - towards a large-scale use of force, the peace enforcement.

The definition of peacekeeping and the distinction between traditional peace-keeping and peace enforcement (Chapters Six and Seven of the UN Charter respectively) is not clear cut. While peacekeeping is directed towards maintaining peace, peace enforcement tries to enforce it. The former tends to support nego-tiated agreement and include the consent of the host government while the latter requires the use of force as the interveners do not need - and often do not have - the consent of the conflicting parties. In both cases the mission's goal is to create an environment in which humanitarian and development tasks can be undertaken. In either Chapter Six or Seven missions, one needs clear objectives, the means to achieve those objectives and rules of engagement that are consistent with those objectives. Defining the goals may also be problematic. Peace operations usually encompass a variety of goals, at least three, each with several sub-goals (Druck-man & Diehl, 2010). The first set, the core goals, deals primarily with militarised conflict: reducing violent conflict between the combatants (violence abatement), preventing incidents from escalating (conflict containment), and resolving issues between the parties (conflict settlement). A second set of goals reflects the second generation of missions, launched in recent years. These missions are designed to limit conflict damage, include election supervision, democratisation, humanitarian assistance, human rights protection, arms control and disarmament. A third set of goals are related to the duties of peacebuilding, therefore those activities fol-lowing a peace settlement between warring parties. Objectives are related to local security, rule of law, governance, and reconciliation.

Understanding the conditions associated with success of peace operations, that is the life with third party forces against life without them, has been the focus of most scholars of peace operations. The record of UN peacekeeping operations is a subject of discussion also among practitioners and the empirical studies on the effect of peacekeeping are overall ambiguous. Some missions seem widely re-garded as having been a failure, particularly those undertaken in the early and mid 1990s (e.g. Angola, Somalia, Rwanda and Bosnia), while others are considered a success (e.g. Cambodia, El Salvador, Mozambique and East Timor).[2] Evaluating

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[2]The UN missions that followed the end of civil wars in El Salvador 1991-95, Mozambique 1992-94 and Cambodia 1991-93, are considered overall successful. They verified agreements on ceasefires, elections, land and electoral reform, organised the demobilisation of soldiers and helped create new police forces. In East Timor in 1999 the mission restored order after the violent reaction to the vote for self-government and provided the transitional administration

missions in term of accomplishment of other operations have drawbacks, because mandates differ widely between operations. Overall, the literature on the UN missions suggests that their success is premised on establishing security, restoring good governance and the rule of law, and creating economic opportunity. Chapter 2 discusses alternative evaluation criteria for the success of a peacekeeping mission.

Although there is a large literature on conflict models, there is no consensus on how one should analytically characterise peacekeeping as an activity and how one should integrate a peacekeeping third party into traditional two party models of conflict. Chapter 3 discusses these issues presenting some preliminary discussion of possible theoretical models. We regard the standard economic approach as assuming that peacekeeping nations are rational agents with coherent objectives, who have a choice set of actions, or available instruments, of differing effectiveness, who try to optimise subject to the constraints, including the strategic interactions that their actions can generate both with other peacekeeping nations and with the parties to the conflict. We investigate how a third party can lower the level of hostility in standard conflict models by altering the elements underlying the choice between war and peace.

Thus, on the demand side, economic variables determining the choice between conflict and cooperation (e.g. rent seeking, financial viability) are dealt with by a third party who is trying to solve the dispute. Chapter 3 integrates traditional bi-lateral models of conflict (e.g. Hirshleifer, 1995; Skaperdas, 1992; Grossman, 1991) to investigate how useful is the economic approach in helping a third party to provide the right incentives for a peace without potential defections. The models suggest that intervention is most likely to succeed when the third party can convince the belligerents that resistance to settlement is costly; that success is impossible; and that the cost of complying with the coercive demands is a price they can afford to pay. We also consider the use of side payments in the provision of satisfactory benefits, to affect the conditions of a settlement. However, limiting the scope of conflicts and enforcing agreed settlements is not feasible without the credible authority to regulate the conflict and to inflict heavier damage to one party, if necessary. Chapter 3 discusses the importance of credibility in the implementation of a resolution.

Often, the benefits of a victory might be much greater than a settlement, thus rendering an agreement difficult to realise. Domestic stakes could be difficult to divide, and a "shared pie" may be infeasible (e.g. only one legitimate government and military force can exist at any one time). Also, peace means relinquishing the weapons, thus entering a condition of vulnerability. Thus, intra-state wars are more

until independence in 2002.

likely when there are weak legal and state institutions, enabling the enforcement of temporary commitments (Walter, 1997; Powell, 2006). Chapter 3 considers how the enforcement of contracts by the international community can substitute weak domestic institutions.

The conflict models analysed suggest that violence within a society can be interpreted as the breakdown of the social contract between ruler and subjects. Although the social contract is not always codified, its perceived collapse can lead to a violent reaction by the disaffected groups. Among the several elements of a social contract, we focus on the state's capacity, the capacity of a state to fulfil its functions. The empirical literature on civil wars points out to the relation between state capacity to deter insurgents and societal violence (e.g. Fearon & Laitin, 2003). The absence of authority and a weak state capacity results in limitations to conflict resolution. The state's ability to raise funds is fundamental to its spending capacity; not withstanding its willingness to invest these funds back into society. As the economist Douglas Rimmer concluded in his study, *The Economies of West Africa*, published in 1984: Africa' political leaders had never been primarily concerned with economic growth but rather with the maintenance of political power and the distribution of wealth to themselves and their supporters. They were unaccustomed to restraint. Thus, how rulers use the fiscal revenues, and a country's resource profile, affect the probability of civil wars. Building on Besley & Persson (2008, 2010), Chapter 3 develops a model of state capacity with a ruler, a rebel movement and a third party intervention.

While these standard two-party models have led to important conclusions, they are partial and do not provide a complete and convincing tool to understand civil wars, even when economic factors are central. While they assimilate war and search for profit, implying that the only cause of war is the personal enrichment, several scholars have moved to a more complex approach that sees civil wars as arising from a mix of different variables. The mediation and bargain process may be hard to implement because of poor communication and fear that limit the room for realistic solutions. Therefore Chapter 3 develops a simple model that synthesises the problem of asymmetric information, in particular the role of overconfidence. Wrong perceptions, such as the overestimation of one's own relative ability, can affect the the size of a settlement region, or its existence. A significant obstacle to conflict resolution can also operate via preferences. War is partly a consequence of mutual mistrust, fear and hatred. To provide an alternative way of thinking about the limitations of peacekeeping, Chapter 3 focuses on human factors contributing to conflict escalation, such as the desire for vengeance. Angry forces may consider fighting as the only possible choice, regardless of any expected utility/cost calcu-

lation. Even when a peace agreement is reached, if the root causes that triggered the desire for vengeance are not addressed, the risk of a relapse into conflict is inevitably high.

Having discussed some of the factors prompting civil war and some intervention strategies, we need to understand the desire of actors to intervene, in particular as part of a multilateral operation. Regional organisations, *ad-hoc* coalitions of states and individual countries have taken on larger peacekeeping responsibilities in conflicts around the globe. They are a different kind of force than a unilateral intervention, often overseen by global or regional bodies, responding to international public opinion, and requiring a variety of staff, from military to administrative personnel. These forces are "'under the leadership of an international command structure and are composed of more than a few national participants" (Regan, 2002).

Given that national governments have a variety of aims and are not always honest about their motives so that their justifications cannot be taken at face value, there are major difficulties about determining the real objectives of the intervening powers. The collective responsibility for international security and the compliance to the UN norm of collective security provision would entail that all states, when capable of providing troops to peace missions, would do so, if needed. However, being able to deploy military forces does not always translate into choosing to do so. Although many countries can rapidly deploy peacekeeping units, they will not necessarily commit troops every time they are needed. To understand the supply of military peacekeeping forces, one has to understand the constraints faced by those that intervene. Peacekeeping diverts financial national resources from domestic to international priorities, reducing at the same time the number of troops available to assist the national government. Therefore, a vague commitment to international security can not be invoked as sole motivation. Chapter 4 relaxes the third part-unitary actor assumption and explores the factors determining countries' voluntary contribution to peace operations. Among the internal determinants of a country's intervention profile we would expect to find the institutional decision-making process, the strategic culture of a country, the national identity, the historical experience and the public opinion, namely the domestic consensus on participation, broadly reflected in the support of international deployment. However, these aspects are hardly quantifiable. Therefore Chapter 4 tests to what extent quantifiable factors, such as the number of national armed forces personnel; the military expenditure per capita; the participation in multiple missions; the number of casualties; the population displacement; and the distance to the conflict area can be a significant obstacles to increasing peacekeeping forces. Firstly, it

explains voluntary contribution by economic models on the private provision of public goods. Secondly, it evaluates a wide range of hypotheses, drawing on a number of case studies. Finally, it presents a panel analysis of individual countries personnel contributions to peace operation in the period 1999-2009, using a novel dataset with 2,889 observations personally collected. Results suggest that technical constraints and geopolitical considerations, all play a role. In particular, when a conflict is regarded as a threat to global stability, security concerns will trigger nation-specific responses.

Along with a quantum increase in peacekeeping activities, there is an impressive rise in the quality of troops required to fulfil new tasks. Since the Cold War ended, NATO alliance and its individual states have been offering to take over peacekeeping tasks and roles which are currently the responsibility of the UN. Today, NATO is the third largest provider of expeditionary forces in the world, after the US and the UN. NATO countries aspire to keep a global military presence. However, the gap between their ambition to be a "force for good" and their ability to fight wars is widening; recruiting enough volunteers to maintain NATO military at required levels is becoming critical. Indeed, by seeking to reform their armed forces, many NATO countries are reducing unnecessary territorial units, reorganising reserve forces into effective, specialised and modern reserve units, suspending or eliminating universal conscription duty and limiting unused infrastructure or disposing of outdated military equipment. In particular, a growing number of NATO countries suspended compulsory military service during the past decade or are now phasing it out, joining the US, Canada, the UK and Luxembourg in the group of All-Volunteer Forces (AVF). By reducing the intake, the volunteer model can make resources available to be invested in up-to-date equipments, thus improving the operational capabilities. However, the transition to smaller professional militaries has forced military organisations to shift their cost structure to recognise the elimination of labour priced below the market. Therefore, ending conscription tends to have two opposite effects, fewer soldiers paid higher wages; thus it is not clear what the net effect on personnel cost is. Chapter 5 investigates shifts in NATO expenditure on personnel, equipment, infrastructure and other costs over the period 1970-2008, and explores how the transition to AVFs has impacted on these shares of defence spending. Our results suggest that NATO forces are relying increasingly less on soldiers and more on capital. However, the end of conscription has not reduced the share of spending on personnel.

With almost 100.000 troops, and with the exception of the US operation in Iraq, the NATO-led International Security Assistance Force (ISAF) operation in Afghanistan is by far the largest military operation of the last few years. It is also

the NATO's first and largest ground operation outside Europe. ISAF's mission was initially limited to Kabul, but since October 2006 its remit has expanded to all the provinces of Afghanistan. In accordance with all the relevant UN Security Council Resolutions, ISAF's main role is to assist the Afghan government in the establishment of a secure and stable environment. To this end, ISAF forces are conducting security and stability operations together with the Afghan National Security Forces. However, security incidents in the country have been rising since 2003. The prevalence of poppy cultivation and drug trafficking threatens the stability of its government and the success of the operation, and can turn the nation into a safer haven for terrorists.

Crime may lead or fuel existing conflicts. While illicit activities provide significant financial resources to rebel groups, the competition between organized criminal groups over the control of illegal activities can take the form of violent retaliations that trigger spirals of violence such as those observed in Mexico or Colombia during the last few years. In Afghanistan, the interaction between violence and opium cultivation is contradictory. While in many poppy-free provinces the security conditions are worsening, in areas where poppy cultivation is a main activity, security is improving. Also, the direction of causality remains unclear. Opium funds insurgency through taxes on production and trafficking, while violence, and the absence of law-enforcement, encourages illegal cultivations. Besides this revenue mechanism, better occupational opportunities and higher wages may lower conflict through the opportunity-cost effect, a mechanism that remains under-explored in this context.

Therefore Chapter 6 returns to the demand side. This Chapter examines the interaction between income and insurgency activities using monthly time-series data on opium prices; four alternative measures of income; and security incidents for 34 Afghan provinces over the period 2004-2009. We explore whether higher opium prices fuel violence; to what extent increasing criminalisation has induced higher opium prices through higher risk premia; and whether alternative measures of the relative income can help explain the spread of insecurity in Afghanistan. Results show that unobservable common channels prevail in determining how income and conflict dynamics interact.

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This thesis is organised in seven Chapters, including this introduction. We provide an outline of each Chapter's original contribution to give the reader a sense of the novelty of this work.

Chapter 2 critically explores the causes of contemporary civil wars, to understand how to select appropriate strategies of intervention. We have included considerable survey material on the literature and institutions as background, since there are few works on the economics of peacekeeping and the available information is spread across different disciplines. Chapter 2 investigates also the role of rebel leadership through a simple formal model.

Chapter 3 considers the way that traditional two-party conflict model can be adapted to allow for third party intervention. While formal theories of wars have yet to consider an effective way to bring conflicts to an end, this analysis integrates standard economic models in a tractable way, to serve as a guide for how observable strategic, economic and political factors determine the probability of a successful external intervention.

While a wealth of studies covering the means of conflict resolution has largely neglected the factors determining peacekeeping activities, Chapter 4 represents the first systematic analysis of the conditions under which third-party actors are more or less likely to intervene in peace missions and the factors determining the size of their contribution.

In an effort to modernise their armed forces, NATO members have been suspending compulsory military service. Chapter 5 examines the effect of moving from conscription to volunteers on the shares of military budget devoted to personnel, equipment, infrastructure and other costs. To the best of our knowledge, a disaggregated analysis of NATO defence expenditure components has never been done before.

Given the links between anti-government elements in Afghanistan and its drug economy, NATO forces consider poppy cultivation an obstacle to the long-term security of the region. Chapter 6 represents the first micro-empirical evidence of the nexus income-violence in Afghanistan, the rebuilding of which has implications for the region as well as the rest of the world.

Chapter 7 concludes the manuscript, suggests potential policy implications and addresses some directions for future research.

Chapter 2

Civil War and Peacekeeping

2.1   Introduction

Since 1945 an estimated 13 to 26 million civilians have lost their lives in the course of armed conflicts, most of them in civil wars (Valentino *et al.* , 2004). Civil wars are the prevailing form of war, making up more than 90% of contemporary armed conflicts, and are more frequent in poor countries. Civil wars are fought over several causes, and are coded accordingly to them (e.g. ethnic conflicts, secessionist struggles). Often causes, like disputes over the control of a strategic region and ethnically motivated claims of secession, overlap and is thus difficult to make a clear distinction. Aims are frequently manipulated by the local elites and the rebel leaders to mobilise the potential followers. The story detailing what the conflict is about is also linked to international concerns. Self-determination and oppression are often displayed as driving motives and tend to rally more international support than issues pertaining to the control of natural resources. Therefore, a number of insurgent groups have switched from "marketing" themselves in terms of ideology in the 1980s, to demanding ethnic self-determination in the 1990s. Governments have also switched from battling Marxist rebels in the 1980s, to fighting ethnic separatists in the 1990s and then terrorists in the 2000s (King, 2007).

Conflict, whether international or civil, has been drawing increasing attention from development and political economists, in addition to political scientists. Contentions are generally shown to arise over matters of territorial control and power sharing, while others broaden the range to include ethical, religious and ideological claims. It is also widely accepted that bargained solutions occasionally break down because of asymmetric information and commitment problems. Generally, proponents of one theory partially accept the insights of the other theories. However, only a handful of theories model more than one of these dynamics at a time. More

importantly, a specific institution capable of facilitating compromise and enforcing commitment remains poorly understood.

How are civil wars and external military interventions related? What conditions are necessary for an external intervention to convince the opposing sides to engage in peace negotiations? Two questions underlie the literature on civil wars: why civil wars begin; and how they come to an end. Thus, section 2 of this Chapter starts with a critical examination of the underlying causes of contemporary civil wars. We ask whether it is the struggle for resources or more complex interactions that cause civil strife; the section attempts to distinguish between causes that ignite a conflict and causes that prevent a negotiated peace. Section 2 investigates also the role of leadership among rebel groups trough a simple leadership-followers model. The third section will introduce the concept of third party intervention, with a clear focus on the military nature of the intervention force. After a discussion of the background and the empirical patterns of peacekeeping, section 3 discusses the actors - the nations and coalitions intervening in conflicts - and their objectives; the choice set of instruments available to an intervening power; the timing of intervention; and the criteria for the success of a peacekeeping mission. We also summarise some of the evidence for and against military intervention.

2.2   Civil War

> The peoples of the earth have thus entered into varying degrees into a universal community, and it has developed to the point where a violation of rights in one part of the world is felt everywhere[1]

Contemporary civil wars display many recurring features: the asymmetry between combatants; the avoidance of conventional battle; the targeting of civilians and the role of economic motives. However, there is no consensus on the appropriate definition. A good definition from which to proceed is provided by Fearon (2007, p. 3): "A civil war is a violent conflict within a country fought by organised groups that aim to take power at the centre or in a region, or to change government policies". How much violence is required to mark off civil wars as opposed to low-level political violence is still a matter of discussion. Many scholars consider civil wars as internal conflicts that count more than 1,000 battle deaths in a single year. According to this criterion, civil wars have affected over 29% of all nations since 1960. When the threshold is lowered to 25 battle deaths per annum, the percentage of countries afflicted rises above 56% of world's nations. In the same

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[1]Immanuel Kant in Perpetual Peace (1798)

period, 20% of nations have experienced at least 10 years of civil wars (Blattman & Miguel, 2010). The proportion of countries ravaged by a civil strife peaked in the 1992 at over 20 %. After that, the global incidence has fallen sharply, halving in 2008, while at the same time, there was a resurgence of serious conflict in Africa. During 1990s, Sub-Saharan Africa was the most afflicted of all the world regions, hosting the largest number of internal wars, with over 40% of the total and almost a third of its countries experiencing civil wars (Marshall, 2009).

Civil wars challenge societies and the international community. They inflict tremendous human suffering and reduce the prospects for economic development. There are three level of damages: national, regional and international. At the national level, damages affect mainly the non-combatant populations. These are displaced, slaughtered, also becoming vulnerable to disease and poverty. Between 1945 and 1999, Fearon & Laitin (2003) estimate that 3.3 million people got killed in 25 inter-state wars, while 16.2 million direct fatalities took place in 127 civil wars. Economic costs, such as the flight of capital, the drastic reduction in foreign investments and the increased rate of mortality among the civilian population, can last for years. Civil wars tend to reduce growth by 2.3% per year, so the average civil war, which lasts about 7 years, reduces GDP by about 15% (Collier, 2007). The total cost of a civil war is estimated at $65bn (Collier & Hoeffler, 2005). The bulk of existing literature on the economic consequences of war focus on the impact on human capital, including education, nutrition, health and productivity, and shows that this effect is the most persistent. Among the indirect effect of wars on human life (e.g. diseases after the end of conflicts), Ghobarah *et al.* (2003) find that the indirect fatalities are at least as large as direct casualties. Some scholars have claimed that the development and ensuing strength of European political, economic and social institutions was made possible by wars (Acemoglu & Robinson, 2006). In our context, as in the case of Uganda, where we see a stronger state emerging out of a civil war, this must be regarded as an exception. In general, the economic and health costs are not balanced by possible improvements in institutional democratisation and liberalisation brought by a *coup d'état*. Even though both theory and evidence are far from accurately assessing the long-run damage, a civil war certainly triggers a long process of social and economic deterioration.

The negative impact of civil war tends to extend to neighbouring countries. While the hostilities are confined to a particular country or even sub-regions of countries, individuals living in more stable regions can be affected by a ripple effect translated to political and social disorders. As populations are displaced and refugees begin to pour across borders, they often require medical attention, as well access to food and shelter. This may lead to strains on food supplies and in turn

affect the functioning of the fragile institutions in place. Tensions between local and refugee populations may ensue, bringing in political and economic instability, and at times lawlessness to the host country. The growth of the economy may also be seriously affected, and a possible arms race mechanism between neighbouring countries may be followed by an increase in military expenditures. Civil wars are a scourge for the whole region and the combined costs in the neighbouring countries are about as large as the costs to the country itself (Collier, 1999).

When the conflict degenerates further it may become an international concern. The rule of international law is threatened when a state slips out of the control of a recognised and legitimate government. But it does not stop there. As the weakened state is unable to fulfil its responsibilities, poverty, discontentment and corruption follow on. Weak states can then become fertile ground for international terrorist groups, further threatening international security. Sudan and Afghanistan are notorious as rogue states supporting terrorists causes[2], although in some instances stable governments have harboured global terrorist groups. Another serious global threat is the spread of HIV/AIDS, particularly among high-risk populations, such as women and children. Given the absence of complete and reliable data this cost is even harder to assess.

A full review of the literature on conflict is beyond this Chapter, Sambanis (2002) and Blattman & Miguel (2010) offer two excellent overviews of civil war causes. However, a short outline of the main ideas is useful to understand how to change the various incentives of combatants away from warfare. We draw a distinction between the source of a conflict and the elements rendering a peace treaty difficult to implement, since in the literature these two aspects are often mixed up. The next two subsections outline the alternative explanations of conflict while a third section reviews some empirical considerations. Finally, the section overviews the collective action problem among rebel groups.

2.2.1 Why do civil wars occur?

To evaluate the motivations related to the onset of civil war, we operate through categories: group versus individual motives and nature of the state versus the nature of the economy.

The group motivation is perhaps the one that more convincingly explains the

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[2]The Algerian Islamist insurrection was started by Algerian veterans who had trained in Sudan. Libyans who had trained in Sudan attempted to assassinate Gheddafi in 1993 and 1995. Palestinian Hamas activists trained in Sudan, as well as Aideed' s militia in Somalia and Islamist group in Eritrea and Ethiopia. Six of the convicted in the bombing of the World Trade Centre in New York were also Sudanese (Meredith, 2006).

occurrence of a civil war. The theory presents a struggle between two groups: one that either wants independence from the state or to take over it, and another that fights to maintain the *status quo* (e.g. nation's integrity, government's power). One of the most powerful motive to mobilise against the government is explained by horizontal inequalities. Violence is the results of a group discontent (Gurr, 1970), which can be the result of political or economic changes causing grievances among group members (Horowitz, 1985). The absence of working political institutions and the unequal access to economic or political resources incite both leaders and followers of a disadvantaged group to violence. Leaders gain support by playing on the generalised dissatisfaction among the population. People are dissatisfied because of an uneven access to employment, land, education, health care - the economic vector - or to political power, including civil rights and participation - the political vector (Stewart & Brown, 2007).

Individual gains are the most immediate understandable causes of civil wars. For that reason, the economic motivations for wars are better theorised than any other factors. The private motivations are based on the rational choice economics: the net advantages of war to same individuals motivate them to fight. The two warring factions are rational decision makers, who choose conflict or cooperative production, depending on which is more profitable on the margin. This approach takes conflict, and anarchy without property rights protection, as given, and focuses on how many resources are devoted to "appropriative activities" in equilibrium. Some classic authors are Hirshleifer (1995); Skaperdas (1992); Grossman (1991). The contest model (e.g. Hirshleifer, 1995), in particular, exemplifies this concept. Group identity is not considered as the cause but it is regarded as an instrument instead. This approach explains conflict intensity, duration, and winning probabilities, more than the motivations.

A further distinction can be made between motivations related to the nature of the state and those generated by the nature of the environment. The nature of the political regime and its economic policies play a big role in the outbreak of an internal war. The breaking down of the social contract, or rather the inability of the state to provide social services and acceptable economic conditions, is deemed to be a cause of the violence between the government and the population. Poor governmental institutions and few checks and balances on the executive power explains the widespread outburst of violent civil conflicts in sub-Saharan Africa, a region characterised by a weak state capacity and limited legal infrastructures (Herbst, 2000). In the presence of functioning political institutions political movements seldom turn violent. The institutions can either channel and respond to socio-economic discontents, by accommodating the protest and dealing with the

dissatisfaction, or put up resistance. Systems with high levels of political partici-
pation and inclusiveness can decrease the risk of conflict (Reynal-Querol, 2002).

The so called "environmental scarcity" argument (Percival & Homer-Dixon,
1998) claims that a major cause of conflict has to be found in the steady depletion of
environmental resources and the increasing pressure exerted by the overpopulation.
Not surprisingly, the IISS Chart of Conflict displays 18 water disputes around the
globe - mainly in Eastern Africa and Central Asia, but also in South America.
Also the presence of natural resources may be conductive to war. Particularly
"dangerous" resources are the diamonds (e.g. Gilmore *et al.* , 2005; Humphreys,
2005), oil (e.g. Fearon, 2005; Humphreys, 2005), narcotics (e.g. Angrist & Kugler,
2008). Lootable resources like alluvial gemstones, narcotics and timber also tend
to sustain and prolong war effort (e.g. Lujala, 2009). This last strand of the
conflict literature overlaps with the rent seeking theory and is not separable from
the private motivations.

2.2.2 Why a settlement is difficult to achieve?

In conflict models the fighting efforts of the two sides determine their relative de-
gree of success and war is a process of rational calculation. However, if actors are
rational, they should prefer a compromise, sharing the rents, to a costly war. Polit-
ical scientists have tended to emphasise the obstacles to compromise. Belligerents
are either driven by a rational cost-benefit calculation or by emotional forces such
as ethnic and cultural identity, where reaching a settlement over non- negotiable
values is difficult (Walter, 1997). In the set of rational explanations for the inabil-
ity to compromise, there are informational problems and bargaining indivisibilities
(Fearon, 1995).

Informational problem arises when the combatants have private information
and have incentives to misrepresent them. The uncertainty of war makes informa-
tion unreliable and calculation difficult. In economic theory, information failure
occurs in imperfect markets. Economists generally advocate free, private and com-
petitive markets; however, markets might not function optimally in conditions of
uncertainty, or when information is insufficient, inaccurate, late. Similarly the
fighting occurs in an uncertain environment, in which assessing the military costs
is extremely difficult. Front lines, alliances, resources, weather; every element shifts
rapidly and makes calculation inaccurate. Reliable information about the oppo-
nent's relative strength are not usually available. Moreover, there are incentives to
keep information concealed and to release false information (Fearon, 1995). Bel-
ligerents cannot transmit their private information, as such messages may not be

credible. Equally, transmitting proofs of military strength may reduce winning chances (secrecy is useful in fighting).

Conflict is costly and one would expect bargaining over contentious issues to avoid war. However, bargaining can fail when the prize cannot be divided in acceptable ways, such as when deep values are at stake. Bargaining indivisibilities underscore the irreconcilable nature of civil wars: rebels taking over the government means that government will lose the power; rebels seceding from the state means that government will no longer control that part of territory. Scholars differ on how important such indivisibilities are in practice, and Powell (2006) argues that indivisibilities should be seen as a commitment problem, an inability to have faith in the division. His analysis shows that bargaining range is not empty even if the dispute concerns an indivisible issue. The problem is that states cannot commit themselves to abide by these agreements. If commitment were possible, both sides would prefer a lottery that awards the contested issue with the same probability of winning the war, therefore avoiding all the costs of conflict. We argue that part of the issue is a technical one. Most expected utility models assume certainty equivalence, where the probability of winning the prize and a share of the prize are formally identical. This is questionable. In one direction, for a risk-averse agent the certainty equivalent is less than the expected value of the lottery because the agent prefers to reduce uncertainty. In the other direction, for indivisible values, a 30% chance of freedom is worth fighting for relative to accepting 30% freedom.

There are additional rational reasons, due to a changing perception of costs involved over time. As conflict progress, belligerents' personal balance between direct costs -such as weapons acquisition and the recruitment and retention of fighting forces- and the original aims do not cease to evolve. When conflicts are protracted, belligerents take into account not only the future costs but also the past costs. War is an investment, so fighting is not limited only to reaching the original aim but also to justify the sunk costs such as damage to property, deaths incurred and the deterioration of the international image (King, 2007). Long-lasting wars are an attempt at recovering past losses and the additional costs that might be suffered often take a second place.

2.2.3 Problems with the empirical evidence

Empirically, cross-country regressions dominate recent works on conflict causes, in an effort to explain the general conditions under which intra state conflicts are more likely to arise. The pioneers of this literature are Fearon & Laitin (2003) and

Collier & Hoeffler (2004).[3] Both use a panel of around 150 countries and covering a period of 50 years. Collier & Hoeffler (2004) find that slower economic growth in a preceding five years period, a high presence of natural resources and a low level of secondary school attainment in the population, are positively correlated with the likelihood of a civil war. In particular, the ability to finance a rebellion determines the feasibility of a civil war (e.g. from looting, the smuggling of natural resources or the trade of illicit products). Ethnic and religious fractionalisation and income inequality appear statistically insignificant. Similarly, Fearon & Laitin (2003) find that proxies for political grievances, namely ethnic and cultural diversity, are poor predictors for war's occurrence. However, rough terrains and large population help to organise an insurgency. Also the state capacity, measured as per capita income and changes in regime type, is a robust account for civil wars. They conclude that war is more a result of weak central government and geographic conditions than economic circumstances. Recent country-level studies also confirm that poor and institutionally unstable countries are most prone to civil wars (Hegre *et al.* , 2001; Hegre & Sambanis, 2006). Yet, the results are not conclusive for ethnic fractionalisation (i.e. the number of groups). More recent studies find that the ethnic polarisation (i.e. the relative group sizes) is linked to conflict (Montalvo & Reynal-Querol, 2005).

The relation between political regime and civil war has been found by many other scholars. In particular, the relationship between democracy scores and the risk of civil conflict is non-monotonic. "Anocracies" - as defined by the middle of the Polity index of political regime - are more prone to civil war than either pure democracies or pure dictatorships. To recall, both Hegre *et al.* (2001) and Fearon & Laitin (2003) employ the Polity index of political regime to test for the effects of anocracy. The usual interpretation is that, in democratic regimes, the social contract is strong enough to avoid violent mobilisations while in authoritarian regimes no room is left to protests. In poor countries democratisation increases the risk of conflict, while the risk decreases in rich countries (Collier & Rohner, 2008). Nevertheless, this theory is open to question, since the Polity index includes a factional category, where political competition is "intense, hostile, and frequently violent". These components exhibit a strong relationship with civil war and when they are removed from the Polity index, the original relationship disappears (Vreeland, 2008).

Overall, the main empirical works reach conflicting conclusions, even when similar data and techniques are employed. Blattman & Miguel (2010) put forward three main explanations. Firstly, they attach different interpretations to variables

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[3]Each of these papers has more than 1900 citations in Google Scholar

like per capita income. This represents the opportunity costs of rebellion in Collier and Hoeffler paper[4], while Fearon and Laitin link income level with state capacity. Therefore measures and proxies are quite crude. Secondly, studies code civil wars in different manners, some use conflict onset while others use conflict incidence. Finally, many works are not derived from theory and include a number of endogenous variables (in fact, in both studies the endogeneity bias of explanatory variables is only addressed using lags). In attempting to address the endogeneity concerns, Miguel *et al.* (2004) use rainfall to instrument for the impact of growth on conflict in Africa.

Scholars widely agree that the duration and termination of civil wars depend on how a war begin and is pursued. Civil wars emerging from coups or revolutions tend to be shorter, while wars that involve land conflict are on average quite long-lived, as are conflicts in which a rebel group derives major funding from contraband (Fearon, 2004).

2.2.4 Enabling collective action: the role of leadership

One of the greatest challenges for potential rebel is to overcome the collective action problem (Lichbach, 1994; Popkin, 1979; Wood, 2003).[5] Since many of the collective benefits of a victory will be realised independent of participation, rebel leaders face a challenge when convincing individuals to join their forces. Armed conflicts involve a high risk of death, so from a rational choice perspective private motivation alone rarely explains the followers' incentive to fight. Although regular combatants discount their future utility, they know the risk of being permanently injured. Thus they look for alternative options prior to joining an insurgence.[6]

Providing positive and negative selective incentives are generally argued to solve collective action problems (Olson, 1965; Lichbach, 1994). In this respect, rebel leaders are essential to the effectiveness of rebel organisations (Clapham, 1998). Not only they offer ideological guidance by playing up religious or ethnic affinities to persuade the followers to mobilise. They also guarantee the provision of selective incentives.

Rebel leaders play an important part in providing rewards and punishments (i.e. resorting to coercion to get a person to fight). However, Weinstein (2009)

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[4]They suggest that in the absence of alternative opportunities in the legal economy, wars allow unemployed young men to become rebels. There are also studies indicating that young men have a taste for rebellion and that they are more likely to join one (Urdal, 2006).

[5]For a critical view see Kalyvas & Kocher (2007)

[6]The marginal cost of rebellion decreases when the government is repressive against the population. Sometimes, "'it pays to rebel'", as was the case of the SPLM guerrillas in Sudan (Meredith, 2006).

highlights that rebel leaders can be constrained in the way they configure their reward structures. He distinguishes between rebel organisations with economic endowments (e.g. natural resources) and social endowments (e.g. ethnic identities). This raises important questions about the role of leadership when it comes to promising and guaranteeing future rewards. Rebel leaders can make decisions about different mixes of endowments as they attempt to recruit the best participants for their movements. While the presence of economic resources allows to attract recruits on the basis of short-term rewards, this strategy entails the risk that organisations might be joined by opportunistic militants who heavily discount the long-term goals of the organisation. On the other hand, leaders can also attract new recruits through appeals to social ties, ethnic identity, or national sentiments. Weinstein argues that this strategy attracts more committed individuals that have an interest in the long-term goals of the organisation. One major difficulty for leaders that have to rely on future rewards is to make credible promises to their followers that they will actually deliver on their promises once they achieve their goals. Therefore, Weinstein (2005) suggests that where resources permit, opportunistic rebel leaders crowd out ideological leaders, because short-term rewards are more credible than promises of future returns. While Weinstein (2005) alludes to the link between rebel organisations and natural resources, less attention is paid to the conditions under which rebel leaders are able to make credible promises to recruit and sustain fighting. For example, given everything equal, which rebel leaders are more likely to make credible promises to their followers and begin or continue fighting?

Weinstein (2009) focuses on positive selective incentives, some leaders resort to selective violence to gain support by increasing the cost of abstaining from an organisation. Gates (2002) develops a model where rebel leaders can use material incentives alongside ethnic appeals to recruit fighters. This model highlights how incentives and methods of recruitment vary with ease of punishing defectors. If the social or geographical distance between leaders and recruits is relatively large, it becomes more difficult for the leader to supervise and punish. Thus, greater distance between the leader and the recruits implies that the leader needs a greater amount of material incentives to sustain support.

A major debate remains about who carries out the punishment. Individual leaders may be willing to sustain this cost in return for access to resources or status. Indeed, high levels of cooperation can be realised with just one elected individual acting as a sole arbiter of punishment. Fehr & Gachter (2002) show experimentally that the altruistic punishment of defectors is a key motive for the explanation of cooperation. Altruistic means that individuals punish, although

it is costly for them and yields no material gain. In contrast, cooperation breaks down if altruistic punishment is ruled out. This is striking not only because a single leader can promote high level of cooperation, but also because when punishment is restricted to a leader, all group-mates do better since fewer individuals suffer the cost of administering punishment (Dreber *et al.* , 2008). Harsh punishments not only increase the individuals' costs of defections but also provides a tangible and credible signal to potential defectors. A credible threat is considered a more effective method of achieving cooperation than punishment because it increases the costs for future free-riders (Frank, 2003).

2.2.5 Wars without rebel leaders? The effects of assassination

Many formal approaches to civil war do not explicitly account for the role of rebel leadership. If we believe that leadership matters, it is also important to focus on how the fate of rebel leaders changes the course of conflicts. Certainly, the killing of a leader of a rebel movement is among the most severe form of damage inflicted to a rebel movement. Recent targets includes the leader of Myanmar's rebel Karen National Union killed in Thailand; the leader of Papua Independence Organisation (OPM) killed by Indonesian forces; the leader of the Tamil Tiger killed by the Sri Lanka army; the leader of the Lord's Resistance Army killed by Ugandan troops; and a top leader of the Revolutionary Armed Forces of Colombia (FARC), killed during a fight with government forces. The very number of successful leader assassinations emphasises the remarkable continuity in the killing of a rebel leaders from the 1980s up to the present.

Beyond the impact on the victim, the assassination of a rebel leader (RL henceforth) has a direct effect on the confidence of the group's members on a victory. It undermines the moral of the group; produces a crisis of authority; disrupts the group's popular and international support. Yet despite the importance of assassination as a crucial event in civil wars, little attention has been paid to the consequences of such acts on the survival of a rebel organisation. Beyond some more thorough accounts of specific civil wars which include the profiles of individual leaders, social scientists have paid little attention to assessing the effect of assassination on civil war. Where scholarly works have addressed the issue, it has been in relation to the assassination attempts on world leaders, and mostly thorough a detailed historical account of particular assassinations (Hudson, 2002) or the individual-level characteristics of the leaders themselves. To the best of our knowledge, the only papers assessing the impact of assassination are those by

Jones & Olken (2009) and Zussman & Zussman (2006). Jones & Olken (2009) find that assassinations of prominent political leaders lead to an intensification of small-scale conflicts relative to failed assassination attempts. They also find that the assassination of autocrats produces institutional changes. Zussman & Zussman (2006) find that the Israeli stock market reacts strongly to the assassination of senior leaders of Palestinian terrorist organisations. Finally, Iqbal & Zorn (2008) focus on the interaction of factors that influence the occurrence of such killings and note that assassinations are less likely to occur in system that provide a regular means of leadership turnover.

Absent is a systematic analysis of RL deaths. However, there are some well-know examples of RL deaths shortening conflicts. The UNITA in Angola, for example, signed a durable peace agreement only when the movement had been weakened by the death of its leader Jonas Savimbi, a men whose "messianic sense of destiny" (Hodges, 2001) to rule Angola had until then precluded compromise. The transformation that followed Savimbi's death was outstanding. From being one of the most protracted conflicts in Africa, Angola became, within five years, one of the most successful economies in sub-Saharan Africa (Vines & Oruitemeka, 2008). Another example is Sri Lanka, where the government in May 2009 declared an end to the 25-year civil war following the killing of the leader of the Tamil Tigers by the Army; an act that resulted in the defeat of the rebel group.

Clearly the assassination of a RL creates a vacuum that cannot easily be filled. This vacuum provides incentives for various sub-factions to fight for power. Repressed rebel factions might rise and further challenge the authority of the "previously major" rebel group. In addition, the demise of a strong leader can lead to a general decrease in popular support as they no longer can apply punitive measures to indiscipline, and implement decentralised strategies of governance to establish effective authority over civilian populations (Kalyvas, 2006). In this section we develop a simple leadership model to improve our understanding of leadership and to identify causal mechanisms.

A simple single-leader-multiple-follower game (SLMFG)

We consider a SLMFG, involving a single leader and N (N>1) followers. Let $u \in U \subset \mathbb{R}$ and $a^n \in A^n \subset \mathbb{R}, n = 1, 2, ..., N$ be the actions available to the leader and followers, respectively. The leader makes the decision first and announces it to the followers. The followers, after knowing the leader's decision, play a Nash game, making concurrent and competitive individual moves. The payoffs are interrelated inasmuch as followers' and leader's decisions influence each others payoffs. SLMFG

have important implications in economics, including incentive design problems (Groves, 1973).

Let the payoff functions of the leader and the followers be:
$V^L(u, a^1, a^2, ..., a^N)$
and
$V^{f_1}(u, a^1, a^2, ..., a^N)$, $V^{f_2}(u, a^1, a^2, ..., a^N)$ .... $V^{f_N}(u, a^1, a^2, ..., a^N)$,
respectively.
For a given action announced by the leader L, the Nash equilibrium for the followers' subgame is the N tuple: $(a_u^{1*}, a_u^{2*}, ..., a_u^{N*})$, such that
$V^{f_1}(a_u^{1*}, a_u^{2*}, ..., a_u^{N*}) \geq V^{f_1}(a_u^1, a_u^{2*}, ..., a_u^{N*})$, $\forall a^1 \in A^1$, $V^{f_2}(a_u^{1*}, a_u^{2*}, ..., a_u^{N*})$
$\geq V^{f_2}(a_u^{1*}, a_u^2, ..., a_u^{N*})$, $\forall a^2 \in A^2$ .... $V^{f_N}(a_u^{1*}, a_u^{2*}, ..., a_u^{N*})$
$\geq V^{f_N}(a_u^{1*}, a_u^{2*}, ..., a_u^N)$, $\forall a^N \in A^N$.

The leader problem is to determine the optimal decision u^* such that

$$u^* = argmax_u V^L(u, a_u^{1*}, a_u^{2*}, ..., a_u^{N*}). \tag{2.1}$$

The (N+1) action tuple $(u^*, a_u^{1*}, a_u^{2*}, ..., a_u^{N*})$ is the Stackelberg equilibrium of the SLMFG. It is assumed that the followers' subgame has a unique Nash equilibrium for every action announced by the leader. We assume that players have complete knowledge of the game and unlimited computational capabilities (perfect rationality), the leader knows the payoffs of every follower and can compute the corresponding equilibrium of the followers' game while the followers, having common knowledge of their payoffs, can determine their responses.

We examine the role of leadership in the "'collective dilemma"' Collective actions pose an important problem at the level of individual decisions: how much to contribute. Individually rational behaviour prevents a socially rational outcome. The difficulty to monitor and coordinate the execution of an agreement by the group leads to the "'free-rider"' problem. Many scholars agree that iteration and retaliation strategies resolve the collective dilemma - its repeated version has many equilibria in which cooperation is enforced by the threat of non-cooperation in retaliation for non-cooperation. Others (Calvert, 1992; Frohlich *et al.* , 1971) suggest that the coordination problem is resolved by external players who take the lead by proposing a coalition aiming at the production of some good and a particular distribution of the benefits. In particular, any player with control over the distribution of benefits generated by the collective actions can achieve and enforce cooperation (Alchian & Demsetz, 1972; Popkin, 1979). We provide an analysis of leadership when its function varies from a coordination role to one of coercion. Leaders are opportunistic and seek personal success, and this may partially clash

with the goals of the individual members of the group. While helping individual to coordinate, they may go beyond what is the group optimal choices because of their greed. We will focus on the leader's ability to enforce full cooperation with retaliatory threats.

How does leadership sustain cooperation?

By definition, a leader causes people to do something that otherwise they might not otherwise do, something not in their immediate interest;[7] often leaders are accepted because of their ability to solve problems of cooperation, usually through the use of selective incentives to force players to contribute. Yet their capacities must not be taken for granted and the issue of sustaining cooperation can produce some controversial results.

The problem of cooperation is analysed in the following form. Let N be the total population and $n_t^1, n_t^2, ..., n_t^f$ be the population of followers/rebels, people who voluntarily join the insurgency on any interaction t. Rebels have the same preferences, and are organised as a lobby, competing with the opposing government to control the allocation of the public resources b. On each iteration t, rebel i's strategy is either cooperate $a_t^i = 1$ or defect $a_t^i = 0$. Cooperation has a cost c which is not incurred in case of defection. We choose these units of participation so that effort is added across rebels to yield insurgency effort $R = \sum_1^f a_t^i = n_t^f$.

Letting a_t^i the contribution by rebel i, insurgency's probability of success is give by $p = n^f/N$. The game has three ingredients; (i) the share λ of the budget b to be distributed to the rebels' community as a form of non-excludable public good, (ii) the share σ of benefits received by the group leader, (iii) the specification of how the remaining budget will be allocated among the active participants $(a_t^i = 1)$. We assume a linear valuation of the private and public benefits.

We define two different ways in which the remaining budget - the private good - is distributed to the rebels. In presence of a leader, a participation rule is applied, which establishes incentives to reward the rebels' contribution. In absence of a leader, there is an egalitarian division among all rebels, because of a lack of monitoring tools.

In presence of a leader, the expected utility of rebel i is given by

$$V_t^i = (1 - \sigma)p_t(\lambda b + (1 - \lambda)ba_t^i) - c \tag{2.2}$$

and without leadership it is

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[7]It might be useful to recall the definition of power, as given by French Jr (1956): the ability to induce others to take actions that they would not have taken, had the first individual not acted

$$V_t^i = p_t(\lambda b + (1 - \lambda)b) - c = p_t(b) - c \qquad (2.3)$$

Although the first rule intends to provide incentives for collective action, there are some additional features of the game structure (e.g. the leader's compensation σ) which render rebels' payoffs under full cooperation with a leader lower than their payoffs under full cooperation without a leader.

In offering solutions to collective action problems, the leader determines, to some extent, what share of benefits constitutes a "'collective good"' to be pursued by the insurgency (λ) and the part of benefits that can be used to the leader's own profit at the expense of all group members (σ). The outcome of the impure coordination game is used to favour the leader directly and to allocate more gains to those whom the leader wishes to reward.

Our scope is to characterise and compare the conditions under which cooperation can be sustained with and without leadership.

Leader Strategy

Our game starts with a leader who supervises and monitors the choices of the members of the rebel group and can take actions by dictating allocations, and in so doing targeting rewards and punishments. Rebels recognise his authority, and he was chosen through some particular process. Following Bianco & Bates (1990), we assume that the leader observers each rebel's strategy a_t^n on each iteration t (or repeated play) and reward or punish each follower separately. The leader gives rebels the incentive to cooperate by distributing benefits to cooperators ($a_t^i = 0$) and withholding benefits from defectors ($a_t^i = 0$).

At $t > 0$, the leader rewards rebel i if $a_t^i = 1$ on all $t^* < t$, punish rebel rebel i otherwise. Thus, a leader can reward or punish a rebel i regardless of what action he takes on another rebel j. The game includes a significant interaction between the leader and the rebels: the leader offers a benefit to a rebel, provided that he accepts the leader's leadership in coordinating the group. We do not develop a leader's utility function. We assume only that the leader is opportunistic, wants to maximise the insurgency payoff and has built-in incentives to create conditions in which cooperation can be sustained. Leadership is analysed in its power of sanctioning rebels and allocating the resources. In our game the leader does not retain his position over time, and in a second stage he is overthrown (e.g. assassinated).

Payoffs and Strategy with Leadership

The payoff function for rebel i on iteration t becomes

- $V_t^i = (1-\sigma)\frac{\sum_1^f a_t^i}{N}(\lambda b + (1-\lambda)b) - c$ if rebel cooperates and is rewarded

- $V_t^i = (1-\sigma)\frac{\sum_1^{f-i} a_t^i}{N}(\lambda b)$ if rebel defects and is punished

Any rebel i begins the game cooperating, and cooperates as long as the leader rewards him and the cost of cooperating does not exceed the benefits. The "agreement"' is enforced by the rebels threat of non cooperation in retaliation for unprovoked punishments. This ensures that the leader is kept "'honest"' - does not misuse the sanctions - and requires taking actions against him when applies the wrong selective incentives. Formally,

- at t $= 0$ rebel i cooperates

- at t>0

  - i cooperates if $V_{t^*}^i \geq V^i(n^{f-i})$ and the leader rewards i on all $t^* < t$
  - i defects otherwise

Assuming that the players' threats are credible and effective, rebel i payoff for the multiple iteration game equals
$\frac{1}{1-r}\left((1-\sigma)\frac{\sum_1^f a_t^i}{N}(\lambda b + (1-\lambda)b) - c\right)$
where r is a discount factor, reflecting the time-value of money and the players' impatience. When rebel i defects and the leader retaliates, i's payoff is $(1-\sigma)\frac{\sum_1^{f-i} a_t^i}{N}(\lambda b)$

Thus a leader can effectively sustain cooperation, if and only if

$$\frac{1}{1-r}\left((1-\sigma)\frac{\sum_1^f a_t^i}{N}(\lambda b + (1-\lambda)b) - c\right) \geq (1-\sigma)\frac{\sum_1^{f-i} a_t^i}{N}(\lambda b)$$

Payoffs and Strategy after Leader's Overthrowing

The payoff function for rebel i on iteration t becomes

- $V_t^i = \frac{\sum_1^f a_t^i}{N}(\lambda b + (1-\lambda)b) - c = \frac{\sum_1^f a_t^i}{N}(b) - c$ if rebel cooperates

- $V_t^i = \frac{\sum_1^{f-i} a_t^i}{N}(\lambda b + (1-\lambda)b) = \frac{\sum_1^{f-i} a_t^i}{N}(b)$ if rebel defects

According to the Folk Theorem, if a rebel's discount rates is sufficiently high, full cooperation can be enforced as a subgame-perfect equilibrium (Selten, 1975; Fudenberg & Maskin, 1986). Any rebel i needs to employ a trigger strategy: cooperating until someone defects. Any deviation from cooperation by rebel j triggers

permanent defection. Therefore, rebels make their behaviour in subsequent collective action problems contingent on the outcomes of previous problems.[8] Formally, we have

- at t = 0 rebel i cooperates

- at t>0

    - i cooperates if $V_{t*}^i = V^i(n^f)$ for all $t^* < t$

    - i defects on all subsequent iterations otherwise

Any trigger strategy must be subgame-perfect to sustain cooperation in iterated games. This implies two things: any rebel's threat must be effective - deviation does not improve rebel's payoff - and credible.

Rebels' payoff for the multiple iteration game equals $\frac{1}{1-r}\left(\frac{\sum_1^f a_t^i}{N}(b) - c\right)$

If rebel i makes the payoff-maximising deviation from full cooperation (full defection) and other rebels cease to cooperate[9], i's payoff equals $\frac{\sum_1^{f-i} a_t^i}{N}(b)$. In absence of a leader, full cooperation can be sustained if and only if

$$\frac{1}{1-r}\left(\frac{\sum_1^f a_t^i}{N}(b) - c\right) \geq \frac{\sum_1^{f-i} a_t^i}{N}(b)$$

Under this condition, rebels overcome personal interests to act in a manner that provides gain for them all. Are rebel group's benefits degraded when leaders are overthrown? Under a leadership, we have:

$$r \geq 1 + \frac{Nc}{(1-\sigma)\sum_1^{f-i} a_t^i(\lambda b)} - \frac{\sum_1^f a_t^i}{\sum_1^{f-i} a_t^i(\lambda b)}$$

While, in absence of a leader, the relation becomes:

$$r \geq 1 + \frac{Nc}{\sum_1^{f-i} a_t^i(b)} - \frac{\sum_1^f a_t^i}{\sum_1^{f-i} a_t^i}$$

Without resorting to further calculations, the model shows that, in general, the conditions under which cooperation can be sustained in presence of a leader

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[8]Many possible schemes of punishing non-cooperation would support a stable pattern of cooperative behaviour in equilibrium, from tit-for-tat to permanent defection.

[9]Each $j's \neq i$ response to $i's$ defection is optimal given that all rebels so respond.

are narrower than in absence of a leader. The result is not surprising and is mainly due to the value of common-interest public goods, which contributes in the determination of the optimal choice (e.g. cooperation or defection) and makes the cooperation under leadership more difficult to sustain. Moreover, the interaction between high values of λ (i.e. public goods are very valuable in the eyes of citizens) and σ (leader's profit) provides disincentives for collective action. The result runs counter to the hypothesised importance of rebel leadership and will be the subject of future investigation. The Appendix to this Chapter provides information on an ongoing "'disaggregated"' research project on rebel leadership.

Do you trust me? Why simple leader replacement is difficult

The leader-follower game assumes that leaders can credibly commit to their promises of rewards and punishments. However, in case the rebel organisation wins, there might be incentives for the rebel leader to redistribute only a very limited amount of the political prize. For example, a rebel leader might have promised political participation to its followers, but once in power an autocratic regime could increase the probability of staying in power. Additionally, to avoid free-riding, recruits have to trust the rebel leader that defectors are actually punished. Rebel leaders that form organisations from scratch slowly build a reputation that they will deliver the announced rewards and punishments. A history of interactions can be observed by new recruits, which enables them to form beliefs about the rebel leader's actions. Trust in the (rebel) leadership is a necessary condition to arrive at the results of the leader-follower game.

In case the rebel leader is killed a new leadership has to take over the redistribution and punishment within the organisation. However, any new leader will not have the same reputation to actually deliver on its promises. Recruits are unlikely to directly transfer the trust they had in the old leader to a new one. This poses a threat to the organisation as a whole since recruitment and fighting capacity relied on the credibility of the leadership. Therefore, even if a new leader can be installed, this may still lead to the demise of the rebel organisation.

2.3 Military intervention in civil war

In the past 19 years, the incidence of Civil Wars has gradually fallen, following a brief escalation in the aftermath of the Cold War. At the same time, there has been a slackening of the restraints that inhibited peacekeeping interventions, mainly by the veto power of the permanent members in the UN Security Council. The two

decades after the end of the Cold War can be seen as a transitional period. This period signalled the shift from a bipolar international system to one characterised by a growing number of constitutionally independent entities, some produced by the fragmentation of the Soviet Union and its satellites. New problems quickly emerged, primarily the need to deal with various non-governmental groups who felt no obligations to obey international rule and the decisions of the UN Security Council. The 1990s and 2000s were characterised by peacekeeping operation and peace negotiations, with increased size, number and intensity of external interventions, particularly those sponsored by multilateral organisations. Therefore it is no more than 20 years that we can reasonably pose the question about which response should be chosen at the international level. Peacekeeping is one form of response.

Peacekeeping is the most common type of action by armed force today, a purposeful dispatch of national troops into another sovereign country, and can be identified as a subset of military intervention. Pickering & Kisangani (2009) define military intervention as the movement of regular troops or forces (airborne, seaborne, shelling, etc.) of one country inside another, in the context of some political issue or dispute. There are five reasons prompting foreign military intervention. This distinction helps to clarify the nature of peacekeeping. (i) A defensive war, the response to an act of hostility ; (ii) a war of aggression to conquer a territory and its resources; (iii) a pre-emptive war to repel a perceived imminent and unavoidable attack, or to achieve a strategic advantage in an impending war before the threat materialises; (iv) a preventive war[10] under the belief that future conflict is inevitable, though not imminent; and (v) military interventions in the internal conflict of another state. Interventions in civil war could be pre-emptive when a civil war is about to ignite and the intervener wants to prevent it or can be targeted to halt violence when conflict itself has already produced significant damages. This very last type of military action is what we describe as peace operation, a military intervention in area of crisis. We do not consider pre-emptive intervention in civil war, since interventions over the last 20 years only took place after significant violence had occurred.

In examining the quantitative evidence on peacekeeping one runs into substantial methodological difficulties in determining which foreign deployments of troops in the internal conflict of another state should be counted as peacekeeping. The operational criteria that is most commonly used (e.g. by SIPRI) is that the deployment is authorised by the UN with the stated intention to: (a) serve as an

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[10]Preventive war is a strategic move which aims to preclude a shift in the balance of power in the direction of the adversary. Perhaps the second country is pursuing an extensive arms program that will give it a clear military superiority and will pose a serious threat in the future.
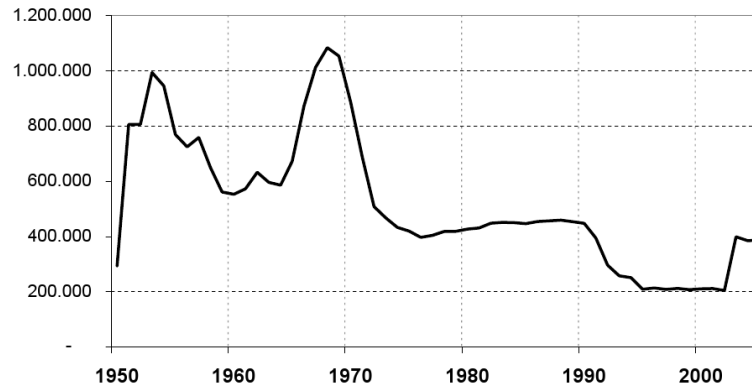
Figure 2.1: Number of US Troops in Foreign Countries. Source: US Department of Defence and The Heritage Foundation
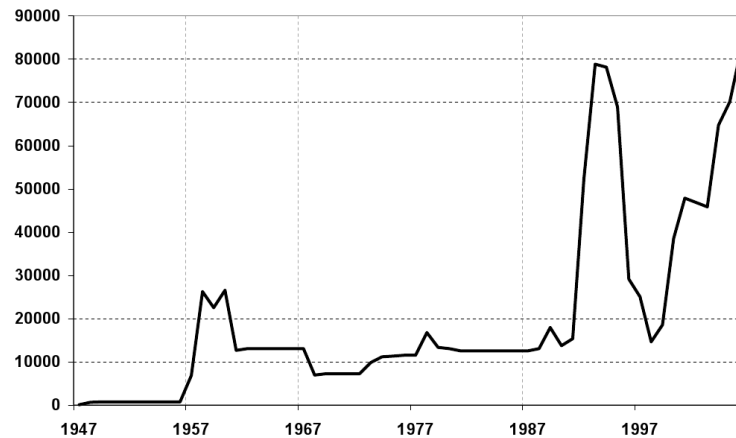
Figure 2.2: Total size of UN Peacekeeping Forces. Source: Peace and Security Section of the UN Department of Public Information and the Department of Peacekeeping Operations

instrument to facilitate the implementation of peace agreements already in place, (b) support a peace process, or (c) assist conflict prevention and/or peace-building efforts. However, in some cases the stated goal may be just a rhetoric of the intervention and may not reflect the real motivations of the intervener. In fact, the largest foreign troop deployments are by the US, the bulk of which are not associated with UN missions, but could be justified by the US as fulfilling peacekeeping missions.

Kane (2004) provides a comprehensive US troop deployment dataset for 1950-2003. US military have deployed more forces abroad and in more countries than any other military in the world history, in an effort to confront perceived contemporary threats. Fig 2.1 and 2.2 contrast the number of US troops in foreign countries with the number of UN troops in peace operations. The difference is striking. The scales

do not overlap, US troops in foreign countries today are more than 400,000; five times the maximum number of troops deployed by UN.

During the last 50 years, 50 countries have hosted at least 1,000 American troops at one point. The bulk of US troops have been concentrated in Europe (52% of troops deployed) and Asia (41%), while Africa and Middle East have hosted a relatively negligible number of troops. Africa in particular is the most distinct example of non-involvement by US military forces. The forces in Europe were reduced after the fall of the Berlin Wall. For the most part, US troops were stationed in allied countries, such as Japan, South Korea, and NATO members in a long-lasting Cold War system of deterrence to contain communism's expansion. However, troops sent to Korea in the early 1950s, to Vietnam during the 1960s and Iraq and Afghanistan in the 2000s saw active combat. A qualitative description of troop deployments would have to distinguish between combat and non-combat missions. To provide some additional context to the theory, the following subsection reviews some of the empirical background to peacekeeping. Next we explore the tasks of the modern peace missions; the actors and their capabilities; the objectives of an intervening power; the timing and forms of intervention; and the criteria for the success of an operation.

2.3.1 Background

The first UN peacekeeping operation was launched in 1948 to monitor the truce after the Arab-Israeli War; it was followed in 1949 by a mission to monitor the India-Pakistan cease-fire line in Kashmir. Sixty years later, those two conflicts continue and peacekeeping has expanded. SIPRI (2009) estimates that 60 peace operations were being conducted in 2008 and the estimated cost for UN peacekeeping was $7.75bn (FT 4/8/2009 p5), slightly more than 1% of what the United States alone spends each year on defense. In the same year, US$157bn have been allocated to the wars in Iraq and Afghanistan by the US (National Priorities Project, 2009). Although small relative to world military expenditures of around $1,500 bn, financing UN peacekeeping has been a matter of continuing concern, due to a remarkable increase in peacekeeping operations over the last 20 years.

Almost 80% of the missions authorised by the UN since 1948 were launched between 1988 and 2007 (Giegerich, 2008). During the 1990s it became possible to identify a trend within the international community for conducting complex peacekeeping and enforcement missions in the middle or in the aftermath of civil wars. Midpoint through the decade, close to half of the 26 operations were considered "'challenging"' or "'very challenging"' (Daniel *et al.* , 2008). Such missions caused

a large increase in the number of troops deployed, in particular in the last decade. As for UN missions, the number[11] rose from 18,000 personnel in 1999, to about 48,000 in 2001 before dropping off to a low 38,000 in 2003. Troop levels thereafter began rising again and stand at 92,000 today.

Since the mid-1990s, the UN has induced non-UN actors to take on a larger and more challenging role, and this has certainly contributed to the recent growth in non-UN operations. Non-UN actors are carrying out more operations than ever before, without any evidence of crowding-out effects. Instead, the two have thrived together and non-UN operations have not challenged the UN-led operations (Daniel *et al.*, 2008). When we look at the total number of troops deployed[12], including other organisations, such as AU, CEEAC, CIS, EU, NATO, and *ad hoc* coalitions, figures become striking. The number rose from 90,000 in 1999 to 335,000 in 2007, before reaching a low 178,000 in 2009. The sudden decrease is due to the Multinational Force withdrawal from Iraq (MNF-I). ISAF troops in Afghanistan, after the recent deployment of 48,000 additional US troops, will outnumber those in Iraq by the end of 2010 (United Press International, 25/03/10).

Bringing sustainable peace by means of external power is an ambitious commitment which requires a high level of involvement. The worldwide demand for peace missions is growing at a fast pace and demand for troops continues to outstrip supply. It is estimated that UN alone would require 200,000 personnel each year to sustain the current level of deployment (Roberts & Zaum, 2008). Although it is very difficult to measure the gap between demand and supply, in the last few years UN, NATO, EU and AU operations have been clearly over-stretched in some operations. In many instances, ill-equipped, relatively small and weakly empowered peacekeepers have to police large territories as in Sudan, Burundi, Congo and many other African countries. On the other hand, civil wars in Europe (such as in the Balkans) and in Middle East (e.g. Lebanon), have been quickly tackled with a relatively significant commitment of peacekeeping forces. This gap between ends and means has always been a major issue. This is especially true for those operations in Angola, Congo and Sudan, where the humanitarian impulse and the desire to resolve has not been matched by the willingness of Western countries to assume greater responsibilities and to carry the major burden of peacekeeping. The case of Balkans has never been replicated elsewhere. This might raise doubts about the importance that Western countries attach to some conflict regions.

Llewelyn & Dew (2004) have examined the peak force ratios in major stability

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[11]Numbers are taken from the UN Department of Peacekeeping Operations, excluding military observers, civilian police and civilian staff.

[12]Numbers are processed from the SIPRI Database on Multilateral Peace Operations, excluding military observers, civilian police and civilian staff.

and control operations in the post World War II. They argue that in no case, where a significant part of the population has been hostile to the occupying power, has a foreign force brought about order and stability with a force ratio of less than 20 troops per thousand of population. Furthermore, depending upon the strength and determination of the opposition, it has in important cases proved impossible (notably Algeria and South Vietnam) to achieve order and stability even with a force ratio approaching 30 or even 40. Diamond (2004) goes on to argue that the Bush administration failed to commit military forces necessary to ensure order in post-war Iraq, which would have needed half a million troops deployed to keep the same ratio to population as NATO had in Bosnia. The number of UN peacekeepers, especially in large-scale missions, is often offset by the size and logistical difficulty of the environments to which they deploy. For example, the UN Mission in Sierra Leone (UNAMSIL) at the start of this decade deployed 17,711 troops in a country of 71,740 square kilometres, a ratio of one soldier for every 4 square kilometres. The UN now has a similar number of troops in the DRC (MONUC), with a ratio of one soldier for every 100 square kilometres due to its large surface area. Kosovo, on the other hand, is the best-policed mission, with about 3.9 soldiers every square kilometre (see Table 2.1). The mission in Kosovo (KFOR) was overall successful. The high risk of a resurgence of large-scale violence were offset by the deployment of well-equipped, properly resourced and numerically superior forces. In Lebanon and East Timor, the comparatively low level of post-conflict violence owe much to the sheer scale of military, economic and diplomatic resources committed to those countries by the international community (see Table 2.1). The problem of over-stretching is even more pronounced in election observation missions.[13]

2.3.2 Peace operation: characteristics and tasks

There are four main features which characterise military interventions in civil wars, as conceptualised and undertaken during the last 20 years. (i) A non-traditional scope, often described as "humanitarian", which requires the forceful denial of combatants' movement and separation of groups; the control over areas at risk; the protection of humanitarian relief; the defence of the civilian population; counterinsurgency activities; and economic reconstruction. These operations respond to a conflict that is not directly menacing the national territory. (ii) The absence of political alliances. The operations do not relate to any specific obligations to allies (included, to same extent, NATO operations). (iii) The multinational make up of

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[13]In Angola, in 1992, a total of 800 election observers were assigned to monitor 5,820 polling stations in an area larger than the combined territories of France, Germany and Italy (Meredith, 2006).

Acronym	Location	Troops per 100 Km2	Troop Force Ratio
KFOR	Kosovo	390	23.6
UNIFIL	Lebanon	131	3.4
UNTAET	East Timor	62	8.2
SFOR	Bosnia and Herzegovina	48	5.3
JPKF	South Ossetia (Georgia)	44	24.3
MNF-I	Iraq	42	6.5
MINUSTAH	Haiti	39	1.2
UNMISET	East Timor	31	4.1
CIS PKF	Abkhazia (Georgia)	30	13.4
UNAMSIL	Sierra Leone	25	2.8
AMISEC	Comoros	21	0.6
ONUB	Burundi	20	0.6
UNFICYP	Cyprus	14	1.7
UNMIL	Liberia	14	4.6
EUFOR ALTHEA	Bosnia and Herzegovina	13	1.4
MIF-H	Haiti	12	0.4
AMIB	Burundi	12	0.4
CPF	Tajikistan	10	1.9
MAES	Comoros	9	0.3
ISAF	Afghanistan	9	1.6

Table 2.1: Peacekeeping Overstretch and Peak Force Ratios (number of personnel per thousand population). Authors' calculation based on records from the UN Department of Peacekeeping Operations, from SIPRI and from the CIA World Factbook

forces. Intervening troops operate under a mandate issued by one or more international security organisations, not necessarily the UN. (iv) The Security Council support through a UN mandate authorising the operation, which confer a degree of legitimacy.

The UN refers to this activity as "peacekeeping" and "peacebuilding" while European scholars use the expression "state building".[14] The UN Department of Peacekeeping Operations (2008, p.18) says "Over the years, peacekeeping has evolved from a primarily military model of observing cease fires and the separation of forces after inter-state wars to incorporate a complex model of many elements - military, police and civilian - working together to help lay the foundations for sustainable peace." Peacekeeping is not specifically mentioned in the UN Charter. Yet, a distinction is made between actions taken under Chapter Six of the Charter (Pacific Settlement of Disputes) and actions taken under Chapter Seven (Action

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[14]Freedman (2007) claims that the expectations are frequently overstated: the natural tendency is to describe such operations as restoring or supporting peace. The less inspirational "stability support" has been adopted in the early 1990s.

with respect to threats to the peace, breaches of the peace, and acts of aggression). The latter, which involve the direct use of force, are sometimes called peace enforcement. This distinction is not clear cut. We provide a brief overview of the three categories that are mainly used by scholars: traditional peacekeeping, peace enforcement and post-conflict stabilisation.

Traditional peacekeeping is the interposition of a neutral force to separate belligerents who have consented to the presence of the force. The definition of peacekeeping as stated by the Nobel Prize Committee when the prize was awarded to the UN in 1988: "as the contribution to "reducing tensions where an armistice has been negotiated but a peace treaty has yet to be established". The mission is installed with the agreement of both parties, often to monitor a border after a cease fire. If the conflict resumed the mission would withdraw. Operations including the restoration of law and order, basic services and governmental authority are called complex peacekeeping (e.g. United Nations Mission in Ethiopia and Eritrea, United Nations Disengagement Observer Force on the Golan Heights).

Since the end of the Cold War more robust missions have been attempted. The role of a mission is defined by the mandate agreed by the UN and the rules of engagement which define when and how the mission is allowed to use lethal force. Rules of engagement under Chapter Six tend to allow the use of force only for the self-defence of the mission; whereas under Chapter Seven, force may be used on the basis of a reasonable belief in hostile intent, either to the mission or the local population. Thus peace enforcement - under Chapter Seven - is the threat of use of coercion to induce the combatants to implement an international mandate intended to restore stability and can be a very challenging operation (e.g. Stabilisation and Implementation Forces in Bosnia and Herzegovina). In most of the hard-to-manage phenomena of collapsed states, traditional peacekeeping proves inadequate and robust peace enforcement is required before the rebuilding of those ruined societies can start and a democratic way of life can be created.[15] There is a grey area between peacekeeping and peace enforcement and the borderline between them is by its nature slight and easily crossed, as illustrated by the Congo and Somalia operations. We use peacekeeping, more broadly, to cover all military interventions designed to maintain or restore peace.

Post-conflict stabilisation involves a range of measures to reduce the risk of relapsing into conflict by strengthening national capacities, and to lay the foundation for sustainable peace and development. It restores authority and social services

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[15]In the spring of 1996, The International Response to Conflict and Genocide assessed the failure of United Nations Mission in Rwanda and concluded that UN needs to develop a new strategy for its interventions that would approach more scale Chapter Seven peace enforcement operations than traditional peacekeeping.

in an occupied country and is generally more demanding than basic peacekeeping (e.g. UN Stabilisation Mission in Haiti)(Daniel *et al.* , 2008). The relationship to local security forces is often a difficult issue. Part of the mandate may involve training or reforming the police and army of the state being supported. Such security sector reform (SSR) is difficult when the police or army have been the main perpetrators of the crimes against the local population.

2.3.3 Actors and capabilities

The political environment is characterised by a patchwork of national and multinational actors conducting military operations in the world's conflict zones. During the Cold War peacekeeping was very much a UN monopoly, representing the maximum action that could be authorised by the Security Council. Since 1990s the pattern has been more varied, with various organisations contributing to nation building operations. However, only a few, such as NATO, the European Union and the African Union, are structured and trained to deploy military forces. Such deployments under an international command structure and with many national participants require very different skills, from military to administrative personnel, all of whom have to respond to international as well as national public opinion.

The UN is the second largest provider of expeditionary forces in the world, after the US but ahead of NATO. In UN operations, the civilian and military chains of command are joined and integrated, with an explicit civilian primacy and a clear chain of command from the UN Secretary General to the local force commander. The UN impartial mediation and its international legitimacy are often regarded as a key quality by UN officials and host countries. A large body of literature claims that non-UN operations lack the moral authority, alluding to the existence of a "UN brand" that improves the operation by its essence. Also, developing countries often believe that non-UN actions are part of a Western sponsored project (Sambanis & Schulhofer-Wohl, 2007). At the same time, combatants are more often willing to accept a UN presence because of the limitations on the use of force, usually in self-defence (Urquhart, 2007).

However, the UN encounters several limitations. The Security Council members are regionally and ideologically diverse and the decisions are subject to veto in the face of strong East-West contrapositions. Another weaknesses of UN operations is their dependency on donor countries at the time of the emergency to be activated. As the former Secretary-General Kofi Annan observed, "the UN is the only fire brigade in the world that has to acquire a fire engine after the fire has started". Roberts & Zaum (2008) suggest that the Security Council cannot

address all security threats efficiently not only because of the veto power of the five permanent members, but also because of the selectivity of all UN member states, the so-called "selective security" concept. States are unwilling to provide resources and trained personnel to resolve conflicts except on a case-by-case basis, and they are reluctant to involve the Council in certain conflicts to which they are party, or which they perceive as distant, complex and resistant to outside involvement.

Given these limitations, it is helpful to identify those countries contributing most of the troops to UN missions. The number of troops in UN peace operations today represents a minuscule percentage of all armies worldwide: 77,000 soldiers (excluding police forces) relative to a pool of over 14 million, or just over 0.5%. Nevertheless, the pool of potential donors is limited. In many instances soldiers, including those employed in advanced militaries, are neither trained nor expected to deploy abroad, being conscripts or reserve forces. Some smaller nations do not have contingents (as opposed to individual military, police and civilian personnel) that meet minimum UN standards for deployment. Only 62 UN Member States - roughly 40 % of the total - maintain forces ready for more intensive missions (Center on International Cooperation, 2009).

In addition, only few states are usually willing to provide troops; 24 countries - less than one third of the total designated contributors worldwide - account for two thirds of all troop contribution. There is also persistence in contribution; long-term data suggests that once states start deploying forces to peace operations, they do not stop (see Table 2.2). Peacekeeping might be habit forming because commitments are never short term. Also, the defence establishment may consider peacekeeping as a way to enhance their visibility and increase the defence budget. The expertise acquired during past operations may lead to a comparative advantage in peace missions. In many instances, the experience of peacekeeping operations helps in domestic counter-insurgency, and this might be the case of India in Assam, Kashmir and Punjab (Sorenson & Wood, 2005). Forty-four countries have also established peacekeeping training centres, to foster the cooperation among the peacekeepers and to improve their their understanding of conflict through a direct exposure. Previous engagement, and maybe performance, along with *ad-hoc* facilities, might lead to future willingness to participate.

In 2008, only 66 countries provided more than 100 troops and the top 22 contributors (Table 2.3) were mainly emerging and developing economies (according to the IMF definition), the "outsiders" being respectively Italy, France, South Africa and Spain. In particular eight countries are considered low-income economies by the World Bank and seven are regarded as lower income economies. Furthermore, in the top five there are four Asian countries (Pakistan, Bangladesh, India and

$1991 - 1995$	$1996 - 2000$	$2001 - 2005$
France	India	Pakistan
Pakistan	Bangladesh	Bangladesh
United Kingdom	Poland	India
India	Ghana	Nigeria
Canada	Jordan	Ghana
Bangladesh	Pakistan	Jordan
Nepal	Austria	Kenya
Jordan	Finland	Nepal
Ghana	United States	Uruguay
Poland	Ireland	Ukraine

Table 2.2: Top 10 Contributors to UN Peacekeeping Operations, 1991-2005. Annual peacekeeping deployment are taken by the UN Department of Peacekeeping Operations (DPKO) website which provides a monthly summary of military and police contributions to UN operations.

Nepal). In the third column of Table 2.3 we rank the size of the "boots on the ground" according to the percentage of active armed forces deployed: 16 out of 22 countries are low-income economies, three are lower-middle and only three are classified as upper-middle economies. France, Italy and Spain disappear from the top 22, India drifts from the third towards the 44th position and African countries take the lion's share: they compose the top five (Gambia, Benin, Ghana, Senegal, and Niger) and make up more than 60% of contributors. Together with a possible regional bias in the allocation of UN missions toward African countries (King & Zeng, 2006), there seems to be a regional bias also in the willingness to provide troops.

It may be difficult to explain why, if the international community as a whole is committed to peace, the poorest countries are those for the most part supporting this objective. Since 2003, UN peacekeeping has been relying overwhelming on the troops of developing economies. Data from SIPRI shows that in 2003 developing countries peacekeeping through the UN had exceeded all others forms of peacekeeping, showing a steady upwards increase. Moreover, among developing economies, those who were former host countries, are now the new contributors, as is the case with Jordan, Namibia, and Baltic States. Looking at developing countries' contribution still leaves a highly heterogeneous group: sub-Saharan Africa, semi-industrialised South America, the oil-rich Middle East, the emerging economies and population giants of China and India. Bellamy & Williams (2009) suggest that Western peacekeeping is not declining, it has just evolved in complexity. They claim that Western countries' peacekeeping effort is conducted through "hybrid operations", where troops work in tandem with the UN forces but outside UN

	Country	Number in Armed Forces (000)	Adjusted Ranking
1	Pakistan	10,637	Gambia
2	Bangladesh	150	Benin
3	India	1,288	Ghana
4	Nigeria	80	Senegal
5	Nepal	69	Niger
6	Ghana	14	Uruguay
7	Jordan	101	Rwanda
8	Rwanda	33	Fiji
9	Italy	186	Nigeria
10	Uruguay	25	Bangladesh
11	France	255	Nepal
12	Ethiopia	138	Kenya
13	China	2,105	Togo
14	South Africa	62	Malawi
15	Senegal	14	Zambia
16	Egypt	469	South Africa
17	Morocco	196	Jordan
18	Benin	5	Mongolia
19	Brazil	368	Pakistan
20	Indonesia	302	Ethiopia
21	Spain	149	Mali
22	Sri Lanka	151	Guatemala

Table 2.3: Top 22 Contributors to UN Peacekeeping Operations in 2008. Numbers in armed forces are based from IISS Military Balance 2008. Adjusted ranking is based on contribution relative to the size of armed forces.

command.

Among the regional organisations conducting these new form of operations, the North Atlantic Treaty Organisation has certainly the primacy. On 28 February 1994, two American F16s shot down four Serbian military aircraft violating the no-fly zone over Bosnia. This episode was the first use of force by NATO. The action, enforcing UN resolution 816, marked the implementation of a UN/NATO ultimatum on the former Yugoslavia. Ever since, NATO has played an important role in the stabilisation of Kosovo and Bosnia. In 2009, more than 90,000 military personnel were engaged in NATO operations, most of them in the large International Security Assistance Force (ISAF) (see Figure 2.3). NATO has also a presence in Iraq, the Mediterranean, off the Horn of Africa and in Somalia, where it combines ground, air and naval operations. The operations in Table 2.4 represents the main scope of Europe's militaries today, and reflects the European inclination toward the upper end of the military capabilities. Along with NATO's founding members, the alliance's new members (i.e. Bulgaria, Czech Republic, Hungary,
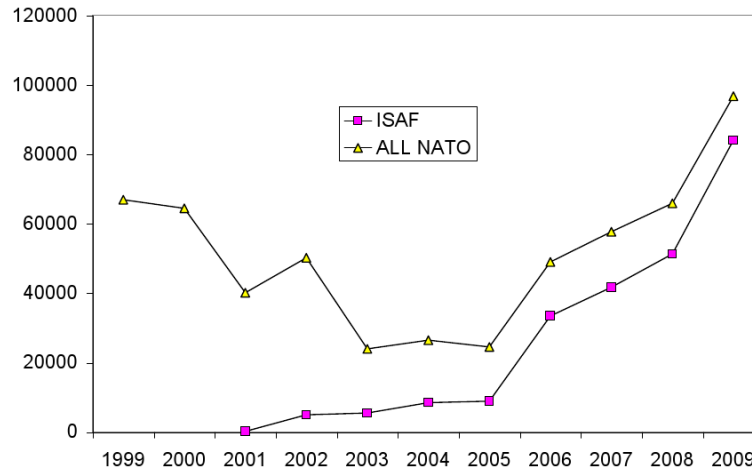
Figure 2.3: NATO Troops Deployment 1999-2009. Source: SIPRI Database on Multilateral Peace Operations

Latvia, Romania, the Slovak Republic and Slovenia) are increasingly keen to participate in NATO, EU and international UN-led operations, to contribute to the goals of these organisations (see Table 2.5).

Table 2.4: NATO Operations, 1999-2009

Current Missions		Completed Missions	
Kosovo	1999 -	Bosnia and Herzegovina	1995 - 2004
Monitoring the Mediterranean Sea	2001 -	Republic of Macedonia	2001 - 2003
Afghanistan	2003 -	Pakistan earthquake relief op.	2005 - 2006
NATO Training Mission in Iraq	2004 -	Counter-piracy Gulf of Aden	2008
Supporting the African Union	2005 -		
Counter-piracy Gulf of Aden	2009 -		

Source: IISS Military Balance

Although NATO-led forces today are struggling to bring stability in Afghanistan, we believe that this role might continue for other future operations for a number of reasons. NATO is trained as an international military alliance with an established and experienced command structure. It has a multinational rapid deployment force that is highly mobile, and possesses air bases and air power to protect its ground forces when these are sent on peacekeeping operations. NATO troops are better equipped than most of those operating under the UN flag - although more expensive. NATO allies are also politically and militarily homogeneous, while the UN must draw its force from a diverse pool of countries. Sandler & Hartley (1999) claims that NATO has also a comparative advantage in procurement over the UN. Another important advantage is the guarantee of heavy American participation -

Table 2.5: Forces of European NATO Members in Multilateral Peace Operations, 2008

Country	EU Operations	NATO and NATO-led	UN
Albania *	76	140	0
Belgium	64	609	329
Bulgaria	119	507	0
Croatia *	0	300	112
Czech Republic	2	819	0
Denmark	0	1069	4
Estonia	2	162	0
France	1859	4559	2068
Germany	114	5729	228
Greece	49	768	46
Hungary	159	705	128
Italy	370	4447	2325
Latvia	2	90	0
Lithuania	3	240	0
Luxembourg	3	31	0
Netherlands	145	1785	3
Norway	0	477	14
Poland	619	1434	829
Portugal	56	331	144
Romania	53	890	0
Slovakia	40	321	196
Slovenia	45	355	14
Spain	354	1412	1136
Turkey	232	1399	491
Ukraine	0	196	286
United Kingdom	13	8925	284

* Joined the alliance on 1 April 2009. Source: SIPRI database
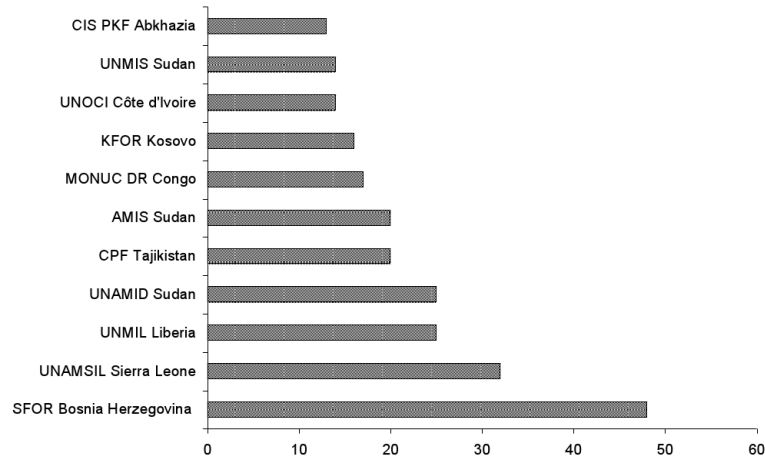
Figure 2.4: Deaths per year among Peacekeepers. Authors' calculation based on records from the SIPRI Database on Multilateral Peace Operations

a potential powerful actor in post-conflict stabilisation - when the US is given the lead.

NATO procedures usually offer a greater influence and autonomy over the use of the contingents than do those of the UN, even if national caveats (i.e. a restriction that NATO members place on the use of their forces) may limit the tasks to which a contingent is assigned. Missions that have tough rules of engagement or that are perceived as risky or morally unjustified have generated domestic pressure and national caveats on deployment of forces (e.g Afghanistan, Balkans). In this respect, the US use of military force in combat operations is unique, in that few other countries are both willing and equipped to take part in combat missions of such size.

Some claim that a high valuation of life in wealthier nations causes a casualty-averse approach, the use of too few peacekeeping troops and the use of a more capital- or weapon-intensive technology (Seiglie, 2005). This issue is controversial. Figure 2.4 shows the operations with more than 10 deaths per year among peacekeeping troops. Among the most dangerous operations there are the NATO-led operations and the collective forces under Russian command.[16] We will explore in more details the relation between the sensitivity to casualties and peacekeeping contribution in Chapter 4.

NATO presents also another significant drawback. Even if it is capable of deploying powerful forces in large numbers, it has no competence to implement civilian operations and depends upon other institutions to perform all the non-military

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[16]We deliberately excluded the operations in Afghanistan (ISAF) and Iraq (MNF-I and NTM-I) since these might seem to be more war-fighting than peacekeeping missions.

functions necessary to the success of any national building operation (Dobbins, 2007).

While coalitions spread the risk and cost of intervention and add legitimacy, there are trade-offs between burden sharing and unity of command. For long-term commitment in a secure environment, consideration of burden sharing often prevails, leading to a role for international institutions. In the case of highly demanding operations the desire for unity of command predominates (Dobbins, 2007). On several occasions, the delegation of responsibility to respond to a crisis has fallen on a single government, with the approval of the Security Council. States that are reluctant to place their troops under an international command also choose nationally/unilaterally-led missions. Individual states have taken the lead in some operations such as Britain in Sierra Leone; Italy in Albania; South Africa in Burundi; France in Côte d'Ivoire and Australia in the Solomon Islands. However, taking the lead in some operations does not prevent single state from handing control over to the United Nations when the mission is partly accomplished, as was the case of Australia in East Timor. Other regional organisations, such as the African Union and the EU, have provided a viable intermediate basis with potentially stronger claims to legitimacy than unilateral actors or NATO.

2.3.4 Objectives

The standard economic model in this area assumes that the peacekeeping actors are the governments of nation-states with some private, national, interests who agree to provide the international public good of peacekeeping, though there is an additional principal agent problem between governments principals and the military agents conducting the peacekeeping. While we will adopt this framework, we have to recognise that it is problematic because nation states are not unitary rational actors, their decisions reflect the operation of coalitions of differing interests. In addition, institutional structures like the separation of powers between the administration, the legislature and the judiciary preclude coherent unitary decision making. Partly as a consequence of this incoherence the justification for the intervention, provided to internal or international audiences, may differ from the actual objectives of influential actors.

Peacekeeping operations generally require nation-states to act in concert, at a minimum to get UN approval for the mission and this raises international collective action issues. Different states have different objectives, which may reflect private as well as public interests. The private interests may include minimising the direct cost on themselves of instability in close neighbours, responding to media or public

demands to do something, establishing their reputations as regional powers, earning money from supplying troops to the UN, opening prospects for their own firms in the target country and providing combat experience for their troops. There is a group of rich countries, such as the Scandinavian countries and Canada, who have traditionally appeared relatively altruistic in providing peacekeeping services, partly for domestic political reasons. Contributing to the international security, peace and justice through the military is normatively acceptable by the national and international community. Because of the hegemonic role of the US, it can be difficult to separate its private, national, and public, international, interests.

The preservation of human rights, peace, and the promotion of economic and social development are central themes in international law, but there are trade-offs between these and national sovereignty, both of which are affirmed in the UN Charter. Chapter 1, article 2.7 says nothing in the Charter shall authorise the UN to intervene in matters which are essentially within the domestic jurisdiction of any state, while Chapter 7, particularly articles 41 and 42, authorises the Security Council to introduce measures that may be necessary to maintain or restore international peace and security against those responsible for threats to peace, breaches of peace and acts of aggression. These measures may include not only economic sanctions but also military action against a country which violates the Charter. The conventional concept of Westphalian sovereignty as the rule to refrain from intervening in the internal affairs of other states has been largely reconsidered during the last 20 years. The extent to which the need to act to reduce human suffering takes precedence over concerns about sovereignty has been debated over the years and the right of humanitarian intervention has been controversial both when intervention has happened, as in Kosovo, and when it has failed to happen, as in Rwanda. In 1992, the UN Secretary General, Boutros-Ghali, spelled out the new doctrine for UN peacekeeping in *An Agenda for Peace*: "'The time for absolute and exclusive sovereignty has [...] passed"'.[17] The International Commission on Intervention and State Sovereignty in 2001 defined the concept of sovereignty as including the responsibilities of states and not just their rights.

> "The responsibility to protect its people from killing and other grave harm was the most basic and fundamental of all the responsibilities that sovereignty imposes - and that if a state cannot or will not protect its people from such harm, then coercive intervention for human protection purposes, including ultimately military intervention, by others in the international community may be warranted in extreme cases".

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[17]B. Ghali, quoted in G.B. Helman, S.R. Ratner, Saving failed states, Foreign Affairs 89 (1992)

ICISS (2001), *The Responsibility to Protect*, p. 69.

The Commission moved further by stating that this responsibility embraces not only the right and duty to react in situations of compelling human need with appropriate measures but also to prevent internal crisis. "Military action can be legitimate as an anticipatory measure in response to clear evidence of likely large scale killing" (ICISS 2001, p.33). However, humanitarian intervention can be used as a justification for less benign actions by other powers, such as Russian intervention in the disputed provinces of Georgia in 2008.

The decision to intervene for humanitarian or altruistic motives by a state may reflect public opinion and media pressure to stop human rights violations, killing and human suffering associated with civil wars. Although the public opinion may not be well informed about the issues at stake in international crises, it may have a strong influence on the decision-making elites. A public that has a perception of international security threats is likely to support demanding international operations. But when national security is not at stake, intervention requires that people and politicians be persuaded that military efforts are worthwhile and offer prospects of success at a tolerable cost (Freedman, 2007). This applies in particular to democratic countries where popular consensus is vital to politicians seeking re-election or possessing a tiny parliamentary majority.

Differences in countries institutional arrangements, such as the degree of parliamentary involvement in decision-making, can lead to different approaches to intervention. Some legal and constitutional frameworks set limits on the action national leaders can take (e.g. a requirement for prior parliamentary consent for the deployment of forces outside the nation's boundaries). The participation in UN operations, although undertaken as part of a multilateral and internationally legitimised deployment, is subject to a formal approval at the national level. As opposed to Western countries, a weak system of checks and balances on executive action could help to explain the ease with which African countries deploy troops in UN operations, although we have never found any argument in the literature for this hypothesis.

There may also be domestic political obstacles to robust rules of engagement, foreign command of domestic forces or the deployment of conscripts, which in some armies made up the bulk of active personnel.

There are many areas in the world that are considered strategically interesting, in ways that transcend altruistic motivations. Concern with resources has made Africa, the main area of peacekeeping, of more strategic interest to China, India, and Russia. Indeed, the continent has taken on increased relevance to the extent that its affairs affect energy security stakes, but also immigration policies and

international terrorism.[18] The need to keep energy supplies flowing and international waterways accessible may also justify intervention. The US determination to ensure access to overseas supplies of vital resources and the protection of global resources flows is becoming increasingly important in the American security policy (Klare, 2002).

Diasporas from the country in conflict may not only finance insurgents but pressure the countries in which they live to intervene. Conversely, expatriate communities from the intervening countries living in the conflict zone, as well as past colonial links can also prompt intervention, such as individually-led military missions in former colonial spheres, such as Britain's in Sierra Leone and France's in Côte d'Ivoire.[19]

However, the different views about the primary function of the armed forces are the ultimate determinants. Some favour force projection over territorial defence. In UK, for example, the sphere of influence and interests is deemed to be global.[20] The image of itself as a guardian of the global order is responsible for the attitude towards military intervention (Heiselberg, 2003). On the contrary, there is a group of countries with long-standing foreign policy against sending troops abroad. Germany, for instance, rejects its past military excess and its strategic culture values military force only as a deterrent - the "culture of restraint" (Giegerich, 2008). The support for missions may also depend on the public confidence that national forces could achieve their goals. Austrian historical experience of being on the loosing side in both world wars has created the feeling that security could be achieved by neutrality (Giegerich, 2008).

For less democratic countries that have experienced military involvements in national politics, peacekeeping can be a stratagem to insulate domestic politics from military interference by diverting armed forces from the domestic to the international arena, like Latin American states (Norden, 1995). Velazquez (2002) defines this strategy as the "'diversionary peace'". Governments that emerge from the authority of an external power (or those formerly under a military regime) may use peacekeeping to signal the end of an internationally ostracised governments and the begin of a new era for the foreign policy (Findlay, 1996b). Argentina's deployment of troops in UN PKOs was a way to regain some of the prestige it lost during the Falkland War (Sorenson & Wood, 2005). China, a non-democratic country in

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[18]At the beginning of 2008 there were four times as many UN troops in Africa as there had been in all UN peacekeeping operations around the world in the previous 10 years. Furthermore, three of the four biggest UN missions where in Africa (IISS Strategic Survey, 2008).

[19]Germany's participation in UN Transition Assistance Group (UNTAG) in Namibia was vital for the protection of 20,000 German Namibians.

[20]Ministry of Defence of the United Kingdom, Strategic Defence Review: Modern Forces for the Modern World, July 1998.

the Security Council, may want to project the image of a "responsible country", committed to sustaining the UN system.[21] States are also drawn to the incentive of responsibility within or over a mission. Countries that are given operational command positions in the field tend to be more committed to operations.[22] Among the forces hampering peacekeeping contribution, there may be the national leaders fear that, while abroad, troops change their mind about their country and their political system (Daniel *et al.* , 2008).[23]

According to the previous explanations, peacekeeping can be interpreted as a self-interested action to preserve or increase a country's standing in the global arena. Doubtless, peacekeeping enhances a country's reputation and national prestige, therefore it is not only the national armed forces that seek a national role and gain benefits, but also the foreign ministry, "'perhaps prodded by its mission to the UN in New York"' (Findlay, 1996b). Therefore, the main peacekeeping countries are not expected to stimulate, even indirectly, the global arms race. However, Table 2.6 shows that 17 of the 30 top contributing countries in the last decade are also ranked among the largest arms exporters. This seems to be the most frequent common feature among the top contributing countries. Thus, countries whose reputation is based on their participation in peace operations are the main world supplier of conventional weapons. On this point, Neack (1995) argues that this correlation casts doubts on their commitment to the international security; the idealist theory of promoting peace cannot reconcile this inconsistency. Moreover, although arms transfers are consistent with the realist view that both arms sales and peacekeeping serves the same national interests, "'UN peacekeeping may be interpreted as a palliative administered after the self- interested act of selling arms ignites regional animosities"(Neack, 1995, p.188). Nevertheless, the measure of export is aggregate, therefore most countries do not sell to the same places they send peacekeepers. We think that the relation is explained by the fact that, more than a measure of reputation, peacekeeping is a sign of integration into global military system as may be arms sales.

Given the variety of domestic and international factors that determine a country's contribution to military peacekeeping, there must be a question as to whether their motivation can be captured in a simple objective function suitable for mathematical analysis. Chapter 4 offers a detailed investigation of the quantifiable

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[21]Moreover, in dealing with its incongruities, China tries to be perceived as the distinctive power, which supports the interests of the developing world (Zhongying, 2005).

[22]Brazil agreed to the mission in Haiti in part to show its commitment to hemispheric security - and a Brazilian Force Commander has taken greater risks with Brazilian troops than would have been possible for an officer from another country (Center on International Cooperation, 2009).

[23]National pride and inferiority is also at play: troops might make a poor impression compared to troops of more advanced nations when working together.

	Supplier[1]	Contributor to PKO[2]		Supplier	Contributor
1	USA*	USA*	16	Poland*	Australia*
2	Russia*	Pakistan	17	Belgium	South Africa*
3	Germany*	United Kingdom*	18	Norway	Spain*
4	France*	Bangladesh	19	South Korea*	Canada*
5	UK*	France*	20	Belarus	Ethiopia
6	China*	India	21	Denmark	Kenya
7	Sweden	Italy*	22	South Africa*	South Korea*
8	Netherlands*	Nigeria	23	Czech Republic	Morocco
9	Italy*	Germany*	24	Slovakia	Rwanda
10	Ukraine*	Russia*	25	Australia*	Turkey*
11	Israel	Ghana	26	Turkey*	Senegal
12	Canada*	Nepal	27	Brazil*	Ukraine*
13	Switzerland	Poland*	28	Austria	Netherlands*
14	Spain*	Jordan	29	Georgia	China*
15	Uzbekistan	Uruguay	30	Finland	Brazil*

Table 2.6: [1]Top 30 suppliers of major conventional weapons in the period 2001-2006 [2]Top 30 contributors to multilateral peace operations in the period 1999-2009. Arms export ranking is according to SIPRI aggregate exports. Deployment ranking calculated by adding countries' number of billets in any operation (with billet defined as one serviceman for one year). *Seventeen countries appear in both ranking.

factors determining the contribution to peacekeeping operations.

2.3.5   Timing and forms of intervention

Any nations' specific peacekeeping-related actions, such as how they vote at the UN on particular interventions; whether they pay their contributions to UN peacekeeping; and whether they contribute troops to particular interventions are situated within a wider spectrum of possible interventions. These include persuasion, such as diplomacy and conflict resolution measures; the provision of material incentives such as aid, trade and economic sanctions; and coercion, either threatened or implemented. The effectiveness of these instruments depends on the international environment, the timing of the intervention and the capability of the target state. When we focus on the forms and timing of intervention, the intervention can be undertaken in anticipation of a conflict, during it or after a ceasefire.

Pre-conflict intervention, prior to the outbreak of violence (e.g. the conflict has not been triggered but there is a high probability that one will occur) should identify and reduce the major risk factors (e.g. making difficult for rebels to organise). While prevention is cheaper than trying to remedy conflict after it occurs, it is rare; it is more a result of failure to pay early attention to impending conflicts rather than a result of lack of early warning indicators (Lahneman, 2004). However, a question of how reliable are these early warning indicators still remains. Generally, states and international organisations only intervene when a conflict threatens

their interests and when there are opportunities and it is usually only when the conflict escalates that opportunities and threats are perceived.

Intervention is easier if the warring parties have reached a "hurting stalemate" (Zartman, 2001), when both parties realise their inability to achieve their aim of winning or to successfully escalate the war and are aware that conditions are becoming worse, with the threat of economic or military collapse. One example of the success of this tactic in a positive setting is the Oslo talks in 1993 that led to the establishment of the Palestinian Authority.[24] Engaging in a major escalation brings an unpredictable outcome and breaking out of the deadlock is impossible, unless a desperate compromise is reached.[25] The intervener can take advantage of the stalemate by persuading the combatants that there is no alternative to negotiation, through the use of diplomatic means. In the absence of a hurting stalemate a third party may resort to coercion and military power to persuade the parties to negotiate.

During post-conflict intervention, a war-torn society needs global financial institutions to invest in infrastructure and social sector recovery, more than a military presence. This economic and social intervention must be followed by efforts supportive of the peace settlement. If the root causes that triggered the problem are not addressed the risk of conflict returning is inherent. Thus, intervention at this level must provide the right incentives for a long-lasting peace, which depends on the third party's ability to persuade the parties that resolution is preferable to continued conflict. Persuasion can be exerted in different ways and with different tools.

Among the forms intervention can take, the military dimension is not the only viable option. There is often a sequence of possibilities, starting with the use of mediation and preventive diplomacy; going through economic sanctions and low-intensity conventional missions to separate the opposing forces with a degree of consent between the parties and ending with high-intensity combat operation. Details of this sequence are followed by a brief reference to some doctrinal dilemmas.

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[24]The conflict between Israel and the Palestine Liberation Organisation (PLO) was harsh and relentless. In Zartman's terms, the situation became ripe for resolution. Israel and the PLO were in a stalemate because they could not defeat each other. The stalemate was hurting Israel by exposing it to significant conflict-related costs: the uprising of Arab youth, or Intifada, the perceived danger of an Iranian attack out of sympathy with the Palestinians and concerns about American support in the wake of the Gulf War. Yitzhak Rabin, head of the Labour Party, won the 1992 election on a promise of settlement with the Palestinians. At the same time, Yasir Arafat faced an impending catastrophe since the PLO's funds were scarce and the Hamas movement was succeeding as an alternative to Palestinian leadership. The Norwegians employed communication tactics, providing the disputants their "good offices."

[25]According to Rowlands & Carment (2006) a third party's utility of escalation derives from four variables: (i) the salience to the third party, (ii) the mission intensity, (iii) the capabilities of the ascendant militia and (iv) his expected gains from continued fighting.

Diplomacy

Diplomacy is the primary form of third party intervention in civil wars. It is not based on the use of force nor it is usually primarily aimed at helping one of the belligerents to prevail. To achieve a satisfactory resolution for both sides (and consistent with the third party's interests), diplomacy requires combatants' cooperation with the intervener. Most third parties are able to exercise this non-coercive leverage by improving the communication between the belligerents (e.g. through exploratory talks and alternative tracks of communication to the official channels). This is useful when conflict has made direct contact between the parties impossible, or when making a unilateral concession can be interpreted as a sign of weakness. The intervener can also serve as formulator of a range of settlements when the conflicting parties' are not able to conceive solutions to a dispute. By highlighting the parties' mutual interests, a third party builds trust in the feasibility of a settlement. Communication and facilitation, by their very nature, might be relatively cheap and easy. Horner *et al.* (2010) investigate when and how unmediated cheap talk and mediation between the disputants in presence of asymmetric information can reduce the ex ante probability of war, relative to the benchmark without communication. They find that mediation improves upon unmediated communication when the intensity of conflict is high, or when asymmetric information is large. Surprisingly, their model predicts that third parties capable of enforcing settlements are no more effective than mediators who can only make non-binding recommendations. Small states can be effective third parties in this respect, since the adversaries may perceive them as less threatening and more trustworthy (Rubin, 1992b). However, if better information and better lines of communication are not enough to convince adversaries to stop fighting, small states do not have the resources to intervene with military force.

Economic tools

The intervener can give resources to one party, through side payments, or take resources away from him, through economic sanctions. Side payment enhances the outcome to one or both parties, in particular when the pay-off from peace is not large enough to balance the anticipated advantages of continued conflict. Side payments might depend on the outcome, such as the guarantees of financial aid for accomplishing changes envisaged by the agreement. Foreign aid is an example of side payment. It is an economic assistance in the form of grants or loans provided by governments or multilateral public institutions to governments or other entities

in developing countries. Aid often requires meeting certain conditionalities.[26] To prevent recurrences of mass starvation, international agencies often set up a relief system. A regular supply of food, however, may be used by both sides in the war at their advantage, to feed the combatants, as the war in Sudan demonstrated (Meredith, 2006). A third party could also attempt to pay off one of the parties and begin negotiating peace, as we will see in the next Chapter.

Economic sanctions are what Kofi Annan has called a necessary middle ground between war and words (Annan, 2005). These are non-military measures that limit or stop ordinary international economic exchanges with a state or a non governmental group, for the purpose of compelling, denying, or deterring certain political or military behaviour (de Jonge, 2007). Chapter Seven of the UN Charter authorises the imposition of economic sanctions. Since the end of the Cold War, the UN Security Council has imposed more than 20 economic sanctions that targeted people, resources, or services. Economic sanctions have a political effect, which forces the target to change his behaviour (e.g. protests against the ruling elites); and an economic impact, because they deny the combatants' access to resources and services, thus reducing their ability to fight.

Yet, the effectiveness of sanctions depends on the economic and political characteristics of the target, which determine whether the target is able to resist pressures and devise counteractions. Thus, the vulnerability to sanctions must first be verified. When dealing with states, it is crucial to know import and export dependencies and the main trading partners. Sanctions may have unwanted effects on developing economies. They can aggravate existing problems and deteriorate the economic and social conditions without affecting the behaviour of their leaders.[27] When sanction are designed to target rebels groups, the capacity to withstand external pressure must first be determined (e.g. the extent of their financial network, the volume of overseas assets and the level of group cohesion). Long-lasting sanctions give the rebels time to adjust by developing alternative supply sources or moving financial assets, for example.

The implementation of economic sanctions requires an international political consensus over time, financial resources to address burden-sharing problems and the establishment of a monitoring and enforcement mechanisms.

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[26]The IMF and the World Bank provide structural adjustment loans, whereby the recipient country is subjected to policy changes. Conditionalities are mainly free-market oriented and include principles such as austerity, exchange rate devaluation, trade liberalisation, budget balances and privatisation (the so called Washington consensus).

[27]In this sense, the existence of a political opposition is often regarded as critical, since the main aim of sanctions is to indirectly support the political opposition to the ruling regime (de Jonge, 2007).

Persuasion with coercion

Coercion is the threat of the use of force, to convince a target of the third party's willingness and capability to resort to full-scale military action should the target not accept the settlement. RAND defines coercion as "the use of threatened force, including the limited use of actual force to back up the threat, to induce an adversary to behave differently than it otherwise would" (Byman *et al.* , 1999).

George (1992) derived a number of lessons from several case studies of "coercive" diplomacy during the Cold War. The intervener must be clear about what it expects from the target; unambiguous communication is of the essence. This must be accompanied by a sense of urgency about complying with the request, via a credible threat of punishment in case of non-compliance. Combining "positive inducements" with punishment also has proved to be effective (e.g. by offering or withholding rewards or issuing threats). Thus he suggests a combination of economic incentives and coercive threats. It is often "the whip of external pressure and the pain of unacceptable alternatives that drives disputants to the bargaining table" (Rubin, 1992b).

However, coercion has some drawbacks. It is a form of "compellence"[28] rather than deterrence; thus it brings about changes in the *status quo* in the face of an imminent action. Deterrence in comparison maintains the *status quo* by dissuading the target from changing its behaviour. It involves "setting the stage by announcement and waiting" (Schelling, 1966). While changing the *status quo* and forcing a target to compel requires efforts, deterrence requires no public action by the targets and no immediate action by those who are deterring. A third party who uses coercion aims at the transition from conflict to de-escalation and then to negotiation. However, too much coercion in conflict with low political will to de-escalate may produce badly designed agreements likely to fail (Hampson, 1996).

 Use of military force

On occasion, both parties reject the proposals at the very beginning of the process. Then the third party can either withdraw or force compliance through an increase of its military commitment. One one side, high-intensity operations are costly, dangerous and could be ineffective. On the other side, abandoning any attempt might be morally unacceptable and may undermine the third party's credibility. The decision to admit failure is likely to attract more domestic critics than holding back (Freedman, 2007). Although the public support for intervention can change

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[28]A term coined by Schelling (1966); compellence is the reversal of policies that provoked or sustained a conflict.

rapidly, once troops have been committed and the national prestige is on the line, withdrawal becomes difficult.

Warring factions can resist limited military interventions, especially when they believe that can defeat the intervener. Any intervener that is not capable of engaging in combat operations to defeat combatants is likely to be confronted (Lahneman, 2004). Hence, robust rules of engagement in tandem with the deployment of overwhelming forces is the only viable way to overcome such challenges. Conventional military force is one of the main supports of power and influence. Unlike the demonstrative use of force, the use of military forces denies an adversary a goal and can damage him.

Impartiality

A fundamental doctrinal dilemma in a peace operation is taking side on behalf of the government or opposition forces. Interventions does not need to be neutral. Peacekeeping must be impartial rather than neutral. Impartiality involves the application of judgement and fairness to a given situation, while neutrality cedes opportunity, initiative and advantages to others . Impartiality allows seizing all three (Cammaert, 2008). External forces can not be neutral when local population is threatened by one of the parties in dispute. Interventions that confront the perpetrators or back the victims of the violence are the only effective type of military response (Krain, 2005). Impartiality is also subject to reconsideration when mediation is envisaged. Closeness to one party implies "the possibility of delivering it" (Touval & Zartman, 2001). The party closer to the mediator may soften its claims to preserve their relationship. Furthermore, the other side could consider a biased intervention as advantageous given the persuasion exerted by the mediator on his "friend". Such influence is more likely to extract concessions than an impartial mediation. "Mediators must be perceived as having an interest in achieving an outcome acceptable to both sides and as being not so partial as to preclude such an achievement" (Touval & Zartman, 2001, p.452).

2.3.6   Methodological criteria for the success

The 2005 Human Security Report attributes the decline in the number and intensity of wars to the increase in the deployment of peace and security operations.

> "The 80% decline in the most deadly civil conflicts numbers that has taken place since the early 1990s owes little to any of the above factors. Here the evidence suggests the main driver of change has been the extraordinary upsurge of activism by the international community

that has been directed toward conflict prevention, peacemaking and peacebuilding".

While there are no agreed criteria for the success of a peacekeeping mission, because of the lack of agreement on goals and what would have happened without a deployment, some missions of the early and mid 1990s seem widely regarded as having been unsuccessful (e.g. Angola, Somalia, Rwanda and Bosnia), while others as having been effective (e.g. Cambodia, El Salvador and Mozambique). There have also been a large number of peacekeeping successes by individual countries with particular interests in the conflict zone, working under UN auspices. Examples of these are the Italian intervention in Albania, the Australian intervention in East Timor and the UK intervention in Sierra Leone in support of UN troops.

The empirical judgment on the overall performance of UN peacekeeping is mixed. A complete review of this literature is provided by Diehl (2008). Collier *et al.* (2008) provide quantitative evidence suggesting that UN expenditures on peacekeeping are cost-effective in stopping conflicts restarting. However, part of the literature shows that economic and military instruments are ineffective and sometimes have a negative effect on the economic recovery of war-torn societies. Regan (1996) argues that external military interventions often fail to halt the fighting. Jarstad & Nilsson (2008) claim that UN and regional peacekeeping have no significant impact on the duration of peace and, the more violent is a conflict, the lesser are the chances of a peace accord lasting. Doyle & Sambanis (2006) conduct a detailed analysis of the factors contributing to success or failure of peacekeeping interventions. Their "ecological model" of peacebuilding shows that the higher the level of hostility of the factions, the lower the local capacities remaining after war, the lower the amount of international assistance, and the lower will be the probability of a successful outcome. Fortna (2004) observes that prior agreement among the warring parties, rather than the presence of peacekeepers, explains sustainable peace. Dorussen (2007) suggests that if peacekeeping is actually effective, there should be a significant negative correlation between peacekeeping and future conflict events, but it is also possible that peacekeepers displace conflict. If so, we should find a sustained high level of conflict events. Elbadawi & Sambanis (2000) and Regan (2002) suggest that external interventions may prolong wars.

Although third party intervention appears to be ineffective in creating the conditions for a peaceful settlement, it seems successful at maintaining peace (Doyle & Sambanis, 2000). Gilligan & Sergenti (2008) finds that while UN interventions are effective in post-conflict intervention, they have no effect when civil wars are still ongoing. Sambanis & Schulhofer-Wohl (2007) suggest that while the UN is "poor" at imposing a resolution by force, it can be effective in negotiating and

implementing a settlement.

UN operations seem to be more likely to achieve good peacebuilding results than non-UN operations conducted by individual countries or regional organisations (Heldt & Wallensteen, 2005). Sambanis & Schulhofer-Wohl (2007) find that non-UN peacekeeping operations have no statistically significant effect on successful peace-building while UN operations have a large positive effect. However, the evidence that non-UN missions from advanced countries do better than other non-UN regional peacekeeping would suggest that differences in technical capacities, resources and military training could partly explain the result.

The economic impact of peace mission in theatre has been largely neglected due to a lack of reliable macroeconomic data on the host country (e.g. GDP growth, inflation and balance of trade), which are altered by the war. Peacekeeping operations have the potential to kick-start the local economy, or at least to provide a stimulus, through the international staff spending and the local procurement (Carnahan *et al.* , 2006). Solomon (1999) estimates the direct, indirect, and induced impact of the UNMIH on the Haitian economy to amount to $34m in 1995-1996.[29]

Are peacekeeping interventions worth the money? Collier (2007) claims that depends upon how much they increase the chances of sustaining a turnaround and how much a turnaround is worthwhile. He found that a military intervention becomes worth doing even if a successful turnaround is valued at only $7bn. Overall, since the results of peacekeeping operations oscillate between mixed results and clear failures, the returns on investments in peacekeeping are uneven (Hentges & Coicaud, 2002).

Studies have more paid more attention to what leads to success than with defining it. As a consequence, "success" and "failure" are not agreed by scholars, and both terms are easily manipulated. There is little agreement on the types of impact analysts should focus on; how far into the post-war era they should look (short or long term); what goals the missions are expected to achieve (mission type); whether to assess effects on the local people or the government; and whether to evaluate many cases or to require mission-specific evaluation assessment criteria (Druckman *et al.* , 1997).

Stiles & MacDonald (1992) suggests three basic performance criteria, which rely on (i) declaration found in written organic documents ("charted based"), (ii) stated operational objective of UN officials and government bodies ("operational"),and (iii) pattern of past behaviour ("trend based"). They argue that the operational and trend-based approaches are better grounded in empirical reality and are a bet-

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[29]He compares Haiti's situation to a small isolated community in Canada with a military base and use a similar multiplier to estimate the spin-off effect of the mission.

ter guide to policy evaluation. Diehl (1994) identifies two even broader criteria: whether the mission deters or prevents armed conflict and whether it facilitates the resolution of the disagreements underlying the conflict. However, the latter criterion is somewhat ambiguous. It does not evaluate peacekeeping operations on the basis of whether they facilitate conflict resolutions, which admittedly is difficult to measure. Instead, he judges them on the basis of whether the belligerents actually resolve their conflicts, a matter over which peacekeepers have little control.[30] Subsequently, Diehl *et al.* (1998) proposes other criteria focusing more on the way a goal has been achieved (e.g. the neutrality and impartiality of the mission, its ability to refrain from using violence).

Another measure of peacekeeping success is the degree to which the mandate has been implemented. However, mandates are political documents that are meant to convey broad purposes while maximising the political support for them (Diehl, 1994). Mandates are often ambiguous and vague and there is room for disagreements on the best way to achieve their general goals. Evaluating whether an operation fulfilled its mandate presupposes that the mandate is politically advisable and that sufficient resources were made available (Druckman *et al.*, 1997). Also, the first-generation missions, which called for the interposition of a force after a truce, had simpler goals than the second generation, more ambitious and aimed at implementing difficult political settlement (Ratner, 1995).

Another interesting issue is the relation between short and long-term considerations. Durch (1996) observes that while limiting violence or famine may be a short-term goal, it may entail long-term commitments (e.g. by creating dependency). Long-term goals such as post-war reconstruction and reconciliation may not be met because donor countries insist on short time-lines to reduce the costs and limit their international responsibility for rebuilding societies. Long-term failures should not be used as an indicator of a mission's overall performance.[31]

The question "success for whom" is also important. Military operations are political enterprises and the mission itself improves the legitimacy of the peacekeepers and strengthens the international community norms of peace. For most countries, participating in a peace operation gives international visibility, and the

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[30]UNFICYP, although generally regarded as a success, would be unsuccessful in meeting the second criterion because Greek and Turkish Cypriots have not settled their disputes during the 30 years since its initial deployment. Druckman *et al.* (1997) critics this approach: UNEF I in Sinai helped to pacify the Israeli-Egyptian border from 1956 to 1967, when it was invited out by Egypt and overrun by Israel. Thus, after eleven years it failed Diehl's first criterion and never met the second.

[31]For example, the UN's 1960-64 Congo mission accomplished its goal of permitting the Congo to become independent and avoided the secession of Katanga, even though today DRC is in desperate conditions (Ratner, 1995).

success may just mean staying unhurt.

In evaluating intervention, there should be "a realistic view"' of the limit of the mission in fostering real changes in the particular country (Ratner, 1995). The intervener does not usually have the power to affect radically all situations he faces. Scholars should look at the range of prior conditions including conflict environment and the major powers' interests to engage; how conductive to the effective implementation of different mandates are; as well as the conditions that are contraindicative of such operations. Criteria for success should be practical and concrete because the intervener cannot eliminate the deeper cause of many conflicts.

The specific accomplishments of the mission such as the number of people fed, disasters avoided, and cease-fires achieved are useful indicators. Yet, they leave open the question of just how many accomplishments are needed to qualify a mission as successful. Some effects may not be direct and thus difficult to identify and to measure. Peacekeeping success is not just an aggregation of different unrelated achievements and success on one dimension might have implications for achievement of another set of goals.

Peace operations are designed primarily to restore and maintain basic security and this is their largest contribution to development since, in the absence of peace, there is no incentive for people to invest in the legal economy. The above criteria provide a basis for comparison across operations but they may place too large a weight on the security dimension, obscuring other positive benefits offered by the operation and neglecting the end values. Peacekeeping contributes to values like world peace, justice, and the reduction in human suffering aggregated across all relevant groups in a conflict. Instrumental values, such as the economic efficiency of the operations, should be only evaluated in relations to these end values. Missions' success should be considered in terms of their contribution to the achievement of peace and "combating cultures of violence and repressive civil structures" (Druckman *et al.* , 1997).

2.4   Conclusion

This section contains some final considerations. In the first part we tried to account for the causes of conflicts. Each of the broad casual theories involves a degree of oversimplification. Conflict onset can be usually described by multiple variables and efficiently explained by integrating different generalised theories. For example, we might argue that the Israeli-Palestinian conflict groups together several motives. (i) Certainly, the border of Jerusalem is a particular delicate issue, with each side

asserting claims over the city. (ii) Yet it can also be interpreted as an example of long lasting horizontal inequalities where the Palestinian society seeks land and resources distribution, particularly the thousands of refugees. (iii) The Palestinian Authority has failed to deliver services and acceptable economic conditions due to the alleged corruption; there are very few advantages to being part of the civil service, often unpaid or paid at irregular intervals, which provides good breading ground for corruption. (iv) A poorly paid police force seldom develops an *esprit de corp*, and by doing so sets the conditions for a security gap. (v) The Gaza strip is one of the most densely populated areas in the world. The poverty, exacerbated by overpopulation, increases social fragmentation, which boosts violence. (vi) Finally, the disputes over the Sea of Galilee and the Jordan River may be considered a result of water scarcity. The causes of civil war involve complex dynamics, which may appear at times contradictory. Nevertheless, we need to generalise in any particular circumstance, since simplifying is a way to identify suitable third party intervention models in view of prevention and resolution of a civil war.

The second part of this Chapter dealt with the issue of a third party intervention. Intervention does not necessarily require a military dimension. It can consist only of economic measures to reduce the risk of a relapse into conflict. When these non-military forms of intervention succeed, they are much more greeted and acclaimed than military intervention. They prevent or end conflict at a social and economic cost far lower than a military option would allow. However a classic development strategy (e.g. the access to open markets, political reforms and international aids) does not always suffice. Besides an educated and trained workforce and physical infrastructures, economic development requires a minimum level of security. Contemporary conflicts caused by the internal failure of weak states bring chaos and anarchy, while radical rebel groups are often unwilling to abide by peacekeeping resolutions. Therefore, some elements that usually do not enter in a development plan (i.e. the presence of foreign troops) influence the stability and the recovery of these regions.

Security is the priority and military intervention is required not only to halt violence and restore order, but also to enforce a peace agreement. The agreement is aimed at the cessation of hostilities between the indigenous parties; it should also help them move toward a "'self-sustainable"' peace. Therefore the maintenance of a peacekeeping contingent with policing duties serves to dissuade or prevent the return of hostile groups - the spoilers- which objective is the resumption of conflict. During the first phase, an outside enforcement is the only concrete way to guarantee security. Bringing in foreign aids in the second phase allows to gradually re-start the economy and to reduce the presence of external troops. When the assistance

programme has concluded, the government should be able to provide security by its own national forces. Interventions must be long-term to be effective. A successful guarantor should be willing to stay at least through the establishment of a new government and a new national army.

Appendix A

Appendix to Chapter 2

A.1 Disaggregating rebel organisations

While country-level studies are very good at identifying states which are highly unlikely to experience civil wars, they have difficulties predicting the actual onset of armed conflict. In addressing this shortcoming, recent studies have argued that aggregated country-level studies do not take into account the dynamic nature and local variation of civil wars (Cederman *et al.* , 2009). This insight has sparked a new wave of "'disaggregated"' civil war research that focuses on the characteristics of conflict actors and conflict locations within countries (Cunningham *et al.* , 2009).

The "'Disaggregated"' approach to civil was has made important scientific progress in the last years. Researchers are now able to access data on rebel organisations, government leaders, and ethnic groups. However, while data on government leaders is widely available, only few authors have systematically collected data on rebel leaders. Some data has been collected on the ethnicity of rebel leaders, but we are still lacking of a comprehensive, up-to-dated and reliable dataset on rebel leaders.

Does rebel leadership matter for dynamics of peace and war? We argue that rebel leaders play a crucial role in achieving peace and ending wars. As part of an ongoing research on civil war, Ismene Gizelis and I have applied for a research grant through the Folke Bernadotte Academy (Government of Sweden) in order to collect a large N dataset on rebel leaders. These data will allow to test new hypotheses on the role of rebel leadership on conflict resolution and peacekeeping. We will be able to map typologies of rebel leaders and to evaluate how different characteristics of these leaders can influence the bargaining process during the conflict and the peace talks. After the collection of a new dataset on the death and fate of rebel leaders between 1989 and 2009, our project will investigate the extent to which

rebel leaders impact on the duration of war and post-war peace.

The data collection is structured to answer two general questions. We want to explore (a) how the stability of peace agreements depends on the post-war fate of rebel leaders and (b) the role of rebel leaders in ending civil wars. We analyse these questions in a bargaining theoretical framework focusing on the interaction between the rebel leader and his/her organisation, while accounting for the strategic interdependence between the government, rebel leaders and third-party such as peacekeepers. This Appendix provides more information on the project.

A.2   Hegemon: A Project on Rebel Leadership

The assassination or death of rebel leaders is a crucial event between warring parties in a civil war. The death of a leader challenges rebel organisations, possibly affecting the outcome of the conflict and the likelihood of a peace agreement. In many instances, the death of rebel leaders brings change to the political context, ceasefires are agreed and progress made in consolidating peace. Questions linking the rebel leadership to the dynamics of warfare are largely unaddressed by the literature on civil conflict.

Recent approaches to civil war have stressed the importance of rebel organisational features to explain violent behaviour (Weinstein, 2005, 2009). In this research project we focus on a particular part of the rebel organisation: the rebel leadership. While existing conflict research alludes to the importance of government leadership, few authors empirically focus on the role of rebel leaders. This research project attempts to address this shortcoming by providing a new dataset on rebel leader characteristics.

Rebel leaders are essential to the effectiveness of rebel organisations (Clapham, 1998). They are both political and military leaders, sometimes offering ideological guidance and training to recruits at the same time. Rebel leaders organise and mobilise initial recruits, define the agenda of the movement, and have the autonomy to determine the militia's position vis-a-vis the government. Moreover, rebel leaders fulfil an important function providing punishment and rewards to overcome collective action problems (Olson, 1965). Therefore, they guarantee the provision of selective incentives.

The death or assassination of rebel leaders is a severe challenge to the rebel organisation. If we conceptualise leaders as central figures in solving collective action problems, their death can imply the end of the organisation as a whole. We argue that even a quick and effective replacement of rebel leaders cannot guarantee the survival of the organisation. Rebel leaders have to built a reputation that they

will actually punish defectors and reward rebel recruits. New leaders do not have the same reputation as old leaders and are therefore less likely to solve collective action problems. This implies that the death of rebel leaders should lead to the end of civil wars. However, we argue that this is not necessarily the case if other rebel organisations are also fighting the government. In these cases rebel recruits can switch to already existing rebel organisations with credible leaders. Switching is even more likely if other rebel leaders come from the same ethnic group as the killed rebel leader.

> **Hypothesis 1**: The death of a rebel leader brings an end to armed conflict.

However, in many situations multiple rebel organisation are fighting the government (Cunningham, 2006). This means that additional rebel leaders exist that already had the opportunity to build a reputation of delivering rewards and punishments. This implies that rebel recruits can switch to these rebel organisations with credible leaders and continue fighting. Therefore, the death of a rebel leader should not impact on conflict duration in these cases.

> **Hypothesis 2**: If multiple rebel organisations exist, the death of a rebel leader does not impact on conflict duration.

Weinstein (2009) argues that social endowments are important to attract recruits. He argues that ethnic networks are helpful to identify committed fighters and motivate participation. We can also imagine that this mechanism works the other way around. More specifically, ethnic networks should also enable recruits to identify credible leaders. This implies that if other rebel leaders exist and have the same ethnicity as the killed rebel leader, recruits are even more likely to switch to other rebel organisations.

> **Hypothesis 3**: If multiple rebel organisations exist, with rebel leaders from the same ethnicity as the killed rebel leader, the death of a rebel leader does not impact on conflict duration.

A.2.1   Data

To test our empirical implications we are planning a major data collection on the fate of rebel leaders. The data collection is structured to answer two general sets of questions. First, as already outlined, we want to focus on how rebel characteristics impact on civil war dynamics. However, in the long run we are not only interested in war dynamics but also want to analyse peace dynamics. For example: Are peace

agreements more stable if rebel leaders gain government positions? If leaders are promised government positions, do they actually stay in office? Does the death of rebel leaders reduce the risk of war recurrence? To address these kind of questions, we also collect information on the rebel leaders' fates after the war. In the following section we outline our data collections approach.

Data review

Data collection projects within the fields of conflict studies and international relations heavily invested in disaggregating their information. Generally, we can distinguish between two approaches. The first approach disaggregates information based on the geographical dimension. For example, Gilmore *et al.* (2005) geo-referenced diamond sites and oil fields to gain a better understanding of how the location of resources is related to conflict onset and duration. Cederman *et al.* (n.d.) geo-referenced ethnic groups to identify how settlement patterns and distance between groups affect their conflict behaviour. Additionally, Weidmann (2009) has geo-referenced conflict events and conflict areas to identify the location and geographical correlates of violence.

The second approach to data disaggregation is actor-based. This approach identifies more specific characteristics of governments, rebel organisations, and ethnic groups. Data projects collecting actor-based information are unsatisfied with the fact that we often test theoretical causal mechanisms with highly aggregated data. For example, most theoretical approaches to civil war assume dyadic interaction between conflict parties while the field's leading datasets (COW and UCDP), until recently, only provided information on the country or conflict level, without explicitly distinguishing between rebel organisations and their characteristics. To enable an empirical analyses of rebel-government dyads Cunningham *et al.* (2009) and Kreutz (2010) collected information on rebel organisations. Additionally, a number of data projects disaggregate information on ethnic groups by distinguishing their political status over time (Cederman & Girardin, 2007). On the government side, research projects have collected information on the government leader (Goemans *et al.*, 2009) and his or her ethnicity (Fearon *et al.*, 2007). Our data project wants to extend this research agenda by collecting data on rebel leader characteristics.

Data collection: Unit of analysis

This research projects focuses on the leadership of rebel organisations. More specifically, the unit of analysis is the leader of a rebel organisation. Similar to the Archigos project on government leaders (Goemans *et al.*, 2009), we define rebel

leaders as the effective leader of a rebel organisation. By effective leader, we mean the person that de facto exercises control over the organisation. There are three main advantages of focusing on the leader and not using a broader definition of leadership. First, narrowing down our unit of analysis allows for a clear operationalisation of leadership, thus enabling other scholars to easily replicate and verify our data collection process. Second, highlighting the leader of an organisation enables us to use existing data collection templates on government leaders. Finally, we can rely on already existing information on rebel leaders.

Case selection

An important step before beginning the data gathering process is to identify the pool of rebel organisations for which we want to collect leadership information. One of our main criteria is data compatibility to relate our information to existing datasets. Out of the two main conflict data projects (COW and UCDP), only UCDP provides information on specific rebel organisation. Therefore, we use the UCDP dyadic dataset (Kreutz, 2010) and the related dyadic NSA data (Cunningham *et al.* , 2009) as a starting point for our analysis. This provides us with roughly 380 rebel-government dyads. The great advantage of using UCDP/PRIO compatible datasets to identify our potential cases is that we can easily relate our dataset to information on, for example, natural resources, conflict zones, or economic indicators. Additionally, being able to link our data to the NSA dataset provides us with the opportunity to control for organisational features of rebel organisations and even link our data to the EPR dataset (Cederman & Girardin, 2007).

Table A.1: Collected Information on Rebel Leaders

Name	Organisation	Birth	Death	Cause of Death	Post-War Position	Post-War Pos.	Punishment
String	String	Date	Date	1) Natural Death	1) Gov. Position	Start/End Dates	1) Domestic
				2) Assassination	2) Opposition		a. Prison
				3) Batte-related death	3) Non-active		b. Death
				4) Punishment	4) Exile		
				5) NA	5) NA		2) International
							a. Prison
							b. Death
							3) NA

Collected information

Our data collection focuses on the conflict period and the succeeding five years. Based on the pool of rebel leaders identified through the NSA/UCDP conflicts, we collect the following information displayed in Table A.1. Similar to the Archigos

dataset on government leaders (Goemans *et al.* , 2009), we first collect data on the rebel leaders' date of birth. We collect this information to get a general sense in how far age impacts on rebel leadership. In a second step we identify whether the rebel leader died during our observation period. If the rebel leader died, we collect information on the date and cause of death. We differentiate between: natural death, assassination, battle-related death, and punishment. While the actual cause of death might not necessarily impact on the above model, it could send a signal to future rebel leaders and organisations. Assassinations and punishments could be a signal by the government that rebel leadership comes at a high cost and a high probability of death. This should impact on the decision of other rebel leaders to begin or continue fighting the government.

However, we are not only interested whether the rebel leader died in our observation period, but also in his or her post-war fate. Therefore, we code whether rebel leaders gained a government position, went into opposition, or were exiled. Of course that status of the post-war fate can change over time. To account for any change, we collect information on the start and end dates of the rebel leader's post-war position.

As already outlined, the ability of governments to punish rebel leaders sends a strong signal that rebellion is a risky and costly endeavour. Therefore, we collect some additional information on the type of punishment and whether it was executed by domestic or external actors. Additionally, we code the date of the punishment sentence. We simply distinguish between imprisonment and death penalty, even though we acknowledge that it might be worth coding information on tribunals. Moreover, we will dock our new dataset with the Uppsala Peace Agreements Data (2006). We will be able to identify whether directly the rebel leader lead the peace talks of any deputy, and their characteristics.

A.2.2   Conclusions

To test our empirical implications we are planning an innovative data project on the fate of rebel leaders. The goal of this research project is to further develop the theoretical approach to rebel leadership and create two new dataset: 1) Rebel Leaders Making War; 2) Rebel Leaders Making Peace. The project will start from the African cases and extend to all globe and we will provide a final version of the two datasets within two years. This data will enable researchers to assess the impact of rebel leadership on war and peace processes.

Chapter 3

Strategies: Modelling Third-Party Intervention in Traditional Two Party Models of Conflict

3.1 Introduction

Effective intervention requires the third party to understand the belligerent's preferences, commitment, and their perception of the credibility of any threat. The threats may be credible and be implemented but not be sufficient to produce compliance if belligerents are deeply committed to strongly held values. This Chapter discusses how third parties can be introduced into the standard bilateral models of conflict and the extent to which these models can help the intervening nation develop more effective strategies.

In rent-seeking and conflict games two players use their available resources to gain a prize and the probability of winning the prize depends on the effort exerted. Each player can invest in either productive activities or wealth-diverting activities, which give them an advantage over their opponents. Models of such conflicts are provided by Grossman (1991), Skaperdas (1992) and Hirshleifer (1995), among others. The social costs of conflict in these models arise from the diversion of productive efforts into socially unproductive activities (i.e. the use of military force). We will consider what a third party might be able to do, in the context of such models, to cause both parties to refrain from investing in fighting and to create the conditions for peace to be an equilibrium outcome. We will not set out the mathematical details of a formal models when they can be stated informally in fewer words without lack of accuracy. We consider different models to emphasise different aspects of the intervention (e.g. coercion, side payment, deterrence, denial

and diplomacy).

In the final section, this Chapter addresses the role of the preferences and asymmetric informations in limiting conflict resolution. A wrong perception of the different parties' preferences may lead to policies that have effects contrary to those desired. Hence, preferences give a clue as to when peacekeeping might work and when it undoubtedly will not.

3.2   Coercion

The first approach we consider uses a standard conflict model originates with Haavelmo (1954) and rediscovered by Hirshleifer (1995). Hirshleifer (1995, p.27) defines anarchy as a system in which "contenders struggle to conquer and defend durable resources, without effective regulation by higher authority". The idea is applicable to any circumstance in which there is no strong overarching authority, such as in sub-Saharan countries where the collapse of many fragile states has left the several ethnic groups living within their borders in a situation close to the anarchy. This model focuses on the behaviour of two competitors choosing between preferred balances of productive effort versus conflicting effort. In that order there are two technologies: production and conflict. On the social level the separate optimising decisions establish levels of production and the level of fighting activity, together with the distribution of product among the competing factions.

Consider a government, G, and an opposition movement, M, that divide available resources between productive effort (E_G, E_M) and fighting effort (F_G, F_M), such that $E_i + F_i = R_i$. The aggregate resources base, R, is assumed constant and independent of the parties' actions $(R_G + R_M = R)$. It does not allow for battle damage. The corresponding intensities are defined as

$$e_i = \frac{E_i}{R_i}, \qquad f_i = \frac{F_i}{R_i} \tag{3.1}$$

Government and rebels choose between fighting and production intensities subject to:

$$e_i + f_i = 1 \tag{3.2}$$

Each party fighting effort determines his share of limited resources R that, combined with productive effort, makes up the production function:

$$Y_i = (e_i R_i)^h \tag{3.3}$$

Figure 3.1: Contest Success Function
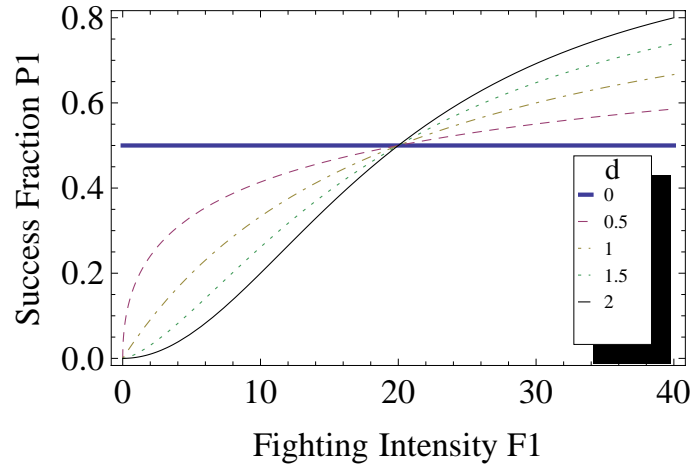
The outcome of a battle is decided by a success parameter, p_i, that is the share of the pie that goes to each side ($p_G = 1 - p_M$). Thus the resource partition will be:

$$R_i = p_i R \tag{3.4}$$

The outcome of the conflict, the success ratio p_G/p_M, is decided by relative investment in fighting, the fighting effort ratio F_G/F_M, and a decisiveness parameter $d_i > 0$, that intensifies the effect of force superiority. The fighting effort ratio and the decisiveness parameter translate into a probability of winning and consuming the opponent's economic resources through the *Contest Success Function* (CSF).

$$\frac{p_G}{p_M} = \left(\frac{F_G}{F_M}\right)^d \tag{3.5}$$

From which we obtain:

$$p_G = \frac{F_G^d}{F_G^d + F_M^d} \qquad and \qquad p_M = \frac{F_M^d}{F_G^d + F_M^d} \tag{3.6}$$

Figure 3.1 illustrates how, with the fighting effort of actor 2 (*F2*) held fixed, the success fraction of actor 1 (*P1*) responds to changes in his fighting effort *F1*. This is the CSF and illustrates how the sensitivity of the probability of winning to the fighting effort grows as the decisiveness parameter d increases.

From (3.4) and (3.5) we have:

$$\frac{R_G}{R_M} = \frac{(f_G R_G)^d}{(f_M R_M)^d} \tag{3.7}$$

Figure 3.2: Fighting Intensity and Success Ratio
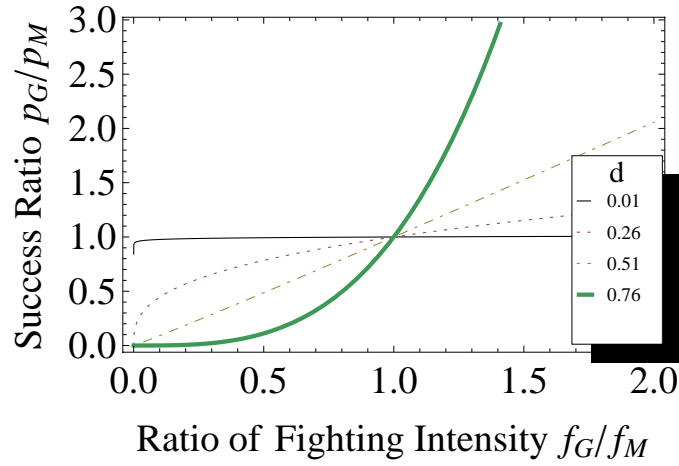
this implies that:

$$\left(\frac{f_G}{f_M}\right)^d = \left(\frac{R_G}{R_M}\right)^{d-1} \tag{3.8}$$

Ultimately the equilibrium success ratio will be:

$$\frac{p_G}{p_M} = \left(\frac{f_G}{f_M}\right)^{\frac{d}{1-d}} \tag{3.9}$$

When the decisiveness parameter d exceeds unity we will get a divergence in favour of the side that exerts a higher fighting intensity f_i. Figure 3.2 displays values consistent with an interior solution (e.g. $0 < d < 1$). It does not show the solution of the anarchic system but only the relations that must hold, in equilibrium, among the dependent variables (probabilities of success) and the fighting intensities. A necessary condition for equilibrium is an initial endowment that provides sufficient income for survival (e.g a minimum income is required to sustain life for an actor in the system). Anarchy cannot be sustained if $Y_i < y$.

The solution is given by the sub-game perfect equilibrium allocation of the players' initial resource endowment assuming simultaneous optimisation (Cournot-Nash behaviour). Each party tries to maximise his income by choosing his optimal fighting effort, as the opponent decides her f_i. The income is accrued by resource capture f_i and resource production e_i. The government optimal f_G is given by:

$$maxY_G = (E_G)^h = (e_G R_G)^h = \left(\frac{e_G R f_G^D}{f_G^D + f_M^D}\right)^h \tag{3.10}$$

subject to the resource constraint $e_G + f_G = 1$ and with $D = d/(1-d)$.

Figure 3.3: Reaction Curve for the Government
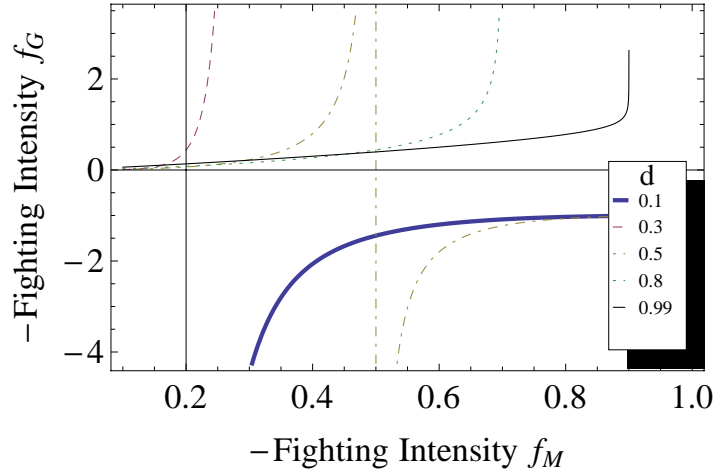
The standard Lagrangean optimising technique yields both players reaction curves RC_i . For the government RC_G:

$$\frac{f_G{}^D}{f_M{}^D} = \frac{D}{f_G} - (D+1) \tag{3.11}$$

The solution of the last equation is not easy to handle [1]

However when the result is plotted in Figure 3.3, then it becomes intuitive: higher f_M will correspond to higher f_G. Moreover the reaction curve depends on the decisiveness parameter d .

Finally, straightforward substitutions lead to the conflict equilibrium:

$$f_G = f_M = \frac{D}{D+2} = \frac{d}{2-d} \tag{3.12}$$

Regardless of differences in endowment, at any interior solution each side devotes equal effort to coercive appropriative activities and as a result achieves equal levels of final resources R_i. In equilibrium the income per capita is:

$$Y_i = (e_i p_i R)^h = \left[\frac{1-d}{2-d}R\right]^h \tag{3.13}$$

Furthermore, the higher the decisiveness parameter, the greater equilibrium fighting efforts. [2]

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[1] $f_M = \dfrac{f_G - d}{-f_G{}^{1+\frac{d}{1-d}}\left(-f_G{}^{-\frac{d}{1-d}}\left(1+\frac{d}{1-d}-\frac{d}{f_G(1-d)}\right)\right)^{\frac{1}{d}} + f_G{}^{1+\frac{d}{1-d}}d\left(-f_G{}^{-\frac{d}{1-d}}\left(1+\frac{d}{1-d}-\frac{d}{f_G(1-d)}\right)\right)^{\frac{1}{d}}}$

[2] Hirshlaifer says "What is possibly disturbing [...] there can never be total peace in the sense of devoting zero resources to conflict."(Hirshleifer, 1995, p. 36)

Financial viability

One can then consider how third party intervention can cause the combatants to choose a fighting effort close to zero. A third party intervention is formalised by defining a set of possible intervention strategies $I = \{i_1, ..., i_k\}$ where i_k is a combination of tactics, weapons, scale and deployment. A function $\Phi : I \rightarrow R^+$ maps specific intervention' strategies to *coercion effectiveness*. This is a kind of military production function, capital and labour combined by military commanders to produce a coercive output. Given the complex nature of military intervention, we do not specify its functional form and let $c = I(i_k)$.

The intervention might be carried out either through a negotiated settlement or by causing the prospect of certain victory for one side. The latter can bring fewer causalities and longer peace. For instance, Regan (1996) finds, that for reasons of efficiency, legitimacy and stability, support for the government should lead to more successful outcomes. An intervention biased towards the government forces can modify the expected resource division at the expense of the rebel group to the point of keeping $y_M < Y$. Notice that the structure of the game does not change if the third party backs one side; this just modifies the budget constraint and rent of the supported side.

The model gives good reasons to think that it is possible to hasten conflict resolution by reducing the endowment of one side. Conflict zones are often associated with natural resources (e.g. diamonds in Sierra Leone and Angola, timber in Cambodia, opium in Afghanistan). Predation may not be the motivation for the war but may be required to make it feasible. Collier *et al.* (2006, p.19) argue that "where rebellion is feasible it will occur". To impede this type of funding, in 2000 more than 50 countries agreed to restrict the trade in illegal diamonds through the Kimberley process. Control of raw materials and control over cash flow through pressure on the international banking system would also be effective. However, rebel movements often have alternative sources of funds that are more difficult to restrict, such as the extortion from foreign companies and drugs trafficking.

War as a resource generator

War is a destructive event: villages, commercial activities, and agriculture are damaged and people are killed. Conflicts congest the law enforcement system and lower the probability of punishment, thus promoting the emergence of criminal and illegal activities. Therefore, this anarchy creates incentives for personal enrichment: with no control in some areas, illegal business can be conducted free of norms, natural resources can be exploited and illegal trade can be carried out. Violence is

profitable to some combatants to the extent that war itself is a resource generator. This may inhibit a peaceful settlement and the longer the conflict, the more people will find a way to thrive in conditions of disorder.

A modified version of the Contest Success Function follows from a reinterpretation of the decisiveness parameter, d. Hirshleifer describes d as an index that raises the effectiveness of each unit of fighting (e.g. the introduction of airplanes during the WWI). However, since the end of the Cold War, the focus on technological comparable competition is less relevant as asymmetric conflicts between actors with high technology weapons and those without became much more likely. African conflicts show that technological superiority does not guarantee safety nor victory in the event of a war (Dunne & Coulomb, 2008). Thus, we do not consider d as related to technology advantage.

We might think of d as indicative of the probability of control and ability to exploit domestic resources once the war is won. As d decreases, any disparity between fighting efforts f_i has a decreasing effect on the partition of resources. Combatants will decrease their fighting effort to the point of exerting efforts close to zero with d sufficiently low. A way to obtain a lower d could be by altering the belligerents' expected gains should they win or should the fighting continue. In this situation the coercion, that is the threat of the use of force (see Chapter 2), is a possible instrument. Consequently, a third party may threat to alter the structure and distribution of power between combatants, which may change their expectations about concession-making and the outcomes of negotiations. The main advantage of a credible threat of coercion is its power to signal the advantage of reconciliation without having to wage a war.

The third party should be committed to stop the fighting and, in case of failure, to punish the winner and reallocate "the spoils of war" in favour of the defeated group. The threatened punishment could include trade sanctions and asset freezes - like the Security Council ban in 1998 on the purchase of Angolan diamonds without official certificates of origin and a freeze on UNITA's bank accounts (Meredith, 2006); moreover the third party could prevent post-war power and rent seizure by the prosecution of warlords in The Hague.[3] Because achieving political (and military) power is the avenue for achieving wealth, the incentive to size power and hold on to it is great. However, if a victory did not entail control over territorial or economic resources, rebel groups would have less incentive to invest in fighting effort.

Two important features that may influence the decisiveness parameter and en-

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[3]Recently, a first step has been taken by the indictment of Charles Taylor, the President of Liberia, and Joseph Kony, the head of Uganda's Lord's Résistance Army by international courts.

ter the d function are the scale of intervention I and the strength of the belligerents W_i. The relative strength of belligerents W_i determines their expected share from victory or purely from continued fighting. Equally matched forces $(W_i \approx I)$ may feel a close victory unlikely whereas a predominance of the rebels' military capabilities may push for further gains. At the end of the civil war, if all the means to stop the fighting failed, the winner can predict three outcomes, all influenced by his relative strength W_i compared to the third party I. First, resisting and defeating the third party that could leave the combatant weaker relative to its original rival but could enhance his prestige. Second, surrendering and sitting at the negotiating table, perhaps yielding some benefit. Third, being defeated by the third party. If a group is well equipped it will make greater gains by holding out rather than surrendering. Moreover, the military power of combatants will establish the degree of force and capabilities that are to be deployed by third party and the associated cost. We can generalise equation 3.6 to allow for an asymmetry of the decisiveness parameter d_i. A simple model of asymmetric conflict (between a government and a guerrillas) is provided, for example, by Dunne *et al.* (2006). They show that the possibility to differentiate the technology or tactics can give the little guys an advantage and can increase their probability of winning should they attack. We have the following equation:

$$d_i = F(W_i, I) \tag{3.14}$$

The function d_i has the following properties:

$$\frac{\partial d_i}{\partial W_i} > 0 \qquad and \qquad \frac{\partial d_i}{\partial I} < 0 \tag{3.15}$$

Given the asymmetry, the *Contest Success Function* (CSF) is

$$\frac{p_G}{p_M} = \frac{F_G{}^{d_G}}{F_M{}^{d_M}} = \frac{(f_G R_G)^{d_G}}{(f_M R_M)^{d_M}} \tag{3.16}$$

and the new equilibrium success ratio in steady state becomes

$$\frac{f_G{}^{d_G}}{f_M{}^{d_M}} \; R^{d_G - d_M} = \frac{p_G{}^{1-d_G}}{p_M{}^{1-d_M}} \tag{3.17}$$

The last equation implies that in equilibrium, an actor that starts with an initial unfavourable resource partition and chooses a lower fighting intensity can still get a better resources allocation, provided that he has a sufficiently higher decisiveness parameter (see numerical examples in the Appendix to this Chapter).

Our asymmetry specification allows the third party to target one of the fac-

tions with a policy that decrease its expected resource partition, or to target both with a simultaneously neutral policy. Intuitively, the smaller is the conquerable national wealth after the struggle, the less there is to fight over and thus, the smaller the equilibrium effort devoted to fighting rather than producing. With this specification we obtain that fighting can be completely deterred.

3.3 Side payment

Intervention might not include only armed peacekeepers, but also provision of guaranteed financial transfers to combatants by third parties. Along with the power to take away resources from a party, as in the previous model, the intervener can simply give resources to one or both players. Through the use of side payments, the intervener can affect the conditions of a settlement. Side payments might depend on the outcome, such as a promise of foreign aid after an agreement but need not be attached to the outcome, if the additional benefits in themselves make agreement more appealing (Touval & Zartman, 2001). A third party could also attempt to explicitly pay off one of the parties with a financial transfer and begin negotiating peace.

Let T be the third party and M the rebels. We normalise the population of any group to 1. The rebel movement and the third party can mobilise fighting unites F_M and F_T. The intervention impact is measured by the effect on the decisiveness parameter d_M, depending on the values taken by F_M and F_T:

(a) $d_M* = d_M$ if $F_T < I$

(b) $d = 0$ if $\Phi F_T > F_M$

(c) $d_M* < d_M$ if $F_M \geq \Phi F_T \geq I$

The parameter Φ can be interpreted as the degree of intervention effectiveness since, for a given number of "boots on the ground", the probability of defeating the rebels increases with Φ. The parameter I is the scale of intervention; a minimum level of deployment is required, to signal the strength and commitment of the intervener. When the third party does not exert enough effort (a), d_M does not change, and the status quo is kept. Destroying the rebels with a preponderant force (b) will wipe out the rebels decisiveness parameter and rebels will exert zero fighting effort against the government. Finally, (c) the third party can still settle the dispute by lowering d_M in the government's favour. With d_M sufficiently low rebels will exert a F_M close to zero. Confronting the third party has always a cost, C_M, that is required to mobilise additional units against a new enemy. Moreover, the third party can buy off a rebel group with a transfer $b \geq 0$, that reflects its determination to secure a peace settlement without resorting to violent means. We

suppose that $b = 0$ when rebels do not cooperate. We think about a sequence of actions made up of three steps:

(i) T exerts F_T and promises $b \geq 0$;

(ii) M exerts F_M, after observing F_T and b;

(iii) Depending on the rebels' choice, T will either transfer b or fight.

We assume that the third party is a Stackelberg leader who moves first and the rebels move second taking advantage of the information acquired. In the first step, the third party mobilises and promises a financial transfer. In the second step the rebels invest in fighting, after observing the third party's deployment - which determines his probability of success - and its promise. Finally, depending on the rebels' choice, the third party will either transfer the money to the rebels or fight. The promise made by T is irreversible.[4]

Rebels will choose:

- $F_M = \Phi F_T$ if

$$F_T < I \ \ and \ \ b < \frac{F_M^{d_M}}{F_G^{d_G} + F_M^{d_M}} R - C_M - R_M \tag{3.18}$$

or

$$F_T \geq I \ \ and \ \ b < \frac{F_M^{d_M*}}{F_G^{d_G*} + F_M^{d_M*}} R - C_M - R_M \tag{3.19}$$

- $F_M = 0$ otherwise.

Rebels try to maximise their expected utility for each possible combination of third party deployment and transfer level (F_T, b), taking into account the initial resource partition R_M, the expected gain should they continue the fight against the government, weighted by either d_M or the new value d_M*, and C_M, the cost involved in confronting the third party. Fighting efforts decrease as the returns to peaceful activity, and the acceptance of a reward, rise relative to the returns to fighting. In short, the third party can ensure that payoffs from continuing to fight no longer exceed the payoffs from accepting the transfer and signing a peace treaty. Once again, when fighting becomes difficult and costly, cooperation becomes more likely and offering payment can avoid a costly military confrontation.[5]

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[4]In absence of credibility, rebels know that the third party will choose b depending on the fighting level F_M, and the two players would determine simultaneously their Nash equilibrium strategy.

[5]In Iraq, for example, American forces paid Sunni insurgents to switch sides away from Al-Qaeda.

There are, however, limits to this strategy. Although in few cases bribes are expensive only when they succeed (Smith, 2005), if it is profitable for one rebel group to predate on national resources, once that group has been bought off, others are likely to take advantage of this new opportunity. Furthermore, this threat can only work if the intervention is credible in the eyes of the combatants and the third party can identify who to bribe (e.g. it may pay people to pretend to be insurgents to collect the payment). The issue of a credible threat is dealt with in the next section.

3.4 Credibility

In any intervention, particularly the threat to use force, the credibility of the intervention is crucial. For a threat to be credible, the third party must have the incentive, ability and resolution to carry it out with "all the necessary means" (Lake & Rothchild, 1995).

The efficacy of a threat depends not only on whether the third party appears capable of carrying it out but also on whether it appears likely to do so (e.g. what the combatants believe he will do). For this reason, the decisiveness parameter d is also a function of the intervention's credibility K. Hence equation (16) becomes:

$$d_i = F(W_i, I, K) \tag{3.20}$$

and the response of d_i when the credibility changes is expressed by:

$$\frac{\partial d_i}{\partial K} < 0 \tag{3.21}$$

In Rwanda for example, the Hutu militia that assaulted the Belgian UNAMIR contingent and marched into UN compounds to wipe out Tutsi refugees was encouraged by the American pullout from Somalia, which they considered as evidence that the West could not endure causalities among its troops, and therefore saw their threats as not credible (Kennedy, 2006). As the situation deteriorated, some contributing nations withdrew their troops, so the rebels came to understand that the threshold of international tolerance for own casualties was low. There have been obviously many others setbacks in the history of intervention. The international community indecision over the years in dealing with Sankoh in Sierra Leone, for example, has sent the wrong signal. This attitude has revealed that the UN still responds too slowly to large abuse of human rights and has a tendency to seek compromise with leaders determined not to share power. These conditions induce

belligerents to act on the assumptions that there would be no intervention.[6]

A third party must fulfil at least two conditions to show that the threat is credible; that he will carry it out; and that he will succeed even if he has to escalate. Firstly, he must have self-interest in sustaining its promise. Carment & Rowlands (1998) consider the salience of the conflict as a factor affecting the decision to intervene. The third party's goal is to achieve a peace agreement at minimal cost; the salience of conflict will determine the willingness to pay these costs and to deploy a sufficient force. They also suggest proxies for salience: the global risk that conflict poses, the economic dimension of trade, investment, and primary commodity production. Strategic interests, old colonial ties, economic investments and alliance loyalties also signal commitment and political will to persist. If the situation is of high salience to the third party (e.g. because of the importance it attaches to its reputation), this will enhance the credibility of the threat. In a high salience situation the third party has sufficient credibility regarding is willingness to escalate that the combatant is more prone to cooperate.

Secondly, in establishing credibility, mission intensity I can be another important signal. The third party can choose the optimal mission strength, say between a low and a high intensity. Lower intensity operations (e.g. traditional peacekeeping) may induce cooperation if the combatants' expected gains from continued conflict are low. Even a minimal troop deployment would impose additional, albeit small, costs. Nevertheless, a weak response may end in failure, which would erode the credibility of the third party, as well as wasting resources. With a high profile deployment a coercive threat need not be entirely believable; even a very small chance that a third party will inflict great damage may carry substantial coercive weight. The third party must be able to "signal resolve" (Walter, 1997). The intervener can send costly signal to enhance the credibility of his commitment (e.g. overwhelming forces at strategic locations, such as borders). A powerful intervention signals the readiness to escalate to prevent any further gains.

In many instances, only a high intensity deployment can deter the combatants from seeking to prolong the conflict.[7] However, high intensity interventions are risky and expensive, particularly when they fail, and may lead to further escalation and unsustainable costs for the third party, as the US found in Vietnam and

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[6]On the other side, the United Nations Confidence Restoration Operation(UNCRO) in Croatia is a clear example of credibility and readiness to stop a war in the "only place left in Europe where genocide was possible" (Kennedy, 2006).

[7]When Croatia began ethnic cleansing of Serbs, the UN Security Council mandate was firm and the 5,000 peace enforcement units were both skilled and considerable. Also the Srebrenica event led to the massive NATO implementation force (IFOR) of 50,000 troops, with substantial American participation, which discouraged any resistance attempt by Bosnian Serbs.

Iraq[8] and the Soviets in Afghanistan. When resources are scarce, high intensity interventions became difficult to realise and will not always work when the salience to the third party is known to be low. In this situation the third party warning will lack credibility and the combatant will choose an uncooperative strategy.

3.5 Deterrence, denial and punishment

Skaperdas (1992) model shares many common features with Hirshleifer (1995): a well-defined resource endowment allows player to choose between fighting and production. The total available product depends on the agents' choice in useful production, while the investment in fighting determines a share of the prize on the basis of a similar contest success function. The final prize is produced jointly and then divided in proportion to the probability of victory. Although in this model no specific functional form is assumed, the conflict technology relates fighting effort to the probability of winning in a classic fashion: the function is assumed concave and the probability of victory of one player is increasing in that player's effort and decreasing in the opponent strategy. The main difference is that even if both parties may choose a mix of fighting and production, Skaperdas (1992) allows for the possibility of a peaceful trading cooperative equilibrium with no one investing in fighting. Therefore, conflict is not the necessary outcome of the players' interaction. For *full cooperation* to be possible, both players must be similar in their marginal product, and the effectiveness of conflict technology for either side must be low. *Full cooperation* has two parts. Firstly, a large differential in fighting efforts causes only a minimal increase in the probability of winning. Secondly, the opportunity costs (or the peaceful productive capacities) for any given level of conflict technology, should be close. A low probability of victory for both parties and equivalent productive capacities result in total peace.

A second, less efficient outcome, the *partial cooperation*, happens when one agent only produces and refrains from conflict, whereas the other chooses a combination of fighting and production. This outcome is possible when the conflict technology is "ineffective" but not as much as in full cooperation and the marginal product of the peaceful party (his marginal contribution to the useful production) is too high to justify any fighting effort. Finally, in *conflict*, both players invest in arms. Even if both have similar productive capacities, the technology of conflict is such that the marginal benefit of investing in war always exceeds its marginal

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[8]The amount of money that US spent on the Iraq war ($694bn) surpassed the cost of Vietnam at the end of 2009, making it the second most expensive military conflict in US history, behind World War II, according to Pentagon figures (LST 11/04/2009).

opportunity cost.

Unlike the Hirshleifer model, peace is possible and, even with conflict, the unilateral use of force is more likely than a symmetric war. Since the combatants "cooperate in equilibrium when conflict is ineffective", the third party can try to make the use of force too difficult or costly. The aim is to force both parties to sit at the negotiating table and when a party faces a consistent decrease in his probability of winning, the *full cooperation* outcome is more likely. This might be done by denial, punishment or deterrence, though these may overlap. Denial seeks to prevent a target from achieving its aims by damaging its military capability. Punishment does not limit the enemy's ability to act but instead seeks to destroy the will to do so by raising the cost of its continuing resistance. Deterrence involves being prepared to inflict unacceptable damage on one party, and primarily making sure it is aware of the risk so that he refrains from violence.

Along with a mandate that embraces the deterrence, Ruggie (1993) proposes also an escalation of measures against the combatants. Escalation is costly for both players: they waste resources, and risk losing territory and lives. As Schelling (1960) points out, escalation is the coercive side of a peace plan: the fear of even greater cost imposition motivates actors to make concessions at the bargaining table. So there are higher costs associated with disagreement. Deterrence and escalation are two ways to control the perceived cost of conflict.[9]

3.6 Diplomacy

Grossman (1991) considers the behaviour of one ruler with many individual subjects, who cannot coordinate but can choose between production, soldiering or insurrection. As usual, time allocated either to soldiering or to insurrection is socially inefficient. Because the subjects cannot co-ordinate, the ruler has a first mover advantage which can be used to shape the subjects calculations. The cost associated with the insurrection is the production forgone by devoting time to rebellion. Grossman (1991) model implies that peasants would devote no time to rebellion when its expected return is less than the expected returns of either soldiering or production. And, vice versa, they will allocate all of their time to rebellion when its expected return is more than the return from both of the other activities. The probability of a successful insurrection is an increasing function of the time allocated to insurrection and a decreasing function of time devoted to sol-

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[9]NATO's use of air power is an application of escalation. NATO intervention against Serbian forces started with a modest air campaign to signal a strong resolve. When the campaign failed to compel the target to change behaviour, it was intensified.

diering. The expected return to insurrection is a positive function of the parameter describing the technology of insurrection, dependent on geography, human factors and weapons. When this parameter is zero, the ruler can choose a combination of soldiering time and tax rate to fully deter the insurrection. A Pareto optimal solution occurs only when soldiering time becomes extremely effective in deterring insurrection; then labour time is almost completely allocated to production. However, when the technology of insurrection parameter is positive, insurrection cannot be completely deterred. The time devoted to insurrection and the consequent probability of a successful insurrection are never zero in equilibrium. Also, with a large parameter, peasants will allocate most of their time to insurrection and a negligible fraction of time to production.

Grossman (1991) moves away from the unitary insurgent model and his assumption that only active insurgents share the prize contrasts with the theories that emphasise the social benefits of insurgency. In this model, a possible third party intervention is to try to change the technology of insurrection. This will reflect not only geography and weapons, but also the charisma of a leader who may be able to inspire a small band of revolutionaries to achieve a great success (e.g. Mao, Castro). Entrepreneurial leaders play a crucial role in many insurgencies and they often have strong personal interests in continuing conflict. They also market the conflict, and the way they choose to frame a conflict influences the way the conflict is settled. Learning to distinguish advertising from interests is important to understand what belligerents elites might be willing to accept in a peace settlement (King, 2007). Therefore, it is of the outmost importance for an effective third party intervention to engage the leaders in the dialogue. The devised strategy in this case involves diplomacy, the improvement of communication and the quality of interaction between the central government (the ruler in Grossman model) and the rebel leaders.

3.7 Enforcing the peace agreement

Peace agreements are fragile. Walter (2002) estimates that 62% of civil wars during 1940- 92 led to peace settlements but only 57% were successfully implemented and of 148 peace treaties signed between 1991 and 2005, only 103 were implemented. This is the danger of the "conflict trap" of enduring hostilities and recurring civil wars (Collier & Hoeffler, 2007). This poor success rate leads many to argue that only total military victory of one side against the other can produce a lasting peace.

The most recent models of wars view commitment problems as the leading rationalist theoretical explanation that make an agreement difficult to maintain.

Commitment problems are incentives to renege on peace deals. Fearon (1995) simple model is summarised below. It includes three situations:

(i) Pre-emptive war and offensive advantages (first strike advantage): pf > ps, where pf =winning probability of a first striker, ps=winning probability of the second striker. Thus, there is a lack of credible commitment not to carry out a surprise attack.

(ii) Preventive war: one side's winning probabilities increase over time in a dynamic setting and he cannot credibly commit to not exploiting this advantage later.

(iii) Strategic territory: These are objects over which states bargain can themselves be sources of military power and there may be lack of credible commitment not to exploit this later.

Commitment issues occur because there is no third party enforcement and the combatants cannot guarantee that they will not renege on agreements. Both sides might prefer any agreement to war if it was enforceable. Few agreements are self-enforcing and the agreement itself may change the balance of military power and the incentives for surprise attacks. Powell (2006) relates these issues to shifts in the future distribution of power between parties. The theory suggests that intra-state wars are more likely when there are weak legal and state institutions, where commitments lack credibility. Thus, the enforcement of contracts by external third parties can substitute for weak domestic institutions.

Similarly, Walter (1997) argues that civil wars negotiations rarely end in a peace settlement because credible guarantees on the terms of the settlement are impossible to arrange by the combatants themselves. A lasting peace requires the development of a plan to integrate the former combatants into the civilian economy. This process is called Disarmament, Demobilisation, and Reintegration (DDR), and is a main vehicle for dissolving the militias. Disarmament, in particular, reduces the ability of one side to threaten the security of the other. In many cases, disarmed and demobilised combatants from various factions are incorporated into a new unified national army. However, a full demobilisation implies vulnerability, and even a slight chance of an attack poses a risk of total destruction. Since the peace agreement offers rewards for cheating and costs for being cheated, few groups are willing to give up their arms before they have been provided a meaningful stake in the system. Even though both parties would be better off with a settlement, each continues to fight for fear that the other may renege on any agreement. Therefore, we can argue that peace fails when there are no legal institutions that can enforce a contract, and combatants do not accept to disarm without an outside enforcer that guarantees the terms. An outside assistance is necessary to reduce belligerents' exposure to enemy attacks and to enforce compliance. Case studies suggest that

preserving a balance of power between forces is proved to deter violence and enable compromise (Longo & Lust, 2009). Also, in theoretical models a monopoly of violence does not always sustain the highest level of peace. In the Chassang *et al.* (2008) framework, the weaker party must keep a minimum stock of weapons to dissuade the stronger party from unilateral attacks. Thus, under strategic risk, intervention may reduce belligerents' fears of being the victim of a surprise attack (Chassang *et al.* , 2008).

In the Addison & Murshed (2002) model, when war provides economic gains to one party (e.g. natural resources), peace is not "incentive-compatible", and the party will agree to peace but renege on it afterwards and return to war. Therefore, the model predicts a temptation to wage a surprise war by at least one side to the peace agreement. In the same model, a high discount rate, or a short time horizon, make the treaty unsustainable. This is particularly true for a war-torn society, where insecurity renders current consumption strongly preferred to future consumption. Because of the high discount rate, breaking an agreement becomes easy, even though it damages the reputation in the future. The model of Murshed (2009) leads to the conclusion that a state of peace in the absence of an external intervener, capable of employing a package of aid and sanctions via peacekeeping forces, is not a sustainable condition in many developing states.

Besides these theoretical models, the empirical evidence also show that the crucial factors for a successful resolution are a third party guarantee and power sharing (Walter, 2002).[10]

A third party can use economic pressure, limit the use of key resources or resort to punishment to create a binding agreement. Similarly, limiting the damage caused by one party cheating can foster cooperation. Military forces and the creation of buffer zones, for example, make a treaty violation and an aggression more costly (Walter, 1997). Finally, the third party can restore harmony and preserve the interests of all parties during the bargaining process by imposing a new value, such as peace instead of competition. The weaker party in the peace process, or even the loser, must be confident about his chances of survival. An example of this approach is illustrated by the post-World War II agreements in Europe. The US, instead of punishing the culprit -as every European nation who suffered German or Italian invasion would have liked– decided to change the nature of the game and create the conditions to avoid the endless repetition of an endemic conflict with

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[10]Also, they seem to be interconnected and indivisible. Power sharing without third party guarantees fails in 80% of cases, while it succeed in 90% of cases in presence of external guarantees. NATO deployment in Bosnia, for example, was accompanied by a power sharing agreement, although, as Walter (2002) emphasises, the power sharing agreement was weaker than the military deployment.

Germany (Zartman & Faure, 2005).

Any peace settlement is always less stable than the complete victory of one side. The agreement must address the security concerns of the parties, and the external military assistance must contribute to leader security. The leaders entering the agreement are exposed to danger; they are vulnerable to revenge by their enemies and by their former followers, which can see the outcome as a betrayal. There are indeed several cases of leader assassination during the peace process (Wallensteen, 2007). This gives incentives for some leaders to keep civil units with paramilitary functions. Thus, a third party is needed to manage the "security dilemma" of the transition from war to peace. A powerful third party, with political will, economic resources and military might, can help the parties to minimise uncertainties by assuming a credible role as guarantor of a negotiation and a temporary trustee.

3.8 Reconstructing state capacity

Between standard economic models, which assume a state that costlessly enforces contracts, and anarchic conflict models with no enforcement, there are a range of intermediate cases associated with different degrees of state capacity. Large-scale violence within a society can be explained by the breakdown of the social contract between the ruler and its subjects.

Yet, the conflict models previously analysed lead in different ways to the concept of social contract and its failure as feature of civil wars. The anarchic system in Hirshleifer (1995) implies the absence of a social contract, which makes the interactions among parties more peaceful. In Grossman (1991) model, citizens voluntarily subject themselves to a ruler to obtain social benefits, such the provision of property rights enforcement, law and security. By taxing the citizenship, the ruler increases his revenue, decreases the peasants' time devoted to production and, above all, increases the time that the peasants devote to insurrection. Skaperdas (1992) highlights that the absence of enforceable property rights results in a "'state of nature"', with coercive behaviours and conflict. Fearon (1995) and Powell (2006) also suggest that intra-state wars are more likely when there are weak legal and state institutions, enabling the enforcement of temporary commitments.

The social contract contains a number of formal or informal arrangements and widely-agreed upon rules by which the state maintains order. For economists, state capacity tends to consist of three elements: the allocation of the national resources through taxation, the provision of public goods through government expenditure and the maintenance of security through a legal system. Civil war is rooted in the institutional failure to execute these tasks.

The taxation is the power to raise revenue. For a social contract to work, the collection of taxes and the redistribution of revenues - the resource sharing agreement -need to be perceived as fair. Otherwise, violence may secure a better allocation. Civil wars over fiscal disputes and resource sharing are common in many parts of Sub Saharan Africa. States often renege on an implicit promise of fiscal transfer to the society. This situation can create violent reactions (Azam & Mesnard, 2003). War and fiscal capacity are intertwined. While the prospect of conflict results in increased military expenditure, that is financed through taxes[11], military supremacy often depends on a comparative advantage in raising revenues.[12]

The public expenditure and its allocation develop the loyalty of the recipients. Potential rebels are less inclined to fight when they perceive a favourable public expenditure (e.g. opportunities in the public sector, a functioning public health care system). In inter-ethnic conflicts, for example, when the state fails to meet its obligation regarding public good provisions among ethnic groups, citizens are forced to rely on ethnic ties. This reliance can encourage warfare against the state over economic resources (Azam, 2001). How government spends its revenue is also important. Investment in public infrastructures can stimulate the economic growth, while spending on social welfare mitigates societal grievances. A functioning state helps to guarantee a degree of social cohesiveness. As we have seen in Chapter 2, a country's resource profile- its revenue opportunities- also affects the likelihood of political violence.

Finally, a working state must be able to enforce law, property rights, and ensure the personal/physical security of its citizens. Anarchy is the absence of any recognised authority capable of avoiding mutual predations among individuals in search of short-term gains. [13]

Models of state capacity and civil war are provided by Besley & Persson (2008, 2010). We modify and expand the model in four directions.
(i) *Players*: In addition to government and rebels, we introduce an external third party who supports the government in retaining power. The intervener sets an incentive mechanism based on the security provision and the license to extract natural resources.
(ii) *Scenario*: we adapt the model to a war-torn society. War can arise when the state and potential opposition do not internalise the preference of the opponent,

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[11]As was the case in the US during its civil war or in Britain during the war against Napoleon's *Grande Armee*

[12]According to OBrien (2005) this helps to explain British naval domination over three centuries

[13]The concept of security can be traced back to Thomas Hobbes who in his Leviathan [1651] observed the need for a ruler, who ensures personal security in exchange for constraints on individual freedom. Without sovereignty a society descends towards an anarchical "state of nature".

attaching zero weight to the other group. The rulers are not held accountable by democratic elections.

(iii) *Resource profile*: in our model, the economy has a mix of lootable and non-lootable resources (see Snyder & Bhavnani, 2005). Non-lootable resources require a large amount of capital and technology to be extracted, a financial barrier to entry (i.e. deep-shaft minerals and gemstones, natural gas, bauxite, copper). Only large companies can afford the costs of exploitation. The contracts granted to these large corporations, whether state-own or multinational, generate revenue for state spending. Lootable resources, instead, are easy-to-loot and lucrative resources, characterised by a high value-to-weight ratio, such as diamonds or drugs. Although low barriers to entry make difficult for the state to establish a monopoly, we allow for the appropriation of the lootable resources by the ruler.

(iv) *State capacity*: Besley & Persson (2010) demonstrate that conflict is not profitable when there is a high demand for public goods which are consequently provided. The intuition is that all spending is on common-interest goods independently of who holds power, so there is nothing to fight over. Our model allows the state to provide public goods whilst being at risk of armed conflicts. We show that civil war incentives are determined by an optimal level of public good provided.

3.8.1 Model

We have three groups, a government, G, an opposition movement, M and an intervener I. Government and rebels make up half the population and total population is normalised to 1. There are two periods $s=1, 2$. At the end of 1, the government holds power. In keeping with our previous formulation, we assume that rebels and government divide their resource availability between productive effort (E^G, E^M) and fighting effort (F^G, F^M). Labour endowment, L_i, is assumed constant and independent of the parties actions $(E^i + F^i = L^i)$. Each group can raise an army to fight in period $s-1$, the size of which is $F^i_{s-1} \in (0, L^i)$. The corresponding intensities are defined as

$$e^i = \frac{E^i}{L^i}, \qquad f^i = \frac{F^i}{L^i} \tag{3.22}$$

Hence, $0 < f_i < 1$.

Power can be transferred through violent means. However, while the government draws on the state budget to finance the fighting, rebels need to tax their own citizens. The success parameter is the probability that rebels take over the government, that is $p(f^M_{s-1}, f^G_{s-1})$. In this model, the conflict tehchnology assumes a linear functional form,

$$p(f_{s-1}^M, f_{s-1}^G) = \mu[f^M - f^G] \tag{3.23}$$

At the end of period s, the government sets a tax on the income of each group member denoted by t_s^i. Taxation is constrained, thus a tax rate in period s (say t_s^i) can not exceed a maximum level T_s, or $t_s^i \leq T_s$. Government also spends on public goods P_s (e.g. protection from external threats, social welfare).

The ruler earns natural resource rent. We assume that the profile of our "natural resources economy" consists of both lootable LR, and non-lootable resources NR, that may be extracted through either rudimentary methods (full access) or the intervener concession(c). Lootable natural resources accrue directly to the ruler's private income. Non-lootable resources are extracted by large, taxable multinational corporations, and given the direct intervener control, accrue only to the public sector (e.g. rulers cannot use them for private needs).

We introduce an external third-party. At the end of period s, the intervener chooses a level of state capacity support S_s in the field of security. In practice, this support S_s represents the physical security and the legal enforcement that will be provided indifferently to both groups (a non-excludable form of public good). In a civil war environment, security is the public good that is perhaps in greatest need. The level of law enforcement chosen by the intervener is constrained by $S_s \in [0, \pi_s]$. In addition, the third party chooses a monitoring effort on the level of non-lootable resources extracted by the ruler. Once gain, we do not specify the functional form and let $c = I(i_k)$, assuming that $(1-c)$ is the share of non-lootable resources directly controlled by the intervener.

By linearity, the individual utility of a member of group i in period s is:

$$U_s^i(t_s^i, P_s) = \alpha P_s + (1 - t_s^i)w(S_s) \tag{3.24}$$

where α is the value of public goods, P_s is the level of public good provided, and w is the income earned by each group, a concave function that increases in its argument S_s. Intuitively, a better enforcement of property rights, a safer environment and a functioning police facilitate the economic activities in the formal sector. Thus they improve the market income. The security support S_s is then considered as a "'business enhancing"' form of state capacity, because it leads directly into an increase in private revenue.

The ruler R budget constraint in period s is

$$P_s \leq \sum_{i \in (M_s, G_s)} \frac{t_s^i w_s^i}{2} + c(NR_s) - w_{s-1}^R f_{s-1}^R \tag{3.25}$$

The budget constraint assumes that rulers pay for their army *ex post*.

Timing

1. The economy starts out with the power held by the government G_{s-1}, the tax rate at the maximum T_s and the security capacity fully supported by the intervener π_1.

2. The value of public goods α and natural resources rents $\{NR, LR\}$ are realised

3. (a) The rebels' movement M_{s-1} chooses their level of fighting intensity f_{s-1}^M

   (b) The government G_{s-1} chooses a fighting effort f_{s-1}^G

   (c) The government holds power with probability $1 - \mu[f^M - f^G]$

4. The intervener is biased, prefers the *status quo* and therefore supports the government. In doing so, it decides the level of non-lootable resources rent that can be extracted by the ruler - through the concession c - and the level of security support S_s

5. The new ruler freely determines its policy vector of tax rates and spending on public goods : $\{t_s^i, P_s\}$

6. Payoffs for period s are realised

3.8.2 Optimal fiscal policy

Given the timing of our economy, we begin with the optimal policy choice at stage 5 of period s. Unlike Besley & Persson (2010), we assume that the new ruler R_s attaches no weight to the opposition group O_s. A reasonable hypothesis in a war-torn society in which parties' struggle makes difficult any attempt of reconciliation. Moreover, as we will seen in the next section, vengeance and malevolent behaviour are usually deeply rooted. Thus it makes sense to conceive the parties in question having totally self-interested aims. The objective of the new ruler R_s is

$$V_s^i = w^R(S_s)(1 - t_s^R) + \alpha \left[\frac{t_s^R w^R(S_s) + t_s^O w^O(S_s)}{2} + c(NR) \right] + LR \qquad (3.26)$$

where the government expenditure has been replaced by the government budget constraint.

The function is maximised subject to $P_s \geq 0$, $t_s^i \leq T_s$ and $S_s \leq \pi_s$.

The maximisation yields:

- $t_s^R = t_s^O = T_s$ if $\alpha \geq 2$

- $t_s^O = T_s$, $P_s = 0$ and $t_s^R w^R(S_s) = -[2c(NR) + T_S w^O(S_s)]$ if $\alpha < 2$

Intuitively, the value of common-interest public goods determines the optimal fiscal policy. Therefore, when the value attached to the public good is high ($\alpha \geq 2$), the ruler taxes both groups as much as possible and finances spending on public goods. When the value of public goods is low ($\alpha < 2$), the ruler uses the fiscal capacity to finance his own group. The opposition is always taxed at the maximum rate. The function underlines also that it is optimal to obtain as much security provision as possible ($S_s = \pi_s$). Regardless of any value attached to the public goods, the ruler gains from an improved security via a higher market income, which in turn means more private consumption and a higher tax base to finance public spending.

3.8.3 Civil war

Using the same model we verify the notion that a given level of state capacity determines the incidence of a civil war. We start from the standard set up in which the government and the rebels maximise their expected utility. We write the objective function for both players at the end of stage 2, prior to choosing the level of fighting intensity. Since no public goods are provided with an insufficient value attached to government spending ($\alpha < 2$), we assume that public goods are always very highly regarded. This assumption is also reasonable in a civil war scenario, in which the development relies on a coherent and effective delivery of public services in different sectors, from education to health care and infrastructure. Then, $\alpha \geq 2$.

The expected utility of the government side is given by:

$$E[V_{s-i}^G | \alpha \geq 2] = p[\alpha(T_s w(S_s') + c'(NR) - w(S_s') f_{s-1}^G) + w(S_s')(1 - T_s)]$$
$$+ (1 - p)[\alpha(T_s w(S_s) + c(NR) - w(S_s) f_{s-1}^G) + w(S_s)(1 - T_s) + LR] \quad (3.27)$$

The expected payoff of the rebels is given by:

$$E[V_{s-i}^M | \alpha \geq 2] =$$
$$p[\alpha(T_s w(S_s') + c'(NR) - w(S_s')f_{s-1}^G) + w(S_s')(1 - T_s - f_{s-1}^M) + LR] +$$
$$(1-p)[\alpha(T_s w(S_s) + c(NR) - w(S_s)f_{s-1}^G) + w(S_s)(1 - T_s - f_{s-1}^M)] \quad (3.28)$$

The government has access to revenue and royalties, but is threatened by the excluded rebel group, which may raise an army and overthrow the government. Therefore, there is a clear trade-off between the opportunity cost of higher fighting efforts and the probability of capturing (by rebels) or keeping (by government) the lootable resources. Also, a trade-off exists between two states with a different level of state capacity and consequently in the capacity of public good provision.

Indeed, the ability of the ruler to earn income from non-lootable resources with which to finance the public expenditure depends on the third party license. In case of a rebels' victory over the government, the intervener will reduce both security support and resources-related rent. In the third party's preferred case, the intervener provides security and the access to non-lootable resources. Then public goods are fully provided. In the worst scenario, when the insurgency is successful, a lower level of security (S_s') and non-lootable resources-related rent $(c'(NR))$ is achieved.

The model expresses a key asymmetry in terms of fighting cost. The government can finance its fighting effort through public funds, whereas insurgents cannot, but insurgency can be financed out of the group's own labour endowment. In dealing with the revenue-opportunity structure, we go beyond a general limitation in the literature: lootable resources do not necessarily escape the government's control (Collier & Hoeffler, 2004), nor does the mode of extraction makes a difference (Snyder & Bhavnani, 2005). In our model, the control over lootable resources depends on the ability of the government to remain in place and deter the rebel army. The relative military superiority over the rebels makes it possible to establish the control over the lootable resources and to exploit them for private interests.

We assume two typology of intervention.

Assumption 3.8.1. *Low-profile intervention*

- *In case of a rebel victory over the government, the intervener will set $c' < c$.*

- *Regardless of the outcome, S_s is always fully provided (i.e. $S_s = S_s' = \pi_s$).*

- *For analytic tractability we assume that $(\alpha + 1)w(\pi_s) \geq 2\mu LR$*

The first is soft, or low-profile. Here, the intervention is limited to denying the full right to extract revenue from the non-lootable resources. Policing and law enforcement are always assured in both regimes. The restriction on parameters guarantees that the lootable sector does not make up a big share of the economy. Thus the value of the lootable wealth does not exceed a given level of real wages $w(\pi_s)$. Given this assumption, we have a simplified version of the model. The expected utility of the government side is now given by:

$$E[V^G_{s-i}] = (1-p)[\alpha(T_s w(\pi_s) + c(NR) - w(\pi_s)f^G_{s-1}) + LR]$$
$$+ p[\alpha(T_s w(\pi_s) + c'(NR) - w(\pi_s)f^G_{s-1})] + w(\pi_s)(1 - T_s)$$

And the expected payoff of the rebels is given by:

$$E[V^M_{s-i}] = (1-p)[\alpha(T_s w(\pi_s) + c(NR) - w(\pi_s)f^G_{s-1})]$$
$$+ p[\alpha(T_s w(\pi_s) + c'(NR) - w(\pi_s)f^G_{s-1}) + LR] + w(\pi_s)(1 - T_s - f^M_{s-1})$$

Proposition 3.8.2. *With a low-profile intervention, there are three possible regimes:*

- *If $(c - c')(NR) < \frac{LR}{\alpha} - \frac{w(\pi_s)}{\alpha\mu}$ there is an insurgency but the government does not resort to the use of force, then $f^M_{s-1} = 1$ and $f^G_{s-1} = 0$*

- *If $(c - c')(NR) > \frac{w(\pi_s)}{\mu} - \frac{LR}{\alpha}$ there is no insurgency, $f^M_{s-1} = 0$, but the government chooses the maximum fighting effort to repress the opposition, such that $f^G_{s-1} = 1$*

- *If $\frac{LR}{\alpha} - \frac{w(\pi_s)}{\alpha\mu} \leq (c - c')(NR) \leq \frac{w(\pi_s)}{\mu} - \frac{LR}{\alpha}$ we have total peace with $f^M_{s-1} = f^G_{s-1} = 0$*

The result makes intuitive sense. The likelihood of a rebellion depends on the different levels of public good provided by each regime. And this level depends on the ability of each regime to earn revenue from non-lootable resources to finance the public expenditure. Therefore, how much of the total value of the sector is freed by the intervener is the key to modifying the players' incentives. Higher realised value of public spendings α results, evidently, in a lower likelihood of insurgency. Higher level of wages $w(\pi_s)$ results also in a lower probability that rebels attack the government, because it is more expensive to fight: the level of wage $w(\pi_s)$ takes account of the rebels' lost income. Finally, high lootable resource-related rent results in a high probability of insurgency because there is a lot to plunder.

When public services and social welfare are very highly regarded and non-lootable resources are more accessible under a government regime ($c > c'$), then the state is repressive. People are offered the prospect of better living standards in return for limited freedom. Any incentive to rebel is discouraged by the prospect of losing the gains that the authoritarian/repressive government delivers. Order is not just maintained through coercion but also through the mutual agreement to the rules. This type of social contract has characterised many Asian regions such as Malaysia, Singapore, Taiwan and China (Cuesta & Murshed, 2008).

Assumption 3.8.3. *High profile intervention*

- *In case of a rebels' victory over the government, the intervener will set $S'_s = 0$ and $c' = 0$. Otherwise $0 < c < 1$ and S_s is fully provided (i.e. $S_s = \pi_s$)*

- *Define $P_{no} = \alpha(T_s w(\pi_s) + c(NR) - w(\pi_s)f^G_{s-1})$ as the level of public good achievable in absence of "coup d'état" (government regime), adjusted by its realised value*

- *For analytic tractability we assume that $(\alpha + 1)w(\pi_s) \geq 2\mu LR$*

The second typology of intervention is relative to a higher involvement by the third party in the affairs of the region. The intervention is considered more complex since the intervener not only has to limit the access to extractive industries, but it must deny its support to the state's policing and law enforcement apparatus. The first point clarifies the importance of the security provision S_s. Spending on security capacity not only enhances the citizens' welfare but also provides the level of enforcement of law and property rights necessary to induce taxable multinational companies to invest in the non-lootable sector. We assume that the investments in the region shrink (e.g. $c' = 0$) when there is a lack of security (e.g. $S'_s = 0$), as a consequence of a state of disorder in the region.

Given this assumption, we have a more simplified version of the model. The expected utility of the government side is now given by:

$$E[V^G_{s-i}] = (1 - p)[\alpha(T_s w(\pi_s) + c(NR) - w(\pi_s)f^G_{s-1}) + w(\pi_s)(1 - T_s) + LR]$$

And the expected payoff of the rebels is given by:

$$E[V^M_{s-i}] = (1 - p)[\alpha(T_s w(\pi_s) + c(NR) - w(\pi_s)f^G_{s-1}) + w(\pi_s)(1 - T_s - f^M_{s-1}]$$
$$+p[LR]$$

Proposition 3.8.4. *With a high-profile intervention, there are three possible regimes:*

- *If $P_{no} < w(\pi_s)(1 - \frac{1}{\mu} + T_s) + LR$ there is an insurgency but the government does not resort to the use of force, then $f_{s-1}^M = 1$ and $f_{s-1}^G = 0$*

- *If $P_{no} > \alpha w(\pi_s)(1 + \frac{1}{\mu}) - LR - w(\pi_s)(1 - T_s)$ there is no insurgency, $f_{s-1}^M = 0$, but the government chooses the maximum fighting effort to repress the opposition, such that $f_{s-1}^G = 1$*

- *If $w(\pi_s)(1 - \frac{1}{\mu} + T_s) + LR \le P_{no} \le \alpha w(\pi_s)(1 + \frac{1}{\mu}) - LR - w(\pi_s)(1 - T_s)$ we have total peace with $f_{s-1}^M = f_{s-1}^G = 0$*

As a result, we notice again that the abundance of lootable resources increases the propensity of future conflicts; further evidence of the "resource curse" theory. A higher level of taxes also makes an insurgency more likely, because there is less to gain in a peaceful state. Spending on social welfare reduces the risk of civil war by making citizens less available for recruitment by rebels. Also, when the public goods are very valuable in the eyes of citizens, then the state becomes repressive. Unlike the previous section and our adaptation of the Hirshleifer's model, in this set up the intervener raises the cost of rebellion indirectly, through a "sub-optimal" provision of security and public services. For conflict to be avoided, a third party can restore the social contract through the reconstruction of state capacity, through taxation, public service provision and the maintenance of law and order.

Furthermore, the prediction entails that civil wars are less likely when state wealth is difficult to appropriate or hard to divorce from citizenry, as with some natural resources, which require expensive foreign participation to be extracted, and foreign aid flows. Bulky resources, such as deep-shaft minerals, which requires substantial investments and are difficult to steal might be examples. This feature of the model is support by the recent literature on state collapse and mineral wealth, which finds that the ability of rulers to achieve political order depends on the availability of non-lootable resources (Snyder & Bhavnani, 2005).

3.9   Wrong perceptions and irrational behaviour

The previous models assumed that the asymmetry in military capabilities (and in fighting efforts) is a crucial factor determining the relative degree of success in the conflict; individual preferences play a role only in relation to material returns and punishment. However there might be two exceptions.

Firstly, a civil war may also present asymmetry of information. The parties in a conflict act on the basis of perceptions, because they can not truly know the

relative cost and benefit of war. The belligerents are vulnerable to systematic errors in decision making, such as overestimating their chances of winning. If the problem of asymmetric information is not addressed, a successful third party intervention will not be possible. Secondly, although war is a process of rational calculation by the combatants, actions can be motivated by a consistent set of irrational human behaviour, such as hatred and vengeance. When the parties in dispute are inspired by deep feelings of ideological, religious and ethnic hatred, reaching a compromise might be impossible. When the historical record of past attempts is poisoned by betrayals and failures, as is the case of the Arab-Israeli conflict, radicalised preferences hamper the willingness to believe in the other side and the desire for a settlement. This requires the third party to understand what the belligerents value and how committed they will be to resisting an external action.

In many cases of unsuccessful coercion, the third party's threats were credible and were carried out exactly as promised but were not sufficient to produce compliance. A poor knowledge of what combatants value and how they make decisions can easily result in a strategic failure.

3.9.1   Overconfidence

> Always remember, however sure you are that you could easily win, that there would not be a war if the other man did not think he also had a chance
>
> Winston Churchill, *My Early Life: A Roving Commission* (1930), p. 246

In any dispute, if everyone agreed on the expected outcome, there would be no need to fight. In particular, if the weaker side had full knowledge of his relative condition, he would surrender and the conflict would cease. This does not happen because the two sides do not agree on how much damage they are likely to inflict on each other.[14]

The overconfidence is the overestimation of one's own relative ability and/or the underestimation of the rival's ability. Let us consider a conflict between the same agents, a government G and a rebel movement M. As before, each agent i decides his fighting effort F_i. Let us suppose that each part differs in fighting ability. With an higher ability agent i obtains an higher return when he wins. We refer to agents' ability as their types, denoted by Θ_i, which real value is disclosed when the war is over. We assume that an agent's subjective belief about his own type b_i is not

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[14]As Landsburg (2004) remarks "...somebody is overconfident. That's why the war gets fought, to find out who the somebody is"'

equal to the true type Θ_i, and that b_i is a private information. Moreover, the agents do not know that they and their rival are overconfident in their own types. Each belligerent's fighting effort F_i is chosen to maximise its expected resource partition R_i on the basis of prior and subjective information, that is on the basis of his type Θ_i. The overestimation of one's type always increases one's effort: the agent behaves as if he has a higher type $(b_i > \Theta_i)$ and since the effort strategy $F_i(\Theta)$ is (strictly) increasing in types, he chooses an higher effort.

The probability of winning depends on the probability that one's own type is no lower than that of the rival. During the course of the conflict each part constantly reassesses its probability of winning in response to new information regarding the progress of the war and since each side may have different information available to it, an agent's subjective probability of winning the war P_i^t needs not to be symmetrical. That is P_i^t needs not to be identical to $[1 - P_j^t]$, as we assumed before. The superscript t underlines that expected probability calculations will change over time as information about the outcome changes.

Building on Wittman (1979), in Figure 3.4 the rebels begin with a low P_M^t (point A) and thus a low expected utility from continuing the war (1). S is the settlement measure, S_G means an unconditional surrender by the government while S_M means an unconditional surrender by the rebels. The government will only agree to a settlement if it is to the right of C. Since the Settlements Region to the left of A gives rebels more utility than in A, both parties are better off in the region CA, and a negotiated settlement is feasible. However, if at some point rebels think their are more likely to win (from utility 1 to utility 2), their peaceful demand increases (shift from A to B). At the same time the government's subjective probability and minimal demand remain unchanged. This relative optimism about the outcome of war rules out the settlement region, rendering a settlement impossible.

In figure 3.5, we have the opposite dynamic. As the rebels' subjective probability of winning (P_M^t) decreases, so does their minimal demand which moves to the right (from point 1 to A). At the same time, the government's subjective probability of winning as well as his minimal demand decrease, moving to the left (from point 2 to B). Since both minimal demands move conversely, a settlement becomes more likely, and the Settlement Region stretches out.[15]

To meet the conditions for a peaceful settlement, the third party can modify each party's expected utility from continuing the war by changing the subjective probability of winning and losing. This can be done by undertaking actions against

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[15]Obviously, if one side's increase in subjective probability of winning were equal to the other side' decrease in subjective probability of winning, there would be no changes in the Settlement Region.

Figure 3.4: Overconfidence
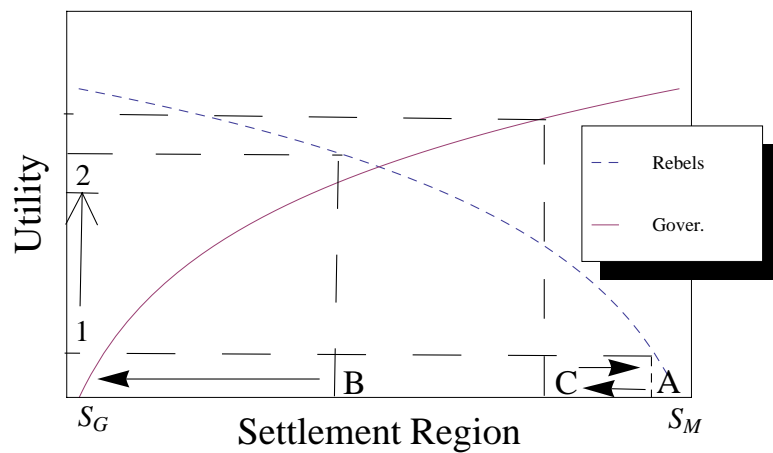
Figure 3.5: Decreasing subjective probabilities
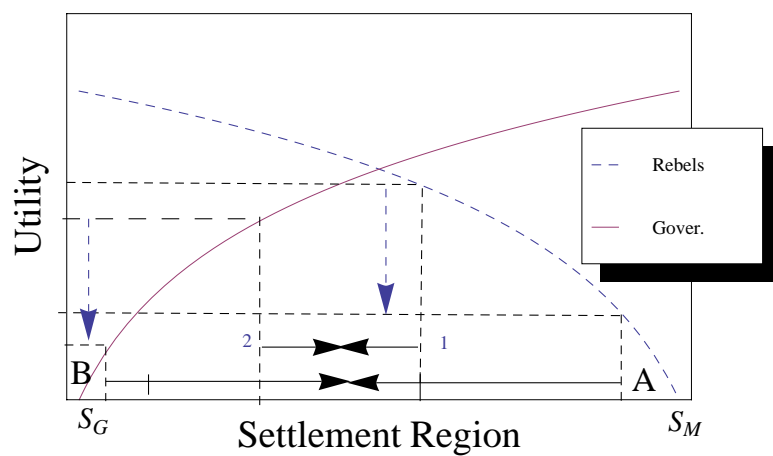
one party to inflicts heavy damages and increase the perceived cost of pursuing the war (e.g. the strategic bombing of military areas). As argued by Regan (1996, p. 341) "'the key to any intervention strategy is to alter the calculation by which the antagonists arrive at a particular outcome"'. When a party faces a decrease in his subject probability of winning, his minimal acceptable demand is reduced. Third party intervention is a process that involves bargains with hostile militias and the aim is to force both parties to sit at the negotiation table. Thus, being prepared to inflict unacceptable damage on one party, and making sure it is aware of the risk, increases the perceived cost of war and lowers the expected probability of a successful outcome. A settlement to the war is then more likely.

But overconfidence and wrong perceptions offer only half the explanations. Conflicting parties may have incentive to exaggerate their strength or misrepresent their own capabilities to have more leverage during in bargaining (Fearon, 1995). War might be also a costly signal indicative of the willingness to fight. A rebel group might choose to fight a losing war against the government to develop a reputation for being hard to suppress, whereas an embattled government may seek out a fight in order to reveal that its military forces are still capable and effective.

Information asymmetries provides also a poor account of prolonged conflicts. Belligerents should reveal their military capabilities on the battlefield, allowing each side to learn more about the opponent' capabilities as the war progresses (Powell, 2006). Parties can also communicate their strengths and have incentives to share information, thus avoiding a dangerous miscalculation of relative power.

3.9.2 Preferences and the role of vengeance

> If you seek vengeance, dig two graves
> Chinese saying

The desire for vengeance is a powerful force driving many conflicts. People are likely to differ in their notions of fairness and appropriate level of punishment and retaliation. Retaliatory actions often incur costs that are out of proportion to the harm that initiated the conflict in the first place. Revenge is often tied to the "'self-worth"' of the originally offended individual (Kim & Smith, 1993). Often, individuals with little power seek revenge against more powerful adversaries even though this action has overwhelming costs. The desire for vengeance can also overcome the collective action problem in the recruitment of rebels.[16]

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[16]Meredith (2006) reports the words of Taylor, one of the most atrocious warlords in the Liberian civil war. "As the National Patriotic Front of Liberia came in, we did not even have to act. People came to us and said: Give me a gun. How can I kill the man who killed my mother?"'

Figure 3.6: Malevolence
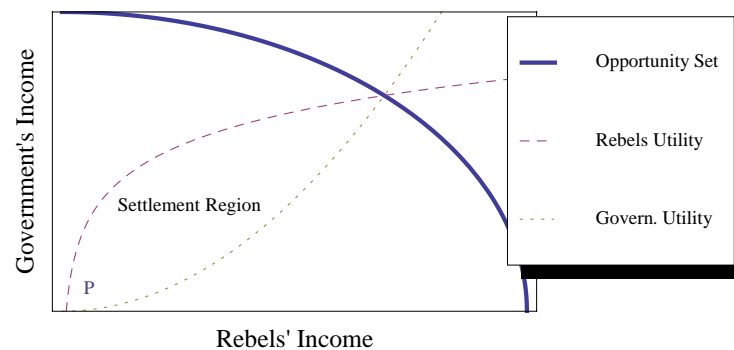
Besides neutral interpersonal preferences, we can think about a malevolent behaviour. A malevolent agent would sacrifice some own-income to make other parties poorer. Building on Hirshleifer (1998), figure 3.6 displays a case of mutual malevolence. The government's income is scaled along the horizontal axis and rebels' income along the vertical axis. Both want to achieve a position as high up as possible. The curve SO is the upper bound of the settlement opportunity set, a range of peaceful outcomes attainable if war is avoided. The point P is the mutual perceived utility from continuing the war. Instead of government being concerned only with maximising his income, and rebels only with maximising their own income, each now attaches a positive utility to the other's material impoverishment. Each side is ready to incur a material sacrifice to reduce the other's well-being. Thus, the indifference curve now has a positive slope. Since a reciprocal malevolence reduces the Settlement Region, and fighting is more favourable than the terms of a conceivable peace treaty, it becomes difficult to alter the costs and benefits enough to induce cooperation. Thus, bargaining fails when war does not entail these net costs, as psychological gains outweigh the destruction and armament costs.

A third party wishing to facilitate a solution has to wait until the groups themselves desire peace. Moreover, in presence of vengeful feelings, and without a genuine reconciliation, achieving a settlement might not suffice to kick start a process of relationship rebuilding. Rasmussen (2001) claims that traditional peace negotiations have been ineffective in repairing the relationship between the parties for three reasons. Firstly, the goal of such negotiations is usually a "micro-level change in behaviour", rather than to create the "attitudinal changes", which are crucial for the reconciliation between the disputants. Secondly, negotiations have always addressed tangible causes of conflict (e.g. land, property and political struc-

ture), but have failed to reach a deeper level of human psychological needs, such as recognition, justice, dignity and identity. Thirdly, traditional negotiations have not mapped out specific ways for the belligerents to repair their relationship.

When the preferences are deeply rooted, punishment strategies will rarely succeed and hatred may well be enough to motivate the belligerents to resist, even if this requires paying a high price. Preferences and emotions play a critical role in conflict, and a correct understanding of civil war resolution requires an integration of emotions into the others better-developed causes of war.

3.10 Conclusions

This Chapter extends the traditional two-party conflict model to allow for a third party and provides a variety of insights. The standard conflict models suggest that in active conflict, the use of military power may be a suitable instrument (e.g. Hirshleifer, Skaperdas). Nevertheless, it is not always the right answer. Active diplomacy by a third party can produce the belligerents' support required to achieve a comprehensive political solution. Moreover, in contexts where regional or national support is lacking, peacebuilding and the reconstruction of the state capacity may be even more effective. Successful crisis management should rest on choosing the right tools and bringing them together in ways that maximize their respective strengths.

Developing useful economic models of peacekeeping poses many challenges. Military peacekeeping interventions usually involve counter-insurgency, which are among the most difficult military operations to mount. Their difficulty arises because they require non-standard strategy, tactics, and logistics. They require effective intelligence, and the integration of the military with the economic and political dimensions. To these difficulties, peacekeeping adds the complications of the international dimension and the collective action problems faced by the international community. Another crucial obstacle is posed by the correct design and implementation of the exit strategy. Any success in stabilising a situation is likely to require a long-term military presence, since the removals of foreign troops could trigger the the reappearance of instability. For this reason, an exit strategy must involve a long-term engagement, to enable both sides to commit realistically to peace. At a minimum, a successful exit strategy should produce conditions under which the military phase of intervention can be terminated without a relapse into conflict. Despite these many challenges, we think that economic approach to peacekeeping and the economic models have potential, particularly if it is possible to develop a more extensive empirical base, to inform the theoretical development.

Appendix B

Appendix to Chapter 3

B.1   Asymmetry in the Contest Success Function

The purpose of this appendix is to demonstrate how the abstract theory might be applied. The numerical examples are not meant to be the complete descriptions of the model.

Example 1

Let the decisiveness parameters be $d_G = 2/3$ and $d_M = 1/3$ $(d_G > d_M)$. The equation (19) simplifies to

$$\frac{f_G^{2/3}}{f_M^{1/3}} R^{1/3} = \frac{p_G^{1/3}}{p_M^{2/3}}$$

Let the total resource be $R = 64$ and suppose the contenders have chosen the fighting intensities $f_G = 8$ and $f_M = 27$ $(f_G < f_M)$ then

$$\frac{p_G^{1/3}}{p_M^{2/3}} \cong 5,3$$

leading to the final equilibrium resources distribution $(R_G^F, R_M^F) \cong (58.8, 5.12)$ that is $R_G^F > R_M^F$. To prove the convergence assume that the initial resource allocation is $R_G^0 = 24$ and $R_M^0 = 40$ $(R_G^0 < R_M^0)$. From equation (14) we have a first period conflict outcome and an end period resource allocation respectively:

$$\frac{p_G}{p_M} \cong 3.24 \quad and \quad (R_G^1, R_M^1) = (48.6, 15.36)$$

In the second period the resource allocation becomes $(R_G^2, R_M^2) \cong (56.3, 7.7)$. After two more periods of conflict the resource allocation is $(R_G^4, R_M^4) \cong (58.2, 5.8)$, and clearly it will approach asymptotically the equilibrium resource division $(R_G^F, R_M^F) = (58.8, 5.2)$.

Example 2

Now let's assume that the decisiveness parameters are $d_G = 3/5$ and $d_M = 2/5$ (again $d_G > d_M$). The equation (19) simplifies to

$$\frac{f_G^{3/5}}{f_M^{2/5}} \, R^{1/5} \quad = \quad \frac{p_G^{2/5}}{p_M^{3/5}}$$

With the total resource $R = 64$ unchanged and with the fighting intensities $f_G = 8$ and $f_M = 27$ as before $(f_G < f_M)$ we have

$$\frac{p_G^{2/5}}{p_M^{3/5}} \quad \cong \quad 2,14$$

and a final equilibrium resources distribution $(R_G^F, R_M^F) \cong (49, 15)$. Notice that, like the previous numerical example, we have $R_G^F > R_M^F$.

Chapter 4

Supplying Peace: Participation in and Troop Contribution to Peacekeeping Missions

4.1   Introduction

Chapter 3 has presented some preliminary discussion of possible theoretical models which explain the demand for peacekeeping, the conflict situations that invite foreign peacekeeping troops. There is also a large literature on the demand-side. The special issue of Defence and Peace Economics edited by Berkok & Solomon (2006) discusses various empirical aspects of the demand for peacekeeping. This Chapter explores the supply-side of peacekeeping, the domestic and international determinants of countries' contribution to peacekeeping operations from 1999 to 2009. The high demand for multilateral military forces in Africa and the Middle East ensures that the supply of uniformed personnel is a recurrent and intensifying challenge for the international community. To explain the uneven record of achievements and to coordinate an effective response, one has to understand the willingness of third party states to provide peacekeeping.

Yet, there is a modest understanding of why nations with heterogeneous geographic positions, economies and institutions agree to dispatch their troops to remote conflict areas. The bulk of studies is made on a case-by-case basis, using an intensive investigation of a particular country (e.g. Sorenson & Wood, 2005). However, this approach suggests a degree of caution, because requires a deep knowledge of the relationships between state apparatus and institutions, and an intensive historical investigation of foreign policy decisions. Moreover, what may account for contribution in one country may contradict the conclusion for another coun-

try and the more country-specific the case-study, the more difficult is to draw general conclusions. The are also descriptive analysis of whether the wealth of states has conditioned contributions to UN operations. Differences between types of governance and levels of income, development and involvement in international organisations are also presented as explanations for the disparities between states' contributions to UN missions (Bobrow & Boyer, 1997). The qualitative nature of some country-specific benefits has prevented a thorough empirical analysis.

The quantitative studies most closely related to ours are Lebovic (2004) and Victor (2010). Lebovic (2004) focuses mainly on the link between democracy and UN peace operations in the period between 1993 and 2001. He finds that the UN peace operations of the post-Cold War era relied on democratic contributions. Victor (2010) examines African states contribution to peacekeeping from 1989 to 2001. He suggests that poorer states, with lower state legitimacy and lower political repression, are more likely to participate in regional peacekeeping. An important difference between their approaches and ours is that we do not limit our study to UN operations or sub-Saharan African states, but we include all UN and non-UN operations (AU, CIS, CEEAC, EU, NATO-led, ad-hoc coalitions) and 102 world's countries from 1999 to 2009. We also test a very different and more complex range of hypotheses, controlling for international-level and domestic-level factors. The remaining quantitative studies can be divided into three broad groups according to the question they attempt to address.

The first group analyses the reasons behind military interventions by external powers and excludes multilateral interventions. One of the earliest attempts is Mitchell (1970) who identifies four factors behind military interventions: (i) the characteristics of the country in conflict; (ii) the characteristics of the intervener; and (iii) the character of the international system; and (iv) the linkage patterns between groups in the two countries. Carment & James (1995) also argue that the decision to intervene is heavily influenced by the ethnic affinities between the potential intervener and the target state. Pearson (1974) identifies both affective and instrumental reasons behind foreign military interventions such as territorial acquisition; protection of social groups in the target; safeguard of diplomatic interests; ideology and regional power balances. Regan (1998) finds that intense conflicts are unlikely to attract outside actors, while those that involve humanitarian crises are quite likely to do so.[1] More recently, Aydin (2010) has built on Regan (2002) dataset on interventions in the post-WWII period and used event history analysis techniques, suggesting that the timing of intervention is associated with the war's

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[1]He also finds that the number of shared borders have a counter-intuitive effect, the greater the number, the less likely the intervention.

intervention history. We complement this literature with the inclusion of multi-lateral peacekeeping intervention in the post-cold war period. Also, we investigate not only the likelihood, but also the size of contribution. We use the characteristics of the conflict to identify which types of conflicts attract outside intervention; and the characteristics of the intervener to identify the countries more willing to provide troops.

The second group focuses on the factors that make UN intervention more or less likely (e.g. de Jonge, 1996; Doyle & Sambanis, 2000; Gilligan & Stedman, 2003; Beardsley, 2004; Mullenbach, 2005).[2] They assume that the UN is a rational unitary actor in the international system with its own set of preferences. However, the UN is not a state in its own right and its capabilities come from the member states. Since the international community is composed of individual states, there are inevitable collective action problems, and what is individually rational for the national states may not be collectively rational for the international community. Although the international system has properties and dynamics of its own, the participation in peacekeeping is reducible to the level of individual state behaviour. Individual nations make their decision about where, when and how to send their military personnel as well as the justifications on which they base their involvement in sovereign states. Together, domestic factors within member states - shaped by the international system - determine the UN capacity for action.

The third group analyses the financial burden sharing of peacekeeping, to grasp the ratio of excludable to public benefits generated by peace operations. These empirical studies have found mixed results. Olson Jr & Zeckhauser (1966) claim that large countries accept a disproportionate share of the peacekeeping burden, because they have the greatest part of benefits from peace and stability. However, Khanna *et al.* (1999) find no statistical evidence of a positive correlation between the GDP of 29 countries (mainly NATO members) and UN peacekeeping actual payments from 1976 to 1999. Shimizu & Sandler (2002) find statistical evidence that burden-sharing was disproportionate during the post-Cold War period (1994-2000); thus peacekeeping has a relatively large share of purely public benefits, which led to some exploitation by the small. Finally, Gaibulloev *et al.* (2009), using data for 29 countries, suggest that during 1994-2006 non-UN peacekeeping was driven by self-interest in the form of participant-specific benefits, while UN peacekeeping depended on the contribution of others, therefore displaying global public benefits.

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[2]Mullenbach (2005) also analyses the factors influencing the likelihood of (groups of states) peacekeeping missions at the international system level. Besides the likelihood of intervention, we also look at the size of the participation and we focus on both international and national level factors.

The main difference with our work is that financial contributions do not mirror personnel contributions. The top 10 countries that accounted for roughly 80% of the financial contributions to UN missions in the period considered contributed less than 10% of the personnel employed in UN peace operations in the same period.[3] Moreover, the capability to provide troops - sometimes configured to engage in combat operations - and the willingness to pay the human costs involves different decision criteria. Firstly, the risk of casualties is an important determinant and countries are reluctant to provide troops that might be placed at risk. Secondly, a country's offers to provide personnel are subject to their overall national capacity (e.g. force size, concurrent commitments, and logistical capabilities). Thirdly, the quality of the troops selected has an impact on the outcome of the operation. Finally, contributors have more control over the use of their national contingents than their financial contributions. Therefore, the decision to dispatch soldiers - the force generation[4]- follows more complex procedures and decision making processes. We think that personnel contributions are better indicators of a country's motivations and constraints.

Why have states agreed to supply troops in peacekeeping operations in the second decade after the end of the Cold War? What are the factors determining the number of troops to provide in case of intervention? The participation and the degree of contribution are the subject of intense debate at the international community and domestic level. We divide the intervention dilemma in two problems: (i) a country decision to participate (participation); and (ii) what determines the number of personnel a country supplies (troop contribution). We first examine the theoretical arguments on public goods, to develop two neo-classical models of participation and troop contribution. Drawing on the theoretical model and on a number of qualitative and quantitative studies, we formulate eight hypotheses. This is followed by a discussion of the dataset and a presentation of the panel methods used in the empirical analysis. Next, we present a panel analysis of individual countries personnel contributions to peace operation in the period 1999-2009. To diversify peacekeeping contributors, we compare UN peacekeeping against other regional organisations. Finally, we discuss the inferences we might draw from the empirical investigation.

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[3]See the UN Department of Peacekeeping Operations, http://www.un.org/en/peacekeeping/
[4]The NATO procedure for staffing an operation is often referred to as "force generation".

4.2   Theoretical model

Considering the state as a rational actor maximising utility subject to a resource constraint, it must decide (a) whether to intervene or not and (b) the number of troops to provide in case of participation.

Participation

For the first problem, we need to specify the expected utility for intervening EU_i^I and the expected utility for not intervening EU_i^N. We assume that both functions are strictly concave and increasing in their arguments. Building partly on Regan (1998), EU_i^N can be expressed as:

$$EU_i^N = p[U_i^p] + (1 - p)[U_i^c] \tag{4.1}$$

where p represents the probability that the conflict will be settled without nation's i intervention, U_i^p is the nation's i utility attached to peace without her intervention and U_i^c is the utility of continued conflict. For simplicity, we assume that there are no costs associated with not intervening.

Although international peace is traditionally regarded as a public good (Kindleberger, 1986), peacekeeping does not exclusively generate pure public benefits, it also produces some excludable and rival contributor-specific benefits. Peacekeeping is "impurely public" because its benefits are not fully available to some countries and benefits decline with the number of countries deriving gains from such missions. Thus, peacekeeping yields *joint products*. Part are purely public to the international community; part are impurely public to a sub-group of countries; and part are country-specific to the participants (Shimizu & Sandler, 2002).[5] Since peacekeeping generates both pure public benefits and some excludable and rival contributor-specific benefits, a nation's expected utility for intervening EU_i^I is given by:

$$EU_i^I = q[U_i^s] + (1 - q)[U_i^f] - \sum C_i^I \tag{4.2}$$

where q is the probability of a successful intervention with nation's i contribution, U_i^s is the utility associated with a successful outcome and U_i^f reflects the utility to the potential intervener from an unsuccessful intervention. $\sum C_i^I$ are the costs associated with intervention.

The net benefit of intervention is given by

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[5]In case of such impure public goods free-riding and its sub-optimality still exist, but not to the same extent as predicted by the pure public goods model (Cornes & Sandler, 1996).

$$EU_i^I - EU_i^N = q[U_i^s] + (1-q)[U_i^f] - \sum C_i^I - p[U_i^p] - (1-p)[U_i^c] \qquad (4.3)$$

When $EU_I - EU_N > 0$ there will be intervention. Therefore, the decision is strongly influenced by the expected marginal impact of country i on the global intervention outcome, by the conflict characteristics, captured by p, and by countries' individual preferences over outcomes. We will test a set of hypotheses grouped into these three categories. Here, we would need to assume *a priori* a sort of utility ordering, which is country-specific. For some countries the utility of continued fighting is higher than the utility from a failed peacekeeping intervention, because they value more the media effect of intervention and the global image. Others prefer intervention to a self-settlement without their involvement because the country-specific benefits of intervention (e.g. involvement in the affairs of the region) are higher than the global public characteristics (e.g. global instability, oil flow disruption). Countries derive utility from characteristics of peacekeeping rather than peacekeeping itself.

Troop contribution

We study a simple model, with two military goods, one s_i is private, say the number of troops employed within the national boundaries. The other T is a public good, which is the size of the country i's own peacekeeping contributions t_i and those of the other $n\text{-}i$ nations T_{n-i}. The countries initially have some endowment of the private good, N_i and determine how much to contribute to the public good. Each nation faces a "troops constraint" when choosing among peacekeeping t_i and other military activities s_i. If country i decides to contribute t_i , he will have $s_i = N_i - t_i$ of "private security consumption". The primary function of armed forces personnel N_i is the protection from foreign threats, but they are also used in public safety roles with police duties among the civilian population and in emergency civil support tasks in post-disaster situations. All these duties are captured by s_i. In case of multiple peacekeeping operations, s_i captures not only the "'home defence"', but also the troops already committed to other operations (e.g. Afghanistan or Iraq). Each unit of peacekeeping generates two joint products, a private benefit αt_i and a global purely public characteristic βt_i. α and β are positive parameters and account for the coexistence of altruistic motivations (β) with the egoistic considerations (α) of intervening states.

To simplify, let us assume that in equation (4.3) the utilities to country's i from continued war, regardless of its intervention, are both small enough to be

considered negligible, therefore $U_i^f \approx 0$ and $U_i^c \approx 0$. In the same equation, p and q account for the outcome of the intervention, which is decided by country's i participation and the coalition's relative investment in fighting. We consider a unique probability σ as a success ratio, given by

$$\sigma(t_i) = \frac{T_{n-i} + t_i}{M + T_{n-i} + t_i} \tag{4.4}$$

where the intervener fighting effort is measured by the scale of his deployment and M is the belligerents' strength and therefore their resistance against a third party involvement. When $t_i = T_{n-i} = 0$ there are no chances that the conflict will be settled without any third party involvement. Let us define a utility function, that captures the optimal number of troops to dispatch in peace operations. The utility is defined over the space of private and public characteristics, is strictly increasing in consumption of both the private and the public good, quasiconcave, continuous and everywhere twice differentiable. Since peacekeeping generates excludable and rival contributor-specific benefits, with an adaptation of Khanna *et al.* (1999) model and following equation (4.3), country i's expected utility function can be written as follow:

$$EU_i = \sigma(t_i)U[\alpha t_i, \beta(t_i + T_{n-1}), s_i, Q] - C_i(t_i) \tag{4.5}$$

Q is added to the function to capture any factor that can influence the utility from peacekeeping, such as the international security threat posed by the conflict and the proximity to the conflict area. $C_i(t_i)$ are the costs of participation. Accounting for the cost of a peace mission is not easy.[6] Besides the military costs, the most important is the loss of life in peacekeepers ranks. The value of life is usually compared to the discounted value of earnings foregone by individuals. We assume that the cost function can be expressed as

$$C_i(t_i) = w\, t_i\, R(M) \tag{4.6}$$

where w is the unit cost of a soldier, that is the value of life, and the function R measures the risk of the mission and is increasing in its argument M. A traditional peacekeeping force into the midst of active and heavy hostilities, captured by an high value of the hostile parties' strength M, might not have the capacity to suppress the conflict and may even be limited in its ability to defend itself. On

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[6]SIPRI provides budget costs for UN multilateral peace operations. They refer to core operational costs, which include the cost of deploying personnel and direct non-field support costs. The cost is shared by all UN member states through a specially designed scale of assessed contributions that takes no account of their participation in the operations.

the contrary, low values of M result in higher odds of establishing peace (equation 4.4) and a lower risk of casualties (equation 4.6). Defining x as the nation-specific output αt_i and y as the global public characteristics βt_i, the first order condition for t_i can be found by maximising (4.5) and can be written as

$$\sigma'(t_i)U_i + \sigma(t_i)\left[\alpha\frac{\partial U_i}{\partial x} + \beta\frac{\partial U_i}{\partial y}\right] = \sigma(t_i)\frac{\partial U_i}{\partial s_i} + wR(M) \tag{4.7}$$

The condition for efficiency is that the marginal benefit of providing peacekeeping (left-hand side of equation 4.7) equals the marginal costs (right-hand side). The marginal benefit is the sum of the utility weighted by the marginal impact of a soldier on the probability that intervention will be successful and the marginal utility of the private and purely public activity weighted by the probability of success. The marginal benefit is offset by the sum of the opportunity cost of having less soldiers for national duties times the probability of success and the expected marginal cost of casualties.

To describe the Nash equilibrium and to obtain the reaction function of country i, we proceed as follow. We simplify the model by normalising the exogenous parameters α, β and Q and the endogenous probability of success σ. The quantity of a country i's provision of the public good is still denoted by t_i. One unit of t_i is also the quantity of the impure public good and its private characteristics. Letting $T = \sum_{i=1}^{n} t_i = T_{n-i} + t_i$, the utility maximisation problem can be written as

$$\underset{s_i,t_i}{\text{Max}}[U_i(s_i, t_i, T) \quad s.t. \quad s_i + t_i = N_i, \quad T = T_{n-i} + t_i] \tag{4.8}$$

where the rescaled utility function U_i keeps the properties of being strictly increasing and quasiconcave. Adding T_{n-i} to both sides of the budget constraint and using the fact that $T = T_{n-i} + t_i$, we can rewrite this country's problem as

$$\underset{s_i,t_i}{\text{Max}}[U_i(s_i, t_i, T) \quad s.t. \quad s_i + T = N_i + T_{n-i}, \quad T \geq T_{n-i}] \tag{4.9}$$

Equation (4.9) says that a country i is choosing the total amount of peacekeeping subject to the constraint that the amount she chooses must be at least as large as the amount provided by the other countries. The "troops constraint" says that the total value of her security consumption must equal the value of her "troop endowment", $N_i + T_{n-i}$. Substituting the constraints into the objective function, we can rewrite this problem as a choice over the aggregate (global) level of peacekeeping

$$\underset{T \geq T_{n-i}}{\text{Max}}[U_i(N_i + T_{n-i} - T, \ T - T_{n-i}, \ T)] \tag{4.10}$$

Problem (4.10) is like any consumer maximisation problem, and a country's optimal choice of peacekeeping T will be a continuous function of the national "endowment"

$$F_i(N_i + T_{n-i}, \, T_{n-i}) \geq T_{n-i} \tag{4.11}$$

Each country's level of private provision of peacekeeping can be written as

$$t_i = F_i(N_i + T_{n-i}, \, T_{n-i}) - T_{n-i} \geq 0. \tag{4.12}$$

This expression is the reaction function for country i and gives her optimal contribution as a function of the other countries' contribution.

Typically, in models of private provision of private goods, a further assumption is the normality condition, satisfied if both the private and public goods are normal with respect to "troop endowment" (i.e. $N_i + T_{n-i}$). The assumption is stated as

$$0 \leq \frac{\partial F_i}{\partial T_{n-i}} \leq 1 \tag{4.13}$$

This implies that reaction functions have slopes greater than -1 and less or equal to zero. Therefore, an increase in other countries' contribution T_{n-i} must increase her demand for the public good and not decrease her demand for the private good.

An alternative formulation to obtain the best-response function is

$$t_i = Max[F_i(N_i + T_{n-i}) - T_{n-i}, 0] \tag{4.14}$$

The last expression shows that each country either contributes a positive amount or completely free rides and contributes zero. Finally, a Nash equilibrium is a set of contributions $\{t_i\}_{i=1}^n$ that satisfies the aggregation rule $T^* = \sum_{i=1}^n t_i^*$. Kotchen (2007) provides a proof of existence and uniqueness of this Nash equilibrium in impure public good model.

4.3 Why states choose to intervene: testable hypotheses

Although we might categorize peacekeeping motivations according to the realist and liberal theoretical approaches, we decide not to do. In many instances the same prediction of the occurrence of UN peacekeeping might be made by both realism and liberalism (Gilligan & Stedman, 2003). Moreover, each of these two

theoretical approaches includes specific variants that might make contradictory predictions about third-party peacekeeping in particular circumstances (Mullenbach, 2005). Thus, we rely on the intuitions of the theoretical model and on a number of motivations derived from case studies. We distinguish between participation and contribution, along decisions related to the nature of the operation; the nature of the conflict and the region at stake; and the characteristic of the intervener. The first hypothesis refers only to the troop contribution problem, the second to the participation dilemma, while hypotheses 3-8 apply to both problems.

Participation

Hypothesis 1. *Conflict spillover: a geographic proximity to the country in conflict increases the likelihood of participation.*

A geographic proximity to the country in conflict increases the utility a neighbouring country expects to get from the cessation of the hostilities. Sharing a border with a country at war means an increase in the probability of instability in the surrounding area (spillover effects). As a consequence, the national security is endangered by the risk of contagion.[7] Benefits from peace are unevenly distributed. The positive externalities generated by an operation are first and foremost consumed by the conflict-ridden country and by the neighbouring countries, that are particularly at risk and are keen to consolidate the neighbourhood stability.

A conflict may also upset a regional balance or provide opportunities for a rival power to increase its influence by intervening on one side of the conflict. Bringing to a halt the conflict is important to the intervener because of the conflict's effects on its relation with the disputing parties in the region. The intervener can also increase its presence and influence by becoming guarantor of an agreement, or by establishing a precedent that would justify future involvement in the affairs of the region(Zartman & Touval, 2007). A military presence in a region can legitimate a heavier deployment if necessary.[8]

Figure 4.1 suggests that a geographic proximity to the country in conflict triggers neighbouring countries responses in UN operations. In fact, the bulk of participating countries come from the same conflict region. However, this relation is not obvious. Peacekeepers do not just deploy within their region of origin or its

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[7]See Gleditsch (2007) on transnational linkages and geographic contagion.

[8]Russian involvement in the affairs of the neighbouring states (e.g. Abkhazia) is often disguised by its will to participate in CIS operations in the area, with the aim of stemming the instability through a permanent military presence. A level of tension in the area justifies that "Moscow keeps a military presence and levers" on former Soviet republics (Facon, 2006, p.35).
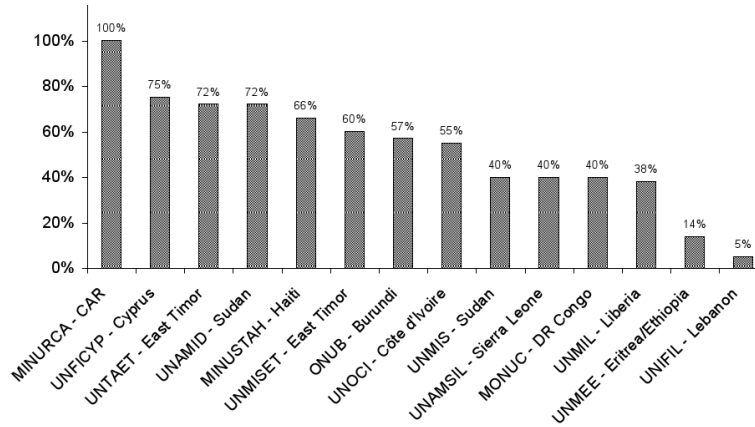
Figure 4.1: Troop-contributing countries to UN operations from the same conflict regions. Authors' calculation based on records from the SIPRI Database on Multilateral Peace Operations

immediate neighbourhood. European forces under NATO and Asian forces under UN command operate across the world. East African troops operate in West African operations, and vice versa, and Latin American forces, such as Argentina and Chile, operate in Haiti. The EU deployments are in two distant areas: EU missions in Africa (such as Artemis in Congo or EUROFOR in Chad/CAR) and EU mission in the Balkans (Macedonia and Bosnia-Herzegovina). *Ad-hoc* coalitions are either made up by neighbour states, such as ISF in East Timor, RAMSI in the Solomon Islands and SAPSDI in Burundi, or by former colonial powers (France in Cote d'Ivoire). Certainly, countries operate through their regional organisations: Africans through the AU, Europeans through the EU and NATO and former Soviet Republics (Russia in particular) through the CIS.

To test this hypothesis, we use a dummy taking value 1 if the donor country is in the same region as the recipient country.

Troop contribution

Hypothesis 2. *Normality condition: an increase in other countries' contribution to an operation increases a country provision of troops to the same operation.*

This hypothesis follows from equation 4.13 and may be considered the opposite of a free-riding behaviour. The interest of other states in the conflict can be an indicator of its salience and the gains that they are expecting from intervention. Such interest might reinforce a mutual recognition among potential interveners that there are significant benefits from involvement. More importantly, this hypothesis accounts for the strategic decision interdependency among interveners. An

emerging body of literature recognises this aspect and show empirically that states observe each other to make intervention decisions (e.g. Findley & Teo (2008); Gent (2008)). Finally, a raise in other countries' contribution increases the success ratio, and therefore the probability of a successful intervention (equation 4.4).

Participation and contribution

Hypothesis 3. *Tolerance of casualties: the valuation of life in wealthier nations envisages a casualty-adverse approach that leads to engagements with lower casualty risk.*

Equations 4.6 and 4.7 stress the importance of the unit cost of a soldier and the expected marginal costs of casualties in the participation dilemma. In some countries public openness to peace operations does not automatically extend to actions involving combat and politicians have to carefully justify the operation's nature. The tolerance for causalities is often an obstacle, and it is deemed to be one of the causes behind the unexpected US withdraw from Somalia in 1994. The political system of wealthier countries has a greater sensitivity to the higher value of life associated with economic growth. This mechanism applies in particular to democratic countries where popular consensus is vital to politicians seeking re-election or possessing a tiny parliamentary majority. Countries are very cautious about intervening in risky conflicts where national security is not at stake. Public support for risky foreign policies is fragile and precipitately erodes with failure (Mueller, 1971). Therefore, intervening countries have to demonstrate to their domestic populations that their military efforts are worthwhile and at a tolerable cost (Freedman, 2007). Under these circumstances a causalities-adverse approach leading to engagements with a lower risk of casualties should be preferred.

The value placed on soldiers life is reflected by the salary. As a result, the level of salary and the risk associated with a mission, which in turn means sensitivity to casualties, is a strong determinant in the decision to intervene. Military salaries are often benchmarked against those of the private sector and wage raises are linked to private-sector average wage hikes (Williams, 2005). Thus, we use the GDP per capita to proxy for the compensations' level.

We consider the number of deaths among the peacekeepers as a signal of the level of risk of any operation. High fatality rates among the peacekeepers inform the intervener about the cost-tolerance of combatants. For this purpose, the conflict intensity is unsuitable. The Heidelberg dataset (Table 4.1) identifies five values of conflict intensity: latent conflict (level 1), manifest conflict, crisis, severe crisis and war (level 5). There is not a clear relation between the conflict level and the

number of deaths among peacekeepers. Many dangerous missions, according to the conflict level, such as the CEEAC missions in the Central African Republic, suffered less than 10 deaths. Paradoxically, the AU mission in Burundi and the EU forces deployed between Central African Republic and Chad suffered respectively one and zero casualties, in areas classified as war regions (conflict level 5). These examples, along with others showed in the Table 4.1, suggest that peacekeepers are often deployed in safe areas, or they do not engage in fighting to carry out the mission mandate. The statistical evidence suggests that the conflict intensity is more suitable as a measure of the perceived global level of threat rather than the risk of casualties.

Category	Acronym	Location	Conflict Intensity	Deaths p.y.
AU/UN	UNAMID	Sudan	5	25
AU	AMISOM	Somalia	5	10
UN	UNMIS	Sudan	5	10
UN	UNAMI	Iraq	5	2
AU	AMIB	Burundi	5	1
EU	EUFOR	Chad/CAR	5	1
EU	Operation Artemis	DR Congo	5	0
CEEAC	MICOPAX	CAR	4	1
Ad-Hoc	SAPSD	Burundi	4	3
CEEAC	FOMUC	CAR	4	2
Ad-Hoc	MIF-H	Haiti	4	1
EU	EUFOR	DR Congo	4	0

Table 4.1: High Risk and Few Casualties. Conflict intensity extracted from the Heidelberg Institute Conflict Barometer dataset. Where applicable the level refers to the specific region of a country (Kosovo, Abkhazia, South Ossetia, Darfur, Eritrea-Ethiopia borders). Where more then one conflict was present, the figure represents the highest intensity reached among all conflicts.

Hypothesis 4. *Global stability: given an ongoing conflict, the greater the international security threats posed is, the higher the likelihood and size of participation will be.*

When a conflict is regarded as a threat to global stability, security concerns will trigger nation-specific responses (captured by the parameter Q in equation 4.5).

Although the public opinion is often not well informed about the issues at stake in international crises, it might have a strong influence on the decision-making elites. A public that feels insecure and has a perception of international security threats is likely to support demanding international operations. Americans in 2001 believed that intervention in Afghanistan was necessary to protect the most

vital of US interests: the security of people and homeland. As a result, the US intervened with overwhelming force with the intent to topple the ruling regime. This event highlights a basic principle in the intervention dynamics: in presence of a clear threat to national interests, there is no lack of political will and the deployment is rapid and powerful (Lahneman, 2004). This hypothesis presents a realistic framework on the international dimension of civil wars. We use the conflict intensity as a proxy for the global security threat that a conflict poses.

Hypothesis 5. *Humanitarian intervention: the participation increases in presence of a large population displacement or an imminent humanitarian crisis.*

Humanitarian norms existing at the level of the international system influences the extent of humanitarian military intervention by states (Finnemore, 2008). But there are also benefits to intervening in civil wars with humanitarian implications, and domestic costs of not intervening. Such an approach is particularly manifested when public opinion and media pressure urge national governments to intervene. Public demands for action are reactive; they arise after widespread media coverage of human rights violations has raised public awareness. The physiological effect of the media coverage of civil wars encourages leaders' response. Shaw (1996) argues that the "'CNN effect"' has completely transformed foreign policy-making and has changed the media-government interaction in the context of humanitarian intervention. Dowty & Loescher (1996) suggest that refugee flows can impose costs that affect the national interests and that interventions in conflicts with large refugee flows are justified by international conventions. Regan (1998) finds that a large social dislocation or humanitarian crisis increase the probability of intervention. Germany and Italian involvement in SFOR (Bosnia) and KFOR (Kosovo) averted the risk of a huge refugees pouring into their territories, for example. Intervention in this case helps also to protect a government from domestic critics. When it comes to the size of the intervention, there does not seem to be a clear correlation between the number of Internally Displaced People and the maximum number of troops deployed from our dataset (Figure 4.2). We use the number of internally displaced persons to test whether humanitarian motivations are associated with the decision to intervene and the size of participation.

Hypothesis 6. *Sustainability: the participation in multiple missions negatively affects the participation in new operations.*

Countries face a "troops constraint" when choosing between a peacekeeping mission t_i and other military activities s_i. Given a level of $s_i = \tilde{s}$, the participation in multiple missions is a significant obstacle to increasing peacekeeping forces and
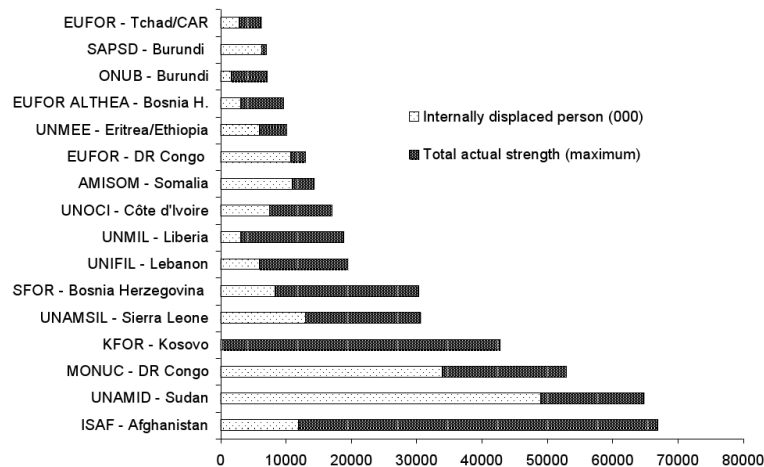
Figure 4.2: Internally displaced persons and maximum actual strength of troops. Authors' calculation based on records from the Internal Displacement Monitoring Centre Database, The Office of the UN High Commissioner for Refugees and US Committee for Refugees and Immigrants. Where applicable the number refers to either the sub-region (e.g. Abkhazia) or the macro region (e.g. Ethiopia-Eritrea) interested.

can easily hamper the willingness to participate in additional operations. Only a minority of states is expected to deploy forces when they are already sustaining missions elsewhere. They function on the basis of the "rotation cycle" concept. The concept predicts that when a peace unit is deployed (on average for six months), a second one is preparing to deploy and a third one is in post-deployment rest. This cycle means that a more accurate indicator of the stress on the military is given by three times the percentage of a nation's force deployed at one time (Daniel *et al.* , 2008). Therefore, the participation in a given UN operation negatively affects the participation in another set of, say non-UN, operations. Obviously, a soldier under NATO command cannot simultaneously be in a UN mission. An assumption of competitive relationship is at play here. NATO members also have to meet their alliance commitments in terms of manpower and materials required to achieve set objectives and might not be able to generate additional forces.

Deploying forces abroad for some states may reduce their ability to protect their homeland. Over half the top 20 troop suppliers to UN operations border on at least one fragile state - mainly African countries (Center on International Cooperation, 2009). Since their primary concern remains their own defence, and given their critical force to space ratio, they can hardly protect their territorial integrity.

The comparison between UN contributors and USA is useful to the stress the importance of the rotation cycle. On average, 22% of all U.S. servicemen were stationed in foreign countries during 1950-2000 (see Figure 4.3). In 2003, 27%
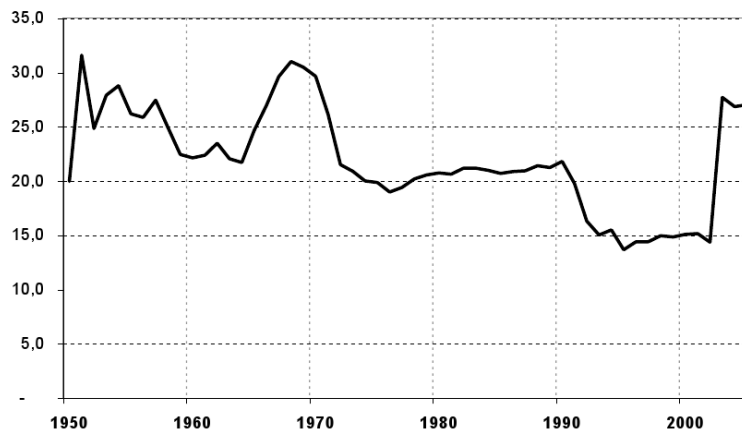
Figure 4.3: Percent of US Troops in Foreign Countries. Source: US Department of Defence and The Heritage Foundation

were deployed, about 387,920 troops, out of a total of 1,434,000 personnel, the same percentage as the 1950s. No other country is capable of deploying such a huge proportion of troops outside the national borders. Figure 4.4 shows that only a small percentage of countries' armed forces are deployed in UN operations.

We use the number of operations conducted at the same time as an indicator of the sustainability of multiple operations.

Hypothesis 7. *The mercenarisation of UN forces: developing countries exploit their comparative advantage in manpower.*

Money is perhaps the motivation more often brought forward for developing countries' contributing to peacekeeping. There is some doubt about UN inclination to subsidise the troops of developing countries during peace missions (i.e. the UN pays them for borrowing their troops). The myth of mercenarism and the "mercenarisation" of UN forces has been often denounced by several practitioners and scholars. Kinloch-Pichat (2004, p. 170) claims that the defects ascribed to *ad-hoc* national contingents are those "historically attributed to mercenary forces in the past: foreign allegiance, corruption and unwillingness to take the necessary risks when it comes to fighting". Peacekeeping contracts are lucrative and are often used as leverage, in order to influence the providers of troops. The cost of UN peacekeeping missions include the compensation for troop contribution at a rate of US\$ 1,028 per month per troop, the repayment for use of the provider's own equipment and clothing (US\$68), the repayment for personal weaponry (US\$5), a supplementary pay for specialists (US\$303), and disability costs.[9] Although the reimbursement should be contextualised by considering the exchange rate, for

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[9]See the UN Department of Peacekeeping Operations website
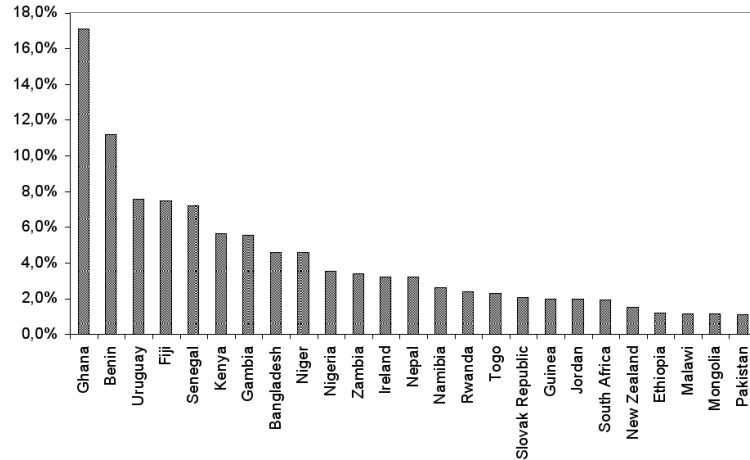
Figure 4.4: Percent of Troops Deployed in UN Operations 2000-2009. Authors' calculation based on records from the UN Department of Peacekeeping Operations and from the IISS Military Balance

those countries who deploy large peacekeeping forces, the earning is a significant proportion of the defence budget, even in countries with a large standing army.[10] A system of fixed reimbursement redistributes resources to developing countries, without requiring that the surpluses be reinvested in equipment or training useful to the UN (Durch, 1993). The armed forces may receive equipments from Western contributors, as happened in Somalia and in Bosnia (Findlay, 1996b), or bilateral military aids from rich allies, like the US military assistance to Bangladesh (Krishnasamy, 2003). Although some poor countries make a profit on peacekeeping, the UN is very slow in paying and the amount so relatively niggardly that this cannot be a sole motivating factor (Findlay, 1996a).[11]

Well equipped and well trained troops from Western countries may be less inclined to participate in UN operations in the developing world. Indeed, Western governments have to fill the gap between what the international system is willing to pay for peacekeeping troops (as reflected by the UN reimbursement) and the amount they actually pay volunteer troops. Also, the value of life increases as the nation develops (Seiglie, 2005), therefore UN cash remuneration might not suffice to offset the risks and costs of contribution. As a consequence of the tolerance

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[10]Bangladesh, for example, earns US$300m a year, a huge reimbursement for a low-income economy, and around half of it goes directly to the soldiers. "Major Furuque Hassan, a military intelligence officer in Dhaka, is a representative Bangladeshi peacekeeper. His one-year tour in Cote D'Ivoire netted him savings of 2m taka ($US\$30,000$), enough to buy two plots of land back home. He describes the tour as his pension fund, a reward for 15 years of service." (The Economist, Feb 21st 2007)

[11]In fact, only 30% of peacekeeping assessment are paid in the first three months and 60% in the first six months McDermott (2000).

of casualties (hypothesis 3), and because of the high relative value of labour, the strategy for Western countries is to become more capital or weapon intensive. On the other side, many intervener countries are capital-poor and labour-rich, and this capital-poverty means having large, non-technologically sophisticated armies. Consequently, the number in the armed forces of a country and the remuneration determines the likelihood and the size of intervention. The size of the armed forces and the real GDP per capita are used as proxies for this comparative advantage in manpower.

Hypothesis 8. *Ambition: (i) UN Security Council candidates are more likely to provide troops in UN operations; (ii) military expenditure determines the likelihood and size of participation.*

Bellamy *et al.* (2004) categorise the reasons of intervention through the relation between the intervener's standing in the international distribution of power and the host country. Certainly, military contribution is linked with the level of ambition, that is a consequence of the international standing of a state. Ambition is a reliable measure of the desire to establish and assert a role in international security matters (Zartman & Touval, 2007).

The combined forces of the permanent five member of the Security Council constitute a fair portion of peacekeeping troops. As Kennedy (2006) describes in his history of the UN, the permanent members of the Security Council were iden-tified as providers of international security, unlike the weak countries like former Czechoslovakia and Ethiopia who were consumers of security. P5 participation in various peace operations may serve to legitimate their permanent seat in the Security Council.

On the other hand, there are a number of potential members of the Security Council who consider participation as a way to enhance their standing in the international community and as a prerequisite for middle power status in the UN (e.g. Canada, Scandinavia). There are also a number of normative expectations towards the emerging powers in the international community. India and Pakistan considerer global policing as a sign of their emergence as a world power. Brazil, Nigeria and South Africa link participation to their desire to become regional leaders and candidates for a permanent seat in the Security Council. Germany, Japan and South Korea consider participation as a part of their coming out as normal countries that possess regionally economic and military clout (Daniel *et al.* , 2008). As a measure of status in the international community, we use a dummy for countries elected as non-permanent members of the Security Council in the subsequent year. Moreover, as a measure of the military ambition of a state and

the relative weight of the military apparatus we use the military expenditure as a percentage of GDP.

4.4 Data description

The dataset consists of observations on national contributions to 45 multilateral peace operations conducted around the world in the period 1999-2009 (see Table 4.2). In determining which foreign deployments of troops should be counted as peacekeeping, we use the SIPRI operational criteria (e.g. the deployment is authorised by the UN).[12] The dataset provides information for the participating countries with the exact number of troops supplied. We use a range of sources to collect the national numbers of personnel deployed: SIPRI Multilateral Peace Operations Database, IISS Military Balance, UN Department of Peacekeeping Operations monthly summaries and NATO data on troops contribution. Our dataset also includes information which can be grouped into the following two categories:

Operation and conflict characteristics

They include the number of fatalities suffered from the onset of the mission until the last reported date; the actual personnel number, including civil police, civil staff and military observers, to display the strength of the operation; the conflict intensity, extracted from the Heidelberg Institute Conflict Barometer dataset. Where applicable the level refers to the specific region of a country (Kosovo, Abkhazia, South Ossetia, Darfur, East-Timor, Eritrea-Ethiopia borders). Where more then one conflict is present, the figure represents the highest intensity reached among all conflicts; the number of internally displaced persons, taken from the Internal Displacement Monitoring Centre Database, The Office of the UN High Commissioner for Refugees and US Committee for Refugees and Immigrants. Where applicable the number refers to either the sub-region (e.g. Abkhazia) or the macro region (e.g. Ethiopia-Eritrea) in question.

Donor characteristics

They include the number of armed forces personnel from 1999 to 2009, based on the IISS Military Balance; military expenditure as a share of GDP, calculated by

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[12]More precisely, we consider "'operations that are conducted under the authority of the UN and operations conducted by regional organisations or by *ad-hoc* coalitions of states that were sanctioned by the UN or authorised by a UN Security Council resolution, with the stated intention to: (a) serve as an instrument to facilitate the implementation of peace agreements already in place; (b) support a peace process; or (c) assist conflict prevention and/or peace-building efforts"' (SIPRI 2010).

using annual data of military expenditure supplied by SIPRI and GDP provided by IMF, World Economic Outlook Database (April 2009); real per capita GDP (constant price, base year 2000), calculated by deflating the GDP per capita in US dollars provided by the IMF, World Economic Outlook Database (April 2009); an indicator of proximity, which takes into account whether a donor country resides in the same geographical area of the operation. The recipient regions for peacekeeping operations are North Africa, sub-Saharan Africa, the Caribbean, Central America, North America, South America, Central Asia, South Asia, Oceania, Europe and the Middle East. The regional designation follows that of the World Bank. Finally, we use an indicator of how many concurrent operations a country is involved in; and an indicator of whether a country is among the ten non-permament members of the security council.

4.5 Econometric models

The aim of the empirical investigation is to determine the factors determining a country's decision to participate (participation); and those explaining the number of soldiers deployed by a country in a specific mission (contribution). We use static discrete choice models to analyse the probability of participating; and fixed effects and first difference panel regression models when we look at the contribution. For each problem, we now discuss the choice of the sample, the covariates and the functional form.

Modelling participation

Consider a set of countries i=1,2,...,N who might participate in a peace operation, then defining y_i=1 for participation, we want to model $Pr[y_{it} = 1|x_{it}]$, with covariates x_{it}. This choice poses some issues. If we considered each operation UN Charter, Chapter VI and VII, as "192 UN members intervention potential", the approach would be methodologically wrong. Many countries have a long-lasting tradition of non-intervention. Few are considered lawless or failed states, such as the Somali Republic or Iraq, therefore incapable of projecting troops abroad. Others have no military resources; approximately 24 countries (the figures vary from different sources) have either no military forces or no standing army. In addition, according to the Military Balance 2009, 12 countries have less than 1000 armed forces personnel. Therefore, we consider as potential intervener any state that participated in at least one peace operation with at least one soldier in the eleven years considered. We only consider troops, therefore excluding military observers, civil-

ian police and civilian staff. In the participation model, the dependent variable is a dichotomous one that takes on the value of 1 in the case of participation and zero in the case of non-contribution. The observational unit is country-operation-year.

Unfortunately, we are only able to estimate such model only for UN missions, since we can not construct a control group (non-participating countries) for other type of operations. This is obvious for the *ad-hoc* coalitions, in which the control group does not exist *a priori*; while in NATO, EU and AU missions too many members participate in any mission - although sometimes with few soldiers - leaving us with a very small control group which makes any inference unreasonable. Participating in operations sponsored by regional organisations is principally driven by a sense of identity towards these organisations, and therefore less influenced by the the factors summarised in section 4.3.[13]

A country decision to participate is modelled according to the following reduced form model for participation:

$$\Pr[y_{it} = 1 | x_{it}, \alpha_i] = \Phi(x'_{it}\beta + \alpha_i) \quad i = 1, ..., N; \ t = 1, ...T \qquad (4.15)$$

where x is a vector of strictly exogenous observed explanatory variables and β is the associated coefficient vector. The covariates vector x includes information on the conflict, the peace operation and the participating country. The model also has a random intercept α_i to account for individual-specific unobserved characteristics. Φ is the cumulative distribution function of a standard normal variate.

The standard uncorrelated random effects model assumes α_i uncorrelated with x_{it}. Alternatively, following Mundlak (1978) and Chamberlain *et al.* (1984), correlation between α_i and the observed characteristics can be allowed by assuming a relationship of the form $\alpha_i = \overline{x}'_i a + \varepsilon_i$ and with ε_i independent of x'_i. Thus the model may be written as:

$$\Pr[y_{it} = 1 | x_{it}, \alpha_i] = \Phi(x'_{it}\beta + \overline{x}'_i a + \varepsilon_i) \quad i = 1, ..., N; \ t = 1, ...T \qquad (4.16)$$

In order to check the robustness of the random effect probit, we run a random effect complementary log log specification, which take into account any asymmetry in the distribution of the dependent variable. Finally, to relax the distributional assumption about the unobserved heterogeneity parameter, we estimate a linear probability model with fixed effects.

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[13]Participating in peace missions fosters the integration and the recognition of a state into regional organisations. This can explain the frequent, and often nominal, contribution of European countries to NATO operations and African countries to AU missions

Modelling troop contribution

In the second empirical part, we try to identify the determinants of the number of soldiers a participant country deploys in a particular mission. Therefore the sample is made up of those that contribute. We construct the dependent variable by considering, on one hand, the plain number of troops and, on the other hand, the number of troops as a percentage of the total number of active armed forces. The reason for such a choice is twofold. Firstly, since in many operations some countries supply a nominal number of personnel compared to the size of their ground forces, the relative measure of troops might capture the real effort sustained. Secondly, we are able to inspect whether results are robust to different specification of the dependent variable.

The model is specified as:

$$y_{it} = x_{it}'\beta + f_i + \epsilon_{it} \quad i = 1, ..., N; \ t = 1, ...T \tag{4.17}$$

where f_i is the time invariant country-specific effects and ϵ_{it} is the error term.

In order to eliminate the fixed effect f_i we apply two customary transformations of the original model: first differences and the within transformation. The first-differences estimator is obtained by subtraction of the lagged one period model from the original model (equation 4.17). The following model is then estimated

$$\Delta y_{it} = \Delta x_{it}'\beta + \Delta \epsilon_{it} \quad i = 1, ..., N; \ t = 2, ...T \tag{4.18}$$

The within model is obtained by subtraction of the time-averaged model from the original model (4.17). Then:

$$y_{it} - \overline{y}_i = (x_{it} - \overline{x}_i)'\beta + (\epsilon_{it} - \overline{\epsilon}_i) \quad i = 1, ..., N; \ t = 1, ...T \tag{4.19}$$

In both procedures the country-specific effects f_i is removed.

Modelling contribution poses a sample selection problem. Since the decision to intervene precedes the one about the number of troops to dispatch, the sample is apparently non-randomly selected. Model estimates based on such non-randomly selected sample might be biased leading to erroneous conclusions (Heckman, 1981). Furthermore, the distribution of troops' contribution takes on non-negative values. A censored regression model might solve the problem and take care of the censoring by postulating a latent distribution of troops' contribution for non-participant. However, this last hypothesis is somehow puzzling for three reasons: firstly, as mentioned above, there are countries incapable of projecting troops abroad and/or having no military resources. Troops' contribution for these countries is necessar-

ily zero. Secondly, the assumption of latent negative values of the distribution of troops' contribution cannot be supported. Thirdly, the censored regression model relies on the normality assumption of the latent variable, which is a strong parametric assumption. Tobit-type latent variable models make sense if the data we are working with are truly censored.[14] In addition, the panel structure of our data would be mathematically complex to combine with a censored regression model; a large burden of computer programming and a set of strong distributional assumptions would be necessary for such a combination (see Hisiao, 2001). Some scholars propose the use of non-parametric estimators for correcting selection bias (amongst others Kyriazidou (1997)), but no method has been widely accepted so far. As a consequence, we decide to rely on the customary linear panel model.

One might argue that the underlying process both for participation and troops contributions is dynamic, that is, it is likely that the decision in the previous period can explain part of the variance of the dependent variable. If this is true, the residuals of the linear panel regression are serially correlated and we need to specify a dynamic model. The GMM estimators of Arellano & Bond (1991), Arellano & Bover (1995) and Blundell & Bond (1998) are well-suited for this case. We do such an exercise by estimating dynamic regressions for the troops contributions model and for the participation model. Results of the dynamic models (not reported here, but available upon request) do not show any significant difference from those in the linear panel regressions or static random effect probit, even though the endogeneity of the lagged dependent variable is unresolved in some regressions. A dynamic specification is not an improvement in the methodology, mainly because of the limits surrounding the GMM estimator; internal instruments, though attractive as a response to endogeneity, have serious limitations (Roodman & Floor, 2008). A large collection of instruments, even if individually valid, can be collectively invalid in finite samples because they over-fit endogenous variables. They also weaken the Hansen test of overidentifying restrictions, which is commonly relied upon to check instrument validity. Also Bun & Windmeijer (2010) highlight the weak instrument problem for the system GMM model and suggest the use of testing procedures that are robust to this issue. Thus, rather than relying on some specific procedure which is far from universally accepted, we choose to carry out our analysis by using more customary econometric tools. This choice might also have its counterpart whether the linear panel model is not the right one. A more extensive investigation is needed and we leave it for future research.

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[14]More arguments against the misuse of a censored regression are developed in chapter 3 of Angrist & Pischke (2009).

4.6   Empirical results

Table 4.3 provides estimates for alternative versions of the participation equation. Columns one, two and three report the estimates for the linear probability model, probit and complementary log log model respectively over the period 1999-2009.[15] The results apply to UN operations only for the reasons mentioned in section 4.5.

Tables from 4.4 to 4.6 provide the first-difference estimates and the within estimates for alternative versions of the troops contribution equation.[16] The dependent variables are the number of troops provided (first and second column) and the percentage of active armed forces deployed to any operation, a measure of the effort sustained (last two columns). In Table 4.4 we report the factors affecting the size of contribution and country efforts in UN missions; in Table 4.5 we present a panel estimates of the drivers of non-UN troops contribution [17]; and in Table 4.6 the estimates of the NATO-led and EU missions alone.

Participation

Results in Table 4.3 confirm the arguments presented in the theoretical framework. Hypothesis 1 on the interests linked with the possibility that a conflict may spill over into surrounding areas is confirmed. The "'same area"' dummy is strongly significant and positive, emphasising that contributor geographic propinquity to the conflict region bolsters peacekeeping contribution to that region. Due to its time-invariant nature, this covariates is only used in the random effect probit (cloglog). Hypothesis 2 is not tested since the contribution of other countries is likely to be endogenous to the participation problem.

The tolerance of casualties (Hypothesis 3) is not entirely supported. The coefficient of the number of deaths among peacekeepers and the real GDP per capita do not tell a consistent story; one is positive and statistically different from zero over different specifications, while the other is negative.

Hypothesis 4 and 5 are confirmed. The proxies for humanitarian intervention (number of displaced people) and global stability (conflict intensity) are positive and significant, suggesting that the higher the humanitarian implications and the security threat that a conflict poses, the higher the probability of contributing to

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[15]As robustness check, we run the regressions including time dummies. The results do not show any significant difference. Therefore, we decide to rely on more parsimonious model without time effects.

[16]Also in this case we run the regressions including time dummies and the results do not show any significant difference.

[17]The category include NATO-led, EU, African Union (AU), the Economic Community of Central African States (CEEAC), ad-hoc coalitions (e.g French operation in Cote d'Ivoire) and the Commonwealth of Independent States (CIS)

a UN operation is. In presence of a large population displacement or an imminent humanitarian crisis, the probability of participation increases.

Hypothesis 6 on the sustainability is also confirmed. We measure the sustainability of deployment by the number of missions supported at the same time. The positive sign of the coefficient and the negative sign of its square predict a negative effect whenever the number of concurrent commitments exceed a certain threshold, resulting in a an inversely U-shaped relationship.

Hypothesis 7 expectations are also supported by empirical findings. The negative sign of the real GDP per capita and the positive sign of the number in armed forces confirm the "mercenarisation" hypothesis and is consistent with the assumption that poorer countries are more likely to join a UN operation, although the number in armed forces is not statistically significant.

Hypothesis 8 on the standing in the international arena is only partially supported by the empirical findings. Although the signs are in the predicted direction, sitting temporarily in the UN Security Council is not statistically significant, while the military expenditure as percentage of the GDP is only significant in the last specification.

Troop contribution

Results for the troop contribution equation (Tables 4.4 - 4.6) confirm most of our hypothesis; nevertheless, they present some relevant exceptions, in which the sign of the coefficient is not in the direction predicted by the theoretical arguments.

Hypothesis 1 on conflict spillover is not tested since the dummy for the geographic proximity is time-invariant. The normality condition (Hypothesis 2) is confirmed; the coefficient for other countries' contribution is positive and significant at the 0.01 level over alternative specifications and different categories, as predicted by the theoretical arguments. We are aware that other countries' contributions might be endogenous, since the decision on the size of contribution is almost simultaneous. An exogenous shift (instrument) is required to interpret the correlation as a causation. However, finding a suitable instrument is quite complicated. Hence, we not draw any causal interpretation on the coefficient. Moreover, dropping this covariate in the regressions does not change the effect of the other covariates.

The tolerance of casualties (Hypothesis 3), when captured by the number of deaths among peacekeepers, has a positive and significant impact on the number of troops deployed and the participation effort in UN missions, although only when the within estimate is used. The result is counter-intuitive. However, in

non-UN missions it has the expected sign in both the within and first difference models, and it is strongly significant. When the real GDP per capita is used as a proxy, the coefficient is negative and significant, emphasising that wealthier states are reluctant to dispatch a large number and proportion of national troops to multilateral peace operations. In non-UN missions, where combatants can inflict human losses, wealthier states are less willing to provide troops in the middle of fighting.

A global stability threat (Hypothesis 4) is among the strongest determinants of countries contribution. The conflict intensity causes an increase in the size of contribution (the number of troops provided) and the country's effort (the number of peacekeepers as a percentage of the number in armed forces) for both models and for any operation category. The finding confirms the previous results on the likelihood of intervention, thus supporting the theory that the global emergency that a conflict poses urge governments to intervene with a large deployment.

Hypothesis 5 on humanitarian interventions is supported by the signs in Table 4.4. Therefore, the media coverage of human rights violations might be an important factor affecting the size of contribution to UN operations. The number of displaced people does not affect the number of national troops deployed in non-UN (Table 4.5), NATO and EU operations (Table 4.6) in the anticipated direction, thus suggesting that humanitarian crises hamper the size of contribution to ongoing non-UN peace operations.

The sustainability index - the number of multiple missions (Hypothesis 6) - is negative as expected in UN operations, although it is not significant. In Table 4.5 and 4.6 it is either insignificant or positive.

The comparative advantage in manpower (Hypothesis 7) is, along with the international security threat, among the main drivers of peacekeeping contribution to UN operations. Both the signs and significance of the real GDP per capita and the number in armed forces are consistent with the theory. It is worth underlining that the "'mercenarisation"' hypothesis (e.g. poorer troop contributing countries, who send the lowest paid forces, are reimbursed more than their actual costs) applies only to UN operations; the number in armed forces and the GDP per capita do not significantly affect the participation in Non-UN and NATO/EU operations, as one would expect.

Hypothesis 8 on the level of ambition and standing in the international arena is not supported by our findings when it comes to the number of troops deployed. Both the UN Security Council candidates dummy and the military expenditure as percentage of the GDP are not significant. We leave the question about the way to proxy the prestige and standing in the international community unresolved.

4.7 Conclusions

This Chapter attempts to address the possible motivations that interact to produce peacekeeping contributions by a diverse pool of participants. This represents the first systematic analyses of the conditions under which third-party actors are more or less likely to intervene in peacekeeping operations and the factors determining the size of their contribution. Given that national countries have a variety of aims and the stated goal may be just a rhetoric of intervention, there are difficulties about determining the objectives of the intervening governments. Participation is decided in carefully selected contexts in which many factors must be taken into account. Our empirical results suggest that at the domestic level, the comparative advantage in manpower, the tolerance of casualties and the sustainability of multiple missions play a role. The results of non-UN missions show that states abstain from engaging in operations with a high level of casualties among peacekeepers. At the international level, the security threat that a conflict poses, the proximity to the conflict area and the number of displaced people influence the likelihood and size of intervention. In particular, the most robust explanations of when states choose to intervene are the proximity to the conflict and the level of threat: when a conflict is regarded as a threat to global and regional stability, security concerns will trigger nation-specific responses. Quantifiable motivations play a role, but they cannot be accepted as a full account of what motivates different actors and legitimising authorities to intervene. This is what Finnemore (2006) defines as "the common problem with the traditional Realpolitik formulation: interests are simply indeterminate"'. Also, contributor-specific benefits linked to his standing in the international community are not a factor for peacekeeping missions as theorised. Unquestionably, a major role is played by a number of immeasurable elements, such as a state's national security culture, and its capacity for action, the domestic public opinion and the political decision making process. Along with the explosive growth in the demand for troops, there is an impressive rise in the numbers and quality of troops required to fulfil new tasks. While the economic crisis is leading to a cutback of peacekeeping expenditure, a new level of engagement is deemed necessary to improve the effectiveness of peace missions. Understanding why and where countries strategically decide to intervene is central to evaluating the impact of operations and to promoting successful conflict outcomes; our work offers some valuable insights into the complex dynamics of peacekeeping operations.

4.8 Tables

Table 4.2: UN and Non-UN Peacekeeping Operations, 1999-2009

Category	Acronym	Location
Ad-Hoc Coalitions	ISF	East Timor
Ad-Hoc Coalitions	MFO	Egypt (Sinai)
Ad-Hoc Coalitions	MIF-H	Haiti
Ad-Hoc Coalitions	MNF-I	Iraq
Ad-Hoc Coalitions	RAMSI	Solomon Islands
Ad-Hoc Coalitions	Op. Licorne (SCR 1464)	Côte d'Ivoire
Ad-Hoc Coalitions	SAPSD	Burundi
AU	AMIB	Burundi
AU	AMIS	Sudan
AU	AMISEC	Comoros
AU	AMISOM	Somalia
AU	MAES	Comoros
CEEAC	MICOPAX	Central African Republic
CEEAC	FOMUC	Central African Republic
CIS	South Ossetia Joint Force	Georgia
CIS	CIS PKF	Georgia (Abkhazia)
CIS	CPF	Tajikistan
CIS	JPKF	Georgia (South Ossetia)
CIS	JCC	Moldova
EU	EUFOR ALTHEA	Bosnia and Herzegovina
EU	EUFOR Concordia	Macedonia (FYROM)
EU	EUFOR DR Congo	Democratic Republic of the Congo
EU	EUFOR Tchad/RCA	Central African Republic, Chad
NATO-led	ISAF (SCR 1386)	Afghanistan
NATO-led	KFOR (SCR 1244)	Kosovo
NATO-led	SFOR (SCR 1088)	Bosnia and Herzegovina
NATO-led	TFF (SCR 1371)	Macedonia (FYROM)
NATO-led	NTM-I (SCR 1546)	Iraq
UN	MINURCA (SCR 1159)	Central African Republic
UN	MINUSTAH (SCR 1542)	Haiti
UN	MONUC (SCR 1279)	Congo (DRC)
UN	ONUB (SCR 1545)	Burundi
UN	UNAMID (SCR 1769)	Sudan
UN	UNAMSIL (SCR 1270)	Sierra Leone
UN	UNDOF (SCR 350)	Syria
UN	UNFICYP (SCR 186)	Cyprus
UN	UNIFIL (SCR 425 & 426)	Lebanon
UN	UNIKOM (SCR 689)	Iraq, Kuwait
UN	UNMEE (SCR 1312)	Eritrea,Ethiopia
UN	UNMIL (SCR 1509)	Liberia
UN	UNMIS (SCR 1590)	Sudan
UN	UNMISET (SCR 1410)	Timor-Leste
UN	UNOCI (SCR 1528)	Cote d'Ivoire
UN	UNTAET (SCR 1272)	Timor-Leste
UN DPA	UNAMI (SCR 1500)	Iraq

Table 4.3: Linear probability model, random effect probit and complementary log log for participation probability, UN missions

	Linear Probability Model	RE Probit[†]	RE Complementary log log[†]
Deaths per year	0.0002***	0.0023**	0.0025*
	(0.0001)	(0.0012)	(0.0014)
Conflict intensity	0.0295***	0.5613***	0.5993***
	(0.0060)	(0.0687)	(0.0844)
Displaced people/1x10^6	0.0479***	0.6218***	0.7460***
	(0.0175)	(0.1234)	(0.1468)
Sustainability	0.0766***	1.1401***	1.4142***
	(0.0103)	(0.0930)	(0.1212)
Sustainability^2	-0.0053***	-0.0953***	-0.1243***
	(0.0016)	(0.0163)	(0.0199)
Real GDP per capita/1000	-0.0012	-0.0227**	-0.0279**
	(0.0020)	(0.0102)	(0.0136)
Military Expenditure/GDP	-0.0038	-0.1065	-0.1367*
	(0.0087)	(0.0650)	(0.0732)
No in armed forces/1000	-0.0022	-0.2394	-0.2537
	(0.0192)	(0.3687)	(0.4452)
UNSC candidate	0.0020	0.0337	0.1349
	(0.0119)	(0.1958)	(0.2286)
Same area		2.7707***	3.2098***
		(0.4535)	(0.5270)
constant	0.0078	-11.7703***	-14.3365***
	(0.0360)	(0.8230)	(1.2638)
$\ln \sigma_\alpha{}^2$		3.0649***	3.4175***
		(0.1117)	(0.1331)
N	9683	9683	9683
Log likelihood		-1716.4780	-1740.4282

Clustered standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

[†] Correlation between ε_i and the observed characteristics is allowed by assuming a relationship of the form: $\varepsilon_i = \overline{x}a + \alpha_i$, where $\alpha_i \sim iidN(0, \sigma_\alpha^2)$.

Table 4.4: Panel estimation of troops contribution, UN missions

	Within	First diff	Within	First diff
Troops$_{n-i}$/1000	0.1220***	0.0838***	0.1137***	0.0862***
	(0.0197)	(0.0167)	(0.0220)	(0.0194)
Deaths per year	0.0024*	0.0023	0.0031*	0.0023
	(0.0014)	(0.0016)	(0.0018)	(0.0021)
Conflict intensity	0.1440**	0.0445	0.2022***	0.0318
	(0.0676)	(0.0491)	(0.0719)	(0.0318)
Displaced people/1x10^6	0.0374	0.1371*	0.0470	0.1369
	(0.1328)	(0.0800)	(0.1471)	(0.1129)
Sustainability	-0.0663	-0.0511	-0.0720	0.0298
	(0.0441)	(0.0315)	(0.0495)	(0.0418)
Real GDP per capita/1000	-0.0569***	-0.0301***	-0.0480**	-0.0209*
	(0.0176)	(0.0100)	(0.0196)	(0.0117)
Military expenditure/GDP	-0.0040	0.0194	-0.0812	-0.0542
	(0.0390)	(0.0250)	(0.0590)	(0.0349)
No in armed forces/1000	0.4026*	0.0395		
	(0.2421)	(0.0622)		
UNSC candidate	0.0364	-0.0821	0.1389	-0.1443
	(0.1572)	(0.0820)	(0.1827)	(0.1011)
constant	2.5013***	-0.0621**	-1.1542***	-0.1072***
	(0.3851)	(0.0260)	(0.4241)	(0.0324)
N	1748	1338	1748	1338

Clustered standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
The dependent variable in columns 1 and 2 is the number of troops deployed; in columns 3 and 4 is the number of troops deployed as a share of the number in armed forces.

Table 4.5: Panel estimation of troop contribution, NON-UN mission

	Within	First diff	Within	First diff
Troops$_{n-i}$/1000	0.0258***	0.0108**	0.0219***	0.0122***
	(0.0037)	(0.0042)	(0.0041)	(0.0047)
Deaths per year	-0.0008***	-0.0007***	-0.0008***	-0.0005*
	(0.0002)	(0.0002)	(0.0002)	(0.0003)
Conflict intensity	0.4350***	0.2509***	0.5871***	0.2837***
	(0.0662)	(0.0647)	(0.0903)	(0.0828)
Displaced people/1x10^6	-0.3844**	-0.3232**	-0.4128**	-0.3121*
	(0.1538)	(0.1326)	(0.1804)	(0.1785)
Sustainability	0.0301	0.0019	0.0315	-0.0202
	(0.0285)	(0.0223)	(0.0383)	(0.0324)
Real GDP per capita/1000	-0.0040	-0.0098**	-0.0001	-0.0039
	(0.0047)	(0.0039)	(0.0069)	(0.0470)
Military expenditure/GDP	0.0007	0.0221	0.0405	0.0141
	(0.0522)	(0.0497)	(0.0504)	(0.0025)
No in armed forces/1000	0.0431	-0.0020		
	(0.2119)	(0.0792)		
constant	2.8162***	0.0286**	-1.3566***	0.0251
	(0.3494)	(0.0140)	(0.3652)	(0.0191)
N	1520	1145	1520	1145

Clustered standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
The dependent variable in columns 1 and 2 is the number of troops deployed; in columns 3 and 4 is the number of troops deployed as a share of the number in armed forces.

Table 4.6: Panel estimation of troop contribution, NATO and EU missions

	Within	First diff	Within	First diff
Troops$_{n-i}$/1000	0.0268***	0.0262***	0.0228***	0.0270***
	(0.0035)	(0.0044)	(0.0042)	(0.0048)
Deaths per year	0.0001	-0.0009	0.0001	-0.0008
	(0.0008)	(0.0010)	(0.0008)	(0.0010)
Conflict intensity	0.5932***	0.3387***	0.7001***	0.3729***
	(0.0906)	(0.0803)	(0.1208)	(0.0989)
Displaced people/1x10^6	-0.5263	0.1252	-0.7934**	-0.5300
	(0.3195)	(0.2280)	(0.3791)	(0.3918)
Sustainability	0.0452	0.0372*	0.0891**	0.0343
	(0.0365)	(0.0198)	(0.0440)	(0.0408)
Real GDP per capita/1000	-0.0135*	-0.0073	-0.0094	-0.0005
	(0.0078)	(0.0077)	(0.0103)	(0.0092)
Military expenditure/GDP	-0.0798	-0.0671	0.0096	-0.0444
	(0.0499)	(0.0460)	(0.0463)	(0.0455)
No in armed forces/1000	-0.1194	0.0778		
	(0.3964)	(0.1780)		
constant	2.6968***	0.0251	-1.5974***	-0.0030
	(0.4062)	(0.0176)	(0.4043)	(0.0257)
N	1098	817	1098	817

Clustered standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
The dependent variable in columns 1 and 2 is the number of troops deployed; in columns 3 and 4 is the number of troops deployed as a share of the number in armed forces.

Chapter 5

From Conscription to Volunteers: Budget Areas in NATO Defence Spending

5.1 Introduction

As we have discussed in the previous Chapter, the availability of sufficient peacekeepers is essential for establishing the foundations for a return to a peaceful environment. There is a tendency among NATO members to rely progressively more on volunteers to fill their military ranks. This Chapter examines the effect of moving from conscription to volunteers on the shares of military budget devoted to personnel, equipment, infrastructure and other costs. To the best of our knowledge, a disaggregated analysis of NATO defence expenditure components has never been done before. Since ending conscription tends to have two effects that go in opposite directions, fewer soldiers paid higher wages, it is not obvious what is the net effect on personnel cost. This is something that has to be determined from the data. This is an important issue since recruiting an adequate number of young citizens on an annual basis is crucial for the armed forces, particularly for those actively deployed in operations abroad. NATO countries are among the main peacekeeping contributors and aspire to keep a global military presence around the world. The rising number of casualties and decreasing domestic support for ongoing operations underline the importance of volunteers' recruitment and high-technology equipment acquisition, if NATO is to maintain its military at the required level. Due to the high cost of weapons and the defence budget cuts, NATO members can no longer afford to fight today's wars while insisting on the acquisition of top-end equipment.

Although the economic, demographic, labour, and social context at the time All Volunteer Forces (AVF) policy is introduced varies among NATO countries, section 5.2 identifies some common factors determining the suspension of conscription. Section 5.3 describes the extent to which military personnel and physical inputs have been substitutable for each other in NATO armed forces during the transition to AVF. Section 5.4 sets up a simple model to determine the demand function of each component of military expenditure and to derive the econometric specification. We represent the military possibility frontier as a transcendental logarithmic production function with four inputs. This allows to indirectly estimate the drivers of the input prices through a translog cost function with symmetry and constant return to scale. Section 5.5 describes our dataset. Section 5.6 presents and interprets the empirical results. They suggest that while the abolition of conscription did not lower personnel costs as a share of the defence budget, it has led to a more pronounced technological emphasis and an increased dependence on infrastructure. Section 5.7 draws some policy-relevant implications.

5.2   Moving to an All-Volunteer Force

Since the supply and demand for military personnel are subject to the forces of the labour market, economists played a key role in the conscription debate. For example, the decision to move to an AVF in the US was a policy reform supported by persuasive economic arguments. This is discussed in Altman & Barro (1971); Oi (1967); Altman & Fechter (1967). Moving to an AVF system has been justified by three main arguments: higher individual opportunity costs and a better quality of life; a higher personnel retention rate; and a changing post-Cold War geostrategic environment.

The opportunity cost of a volunteer (e.g. his alternative wages plus his net preferences for civilian life) is always less than the opportunity costs of a conscript.[1] Costs also flow from individuals who try to evade conscription (Warner & Negrusa, 2005). Performance incentives under a conscription system are usually negative, often taking the form of punishment. Thus maintaining a minimum degree of compliance might become very costly. Usually, the compensation paid to volunteer forces; the level of training; and professional advancement provided are better than under a conscription model. Professional recruiting improves the conditions of military life. It provides educational benefits and can attract and retain high-

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[1] There are only a few exceptions, in which serving a conscript force has the same opportunity cost of serving a volunteer force (Warner & Asch, 2001).

Table 5.1: NATO members with and without mandatory military service.

Country	Abolished/Suspended	Notes
Albania	Abolished Jan 2010	-
Belgium	Suspended Jan 1994	Under the "'Delacroix Bill"' of 6 July 1993
Bulgaria	Abolished Jan 2008	Last conscripts sent home Nov 2007
Canada	No Conscription	Never taken place in peacetime
Croatia	Abolished Jan 2008	Full conversion to AVF[1] by 2010
Czech Republic	Abolished Dec 2004	Last intake Apr 2004. No conscripts from Jan 2005
Denmark	Compulsory (ages 18-27)	4 - 12 months
Estonia	Compulsory (ages 16-60)	8 -11 months
France	Suspended 2001	Last intake 2001. Since 1954 never deployed abroad
Germany	Compulsory (ages 18-27)	9 months. Alternative service permitted.
Greece	Compulsory (ages 19-45)	12 months for all services
Hungary	Abolished Nov 2004	No conscripts serving from Aug 2005
Iceland	No Conscription	No Armed Forces
Italy	Abolished Jan 2005	No conscripts serving from Jan 2005
Latvia	Abolished Jan 2007	Every citizen is entitled to serve in the AF for life
Lithuania	Suspended Sept 2008	Before 2008 compulsory for 19-26, 12 months
Luxembourg	Abolished 1967	17-25 years of age for VMS[2]
Netherlands	Suspended 1992	Last conscripts demobilised in 1996. 20 years of age for VMS
Norway	Compulsory (ages 19-44)	8-12 months. Seldom called to duty after age 30
Poland	Suspended Dec 2008	No conscripts serving from 2012
Portugal	Abolished Nov 2004	18 years of age for VMS
Romania	Suspended Oct 2006	18-35 years of age for VMS
Slovakia	Abolished Jan 2006	No conscripts serving from Jan 2007
Slovenia	Abolished in Sept 2003	17 years of age for VMS
Spain	Abolished Mar 2001	No conscripts serving from Jan 2002. 20 years of age for VMS
Turkey	Compulsory (ages 20-41)	6-15 months. Delays to complete higher education programs
United Kingdom	Abolished 1960	16-33 years of age (officers 17-28) for VMS
United States	Active con. ended in 1973	18 years of age for VMS. Obligation 8 years

[1] AVF= All Volunteer Force [2] VMF=Voluntary Military Service.

Source: CIA The World Factbook, United Nations High Commissioner for Human Rights, United Press International, BBC News, El Mundo, CPTI Bulletin, Albanian Times.

quality staff.[2] The quality of life is usually higher under the AVF system; it often includes benefits for the military and families, such as an advantageous health care system, generous retirement incentives and better training opportunities than those offered by the private sector.

The second argument recognises that AVFs efficiency comes also from a higher personnel retention rate. Indeed, for the military, the employment of volunteers is more cost-effective due to longer terms of service (and thus lower personnel turnover, less demand for new recruits and reduced training costs). Retention policies normally include a contractual commitment, usually a fixed-term contract that covers the initial training and a subsequent period of employment. NATO members are active contributors to peace and crisis management operations around the world. This requires cost-effective expeditionary capabilities and quick deployabil-

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[2]In the US, money for post-service education (e.g. college, technical schools) helped to attract people with higher-than-average skills and cognitive aptitudes, which are likely to be most successful in the military (Williams, 2005).

ity to respond to crises. While conscripts are generally precluded from out-of-area missions by law, the AVF model with an high retention rate is better suited to the needs incumbent in a crisis.

For the Central and Eastern European member states there are also geostrategic considerations playing into their decision to shift to an AVF system. In the new post-Cold War security environment, the prospect of collective defence and the integration into NATO for missions around the world made military downsizing possible. Moreover, alliance leaders considered sizeable conscript forces as a vestige of the Cold War.[3]

There are also arguments in favour of conscription, mainly budgetary considerations. Although the Cold War was followed by a reduction in military budgets and a cut in the number of uniformed troops serving, the level of military pay necessary to make the military career competitive and the costs to train longer-serving volunteer is higher than when conscription was in place. Attracting and keeping high-quality personnel has been a challenge for the military in Western countries, since the end of compulsory service. As a result of greater private-sector opportunities, the military has had to adjust salaries (Hosek & Sharp, 2001). NATO member states compensate servicemen with salaries that are usually above the world average. Similarly, military salaries are often benchmarked against those of the private-sector and wage raises are linked to private-sector average wage hikes (Williams, 2005). Hence, an increase in the size of AVFs results in an increase in the military wage bill. As the supply curve is not perfectly elastic, to attract or retain more people, remuneration has to be increased. Higher military compensations might eventually trade off with military research and development.

Moreover, a government budget under strain results in a decline in the personnel budget or a reduction in the force size. The Stability and Growth Pact has imposed limits on European countries, increasing the pressure to reduce the defence spending as well as the budget allocated for military personnel. This drop in military pay has three important effects. Firstly, it results in lower entry standards. Warner & Asch (1995) use post Cold-War market factors affecting the supply of military personnel (e.g. relative military pay, recruiting goals, enlistment incentives and unemployment) to estimate how those factors, and hence the state of the civilian economy, affect high-quality enlistment. They argue that high-quality military recruitment is sensitive to business cycles and to attendance to post-secondary education. More generally, recruiting and retention plummet

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[3]The Romanian Parliament, for example, voted to abolish conscription in October 2005, with the vote formalising one of many military modernisations that Romania agreed to when it joined NATO.

during economic booms. Secondly, while conscription promotes social integration, in low remunerated AVF systems, social minorities are usually over-represented. As a result the social make-up of the armed forces do not present an accurate picture of society-at-large.[4] Finally, a drop in military pay can result in a sensible decline of retention (Warner *et al.* , 2008).

5.3 Factor substitution

The end of the Cold War has dramatically reduced the number of new recruits. Figure 5.1 shows the drop in the number of military personnel as percentage of the national labour force. This remarkable reduction was particularly pronounced in the decade 1990-2000, due to a changing geopolitical situation. The end of the Cold War has also prompted a number of European countries to phase out conscription. The consequent decline in the availability of surplus troops has resulted in an increased cost of labour. Moreover, a long-term technological trend has reduced the demand for raw combat power and increased the premium for skills. As the technical skills required in the military organisations have become more demanding, more time and funding are invested to provide adequate training to a restricted number of personnel to operate high-technology equipments. This situation has led to an over-reliance on technology, a substitution of labour for physical capital.

Factor substitution can be seen in the relative trends of the shares of the defence budget. We disaggregate the defence expenditure in four components. (i) The share of expenditures on personnel, which includes the compensation of military and civilian personnel (e.g. basic pay, allowances for food and housing and the pension). According with the NATO definition, military personnel also includes paramilitary units (e.g. French *Gendarmerie*). (ii) The share of expenditures on equipment (e.g. troop outfitting, armed equipments, research and development). (iii) The share of expenditures on infrastructure (e.g. military bases, airfield and communications). (iv) A residual shares of expenditures, which includes operations and maintenance (e.g. fuel).

Table 5.2 shows the evolution of these shares of the defence budget. Figures are five-year averages computed at the beginning and at the end of the period considered in this study: 1970-74 and 2004-08. The recent trend reveals more technological emphasis in the defence expenditure. With few exceptions, countries with an AVF model generally devote a smaller share of their budget to personnel expenditures and a larger share to the purchase of new equipments than countries

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[4]Simon & Warner (2007), using US data over the 1988-2000 (a period of decreasing unemployment rate), find no disproportionate recruiting from minority groups.
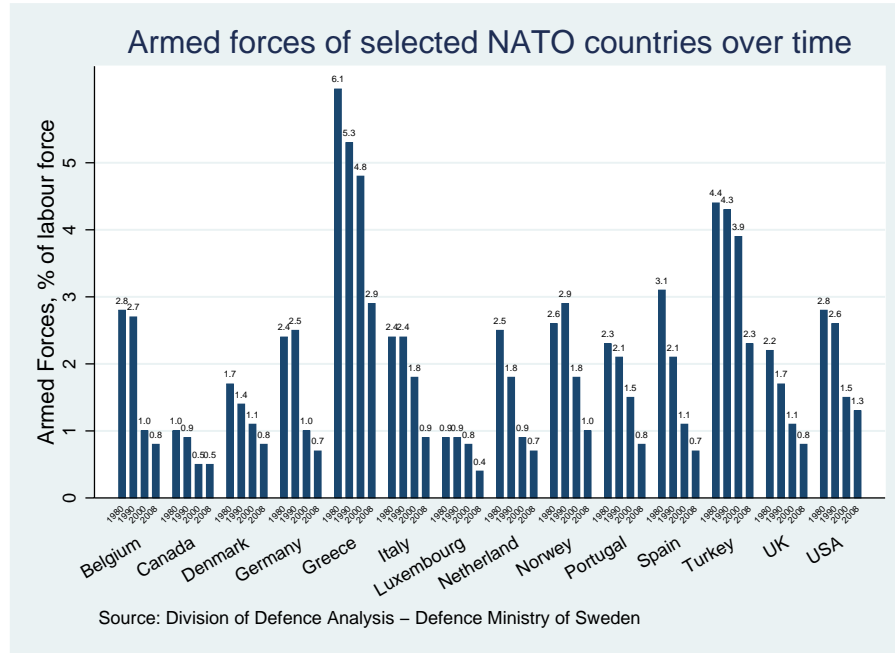
Figure 5.1: NATO Armed forces 1980-2008. Source: Defence Ministry of Sweden

still retaining a conscription model do. Germany has a compulsory 9-month con-
scription, resulting in a predictably higher than average expenditure on personnel.
Belgium and Italy are the only exceptions within the sample, inasmuch as their
budget shows increasing shares devoted to personnel. However, Italy ended con-
scription in 2005 and is still in a transitional phase, which might explain the higher
than average allocation to personnel among countries under the AVF model.

Anticipated savings from the suspension of conscription may not materialise as
soon as predicted due to the presence of programs protecting civilian employees.
These programmes delay the close-down of redundant military bases. Moreover,
because the transition to an AVF system is gradual, it might show effects opposite
to those expected. In the US, for example, during the first few years of the AVF
implementation, the share of military spending devoted to personnel rose, despite
a reduction in the size of the armed forces. However, it is difficult to draw clear
conclusions, since the AVF transition for the US occurred during the withdrawal
from Vietnam.[5] Netherlands and Belgium show the same pattern and suggest an
increase in the spending on personnel after the AVF advent. Overall, Table 5.3
confirms a reduction in military expenditures after the end of the conscription
system.

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[5]Nelson (1986) suggests that this increase was due to a rise in the number of first-term enlistees
who left the service before the end of their contract.

Table 5.2: Long-Run Trends of military shares

Country	Personnel 1970-1974	Personnel 2004-2008	Equipment 1970-1974	Equipment 2004-2008	Infrastructure 1970-1974	Infrastructure 2004-2008	Other 1970-1974	Other 2004-2008
Belgium	62.62	71.36	10.73	5.70	3.79	2.43	22.86	20.51
Canada	65.81	45.88	7.32	16.97	2.90	3.69	23.97	33.47
Denmark	58.96	52.21	16.41	10.77	1.71	2.77	22.92	34.25
Germany	50.80	57.41	16.50	14.22	6.23	4.82	26.47	23.56
Greece	67.71	62.82	8.33	10.60	2.59	1.26	21.37	25.33
Italy	60.34	68.72	15.41	11.77	1.30	1.60	22.95	17.91
Luxembourg	83.48	50.27	1.50	11.59	5.29	2.73	9.73	35.41
Netherland	65.53	47.70	12.83	18.37	2.44	3.76	19.21	30.17
Norway	52.13	45.35	15.19	23.77	4.40	5.45	28.28	25.43
Portugal	25.46	20.83	3.55	3.09	0.58	0.92	70.41	75.16
Spain	.	57.47	.	23.96	.	3.98	.	14.58
Turkey	97.54	39.65	5.73	29.71	.	7.93	.	22.72
UK	48.94	40.40	16.65	22.90	4.99	0.80	29.43	35.89
USA	32.92	32.58	21.48	21.58	2.42	1.67	43.19	44.17
Total	56.90	49.47	12.05	16.07	3.22	3.13	28.40	31.33

Table 5.3: Defence Spending Before and After the AVF Transition - 5 years averages

Country		Personnel	Equipment	Infrastructure	Other	Military Exp
Belgium	before	67.86	8.24	3.40	20.50	5444.40
	after	69.44	6.11	3.48	20.96	4394.40
Italy	before	72.86	14.24	0.96	11.94	25169.26
	after	72.67	9.30	1.67	16.36	19101.11
Netherland	before	54.14	17.86	3.15	24.85	9711.00
	after	58.20	15.86	2.92	23.02	8434.20
Portugal	before	25.48	1.89	0.89	71.74	8166.00
	after	20.83	3.09	0.92	75.16	8512.22
Spain	before	66.16	12.68	1.64	19.53	8575.60
	after	63.12	23.72	2.42	10.73	9217.28
United States	before	31.51∗	20.56∗	2.54∗	45.38∗	298953.00∗
	after	39.35	19.76	2.17	38.73	254096.20

∗ US averages before AVFs are for 1970-1973 due to data availability.

5.4   Theoretical model

As summarised by Dunne *et al.* (2008) there are two groups of empirical studies on the determinants of military spending. Those based on the arms race models of Richardson *et al.* (n.d.), which are best suited to countries in conflict. And those studies focusing on a range of economic, political and strategic determinants of military spending.

   We start with a twice differentiable aggregate military production function, relating a defence output Y to four inputs: personnel (T), equipment (E), infrastructure (I) and other costs (O). We assume constant return to scale and any technological progress is assumed to be Hicks-neutral - it does not affect the inputs' balance. The corresponding cost function may be written as $M = M(Y, P_T, P_E, P_I, P_O)$, where M is the total cost as a function of the four input prices and output. A sufficiently flexible second order approximation to an arbitrary twice-differentiable cost function is obtained through a translog cost function (Christensen *et al.* , 1973, 1971). For our four inputs model, we write this cost function with symmetry and constant return to scale imposed as

$$LogM = log\alpha_0 + \sum_j \alpha_j logp_j + \frac{1}{2}\sum_j \sum_k \gamma_{jk} logp_j logp_k \quad (j, k = T, E, I, O) \quad (5.1)$$

   The conditions for symmetry and homogeneity of degree one in the input prices are

$$\sum_j \alpha_j = 1, \quad \sum_{jk} \gamma_{jk} = 0, \quad \gamma_{jk} = \gamma_{kj}, \quad j \neq k \quad (5.2)$$

   In producer equilibrium and constant returns to scale, the translog price function can be expressed in terms of expenditure shares in the four inputs. Cost minimising input demands are derived by logarithmically differentiating (5.1), and then by using the Sheperd's Lemma

$$x_j = \frac{\partial M}{\partial Logp_j}, \quad (j = T, E, I, O) \quad (5.3)$$

The input demand equation is

$$M_j = \frac{P_j x_j}{M} = \alpha_j + \sum_k \gamma_{jk} logp_{j,k} \quad (j = T, E, I, O) \quad (5.4)$$

   where M is the total cost (i.e. $M = P_T T + P_E E + P_I I + P_O O$). M_j represents

the cost share of each inputs in the total cost of producing Y.[6] The input prices are a particular problem in this context because they can not be derived from any available source. However, since input prices are affected by some general costs (e.g. unit labour cost, inflation, interest rate), we can use these general drivers of input prices to determine the demand function. Assuming that any input price can be specified as:

$$Log\ p_j = \beta_1 LogC_1 + \beta_2 LogC_2 + .. + \beta_n LogC_n \tag{5.5}$$

where C_n is a price driver, the shares of military expenditure will be expressed as:

$$M_j = \alpha_j + \sum_k \gamma_{jk}(\beta_1 LogC_1 + \beta_2 LogC_2 + .. + \beta_n LogC_n) \tag{5.6}$$

Besides the response of budget shares to the drivers of input prices (equation 5.6), we include the real military expenditure, as in Deaton & Muellbauer (1980).[7]

The econometric specification for each input expenditure share is

$$M_{ji} = \alpha_{ji} + \sum_k \gamma_{jki} log(C_{ki}) + \beta_{ji} log(m/p)_i + \epsilon_{ji} \tag{5.7}$$

where the dependent variables are the j shares ($j = T, E, I, O$) of military expenditure for country i, C_{ki} are the k drivers of input prices for country i, m/p is the real defence expenditure for country i. At this stage, the disturbances are assumed to be homoskedastic and serially uncorrelated. The model is evaluated over time with $t \in (1970 - 2008)$. To ease notation we have omitted the subscript t in equation 5.7.

The system imposes a number of restrictions. Given the properties of the cost function, homogeneity of degree zero in prices and total expenditure imposes $\sum_j \gamma_{jk} = 0$ and $\sum_j \beta_{ji} = 0$. Since the demand functions must add up to total expenditure ($\sum_j M_{ji} = 1$), the model also imposes the "'adding up"' restriction $\sum_j \alpha_{ji} = 1$.[8]

Equation 5.7 is a static model. Shocks, depreciation, slow adjustment and expectations would induce dynamic elements. Introducing dynamics into model

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[6]Using this procedure we can obtain the Allen partial elasticity of substitution between inputs j and k as $\sigma_{jk} = \frac{\gamma_{jk} + M_j M_k}{M_j M_k}$ ($for j \neq k$ and $j, k = T, E, I, O$).See Berndt & Wood (1975) for full discussion.

[7]The "'Almost Ideal Demand System"'

[8]The "'adding up"' restriction imposes that the coefficients explaining a total are merely the sum of coefficients in the equations for its components.

5.7 is a topic for future research. The static formulation can be interpreted as capturing the long-run equilibrium.

5.5   Data

We collected a series of disaggregated military expenditures expressed as a share of defence budget for 14 NATO countries. The shares adjust for inflation and defence expenditure growth and are directly comparable among countries. They also reflect the national governments' priorities for their armed forces and are a major source of discussion in budget planning.

The shares of the defence budget on personnel and equipment originate from NATO reports and have been subsequently assembled and processed by the Division of Defence Analysis at the Swedish Defence Ministry.[9] The dataset provides estimates of the real defence expenditure deflated by CPI (expressed in million USD, constant price 1995). The dataset is updated with figures from the Stockholm International Peace Research Institute (SIPRI) for the period 2002-2008.[10] The "'residual" share of defence expenditure in the SIPRI dataset includes infrastructure and other military expenditures. The International Institute for Strategic Studies (IISS) provides figures for the share of infrastructure in defence expenditure in the annual issues of the Military Balance. Figures are available from 1980, although the period 1980-1999 includes five-year averages and annual figures are only available from 1999. The figures are subtracted from the "residual" series from SIPRI and gaps years are filled in by the growth rates of the "residual" series. Whenever possible, we compare overlapping years from the Swedish Ministry, the Military Balance and the SIPRI dataset to check the consistency of our series across different sources.

The price drivers considered are nominal interest rate, inflation rate, unit labour cost and (log)real total military expenditure. We include a time trend as suggested by the time series plots and the model selection criteria. The unit labour cost is proxied by the (log)GDP per capita.[11] We also control for (log)population, using

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[9]The dataset is part of the Defence Expenditure Studies - Data on NATO Defence Expenditures and Economic Development 1949-2001 by the Department of Security Policy and Strategy - Division of Defence Analysis, Defence Ministry of Sweden.

[10]SIPRI provides estimates of real defence expenditures in million USD in constant price 2005 and constant exchange rate. These are made compatible with the earlier series expressed in constant price 1995. Using a constant exchange rate assumes that PPP holds. To transform the series in constant price, SIPRI deflates the military expenditure expressed in local currency by a local price index. Local price indexes might be poor approximations of the evolution of military prices. However, there is no available index for military prices.

[11]In earlier estimations we use a real unit labour index available from the World Bank Development Indicators (WDI). However, the indicator is never statistically significant, probably due

the data for the population aged 15-64 provided by the World Bank Development Indicators (WDI). Dunne & Perlo-Freeman (2003), for example , find that the log(population) is a significant (although negative) explanatory variable for the military burden in developing countries .

5.6   Empirical results

To investigate the impact of the transition to AVFs on the balance between military expenditure on personnel, equipment and infrastructure, we use a two-way fixed effect model. This accounts for state-specific effects and time effects. Preliminary analysis has shown that Turkey is heterogeneous in our sample. Turkey is a developing economy in which the economic and political weight of the armed forces differs from that of NATO's Western members. Turkey can be considered an outlier in our sample and would require a separate analysis. Hence, we restrict the sample to 13 NATO member states. These estimates are shown in Table 5.4, while Table 5.5 report the estimates for the full sample of 14 NATO members for comparison.

Time effects are estimated by fitting a two-way fixed effect model with a set of centred time indicators.[12] The time effects are jointly significant, thus suggesting that they should be included in a properly specified model.

Table 5.4 shows that the AVF dummy is well determined in the share of expenditure on equipment and infrastructure; the suspension of conscription has reduced the expenditure on equipment while increasing the expenditure on infrastructure. Although not statistically significant, the AVF model has the effect of increasing the share of expenditure on personnel. The positive sign of the coefficient suggests that professional forces do not lower personnel costs.

There is evidence that real interest rate is an important driver of defence spending allocations. The estimates show that an increase in the nominal interest rates has the predictable effect of reducing the share of expenditure on infrastructure and on other costs, but increases the share on equipment. There is also a strong evidence that inflation decreases the share spent on personnel and increases the share spent on infrastructure and other cost shares.

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to its index nature. The GDP per capita is a valid alternative instrument.

[12]Centred indicators are created by subtracting the indicator of the reference year from each of the other time indicator variables, such as $d_t^* = d_t - d_{base}$. The $(T-1)d_t^*$ variables generated are trinary variables (1, -1, 0) which express the time effects as variation from the conditional mean rather than deviation from the reference year, as in the usual dummy variable case. The exclusion of the reference year avoids the dummy variable trap. In a balanced panel, a two-way fixed-effects (FE) model can be implemented without the use of indicator variables through a "double demeaning" as explained in Hsiao (1986).

Table 5.4: Two-way FE estimates - Restricted sample

Dep variable	personnel	equipment	infrast	other
interest	0.100	0.172**	-0.042**	-0.237**
	(0.118)	(0.079)	(0.019)	(0.105)
inflation	-0.474***	0.015	0.051***	0.416***
	(0.102)	(0.068)	(0.017)	(0.091)
labour cost♭	-4.604	4.044	0.327	-0.101
	(3.718)	(2.492)	(0.608)	(3.305)
milex	-8.149***	6.268***	1.384***	0.466
	(1.894)	(1.271)	(0.309)	(1.683)
AVF	1.911	-1.586*	0.666***	-1.007
	(1.263)	(0.848)	(0.206)	(1.123)
const	176.197***	-85.034***	-13.388**	25.914
	(41.270)	(27.663)	(6.744)	(36.687)
N	375	376	375	375
N groups	13	13	13	13
ρ	0.914	0.897	0.961	0.945
MLL	-1055.292	-908.412	-376.006	-1011.147
Time effect	1.616	1.592	1.663	2.291
p value	0.015	0.018	0.011	0.000
csd Pesaran	-4.747	-3.750	-2.884	-3.620
csd Friedman	3.026	1.217	15.097	2.058
AIC	2198.584	1904.823	840.012	2110.294
BIC	2371.369	2077.725	1012.797	2283.079

♭ Labour cost is proxy by log GDP per capita; Milex is log of real military expenditure. The CPI is used. AVF is a binary variable equal to 0 over the years in which conscription was in place, equal to 1 in the AVF years. Time effect indicators are included but not reported.

The specification of equation (5.5) on prices' drivers would require a labour cost measure. Traditionally, the log GDP per capita has been used to this end. Although the labour cost is not statistically different from zero over the four shares, the signs are those expected. The lack of significance might be due to the choice of the proxy. Probably the most interesting finding is that, as labour cost increases, there is a greater emphasis on equipment and infrastructure and less reliance on soldiers. The defence expenditure elasticity of personnel is significantly less than unity, therefore when defence expenditure increases, the share on personnel does not raise proportionately. On the contrary, equipment and infrastructure show an income elasticity greater than one, typical of the behaviour of a luxury good. These findings imply that high technology equipment and ready and viable infrastructure are becoming more vital to NATO now than in the past.

Table 5.5 presents the model's estimates including Turkey. The effects of the price drivers are almost the same. The most significant difference is in the elasticity of defence expenditure. In particular, the demand for infrastructure and other costs is more inelastic as suggested by a defence expenditure elasticity smaller than one. The AVF dummy is not statistically significant over the different shares, however the coefficients maintain the same signs.

As an additional test of our estimation approach, in the Appendix to this Chapter we report pooled estimates for the restricted sample (Table C.1) and for the full sample (Table C.2). Pooled estimates assume constant parameters across countries (e.g. $\alpha_i = \alpha$, $\gamma_i = \gamma$ and $\beta_i = \beta \ \forall \ i, t$). Fixed effect estimates are more flexible, allowing the constants to vary. However, they still impose equality of the slopes and variances. Heterogeneity in slopes may be an issue. The fixed effect procedure will produce unbiased estimates of the average effects, provided that the difference in coefficients is independent of the regressors.

In the Appendix we also illustrate the robustness of our findings to changes in specification. Table C.3 and Table C.4 report the estimates for a one-way fixed effect model for the restricted and full sample. The results from the one-way models are overall similar to the two-way models seen before; estimates retain their sign and significance. The only variable which shows a high degree of sensitivity to the introduction of time effects is the GDP per capita. The time effect improves the likelihood so that a two-way fixed effects is preferred. In all specifications, the F test for equality of constants is strongly rejected; this implies that there are significant country-specific effects. The ρ statistic suggests that almost all the variation in the shares is related to inter-state differences.

As an additional test of our estimation approach, we identify the effect of civilian wages. Using the (log)population aged 15-64 as a proxy, we ask whether

Table 5.5: Two-way FE estimates - Full sample

Dep variable	personnel	equipment	infrast	other
interest	0.084*	0.156***	-0.109***	-0.182***
	(0.050)	(0.038)	(0.015)	(0.044)
inflation	-0.041	-0.114***	0.045***	0.094***
	(0.040)	(0.030)	(0.012)	(0.035)
labour cost$^\flat$	-3.389	2.229	-0.814	-2.092
	(3.692)	(2.785)	(1.113)	(3.252)
milex	-6.358***	10.665***	-2.300***	-2.563
	(1.796)	(1.357)	(0.532)	(1.555)
AVF	0.817	-0.865	0.549	-0.372
	(1.304)	(0.985)	(0.385)	(1.126)
const	143.703***	-105.693***	33.682***	75.073**
	(39.135)	(29.520)	(11.841)	(34.612)
N	403	404	402	402
N groups	14	14	14	14
ρ	0.899	0.953	0.922	0.952
MLL	-1157.736	-1047.322	-664.781	-1095.993
Time effect	2.373	1.068	1.777	2.742
p value	0.000	0.367	0.004	0.000
csd Pesaran	-4.406	-3.387	1.870	-3.782
csd Friedman	3.432	1.356	33.192	3.297
aic	2403.473	2182.644	1417.562	2279.987
bic	2579.426	2358.707	1593.406	2455.831

$\flat$ Labour cost is proxy by log GDP per capita; Milex is log of real military expenditure. The CPI is used. AVF is a binary variable equal to 0 over the years in which conscription is in place, equal to 1 in the AVF years. Time effect indicators are included but not reported.

this might affect the personnel expenditure. The corresponding estimates on 13 NATO countries are reported in C.5. The fit of the model increases with respect to the specification in Table C.1, in particular for the personnel equation. The (log)population is positively associated with the personnel share. Assuming that conscription does not affect the personnel demand curve, a larger labour force makes labour relatively cheaper so that the personnel share increases due to the substitution effect. The (log)population, and therefore variations in the relative cost of labour, are not significantly associated with shares in equipment and infrastructure.

5.7 Conclusion

While in the past, conventional wars required mass conscript armies, modern peace operations require well-equipped, mobile, professional, rapid response forces. These forces should also be able to plan preventive actions, including intense combat operations. By seeking to reform their armed forces, NATO members are paying increasing attention to the the procurement of new military technologies and to the development of special operations forces and light- and medium-sized military units. To this end, the AVF model is required for a flexible and high-technology military.

Our results suggest that NATO forces are increasingly less reliant on soldiers and more on capital. However, the end of conscription did not reduce the share of spending on personnel. Views of the appropriate balance between military personnel and physical inputs vary across the alliance. The personnel downsizing of the past 20 years has created several challenges, resulting in severe staff imbalances and costs higher than planned. The existence of a transition period indicates that the expected improvements will not be visible for some years following the elimination of the conscription system. This might result in temporary higher costs of personnel, which might drain resources otherwise needed for the acquisition of new equipment and its maintenance. Certainly, the quality of new recruits will be fundamental to match the skills required to operate out-of-area missions and maintain increasingly high-technology equipments.

Military manpower is the primary instrument of military power, therefore understanding how the increasing cost of labour has affected the substitution of labour for capital and the retention of trained individual is fundamental to assess NATO capabilities in the near future. To this end, there is an increasing need of economic studies to inform policies related to the AVF in the future.

Appendix C

Appendix to Chapter 5

Table C.1: Pooled OLS

Dep Variable:	personnel	equipment	infrast	other
interest	-0.982***	0.402***	-0.075***	0.652***
	(0.213)	(0.101)	(0.026)	(0.242)
inflation	-0.113	-0.033	0.055**	0.087
	(0.190)	(0.090)	(0.023)	(0.216)
labour cost$^\flat$	4.721	13.303***	3.344***	-21.654***
	(3.445)	(1.623)	(0.419)	(3.923)
milex	-4.081***	2.451***	-0.291***	1.915***
	(0.374)	(0.177)	(0.045)	(0.426)
trend	-0.321***	-0.099**	-0.079***	0.501***
	(0.083)	(0.039)	(0.010)	(0.094)
AVF	-0.306	-1.933***	0.578***	1.668
	(1.484)	(0.701)	(0.180)	(1.690)
const	56.698	-141.930***	-26.314***	214.527***
	(35.639)	(16.791)	(4.331)	(40.579)
N	375	376	375	375
N groups	13	13	13	13
$\bar{R}^2$	0.373	0.407	0.375	0.263
SER	11.553	5.460	1.404	13.155
MLL	-1446.188	-1168.236	-655.864	-1494.873

$\flat$ Labour cost is proxy by log GDP per capita; Milex is log of real military expenditure. The CPI is used. AVF is
a binary variable equal to 0 over the years in which conscription was in place, equal to 1 in the AVF years.

Table C.2: Pooled OLS - Full sample

Dep Variable:	personnel	equipment	infrast	other
interest	-0.144	0.316***	0.015	-0.257**
	(0.105)	(0.053)	(0.023)	(0.125)
inflation	0.112	-0.022	0.101***	-0.192*
	(0.092)	(0.047)	(0.020)	(0.108)
labour cost	10.637***	6.451***	-1.010*	-19.298***
	(2.673)	(1.352)	(0.602)	(3.267)
milex	-4.245***	2.267***	-0.513***	2.394***
	(0.377)	(0.191)	(0.081)	(0.441)
trend	-0.168**	0.035	0.009	0.146*
	(0.073)	(0.037)	(0.016)	(0.086)
AVF	-1.158	-0.942	1.403***	1.275
	(1.473)	(0.746)	(0.319)	(1.732)
const	-11.918	-73.119***	16.997***	201.508***
	(27.252)	(13.782)	(6.151)	(33.362)
N	403	404	402	402
N groups	14	14	14	14
$\bar{R}^2$	0.312	0.356	0.401	0.149
SER	11.872	6.014	2.559	13.880
MLL	-1565.395	-1294.505	-944.601	-1624.328

♭ Labour cost is proxy by log GDP per capita; Milex is log of real military expenditure. The CPI is used. AVF is

a binary variable equal to 0 over the years in which conscription was in place, equal to 1 in the AVF years.

Table C.3: One-way FE estimates

Dep variable:	personnel	equipment	infrast	other
interest	0.005	0.306***	-0.020	-0.296***
	(0.098)	(0.066)	(0.016)	(0.090)
inflation	-0.383***	-0.052	0.014	0.424***
	(0.080)	(0.054)	(0.013)	(0.074)
labour cost♭	1.085	-1.960	-0.033	0.514
	(3.312)	(2.226)	(0.540)	(3.049)
milex	-11.128***	7.794***	1.264***	2.088
	(1.736)	(1.170)	(0.283)	(1.598)
trend	-0.156**	0.068*	-0.031***	0.123**
	(0.061)	(0.041)	(0.010)	(0.056)
AVF	1.481	-1.201	0.775***	-1.067
	(1.256)	(0.847)	(0.205)	(1.157)
const	149.662***	-40.160	-7.844	2.124
	(37.740)	(25.390)	(6.154)	(34.742)
N	375	376	375	375
N groups	13	13	13	13
rho	0.938	0.940	0.956	0.937
MLL	-1084.928	-939.525	-404.807	-1053.889
CSD Pesaran	3.308	0.689	1.098	4.185
CSD Fried	31.557	17.948	26.748	32.622
AIC	2183.856	1893.050	823.613	2121.779
BIC	2211.345	1920.557	851.102	2149.267

♭ Labour cost is proxy by log GDP per capita; Milex is log of real military expenditure. The CPI is used. AVF is a binary variable equal to 0 over the years in which conscription was in place, equal to 1 in the AVF years.

Table C.4: One-way FE estimates - Full sample

Dep variable	personnel	equipment	infrast	other
interest	0.084*	0.130***	-0.082***	-0.210***
	(0.049)	(0.035)	(0.015)	(0.044)
inflation	-0.020	-0.090***	0.029**	0.065*
	(0.040)	(0.028)	(0.011)	(0.035)
labour cost♭	7.150**	-2.768	-3.643***	-4.490
	(3.113)	(2.216)	(0.913)	(2.774)
milex	-10.484***	11.135***	-1.516***	0.021
	(1.765)	(1.259)	(0.512)	(1.556)
trend	-0.118*	0.046	0.010	0.094*
	(0.063)	(0.045)	(0.018)	(0.056)
AVF	0.136	-0.452	0.602	-0.084
	(1.347)	(0.961)	(0.389)	(1.184)
const	78.456**	-60.672**	54.685***	73.388**
	(34.643)	(24.678)	(10.197)	(31.001)
N	403	404	402	402
N group	14	14	14	14
ρ	0.918	0.958	0.846	0.931
MLL	-1202.574	-1069.120	-700.552	-1147.554
CSD Pesaran	4.447	0.717	6.384	4.781
CSD Fried	37.133	15.058	39.261	54.081
AIC	2419.147	2152.241	1415.105	2309.108
BIC	2447.140	2180.250	1443.080	2337.083

♭ Labour cost is proxy by log GDP per capita; Milex is log of real military expenditure. The CPI is used. AVF is a binary variable equal to 0 over the years in which conscription was in place, equal to 1 in the AVF years.

Table C.5: Pooled OLS

Dep variable:	personnel	equipment	infrast	other
interest	-0.321*	0.433***	-0.071***	-0.039
	(0.180)	(0.104)	(0.027)	(0.213)
inflation	-0.194	-0.037	0.054**	0.173
	(0.154)	(0.090)	(0.023)	(0.183)
labour cost♭	12.783***	13.698***	3.397***	-30.081***
	(2.862)	(1.660)	(0.428)	(3.389)
labour force	17.795***	0.842	0.117	-18.601***
	(1.293)	(0.748)	(0.193)	(1.531)
milex	-19.354***	1.729***	-0.391**	17.880***
	(1.151)	(0.666)	(0.172)	(1.362)
trend	-0.470***	-0.106***	-0.080***	0.656***
	(0.068)	(0.040)	(0.010)	(0.081)
AVF	0.246	-1.907***	0.581***	1.091
	(1.208)	(0.702)	(0.181)	(1.430)
const	-175.742***	-153.071***	-27.838***	457.492***
	(33.547)	(19.483)	(5.018)	(39.717)
N	375	376	375	375
N groups	13	13	13	13
$\bar{R}^2$	0.585	0.408	0.373	0.473
SER	9.396	5.458	1.405	11.124
MLL	-1368.173	-1167.589	-655.678	-1431.487

♭ Labour cost is proxy by log GDP per capita; Milex is log of real military expenditure. The CPI is used. Labour force is log of the population aged 15-64. AVF is a binary variable equal to 0 over the years in which conscription was in place, equal to 1 in the AVF years.

Table C.6: Two-way FE estimates - Restricted sample

Dep variable	personnel	equipment	infrast	other
interest	0.091	0.176**	-0.040**	-0.233**
	(0.115)	(0.078)	(0.019)	(0.105)
inflation	-0.394***	-0.022	0.038**	0.387***
	(0.101)	(0.069)	(0.016)	(0.092)
labour cost	-2.413	3.008	-0.014	-0.907
	(3.644)	(2.483)	(0.597)	(3.323)
labour force	-30.659***	14.353***	4.780***	11.280*
	(6.845)	(4.668)	(1.122)	(6.241)
milex	-6.198***	5.354***	1.080***	-0.251
	(1.890)	(1.290)	(0.310)	(1.724)
AVF	1.382	-1.339	0.748***	-0.813
	(1.232)	(0.841)	(0.202)	(1.124)
const	638.159***	-301.216***	-85.407***	-144.042
	(110.649)	(75.431)	(18.134)	(100.900)
N	375	376	375	375
N groups	13	13	13	13
ρ	0.994	0.990	0.996	0.972
MLL	-1043.820	-902.922	-365.595	-1009.231
Time effect	1.363	1.396	2.195	2.164
p value	0.082	0.067	0.000	0.000
csd Pesaran	-4.688	-3.787	-3.200	-3.687
csd Friedman	2.396	1.393	22.084	2.283
AIC	2177.639	1895.844	821.189	2108.462
BIC	2354.351	2072.675	997.901	2285.174

♭ Labour cost is proxy by log GDP per capita; Milex is log of real military expenditure. The CPI is used. Labour force is log of the population aged 15-64. AVF is a binary variable equal to 0 over the years in which conscription was in place, equal to 1 in the AVF years.

Chapter 6

Opium Market, Occupational Choices and Insurgency in Afghanistan's Provinces

6.1   Introduction

Afghanistan has been suffering from civil war and external military intervention for more then a quarter-century. The devastation created by the war has resulted in the collapse of the economic infrastructure across the country, relegating Afghanistan to the list of the poorest economies in the world and among those exercising the lowest levels of global human security and development.[1] Despite seven years of external assistance, unemployment rates remain high and a large proportion of the population does not have access to basic services such as electricity.

Poverty and economic stagnation, combined with an almost collapsing state, have been driving ordinary citizens to take the risks associated with the production, processing and transportation of drugs. Between 2003 and 2009, Afghan farmers earned more than US$ 6.4 billion from opium poppy cultivation, and Afghan traffickers approximately US$ 18 billion from local opium processing and trading. Opium is a labour-intensive crop which generates jobs in on-farm casual work (e.g. weeding and harvesting) and in the non-farm rural sector (5.6 jobs per hectare, according to UNODC, 2009a). Thus, opium sustains the livelihoods of millions of rural Afghans.[2]

A growing literature on civil conflict has demonstrated that insurgencies have

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[1]Second last in the UNDP's 2009 Human Development Index.

[2]The number of people engaged in the opium trade has increased since Taliban times. In Helmand province alone, the estimated number of traders is between 600 and 6,000 (Opium trading systems in Helmand and Ghor provinces, Afghanistan drug industry, World Bank- UNODC).

the capability of exploiting drug money for funding (e.g. FARC in Colombia). In this respect, Afghanistan is not an exception. ISAF forces consider opium eradication a "'strategic threat"' for the long-term security [3] while the UN finds "'a strong link between insecurity and opium cultivation"'(UNODC, 2009b). On the other side, a recent report from the Centre for International Cooperation, NYU, concludes that counternarcotics policy in the context of a weak state like Afghanistan is likely to aggravate rather than alleviate insurgency, corruption, and criminal violence.[4] Certainly, the country's drug economy generates several hundred million dollars per year into criminal activities. Conflict and illicit economic activities have been always intertwined. Instability has an impact on the narco-industry, while money-laundering and collusion with government officials undermine the security environment. This strong link is both a cause and a consequence of the inability of the central government to effectively control the country's "'borderlands"'. Since 2004, the nexus of drugs and insurgency has become stronger, and, as a result, the transnational threat posed by Afghanistan's opium has become more acute. It is very difficult to distinguish among terrorist movements, insurgencies and organised crime (linked to the drug trade or otherwise), since their tactics and funding sources are increasingly similar. As a label, "'AGE"', or Anti-Government Elements, brings under one umbrella a complex mixture of groups and shifting alliances. This mix includes warlords, tribal leaders, religious leaders (mullahs), foreign jihadists, mercenaries militias, Pakistani/Afghan Taliban and criminal organisations. The most devoted insurgents - those who want to take over the government and expel ISAF troops - associate themselves with the Taliban or Al-Qaeda. Defining the borders between the ideologically-driven Taliban and the criminal groups in the opium business is beyond the scope of this Chapter. What we are interested in is the state of insecurity in the country, which is related to (the role played by) the Taliban-led insurgency.

Taliban insurgents in Afghanistan benefit from the drug trade at various points in the value chain and through several mechanisms. Besides levying taxes on production in Taliban-held areas, since 2005 they also apply systematically transit and trade levies that derive from drug trafficking across southern and western Afghanistan (UNODC, 2009a). The drugs trade pay for soldiers, weapons and protection, and is also a source of patronage. Even though Taliban insurgents levy taxes on all other forms of trade and agriculture, opiates are the highest-value product on the market. By providing protection to farmers and traffickers

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[3]See *NATO's Support to Counter-Narcotics Efforts in Afghanistan June 2009* from the NATO Media Operation Centre http://www.nato.int/isaf/topics/factsheets/counter-narcotics-factsheet.pdf

[4]Available online: http://www.cic.nyu.edu/LeadPagePDF/shermandrugtrafficking.pdf

(e.g. preventing interdiction and eradication efforts), they delegitimise the central government and reconsolidate the political influence in areas under their control.

The economic theory on conflict suggests two opposite relations between income and violence. Wage and income shocks increase the incentives for peace through the reduction of labour supplied to conflict activities. The higher the returns to (legal) productive activities relative to the returns to fighting activities, the higher the amount of citizens' time devoted to peaceful activities (Grossman, 1991). The opportunity-cost effect motivates civil wars (Fearon, 2008), and this theory is supported by recent formal models (e.g. Chassang & Padro-i Miquel, 2009). The contest model suggests that the greater the national wealth, the greater the effort devoted to fighting relative to production (Hirshleifer, 1995; Garfinkel & Skaperdas, 2007). The nexus between income and violence is not so clear cut also in the empirical evidence. While Collier & Hoeffler (1998, 2004) find a negative relationship between growth shocks and the likelihood of civil wars, Fearon (2005) finds that countries exporting natural resources are more likely to experience civil wars. More recently, Besley *et al.* (2008) show that positive price shocks to imported and exported commodities make civil war more likely; in contrast, Bruckner & Ciccone (2010) find that a civil war is more likely in those Sub-Saharan countries where the value of export commodities is decreasing. However, the cross-country analysis has a number of severe shortcomings, and should be regarded with caution (see Blattman & Miguel, 2010). Country-level analysis should be preferred. Two works on the Colombian conflict and the drug-violence nexus find a positive effect of coca production on conflict both through a micro-econometric (Angrist & Kugler, 2008) and a macro-econometric approach (Gonzalez & Smith, 2009). Finally, Dube & Vargas (2007) find that both a price-drop in labour-intensive activities (e.g. coffee production) and a rise in capital-intensive commodities (e.g oil) have the same effect of intensifying attacks by Colombian guerillas.

Although the link between income and violence is among the most robust in the empirical literature, the direction of causality remains a serious concern. The recent literature has focused on addressing the causal identification problem, in a search for exogenous measures (e.g Miguel *et al.* , 2004). In 2006, UNODC published a study on the socio- economic and psychological factors influencing the variations of opium poppy cultivation in Afghanistan (UNODC, 2006). The survey found that main motivations for opium cultivation were (i) a lack of rule of law; (ii) insecurity; (iii) lack of employment; (iv) lack of water and agricultural infrastructure; (v) provision of basic needs and (vi) external pressure from traffickers and traders. Therefore we do not only question the ability of the Taliban-led insurgency to finance war expenditures through the drug economy; we also investigate whether

the (perceived) lack of security makes illegal activities more profitable. Lind *et al.* (2010) show that ISAF hostile casualties - their tentatively exogenous proxy for conflict- have a significant impact on annual opium production. However, a suspicion of endogeneity (e.g. the placement of soldiers endogenous to opium production and ISAF eradication activities[5]) still remains. We will use monthly opium prices at the farm gate level to test the direction of causality. Moreover, prices adjusted by the level of cultivation will be used as a critical determinant of the provincial distribution of revenues. Our baseline analysis assumes the endogeneity of the variables, therefore we use a vector autoregression, VAR, to estimate a system in which both income and violence are functions of their own lag, and the lag of the other variable in the system.

Notwithstanding the role of the security conditions in determining the incentives for illegal cultivations, the survey also stresses the role of agriculture - and livelihood in general- as an important element underlying the choice between legal and illegal cultivation. The substitution effect and opportunity-cost calculations are also at play when choosing between peaceful activities (e.g. farming, either legal or illegal) and insurgency. Therefore, we will rely on a micro-level data analysis to identify the relation between different occupational choices - and thus revenue opportunities- and violence.

This Chapter empirically explores whether opium prices induce subsequent violence; whether a reverse mechanism coexists; and whether alternative measures of the relative income can help explain the spread of insecurity in Afghanistan. To this end, we have gathered a unique dataset with monthly information on opium prices, security incidents and the prices of four alternative commodities from the 34 Afghan provinces over the period 2004-2009. The geographic disaggregation of our data enables us to exploit variations across provinces and over time. Section 6.2 describes the background of opium and insurgency in Afghanistan. Section 6.3 deals with the difficulties of identifying a clear pattern among opium, alternative measures of income and violence. Section 6.4 describes the data whereas section 6.5 describes the methodology and presents some tentative evidence. Section 6.6 sums up the findings from the Chapter.

6.2 The Afghan conflict and the opiate industry

The nature and extent of the Afghan drug trafficking have been always shaped by military factors. Before the outbreak of war - from 1950s to 1970s - Afghanistan

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[5]In fact, the bulk of ISAF's forces are in the insurgency-wracked south and east of the country, especially in the provinces of Helmand and Kandahar, where cultivation is concentrated.

was a sort of rentier or "allocation" state, deriving over 40% of its revenue from resources accruing directly from abroad, which were used to create basic infrastructure and a police force and army. These revenues included both foreign aid and sales of natural gas to the USSR (Rubin, 1992a). The rural community was isolated from the central state and dependent on agricultural production. In the mid-1970s, following the disruption of opium production in Iran, poppy production became a significant staple in the country's rural economy. By the late 1970s, poppy was cultivated in half of the provinces (Goodhand, 2005). In 1978, the communist *coup d'état* and the Soviet occupation of the country were accompanied by a continued expansion of poppy cultivation. Opium was used as a source of funding for the Mujahideen guerrillas. Along with increasing production in Pakistan, Afghanistan developed into a major producer of opium, accounting for more than one-third of the global production by the mid-1980s. After 1992, when the Mujahideen took Kabul, the local warlords fought each other to consolidate their economic activities, fragmenting the country in a series of sub-conflicts. The further deterioration of the central authority saw a rapid expansion of cross-border smuggling and the production of narcotics. In the mid-1990s, the disintegration of the country and the dissatisfaction among the population about greedy "warlordism" encouraged the rise of the Taliban. From their stronghold in the south, in the Kandahar province, the Taliban conquered the country. By September 1996 they had captured Afghanistan's capital.

The Taliban's relationship with opium has been uneven over time. When in power, the smuggling network proved to be an important source of revenue for the new regime, which facilitated its export. In 1997 total production was 2,700 metric tons, showing a 43% increase over the previous year, with cultivation spreading to new provinces. Through a direct taxation on farmers (*ushr*), a 10% "agricultural tax", they generated about $75-100 million per year between 1995 and 2000, to fund a regime without alternative sources of foreign exchange (Thachuk, 2007). In 1999 the production peaked at 4,500 metric tons, three-quarter of the world' supply (UNODC, 2005). In the same year the most damaging drought in three decades struck the rural economy, already devastated by years of conflict. In the summer of 2000 Mullah Omar banned opium cultivation, the reasons for which are still debated - he appealed generically to religious sentiments to justify the ban. The Taliban decree, (*fatwa*), reduced the overall production, although the cultivation continued in areas outside the Taliban reach, particularly the north-east provinces. While the opium ban concerned opium poppy cultivation, no policy toward opium trading and heroin manufacture was enunciated and the Taliban continued to levy taxes on these activities (Buddenberg & Byrd, 2007).

By 2005 following the end of the regime, poppy production returned to previous levels. Ever since their return as insurgents into southern Afghanistan in 2005, the Taliban - and other anti-government forces - have derived enormous profit from the opium trade. In 2007 the production peaked at 8,000 metric tons, the highest level ever recorded. Today Afghanistan provides over 90 per cent of global supply. Opium is the country's biggest export and one in seven Afghans is reportedly involved in some aspect of the trade, with 6.5% of the population involved in growing poppy (UNODC, 2009b). In areas such as Helmand, where cultivation is concentrated, this share rises to a staggering 80 %. Although the magnitude is subject to debate, the total drug-related funds accruing to insurgents and warlords were estimated at $200- 400 million in 2006-2007 and at $450-600 million between 2005 and 2008 (UNODC, 2009a). These estimates included incomes from four sources: levies on opium farmers; protection fees on lab processing; transit fees on drug convoys; and taxation on imports of chemical precursors. At the same time, Afghanistan's opiate economy has moved towards a greater share of refined products (at present 2/3 of the raw opium output is turned into heroin and morphine compared to 3/4 a few years back).[6] This has allowed the Taliban to tax higher value-added commodities (refined products) and other drug-related activities. The relation between the opiate business and the insurgency in southern Afghanistan is amplified by the role played by tribalism in both drug trafficking and insurgent networks. The strongest overlap between the insurgency, tribal networks and the drug trade is found in the southern and eastern parts of the country, and extends into Pakistan's tribal areas across the Afghan border .[7]

6.3   Revenues and occupational choices

The theoretical literature on economic conditions and warfare highlights the role of the illegal returns in the decision to fight: an increase in the return to crime increases the labour supplied to criminals, therefore increasing the level of violence.

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[6]UNODC estimates that every year around 110 tons of heroin are exported to the European market, about 100 tons to Central Asia (the majority destined for the Russian Federation), some 25 tons to Africa, 15-17 tons the potentially large market in China, and some 15-20 tons to the USA and Canada. Heroin is trafficked through the Afghanistan's neighbours, Pakistan (40%), Iran (30%) and the Central Asian countries of Tajikistan, Uzbekistan and Turkmenistan (25%). The remaining 5% is likely to be smuggled into India.

[7]In Pakistan, the value of the drug trade is estimated at around US$ 1 billion per year. Although it is a transit region for opiate flows out of Afghanistan, there were almost no seizures in Pakistan's Federally Administered Tribal Areas (FATA) bordering Afghanistan between 2002 and 2008. FATA is also considered a a sanctuary for extremist/insurgent groups like the Pakistani Taliban, Al-Qaeda, and the Haqqani network. Much like in Afghanistan, Pakistan-based insurgents reportedly levy taxes on licit business and trade in this region.

Thus, the opportunity-cost effect is a main factor motivating civil wars (among others Fearon (2008)). The theory is supported by empirical evidences of the link between criminal activities and economic conditions also in non-war environments (Hidalgo *et al.* , n.d.). In Afghanistan individuals can choice between opium culti- vation, legal activities (e.g. wheat and cereal production, sheep-farming) or joining an anti-government group (e.g. Taliban, insurgency linked to Al-Qaeda or non- ideological organised crime). Theoretically, there is also a revenue-appropriation mechanism, or "'greed"' effect (Collier & Hoeffler, 2004), especially on lootable resources (Snyder, 2006): violence might be over the opium cultivation and con- trolling the plantation can finance the insurgency. In practice, the narcotic trade seems to be crucial in supporting Anti-Government Elements. Extortion fund AGE through two form of local-levied taxes: *ushr*, a 10% tax on agricultural products and *zakata*, a 2.5% wealth tax applied to traders (Kalfon *et al.* , 2005). According to the 2007 Afghanistan Opium Survey, almost all the farmers in the Southern and Western regions pay the *ushr*. Between 2005 and 2008, the total estimated farm-gate value of opium produced in those regions was US$ 2 billion. That means approximately US$ 200 million paid as *ushr* by farmers.[8] Taliban also levy taxes on laboratories producing morphine and heroin (UNODC, 2009a). To what extent is regional instability and insurgency fuelled by the Afghan opiate industry?

From 2004, there has been tangible progress in the increasing number of poppy- free provinces, decreasing opium poppy cultivation, and greater regional counter- narcotics cooperation, especially in the last three years. In 2004, poppy cultivation was observed in 30 provinces (out of 34) and occupied 131,000 hectares. In 2009, opium poppy was cultivated in 14 provinces, and production decreased by 6 % (123,000 ha) compared to 2004. Comparing 2004 and 2009, opium poppy cul- tivation increased in the southern and western regions and decreased in all the other regions. At the same time there has been a notable extension of the area under insurgent control, particularly along the restive Pashtun tribal belt on the Afghanistan-Pakistan border (see Figure 6.1).

By most measures, insecurity in Afghanistan has dramatically increased in the last 7 years. This is primarily a result of the insurgency's growing strength. The Afghan National Army, the Afghan National Police and ISAF forces are the most frequent targets, but there have also been a substantial number of civilian casual- ties. In 2008 and 2010, many Afghanistan's provinces registered a record number of attacks (Figure 6.2), ranging from suicide bombings to coordinate assaults on

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[8]In the period 2003-2009, UNODC estimated that the total farm-gate value of the total opium produced in Afghanistan was almost US$ 6 billion. 2.2 billion went to Helmand farmers and 874 million to Nangarhar farmers.

The Afghan Insurgent Front

Figure 6.1: The Afghan Insurgent Front. Source: RAND Corporation

military compounds to kidnapping of government officials and contractors. Much of the violence occurred in souther Afghanistan (e.g. Kandahar, Helmand, Zabol), but insecurity has also spread eastwards, to cover the majority of Afghan provinces. Although it is commonly assumed that areas of opium cultivation and insecurity correlate geographically - particularly by the UN Office on Drugs and Crime (UN-ODC) and by NATO - there are too many exceptions. Firstly, they fail to consider the magnitude of opium cultivation per province. In the period 2004-2009, 80 per cent of the opium was produced in six Afghan provinces (Helmand, Nangarhar, Kandahar, Badakshan, Uruzgan and Farah). Badakshan and Nangarhar aside, the bulk of the production took place in only four provinces in southern Afghanistan. And almost half of all opium was produced in Helmand province.

The next provinces in order of importance were Kandahar and Nangarhar (see Figure 6.3). On the other side, half of the Afghanistan provinces shows level of violence above the average (see Figure 6.2). Figure 6.4(a) shows a number of relatively insecure provinces with a negligible level of opium cultivation as percentage of the total. This should be hardly surprisingly since cultivation is more likely to occur in remote areas, where the presence of government and coalition forces is weaker or totally absent. Thus, the expected punishment decreases. Other areas, such as Badakhshan, have a steady level of violence and a decreasing area under

Figure 6.2: Number of security incidents. Author's calculation based on records from the Worldwide Incidents Tracking System, US National Counterterrorism Center, and from the UNODC Statistics and Survey Section
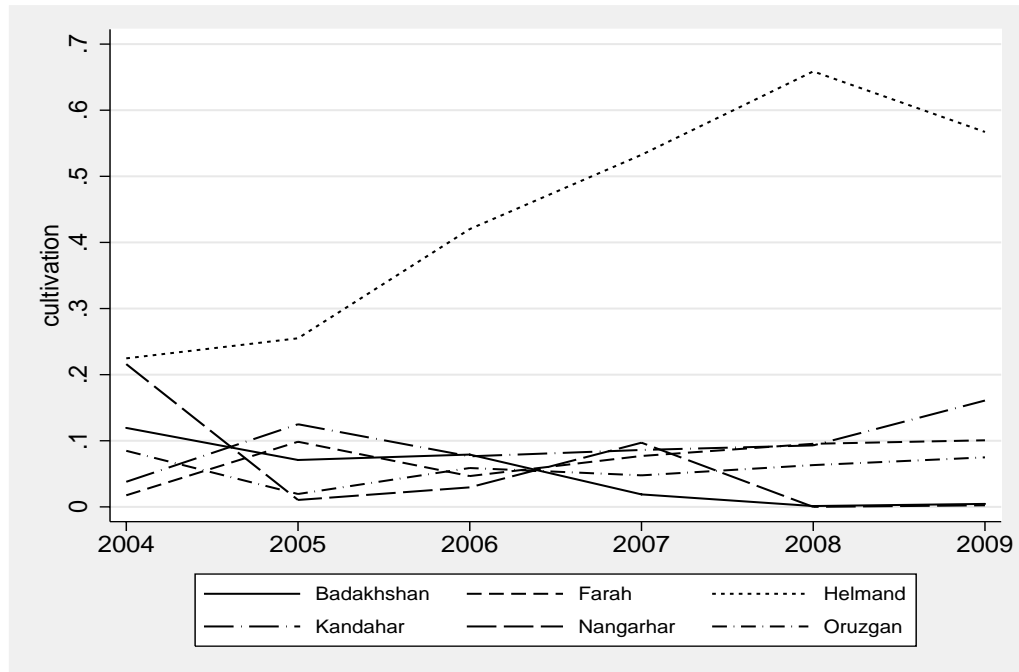
Figure 6.3: Provincial distribution of opium cultivation (percentage). Author's calculation based on records from the UNODC Statistics and Survey Section

cultivation.

Secondly, the overall level of opium revenues in the Afghan economy is determined also by the opium prices. At the aggregated national level, monthly opium prices and attacks do not show a similar trend (see Figure 6.4(b), in logs to compress the scale of the graph). Since 2004, there has been a notable increase in the number of security incidents in Afghanistan in parallel with a decrease in opium prices. This suggests that there is a negative correlation between opium prices and violence, although at this level of aggregation we can not say anything about causation. As can be seen from Figure 6.5, opium prices exhibit considerable volatility.

Opium production - and consequently opium prices - has a strong seasonal component. Opium poppy is an annual crop with a six to seven month planting cycle. It is planted between September and December and flowers approximately three months after planting. After the flower's petals fall away, between April and July, the opium, a sap found in the seed capsule, is harvested. The sap can then be refined into morphine and heroin. The timing of the price drop usually coincides with the opium harvest (UNODC, 2009b). Weather conditions have an impact on yields and hence on overall supply, therefore influencing the prices; also, the final consumption demand in OECD markets might cause changes in prices. We are interested in exploring an alternative factor: the interaction between the illicit

(a) Security incidents and opium cultivation (in percentage of the total)
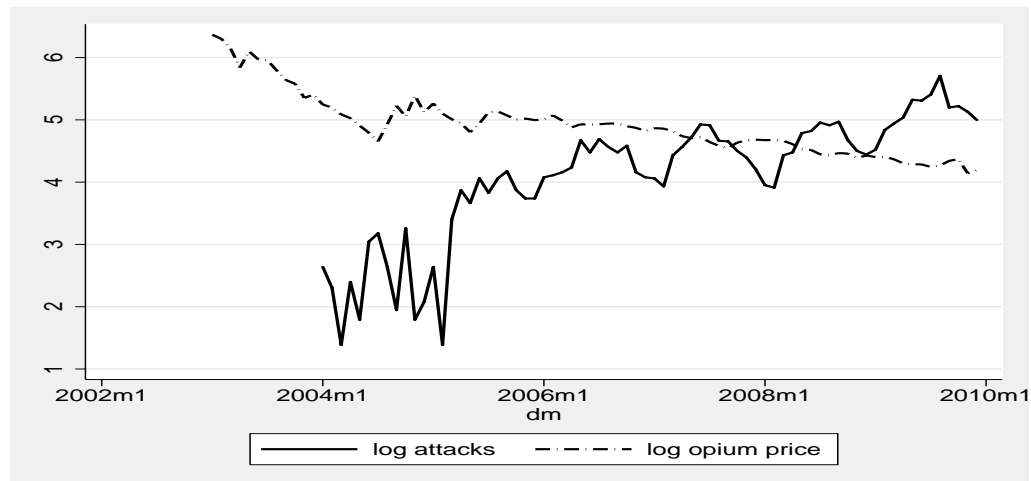
(b) Monthly prices of dry opium collected from farmers and number of security incidents.
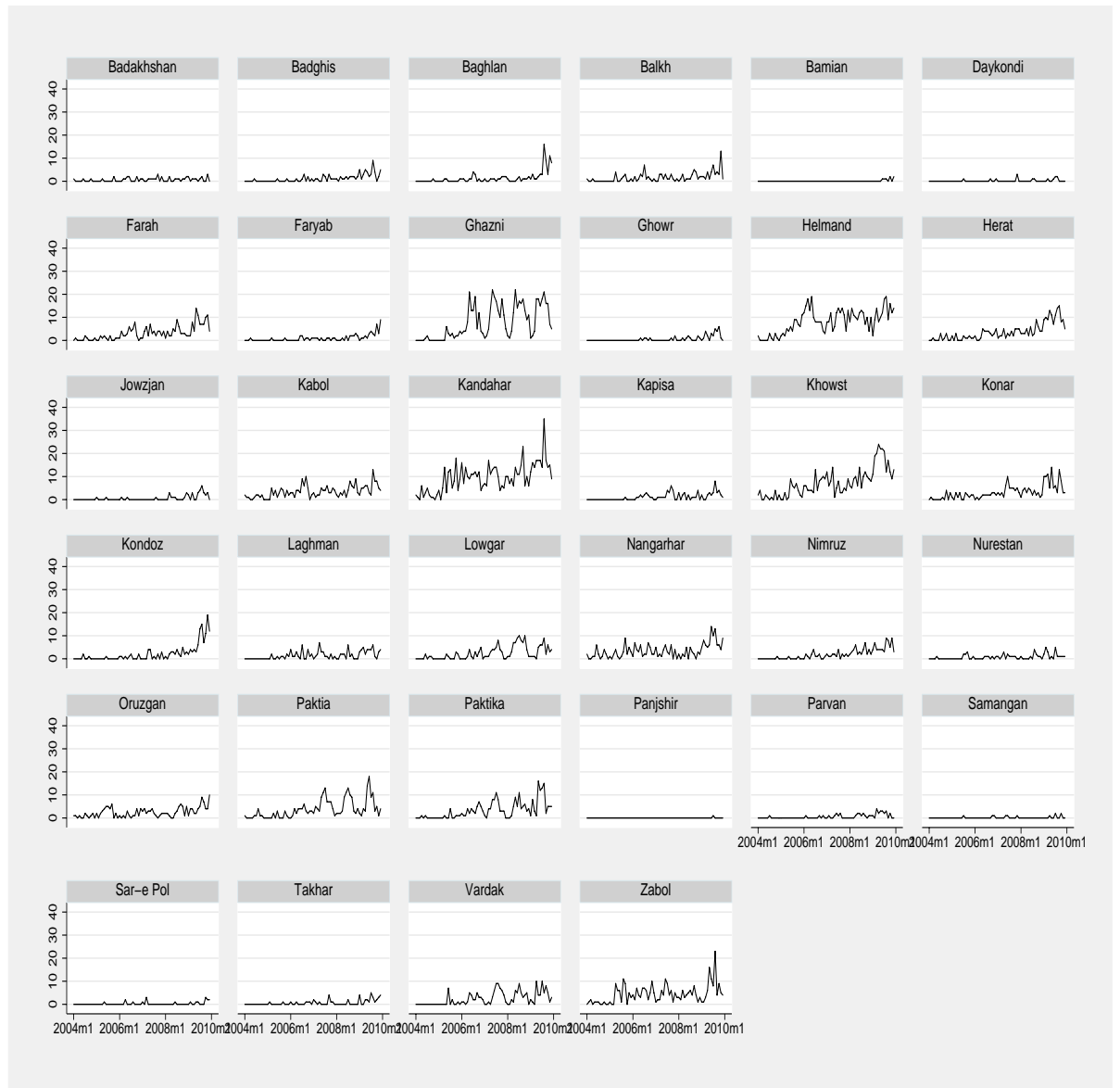
Figure 6.4: Source: Author's calculation based on records from the Worldwide Incidents Tracking System, US National Counterterrorism Center, and from the UNODC Statistics and Survey Section
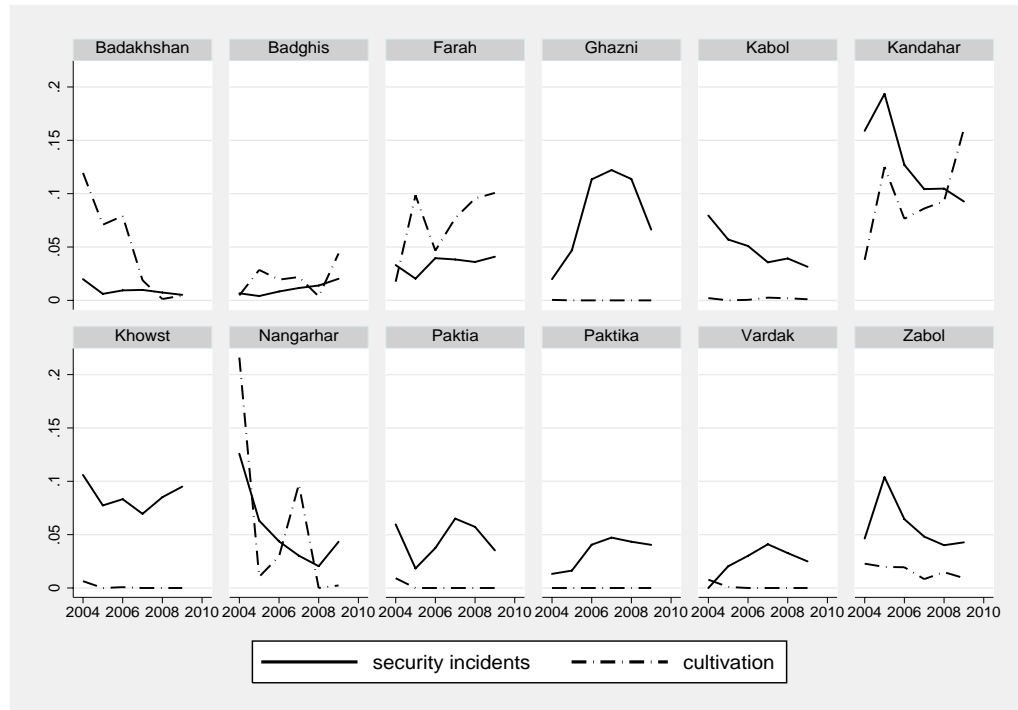
nature of opium production and the political/military situation. An important question is to what extent increasing criminalisation have induced higher prices through higher risk premia. Do security incidents affect prices? Also, we will test the reverse mechanism: does opium foster violence?

Opium cultivation is not the main occupational opportunity in the Afghan economy. Almost half of Afghan households depend on income from agriculture,

Figure 6.5: Monthly prices of dry opium at farm-gate level. Source: UNODC Global Illicit Crop Monitoring Programme, Statistics and Survey Section
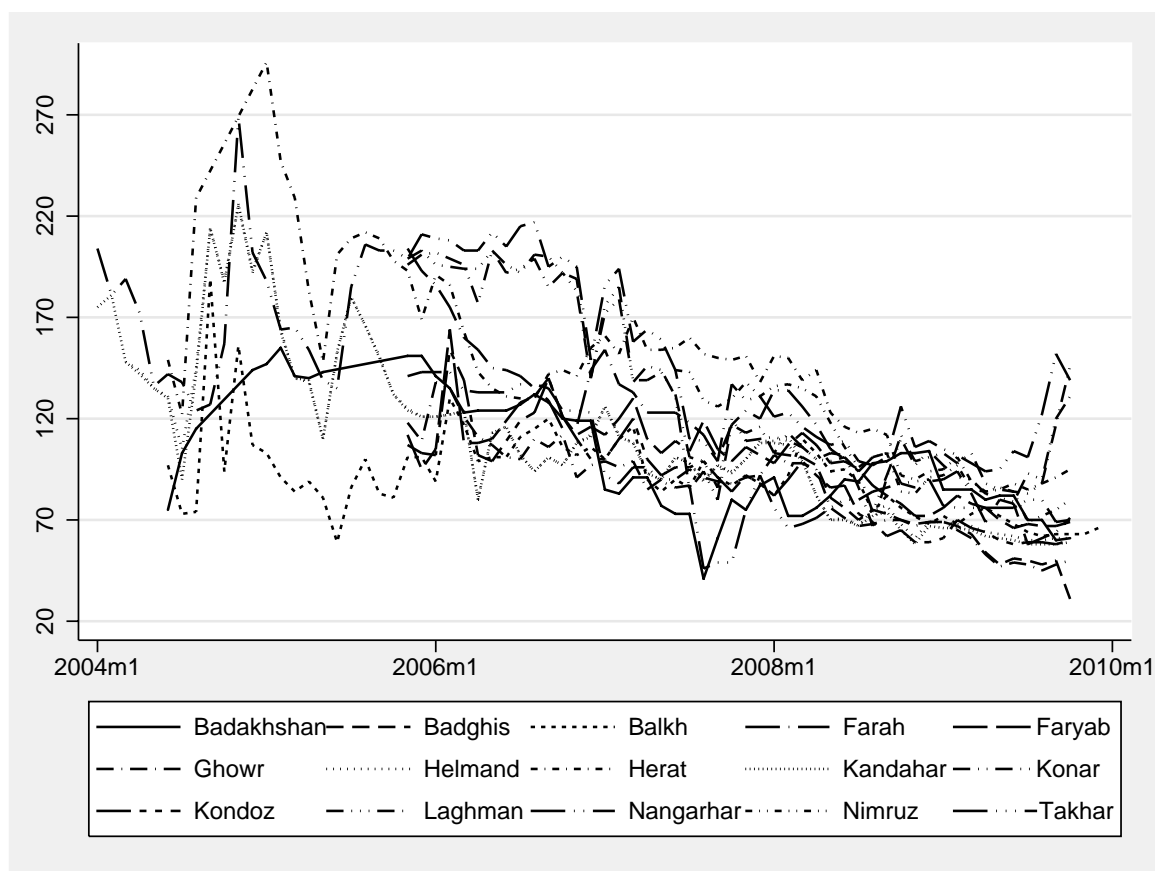
33% on non-farm labour, 23% on livestock and only 4% on opium production (UNODC, 2009a). Household surveys demonstrate the centrality of wheat and livestock prices in the economy of the country. The theory mentioned above would suggest a strong correlation between the relative income - or the purchasing power - and the level of violence in Afghanistan's provinces. Wheat is the main legal crop in rural Afghanistan. It is also a key staple food, accounting for over half the caloric intake of population (Persaud, 2010). Many Afghans in rural areas also rely on diversified livelihood strategies to generate household income, mainly pastoralism. We look at:

(i) the ratio between the price of one day of unskilled labour and 1 kg of wheat to proxy for the purchasing capacity of households relying on casual labour as main income;

(ii) the ratio between the price of one year old female sheep and 1 kg of wheat as an indicator of the purchasing capacity of those households that are mainly reliant on income from livestock (pastoralists);

(iii) the ratio between labour and diesel prices to proxy for the cost of non-farm activities, since only 10% of the population has access to electricity.[9]

In Figure 6.6 all our indicators show a decreasing trend over the period 2002-2008, in conjunction with increasing insurgent activities. The period from 2006 to 2008 witnessed an unprecedented surge in global agricultural prices, and wheat prices in Afghanistan followed the global trend. However, since 2008, the dramatic increase in the number of security incidents has been accompanied by improving economic and social conditions. Therefore the overall effect of the occupational choices on the level of violence is not obvious. The ambiguous relation between relative income and the political/military situation prevailing on the ground will be tested in the empirical model, using data disaggregated at provincial level (Tables 6.4-6.6).

6.4 Data

Opium

Monthly prices of opium have been kindly provided by the *UNODC Global Illicit Crop Monitoring Programme, Statistics and Survey Section*. These price data are based on inquiries in major opium producing areas (interviews with some 170 farmers and 160 traders) on a monthly basis. They have recorded farmer and trader price of dry and fresh opium. Farmer refers to farm-gate price of opium, trader refers to local trading level, dry opium refers to air-dry opium, and fresh opium to

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[9]USAID data from http://www.usaid.gov/locations/asia/countries/afghanistan/
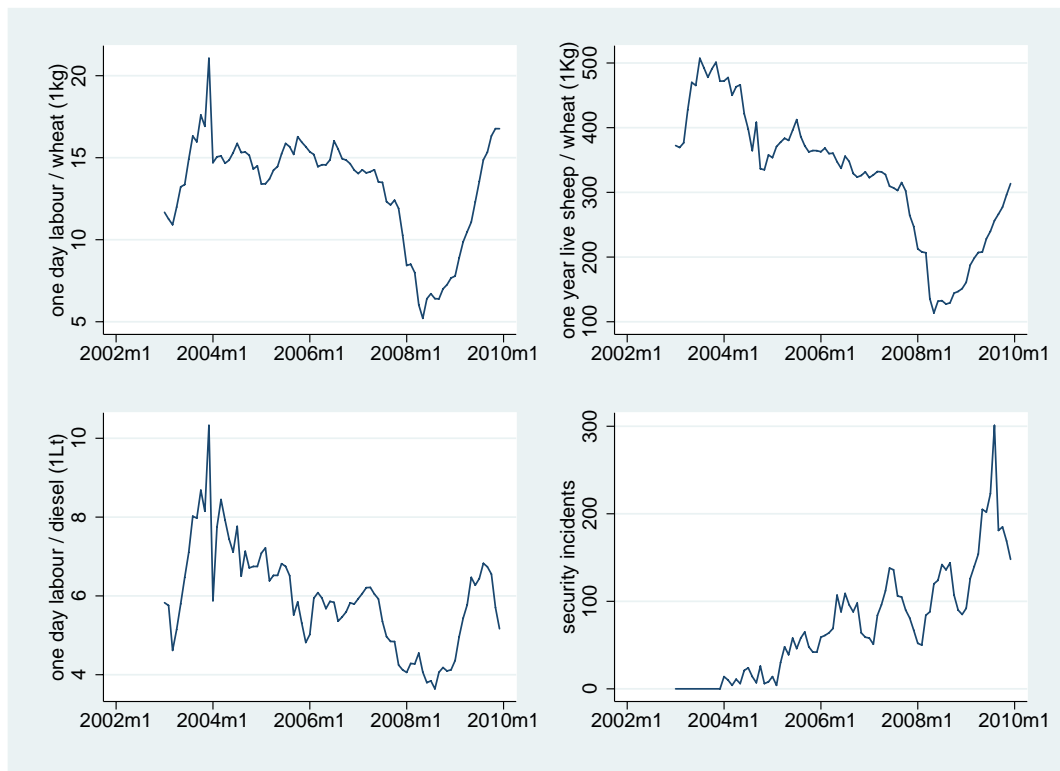
Figure 6.6: Income and security incidents in Afghanistan. Author's calculation based on records from Vulnerability Analysis and Mapping (VAM) Market Data from Afghanistan main cities, World Food Programme and from the Worldwide Incidents Tracking System (WITS), US National Counterterrorism Center

"wet" opium shortly after harvest - or kept "fresh" by plastic wrapping to avoid moisture loss. Prices are subject to seasonal variations, with lower prices during the harvest season. This is particularly true for fresh ("'wet"') opium prices, as fresh opium is available in the harvest period. For this reason we use dry opium prices. The farm-gate level is chosen because reflects supply factors and risk premia. Data are broken down at the level of 15 provinces.[10] Opium production is also based on data from the UNODC, but available online. They provide annual data on the location and extent of opium cultivation and opium eradication efforts. Data are annual and based on satellite image acquisition. (see UNODC, 2010, on the methodological aspects).

Conflict

Our data on the Afghan conflict comes from the *Worldwide Incidents Tracking System (WITS), US National Counterterrorism Center*. This dataset is event-based, and includes information on the event type, date, location, whether the perpetrator is an Islamic Extremist/Sunni or unknown, and the number of deaths, wounded and kidnapped in each event. The dataset includes 6080 episodes in 34 provinces from 2004 to 2009.[11]

Market Prices

We gathered monthly US$ prices of 1 kg of wheat, flour and bread; 1 liter of diesel; a one year old female sheep; and 1 day of unskilled labour. Prices are from the *Vulnerability Analysis and Mapping (VAM) Market Data, World Food Programme*. Wheat and flour prices (which are strongly correlated) tend to move together over the eleven provinces. Co-movements among provinces are less clear when we consider other price levels, particularly sheep, bread and labour (see Figure 6.7).

6.5   Estimates

There are almost certainly unobserved common factors influencing all parameters, and to allow for this the estimation and testing approach is based on the Common Correlated Effects (CCE) method advanced by Pesaran (2006). The approach consists of approximating the linear combinations of the unobserved factors by cross section averages of the dependent and explanatory variables, and then running our regressions augmented with these cross section averages. An advantage of this method is that it yields consistent estimates under a variety of situations such as serial correlation in errors, unit roots in the factors and contemporaneous

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[10]Prices have been recorded in Nangarhar ,Laghman, Kunar, Helmand, Kandahar, Badghis, Herat, Ghowr, Farah, Nimroz, Takhar, Badakhshan, Faryab, Kunduz, Balkh.

[11]The dataset is available at http://www.nctc.gov/wits/witsnextgen.html
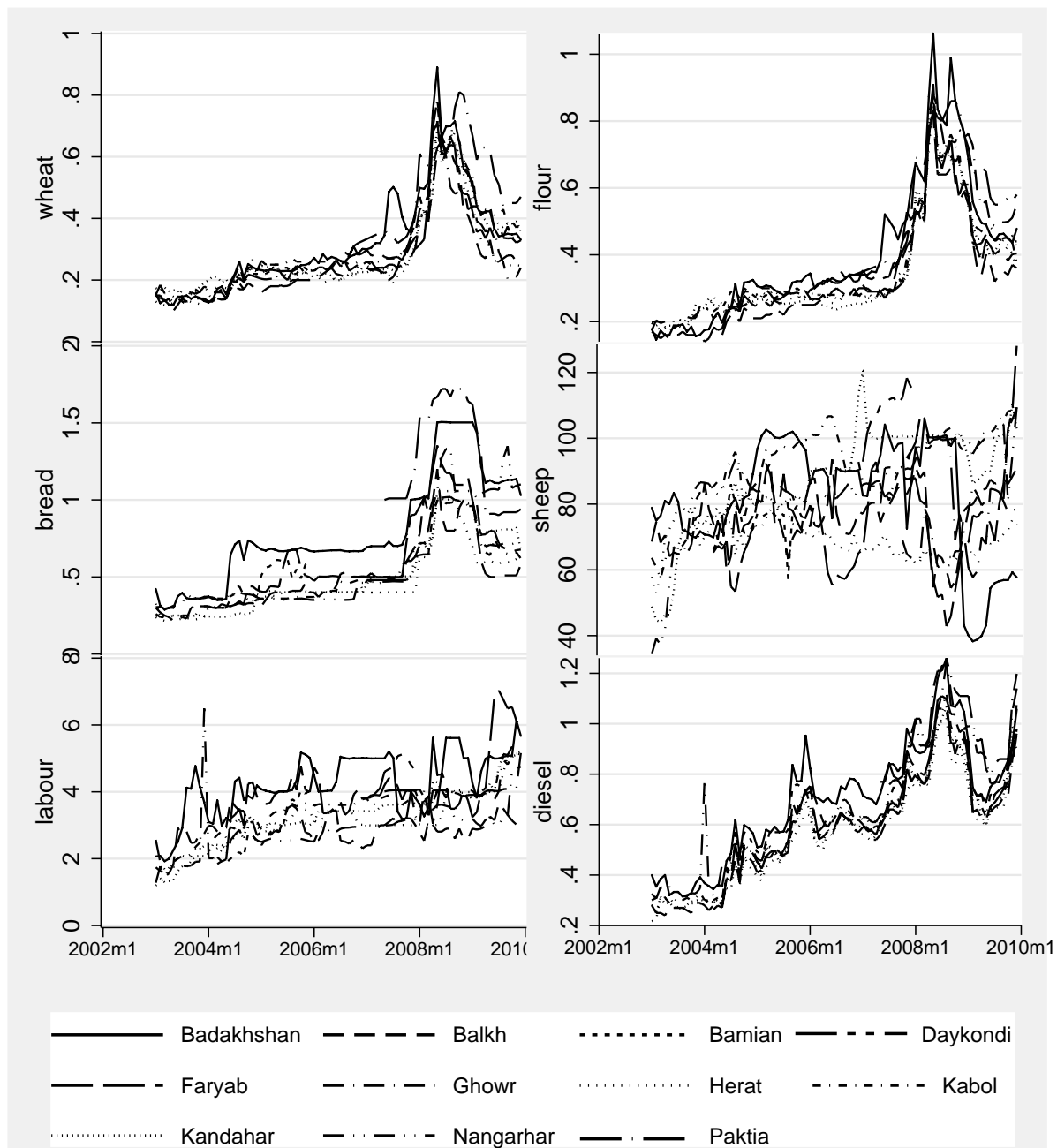
Figure 6.7: Analysis of prices in Afghanistan's provinces. Source: Vulnerability Analysis and Mapping (VAM) Market Data from Afghanistan main cities, World Food Programme

dependence of the observed regressors with the unobserved factors (Pesaran & Tosseti, 2009).

To see the motivations for this procedure, consider a general model of this form

$$y_{it} = \alpha_i + \beta_i x_{it} + \gamma_i f_t + \epsilon_{it}$$

where f_t represents the unobserved factors, which may influence each unit differently and which may be correlated with the x_{it}. The average across units gives

$$\bar{y}_t = \bar{\alpha} + \bar{\beta}\bar{x}_t + \bar{\gamma}f_t + \bar{\epsilon}_t + N^{-1}\sum(\beta_i - \bar{\beta})x_{it}$$
$$f_t = \bar{\gamma}^{-1}[\bar{y}_t - \bar{\alpha} + \bar{\beta}\bar{x}_t + \bar{\epsilon}_t + \sum(\beta_i - \bar{\beta})x_{it}]$$

so the $\bar{y}_t$ and $\bar{x}_t$ provide a proxy for the unobserved factor. The covariance between $\bar{y}_t$ and ϵ_{it} goes to zero with N, so for large N there is no endogeneity problem. The CCE generalises to many factors and lagged dependent variables. We hope that any seasonality is captured by the means (seasonality is a common factor).

We consider an economic variable for province i in month t (P_{it}) and the number of security incidents (I_{it}), such that

$$P_{it} = a_{11}^i P_{it-1} + a_{12}^i I_{it-1} + \sigma_{11}\bar{P}_t + \sigma_{21}\bar{I}_t + \epsilon_{it}$$
$$I_{it} = a_{21}^i P_{it-1} + a_{22}^i I_{it-1} + \sigma_{12}\bar{P}_t + \sigma_{22}\bar{I}_t + \epsilon_{it}$$

with $\bar{P}_t$ and $\bar{I}_t$ being the cross section averages of the prices and security incidents, respectively. Besides the parameters in the equation, our econometric specification includes a constant term and two lags.

We consider alternative measures of P_{it} in the context of the bivariate VAR above. Due to a lack of a large T (we only have a maximum of 72 time series observations for some provinces, and less than 30 for a couple of provinces), we do not consider VARs in more variables. The economic variables we use are (i) the opium price in Table 6.2; (ii) the revenue from opium (monthly opium price x area under cultivation) in Table 6.3; (iii) the purchasing capacity of households relying on casual labour (labour price/wheat price) in Table 6.4; (iv) the purchasing capacity of households relying on livestock(sheep price/wheat price)in Table 6.5; (v) the cost of non-farm activities in Table 6.6.

To summarise our results we use the Mean Group (MG) estimator proposed by Pesaran & Smith (1995). The MG estimator is defined as the simple average of the coefficients a_{11}, a_{12}, σ_{11} and σ_{21}. Given a coefficient a_{11}, we compute the MG coefficients and standard errors, respectively, using the following formulae:

$$a_{11}^{MG} = \bar{a}_{11} = \frac{\sum_{k=i}^{N} a_{11}^{i}}{N}$$
$$se(a_{11}^{MG}) = \sqrt{\frac{\sum_{k=i}^{N}(a_{11}^{i} - \bar{a}_{11})}{N-1}} \Big/ \sqrt{N}$$

The MG estimator can produce consistent estimates of the average of the parameters. Table 6.1 shows the International Organization for Standardization (ISO) code used in the columns of the subsequent tables to identify the provinces. The last column of each table shows the results for the MG estimator. Finally, Table 6.7 shows the estimates for an aggregate VAR, where $\bar{I}_t$ and $\bar{P}_t$ are function of their own lags and the lags of the other variable in the system.

The test of our main hypothesis is in Table 6.2, where we find a weak and positive effect of lagged opium price on subsequent number of incidents only for two provinces, Laghman and Takhar, both in the North of the country. The mean group estimator suggests a general negative effect. The strong and highly significant effect of the cross sectional average of the number of attacks suggests the persistence of unobservable common factors. As one would expect, accounting for common correlated effects decreases the effect of the other variables in the equation. The lagged number of security incidents in the opium price equation is negative and significant for five provinces. The mean group estimator also points out a negative impact of violence on opium prices, implying that violence may disrupt the opium trade. Common correlated effects are again those showing more statistical significance and the mean group estimator confirms the presence of common factors driving the dynamics of violence and opium prices.

In Table 6.3, prices are adjusted by the level of cultivation, to account for the provincial distribution of revenues. With this adjustment, it turns out that the number of attacks at provincial level is only affected by common correlated factors, while all others coefficients are insignificant. In the equation for prices, the coefficients are not statistically significant, with the only exception of the level of revenue with a lag.

Tables 6.4-6.6 on the purchasing capacity of household relying on different income sources show mixed results. While in some provinces worsening economic conditions are followed by increasing levels of violence, in others there seems to be a

positive relation between these two variables. Income effects on violence are overall stronger and more significant than the reverse mechanism. Lagged income levels have sometimes a significant effect on the number of incidents, whereas lagged incidents have no significant effects on prices. Common effects are strong in both equations, and the mean group estimator seems to confirm this finding. Estimators for the aggregate VAR highlight a negative, although not statistically significant, interaction between incidents and prices.

6.6 Conclusions

Afghanistan's drug industry is a central issue for the country's state-building, security, governance, and development agenda. The country provides over 90% of global supply of opium, which is the country's biggest export. One in seven Afghans is involved in some aspect of the trade. This opium trade has worldwide consequences. Drugs fund insurgents, criminals and terrorists in Afghanistan and abroad. Collusion with corrupt government officials undermines public trust, security, and the law, while money-laundering damages the reputation of banks in the Gulf region. Drug addiction and HIV are spreading death along opiate trafficking routes, particularly in Central Asia and Russia. In Europe, thousands are predicted to die this year from heroin overdoses, a sub-product of opium. It is therefore essential to analyse the relation between the opiate business and insurgency and to indentify a more general pattern among opium, alternative measures of income and occupational choices, and violence.

This Chapter has examined how different sources of revenues interact with the level of violence in Afghanistan. Using detailed data at provincial level over a 5-year period, we show that unobservable common channels prevail in determining how income and conflict dynamics interact. The relation between opium prices and violence in some provinces suggests that opium can play a role in exacerbating violence, although not in the expected magnitude and significance. Both a conflict-induced opium production (which drives the prices) and an opium-violence mechanism seem to work at the same time. The relative value of revenues generated from different sources (e.g. casual labour, pastoralism) shows mixed and not so clear-cut effects on the level of violence. Results are preliminary and any conclusion is only tentative because the T is quite short and the data collection in a war region is inevitably subject to many errors of measurement. Due to a lack of reliable and comparable data, we cannot evaluate the robustness of these conclusions. How the level of income and other observable and unobservable factors interact to produce the value-to-violence relationship in the Afghanistan provinces

is an important avenue for future research. The number of hostages might be particularly useful as an additional control, since it indicates the presence of insurgents without necessarily indicating the occurrence of fighting. The number of deaths and wounded in each attack can be used to take into account the size distributions of casualties and the insurgency effectiveness over time and provinces.

6.7 Tables

Table 6.1: Afghanistan's Provinces

Province	ISO	Capital	Population	Area (kmsq)
Badakhshan	BDS	Feyzabad	805,500	44,059
Badghis	BDG	Qal'eh-ye Now	420,400	20,591
Baghlan	BGL	Pol-e Khomri	762,500	21,118
Balkh	BAL	Mazar-e Sharif	1,073,000	17,249
Bamian	BAM	Bamian	379,200	14,175
Daikondi	DAY	Khadir	391,000	8,088
Farah	FRA	Farah	428,800	48,471
Faryab	FYB	Meymaneh	840,400	20,293
Ghazni	GHA	Ghazni	1,040,100	22,915
Ghowr	GHO	Chaghcharan	585,900	36,479
Helmand	HEL	Lashgar Gah	782,100	58,584
Herat	HER	Herat	1,544,800	54,778
Jowzjan	JOW	Sheberghan	452,000	11,798
Kabul	KAB	Kabul	3,071,600	4,462
Kandahar	KAN	Kandahar	990,100	54,022
Kapisa	KAP	Mahmud-e-Eraqi	374,500	1,842
Khowst	KHO	Khowst	487,400	4,152
Konar	KNR	Asadabad	381,900	4,942
Kondoz	KDZ	Kondoz	833,300	8,040
Laghman	LAG	Mehtar Lam	378,100	3,843
Lowgar	LOW	Pol-e 'Alam	332,400	3,880
Nangarhar	NAN	Jalalabad	1,261,900	7,727
Nimruz	NIM	Zaranj	138,500	41,005
Nurestan	NUR	Kamdish	125,700	9,225
Oruzgan	ORU	Tarin Kowt	297,200	22,696
Paktia	PIA	Gardez	467,500	6,432
Paktika	PKA	Sharan	369,100	19,482
Panjshir	PAN	Bazarak	130,400	3,610
Parvan	PAR	Charikar	560,800	5,974
Samangan	SAM	Aybak	327,700	11,262
Sar-e Pol	SAR	Sar-e Pol	472,700	15,999
Takhar	TAK	Taloqan	827,500	12,333
Vardak	WAR	Maidanshahr	506,300	8,938
Zabol	ZAB	Qalat	257,600	17,343

Table 6.2: Security incidents $\mathbf{I}_{it}$ and opium price $\mathbf{P}_{it}$

	(BDS)	(BDG)	(BAL)	(FRA)	(FYB)	(GHO)	(HEL)	(HER)	(KAN)	(KNR)	(KDZ)	(LAG)	(NAN)	(NIM)	(TAK)	MEAN GROUP
$\mathbf{I}_{it}$																
I_{it-1}	-0.09 (-0.63)	-0.17 (-0.95)	-0.11 (-0.91)	-0.02 (-0.15)	0.06 (0.32)	0.29 (1.87)	0.28* (2.42)	0.26 (1.92)	-0.10 (-1.04)	0.12 (0.77)	0.17 (1.16)	-0.28* (-2.07)	0.03 (0.23)	0.09 (0.46)	-0.05 (-0.36)	0.03 (0.72)
I_{it-2}	-0.04 (-0.29)	-0.68*** (-3.95)	-0.02 (-0.18)	-0.12 (-0.75)	0.22 (1.20)	0.14 (0.85)	0.23 (1.94)	0.09 (0.67)	-0.15 (-1.49)	0.15 (0.88)	0.12 (0.92)	-0.28* (-2.01)	-0.00 (-0.03)	0.01 (0.05)	-0.01 (-0.05)	-0.02 (-0.38)
P_{it-1}	-0.02 (-1.55)	-0.01 (-0.15)	-0.01 (-0.58)	0.00 (0.01)	-0.01 (-0.92)	-0.02 (-0.70)	-0.02 (-0.64)	-0.01 (-0.26)	-0.03 (-1.32)	0.02 (0.63)	-0.01 (-0.32)	-0.02 (-1.15)	0.00 (0.04)	-0.06 (-0.98)	-0.03 (-1.90)	-0.01 (-3.36)
P_{it-2}	0.02 (1.62)	-0.04 (-0.66)	-0.01 (-0.98)	-0.01 (-0.26)	-0.01 (-0.82)	0.00 (0.15)	0.01 (0.57)	-0.01 (-0.39)	0.01 (0.41)	0.00 (0.05)	-0.01 (-0.27)	0.04** (2.76)	0.00 (0.15)	-0.01 (-0.12)	0.04* (2.46)	0.00 (0.25)
$\bar{P}_t$	-0.01 (-0.63)	-0.02 (-0.23)	0.01 (1.26)	0.02 (0.48)	0.00 (0.43)	0.01 (0.42)	0.02 (0.74)	-0.02 (-0.85)	0.05 (1.83)	-0.08 (-1.37)	0.00 (0.06)	-0.02 (-0.54)	0.02 (1.55)	0.12 (1.47)	-0.01 (-0.84)	0.00 (0.54)
$\bar{I}_t$	0.04 (0.44)	0.71** (2.84)	0.77*** (4.23)	1.51*** (3.56)	0.29 (1.95)	0.36* (2.29)	1.21*** (2.86)	0.81** (2.87)	3.68*** (7.41)	0.21 (0.56)	1.25*** (4.25)	1.11*** (4.06)	1.51*** (5.04)	0.66* (1.98)	0.31 (1.83)	0.96 (4.20)
cons	1.26 (1.36)	7.07 (1.25)	-0.19 (-0.12)	-0.63 (-0.23)	1.67 (1.10)	-0.03 (-0.02)	-0.73 (-0.23)	3.99 (1.53)	-0.51 (-0.15)	8.29* (1.99)	-1.01 (-0.46)	-1.92 (-0.83)	-3.77 (-1.84)	-2.41 (-0.36)	0.51 (0.39)	0.77 (0.89)
$\mathbf{P}_{it}$																
I_{it-1}	0.81 (0.45)	-0.73 (-1.25)	-1.04 (-0.69)	-0.86 (-1.69)	-2.58 (-1.35)	-1.48 (-1.55)	-1.02* (-2.29)	0.39 (0.36)	-0.91* (-2.54)	-0.17 (-0.19)	-0.59 (-0.91)	0.05 (0.04)	1.97* (2.44)	-1.57* (-2.49)	-0.37 (-0.28)	-0.54 (-1.93)
I_{it-2}	1.75 (0.95)	-2.32*** (-4.02)	-0.65 (-0.47)	-0.88 (-1.68)	-1.06 (-0.60)	-0.02 (-0.02)	-0.75 (-1.69)	-1.65 (-1.51)	-0.39 (-1.06)	-1.16 (-1.21)	-0.30 (-0.52)	0.39 (0.32)	-0.22 (-0.27)	-0.06 (-0.08)	0.62 (0.52)	-0.45 (-1.78)
P_{it-1}	0.87*** (6.26)	0.39 (1.41)	0.10 (0.97)	0.67*** (4.51)	0.25* (1.98)	0.39** (2.64)	0.38*** (3.87)	0.33 (1.86)	0.37*** (3.83)	0.47** (2.95)	0.53*** (4.76)	0.47** (3.05)	0.50*** (5.14)	0.63*** (3.00)	0.86*** (5.72)	0.48 (8.87)
P_{it-2}	-0.03 (-0.22)	-0.04 (-0.19)	0.14 (1.18)	-0.16 (-1.31)	-0.02 (-0.16)	0.01 (0.06)	-0.15 (-1.64)	0.12 (0.85)	-0.16 (-1.81)	-0.09 (-0.59)	-0.33** (-3.13)	-0.04 (-0.29)	-0.01 (-0.09)	-0.15 (-0.83)	-0.15 (-1.05)	-0.07 (-2.29)
$\bar{P}_t$	0.09 (0.89)	0.69* (2.29)	0.35*** (3.42)	0.41*** (3.85)	0.52*** (5.13)	0.41*** (4.66)	0.76*** (7.81)	0.43** (2.99)	0.80*** (7.89)	1.03** (3.15)	0.71*** (7.20)	1.04*** (3.38)	0.85*** (7.47)	0.88*** (3.27)	0.32* (2.34)	0.62 (8.53)
$\bar{I}_t$	-0.54 (-0.44)	-0.61 (-0.72)	1.06 (0.48)	-0.62 (-0.44)	-0.36 (-0.25)	-2.23* (-2.30)	0.52 (0.32)	-3.11 (-1.37)	0.82 (0.45)	4.62* (2.15)	1.22 (0.94)	3.38 (1.39)	5.04* (2.31)	0.51 (0.48)	2.09 (1.41)	0.79 (1.33)
cons	3.90 (0.33)	-5.94 (-0.31)	27.52 (1.49)	20.42* (2.23)	26.59 (1.80)	16.49 (1.96)	5.02 (0.41)	43.04* (2.04)	-1.43 (-0.11)	-38.42 (-1.62)	-5.40 (-0.56)	-17.60* (-2.31)	-44.51*** (-2.99)	-20.99 (-0.97)	-14.43 (-1.24)	-2.38 (-0.34)
N	51	20	63	46	46	46	66	57	68	46	46	46	68	27	46	15

t statistics in parentheses: $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Table 6.3: Security incidents $\mathbf{I}_{it}$ and revenue from opium $\mathbf{P}_{it}$ (monthly opium price x area under cultivation)

	(BDS)	(BDG)	(BAL)	(FRA)	(FYB)	(GHO)	(HEL)	(HER)	(KAN)	(KNR)	(KDZ)	(LAG)	(NAN)	(NM)	(TAK)	MEAN GROUP
$\mathbf{I}_{it}$																
I_{it-1}	-0.05 (-0.34)	-0.17 (-1.09)	-0.16 (-1.34)	-0.02 (-0.15)	0.09 (0.48)	0.28 (1.86)	0.23 (1.79)	0.28* (2.12)	-0.14 (-1.49)	0.14 (0.96)	0.16 (1.10)	-0.19 (-1.27)	0.04 (0.38)	0.04 (0.22)	-0.06 (-0.42)	0.03 (0.75)
I_{it-2}	-0.05 (-0.38)	-0.73*** (-5.00)	0.05 (0.34)	-0.12 (-0.77)	0.30 (1.60)	0.13 (0.79)	0.21 (1.77)	0.07 (0.54)	-0.17 (-1.81)	0.15 (0.95)	0.13 (1.01)	-0.25 (-1.64)	0.04 (0.36)	-0.13 (-0.67)	-0.02 (-0.15)	-0.03 (-0.41)
P_{it-1}	0.00 (0.17)	-0.00 (-1.01)	0.00 (0.37)	0.00 (0.53)	0.00 (0.31)	-0.00 (-0.24)	0.00 (0.76)	-0.00 (-0.23)	0.00 (0.01)	-0.00 (-0.33)	-0.00 (-0.74)	-0.00 (-0.60)	-0.00 (-0.27)	-0.00 (-1.18)	-0.00 (-1.36)	0.00 (0.00)
P_{it-2}	-0.00 (-0.21)	0.00* (2.03)	-0.00 (-0.20)	-0.00 (-0.81)	-0.00 (-0.74)	0.00 (0.42)	-0.00 (-0.32)	-0.00 (-0.04)	0.00 (1.64)	-0.00 (-0.05)	0.00 (0.91)	0.00 (1.07)	-0.00 (-0.37)	0.00 (1.14)	0.00 (1.45)	0.00 (0.00)
$\bar{I}_t$	0.13 (1.31)	0.57** (2.68)	0.73** (3.25)	1.46*** (3.60)	0.29 (1.91)	0.36* (2.53)	0.97** (2.64)	0.80** (2.84)	3.32*** (7.70)	0.29 (0.73)	1.21*** (4.10)	1.03*** (3.52)	1.20*** (4.36)	0.41 (1.29)	0.42* (2.51)	0.88 (4.34)
$\bar{P}_t$	0.00 (0.30)	-0.00* (-2.22)	-0.00 (-0.74)	0.00 (0.04)	-0.00 (-0.05)	-0.00 (-1.18)	-0.00 (-0.62)	-0.00 (-1.49)	-0.00 (-0.92)	-0.00 (-0.62)	-0.00 (-1.19)	0.00 (0.46)	0.00 (1.10)	-0.00 (-1.26)	-0.00 (-0.16)	0.00 (0.00)
cons	0.29 (0.41)	5.62* (2.23)	0.33 (0.29)	0.56 (0.23)	0.13 (0.12)	0.10 (0.11)	2.02 (0.91)	2.77 (1.57)	2.10 (0.71)	4.04 (1.62)	-0.87 (-0.51)	-1.53 (-0.97)	-0.61 (-0.49)	4.49 (1.44)	-0.49 (-0.48)	1.26 (2.28)
$\mathbf{P}_{it}$																
I_{it-1}	-1118.14 (-0.36)	-372.67 (-0.52)	11.14 (0.01)	-644.41 (-0.57)	-623.72 (-0.72)	-217.74 (-0.23)	-428.96 (-0.11)	207.62 (0.76)	-538.33 (-0.83)	-46.76 (-0.82)	-2.23 (-0.13)	53.55 (0.48)	3971.83 (1.35)	946.24 (1.12)	153.64 (0.38)	90.07 (0.30)
I_{it-2}	763.50 (0.24)	-1333.20 (-1.93)	360.84 (0.29)	-1331.27 (-1.18)	33.60 (0.04)	-687.70 (-0.66)	2818.22 (0.76)	-325.22 (-1.13)	-191.24 (-0.29)	-68.76 (-1.12)	-10.61 (-0.72)	75.83 (0.65)	-1636.19 (-0.55)	316.18 (0.35)	-67.00 (-0.18)	-85.53 (-0.31)
P_{it-1}	0.95*** (8.51)	0.66** (3.24)	0.68*** (5.60)	0.78*** (5.51)	0.73*** (4.86)	0.88*** (6.03)	0.81*** (6.26)	0.68*** (3.91)	0.64*** (5.22)	0.90*** (6.20)	0.48*** (3.56)	0.90*** (6.09)	0.64*** (5.74)	0.59** (3.27)	0.96*** (6.53)	0.75 (20.19)
P_{it-2}	0.02 (0.20)	-0.04 (-0.21)	0.20 (1.68)	-0.10 (-0.77)	0.09 (0.60)	0.09 (0.60)	0.06 (0.50)	0.16 (0.92)	0.14 (1.18)	0.05 (0.35)	0.24* (2.03)	-0.03 (-0.22)	-0.19* (-2.07)	0.24 (1.33)	0.02 (0.13)	0.06 (1.99)
$\bar{I}_t$	-1462.70 (-0.64)	-1438.97 (-1.43)	-1968.54 (-1.10)	2643.49 (0.88)	939.17 (1.40)	179.96 (0.20)	6203.62 (0.55)	327.93 (0.55)	35.36 (0.01)	186.56 (1.25)	4.41 (0.13)	-128.35 (-0.58)	10922.57 (1.51)	1712.24 (1.18)	-63.86 (-0.14)	1206.19 (1.40)
$\bar{P}_t$	-0.12 (-0.94)	-0.52** (-3.26)	-0.00 (-0.02)	0.32** (2.71)	0.10 (1.78)	-0.03 (-0.66)	0.61 (1.83)	0.07* (2.19)	-0.01 (-0.11)	-0.01 (-0.68)	-0.00 (-0.78)	0.01 (1.15)	1.36*** (5.94)	0.37** (3.01)	-0.01 (-0.56)	0.14 (1.32)
cons	14197 (0.88)	42131*** (3.54)	7813 (0.85)	9631 (0.55)	-7838 (-1.60)	2584 (0.44)	-29147 (-0.43)	-3974 (-1.07)	33390 (1.66)	228 (0.24)	134 (0.68)	-105 (-0.09)	-120038*** (-3.65)	-30552* (-2.15)	975 (0.36)	-5371 (-0.56)
N	51	20	65	46	46	46	66	57	68	46	46	46	68	27	46	15

t statistics in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6.4: Security incidents $\mathbf{I}_{it}$ and purchasing capacity $\mathbf{P}_{it}$ of households relying on casual labour (labour/wheat prices)

	(BDS)	(BAL)	(BAM)	(DAY)	(FYB)	(GHO)	(HER)	(KAB)	(KAN)	(NAN)	(PIA)	MEAN GROUP
$\mathbf{I}_{it}$												
I_{it-1}	-0.24*	-0.19		0.00	0.11	-0.08	0.26*	0.15	-0.10	-0.12	-0.02	-0.02
	(-2.09)	(-1.61)		(0.00)	(0.83)	(-0.42)	(2.20)	(1.37)	(-1.01)	(-1.04)	(-0.16)	(-0.46)
I_{it-2}	-0.16	0.02		-0.24	0.70***	-0.40	0.11	-0.00	-0.13	-0.14	-0.13	-0.04
	(-1.41)	(0.11)		(-1.50)	(5.69)	(-1.70)	(1.04)	(-0.04)	(-1.29)	(-1.20)	(-0.81)	(-0.40)
P_{it-1}	-0.08	-0.18	0.81***	0.06	-0.00	0.36*	0.49	0.10	0.25	-0.62*	-0.02	0.11
	(-1.56)	(-1.27)	(3.47)	(0.33)	(-0.02)	(2.48)	(1.77)	(0.37)	(0.41)	(-2.34)	(-0.06)	(0.94)
P_{it-2}	-0.06	0.08	-0.11	0.13	0.01	-0.30*	-0.30	-0.18	-0.34	0.36	0.69*	-0.00
	(-1.10)	(0.58)	(-0.54)	(0.77)	(0.20)	(-2.07)	(-1.32)	(-0.74)	(-0.64)	(1.57)	(2.48)	(-0.02)
$\bar{I}_t$	0.10	0.82***	0.60	0.38**	0.26**	0.42	0.86***	0.85***	3.29***	1.53***	5.25***	1.30
	(1.75)	(4.72)	(1.36)	(2.89)	(2.70)	(1.61)	(3.89)	(4.47)	(7.55)	(6.39)	(5.78)	(2.74)
$\bar{P}_t$	0.14*	0.21	0.82*	-0.12	0.02	0.12	-0.33	0.09	0.14	0.53**	-0.17	0.13
	(2.54)	(1.77)	(2.57)	(-1.70)	(0.29)	(0.63)	(-1.50)	(0.51)	(0.55)	(3.17)	(-0.40)	(1.37)
cons	0.91*	-1.54	-8.43*	-1.30*	-0.83	-1.48	1.91	0.63	2.83	-3.53*	-17.67**	-2.59
	(2.06)	(-1.54)	(-2.02)	(-2.01)	(-1.41)	(-1.49)	(1.55)	(0.49)	(1.23)	(-2.48)	(-2.98)	(-1.47)
$\mathbf{P}_{it}$												
I_{it-1}	0.06	-0.09		-0.09	-0.05	0.20	0.06	-0.04	-0.00	-0.10*	0.17	0.01
	(0.22)	(-0.94)		(-0.63)	(-0.25)	(0.85)	(1.16)	(-0.77)	(-0.13)	(-2.11)	(1.30)	(0.35)
I_{it-2}	0.07	-0.12		-0.64***	-0.08	-0.13	0.06	-0.00	-0.01	-0.00	0.18	-0.07
	(0.27)	(-0.97)		(-4.89)	(-0.39)	(-0.44)	(1.40)	(-0.01)	(-0.57)	(-0.06)	(1.30)	(-0.95)
P_{it-1}	0.60***	0.85***		0.73***	0.83***	1.08***	0.67***	0.65***	0.70***	0.46***	-0.03	0.65***
	(5.06)	(6.99)		(5.37)	(6.81)	(5.84)	(5.95)	(5.31)	(5.95)	(3.99)	(-0.10)	(7.08)
P_{it-2}	0.20	-0.11		0.04	-0.20	-0.41*	-0.15	-0.07	0.03	0.09	0.06	-0.05
	(1.58)	(-0.98)		(0.31)	(-1.72)	(-2.21)	(-1.61)	(-0.69)	(0.26)	(0.90)	(0.26)	(0.94)
$\bar{I}_t$	0.05	0.02		0.12	0.24	0.27	0.29**	-0.04	0.17*	0.17	-0.05	0.12
	(0.37)	(0.12)		(1.11)	(1.54)	(0.82)	(3.20)	(-0.49)	(1.99)	(1.64)	(-0.07)	(3.14)
$\bar{P}_t$	0.22	0.27**		0.18***	0.45***	0.41	0.58***	0.40***	0.28***	0.43***	1.66***	0.48***
	(1.77)	(2.73)		(3.30)	(3.90)	(1.68)	(6.51)	(4.87)	(5.85)	(5.87)	(4.45)	(3.59)
cons	-0.18	-0.02		-0.26	-0.91	-1.27	-2.25***	0.33	-0.40	-0.67	-7.87	-1.35
	(-0.18)	(-0.03)		(-0.50)	(-0.97)	(-1.00)	(-4.54)	(0.56)	(-0.90)	(-1.07)	(-1.50)	(-1.77)
N	70	70	17	30	68	25	70	70	70	70	10	11

t statistics in parentheses: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6.5: Security incidents I_{it} and purchasing capacity P_{it} of households relying on livestock (sheep/wheat prices)

	(BDS)	(BAL)	(BAM)	(DAY)	(FYB)	(GHO)	(HER)	(KAB)	(KAN)	(NAN)	(PIA)	MEAN GROUP
I_{it}												
I_{it-1}	-0.16 (-1.35)	-0.17 (-1.48)		0.01 (0.05)	0.13 (0.96)	0.04 (0.18)	0.28* (2.33)	0.15 (1.44)	-0.09 (-0.90)	-0.04 (-0.32)	0.06 (0.30)	0.02 (0.46)
I_{it-2}	-0.12 (-1.00)	0.08 (0.54)		-0.25 (-1.51)	0.72*** (5.80)	-0.32 (-1.26)	0.15 (1.39)	0.00 (0.04)	-0.12 (-1.27)	-0.05 (-0.41)	0.01 (0.06)	0.01 (0.11)
P_{it-1}	-0.00 (-0.09)	0.00 (0.15)	-0.11 (-0.51)	0.00 (0.68)	-0.00 (-0.63)	0.01 (1.02)	0.01 (1.18)	0.00 (0.46)	-0.02 (-1.27)	-0.00 (-0.11)	-0.02 (-0.47)	-0.01 (-1.15)
P_{it-2}	-0.00 (-0.54)	-0.01 (-1.11)	0.10 (0.62)	0.00 (0.16)	0.00 (0.48)	-0.01 (-0.96)	-0.00 (-0.50)	0.00 (0.07)	0.02 (1.06)	0.01 (0.66)	0.01 (0.55)	0.01 (1.17)
$\bar{I}_t$	0.12 (1.46)	0.89*** (4.91)	-21.39 (-1.86)	0.29** (2.63)	0.25* (2.42)	0.55** (2.69)	0.82*** (3.54)	0.96*** (5.04)	3.45*** (7.76)	1.58*** (5.63)	5.36*** (3.81)	-0.65 (-0.30)
$\bar{P}_t$	0.00 (0.41)	0.01 (1.44)	0.48* (2.46)	-0.00 (-1.25)	0.00 (0.56)	0.01 (0.80)	-0.01 (-1.25)	-0.00 (-0.47)	0.01 (1.21)	0.01 (0.77)	-0.00 (-0.05)	0.05 (1.07)
cons	0.81 (1.49)	-1.52 (-1.39)	169.59 (1.88)	-0.91 (-1.43)	-0.66 (-1.03)	-1.82 (-1.56)	1.64 (1.27)	0.04 (0.03)	1.49 (0.59)	-3.64* (-2.31)	-7.82 (-1.11)	14.29 (0.92)
P_{it}												
I_{it-1}	-3.75 (-0.84)	-1.74 (-0.64)		-0.60 (-0.20)	4.85 (1.12)	5.25 (1.75)	-0.92 (-0.75)	0.49 (0.30)	-0.06 (-0.10)	-0.48 (-0.38)	3.07 (1.15)	0.61 (0.67)
I_{it-2}	-6.97 (-1.51)	0.95 (0.28)		-17.73*** (-6.19)	5.10 (1.28)	2.94 (0.79)	2.18 (1.95)	-0.12 (-0.08)	0.46 (0.74)	-1.78 (-1.40)	-0.78 (-0.24)	-1.57 (-0.76)
P_{it-1}	0.75*** (6.50)	0.63*** (5.13)		0.69*** (6.01)	1.00*** (9.11)	1.37*** (8.59)	0.38*** (4.02)	0.64*** (5.34)	0.94*** (8.12)	0.60*** (5.43)	-0.34 (-0.69)	0.67 (4.72)
P_{it-2}	-0.06 (-0.49)	-0.14 (-1.28)		0.20 (1.73)	-0.37*** (-3.56)	-0.78*** (-4.42)	0.02 (0.20)	-0.06 (-0.54)	-0.13 (-1.19)	-0.13 (-1.31)	-0.19 (-0.57)	-0.16 (-1.99)
$\bar{I}_t$	-3.56 (-1.17)	4.99 (1.17)		6.22*** (3.31)	-2.34 (-0.70)	0.68 (0.23)	5.90* (2.48)	-1.30 (-0.45)	2.44 (0.85)	5.85 (1.86)	11.71 (0.60)	3.06 (2.04)
$\bar{P}_t$	0.27** (3.66)	0.56*** (4.10)		0.12** (2.84)	0.35*** (4.26)	0.47*** (3.42)	0.67*** (7.28)	0.43*** (4.77)	0.23*** (4.14)	0.56*** (6.83)	1.87** (2.94)	0.55 (3.55)
cons	12.79 (0.63)	-17.63 (-0.69)		-27.95* (-2.55)	-6.15 (-0.30)	-19.90 (-1.15)	-54.25*** (-4.08)	4.54 (0.22)	-17.16 (-1.06)	-0.85 (-0.05)	-16.98 (-0.17)	-14.35 (-2.42)
N	70	70	17	30	68	25	70	70	70	70	10	11

t statistics in parentheses: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6.6: Security incidents I_{it} and cost of non-farm activities P_{it} (labour price/diesel price)

	(BDS)	(BAL)	(BAM)	(DAY)	(FYB)	(GHO)	(HER)	(KAB)	(KAN)	(NAN)	(PIA)	MEAN GROUP
I_{it}												
I_{it-1}	-0.20 (-1.73)	-0.15 (-1.31)		0.06 (0.35)	0.09 (0.67)	-0.36 (-1.64)	0.26* (2.16)	0.14 (1.27)	-0.15 (-1.60)	-0.03 (-0.27)	-0.02 (-0.09)	-0.04 (-0.62)
I_{it-2}	-0.12 (-0.99)	0.07 (0.46)		-0.16 (-1.03)	0.69*** (5.53)	-0.34 (-1.60)	0.16 (1.43)	-0.02 (-0.19)	-0.12 (-1.32)	-0.03 (-0.24)	-0.02 (-0.10)	0.01 (0.13)
P_{it-1}	-0.25* (-2.15)	-0.13 (-0.42)	0.52* (2.47)	0.66 (1.46)	0.09 (0.48)	1.57** (3.17)	0.72 (1.39)	0.76 (1.24)	-2.24* (-2.21)	-0.73 (-1.21)	1.03 (0.82)	0.18 (0.58)
P_{it-2}	0.04 (0.36)	0.20 (0.73)	-0.10 (-0.49)	0.01 (0.04)	0.07 (0.44)	-0.07 (-0.13)	-0.53 (-1.13)	-0.33 (-0.68)	-0.94 (-1.14)	0.51 (1.17)	-0.20 (-0.05)	-0.12 (-1.05)
$\bar{I}_t$	0.17** (3.09)	0.83*** (4.69)	0.24 (1.06)	0.34** (2.89)	0.23* (2.33)	0.33 (1.62)	1.00*** (4.10)	0.86*** (5.22)	3.53*** (8.84)	1.33*** (5.66)	5.13** (2.82)	1.27 (2.64)
$\bar{P}_t$	0.07 (0.42)	0.00 (0.00)	0.31 (1.86)	-0.59* (-2.07)	-0.17 (-0.74)	0.25 (0.62)	-0.12 (-0.25)	-0.62 (-1.12)	2.64** (2.72)	0.81* (1.98)	-0.78 (-0.22)	0.16 (0.57)
cons	1.31* (2.30)	-0.68 (-0.51)	0.86 (0.62)	-0.91 (-1.12)	-0.42 (-0.52)	-6.58** (-3.25)	-0.78 (-0.54)	1.89 (1.24)	7.05* (2.54)	-3.27 (-1.75)	-9.97 (-0.22)	-1.04 (-0.78)
P_{it}												
I_{it-1}	0.02 (0.17)	-0.05 (-1.35)		0.00 (0.02)	-0.08 (-1.15)	-0.05 (-0.54)	0.05 (1.82)	0.01 (0.46)	-0.01 (-0.85)	-0.03 (-1.87)	-0.02 (-0.31)	-0.02 (-1.32)
I_{it-2}	0.02 (0.16)	-0.09 (-1.92)		-0.05 (-0.89)	-0.01 (-0.08)	-0.03 (-0.38)	-0.02 (-0.83)	0.02 (1.06)	-0.02* (-1.99)	0.03 (1.41)	0.06 (1.08)	-0.00 (-0.66)
P_{it-1}	0.25* (2.29)	0.33*** (3.38)		0.14 (0.96)	0.56*** (5.34)	0.51* (2.54)	0.47*** (4.15)	0.39*** (4.11)	0.25** (2.79)	0.52*** (5.17)	0.08 (0.20)	0.35 (6.61)
P_{it-2}	0.03 (0.22)	0.14 (1.71)		0.17 (1.39)	-0.11 (-1.16)	-0.12 (-0.58)	0.03 (0.29)	-0.26*** (-3.44)	-0.31*** (-4.14)	-0.15* (-2.04)	-0.97 (-0.85)	-0.15 (-1.50)
$\bar{I}_t$	-0.00 (-0.09)	-0.01 (-0.18)		-0.12* (-2.97)	0.20*** (3.58)	0.08 (0.97)	-0.04 (-0.69)	-0.01 (-0.23)	0.13*** (3.57)	-0.00 (-0.10)	0.61 (1.07)	0.08 (1.29)
$\bar{P}_t$	0.79*** (5.27)	0.77*** (7.04)		0.57*** (6.03)	0.89*** (7.20)	0.49** (3.01)	0.55*** (5.47)	0.90*** (10.35)	0.92*** (10.64)	0.39*** (5.67)	-0.36 (-0.32)	0.63 (5.08)
cons	0.05 (0.10)	-1.47*** (-3.52)		0.59* (2.13)	-1.81*** (-4.09)	0.10 (0.12)	-0.15 (-0.47)	-0.05 (-0.20)	0.83*** (3.33)	0.75* (2.43)	12.67 (0.90)	0.98 (0.74)
N	70	70	17	30	68	25	70	70	70	70	10	11

t statistics in parentheses: $^*\,p < 0.05$, $^{**}\,p < 0.01$, $^{***}\,p < 0.001$

Table 6.7: Security incidents $\mathbf{I}_{it}$ and opium price $\mathbf{P}_{it}$, Aggregate VAR

	Afghanistan $\bar{I}_t$
$\bar{\mathbf{I}}_t$	
$\bar{I}_{t-1}$	0.702***
	(5.70)
$\bar{I}_{t-2}$	0.111
	(0.91)
$\bar{P}_{t-1}$	-0.00676
	(-1.20)
$\bar{P}_{t-2}$	-0.00121
	(-0.23)
cons	1.516*
	(2.28)
$\bar{\mathbf{P}}_t$	
$\bar{I}_{t-1}$	-0.254
	(-0.10)
$\bar{I}_{t-2}$	-1.892
	(-0.75)
$\bar{P}_{t-1}$	0.641***
	(5.48)
$\bar{P}_{t-2}$	0.181
	(1.64)
cons	25.07
	(1.82)
N	68

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Chapter 7

Final Remarks

In the last seven years, the largest military operations worldwide have faced serious military and political reversals. The 2003 invasion of Iraq has resulted in a increasing conflict between Iraqi Sunni and Shi'a factions, while the continued erosion of the government stability in Afghanistan and the ground lost to the Taliban is casting new doubts about a possible NATO success. In Lebanon, the UN's recently upgraded mission, designed to disarm non-state groups, has not stopped Hezbollah from challenging the government in Beirut. In Sudan, the violence in Darfur continues while the UN struggles to find enough troops and helicopters and the ceasefire in the South is fragile. In the DRC, despite the presence of 18,000 blue helmets, the mission has been repeatedly overwhelmed by rebel forces[1], and the prospects for a negotiated settlement appear remote. Therefore it is not easy to arouse much support for military interventions, especially those undertaken by *ad-hoc* coalitions.

This is not to suggest that efforts of external actors to assist in war-to-peace transitions are doomed to failure. There are several cases of military forces that have intervened successfully. Mozambique has witnessed two decades of peace, steady economic growth and four multi-party elections. In Cambodia, the UN's transitional authority in the early 1990's helped to set it on a path of progress that has marked a sharp break with the country's bloody past. In East Timor the intervention of foreign troops restored order. Finally, in the absence of the British military intervention in Sierra Leone, the government would have been unable to neutralise the rebels. Foreign military intervention has an important place in helping war-torn countries to develop and sustain their own institutions. The very fact that the last 19 years have been marked internationally by a wide variety of external interventions in civil conflicts, leads to the need for greater clarity

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[1]The *Congres National pour la Defense du Peuple.*

regarding how peacekeeping operations, stabilisation missions and peacebuilding efforts need to be organised, resourced, directed and sustained, especially in their military and economic component. As such, military intervention remains one of the most promising areas in the literature on conflict, and is ripe for the application of economic tools. We point to a set of challenges - of a theoretical as well as practical nature - that merit more systematic attention from scholars and the international community attempting to assist countries emerging from civil wars.

The need to reconsider the timing of intervention and the effectiveness of peacekeeping

Chapters 2 and 3 show that most theories do not share Collier's view on the causes of civil conflicts. However, theoretical models can support the idea that external intervention may be necessary to resolve conflicts. Weak constitutions make it difficult for belligerents to make credible, binding commitments to each other in negotiations. External powers that are willing to enforce a settlement on all parties can be vital in breaking this security dilemma stalemate. We would agree with Collier that to be effective this external commitments need to be for at least a decade and guarantors have to be willing to sustain casualties and, if necessary, impose the peace.

Chapter 3 has largely considered strategies of reactive intervention. Nevertheless, preventative intervention should be also regarded as effective. Prevention aims to reduce the scale of conflicts by finding solutions at an early stage (e.g. by observing early warning signs). The causes of many societal breakdowns tend to be structural, thus they might be partly addressed in a preventative manner. Guarantees of stability for those weak states that have not already broken down in conflict is the easiest and most efficient external assistance to supply, and should give higher returns. A credible commitment of support by a number of states with well-equipped forces - and a proven record of success - would be necessary. In the long run, the "'Bottom Billion"' regimes should find stable democracy preferable to unstable autocracy.

Where conflict has already been triggered, peace operations are important, especially in the short-term. They can contribute to the reduction of regional violence; prevent unwelcome interventions by regional powers; and manage the refugee problem. Although some encouraging conditions could emerge in a post-conflict environment, neither the economic assistance, nor the political reform and the design of new democratic institutions alone, can keep or enforce the peace without an external assistance. Peacebuilding is a long and complex process, especially if

the conditions for self-sustainable peace are to be created. It works by addressing the deep-rooted, structural causes of violent conflict in a comprehensive manner. In this respect, the fact that the conflicts are profitable to some combatants may inhibit a peaceful settlement in the log-run.

Little is known about the best way to evaluate peacekeeping operations. When the evaluation is drawn from the mandate, what constitutes success will differ across operations because the political and operational environments vary. Missions fulfilling their operational mandate, and thus efficiently planned, supplied and executed, but unable to contribute to containing conflict should be reassessed. The ability of a mission to achieve its goals can be influenced by exogenous factors irrespective of its mandate. This, however, cannot justify the tendency to blame failure on exogenous factors beyond the operation's control rather than on the mission itself. When peacekeepers have significant chances to influence a political settlement, they have a collective responsibility for achieving success.

The importance of the national interests involved in peacekeeping

In the last few years the supply-side of peace operations has come under incredibly difficult strains and the surge of violence in many parts of the world, Africa in particular, saw many already overstretched operations, close to collapse on the ground. On the other side, conflicts in the Balkans and in Lebanon, have been quickly tackled with a large deployment of forces. As we have sought to show in Chapter 4, the moral imperative for peacekeeping may be universally accepted but a country decision to participate is also based on self-interest combined to the geo-strategic dimension and finally constrained by domestic and technical considerations. The very fact that humanitarian explanations are widely invoked as a justification for third party intervention has drawn attention to the "danger of abuse" (Bellamy, 2004). Humanitarian interventions cease to be an exception when they become the norm. UN Security Council resolutions themselves can be interpreted to the extent that the border between pre-emptive self-defence and aggression disappears.

Therefore, explaining the interests involved in peacekeeping is a crucial means of understanding the political dynamics of peacekeeping, and the actors involved in constructing peacekeeping as a global institution. There are many possible avenues of exploration: national bureaucracies, armies, political institutions, state motivations, governments, policies and regimes. All of these interact to produce sustained peacekeeping participation by specific countries. Although it is always difficult to sustain generalisation across cases, the question of peacekeeping contribution cannot be exhausted by accumulating more intensive case studies. Our

attempt to decompose peacekeeping contribution into its constituent elements of national interests, military capabilities, and so on, can generate valuable insights. One of the greatest challenges is to account for concerns over the risk of casualties, which can easily hamper the willingness to participate. In this respect, case studies can give some additional insights. The Somali debacle in 1992 and the failed US intervention had repercussions around the world. Henceforth, before offering any military support to the UN, the US had to be satisfied that a vital national interest was at stake; that the mission was clearly defined in scope, size and duration; that a working ceasefire among all local parties was fully evident; and that there was both political will behind the mission and an identifiable exit strategy (Meredith, 2006). However, it should be noted that the tolerance of casualties has not prevented the US from intervening in Afghanistan and Iraq to topple the ruling regimes. Further work along these boundaries, including additional data collection, would lead to more robust explanations.

The importance of the actors and their capabilities

Bringing peace by means of external power intervention is an ambitious and demanding commitment. Peacekeeping missions involve substantial costs and require logistics, intelligence, reliable and secure communication, engineering to provide infrastructures and a budget for local projects. For this reason, there is certainly a need for greater Western involvement in peace operations; only developed countries can provide specialised personnel, logistical support and vehicles (e.g. armoured personnel carrier, helicopters, tanks, etc..). However, while Western bilateral guarantees might work faster and better than multilateral agreements, the legitimacy of multilateral interventions is much greater. In this sense, the EU is one of the best candidate for providing such guarantees, partly because of its growing expertise in conflict management (five missions since 2003) and the creation of rapid reaction forces. EU military interventions, such as Operations Artemis and EUFOR Congo (both in the Democratic Republic of Congo), have led to conceptual innovations - such as the creation of battle groups of about 1,500 troops with appropriate supporting units. Over the past years the EU has largely avoided the institutional discontinuities that have spoiled UN and NATO performances. The EU has also the support staff to take on new missions without abandoning old missions. Similarly, EU missions can provide assistance on necessary reforms to the security forces and the police, consolidating the EU's contribution to post-conflict reconstruction by civilian means. Moreover, security concerns have been integrated into its trade policy, as testified by the Kimberley Process.

The quality of peacekeeping is important; the numbers also matter. In a disordered world of widespread threats, having a large presence is much more valuable, and in places like Sudan and Congo, numbers may matter more than fire-power. The same applies to naval units fighting pirates off the cost of Somalia in the EU operation Atlanta. As the old Stalinist maxim says, "'quantity has a quality all of its own"'. As we argue in Chapter 5, manpower in all-volunteer armies, as most Western ones are these days, is expensive. Pay has to be competitive. In the US, moreover, a big burden is the cost of health-care programmes for soldiers and veterans, and their families. One response to high manpower costs is to rely on technology. But that does not come cheap. Data shows that the price of high-technology combat units has been rising substantially faster than inflation, often faster than GDP.

An alternative response is to couple Western assistance with the intervention of local troops through regional organisations (e.g. the Economic Community of West African States). The traditional view of developing countries armed forces as only "'kleptocratic"' is short-sighted. A more nuanced approach is gaining wide influence and is leading to the high number of Security Sector Reform (SSR) processes (i.e. the training of local security forces) in war-torn regions. Research on SSR - largely endorsed by important development donors, including the DFID - suggests that a cost-effective management of the sector (e.g. lighter and more mobile armed forces and the elimination of organisational duplication), as well as more involvement in international peacekeeping missions are required. Southern armies are crucial because Western external forces cannot sustain a large commitment to prevent a relapse into armed confrontation, especially over the long-term. Our empirical results support this view and show an increasing reliance on Southern peacekeeping organisations; this might be necessary to back policy development related to the keeping of peace in the near future. Chapter 6 highlights the possible factors explaining the failure of the international stabilisation and state-building efforts in Afghanistan. The declining security situation has been compounded with an expansion of the illegal, opium-driven economy, the inability of the Afghan government to provide security and the local population's perception of the Afghan National Security Force (especially the Afghan National Police) as a threat. This lack of progress in governance and rule of law has undermined the public's trust in the Afghan government. Therefore, a serious security sector reform and investments in the legal economy are part of the state-building strategy in Afghanistan.

The importance of rebel groups dynamics in the demand for peacekeeping

There are large gaps in the quantitative literature on peacekeeping, particularly on the demand side. Future research should account more in details for the factors that influence the decision to establish peacekeeping missions in the first place. While Chapter 3 has taken the deployment of a peacekeeping mission for granted, Chapter 4 on the supply of troops has focused entirely on donor-level factors or attributes of the peacekeeping mission, such as the relative advantage in manpower, the humanitarian emergencies or the conflict intensity. These factors may not hold up when regional-level dynamics are considered. At the very least, there are factors (such as the perceived neutrality of the peacekeepers, the scope of the mission, and the level of support of local parties in the target state), that systematically influence whether or not a peacekeeping mission will be established in a civil conflict. Indeed, each operation, excluding peace enforcement missions, is dependent on the support of all belligerents. They have often a veto on the size, composition and time of deployment of the peace force in-theatre. This constraint must be overcome before the international community can begin building a peacekeeping force from voluntary national contributions. There is no systematic analysis of the conditions under which warring parties consent to an external military assistance; hence the demand-side is most overlooked by the already limited literature. The conditions for the demand of an international presence, such as past peace agreements, the belligerents relative strength and their leaderships, should help to reveal why peacekeepers are sent to maintain peace after some conflicts but not others.

Furthermore, the shorthand description of rebel groups as chaotic and disorganised reveals an undifferentiated approach to the problem of leadership and group organisation. To explain the role played by rebel movements in the demand for external assistance, we need to understand whether a sudden lack of leadership (e.g. assassination) can change the course of events. How important is the leadership on the group membership? How does a sudden lack of leadership influence the behaviour of the rebel groups? While the observation that the dynamics within the group determine the cessation of violence is not itself new, the portrayal of rebel movements has lacked adequate understanding of the logic and functions of leadership in such groups and their role in the generation of violence. My ongoing project on rebel leadership will be the first to explore the role of leadership among rebels in the context of what we can presume about its fate and its sudden disappearance on the continuation of political and social violence.

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Understanding the above issues is likely to be a useful starting point from which to consider the challenges of peacekeeping. The world is undergoing dramatic change. Rapidly diminishing resource supplies and future projections of massive climate- induced human displacement might well make more regions vulnerable to conflict tomorrow. There is a need to conduct research that is strategic in its potential to improve human security. The overarching question that should guide the research on conflict is: How can our knowledge on this topic be applied to prevent conflict tomorrow? By applying the economics way of thinking to contemporary conflicts, we believe that the gap between what works for academics and what works for policy-makers and civil society can be certainly reduced.

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