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The economics of United Nations peacekeepers

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Abstract

We conduct a quantitative analysis to assess the economic and institutional outcomes of sending troops to United Nations peacekeeping operations on contributing countries. For this purpose, we use a panel data approach for 209 countries over the period 1990 - 2019 using country and year fixed effects. Furthermore, we use an instrumental variable approach to enhance our research. The results show that, overall, sending troops to UN peacekeeping operations does not affect the economic or institutional performance of the contributing countries. However, if there were to be an effect for some specific cases, it would tend to be positive, but their interpretation must be cautious.

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Keywords: Peacekeeping, Contributing countries, Economy, United Nations

Table of contents

1	Introduction	1
2	Literature review	4
2.1	The beginnings of peacekeeping	4
2.2	United Nations peacekeeping	5
2.2.1	United Nations peacekeeping before 1990	5
2.2.2	Evolution of United Nations peacekeeping since 1990	6
2.3	Effect of sending troops to UN peacekeeping operations on contributing countries . .	11
2.4	Expected results	16
2.5	Effect of sending troops to UN peacekeeping operations on recipient countries	17
2.6	Other peacekeeping actors	19
3	Empirical analysis	20
3.1	Data	20
3.1.1	Data for the base model	20
3.1.2	Data for models with institutional outcomes	22
3.1.3	Data for instrumental variables	24
3.2	Methodology	26
3.2.1	Dependant variables	26
3.2.2	The model	26
3.3	Results	29
3.3.1	First method: results on economic outcomes	29
3.3.2	Second method: result on institutional outcomes	34
3.3.3	Instrumental variables	36
4	Conclusion	38
5	References	41
6	Appendices	50

1 Introduction

The literature on conflict, its causes and consequences are extremely broad and long-standing. The first texts were mainly about war strategies with famous authors such as Sun Tzu (6th century BC) or more recently Von Clausewitz (1780 - 1831) who revolutionised their fields. Many other authors have contributed to this vast literature and despite all this knowledge, we have not managed to eradicate this scourge since some people still support wars in order to make profits. Over time, ideas, each more original and cruel than the last, have flourished in some minds, which have not hesitated to use them to satisfy their personal objectives at the expense of many lives. The examples of the First World War and the Second World War, which led to the Shoah, are surely the most extreme examples of human sufferance that humanity has ever known. Although we have not experienced such a severe conflict to date, many conflicts are still ongoing and continue to cause great harm. However, conflict is not the approach we want to depict, and instead of decrying these facts, we will focus on the antithesis of war, namely peace.

In recent decades, more and more people have been promoting peace. Following the devastation caused by the Second World War, an increased willingness and the necessary means led to the creation of the United Nations (UN) in 1945. To this day, the United Nations is the largest and most important international organisation in the world (Amnesty International, 2021). 193 states are now represented and the organisation deals with an ever wider range of contemporary issues. When it was created, the founding members of the UN had one primary objective, namely to maintain international peace and security (United Nations, 2021a). It is on this last aspect that our analysis will focus. The creation of the United Nations has given rise to a vast literature that attempts to understand the mechanisms of UN peacekeeping operations and the consequences of their actions. Moreover, as the organisation has grown, its impact has become increasingly important and visible. Indeed, the budget allocated for peacekeeping operations is over 6.5 billion US\$ for the year 2020-2021, and even reached over 8.3 billion US\$ in 2015, which is considerable (United Nations General Assembly, 2019 and Hüfne, 2019). Furthermore, peacekeeping operations set up processes to promote peace and put regions that are or have been affected by conflict on the path to development. Even if some of the consequences are unintended and contrary to the desired objectives, peacekeeping operations certainly have a positive impact on many people.

The subject is very interesting and raises many questions. In an attempt to answer these questions, many research studies have focused on the overall impact of peacekeeping operations.

Others have focused on specific missions, analysing in depth the context in which these missions evolve and the multiple consequences they have brought. In addition, some authors have studied the effects of peacekeeping operations on the regions hosting them, both at the global level and for specific missions. Finally, relatively less research has examined the impact of peacekeeping operations on the countries contributing to the missions. It is on this last point that we focus but it still needs to be more precisely defined as the subject remains vast. Many texts discuss the reasons why certain countries contribute financially or with troops to UN peacekeeping operations. However, few texts quantify the influence of the factors that motivate countries to contribute to different missions. Authors who do such research usually focus on certain countries, such as Bangladesh, Fiji or Ghana (respectively Zaman & Biswas, 2015; Scobell, 1994 and Aubyn & al., 2019). Other authors such as Bove and Elia (2010) or Coleman and Nyblade (2018) have attempted to quantify country participation according to economic or contextual factors such as the gross domestic product (GDP) per capita, trade openness, conflict intensity or military expenditure. The results that have emerged are generally not unanimous. Despite all this research, no study has, to our knowledge, examined the impact of sending peacekeepers on the contributing countries at the aggregate level. It is this omission that is addressed in the remainder of this paper, and it is through this approach that we attempt to contribute to the existing literature.

We believe that participating in UN peacekeeping operations can bring benefits to the contributing countries as they do so on a voluntary basis. Several factors can be taken into account, such as monetary incentives, greater international stability, field experience, etc. Through this study, we attempt to quantify the effects of these factors on the economic or institutional performance of countries that send peacekeepers to UN peacekeeping operations. To do so, several explanatory variables are needed. These are mainly drawn from the United Nations and World Bank databases, but other databases have also been used to obtain the most accurate and representative results possible. We used a panel data approach covering the period 1990 - 2019 with country and year fixed effects. Since we suspect a potential endogeneity problem, we have improved our method by using an instrumental variable approach to, at least partially, address this problem. The results show us that, in many cases, sending peacekeepers to UN peacekeeping operations does not have an impact on economic or institutional outcomes in the countries that send them. If there is to be one, it would tend to be positive, as we were expecting. However, as previously mentioned, it is possible that our model suffers from endogeneity, which may bias the results if it proves to be true.

The rest of this text is divided into three main sections. The first section reviews the existing literature. This section begins by describing the evolution of UN peacekeeping operations over time. Then, the possible effects of sending peacekeepers on contributing countries are discussed. Finally, the impacts on the countries receiving the peacekeeping operations as well as the various other peacekeeping actors are mentioned. This last point, although indirectly related to our research question, provides a global view of peacekeeping operations. This literature review allows us to understand the different mechanisms underlying UN peacekeeping operations as well as the resulting direct and indirect effects. The second section discusses the empirical analysis carried out. First, it mentions the data used and the transformations performed on them. Then, the methodology is explained. The results are finally presented, starting with the results on economic outcomes and then on institutional outcomes, before analysing those obtained with the instrumental variables. The third and final section concludes on the main lessons that can be drawn from the analysis. It also highlights some aspects of the work that could be completed or refined and some avenues for further research in the field.

2 Literature review

In this second section we review the literature, beginning with a discussion of the evolution of peacekeeping operations. Then we cover the different possible effects on countries that send troops as well as on those receiving UN peacekeeping missions.

2.1 The beginnings of peacekeeping

According to Bouthoul (1976), the first international relations can be dated from the moment when human beings came together in organized societies which then entered into interaction. The more societies grow and the more they develop, the more they interact with each other, giving rise to many reasons for conflict. Therefore, since the beginning of mankind, the various civilizations have not stopped waging war to conquer new territories, acquire wealth and develop. These different wars temporarily enrich some peoples at the expense of the vanquished. However, in many cases, the monetary and human costs are colossal. This is all the more true for conflicts that last for a long time. As conflicts between societies and individuals increase, the search for peace and stability emerges. The Treaty of Qadesh is the first known peace treaty. It dates back to the twelfth century BCE and is signed between the Egyptians and the Hittites (Mays, 2010). Since then, many different agreements and treaties have appeared between rival parties. However, it did not prevent the many wars that humanity knew and still knows.

More recently, an increased willingness has emerged to prevent the atrocities of war. At the end of the First World War the League of Nations is created. This international organisation is the precursor to the United Nations and lasted from 1919 to 1946. Glossaire-international (2021) describes the role of the League of Nations as “to ensure the maintenance of peace in the world. The objectives of the League of Nations included disarmament, the prevention of wars through the principle of collective security, the resolution of conflicts through negotiation and the overall improvement of the quality of life”. The League of Nations is founded by 42 countries, but many countries will join or leave the organization before 1946. In particular, three countries left the League of Nations in the interwar period, namely Germany, Japan and Italy. Moreover, the United States never joined the organisation, which greatly weakened its position in international decision-making. This organization will prevent and resolve many minor conflicts. Unfortunately, due to the lack of coercive means, the low will of member states and the non-adherence of some states, the League of Nations will not be able to achieve its objectives for a very long time (History on the Net, 2021).

The outbreak of the Second World War is the main cause of the dissolution of the League of Nations which is afterward considered a failure. It will subsequently be replaced by the United Nations, which incorporated many of the principles and objectives of the League of Nations while learning from the mistakes of the past.

2.2 United Nations peacekeeping

Since those early days, United Nations peacekeeping has undergone many changes. This is discussed in this section by providing a brief historical overview of UN peacekeeping operations.

2.2.1 United Nations peacekeeping before 1990

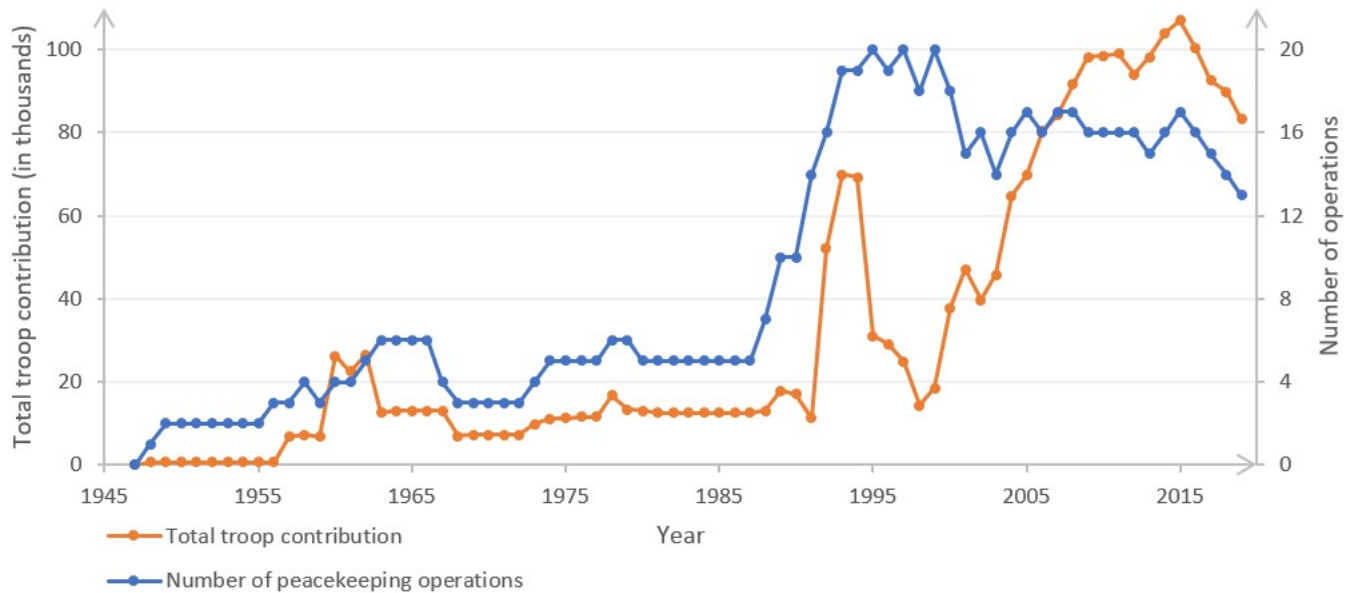
The expression “United Nations” is suggested for the first time in 1942 by President Franklin D. Roosevelt, in the midst of World War II. However, it is not until the end of the Second World War that the United Nations is established, following the ratification of the Charter by China, the United States, France, the United Kingdom, the USSR and many other signatory countries (United Nations, 2021b). Article I of the first Chapter of the United Nations Charter (1945) sets out the purposes of the United Nations. There are four of these: the first is to maintain international peace and security; the second aims to promote and defend human rights; the third consists of developing international cooperation and the last is to be a centre for harmonizing the actions of nations in the attainment of these common ends. Even if the Charter speaks about peace and security, peacekeeping operations are neither foreseen nor mentioned but will quickly become one of the main instruments of the United Nations to achieve its goals. However, peacekeeping operations refer to chapters VI and VII which deal respectively with the pacific settlement of disputes and action with respect to threats to the peace, and acts of aggression.

UN peacekeeping is born at the same time as the onset of the Cold War. Growing rivalries between the different member nations of the United Nations have often paralysed the Security Council. This has hampered the deployment of many operations, particularly in areas in which the permanent members of the Security Council have an interest. The first missions were mainly observation missions where the personnel are little or not armed. Their objective is to provide reports of the situation on the ground, generally by checking whether ceasefires are being respected or not, rather than to act as an interposition force between the warring parties. In 1948, the Security Council authorised the first deployment of UN military observers to the Middle East. This is the first UN peacekeeping mission (United Nations Peacekeeping, 2021a). One year after, a second

mission is launched at the border between India and Pakistan to check the ceasefire between both parties. Both missions are still active today even if they are relatively minor. It is not until 1956 that the first armed United Nations force to keep the peace appeared, following the Suez crisis. Moreover, it is during this mission that the very distinctive blue helmet of the United Nations is created (Hatto, 2015). Thereafter, as we can see in Figure 1, the number of peacekeeping missions is relatively small and stable until the 1990's. However, between 1960 and 1963, we can see an increase in the number of troops deployed on behalf of the United Nations. They are mainly deployed for the United Nations Operation in the Congo (ONUC) which will have nearly 20 000 soldiers at its peak.

It is not until the end of the Cold War to see profound changes appear in the peacekeeping instrument with what would later be called the second generation of peacekeeping operations.

Figure 1: Total troop contribution and number of UN peacekeeping operations



Source: Global Policy Forum (from 1947 to 1989) and United Nations Peacekeeping (from 1990 to 2019). For data up to 1989, the reported troop contribution and number of missions is the total for the highest month in each year. For data from 1990, the reported troop contribution and number of missions is that of 31 December of each year.

2.2.2 Evolution of United Nations peacekeeping since 1990

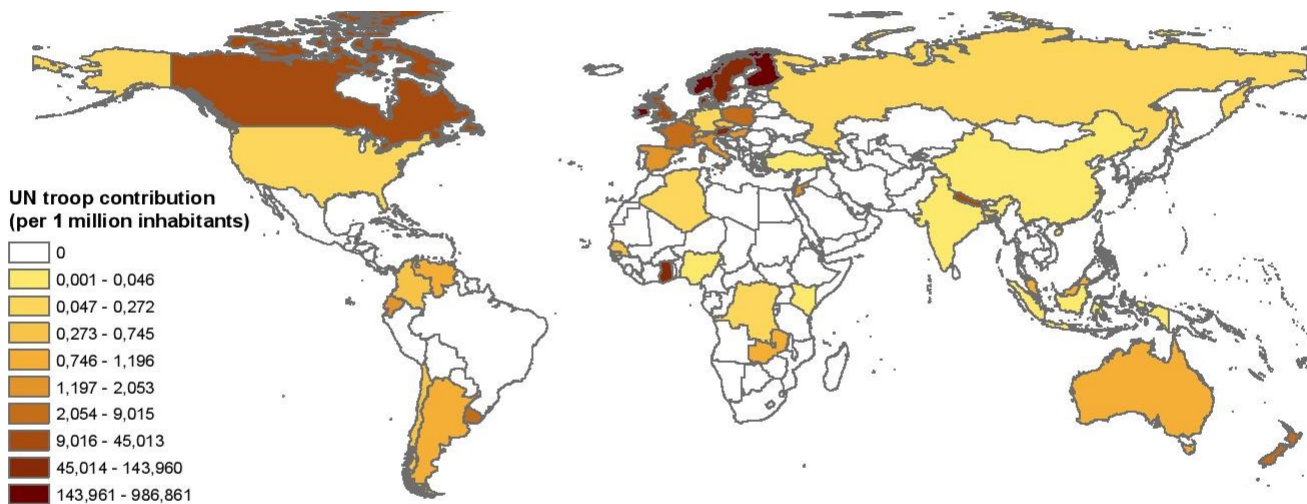
With the end of the Cold War, new conflicts emerge. These are mainly civil conflicts and will replace traditional state conflicts. The new context will give rise to many missions which will become more complex. These go beyond the strictly military framework and call into question the principle of state sovereignty. To do this, the missions will become multidimensional, by securing and

supporting political transformations, reconciliation processes, the establishment of institutions and the organization of elections (Zahar & Gaudreault, 2013 and Maertens, 2013). Being aware of these changes, the Secretary-General of the United Nations wrote *An Agenda for Peace* in 1992. In this report, Boutros Boutros-Ghali outlines the new vision for UN peacekeeping operations. In particular, it presents the four areas for action, namely: preventive democracy, peace-making, peacekeeping and peace-building.

The renewed interest in UN peacekeeping operations has come to a sudden stop. Indeed, as can be seen in Figure 1, the strong growth in the number of troops sent on missions came to a net halt in 1994. This decrease can be associated with the disastrous failure of the missions UNOSOM in Somalia, UNAMIR in Rwanda and UNPROFOR in Bosnia in the early 1990's (Howard, 2002). Some authors would later call those three missions as “the deadly trilogy”. According to Coulon and Liégeois (2010), several reasons can be put forward for the failure of these missions. First, these missions are deployed in the absence of the necessary conditions for the execution of their mandate (consent of the parties and respect for the ceasefire). Furthermore, to cope with these situations, the soldiers are more heavily armed, which call into question their impartiality and their neutrality. Finally, despite much information about the situation on the ground, the actions put in place by the UN are not sufficient to prevent the failure of these missions. In Somalia, UNOSOM is not able to implement its mandate, and the humanitarian situation in the field leads to fears of widespread famine. In Rwanda, the operation is mainly an observation mission. Despite several warnings, no coercive action is taken which results to the Rwandan genocide. Finally, in Bosnia, the peacekeepers are not able to prevent the fall of the Muslim enclaves which lead to the Srebrenica massacre. Subsequently, the UN publish the *Supplement to an Agenda for Peace* in 1995. In this document, they mention a return to the realities of an inter-state world, for which the UN is only one instrument among others. In particular in paragraph 24, which states that: “The United Nations does not have or claim a monopoly of any of these instruments. All can be, and most of them have been, employed by regional organizations, by ad hoc groups of States or by individual States”. In late 1999, the United Nations issue a report on its role in events leading to the deaths of thousands of civilians under its protection in Srebrenica in 1995 (United Nations General Assembly, 1999). A month after they made a similar report on the UN's failure to prevent the genocide of half a million Rwandans in 1994 (United Nations Security Council, 1999). These reports, suggest that the organization learn from its mistakes and seeks to improve its performance (Malone & Thakur, 2001).

In the early 2000s, the number of peacekeepers rise again to reach a peak in 2015. This is the result of the various reforms made within the United Nations in order not to make the mistakes of the past. In 2000, the United Nations publish the Brahimi report. The report reinterprets the minimum use of force. They include the application of force in defence of the mandate as well as themselves, which is seen as a robust turn in UN peace operations (Hunt, 2017). As a result, according to Koops, MacQueen, Tardy, and Williams (2015), UN missions become more dangerous, require more soldiers and need more funds. All these substantives changes have modified the origin as well as the size of the peacekeeper contributions. Figure 2 and Figure 3 show the state of the world in 1990 and 2019 respectively.

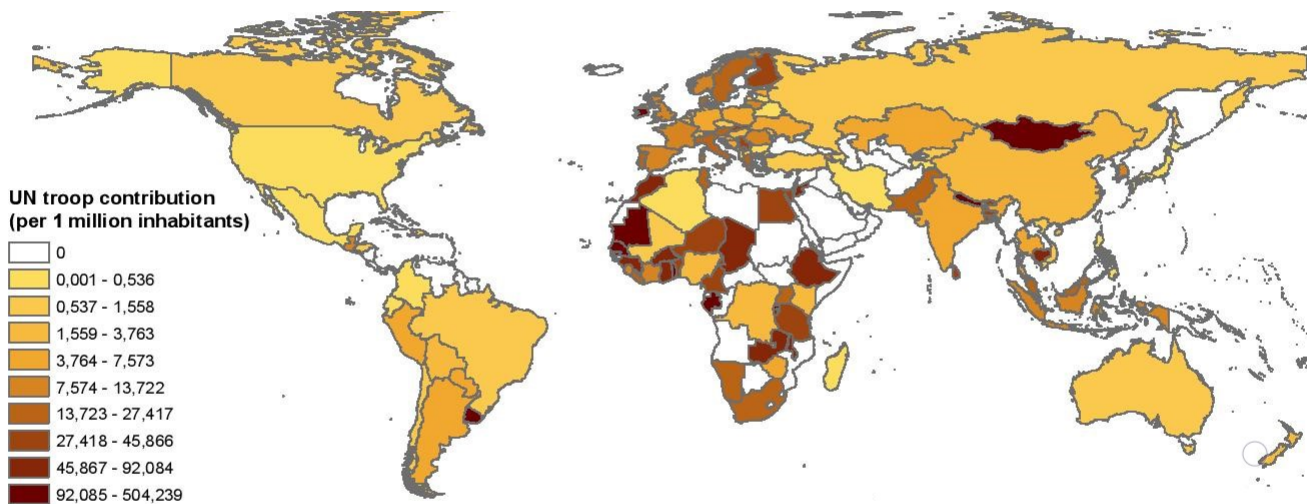
Figure 2: UN troop contribution as a proportion of the population in 1990



Source: United Nations and World Bank. The scale is divided by decile and allows us to see the distribution between countries. The scale is therefore different for each figure. Greenland and Antarctica have been removed for reasons of convenience

First of all, we can see that the number of countries participating in peacekeeping operations has increased significantly. In 1990, only 46 countries contributed to UN peacekeeping operations, whereas in 2019, there are 118. In addition, the number of peacekeepers per inhabitant has significantly changed. Some regions such as Europe and North America have become lighter, while Africa and Asia have contributed proportionally more. However, one must be careful with the scales which represent the deciles and are therefore not identical from one year to the next. However, the use of decile makes it easier to see the distribution of contributions between countries. For more details, the year 2000 (Figure 5) and the year 2010 (Figure 6) are included in the appendices.

Figure 3: UN troop contribution as a proportion of the population in 2019



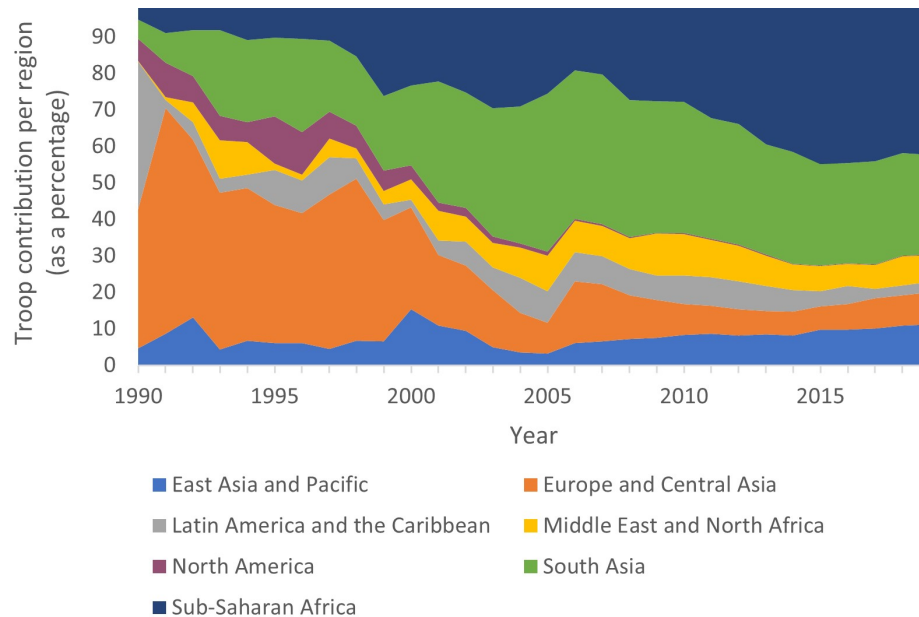
Source: United Nations and World Bank. The scale is divided by decile and allows us to see the distribution between countries. The scale is therefore different for each figure. Greenland and Antarctica have been removed for reasons of convenience

Among other things, these changes are the result of a new trend which seems to be emerging as a form of regionalisation or tier-mondisation of peacekeeping missions. The neighbouring countries are more often called upon and they are more willing to use force to counter terrorist or other violent threats to stabilise the region (de Coning, 2019). Figure 4 shows that the regional composition of peacekeepers has significantly changed over the period 1990 - 2019. Indeed, the share of peacekeepers contributions from Europe and Central Asia has significantly decreased, from almost 62% of the total in 1991 to only about 8% in 2019. On the other hand, South Asia and Sub-Saharan Africa, which are less developed regions and experience more conflict, have seen their share of peacekeepers' contributions increase significantly. South Asia's share rose from 5% in 1990 to over 25% from the 2000s onwards, and even to 41% in 2007. For Sub-Saharan Africa, its contribution increased from 5% in 1990 to over 40% by 2014. The other regions of the world have not experienced such variations, except for Latin America, which provided 40% of the blue helmets in 1990 but never exceeded 10% of the total troop contribution from 1991.

A similar trend can be seen when focusing on specific countries. This is shown in Figure 7 and Figure 8 (see appendices), which show the troop contributions for the five largest contributors in 1990 and 2019 respectively. In 1990, four of the five largest contributing countries are developed ones (namely Austria, Canada, Finland and Norway). While the number of peacekeepers has grown over the last thirty years, the contribution of these four countries has tended to decrease and then

stagnate from the 2000s, making their contribution marginal. The opposite pattern can be seen for the top five contributing countries in 2019. Indeed, these five countries are Bangladesh, Ethiopia, India, Nepal and Rwanda. They are all classified as developing countries and tend to contribute more and more to UN peacekeeping operations over the years.

Figure 4: Proportion of United Nations troop contributions by region



Source: United Nations Peacekeeping and World Bank. The data are obtained by summing the contributions per country according to their regions as determined by the World Bank.

Finally, according to van der Lijn et al. (2014), the mandates of the missions have broadened. They increasingly include multidimensional aspects that may include organising elections, monitoring sanctions and transitional regimes, training personnel or even temporarily assume some or all of a government's tasks. In addition, the missions include a long-term vision by considering the causes of conflict as well as the post-conflict recovery.

Over time, peacekeeping operations have significantly evolved and will continue to evolve in the coming years. No one can predict what peacekeeping operations will look like in 50 or 100 years' time, but it is interesting to look at the mechanisms underlying these missions to understand their origin and potential impact. The following section attempts to show what motivates countries to participate or not in UN peacekeeping operations.

2.3 Effect of sending troops to UN peacekeeping operations on contributing countries

The UN has no military forces of its own. Therefore, when the UN launches a new mission, they estimate the troop requirements according to the needs of the mission and Member States provide, on a voluntary basis, the military and police personnel required (United Nations Peacekeeping, 2020). This means that there are incentives to send troops and that we need to understand the reasons why countries participate in peacekeeping operations. This will help us to estimate the direction of the expected effects in order to compare them to the results and see if the theory matches reality.

The literature on the subject tells us that there are several reasons for a country to send or not military troops to the United Nations. The effect of each of these reasons is difficult to quantify and will vary depending on the context in which the country finds itself. In the following text, the main reasons that emerge from the literature will be named and we provide an explanation as to their expected effect on the number of troops that a country will send to a UN's operation. We begin by mentioning the factors encouraging the contribution of military troops to the United Nations and then talk about the factors dissuading the sending of peacekeepers.

First, a vast literature tells us that some countries participate in peacekeeping for the monetary incentive that they receive. As said in the United Nations Peacekeeping (2020), "Peacekeeping soldiers are paid by their own Governments according to their own national rank and salary scale. Countries volunteering uniformed personnel to peacekeeping operations are reimbursed by the UN at a standard rate, approved by the General Assembly, of 1428 US\$ per soldier per month as of 1 July 2019". Depending on the wealth of the country and the salary they provide, some countries can make benefits on the money received from the United Nations. In her book entitled: *The economics of UN peacekeeping*, Sheehan (2011) tells us that "Nations' participation in peacekeeping is based on national interests and on their utility for the operation". According to the author, countries act as economic agents that are rational. They do this by maximising their utility in relation to the costs and benefits that peacekeeping operations can bring them. Since the monetary cost-benefit analysis is easily calculated, the monetary incentive is the main reason given by some countries. For example, in the 1990's, Fiji's involvement in peacekeeping became a significant source of foreign exchange for the country (Scobell, 1994). There is evidence which suggests that Ghana is earning a significant amount of foreign currency through the reimbursement package that the UN offers even if official figures are not available (Aubyn & al., 2019). Finally, according to Krishnasamy (2003)

or Zaman and Biswas (2015) Bangladesh also makes large and significant troop contributions to the United Nations in order to receive economic assistance and international recognition from its participation in peacekeeping operations. However, Bove and Elia wrote an article which appeared in 2010, questioning some of this literature. In their article, the authors make a quantitative analysis of the domestic and international determinants of countries' contribution to peacekeeping operations from 1999 to 2009. Their results show that foreign direct investments and trade openness have a negative impact on the estimation of troops contribution in UN missions. This is contrary to the literature on the subject, but Bove and Elia reposition their results in context by stating that: "The negative sign might indicate that conflicts, and then peacekeeping, emerge during economic crisis and the disruption of international trade". To our knowledge, no further research on these specific cases have been carried out to date. In 2018, Coleman and Nyblade, wrote an article in which they argue that this 'peacekeeping for profit' narrative is vastly overstated. They make a more in-depth analysis of various research studies and conclude that: "The quantitative evidence that has been reported as supporting the peacekeeping for profit argument is much weaker than it initially appears [...]. Profit-making may still motivate some UN troop contributors, but we need a far more nuanced understanding of which states it is most likely to be relevant for". In their report, the authors set out two conditions for the profit argument to be plausible. The first is that the peacekeeping reimbursement must be significant regarding the army's budget. And the second is that the state should limit the deployment allowances they pay to their UN peacekeepers and provide large stocks of cheap equipment.

Second, according to Handy, P. S. (2020), neighbouring and regional states often have a strategic interest in contributing to the stability of a country dealing with conflicts. Indeed, a risk when a war occurs in a country is that it spreads to neighbouring countries (Hannes, 2013). This would cause serious damage that neighbouring states want to avoid at all costs. According to the International Peace Institute (IPI) peacekeeping database, less than 3% of peacekeepers deployed to UN peacekeeping missions in the early 1990s were from neighbouring states relatives; this number rose to around 20% in 2017 (Williams & Nguyen, 2018). Bove and Elia (2011) tested this argument through panel data from 1999 to 2009. They confirm that geographic proximity to the country in conflict increases the likelihood of participation in the UN peacekeeping mission. Moreover, they find that the level of threat is among the strongest determinants of countries' contribution. This confirms the fact that countries are more likely to contribute to peacekeeping operations when conflicts are close and violent to prevent the spread of conflict. Furthermore, if a conflict emerges in

a neighbouring country, trade will be reduced, there will be migration flows, security and stability will decrease which will have a negative impact on the regional economy. A study from Bayer and Rupert (2004) tests the effect of a civil war on bilateral trade using panel data from 1950 to 1992. Their results estimate that, there is a reduction in bilateral trade of about one third as a result of civil war on one of the two side. A second, slightly more recent study by Martin, Mayer and Thoenig (2008) shows similar results. However, the authors go further and show that it takes about 17 years after the conflict before a level of trade not statistically different from the norm is recovered. Finally, Ward and Dorussen (2016), have analysed this argument from a different perspective. In addition to the commercial situation, they considered other factors such as the political regime, participation in other missions or the presence of colonial links. They conclude that the countries forming the coalition have an impact on the participation and that countries wish to stand alongside similar countries when they engage in peacekeeping which is usually the case in regional operations.

Third, Findlay (1996) tells us that, for both high and low income countries, the overseas experience and contacts with other military forces are worth it. Some developing countries do not have the means to professionally train their soldiers. The UN supply them a formation and they learn new techniques by working with different soldiers. Other countries take advantage of this experience on the ground to put their theoretical combat training into practice. This is notably what Harig (2020) tells us in his article which sets out the case of the participation of Brazil in the MINUSTAH operation in Haiti. Moreover, he adds that the experience acquired in the field allows for the adjustment of training and internal missions according to the lessons learned in UN peacekeeping operations. Other case studies show the interest of some countries in the experience gained through peacekeeping operations. This is particularly the case for Ghanaian soldiers who receive a wider front-line training experience. Through its contribution, Ghana also has the opportunity to acquire new armaments that would otherwise be difficult to obtain and operate (Aning, 2007). According to Murthy (2007), the same argument can be made for Asian countries such as Bangladesh, India or Pakistan. Thanks to the experience gained, Bangladesh and India have created international training centres that are renowned by many countries. Moreover, gaining experience matters for countries which fear to face a conflict or are unstable because they will be better prepared to face it. Lundgren (2018) argues that armies that send a large number of soldiers, experience fewer coup attempts than their comparable peers. This disciplinary effect stems from the fact that armies become dependent on UN reimbursements and that a coup or insubordination could deprive them of foreign missions and therefore of their funds.

This leads to the fourth and final argument. Several articles tell us that participation in peacekeeping operations is related to the institutional context of countries. For example, Lebovic (2004) shows that over the period 1993 - 2001, democratic countries contribute more to peacekeeping than non-democratic countries. A few years earlier, Andersson (2000) shows similar results and add that recipient states which are non-democratic are more likely to receive a peacekeeping operation. This result can be attributed to the fact that democratic countries tend to support the diffusion of liberal institutions and values. In their 2008 article, Perkins and Neumayer goes further and point out that countries which are more committed to human rights are more likely to send troops to peacekeeping operations. However, this argument needs to be put into context. According to Passmore (2020) who analyse the troop contributions from 1990 to 2011, countries in early years of democracy are the most likely contributors of troops to UN peacekeeping. He also mentions that the effect diminishes as the democracy consolidates. However, the data used for these researches are relatively old and may no longer reflect the actual situation. Another research from Duursma and Gledhill (2019), analyse other aspects. According to them, since the 1990s there is a change in peacekeeping operations which have become more robust. This implies that democratic countries are more reluctant to contribute peacekeepers for media reasons. Their results show that democracies contribute on average more troops but that non-democratic governments are more likely to make large-scale contributions. Furthermore, as elections approach, democratic countries tend to send fewer soldiers on operations.

On the contrary, several factors can be highlighted regarding the low or non-participation of some countries in United Nations peacekeeping operations.

The most important criterion that comes up many times in the literature is that some countries are reluctant to take risks for their soldiers and are concerned about damaging their image. This is especially true for high income countries which put more value on their soldiers. According to Liégeois (2013), soldiers from the poorest countries receive lower wages, less training and have poor infrastructure, which decreases their value in the eyes of their governments, making it easier to send them to dangerous missions. Furthermore, in the event of mission failure or loss of human life, the media fallout can be disastrous. One example is Belgium, which lost 10 soldiers in the UNAMIR operation in Rwanda in 1994. Following this incident, Belgium put a hold on its participation in peacekeeping operations, until the mid-2000s (Permanent Mission of Belgium to the UN, n.d.). Another example is that of Kenya, which withdrew its troops from Southern Sudan in 2016. Although they did not lose any soldiers, they consider the mission a failure because they are not able to

properly protect civilians and restore peace in the country (Deutsche Welle, 2016). However, an article from Bove and Elia published in 2011, challenges this argument. Indeed, their empirical research shows that there is no significant effect of the number of casualties on the troops deployed, and that if there is one, it is counter-intuitive. However, their results can be questioned because, according to the literature, there may be characteristics that are likely to undermine these results, such as regime type or the weight of the army in political decisions.

A second argument that can be mentioned is that peacekeeping can be seen as an international public good. Indeed, the peace and stability achieved through peacekeeping operations give rise to non-excludable and non-rival benefits for the world community (Shimizu & Sandler, 2002). The very nature of public goods offering positive externalities, causes them to be under-produced in comparison to the social optimum. This is due to the incentive to free ride in such situations. A relatively recent study by Passmore, Shannon and Hart (2018), examines the existence of free riding for 21 UN missions between 1990 and 2010. The authors show that all missions suffer from personnel shortfall with an average personnel deficit that is 21.6% below the authorised level. Furthermore, their results show that as the number of contributing countries increases, mission shortfall increases. However, the authors have done further research and add that the private benefit (such as the financial incentives provided by the United Nations) partly avoid the problem of free riders.

Other factors are taken into account such as the will to remain neutral in conflicts (such as Switzerland), the will to maintain autonomy of action and to act in its own name (as the United States or Russia does) or simply the inability to participate in peacekeeping operations. However, these factors are rarely mentioned and do not seem to be a major obstacle to participation in peacekeeping operations.

Of course, other arguments can be cited for the participation or the non-participation of countries in peacekeeping operations. However, the previous arguments mentioned are the most universal and the most frequently cited in the literature. We should not forget that nations participation in peacekeeping is based on national interests and on their utility for the operation (Sheehan, 2011). The decision to contribute or not to peacekeeping operations remains primarily a political decision and states often pursue several objectives simultaneously.

2.4 Expected results

These arguments prompt us to say that developing countries will send most of the troops to UN peacekeeping operations because they can benefit the more from them. The economic incentive is stronger in these countries, as the cost of living is lower. In addition, low income countries value the loss of their soldiers less and benefit greatly from the field experience gained in peacekeeping operations. Furthermore, Stewart (2002) tells us that one of the main causes of conflict is poor economic development. Therefore, developing countries are more willing to prevent the contagion of conflict since they are themselves more likely to experience conflict and they are generally located closer to the latter. Developed countries also send troops mainly to avoid contagion and keep commercial benefits. Some of them seek to promote institutions and values such as democracy or liberalism, which cannot be achieved in conflict situations. However, these countries benefit proportionally less from the financial benefits of the peacekeeping operations and value more their casualties. For this reason, developed countries tend to participate in less hazardous peacekeeping operations and to a lesser extent than developing countries.

However, economic theory shows us that in many situations there are decreasing marginal returns. This should also be the case for troop contributions to peacekeeping operations. Thus, it is expected that there will be a maximum threshold for countries to participate.

Therefore, considering the positive and negative effects, it is expected that, at the aggregate level, sending peacekeepers will have a positive economic impact on the contributing country until a certain threshold.

2.5 Effect of sending troops to UN peacekeeping operations on recipient countries

UN peacekeeping operations do not only have an effect on the contributing countries. A large literature reviews the different impacts that peacekeeping operations have on the recipient countries. In this section, we attempt to capture the main aspects of these impacts, both at national and local level.

First, the main objective of peacekeeping operations is, as stated in the term, to keep the peace and more generally to promote it. Negative peace refers to the absence of violence or conflict (Dijkema, 2007). Therefore, following this definition, peace avoids the costs of conflict, which are numerous. Blattman and Miguel mentions some of them in their 2006 article. The authors say that civil wars are usually attributed to poverty and they breed poverty, which creates a vicious circle. Moreover, conflicts generate refugee flows, facilitate the spread of disease, and give rise to illicit trade in drugs, arms and other goods. All these negative aspects can be reduced or even eliminated by the establishment of peace. In addition, Ammitzball (2007) tells us that in recent years, the mandates of peacekeeping operations have been expanded and tend to contribute more to peace-building. Therefore, peacekeeping operations aim at political stability, economic recovery and social transition towards a more equitable distribution of wealth and resources, in order to avoid the recurrence of conflicts. Through these actions, peacekeeping operations change the economic incentives of the various parties and provide incentives to produce, consume and invest in the legal economy. This helps to strengthen the security and stability of the country. Furthermore, the deployment of a peacekeeping operation generates many externalities. These are generally well studied to minimise the negative ones and maximise the positive ones. These include easier access for humanitarians to areas of need, increased agricultural production and food security, improved personal security and well-being, etc (Nations Unies, 2009).

Peacekeeping operations do not only have an impact at the national level. They also have an impact in the regions in which they are located. Indeed, the arrival of foreign contingents disrupts several local habits. In their final report on the economic impact of peacekeeping, Carnahan, Durch and Gilmore (2006) studies the economic impact of UN peacekeeping operations on local economies. They show that the restoration of peace is followed by an immediate upturn in economic activity and that mission spending stimulates local economies. This is because international staff bring a lot of money which they spend on housing, basic goods and recreation. In addition to generating employment through demand, peacekeeping operations will hire some local staff to fill administrative, clerical and support roles. However, several studies point out the inflationary effects of missions

and the negative impact this has on the economy. The authors assess the inflationary impact of missions and find that there is no widespread inflation in recipient countries. They conclude that peacekeeping operations have an overall positive impact on local economies but that there is still room for improvement.

Several articles mention some negative aspects of peacekeeping operations on local economies. These include the distortion of expectations regarding the professional working environment and personal living standards, political decisions that distort markets and the implementation of a privileged taxation system for the UN at the expense of the host nation. (Carnahan, Durch & Gilmore, 2007). Hull, Eriksson, MacDemott, Ruden and Waleij (2009) also mention that missions can reinforce certain groups that are not always legitimate, that peacekeepers are a factor in the spread of diseases such as AIDS or diseases for which local people are not immune, or the environmental consequences of missions such as the use of water, electricity and fuel, the waste management, the distribution of arable land, etc. One should also think about the consequences when the troops leave when the missions end, as the economy they have created may collapse. However, these are generally far outweighed by the positive effects of UN peacekeeping operations. It is likely that if this were not the case, there would be few, if any, UN peacekeeping operations since they require the prior agreement of the country before intervention.

2.6 Other peacekeeping actors

The United Nations is not the only organisation providing peacekeeping. This section reviews the other main peacekeeping operators to give a more comprehensive and global picture of peacekeeping operations around the world. It also provides hints to understand some of the mechanisms by which some countries withdraw from UN peacekeeping operations to join others, under a different authority and the other way around.

There are two other main organisations whose objectives include peacekeeping. First, there is the North Atlantic Treaty Organisation (NATO) whose main objective is “to secure a lasting peace in Europe, based on common values of individual liberty, democracy, human rights and the rule of law.” (NATO, 2020). The Alliance also contributes to the maintenance of peace and stability beyond its borders in order to ensure its inner objective. Second, there is the African Union (AU), whose objectives include the promotion of peace, security and stability on the continent. This is done through the Peace and Security Council, which is the decision-making body for conflict prevention, management and resolution (African Union, 2021). Of course, there are other organisations or agreements that bring together coalitions of countries and have peacekeeping as one of their direct or indirect objectives. In some cases, coalitions are ephemeral and are formed to intervene in a specific conflict and then dissolve at the end of it. This is the case with the current conflicts in Iraq and Syria.

Depending on the context and the benefits they can draw from it, states will intervene more massively in one or other of the organisations. This is one of the reasons why some European countries withdraw entirely or partially from United Nations operations to focus on NATO operations. The same phenomenon can be seen for some African countries that are more involved in the AU. However, the reverse effect cannot be ruled out.

3 Empirical analysis

The empirical analysis is divided into three subsections. The first deals with the data, its source and any modifications that have been made. The second presents the methodology used for the different models. Finally, the third section analyses the various results obtained.

3.1 Data

Before considering the research method, it is worth describing the data used. We begin by describing the baseline data and the data used for the regressions on economic outcomes. Next, we describe the data used for the institutional outcomes and finally, the data used to generate the instrumental variables.

3.1.1 Data for the base model

The data collected come from a wide range of institutions in order to have the most accurate and complete database possible. As mentioned before, with the end of the cold war and the start of the second generation of peacekeeping operations, a new dynamic kicks in. To consider these structural changes and obtain contemporary results, the database covers the period 1990 to 2019. Moreover, 1990 is the first year for which complete and detailed data are provided by the United Nations regarding the number of troops each country sends as peacekeepers.

In addition to having a reference period, a defined list of countries is required. Several lists are available according to the criteria used to define a country, which implies making a choice among them. A list of 209 countries is used as a benchmark. Defining a thirty-year period and a fixed list of countries for the analysis involves some constraints. Complete data over such a large period and for all countries do not always exist. Regarding missing data, they are either defined as non-existent, or by a 0 when only strictly positive data is listed (i.e. UN troop contribution). In addition, over the last thirty years, some countries have been divided and others have been created. It involves adjustments that come from personal manipulations and decisions. These minor adaptations are intended to remain as impartial as possible so as not to modify the results but are nevertheless mentioned in the following paragraphs.

First, each country is associated with a region which are defined by the World Bank and mainly used for administrative purposes. The World Bank defines seven different regions namely East Asia and Pacific; Europe and Central Asia; Latin America and Caribbean; Middle East and North Africa;

North America; South Asia and Sub-Saharan Africa, as illustrated in Figure 9 (see appendices). Some countries are not included in the World Bank list and have been associated with the region that best suits them. This is notably the case for some small islands.

The data describing the number of peacekeepers sent by each country, for each year from 1990 to 2019 comes from the United Nations. They report the situation at the end of the year, namely on December 31 except for the year 1990 where the only data available is as of November 30. To obtain the final version of these data, several adjustments are necessary. Some countries have changed names over time. It can come from a redefinition of borders, from the independence of part of the country, etc. Therefore, we only indicate the most recent and most appropriate version, even for the early years of the panel. The USSR existed until 1991 and, for the sake of convenience, is assimilated to Russia for all data. Czechoslovakia existed until 1992 and is assimilated to the Czech Republic and finally, Yugoslavia, which existed until 2006, is assimilated to Montenegro. Moreover, for all countries which are not providing peacekeepers at the end of a year, the value 0 is assigned to them. This is the case even if the country sent troops earlier in the year or if they have been modified or created during the thirty-year period analysed. Finally, some adjustments in the naming of countries are made to correspond with the reference list of 209 countries.

Several indicators, such as the gross domestic product (GDP), the GDP per capita, the population, the working age population (the population aged between 15 and 64) and the military expenditure comes from the databases of the World Bank. As the World Bank database does not contain data for all years and for all countries, some values are marked as missing.

To compute the distance between each country and the nearest conflict, two databases are needed. On the one hand, a first database which indicates the localisation of battle-related deaths for each year comes from the Uppsala Conflict Data Program (UCDP). This database provides us a wide range of conflict related indicators and their location. The selected data are aggregated at country level. Moreover, according to Högladh Stina (2020), it is considered that there is a conflict if there are at least 25 battle related deaths during the same year. In addition, a conflict is always considered as at least a two-sided violence. The chosen estimator is the sum of the best estimate of deaths sustained by all sides, the best estimate of dead civilians and the best estimate of deaths of persons of unknown status. On the other hand, the distance between each pair of countries come from the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII). This database gives us the bilateral distance (in kilometres) between the different countries with the capital as the reference point. Again, some countries are not referenced, and no value is assigned to them. Finally,

by combining the two databases, we extract the distances between each country and the nearest country dealing with a conflict, for the 30 years of the panel.

The variable official language comes from the CEPII, and more particularly from the `geo_cepii` database. This variable includes official or national languages and languages spoken by at least 20% of the population of the country and spoken in another country of the world. For some countries, several official languages exist. Therefore, for convenience reasons, only the most used official language will be retained. In addition, some countries of our panel are not found in the `geo_cepii` database. In these cases, an individual search is carried out for each country to define their first official language.

Finally, several variables are the result of modifications made to the variables mentioned above. There are logarithms, lags, squares or even percentages of certain variables, and the values obtained are the results of personal computations.

3.1.2 Data for models with institutional outcomes

All previous variables are used to analyse the economic outcomes. To refine the analysis, we have selected two other dependent variables to try to perceive the impact of sending peacekeepers on institutional outcomes for contributing countries.

First, there is the Human Development Index (HDI), which is a composite index for assessing key dimensions of human development, such as: a long and healthy life, being knowledgeable and have a decent standard of living. The HDI is obtained via the geometric mean of normalized indices for each of the three dimensions. The long and healthy life is assessed by the life expectancy at birth. The education dimension is measured by the average number of years of schooling for adults aged 25 years and over and the expected number of years of schooling for school-age children. The standard of living dimension is measured by gross national income (GNI) per capita (United Nations Development Program, 2021). A summary diagram is presented in Figure 10 (see appendices). The HDI data comes from the United Nations Development Program databases.

The second dependant variable to reflect institutional outcome is the polity index and comes from the Center for Systemic Peace database. These data are a composite indicator made of the democracy index and the autocracy index which are themselves composite indicators.

Marshall and Gurr (2020), the authors of the dataset users' manual, define the polity index as:

$$POLITY_{it} = DEMOC_{it} - AUTOC_{it} \quad (1)$$

The variable $DEMOC_{it}$ is the democracy index for the country i and for the year t . It should be interpreted as follows: when the polity index increases, it means that the democracy index increases more (or decreases less) than the autocracy index and vice versa. It is represented by a score between 0 and 10 and is defined by:

$$DEMOC_{it} = XRCOMP_{it} + XROPEN_{it} + XCONST_{it} + PARCOMP_{it} \quad (2)$$

where $XRCOMP_{it}$ is the competitiveness of executive recruitment and has a score of maximum 2; $XROPEN_{it}$ is the openness of executive recruitment and has a score of maximum 1; $XCONST_{it}$ is the constraint on chief executive and has a score of maximum 4 and $PARCOMP_{it}$ is the competitiveness of political participation and has a score of maximum 3.

The variable $AUTOC_{it}$ is the autocracy index for the country i and for the year t . It is represented by a score between 0 and 10 and is defined by:

$$AUTOC_{it} = XRCOMP_{it} + XROPEN_{it} + XCONST_{it} + PARREG_{it} + PARCOMP_{it} \quad (3)$$

where $XRCOMP_{it}$ is the competitiveness of executive recruitment and has a score of maximum 2; $XROPEN_{it}$ is the openness of executive recruitment and has a score of maximum 1; $XCONST_{it}$ is the constraint on chief executive and has a score of maximum 3; $PARREG_{it}$ is the regulation of participation and has a score of maximum 2 and $PARCOMP_{it}$ is the competitiveness of political participation and has a score of maximum 2.

The HDI and the polity index allows us to capture the influence of participation in peacekeeping operations on variables that cannot be measured by wealth, but which greatly affect the lives of a country's citizens.

3.1.3 Data for instrumental variables

A final source of data should be mentioned. Indeed, a more in-depth analysis led us to generate instrumental variables. We tested two methods based on four variables, making a total of eight instrumental variables. These instrumental variables measure the geographical, the linguistic and the cultural (via religions) proximity between the countries that send peacekeepers and the countries that host UN peacekeeping missions. The fourth instrumental variable is a composite variable of the three previous ones obtained via the principal component analysis.

To obtain these instrumental variables, we need the distance between each pair of countries for the desired indicator. The geographical distances between each pair of countries come from the CEPII database (as mentioned in section 3.1.1). The linguistic and religious distances come from the Research Web-Page for Douglas Dow. The data for the latter two variables are represented on a scale of 0 to 10, with 0 for the lowest distance (linguistic or religious) and 10 the highest. These data are for the year 2015 but we have considered that distances do not vary over time, so we have used them for our entire panel. To make the analysis easier, we have modified these variables into proximity variables via the following formulas:

$$\textit{Geographical proximity}_{ij} = 1/\textit{logarithm of the geographical distance}_{ij} \quad (4)$$

$$\textit{Linguistic proximity}_{ij} = 1/(\textit{linguistic distance}_{ij} + 1) \quad (5)$$

$$\textit{Religious proximity}_{ij} = 1/(\textit{religious distance}_{ij} + 1) \quad (6)$$

where i represent the country contributing in peacekeepers and j represent the country hosting the UN peacekeeping mission. We have added 1 to the linguistic and religious distance because some data are equal to 0.

Data for the dummy variable on the location of missions is taken from the United Nations. Countries hosting a UN peacekeeping mission in a specific year are assigned the value 1, and a value of 0 is assigned otherwise.

From these data, two types of instrumental variables were created:

- The first type of instrumental variables is obtained through a weighted average of the proximity (geographic, linguistic and religious) according to the location of the UN peacekeeping missions (excluding the country whose number of peacekeepers is to be predicted) for each country and for each year. Based on the three instrumental variables obtained, a fourth was created via the principal component analysis.
- The second type of instrumental variables is obtained through a weighted average of the proximity (geographic, linguistic and religious) according to the number of peacekeepers sent by each country (excluding the country whose number of peacekeepers is to be predicted) for each country and for each year. Again, we created an instrumental variable via the principal component analysis of the three previous instrumental variables generated.

This allowed us to obtain the eight instrumental variables that are used to estimate the causal relationship between the number of troops sent and the economic outcome.

3.2 Methodology

To identify the impact of sending troops to UN operations on the economy of the contributing country, we rely on two different sources of dependant variables. Subsequently, instrumental variables will be included to test for endogeneity and then try to establish the causal relationship between the dependent variables and the number of troops sent to UN peacekeeping operations.

3.2.1 Dependant variables

First of all, we look at variables giving us economic outcomes. To do this, we use the GDP, the GDP per capita as well as their variants in logarithm. This allows us to distinguish the effect of sending troops to peacekeeping operations both on the whole country and on an individual level. In addition, many authors such as Cornilleau (2006) and Głodowska (2017) tell us that the GDP and the GDP per capita have a very close relation with the socio-economic development and the well-being of a nation and that they are very good indicators of the latter two. However, more and more criticism appear regarding the GDP as a good indicator of the wealth and the well-being and many alternatives became to emerge.

In a second step, as a variation in the troop's contribution is not always reflected in a modification of the economic outcomes, we examine variables that may reflect an effect on institutional outcomes. Two different dependant variables are used to measure institutional outcomes. The first one is the Human Development Index and the second is the polity index. These two dependent variables allow us to capture the influence of participation in peacekeeping operations on variables that cannot be measured by wealth, but which greatly affect the lives of a country's citizens.

3.2.2 The model

To measure the effect of sending troops to United Nations peacekeeping operations (*UN troop_{it}*) on the GDP per capita (denoted by *GDPpc_{it}*), for country *i* at time *t*, we estimate the following model as a reference specification:

$$GDPpc_{it} = \beta_0 + \beta_1 UN\ troop_{it} + \alpha_i + \delta_t + u_{it} \quad (7)$$

The parameter β_0 is the constant and β_1 shows us the effect of an increase of the troop contribution of a country. α_i is the country fixed effect while δ_t is the time fixed effect, and finally, u_{it} is the idiosyncratic error term.

The equation (7) allows us to quantify the economic outcome of sending troops to the United Nations. When we measure the impact on an institutional outcome, we must modify the dependant variable of the reference model so that the equation becomes:

$$Institution_{it} = \beta_0 + \beta_1 UN\ troop_{it} + \alpha_i + \delta_t + u_{it} \quad (8)$$

Where $Institution_{it}$ represents the different possible institutional outcomes for country i at time t , such as the Human Development Index or the polity index.

Based on the economic theory and the existing literature on the subject, we have some reason to believe that our benchmark model faces endogeneity. We suspect that the main source of endogeneity would come from simultaneity and/or reverse causality. Indeed, we want to show that sending troops to UN peacekeeping operations affects the wealth of a nation. However, we have some reason to believe that the wealth of a nation also affects the number of troops it sends. In an attempt to solve this problem, we applied the instrumental variables method. To do so, we instrumented the variable UN troop (number of peacekeepers a country sends for a given year) with instrumental variables as described in the previous section (3.1.3). It is not possible to test the exclusion restriction. However, an attempt can be made to show that they are valid on the basis of common sense and economic theory. We expect our instrumental variables to be valid since we do not think that geographical, linguistic or religious proximity between two countries will have a significant impact on the wealth of a country. If this turns out to be the case, a change in the instrumental variables is assumed to have an effect on the number of peacekeepers a country sends but no effect on the wealth of the country sending them. However, we can criticize these instrumental variables since it is possible that the distance between two countries has an impact on their wealth. Many authors such as Fratianni, M. (2009) or Cyrus, T.L. (2012) have shown through various gravity equations, that countries that are close (geographically, linguistically or in terms of religion) trade more with each other. Furthermore, conflicts negatively affect the wealth of a country and therefore may have an impact on the countries with which it trades. This is not the direction we have taken and we have tested the model assuming that the instrumental variables are valid.

The instrumental variables method requires two successive regressions such as:

$$\widehat{UN\ troop}_{it} = \eta_0 + \eta_1 IV + \delta_t + v_{it} \quad (9)$$

$$GDPpc_{it} = \beta_0 + \beta_1 \widehat{UN\ troop}_{it} + u_{it} \quad (10)$$

where $\widehat{UN\ troop}_{it}$ is the prediction of the number of troops a country will send in a given year, IV represents the different possible instrumental variables and v_{it} is the error term for the first stage regression.

As we have panel data with many observations and we use several levels of fixed effects, the most convenient way to regress the equations is to use the command *reghdfe* in the statistical and econometrics software Stata. This command allows us to make regressions with multiple fixed effects (FEs) and individual FEs with group-level outcomes (Correia & Constantine, 2019). In the benchmark model, we absorb the fixed effects for the country and the year, using the *absorb* option. For further regressions, we absorb the interactions of multiple categorical variables. Moreover, we report the standards errors using the *vce(cluster clustervars)* option. This allows us to estimate consistent standard errors even when the observations are correlated within groups. In all the regressions, the *clustervars* is represented by the country variable. For regressions with instrumental variables, the Stata command *xtivreg* is used. This command allows us to obtain the results of the first level regressions, which are essential when analysing the results.

For more details, Table 8 presents summary statistics for all variables included in our econometric analysis. Table 9 provides the correlations matrix for all the variables used in the analysis and Figures 11 to 14 present kernel density estimates for several variables (see appendices).

3.3 Results

In this section we analyse the different results obtained. It is important not to draw too hasty conclusions from the different results and to take a step back when needed. Indeed, we try to be as neutral as possible and to provide the most representative picture of reality. Nevertheless, the results are not always straightforward and it is sometimes necessary to criticise them if they do not really represent reality, even if this is at the expense of strong results that seem to bring new elements to the literature. We start by describing the results as they appear and then go on to analyse them in greater depth. We will see that we must be very careful about the conclusions we draw, but we will not diminish the extent of the results where they are valid.

It should be noted that, for all regressions, the sample size is always large enough not to have statistical problems in this respect. On another note, the article from Coleman and Nyblade (2018) which examines the relationship between a country's GDP per capita and the number of peacekeepers it sends (the reverse of the one we do), reviews several articles on the subject. It is mentioned that "It is important to recognize that challenges arise in analysing any relationship between personnel contributions and the GDP per capita because the distributions of both variables are skewed". We face the same problem, and to handle it, we use the logs of the variables. This is not without cost as the authors tell us that the relative impact of large contributors is diminished in the analysis. They conclude that "The overall results thus become more likely to be driven by small variations in small contributions, which risks the results being less representative of what drives the relatively small number of countries making the large troop contributions that constitute the bulk of UN peacekeeping forces". Therefore, it is important to keep this in mind when analysing the results.

3.3.1 First method: results on economic outcomes

We start by looking at the economic outcomes of sending military troops to the UN for the contributing country. Our first variable of interest is the GDP per capita. As we can see from Table 1, the first column only takes into account the number of troops a country sends. The coefficient obtained is negative and statistically significant at the 1 percent level. This means that on average, if a country sends 1000 extra soldiers to UN peacekeeping operations, the GDP per capita will decrease by 1781.54 constant 2010 US\$. We obtain a similar result in column (3) where the explanatory variable is the natural logarithm of the troop contribution. The coefficient obtained means that an increase of 1% of the troop contribution to peacekeeping operations decreases on average the GDP per capita by 11.77 constant 2010 US\$. These results are counter-intuitive and the opposite of what

the literature suggests. Moreover, if we put them into context, we realise that these results seem far too high. This means that if the countries which are close to the average GDP per capita increase their troop contribution to UN peacekeeping operations by 1%, its GDP per capita will decrease by about 0.1%, which is substantial and does not seem to reflect reality. However, we can deepen the analysis and check if there is a non-linear relation between the GDP per capita and the contributions to UN peacekeeping operations. This is what column (2) shows us. We can see that the coefficient UN troop becomes even more negative. However, the coefficient square of UN troop appears to be positive and both coefficients are significant at the 1% level. These results suggest that there is a convex relationship between the number of troops sent and the GDP per capita. In other words, the negative effect of sending troops to the United Nations tends to decrease as the number of troops sent increases and will even turn into a positive effect after a certain threshold. We can therefore compute the turning point which is 6819. This value means that a country needs to send more than 6819 soldiers to UN peacekeeping operations to have a positive impact on the GDP per capita of its citizens. Before this threshold, sending troops to the UN has, on average, a negative impact on the GDP per capita. When we look at the summary statistics of the variable UN troop (Table 8), the mean is far below 6819 (i.e. 312), which implies that very few countries send more than 6819 soldiers during the years observed. 0.7% of all data are above the 6819 threshold and if we only consider countries sending troops, the proportion barely reaches 1.5%. Finally, column (4) does the same analysis as column (2) but with the natural logarithm of UN troop and the square of the natural logarithm of UN troop. This time, both coefficients are negative, but the natural logarithm of UN troop is not significant anymore. Therefore, according to this last regression, it cannot be said that the number of troops sent has a significant impact on the GDP per capita.

Table 1: The effect of peacekeepers on the GDP per capita

	GDP per capita			
	(1)	(2)	(3)	(4)
UN troop (per 1000 soldiers)	-1781.544*** (319.398)	-3767.240*** (645.067)		
Square of UN troop (per 1000 soldiers)		276.197*** (63.707)		
Natural logarithm of UN troop			-1177.076*** (171.237)	-463.711 (320.130)
Square of the natural logarithm of UN troop				-101.708*** (40.452)
Observations	5649	5649	5649	5649
R ²	0.889	0.890	0.892	0.892

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses are clustered at the country level. The dependant variable is the Gross Domestic Product per capita. The numbers in the column headings indicate the different regressions performed to obtain the results table. All columns include controls for country and year fixed effects.

When we look at the graph of kernel density of the GDP per capita (Figure 11), we see that the data are not linear and suggest a logarithmic relation. We report the results using the natural logarithm of the GDP per capita as the dependant variable in Table 2. We believe that this picture is a more accurate reflection of reality. When we look at the results, we see that column (1) report a coefficient which is positive and significant at the 10% level. This coefficient remains relatively high, since an increase of 1000 peacekeepers would imply an increase in the GDP per capita of approximately 2.5%. This is more in line with our expectations of the impact of peacekeepers on the GDP per capita. Furthermore, we see that the other coefficients lose most of their significance. This means that the coefficients are not statistically different from 0 and therefore the explanatory variables have no effect on the explained variable. However, if we consider that there is an effect, we would say that the effect is very small, but the sign of the coefficients suggests that it is in line with our expectations.

Table 2: The effect of peacekeepers on the natural logarithm of the GDP per capita

	Natural logarithm of the GDP per capita			
	(1)	(2)	(3)	(4)
UN troop (per 1000 soldiers)	0.0250*	0.0408		
	(0.0137)	(0.0337)		
Square of UN troop (per 1000 soldiers)		-0.00219		
		(0.00384)		
Natural logarithm of UN troop			0.00266	-0.00599
			(0.00699)	(0.0173)
Square of the natural logarithm of UN troop				0.00123
				(0.00240)
Observations	5649	5649	5649	5649
R ²	0.972	0.972	0.972	0.972

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses are clustered at the country level. The dependant variable is the natural logarithm Gross Domestic Product per capita. The numbers in the column headings indicate the different regressions performed to obtain the results table. All columns include controls for country and year fixed effects.

To complete the analysis on the GDP per capita, we ran a number of regressions with control variables and varied the fixed effects. We selected three control variables that we believe may be correlated with the number of peacekeepers a country sends. These are the working age population (population aged 15-64, as a percentage of the population), the military expenditure (as a percentage of the GDP) and the distance to the nearest conflict (in kilometers). Regarding the fixed effects, a first set of regressions takes into account country and the interaction between region and year fixed effects. The second set of regressions takes into account the country and the interaction of the language and the year fixed effects. The last set of regressions takes into account the fixed effects for the country and the interaction between the region, the language and the year. The table with all the results can be found in the appendices (Table 10). It can be seen that the coefficients for the impact of sending troops to UN peacekeeping operations on the logarithm of GDP per capita are not fundamentally different from those obtained in the previous table (Table 2). They tend to be larger but the significance of the coefficients varies slightly when considering either specification, which does not provide much clarification for our analysis.

The analysis is also carried out with the gross domestic product as the dependent variable (see Table 11 in the appendices). The results obtained show us that there is no effect of the sending of peacekeepers on the GDP of the contributing countries. Indeed, although the coefficients obtained are relatively high, their standard deviations are too large for there to be a significant effect on the dependent variable. Therefore, we will not take the analysis on the GDP any further.

Nevertheless, the graph of kernel density of the GDP (Figure 12) suggest a logarithmic relation. Table 3 presents the results when the dependent variable is the natural logarithm of the GDP. Column (1) shows a coefficient which is statistically significant at the 1% level. This coefficient means that, on average, an increase of 1000 peacekeepers leads to an increase in the country's GDP of 5%. This result is in line with what is expected. Column (2) shows us the interaction between the number of peacekeepers sent and its square. Again, the results can be interpreted as they are significant at least at the 10% level. They show us that there is a concave relationship. The turning point is at the threshold of 7252 peacekeepers. This means that up to this threshold, sending additional peacekeepers has on average a positive impact on the country's GDP. This threshold is very high and a very limited number of countries send more than 7252 peacekeepers to UN peacekeeping operations. The coefficient obtained in column (3) shows the relationship between the natural logarithm of the GDP and the natural logarithm of the number of troops sent. It can be interpreted as follows: a 1% increase in the number of troops sent implies on average a 0.017% increase in the country's GDP. Finally, when the natural logarithm of the number of troops sent is interacted with its square (shown in column (4)), the coefficients lose their significance.

Table 3: The effect of peacekeepers on the natural logarithm of the GDP

	Natural logarithm of the GDP			
	(1)	(2)	(3)	(4)
UN troop (per 1000 soldiers)	0.0500*** (0.0158)	0.0991*** (0.0311)		
Square of UN troop (per 1000 soldiers)		-0.00683* (0.00353)		
Natural logarithm of UN troop			0.0169** (0.00691)	-0.00994 (0.0166)
Square of the natural logarithm of UN troop				0.00382* (0.00228)
Observations	5652	5652	5652	5652
R ²	0.986	0.986	0.986	0.986

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses are clustered at the country level. The dependant variable is the natural logarithm Gross Domestic Product. The numbers in the column headings indicate the different regressions performed to obtain the results table. All columns include controls for country and year fixed effects.

3.3.2 Second method: result on institutional outcomes

In the previous section, we have looked at the economic outcomes that sending troops to the United Nations can generate. In this section, we will focus our attention on dependent variables which are not entirely explained by wealth (even if they are correlated or partially computed with economic indicators) but which are also important in representing the living environment of a country's citizens. To represent the effect of peacekeepers on institutional outcomes we consider two dependant variables, namely the Human Development Index and the polity index.

As one of the three components of the HDI is the gross national income (GNI) per capita, we can expect somewhat different results from those of the analysis of the GDP per capita, but not fundamentally divergent. Table 4 shows us the effect of sending troops to UN peacekeeping missions on the HDI. As the HDI is a value between 0 and 1, it is expected to get relatively small coefficients. We can see that all coefficients are statistically significant at least at the 10% level for the first two column. The first column shows us a positive coefficient. In numerical terms, it means that if a country sends 1000 more troops to the United Nations, its human development index will on average increase by 0.0085. When we compute the turning point of the coefficients in column (2), we see that it is 7799. This is higher than those calculated previously and suggests that a country can send more troops to UN peacekeeping operations before it has a negative impact when considering the human development index. Of the 6270 observations we have, only 37 are above the threshold of 7799 which leaves some space for improvement. The third column shows, however, that the relation between the HDI and the natural logarithm of UN troop is not statistically significant.

Table 4: The effect of peacekeepers on the HDI

	HDI		
	(1)	(2)	(3)
UN troop (per 1000 soldiers)	0.00846*** (0.00267)	0.0160** (0.0634)	
Square of UN troop (per 1000 soldiers)		-0.00103* (0.000555)	
Natural logarithm of UN troop			0.00824 (0.00568)
Observations	4820	4820	4820
R ²	0.713	0.714	0.716

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses are clustered at the country level. The dependant variable is the Human Development Index. The numbers in the column headings indicate the different regressions performed to obtain the results table. All columns include controls for country and year fixed effects.

We analyse the results for the effect of peacekeepers on the country polity index using the Table 5. We can see that there is no direct effect between the variable UN troop and the polity index since the coefficient is not significant (column (1)). Nonetheless, if there were to be one, it would tend to be positive. In addition, the coefficient of the natural logarithm of the UN troop is positive and significant at the 5% level. This suggests that there is a positive relationship between participation in peacekeeping operations and the polity index. In concrete terms, the coefficient can be analysed such that a 1% increase in the number of troops sent to UN peacekeeping operations increases, on average, the polity index by 0.00168 point. This means that the country becomes more democratic according to the criteria used to generate the polity index variable. The results in column (2) suggest that there is a non-linear relationship between the two variables. The relation is concave and the turning point is reached when a country sends more than 3897 soldiers to the UN. Even if this threshold is lower than the previous ones, it remains largely higher than the mean and the median (respectively 312 and 0) since only 1.58% of the observations exceed this threshold. However, some countries send far more than 3897 peacekeepers. This is particularly the case for the 5 countries that contribute the most in 2019, namely: Ethiopia, Bangladesh, Rwanda, Nepal and India as can be seen in Figure 8 (see appendices). It would be interesting to investigate this further and check the direction of the causality to see if the impact is large for these countries.

Table 5: The effect of peacekeepers on the polity index

	Polity index		
	(1)	(2)	(3)
UN troop (per 1000 soldiers)	0.0455 (0.147)	0.662** (0.265)	
Square of UN troop (per 1000 soldiers)		-0.0849*** (0.0260)	
Natural logarithm of UN troop			0.168** (0.0646)
Observations	4605	4605	4605
R ²	0.865	0.866	0.866

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses are clustered at the country level. The dependant variable is the Polity index. The numbers in the column headings indicate the different regressions performed to obtain the results table. All columns include controls for country and year fixed effects.

3.3.3 Instrumental variables

So far, we have studied the results directly. However, there are indications that there may be endogeneity in our regressions. In an attempt to test this, we have created several instrumental variables that we have tested on our regressions. As mentioned earlier, we generated three instrumental variables and a fourth one composed of the three previous ones in two different ways to obtain a total of eight instrumental variables. Here are the results of the regressions with the instrumental variables.

Table 6 presents the results for the regressions with the first instrumental variable estimation method on the GDP per capita. Looking at the first column, one way of interpreting these results is to say that the closer countries are to countries hosting a UN peacekeeping mission (according to the geographic distance), the more peacekeepers they will send (this is shown by the positive sign of the coefficient 23577.49). In addition, the more peacekeepers a country sends, the more it will have a negative impact on the GDP per capita (this is shown by the negative sign of the coefficient -29.334). The results in the third column show us an opposite analysis. Indeed, we can interpret them by saying that the smaller the religious distance between a country and the other countries hosting a UN peacekeeping mission, the less they will send peacekeepers (we can see this thanks to the negative sign of the coefficient -2708.367). Moreover, the more peacekeepers a country sends, the more positive impact it will have on the GDP per capita (this is shown by the positive sign of the coefficient 3.764). However, no results are statistically significant. Furthermore, the first stage F-statistics are relatively small, which indicates the presence of a weak instrument. Therefore, it cannot be said that our instruments can predict the number of peacekeepers a country will send.

Table 6: First instrumental variables on the GDP per capita

	GDP per capita			
	IV1 Geography	IV1 Language	IV1 Religion	Principal component
UN troop	-29.334 (25.265)	10.723 (9.440)	3.764 (18.901)	-3.444 (16.070)
Time dummies	YES	YES	YES	YES
First stage				
UN troop	23577.49 (20414)	4643.453* (2676.07)	-2708.367 (6861.1)	25.191 (69.391)
First Stage F-Statistic	3.01	3.09	3.08	3.06
Observations	5387	4296	4296	4211

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses are clustered at the country level. The dependant variables are the different instrumental variables (obtained via the first method) for the first stage regressions and the GDP per capita for the second stage regressions. All columns include dummy variables for the year fixed effects.

The results for the regressions with the second instrumental variable estimation method on the GDP per capita are presented in Table 7. This time we see that the coefficients for UN troop according to IV2 Geography and IV2 Language are respectively significant at the 5% level and the 1% level. When we look at the results for the second stage regression, only the coefficient for IV2 Geography is statistically significant at a reasonable level (in this case the 5% level). However, we can again note that the first stage F-statistic is too small (i.e. 2.88) to be able to infer results other than that the instrument does not allow us to predict the number of peacekeepers a country will send to UN peacekeeping operations.

Table 7: Second instrumental variables on the GDP per capita

	GDP per capita			
	IV2 Geography	IV2 Language	IV2 Religion	Principal component
UN troop	-22.774** (10.306)	3.079 (3.881)	-10.049 (10.157)	-48.729 (102.792)
Time dummies	YES	YES	YES	YES
First stage				
UN troop	12.149** (5.036)	-3.053*** (1.082)	1.085 (1.088)	51.539 (111.383)
First Stage F-Statistic	2.88	3.06	2.93	2.93
Observations	5387	4296	4296	4211

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses are clustered at the country level. The dependant variables are the different instrumental variables (obtained via the second method) for the first stage regressions and the GDP per capita for the second stage regressions. All columns include dummy variables for the year fixed effects.

We have reproduced the procedure with the same instrumental variables according to the natural logarithm of the GDP per capita and the natural logarithm of the GDP. The tables of results can be found in the appendices (respectively Table 12 and 13 and Table 14 and 15). The results obtained for the first stage regressions are not different than those obtained above because the regressions performed are identical. The coefficients of the second stage regressions are not significant when the instrumental variables generated by the first method are used. When the instrumental variables created from the second method are used, some coefficients become statistically significant but again, the F-statistics are too low to infer a result.

4 Conclusion

The United Nations peacekeeping programme is probably one of the most important conflict resolution processes the world has ever seen. Since its first mission in 1948, UN peacekeeping operations have evolved significantly. Starting as simple observation missions, they have become increasingly important over time. This has been transmitted through larger, more multidimensional and in some cases more robust missions. To this day, more than one million people have served in peacekeeping operations. At the end of March 2021, almost 90000 peacekeepers from 121 countries are currently deployed on 12 missions (United Nations Peacekeeping, 2021c & United Nations Peacekeeping, 2021b). These figures are significant and have led to abundant research on the subject. Yet, econometric evidence of the relationship between the number of peacekeepers a country sends and economic or institutional outcomes is still quite limited. It is on this last aspect that our analysis has focused.

The results we obtained are neither straightforward nor clear cut. Preliminary results estimate different variations of the variable representing the number of troops sent to peacekeeping operations on the GDP per capita. The coefficients obtained show a very large and significant impact of the number of troops sent on the GDP per capita. These results are the opposite of what we expected, but it is likely that the regressions performed are not adequate since the data are skewed. To solve this problem, we performed the same analysis with the logarithm of the GDP per capita as dependent variable. The coefficients are consistent with what is expected but they lose most of their significance and are therefore not statistically different from 0 in many cases. In other words, the number of troops sent to UN peacekeeping operations does not affect the GDP per capita. We also replicated the regression set with several control variables and varying fixed effects. This did not shed much light on the issue.

Another set of regressions was performed, but this time with GDP and the natural logarithm of GDP as the dependent variable. The results with the GDP as dependent variable are not significant. Nevertheless, the data are again skewed and we have replicated the analysis with the natural logarithm of the GDP. The latter shows us that the results are more statistically significant than in the regressions with the natural logarithm of the GDP per capita as dependent variable. Moreover, the sign of the coefficients is consistent with what we expected.

Thinking that peacekeepers do not only have an effect on economic outcomes, we looked at their effects on institutional outcomes. To do so, we considered the Human Development Index and the polity index. The results are not always significant, but they are in line with our expectations.

This means that an increase in the number of peacekeepers sent increases the country's human development index. The polity index also increases with the number of troops sent, which means that the country is becoming more democratic at the expense of autocracy.

Since we expected to see a peak following diminishing marginal returns to sending peacekeepers, we implemented a quadratic relationship taking into account the number of peacekeepers sent and its square to the different dependent variables. We have calculated the turning point and it is in all cases very high (at least much higher than the average number of troops sent by the countries). This suggests that there is still a lot of room for improvement before countries send the optimal number of peacekeepers (in terms of maximising their utility).

However, an endogeneity problem could compromise all the results obtained. In order to try to verify whether this bias really exists or not, we have created different instrumental variables. These are based on the geographical, linguistic and religious proximity of the different countries to either the countries that host peacekeeping operations or the other contributing countries. Unfortunately, the instrumental variables show us that the instruments used do not allow us to predict the number of peacekeepers a country will send to a UN peacekeeping operation. Furthermore, the f-statistic are relatively small, which suggests that our instruments are weak. As a result, we cannot say whether the regressions suffer from a bias of endogeneity and if so, to what extent.

Thanks to the various results obtained, we can say that the economic and institutional outcomes of sending troops to UN peacekeeping operations for the contributing country are mixed. The results are not always significant, but when they are, they show that sending peacekeepers is positive for the country, up to a certain threshold which is rarely reached. This is very much in line with what we expected since we believe that sending peacekeepers should, on average, have a positive impact on the contributing countries. This positive impact does not last forever as we suspect diminishing marginal returns to sending peacekeepers, which is also observed in the results. Since we have not been able to detect whether our regressions suffer from endogeneity, it is possible that the results are over- or underestimated and do not reflect the reality we wish to describe.

In any case, the results obtained should not be immediately discarded. In order to confirm or refute the results obtained, it would be wise to extend the breadth and depth of the analysis. If further research were to be carried out on the same subject, it would be wise to consider the results we have obtained so as not to replicate exactly the methodology we have set up, but rather to improve it or to look for another way to implement instrumental variables. Furthermore, it would

be very interesting to bring a view from other disciplines to this study. As the study touches on geopolitics, military or history, a perspective from these fields could enhance both the method used and the substance of the research. Moreover, the complementarities between the different fields may benefit this work and more generally economics, this would also be true reciprocally. On the other hand, it is always possible to obtain more complete and accurate data. For example, it is possible to specify for which missions countries contribute or to indicate the personal characteristics of the peacekeepers sent by each country, such as age, gender, level of education, function, etc. The number of control variables and fixed effects can also be increased. All this would allow for more accurate results. Finally, it should be remembered that the analysis carried out covers many countries, they all have different contexts and situations. For this reason, we believe that it would also be interesting to carry out the analysis on sub-groups of countries, notably according to wealth, the number of peacekeepers they send, etc.

Although we have attempted to fill a gap in the econometric literature on UN peacekeeping operations, there is still work to be done before we have completely covered this topic. Moreover, it is likely that peacekeeping operations will continue to evolve in the coming years. Even if considerable efforts are devoted to conflict resolution, conflicts are still present and the trend is not towards their disappearance. While this is unfortunate, a lot of interesting work on the subject can be expected in the future.

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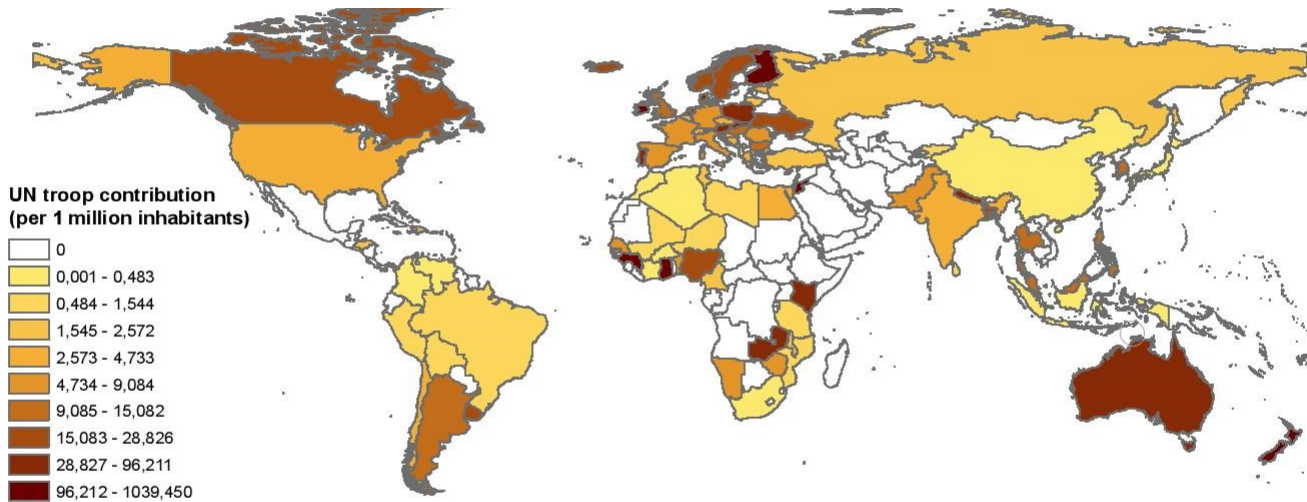
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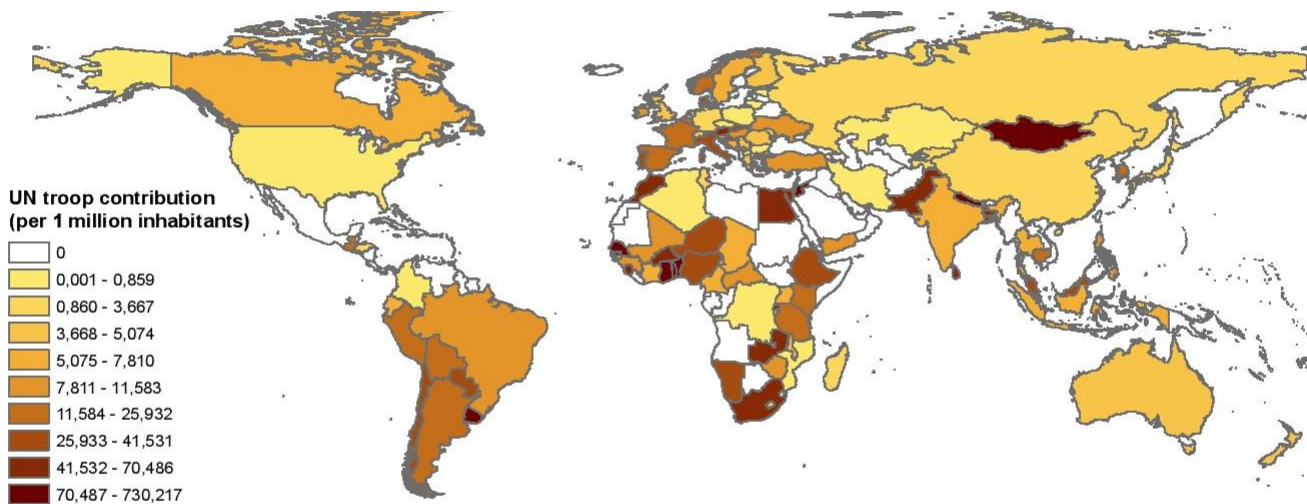
6 Appendices

Figure 5: UN troop contribution as a proportion of the population in 2000



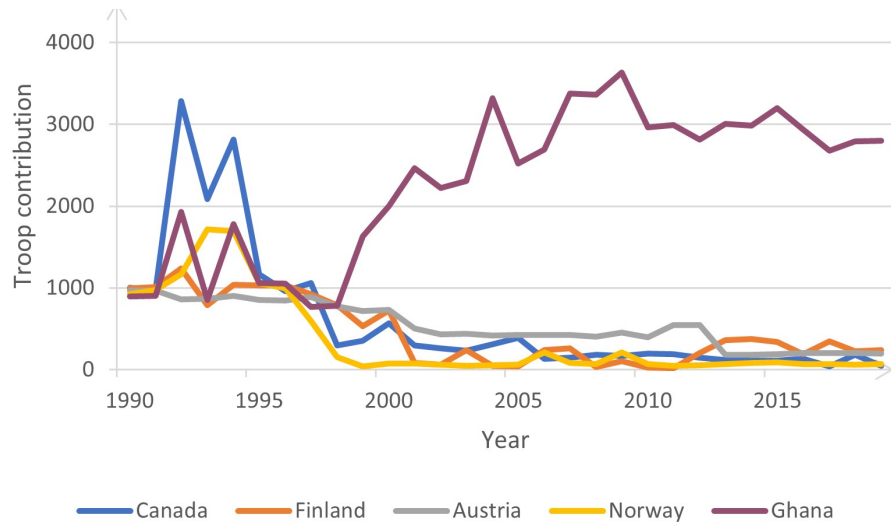
Source: United Nations and World Bank. The scale is divided by decile and allows us to see the distribution between countries. The scale is therefore different for each figure. Greenland and Antarctica have been removed for reasons of convenience

Figure 6: UN troop contribution as a proportion of the population in 2010



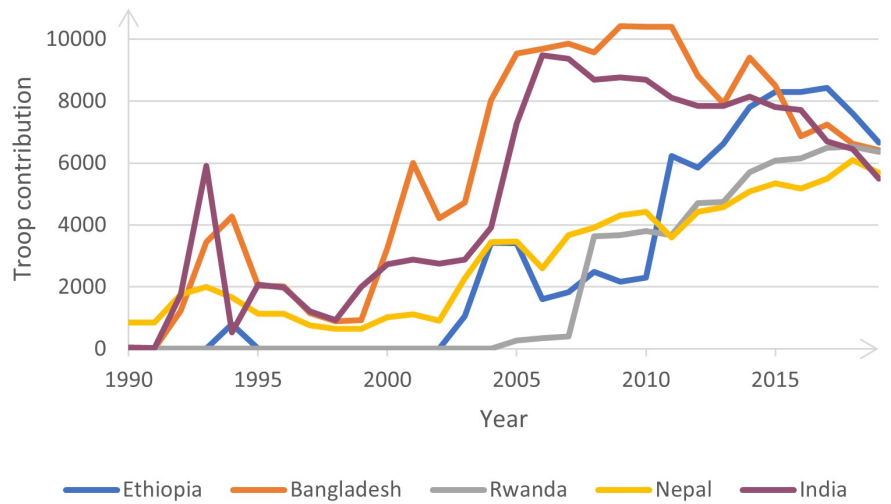
Source: United Nations and World Bank. The scale is divided by decile and allows us to see the distribution between countries. The scale is therefore different for each figure. Greenland and Antarctica have been removed for reasons of convenience

Figure 7: Top 5 troop contributing countries in 1990



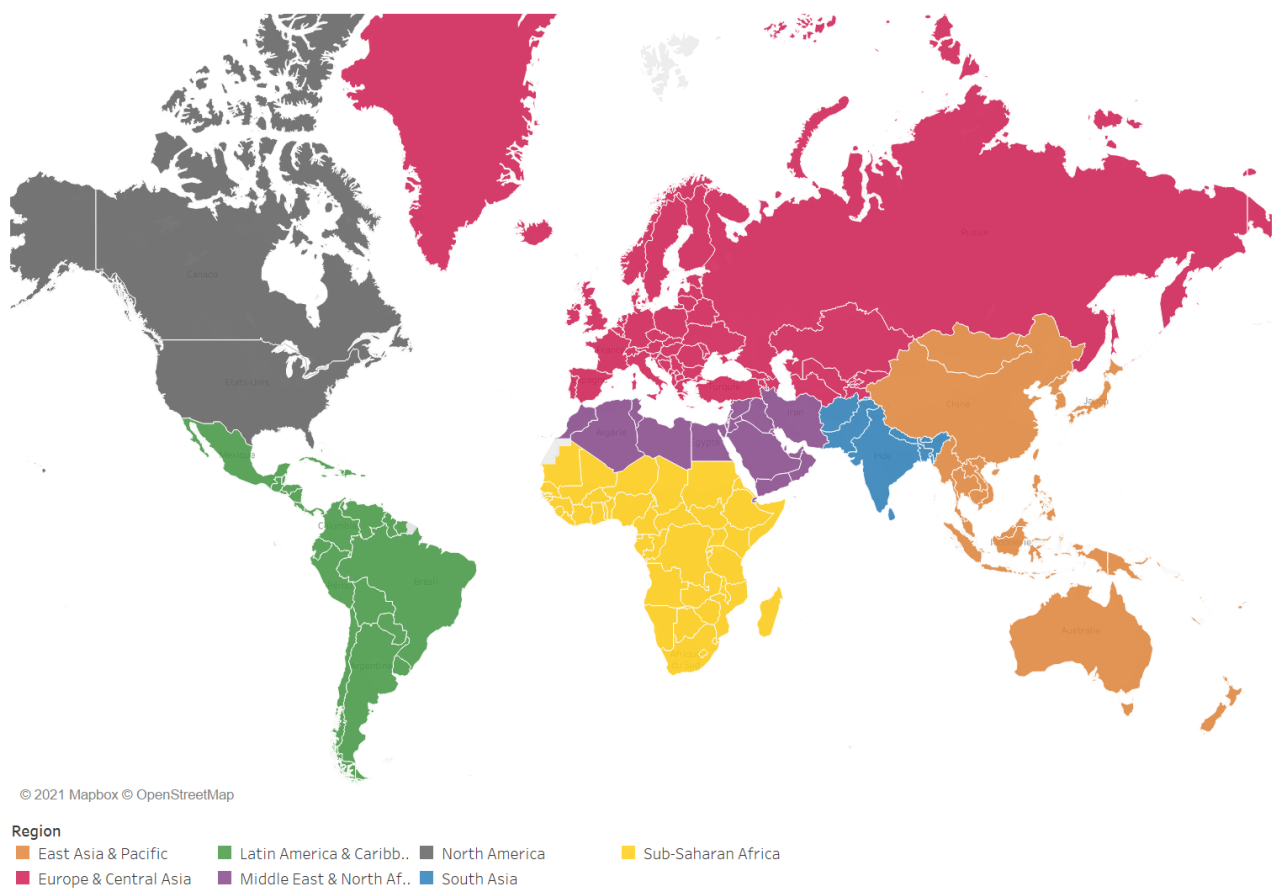
Source: United Nations Peacekeeping. The five countries listed are those that contributed the most in absolute terms to UN peacekeeping operations in 1990.

Figure 8: Top 5 troop contributing countries in 2019



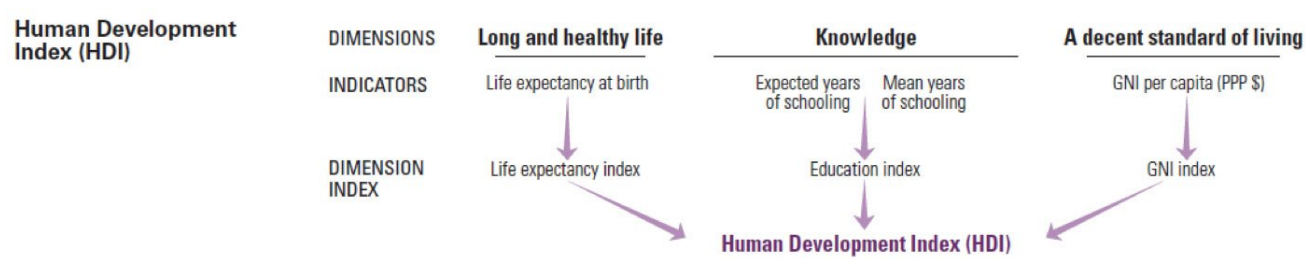
Source: United Nations Peacekeeping. The five countries listed are those that contributed the most in absolute terms to UN peacekeeping operations in 2019.

Figure 9: The world by region



Source: World Bank.

Figure 10: Human Development Index



Source: United Nations Development Program.

Table 8: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
UN troop	312.213	1024.783	0	11135	6270
Square of UN troop	1147491	7501608	0	123988225	6270
Natural logarithm of UN troop	2.213	2.783	0	9.318	6270
Square of the natural logarithm of UN troop	12.64	19.487	0	86.824	6270
UN troop per million inhabitants	20.832	77.341	0	1039.45	6199
GDP per capita	12030	20226	95.188	189422	5650
Natural logarithm of the GDP per capita	8.218	1.638	4.556	12.152	5650
GDP (million US\$)	266957	1195482	8.824	21374400	5653
Natural logarithm of the GDP	23.611	2.412	15.993	30.693	5653
HDI	0.656	0.196	0	6.154	4821
Polity index	3.228	6.569	-10	10	4606
First method instrumental variable according to language	0.007	0.008	0.002	0.08	4470
First method instrumental variable according to religion	0.016	0.015	0.003	0.107	4470
First method instrumental variable according to geographic distance	0.015	0.004	0.008	0.039	5790
Principal component of the first method instrumental variables	0	1.309	-1.71	8.419	4380
Second method instrumental variable according to language	58.833	40.547	5.539	229.686	4470
Second method instrumental variable according to religion	124.894	104.585	3.984	691.401	4470
Second method instrumental variable according to geographic distance	90.114	43.908	11.561	172.836	5790
Principal component of the second method instrumental variables	0	1.43	-2.452	4.106	4380
Population 15-64 (%)	0.617	0.071	0.46	0.864	5607
Military expenditures (% of the GDP)	2.308	3.002	0	117.35	4145
Nearest distance to conflict	1551.124	1533.477	16.23	9803.997	5820
Year	2004.5	8.656	1990	2019	6270
Country code	105	60.337	1	209	6270
Region	3.526	2.183	1	7	6270
Official language	25.165	17.614	1	65	6270

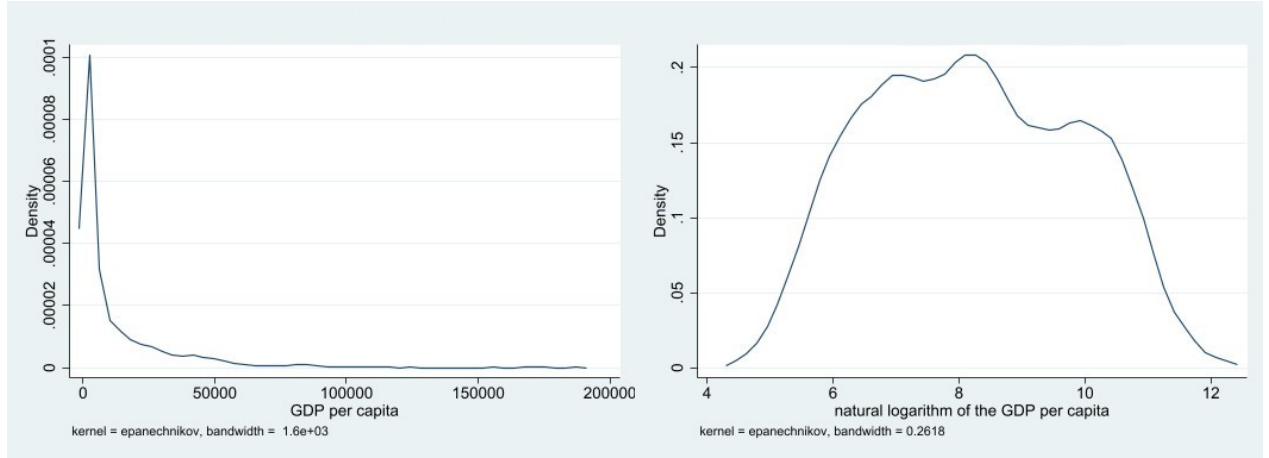
This table reports the mean, the standard deviation, the minimum, the maximum and the number of observations for the different indices.

Table 9: Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
UN troop	1.000									
Square of UN troop	0.908	1.000								
Natural logarithm of UN troop	0.600	0.350	1.000							
Square of the natural logarithm of UN troop	0.750	0.482	0.959	1.000						
GDP per capita	-0.090	-0.073	-0.023	-0.047	1.000					
Natural logarithm of the GDP per capita	-0.113	-0.106	0.012	-0.027	0.753	1.000				
GDP	0.092	0.036	0.217	0.198	0.204	0.234	1.000			
Natural logarithm of the GDP	0.239	0.138	0.508	0.450	0.298	0.457	0.447	1.000		
HDI	-0.073	-0.080	0.094	0.042	0.530	0.771	0.209	0.472	1.000	
Democracy index	0.063	0.013	0.325	0.245	0.295	0.385	0.139	0.297	0.406	1.000

Correlation matrix of the different variable used in the regressions.

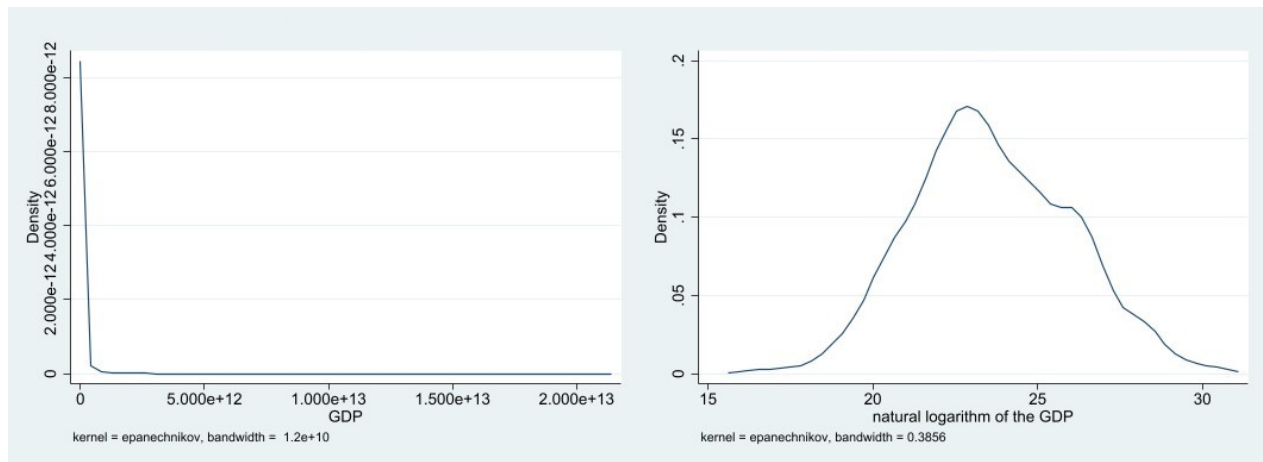
Figure 11: Kernel density estimate for the GDP per capita and the logarithm of the GDP per capita



(a) GDP per capita

(b) Logarithm of the GDP per capita

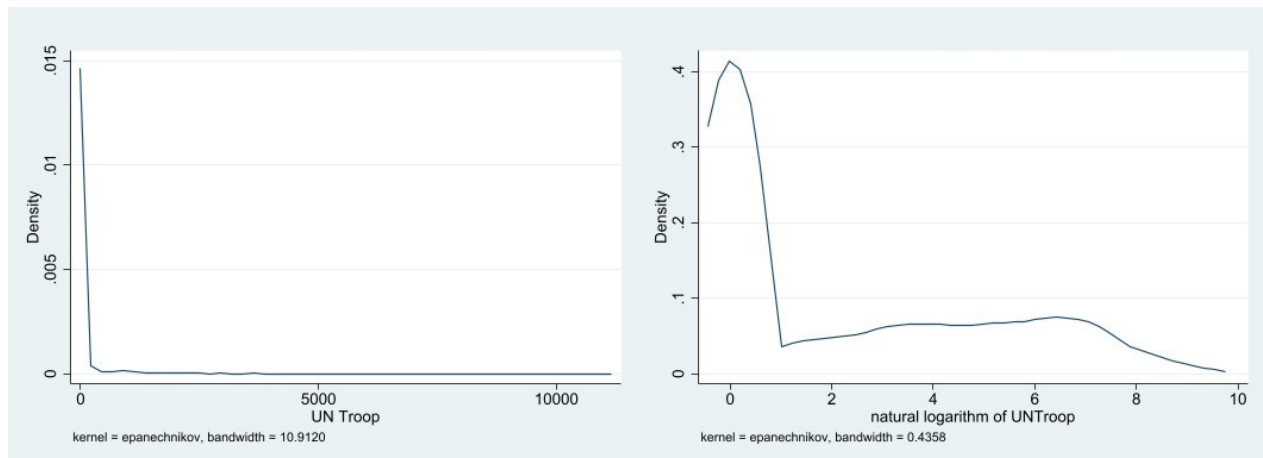
Figure 12: Kernel density estimate for the GDP and the logarithm of the GDP



(a) GDP

(b) Logarithm of the GDP

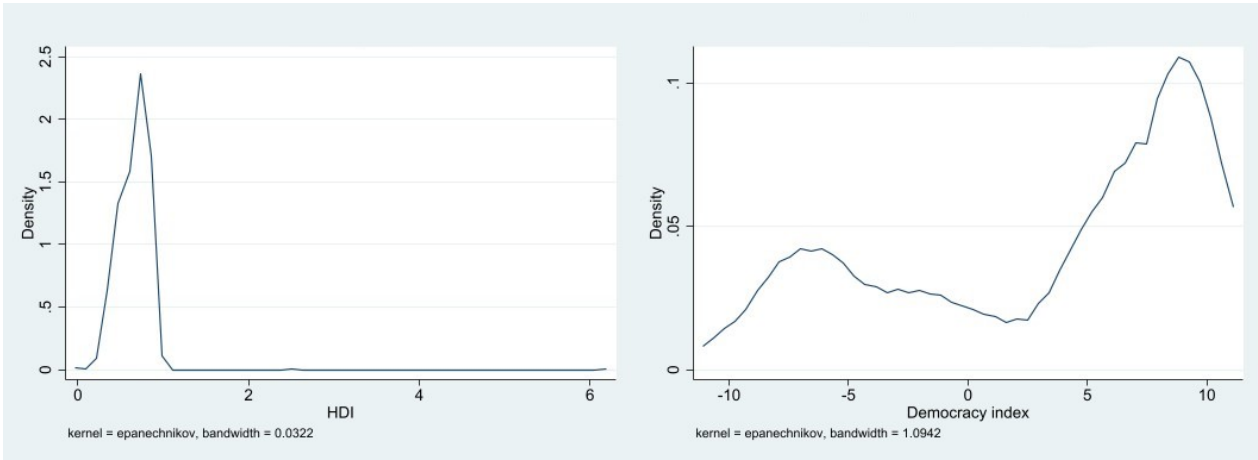
Figure 13: Kernel density estimate for the UN troop and the logarithm of the UN troop



(a) UN troop

(b) Logarithm of the UN troop

Figure 14: Kernel density estimate for the Human Development Index and the polity index



(a) Human Development Index

(b) Polity index

Table 10: The effect of peacekeepers on the GDP per capita with multiple control variables and fixed effects

	Natural logarithm of the GDP per capita			
	(1)	(2)	(3)	(4)
Country and interaction of the region and year fixed effect				
UN troop (per 1000 soldiers)	0.0302 (0.0186)	0.00596* (0.0328)		
Square of UN troop (per 1000 soldiers)		-0.00449 (0.00388)		
Natural logarithm of UN troop			0.00249 (0.00678)	
UN troop (per 1 million inhabitants)				0.0000926 (0.000128)
Population 15-64 (%)	3.819*** (0.958)	3.871*** (0.954)	3.829*** (0.964)	3.840*** (0.966)
Military expenditures (% of the GDP)	-0.00931*** (0.00271)	-0.00948*** (0.00269)	-0.00944*** (0.00269)	-0.00945*** (0.00269)
Nearest distance to conflict (per 1000 km)	-0.00907 (0.0190)	-0.00924 (0.0188)	-0.00992 (0.0193)	-0.00976 (0.0193)
Observations	4009	4009	4009	4009
R ²	0.979	0.979	0.979	0.979
Country and interaction of the language and year fixed effect				
UN troop (per 1000 soldiers)	0.0445*** (0.0144)	0.0224 (0.0302)		
Square of UN troop (per 1000 soldiers)		0.00380 (0.00372)		
Natural logarithm of UN troop			-0.00155 (0.00712)	
UN troop (per 1 million inhabitants)				-0.0000256 (0.000164)
Population 15-64 (%)	0.0870 (0.819)	0.0622 (0.820)	0.129 (0.843)	0.121 (0.842)
Military expenditures (% of the GDP)	-0.0109*** (0.00223)	-0.0108*** (0.00223)	-0.0108*** (0.00230)	-0.0108*** (0.00229)
Nearest distance to conflict (per 1000 km)	-0.00960 (0.0132)	-0.00894 (0.0134)	-0.00894 (0.0140)	-0.00900 (0.0140)
Observations	2902	2902	2902	2902
R ²	0.985	0.985	0.985	0.985

	Natural logarithm of the GDP per capita			
	(1)	(2)	(3)	(4)
Country and interaction of the region, language and year fixed effect				
UN troop (per 1000 soldiers)	0.0472** (0.0225)	-0.0242 (0.0347)		
Square of UN troop (per 1000 soldiers)		0.0161*** (0.00488)		
Natural logarithm of UN troop			-0.00309 (0.00719)	
UN troop (per 1 million inhabitants)				-0.0000733 (0.000186)
Population 15-64 (%)	-1.136 (0.896)	-1.206 (0.886)	-1.283 (0.912)	-1.301 (0.921)
Military expenditures (% of the GDP)	-0.0107*** (0.00248)	-0.0105*** (0.00246)	-0.0106*** (0.00265)	-0.0106*** (0.00264)
Nearest distance to conflict (per 1000 km)	-0.0152 (0.0169)	-0.0157 (0.0169)	-0.0155 (0.0172)	-0.0153 (0.0171)
Observations	2703	2703	2703	2703
R ²	0.989	0.989	0.989	0.989

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses are clustered at the country level. The dependant variable is the natural logarithm of the Gross Domestic Product per capita. The numbers in the column headings indicate the different regressions performed to obtain the results table. The controls for the fixed affects are mentioned above each set of regressions.

Table 11: The effect of peacekeepers on the GDP

	GDP (per million US\$)			
	(1)	(2)	(3)	(4)
UN troop	22.670 (58.531)	42.959 (175.896)		
Square of UN troop		-0.00282 (0.0169)		
Natural logarithm of UN troop			-16168.205 (21070.322)	-73081.670 (59195.675)
Square of the natural logarithm of UN troop				8121.113 (10777.467)
Observations	5652	5652	5652	5652
R ²	0.836	0.836	0.836	0.837

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses are clustered at the country level. The dependant variable is the Gross Domestic Product. The numbers in the column headings indicate the different regressions performed to obtain the results table. All columns include controls for country and year fixed effects.

Table 12: First instrumental variable on the natural logarithm of the GDP per capita

	Natural logarithm of the GDP per capita			
	IV1Dist	IV1Lang	IV1Relig	Principal component
UN troop	-0.00173 (0.00154)	-0.000572 (0.000468)	0.000611 (0.00173)	-0.00180 (0.00497)
Time dummies	YES	YES	YES	YES
First stage				
UN troop	23577.49 (20414)	4643.453* (2676.07)	-2708.367 (6861.1)	25.191 (69.391)
First Stage F-Statistic	3.01	3.09	3.08	3.06
Observations	5387	4296	4296	4211

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses are clustered at the country level. The dependant variables are the different instrumental variables (obtained via the first method) for the first stage regressions and the natural logarithm of the GDP per capita for the second stage regressions. All columns include dummy variables for the year fixed effects.

Table 13: Second instrumental variable on the natural logarithm of the GDP per capita

	Natural logarithm of the GDP per capita			
	IV2Dist	IV2Lang	IV2Relig	Principal component
UN troop	0.000449 (0.000313)	0.000541** (0.000261)	-0.000302 (0.000380)	-0.00164 (0.00362)
Time dummies	YES	YES	YES	YES
First stage				
UN troop	12.149** (5.036)	-3.053*** (1.082)	1.085 (1.088)	51.539 (111.383)
First Stage F-Statistic	2.88	3.06	2.93	2.93
Observations	5387	4296	4296	4211

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses are clustered at the country level. The dependant variables are the different instrumental variables (obtained via the second method) for the first stage regressions and the natural logarithm of the GDP per capita for the second stage regressions. All columns include dummy variables for the year fixed effects.

Table 14: First instrumental variable on the natural logarithm of the GDP

	Natural logarithm of the GDP			
	IV1Dist	IV1Lang	IV1Relig	Principal component
UN troop	-0.00103 (0.00104)	-0.000328 (0.000399)	0.000609 (0.00165)	-0.00124 (0.00360)
Time dummies	YES	YES	YES	YES
First stage				
UN troop	23577.49 (20414)	4643.453* (2676.07)	-2708.367 (6861.1)	25.191 (69.391)
First Stage F-Statistic	3.01	3.09	3.08	3.06
Observations	5387	4296	4296	4211

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses are clustered at the country level. The dependant variables are the different instrumental variables (obtained via the first method) for the first stage regressions and the natural logarithm of the GDP for the second stage regressions. All columns include dummy variables for the year fixed effects.

Table 15: Second instrumental variable on the natural logarithm of the GDP

	Natural logarithm of the GDP			
	IV2Dist	IV2Lang	IV2Relig	Principal component
UN troop	0.00136** (0.000629)	0.000431** (0.000219)	0.000152 (0.000277)	0.000224 (0.000773)
Time dummies	YES	YES	YES	YES
First stage				
UN troop	12.149** (5.036)	-3.053*** (1.082)	1.085 (1.088)	51.539 (111.383)
First Stage F-Statistic	2.88	3.06	2.93	2.93
Observations	5387	4296	4296	4211

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses are clustered at the country level. The dependant variables are the different instrumental variables (obtained via the second method) for the first stage regressions and the natural logarithm of the GDP for the second stage regressions. All columns include dummy variables for the year fixed effects.