

# Journal of Peace Research

<http://jpr.sagepub.com/>

---

## Supplying peace: Participation in and troop contribution to peacekeeping missions

Vincenzo Bove and Leandro Elia  
*Journal of Peace Research* 2011 48: 699  
DOI: 10.1177/0022343311418265

The online version of this article can be found at:  
<http://jpr.sagepub.com/content/48/6/699>

---

Published by:



<http://www.sagepublications.com>

On behalf of:

Peace Research Institute Oslo



[Journal of Peace Research Replication Data](#)

**Additional services and information for *Journal of Peace Research* can be found at:**

**Email Alerts:** <http://jpr.sagepub.com/cgi/alerts>

**Subscriptions:** <http://jpr.sagepub.com/subscriptions>

**Reprints:** <http://www.sagepub.com/journalsReprints.nav>

**Permissions:** <http://www.sagepub.com/journalsPermissions.nav>

>> [Version of Record](#) - Nov 29, 2011

[What is This?](#)

# Supplying peace: Participation in and troop contribution to peacekeeping missions

**Vincenzo Bove**

*Department of Government, University of Essex*

**Leandro Elia**

*Department of Economics and Statistics, University of Calabria*

Journal of Peace Research

48(6) 699–714

© The Author(s) 2011

Reprints and permission:

sagepub.co.uk/journalsPermissions.nav

DOI: 10.1177/0022343311418265

jpr.sagepub.com



## Abstract

We explore the supply side of peacekeeping – the determinants of a country’s voluntary contributions to peacekeeping operations. We focus on troop contribution and examine a large set of operations, from UN-led missions to operations led by NATO, the African Union, the European Union, and ad hoc coalitions. We rely on a theoretical model of the private provision of public goods and a dataset on troop contribution across 102 states and 45 operations from 1999 to 2009 to explain both 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 personnel 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. We show that at the domestic level, contributions are driven by the comparative advantage in manpower – or the relative value of labor – and constrained by the tolerance of casualties and the sustainability of multiple and concurrent missions. At the international level, the most robust explanations of when states choose to intervene are the level of threat to global and regional stability, the proximity to the conflict area, and the number of displaced people. In particular, security and humanitarian concerns trigger nation-specific responses. Our empirical findings provide further evidence of the centrality of country-specific gains in explaining the participation in peacekeeping. However, contributor-specific benefits play the same role in UN and non-UN peacekeeping missions, in contrast with previous empirical studies on the financial burden-sharing.

## Keywords

panel data, peacekeeping, public good, voluntary contributions

## Introduction

In this article we explore the supply side of peacekeeping, the domestic and international determinants of a country’s contributions to peacekeeping operations from 1999 to 2009. There are three dimensions to peacekeeping: demand, the situation that allows for foreign

military intervention; supply, the factors determining voluntary contributions to peace operations and thus the willingness to provide that intervention and the constraints faced in meeting the demand; and the outcome of the operation, which is determined by this interaction.<sup>1</sup> The high demand for multilateral military forces in Africa and the Middle East ensures that the supply of uniformed personnel is an increasing challenge for the international community. Yet, there is only a modest understanding of why nations with heterogeneous economies and

<sup>1</sup> Gaibullov, Sandler & Shimizu (2009) refer to what we call the supply of peacekeeping, payments for peacekeeping missions, as the demand for peacekeeping (i.e. how much the contributing governments pay for a service they demand, peacekeeping). From the perspective of the countries in conflict we think that the supply of peacekeeping terminology is more appropriate

**Corresponding author:**

vbove@essex.ac.uk

institutions agree to dispatch their troops to remote conflict areas.

Peacekeeping is the most common type of action by armed forces today. It is a purposeful dispatch of national troops into another sovereign country and can be identified as a subset of military intervention (i.e. the movement of regular troops or forces of one country inside another, in the context of some political issue or dispute [Pickering & Kisangani, 2009]). Peacekeeping was defined 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'. Therefore, it can be conceptualized as a military intervention designed to maintain or restore peace. As Victor (2010) points out, while peacekeeping is usually implemented when a ceasefire has been established and peacekeepers rarely bring heavy armaments, recent cases have seen these forces engage in active defense to accomplish their mandate (e.g. Bosnia and Somalia). Moreover, in examining the quantitative evidence on peacekeeping, we encountered methodological difficulties in determining which third-party interventions should be counted as peacekeeping. The operational criteria we use (i.e. by SIPRI) state that the deployment is authorized by the UN with the stated intention (a) to serve as an instrument to facilitate the implementation of peace agreements already in place, (b) to support a peace process, or (c) to assist conflict prevention and/or peacebuilding efforts (see Bellamy, Williams & Griffin, 2010). Therefore, there are features ascribable to peacekeeping (e.g. the intention to contribute to the implementation of a peace process) which make it distinct from other forms of third-party intervention. Thus, we depart from studies analyzing military interventions by external powers and excluding multilateral interventions (e.g. Carment & James, 1995; Regan, 1998). We consider multilateral interventions under the auspices of the UN. Since peacekeeping generates public benefits, we develop a theoretical model based on the private provision of public good. We explain peacekeeping contributions by country-specific benefits accrued by participation and by a number of pure public benefits. Indeed, containing the regional violence generates benefits spillover to non-participants. Since this provision of security is costly, states have an incentive to free-ride on the troop contributions of others. Our theoretical framework identifies the possible private and public gains derived from peacekeeping, the potential costs associated with the participation, and how the interaction between marginal costs and benefits may lead to

an under-provision of troops. Empirically, we single out only those interventions that conform to our operational criteria, although in some cases the stated goal may be just rhetoric and may not reflect the real motivations of the intervener.

Other quantitative studies analyze the financial burden-sharing of peacekeeping (e.g. Khanna, Sandler & Shimizu, 1999; Shimizu & Sandler, 2002; Gaibulloev, Sandler & Shimizu, 2009). Nevertheless, financial contributions do not mirror personnel contributions. The top ten 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 operations in the same period.<sup>2</sup> Furthermore, personnel contributions serve as better indicators of state objectives for a number of reasons.

Firstly, conflict characteristics influence the likelihood and size of intervention. The risk of casualties, for example, is crucial and countries are reluctant to provide troops that might be placed at risk. Secondly, donors' personnel contribution is subject to their military capacity (e.g. force size, concurrent commitments). Taken together, the capability to provide troops – sometimes configured to engage in combat operations – and the willingness to pay the human costs involve different decision criteria. Thirdly, the quality of the troops selected has an impact on the outcome of the operation, and indiscipline among peacekeeping troops has also been a cause of concern.<sup>3</sup> Finally, contributors can choose whether to deploy troops in particular conflict areas, and they have more control over the use of their national contingents than their financial contributions (Lebovic, 2004). Therefore, the procedure for staffing an operation follows more complex decisionmaking processes. We believe that personnel contributions are better indicators of a country's motivations and constraints.

Two quantitative studies are most closely related to ours. 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' contributions to peacekeeping between 1989 and 2001. He suggests that poorer states, with lower state legitimacy and lower political repression, are more likely

<sup>2</sup> See the UN Department of Peacekeeping Operations, <http://www.un.org/en/peacekeeping/>.

<sup>3</sup> ECOMOG troops in Liberia were heavily involved in looting, arms trading, and contraband. Senior officers supplied factions with weapons in return for looted goods (Meredith, 2006).

to participate in regional peacekeeping. We include all UN and non-UN operations and a larger number of countries (i.e. 102) from 1999 to 2009. Many countries operate through their regional organizations, from multi-regional organizations such as the African Union (AU) to sub-regional organizations such as the Commonwealth of Independent States (CIS). We compare UN peacekeeping against other regional organizations.

A second main difference is our attempt to control for international-level and domestic-level factors. Our article is broader in scope and addresses a different set of hypotheses, applied to several categories of operations, although it retains some of the variables used by the above-mentioned studies, notably the military capacities and the relative wealth of donor countries. We refrain from using some interesting control variables, such as regime type, where little or no variations would be found across a homogeneous group of countries (e.g. NATO, EU, and CIS).

We divide the intervention dilemma into two problems: (i) a country's decision to participate (participation); and (ii) what determines the number of personnel a country supplies (troop contribution). Drawing on the theoretical model and a number of qualitative arguments and quantitative studies, we formulate seven hypotheses. This is followed by a presentation of the empirical method used. Next, we present a panel analysis of countries' personnel contributions to peace operations in the period 1999–2009. Finally, we discuss the inferences drawn from the empirical investigation. A discussion of the dataset, descriptive statistics, and a summary of the results are included in the web appendix.

## Theoretical model

We develop a theoretical model to identify how domestic and international forces shape a country's decision to participate and determine the size of its contribution, should it decide to intervene. If the state is considered to be a rational actor maximizing 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. For the first problem, we adapt Regan (1998) to describe peacekeeping missions, rather than military interventions broadly conceptualized. Next, we expand and modify his framework to allow for the size of a country's participation and to derive the condition for efficiency in terms of its 'troops commitment'.

### 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.  $EU_i^N$  can be expressed as:

$$EU_i^N = p[U_i^p] + (1 - p)[U_i^c] \quad (1)$$

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

Peacekeeping is not a public good but a hybrid good that possesses some features of both public and private goods. Peace operations produce purely public benefits and some excludable and rival contributor-specific benefits. It 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 (Cornes & Sandler, 1996). Thus, peacekeeping yields *joint products*; some of these are purely public to the international community, some are impurely public to a subgroup of countries, and some are country-specific to the participants (Shimizu & Sandler, 2002).

For the reasons above, a nation's expected utility for intervening  $EU_i^I$  is given by:

$$EU_i^I = q[U_i^s] + (1 - q)[U_i^f] - \sum C_i^I \quad (2)$$

where  $q$  is the probability of a successful intervention with nation  $i$ 's 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 the intervention.

The net benefit of intervention is given by

$$EU_i^I - EU_i^N = q[U_i^s] + (1 - q)[U_i^f] - \sum C_i^I - p[U_i^p] - (1 - p)[U_i^c]. \quad (3)$$

When  $EU_i^I - EU_i^N > 0$  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. 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 their global image more highly. Some countries derive utility from characteristics of peacekeeping rather than peacekeeping itself. Indeed, the model

highlights two different decisionmaking processes when different groups of countries are involved: those sitting on the UN Security Council, for example, and Third World states. The former group authorizes the operations, pays the financial costs, and most likely derives utility from the outcome of the intervention. For those countries  $U_i^s \gg U_i^f$  and  $U_i^p \gg U_i^c$ , that is, the utility from peace strictly dominates the utility from continued conflict, regardless of their participation. For the latter group, donating troops and receiving some benefits in return is more valuable than a self-settlement without their involvement, because the country-specific benefits of intervention (e.g. UN compensation) are higher than the global public characteristics (e.g. countering global instability). Participating is a success per se, that is,  $U_i^s \approx U_i^f \gg U_i^p \approx U_i^c$ .

### Troop contribution

We expand the model above and consider 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  $n - i$  nations,  $T_{n-i}$ . The countries initially have some positive 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  $t_i$ , it will have  $s_i = N_i - t_i$  of 'private security consumption' (e.g. home defense). In case of multiple peacekeeping operations,  $s_i$  captures also the troops already committed to other operations. Each unit of peacekeeping generates two joint products, a private benefit  $\alpha t_i$  and a global purely public characteristic  $\beta t_i$ .  $\alpha$  and  $\beta$  are positive parameters and account for the coexistence of altruistic motivations ( $\beta$ ) with the egoistic considerations ( $\alpha$ ) of intervening states.

To simplify, let us assume that in Equation 3 the utilities to country  $i$  from continued war, regardless of its intervention, are 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  $i$ 's participation and the coalition's relative investment in fighting. We consider a unique probability  $\sigma$  as a success ratio, given by

$$\sigma(t_i) = \frac{T_{n-i} + t_i}{M + T_{n-i} + t_i} \quad (4)$$

where the intervener fighting effort is measured by the scale of its deployment and  $M$  is the belligerents' strength

and therefore their resistance against 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 and 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, Sandler & Shimizu's (1999) model and following Equation 3, country  $i$ 's expected utility function can be written as:

$$EU_i = \sigma(t_i) U_i[\alpha t_i, \beta(t_i + T_{n-i}), s_i, Q] - C_i(t_i). \quad (5)$$

$Q$  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. The cost function is continuous, increasing in its argument  $t_i$ , differentiable and convex because each additional unit of 'boots on the ground' requires increasingly higher costs. Accounting for the cost of a peace mission is complicated. Besides the military costs, the most important is the loss of life of peacekeepers. 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

$$C_i(t_i) = VSL[WTP/R] t_i \quad (6)$$

where  $VSL$  is the unit cost of a soldier, that is, the value of life. Public choices about safety in a society require estimates of the willingness of people to trade off wealth for a reduction in the probability of death. The literature on the topic assumes that  $VSL$  is increasing in the individual's willingness to pay ( $WTP$ ) to reduce the risk of death – or in his willingness to accept a certain amount to see his life expectancy reduced – and decreasing in the probability of death  $R$  (Bellavance, Dionne & Lebeau, 2009). In our context,  $R$  is the risk of a mission.

Defining  $x$  as the nation-specific output  $\alpha t_i$  and  $y$  as the global public characteristics  $\beta(t_i)$ , the first order condition for  $t_i$  can be found by maximizing (5) and can be written as

$$\begin{aligned} \sigma'(t_i) U_i + \sigma(t_i) \left[ \alpha \frac{\partial U_i}{\partial x} + \beta \frac{\partial U_i}{\partial y} \right] \\ = \sigma(t_i) \frac{\partial U_i}{\partial s_i} + VSL[WTP/R]. \end{aligned} \quad (7)$$

The condition for efficiency is that the marginal benefit of providing peacekeeping, on the left-hand side of Equation 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 fewer soldiers for national duties multiplied by the probability of success and the expected marginal cost of casualties.

To summarize, we draw a number of intuitions from the model. A rise in country  $i$ 's contribution increases the success ratio, and therefore the probability of a successful intervention (Equation 4). While a traditional peacekeeping force in the midst of active and heavy hostilities  $M$  may even be limited in its ability to defend itself, high values of  $t_i$  result in higher odds of establishing peace. But a rise in  $t_i$  also directly increases the amount of private benefits deriving from the participation, such as the UN reimbursement ( $\alpha t_i$  in Equation 5), and the quantity of public goods generated by the operation, such as the level of global stability ( $\beta t_i$  in Equation 5). However, the higher the unit cost of a soldier and the expected marginal costs of casualties (Equation 6), the lower will be the marginal utility for participating (Equation 7). Moreover, since countries face a troops constraint when choosing between a peacekeeping mission  $t_i$  and other activities  $s_j$ , including alternative peace operations, they may not be willing to bear the additional burden of a new deployment, when they have already committed forces elsewhere ( $\frac{\partial U_i}{\partial s_j}$  is negative). Overall, it is not obvious what the net effect is of an increase in  $t_i$  on the marginal utility (Equation 7). This is something that has to be determined from the data. Finally, there are a number of exogenous factors, like the level of threat posed by the conflict, captured by the parameter  $Q$  in Equation 5, which shape nation-specific responses.

### Why states choose to intervene: Testable hypothesis

We rely on the intuitions of the theoretical model and on a number of qualitative and quantitative studies to categorize peacekeeping motivations. 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. We identify seven explanations of peacekeeping.

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

Geographic proximity to the country in conflict increases the utility a neighboring 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, national security is endangered by the risk of geographic contagion (Gleditsch, 2007). 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 those neighboring countries that are particularly at risk and are keen to consolidate neighborhood stability. A conflict may upset 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 relations 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). To test this hypothesis, we use a dummy that takes the value 1 if the donor country is in the same region as the recipient country. We integrate this measure with the distance between the donor and host states to offer an alternative and more precise indication of the proximity.

*Hypothesis 2:* The mercenarization of UN forces: the higher the comparative advantage in manpower – measured by the number of personnel in the armed forces and their remuneration – the higher the likelihood and size of intervention will be.

Equation 3 highlights the advantages that some countries derive from particular characteristics of peacekeeping, that is, a number of benefits accruing to the donors. And money is perhaps the motivation more often put forward for developing countries' contributing to peacekeeping. There is some doubt about UN inclination to subsidize the troops of developing countries during peace missions (i.e. the UN pays them for borrowing their troops). The 'mercenarization' of UN forces has been denounced by several practitioners and scholars. Kinloch-Pichat (2004) claims that the defects ascribed to ad-hoc national contingents are those 'historically attributed to mercenary forces: 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, to influence the providers of troops. The cost of UN peacekeeping missions includes compensation for troop contribution at a rate of US\$1,028 per month per troop member, the repayment for use of the provider's own equipment and clothing (US\$68) and personal weaponry (US\$5), supplementary pay for specialists (US\$303), and disability costs.<sup>4</sup> Even without considering the exchange rate, for countries deploying large peacekeeping forces the earning is a significant proportion of the defense budget. Moreover, many intervener countries are capital-poor and labor-rich, and this capital-poverty means having large, non-technologically sophisticated armies.

As our model states, donor countries face troop constraints. Consequently, the number in the armed forces of a country and their 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. We also use additional covariates related to the labor market scenario, such as the unemployment rate and the tertiary enrollment rate, to capture the relative value of labor.

*Hypothesis 3:* Tolerance of casualties: the higher the value placed on soldiers' lives in donor countries and the higher the level of risk of an ongoing operation, the lower the likelihood and size of participation will be.

Equations 6 and 7 underline 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 casualties is often an obstacle, and it is deemed to be one of the causes behind the unexpected US withdrawal from Somalia in 1994. The political system of wealthier countries has a greater sensitivity to the higher value of life associated with economic growth. Therefore, intervening countries have to demonstrate to their domestic populations that their military efforts are worthwhile and at a tolerable cost (Freedman, 2007). The value placed on soldiers lives (VSL) is not directly observable, so an indirect method is required for measurement. VSLs may vary between countries because of differences in cultural norms or in income levels (Miller, 2000). The sensitivity of VSL to income within various

countries has been documented in several studies, all suggesting that VLS varies elastically with income, with an income elasticity between 0.4 and 0.7 (e.g. Viscusi & Aldy, 2003; Kniesner, Viscusi & Ziliak, 2010). In particular, a recent study by Kniesner, Viscusi & Ziliak (2010) finds an income elasticity of VSL above 1. Thus, we use GDP per capita to proxy for the value of life. The level of risk  $R$  is another important factor affecting the decision.  $R$  increases the marginal costs of an intervention (Equations 6 and 7). We consider the number of deaths among the peacekeepers as a signal of the level of risk of any operation. High fatality rates among peacekeepers inform the intervener about the cost-tolerance of combatants.

*Hypothesis 4:* Level of threat: given an ongoing conflict, the greater the security threats posed, the higher the likelihood and size of participation will be.

Hypothesis 1 captures the threat of the conflict to a potential donor. However, a measure of proximity is not time-varying and does not consider the level of threat posed by an ongoing conflict. Moreover, peacekeepers do not just deploy within their region of origin or its immediate neighborhood.<sup>5</sup> When a conflict is regarded as a threat to the regional and sometimes global stability, security concerns will trigger nation-specific responses (see the parameter  $Q$  in Equation 5). A public that feels insecure and has a perception of international security threats is likely to support demanding international operations, like the NATO intervention in the Balkans. The need to keep energy supplies flowing and international waterways accessible during regional crises may also justify intervention, such as the EU maritime operation off the coast of Somalia.

In presence of a clear threat, 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 conflict intensity as a proxy for the level of threat that a conflict poses.<sup>6</sup>

<sup>5</sup> We have EU missions in Africa, East African troops operating in West Africa (and vice versa), and ad-hoc coalitions often made up by former colonial powers (e.g. France in Côte d'Ivoire).

<sup>6</sup> The conflict intensity measures the perceived global level of threat rather than the risk of casualties. To reinforce this assumption, we calculated the correlation between conflict intensity and deaths per year among peacekeepers. The Spearman's rank correlation coefficients are the following: UN missions  $\rho = -0.04$ ; non-UN missions  $\rho = 0.24$ ; NATO + EU missions  $\rho = 0.13$ .

<sup>4</sup> See, for example, [www.un.org/en/peacekeeping/](http://www.un.org/en/peacekeeping/).

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

Existing humanitarian norms at the international system level influence 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 to 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 to respond. Shaw (1996) argues that the 'CNN effect' has completely transformed foreign policymaking 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. 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:* Troops constraint: the greater the number of multiple missions, the lower the likelihood and size of participation in new operations.

Our theoretical model says that countries face a 'troops constraint' when choosing among peacekeeping missions,  $t_i$ , and other military activities,  $s_i$ . Given a number of operations being sustained at any one time by country  $i$ , we should expect a decreasing ability to join additional operations when this number increases. 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. 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. We use the number of operations conducted at the same time as an indicator of the sustainability of multiple operations.

*Hypothesis 7:* Ambition: (1) UN Security Council candidates are more likely to provide troops in UN operations; (2) military expenditure determines the likelihood and size of participation.

The relation between the intervener's and the host country's standing in the international distribution of power can also explain the reasons for intervention (Bellamy, Williams & Griffin, 2010). Military contribution is linked with the level of political and military ambition that is a consequence of the international standing of a state. Ambition is a measure of the desire to establish and assert a role in international security matters (Zartman & Touval, 2007).

The combined forces of the permanent five (P5) members of the Security Council constitute a fair portion of peacekeeping troops. P5 participation in various peace operations may serve to legitimize their permanent seat on the Security Council.

There are also 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 and for a permanent seat on the Security Council (Daniel, Taft & Wiharta, 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 military expenditure as a percentage of GDP and the rate of militarization.

## Econometric models

We analyze the factors determining (i) a country's decision to participate (participation) and (ii) the number of soldiers deployed in any mission (contribution). We use static discrete choice models to analyze 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  $i = 1, 2, \dots, N$  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  $x_{it}$ . The choice poses some issues. If we considered each operation as '192 UN members' intervention potential', as in UN Charter, Chapter VI and VII, the approach would be methodologically wrong. Many countries, such as Iran, Israel, and North Korea, have a longstanding tradition of non-intervention in peacekeeping. A few, such as Somalia or Iraq, are considered failed states and therefore incapable of projecting national



troops abroad. Others have no military resources; approximately 24 countries have either no military forces or no standing army. Therefore, we consider as a potential intervener any state that participated in at least one peace operation with at least one soldier in the period considered. We exclude military observers, civilian police, and civilian staff. In the participation model, the dependent variable is dichotomous and takes the value 1 in the case of participation and 0 in the case of non-contribution. The observational unit is country-operation-year.

Unfortunately, we are only able to estimate such models for UN missions, since we cannot 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 organizations is principally driven by a sense of identity towards these organizations and, therefore, is less influenced by the factors explained by our hypotheses. A country decision to participate is modeled according to the following reduced-form model for participation:

$$Pr[y_{it} = 1 | x_{it}, \alpha_i] = \Phi(x'_{it}\beta + \alpha_i) \quad i = 1, \dots, N; t = 1, \dots, T \quad (8)$$

where  $x$  is a vector of strictly exogenous observed explanatory variables and  $\beta$  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  $\alpha_i$  to account for individual-specific unobserved characteristics.  $\Phi$  is the cumulative distribution function of a standard normal variate.

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

$$Pr[y_{it} = 1 | x_{it}, \alpha_i] = \Phi(x'_{it}\beta + \bar{x}'_i a + \varepsilon_i) \quad i = 1, \dots, N; t = 1, \dots, T. \quad (9)$$

To check for robustness of the random effect probit, we run a random effect complementary log-log specification, which takes 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.

#### Modeling 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.

The model is specified as:

$$y_{it} = x'_{it}\beta + f_i + \varepsilon_{it} \quad i = 1, \dots, N; t = 1, \dots, T \quad (10)$$

where  $f_i$  is the time invariant country-specific effects and  $\varepsilon_{it}$  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 10). The following model is then estimated

$$\Delta y_{it} = \Delta x'_{it}\beta + \Delta \varepsilon_{it} \quad i = 1, \dots, N; t = 2, \dots, T. \quad (11)$$

The within model is obtained by subtraction of the time-averaged model from the original model (10). Then:

$$y_{it} - \bar{y}_i = (x_{it} - \bar{x}_i)' \beta + (\varepsilon_{it} - \bar{\varepsilon}_i) \quad i = 1, \dots, N; t = 1, \dots, T. \quad (12)$$

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

Modeling contribution poses a sample selection problem. Since the decision to intervene precedes the decision about the number of troops to dispatch, the sample is apparently non-randomly selected and estimates might be biased (Heckman, 1979). Furthermore, an additional problem would be presented if the distribution of troops contribution were to take non-negative values.

A selection model a la Heckman would potentially be a solution to the first problem. It relies on exclusion restriction assumptions (i.e. at least one observable covariate explains the problem of participation but not the troop contribution). Exclusion restrictions are difficult to find unless we rely on some exogenous variation, for example policy changes, which randomize the selection process. The identification can also be achieved through the non-linearity of the inverse Mills ratio, as in Lebovic (2004). However such identification results in substantial collinearity between the predicted inverse Mills ratio

term and the remaining covariates in the outcome equation, leading to large standard errors. Therefore, we also refrain from using this last approach.

A second problem is the apparently censored distribution of the troops contribution. A censored regression model might solve the problem and take care of the censoring by postulating a latent distribution of troops contribution for non-participants. However, this is puzzling for three reasons: firstly, troops contribution is zero for both countries incapable of projecting troops abroad and/or having no military resources and countries that choose not to participate. This is not a statistical artifact. 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 are truly censored.<sup>7</sup> Furthermore, a large burden of computer programming and a set of strong distributional assumptions would be necessary for combining a panel structure with a censored regression model (see Hsiao, 2007). Some scholars propose the use of non-parametric estimators for correcting selection bias (e.g. 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 troop 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) may be well suited for this case. However, the GMM estimator has serious limitations concerning the validity of the internal instruments (Bun & Windmeijer, 2010). A large collection of instruments, even if individually valid, can be collectively invalid in finite samples because they overfit endogenous variables. They also weaken the Hansen test of over-identifying restrictions, which is commonly relied upon to check instrument validity. Thus, rather than relying on some specific procedure which is far from universally accepted, we use more customary econometric tools. This choice might also have its counterpart if the linear panel model is not

the right one. A more extensive investigation is needed and we leave it for future research.

## Empirical results

Table I provides estimates for alternative versions of the participation problem and reports estimates for the linear probability model, probit, and complementary log-log models, respectively. As a robustness check, we run the regressions including time dummies, alternative measures of distance, and covariates related to the labor market scenario. The results apply to UN operations only for the aforementioned reasons. The linear probability model would allow us to identify the marginal effects of our covariates on the probability of intervention. However, we do not undertake such analysis since our model is far from being saturated and the signs of the coefficients, more than their size, are the most reliable results to comment on.

Tables II, III, and IV provide the first-difference and the within estimates for alternative versions of the troop contribution equation. In Table II we report the factors affecting the size of contribution in UN missions; in Table III we present panel estimates of non-UN troop contribution; and Table IV reports the estimates of the NATO-led and EU missions alone.

### Participation

Table I confirms most of 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, emphasizing that contributor geographic propinquity to the conflict region bolsters the peacekeeping contribution to that region. The negative sign and significance of the distance between a donor country and a recipient region substantiate the finding. This is consistent with a recent study on peacekeeping financial burden-sharing by Gaibulloev, Sandler & Shimizu (2009). Owing to their time-invariant nature, these covariates are only used in the random effect probit and log-log.

Hypothesis 2 expectations are also supported by empirical findings. The negative sign of the real GDP per capita and the tertiary enrollment ratio and the positive sign of the number in armed forces confirm the 'mercenary' hypothesis. Poorer countries are more likely to join a UN operation, as found by Victor (2010), although the number in armed forces is not statistically significant. The tertiary enrollment ratio captures the discrepancies in higher education opportunities between

<sup>7</sup> More arguments against the misuse of a censored regression are developed in chapter 3 of Angrist & Pischke (2009).

Table I. Linear probability model, random effect probit and complementary log-log for participation probability, UN missions

	<i>Linear probability model</i>			<i>RE probit</i> <sup>†</sup>			<i>RE cloglog</i> <sup>†</sup>		
	<i>i</i>	<i>ii</i>	<i>iii</i>	<i>iv</i>	<i>v</i>	<i>vi</i>	<i>vii</i>	<i>viii</i>	<i>ix</i>
Deaths per year	0.0002*** (0.0001)	0.0000 (0.0001)	0.0001 (0.0001)	0.0023** (0.0012)	0.0017 (0.0040)	0.0045 (0.0046)	0.0025* (0.0014)	0.0001 (0.0045)	0.0039 (0.0052)
Conflict intensity	0.0295*** (0.0060)	0.0326*** (0.0083)	0.0463*** (0.0106)	0.5613*** (0.0687)	0.1781 (0.1518)	0.1566 (0.2041)	0.5993*** (0.0844)	0.2197 (0.1902)	0.1719 (0.2535)
Displaced people/1×10 <sup>6</sup>	0.0479*** (0.0175)	0.0579*** (0.0220)	0.0599*** (0.0227)	0.6218*** (0.1234)	0.9306*** (0.2577)	0.7184** (0.3043)	0.7460*** (0.1468)	1.2508*** (0.3148)	1.0238*** (0.3746)
No. of concurrent PKOs	0.0766*** (0.0103)	0.0717*** (0.0142)	0.0728*** (0.0146)	1.1401*** (0.0930)	1.3453*** (0.2289)	1.7247*** (0.2550)	1.4142*** (0.1212)	1.5973*** (0.2855)	1.7455*** (0.3137)
No. of concurrent PKOs <sup>2</sup>	-0.0053*** (0.0016)	-0.0052** (0.0021)	-0.0043** (0.0021)	-0.0953*** (0.0163)	-0.1335*** (0.0420)	-0.1861*** (0.0480)	-0.1243*** (0.0199)	-0.1621*** (0.0497)	-0.1901*** (0.0548)
Real per capita GDP/1000	-0.0012 (0.0020)	-0.0048* (0.0027)	-0.0033 (0.0030)	-0.0227** (0.0102)	-0.1328*** (0.0245)	-0.0692* (0.0387)	-0.0279** (0.0136)	-0.1507*** (0.0301)	-0.0938* (0.0488)
Military Expenditure/GDP	-0.0038 (0.0087)	-0.0053 (0.0139)	-0.0052 (0.0140)	-0.1065 (0.0650)	-0.2881*** (0.0994)	-0.3661*** (0.1049)	-0.1367* (0.0732)	-0.3592*** (0.1350)	-0.4157*** (0.1417)
No. in armed forces/1000	-0.0022 (0.0192)	-0.0129 (0.0154)	0.0029 (0.0153)	-0.2394 (0.3687)	-0.1067 (0.7432)	0.1197 (0.8012)	-0.2537 (0.4452)	-0.1121 (0.9508)	0.0935 (0.9852)
UNSC candidate	0.0020 (0.0119)	0.0118 (0.0155)	0.0136 (0.0152)	0.0337 (0.1958)	0.4006 (0.3588)	0.6133 (0.3871)	0.1349 (0.2286)	0.4962 (0.4225)	0.6856 (0.4458)
Militarization rate		0.4039 (1.0213)	-0.3822 (1.0311)		-61.7106* (33.2707)	-80.5580** (36.0528)		-66.7038* (39.2427)	-76.9078* (42.2952)
Unemployment rate		0.0023 (0.0025)	0.0029 (0.0029)		0.0566 (0.0591)	-0.0327 (0.0689)		0.0453 (0.0689)	-0.0366 (0.0810)
Tertiary enrollment ratio		0.0005 (0.0013)	0.0015 (0.0015)		-0.0645*** (0.0241)	-0.0677** (0.0275)		-0.0854*** (0.0305)	-0.0820** (0.0347)
Same area				2.7707*** (0.4535)			3.2098*** (0.5270)		
log of distance					-1.0565 (0.6633)	-0.9977*** (0.3787)		-1.1964* (0.6822)	-1.2101 (0.8099)
constant	0.0078 (0.0360)	0.0122 (0.0902)	-0.0899 (0.0990)	-11.7703*** (0.8230)	-4.8392 (5.3666)	-8.5709*** (3.1498)	-14.3365*** (1.2638)	-5.9443 (5.5323)	-6.7458 (6.7693)
lnσ <sub>ε</sub> <sup>2</sup>				3.0649*** (0.1117)	3.3504*** (0.1835)	4.3133*** (0.1172)	3.4175*** (0.1331)	3.6750*** (0.1661)	3.7482*** (0.1803)
Time dummies	no	no	yes	no	no	yes	no	no	yes
<i>N</i>	9683	4763	4763	9683	2829	2829	9683	2829	2829
log-likelihood				-1720.0292	-523.3203	-519.1602	-1743.1262	-525.6578	-516.9730

Robust standard errors in parentheses. \**p* < 0.10, \*\**p* < 0.05, \*\*\**p* < 0.01. † Correlation between ε<sub>*i*</sub> and the observed characteristics is allowed by assuming a relationship of the form: ε<sub>*i*</sub> =  $\bar{x}a + \alpha_i$ , where α<sub>*i*</sub> : iidN(0, σ<sub>α</sub><sup>2</sup>).

Table II. Panel estimation of troop contribution, UN missions

	<i>Within</i>			<i>First difference</i>		
	<i>i</i>	<i>ii</i>	<i>iii</i>	<i>iv</i>	<i>v</i>	<i>vi</i>
Deaths per year	0.0044*** (0.0014)	0.0041** (0.0018)	0.0036* (0.0018)	0.0040*** (0.0015)	0.0035** (0.0017)	0.0044** (0.0018)
Conflict intensity	0.2037*** (0.0704)	0.1298 (0.0861)	0.1824* (0.1074)	0.0717 (0.0454)	0.1439** (0.0687)	0.1722* (0.0877)
Displaced people/1 × 10 <sup>6</sup>	-0.4427*** (0.1565)	-0.2445* (0.1432)	-0.2093 (0.1430)	0.1303* (0.0782)	0.1564 (0.1226)	0.2287* (0.1330)
No. of concurrent PKOs	-0.0353 (0.0481)	0.0435 (0.0688)	0.0693 (0.0678)	-0.0405 (0.0332)	0.0571 (0.0460)	0.0547 (0.0515)
Real per capita GDP/1000	-0.0341** (0.0172)	-0.0412** (0.0187)	-0.0609** (0.0272)	-0.0285** (0.0131)	-0.0493** (0.0233)	-0.0673** (0.0308)
Military Expenditure/GDP	-0.0056 (0.0414)	0.0522 (0.0439)	0.0401 (0.0476)	0.0216 (0.0228)	-0.0018 (0.0171)	-0.0112 (0.0213)
No. in armed forces/1000	0.5314* (0.2872)	0.4610 (0.3450)	0.4963 (0.3385)	0.0781 (0.0878)	0.1894 (0.1643)	0.1610 (0.1769)
UNSC candidate	0.0689 (0.1619)	0.1832 (0.1873)	0.1414 (0.1858)	-0.0863 (0.0845)	0.0560 (0.1295)	0.0755 (0.1282)
Militarization rate		-8.2260 (17.9308)	-10.9477 (17.9369)		-14.5829 (14.9749)	-15.1403 (15.7409)
Unemployment rate		-0.0287 (0.0342)	0.0167 (0.0411)		-0.0158 (0.0313)	0.0182 (0.0345)
Tertiary enrollment ratio		0.0209 (0.0169)	0.0145 (0.0194)		0.0059 (0.0171)	-0.0051 (0.0197)
Time dummies	no	no	yes	no	no	yes
<i>N</i>	1748	823	823	1338	569	569

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

developed and developing nations; its negative sign and significance reinforce our hypothesis about the persistence of poorly trained troops in the composition of peacekeeping missions. The number of operations with Western countries' participation has shrunk in the period considered. The tolerance of casualties (Hypothesis 3) is not entirely supported. The coefficients 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. Hypotheses 4 and 5 are validated. The proxies for the level of threat (conflict intensity) and humanitarian implications (number of displaced people) are both positive and significant, suggesting that the higher the security threat and the humanitarian implications that a conflict poses, the higher is the probability of contributing to a UN operation. In a study on outside unilateral interventions in internal conflicts, Regan (1998) finds that, while humanitarian crises increase the probability of intervention, the intensity of the conflict has the opposite effect. Our study confirms that in the presence of a large population displacement,

the probability of participation increases. Therefore, concerns about an impending humanitarian crisis matter. However, we argue that when the conflict is of high intensity – and the associated threat is of high risk – it plays a similarly large and critical role in determining the decision to intervene.

Hypothesis 6 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, both at the 0.01 level over alternative specifications, predict a negative effect whenever the number of concurrent commitments exceeds a threshold, resulting in an inversely U-shaped relationship. This is consistent with our theoretical expectations on the existence of a 'troops constraint'. Hypothesis 7 on the UNSC candidacy 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. The military expenditure as a percentage of the GDP and the militarization rate are either insignificant or negative.

Table III. Panel estimation of troop contribution, non-UN missions

	<i>Within</i>			<i>First difference</i>		
	<i>i</i>	<i>ii</i>	<i>iii</i>	<i>iv</i>	<i>v</i>	<i>v</i>
Deaths per year	-0.0003 (0.0002)	-0.0002 (0.0002)	-0.0003 (0.0002)	-0.0003** (0.0001)	-0.0002** (0.0001)	0.0000 (0.0001)
Conflict intensity	0.5878*** (0.0996)	0.5833*** (0.0969)	0.6559*** (0.1043)	0.2894*** (0.0681)	0.3341*** (0.0894)	0.2924*** (0.0922)
Displaced people/1 × 10 <sup>6</sup>	-0.7529*** (0.1645)	-0.8933*** (0.2094)	-0.9818*** (0.2134)	-0.3940*** (0.1246)	-0.5051*** (0.1677)	-0.5869*** (0.1739)
No. of concurrent PKOs	-0.0844*** (0.0270)	-0.0865*** (0.0310)	-0.0048 (0.0413)	-0.0051 (0.0234)	0.0109 (0.0262)	-0.0053 (0.0306)
Real per capita GDP/1000	-0.0084 (0.0051)	-0.0118 (0.0072)	-0.0067 (0.0103)	-0.0098** (0.0041)	-0.0257** (0.0103)	-0.0110 (0.0122)
Military Expenditure/GDP	-0.0182 (0.0555)	0.0265 (0.0532)	0.0327 (0.0554)	0.0196 (0.0518)	0.0385 (0.0499)	0.0386 (0.0490)
No. in armed forces/1000	0.2682 (0.2496)	-1.0904 (1.6988)	-0.9025 (1.5884)	0.0349 (0.0947)	0.3709 (0.8973)	0.2498 (0.8407)
Militarization rate		23.7280* (13.6763)	14.0230 (12.8195)		-4.0191 (10.6911)	-10.0838 (11.0416)
Unemployment rate		-0.0596** (0.0286)	-0.0362 (0.0296)		-0.0484** (0.0239)	-0.0309 (0.0246)
Tertiary enrollment ratio		0.0004 (0.0067)	0.0075 (0.0082)		0.0052 (0.0059)	0.0057 (0.0070)
Time dummies	no	no	yes	no	no	yes
<i>N</i>	1521	1138	1138	1147	811	811

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

### *Troop contribution*

Results for the troop contribution equation are in Tables II, III, and IV. Hypothesis 1 on conflict spillover is not tested since the measures for geographic proximity are time-invariant.

We start with Table II, where we have the results for UN operations, ranging from MINURCA in the Central African Republic to UNIFIL in Lebanon (see the Appendix). The comparative advantage in manpower (Hypothesis 2) is, along with the international security threat, among the main drivers of peacekeeping. Both the signs and significance of the real GDP per capita and the number in armed forces are consistent with the theory. Poorer troop contributing countries, which send the lowest paid forces, are reimbursed more than their actual costs. The unemployment rate is always negative, as predicted by the theoretical arguments, although it is not significant in a few specifications. The strategy for developing countries is to dispatch large contingents, since they are more labor intensive, as a consequence of the low relative value of labor. The tertiary enrollment ratio loses its statistical significance in the troop contribution problem over alternative model specifications and categories.

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. The result is counter-intuitive and runs counter to our hypothesized relation. A level of threat (Hypothesis 4) is among the strongest determinants of countries' contribution. The conflict intensity causes an increase in the size of contribution for both models (within and first-difference) and for any operation category. The finding confirms the previous results on the likelihood of intervention, thus supporting the theory that the global emergency posed by a conflict urges governments to intervene with a large deployment. This again contradicts Regan's (1998) findings.

The number of displaced people shows no consistency – it is either negative or positive, depending on the methodology. The sustainability index – the number of multiple missions (Hypothesis 6) – is negative, as expected in UN operations, although it misses the significance level. Hypothesis 7 on the level of ambition and standing in the international arena is not supported by our findings. Both the militarization rate and military

Table IV. Panel estimation of troop contribution, NATO and EU missions

	<i>Within</i>			<i>First difference</i>		
	<i>i</i>	<i>ii</i>	<i>iii</i>	<i>iv</i>	<i>v</i>	<i>vi</i>
Deaths per year	0.0020** (0.0009)	0.0059*** (0.0009)	0.0065*** (0.0010)	-0.0004 (0.0010)	0.0040*** (0.0009)	0.0059*** (0.0011)
Conflict intensity	0.8023*** (0.1303)	0.7644*** (0.1163)	1.0769*** (0.1425)	0.4873*** (0.1068)	0.4848*** (0.1082)	0.6539*** (0.1371)
Displaced people/ $1 \times 10^6$	-1.3798*** (0.3373)	-1.2214*** (0.3911)	-1.1551*** (0.4061)	-0.1178 (0.2263)	-0.9680*** (0.2426)	-0.8848*** (0.2350)
No. of concurrent PKOs	-0.0408 (0.0406)	-0.0700** (0.0348)	0.0037 (0.0478)	0.0497** (0.0236)	0.0683*** (0.0255)	0.0017 (0.0317)
Real per capita GDP/1000	-0.0343*** (0.0094)	-0.0348*** (0.0104)	-0.0032 (0.0101)	-0.0122 (0.0082)	-0.0436*** (0.0125)	-0.0080 (0.0120)
Military Expenditure/GDP	-0.1129* (0.0578)	-0.0894** (0.0435)	-0.0441 (0.0464)	-0.0789* (0.0439)	-0.0483 (0.0373)	-0.0534 (0.0367)
No. in armed forces/1000	0.0621 (0.5922)	-1.1844 (2.5072)	-0.7893 (1.9734)	0.2017 (0.2349)	0.5590 (1.2893)	0.8356 (1.1794)
Militarization rate		26.4200 (17.0760)	9.3039 (14.6937)		-2.5964 (12.7216)	-10.8302 (13.8454)
Unemployment rate		-0.0321 (0.0249)	-0.0426* (0.0249)		-0.0333 (0.0244)	-0.0263 (0.0245)
Tertiary enrollment ratio		-0.0110 (0.0067)	0.0072 (0.0075)		-0.0015 (0.0071)	0.0001 (0.0084)
Time dummies	no	no	yes	no	no	yes
<i>N</i>	1098	856	856	817	595	595

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

expenditure as percentage of the GDP are not significant. Contributor-specific benefits linked to a country's standing in the international community are not a factor for peacekeeping missions as theorized.

Table III presents the results for non-UN operations. This heterogeneous category includes operations led by NATO, the EU, the African Union, and ad hoc coalitions, among others (see Table I in the Appendix). They corroborate most of our hypotheses.

Hypothesis 2 on the relative advantage in manpower is supported by our empirical findings. This mechanism is clear in the UN sample. In non-UN and NATO/EU operations, the number in armed forces is insignificant while the GDP per capita is significant in only two specifications, as one would expect. This may be explained by the fact that developing countries readily contribute personnel to UN operations for the financial and training benefits that participation provides. This financial support is not provided in non-UN missions. The tolerance of casualties appears to be a significant disincentive to dispatch troops in non-UN missions, where our proxy (i.e. the number of deaths among peacekeepers) has the expected sign. When the real GDP per capita is used as a proxy, the coefficient is also negative and significant,

emphasizing that wealthier states are less willing to dispatch large contingents to multilateral operations. In non-UN missions, where combatants can inflict human losses, wealthier states are less willing to provide troops. This confirms that public support for military intervention is reputedly soft and short-lived and might disappear in the presence of combat casualties (Mueller, 2002). While the level of threat is again positive and significant, as postulated by Hypothesis 4, the number of displaced people does not affect the number of national troops deployed in non-UN operations in the anticipated direction, thus suggesting that humanitarian crises hamper the size of contribution in non-UN operations. The number of concurrent operations is negative and significant as expected; therefore, participation in multiple missions is a significant obstacle to increasing the size of the commitment in additional operations. Finally, the level of standing and integration into the global military system, when captured by the militarization rate, affect positively the size of the donors' contribution.

The results for NATO and EU operations are in Table IV. We present these two sets of operations together to offer a homogeneous group of countries, sharing many economic and geopolitical features. We are

not able to further narrow down the set of countries (e.g. only AU or EU), owing to an insufficient number of observations. The results present some relevant exceptions, in which the sign of the coefficient is not in the direction predicted by the theoretical arguments. The number of deaths among troops is positive, suggesting that Western countries are more prone to dispatch large contingents in operations presenting risks of casualties. The main driver of NATO and EU peacekeeping is the conflict intensity, while the number of concurrent operations hampers the size of their contributions. The most important insight is the negative sign of the real per capita GDP and the military expenditure as a share of the GDP. This suggests that when it comes to the size of the contribution, the relatively less developed economies, or those facing a military downsizing – notably Eastern European countries – contribute more to EU and NATO missions. This may support Bobrow & Boyer's (1997) view about the increasing surge in participation by countries that were previously in the Warsaw Pact but are now active contributors to peacekeeping.

## Conclusions

This article attempts to address the possible motivations that interact to produce peacekeeping contributions by a diverse pool of participants. Most scholarly studies of peacekeeping have focused on the UN, ignoring other types of peacekeeping missions, that is, by regional inter-governmental organizations (e.g. the AU, the EU) and by states or ad hoc groups of states. Our comprehensive empirical study suggests that at the state level the tolerance of casualties, the number of multiple missions, and the comparative advantage in manpower play a role. Overall, countries with a comparative advantage in manpower – the UN 'mercenaries' – commit more fully to these operations. Indeed, Western governments have to fill the gap between what the international system pays for peacekeeping troops (e.g. the UN reimbursement) and the cost paid for volunteer troops. States abstain from engaging in non-UN operations with a high level of casualties among peacekeepers. Our results indicate that the number of concurrent operations is another significant obstacle to increasing peacekeeping participations. But a country's contributions to peacekeeping operations are also explained by its relative wealth, in contrast with Lebovic (2004), even when novel measures are used, such as the enrollment rate. Our study lends evidence to support the insight of Victor (2010) that the size of a state's military predicts the contribution to UN peacekeeping. Contributions to non-UN missions and

NATO-EU operations are mainly affected by conflict characteristics.

At the international system 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. Although the role of geographic proximity seems to be very established in the literature, there are some exceptions which find no significance (e.g. Lebovic, 2004). We show that the distance does matter in decisions about when and how to respond to civil conflicts. Our empirical evidence also shows that the level of threat triggers a country's participation and contribution to peacekeeping. Similarly, Regan (1998) attempted to control for the level of conflict and suggested a counter-intuitive negative relation. We find that the most robust explanations of when states choose to intervene are the proximity to the conflict and the level of threat. Finally, the number of displaced people increases the likelihood but not the size of participation. The media coverage of social dislocations might be an important factor affecting the decision to contribute to UN operations.

Generally, our findings provide further evidence of the centrality of country-specific benefits in explaining the participation in peacekeeping (Khanna, Sandler & Shimizu, 1999). However, we show that contributor-specific benefits play the same role in UN and non-UN peacekeeping missions, in contrast with previous empirical studies on the financial burden (e.g. Gaibullov, Sandler & Shimizu, 2009). Moreover, some factors affecting whether a country participates in an operation might differ from the factors affecting how participants allocate troops to those operations. Along with the explosive growth in the demand for troops, there is an impressive rise in the numbers and quality of troops required to fulfill new tasks. While the economic crisis is leading to cutbacks in 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.

## Replication data

The dataset and do-files for the empirical analysis in this article can be found at <http://www.prio.no/jpr/datasets>.

## Acknowledgments

The first author is grateful to Ron Smith for his expert guidance and invaluable advice. We wish to thank Sergio

Destefanis, Kristian Gleditsch, Birger Heldt, Nikolay Marinov, Emanuela Sciubba, Nicolas Van de Sijpe, and three anonymous referees for helpful suggestions and discussion.

## References

- Angrist, Jousha & Jörn-Steffen Pischke (2009) *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton, NJ: Princeton University Press.
- Arellano, Manuel & Stephen Bond (1991) Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies* 58(2): 277–297.
- Bellamy, Alex; Paul D Williams & Stuart Griffin (2010) *Understanding Peacekeeping*. Cambridge: Polity.
- Bellavance, François; Georges Dionne & Martin Lebeau (2009) The value of a statistical life: A meta-analysis with a mixed effects regression model. *Journal of Health Economics* 28(2): 444–464.
- Bobrow, Davis & Mark A Boyer (1997) Maintaining system stability: Contributions to peacekeeping operations. *Journal of Conflict Resolution* 41(6): 723–748.
- Bun, Maurice JC & Frank Windmeijer (2010) The weak instrument problem of the system GMM estimator in dynamic panel data models. *Econometrics Journal* 13(1): 95–126.
- Carment, David & Patrick James (1995) Internal constraints and interstate ethnic conflict: Toward a crisis-based assessment of irredentism. *Journal of Conflict Resolution* 39(1): 82–109.
- Chamberlain, Gary (1984) Panel data. In: Griliches Zwi & Michael D Intrilligator (eds) *Handbook of Econometrics*. Amsterdam: North-Holland, 1247–1318.
- Cornes, Richard & Todd Sandler (1996) *The Theory of Externalities, Public Goods, and Club Goods*. Cambridge: Cambridge University Press.
- Daniel, Donald CF; Patricia Taft & Sharon Wiharta (2008) *Peace Operations: Trends, Progress, and Prospects*. Washington, DC: Georgetown University Press.
- Dowty, Alan & Gil Loescher (1996) Refugee flows as grounds for international action. *International Security* 21(1): 43–71.
- Finnemore, Martha (2008) Constructing norms of humanitarian intervention. In: Richard K Betts (ed.) *Conflict after the Cold War: Arguments on Causes of War and Peace*. London: Longman, 191–206.
- Freedman, Lawrence (2007) Using force for peace in an age of terror. In: Chester A Crocker, Fen Olser Hampson & Pamela Aall (eds) *Leashing the Dogs of War: Conflict Management in a Divided World*. Washington, DC: United States Institute of Peace Press, 245–263.
- Gaibulloev, Khusrav; Todd Sandler & Hirofumi Shimizu (2009) Demands for UN and non-UN peacekeeping: Nonvoluntary versus voluntary contributions to a public good. *Journal of Conflict Resolution* 53(6): 827–852.
- Gleditsch, Kristian S (2007) Transnational dimensions of civil war. *Journal of Peace Research* 44(3): 293–309.
- Heckman, James J (1979) Sample selection bias as a specification error. *Econometrica* 47(1): 153–161.
- Hsiao, Cheng (2007) Panel data models. In: Badi H Baltagi (ed.) *A Companion to Theoretical Econometrics*. Malden, MA: Blackwell, 349–365.
- Khanna, Jyoti; Todd Sandler & Hirofumi Shimizu (1999) The demand for UN peacekeeping, 1975–1996. *Kyklos* 52(3): 345–368.
- Kinloch-Pichat, Stephen (2004) *A UN 'Legion': Between Utopia and Reality*. London: Routledge.
- Kniesner, Thomas; W Kip Viscusi & James Ziliak (2010) Policy relevant heterogeneity in the value of statistical life: New evidence from panel data quantile regressions. *Journal of Risk and Uncertainty* 40(1): 15–31.
- Kyriazidou, Ekaterini (1997) Estimation of dynamic panel data sample selection models. *Econometrica* 65(6): 1335–1364.
- Lahneman, William J (2004) *Military Intervention: Cases in Context for the Twenty-First Century*. Oxford: Rowman & Littlefield.
- Lebovic, James H (2004) Uniting for peace? Democracies and United Nations peace operations after the Cold War. *Journal of Conflict Resolution* 48(6): 910–936.
- Meredith, Martin (2006) *The State of Africa: A History of Fifty Years of Independence*. London: Free Press.
- Miller, Ted R (2000) Variations between countries in values of statistical life. *Journal of Transport Economics and Policy* 34(2): 169–188.
- Mueller, John E (2002) Public support for military ventures abroad: Evidence from the polls. In: John M Moore & Robert F Turner (eds) *The Real Lessons of the Vietnam War*. Durham, NC: Carolina Academic Press, 173–219.
- Mundlak, Yair (1978) On the pooling of time series and cross section data. *Econometrica* 46(1): 69–85.
- Pickering, Jeffrey & Emizet F Kisangani (2003) The International Military Intervention Data Set: An updated tool for conflict scholars. *Journal of Peace Research* 46(4): 589–599.
- Regan, Patrick M (1998) Choosing to intervene: Outside interventions in internal conflicts. *Journal of Politics* 60(3): 754–779.



- Shaw, Martin (1996) *Civil Society and Media in Global Crises: Representing Distant Violence*. London: Pinter.
- Shimizu, Hirofumi & Todd Sandler (2002) Peacekeeping and burden-sharing, 1994–2000. *Journal of Peace Research* 39(6): 651–668.
- Victor, Jonah (2010) African peacekeeping in Africa: Warlord politics, defense economics, and state legitimacy. *Journal of Peace Research* 47(2): 217–229.
- Viscusi, W Kip & Joseph E Aldy (2003) The value of a statistical life: A critical review of market estimates throughout the world. *Journal of Risk and Uncertainty* 27(1): 5–76.
- Zartman, William & Saadia Touval (2007) International mediation. In: Chester A Crocker, Fen Olser Hampson & Pamela Aall (eds) *Leashing the Dogs of War: Conflict Management in a Divided World*. Washington, DC: United States Institute of Peace Press, 437–454.
- VINCENZO BOVE, b. 1980, PhD in Economics (Birkbeck College, University of London, 2011); post-doctoral fellow, Department of Government, University of Essex; main research interests: economics of conflict, political economy, and quantitative methods.
- LEANDRO ELIA, b. 1979, PhD in Applied Economics (University of Calabria, 2009); post-doctoral fellow, Department of Economics and Statistics, University of Calabria; main research interests: labor economics, political economy, and applied economics.