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RESEARCH ARTICLE

Does peacekeeping by civilians work? Reducing armed violence without armed force

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Abstract

Since the 1990s, United Nations (UN) peacekeepers have been engaged in multidimensional activities in conflict-affected countries. The existing literature, however, focuses predominantly on the effectiveness of military and police peacekeepers involving the threat of force, and does not shed light on the effectiveness of civilian peacekeepers despite the latter's crucial role in rebuilding local livelihoods and restoring state institutions. Civilian participation in peacekeeping increases both the benefits of peaceful life and the costs of combat. Further, civilian activities, by strengthening the rule of law and political accountability mechanism, contribute to encouraging both the rebels and government to disengage from further violence. Using the original dataset of financial resources for UN peacekeeping operations in the world, from 1988 to 2019, I test hypotheses regarding the impact of civilian expenditures on battle-related deaths. Regression analysis shows that spending on the civilian component in UN peacekeeping reduces battle-related deaths on the government side inflicted by insurgents.

Do civilian peacekeepers in United Nations (UN) peacekeeping operations (PKOs) reduce violence in intrastate conflicts? Since the 1990s, the focus of UN PKOs has shifted from interstate to intrastate conflicts, and peacekeepers have been involved with manifold tasks of facilitating intergroup dialogue, rebuilding infrastructures and communities, strengthening the rule of law, and supporting electoral processes in war-torn countries.[1] Such missions typically comprise a combination of military, police, and civilian peacekeepers but, according to the UN Peacekeeping website '[a]s peacekeeping operations have become more multi-dimensional, the need for specialized civilian skills is ever in demand' (UN Peacekeeping, 2023).

The salience of civilian peacekeepers can be confirmed by data on UN PKO expenditures. Figure 1 traces the trend of total expenditures (in thousands of US dollars) for military, police, civilian, and operational costs for UN PKOs, respectively, from 1988 to 2018. As shown in the figure, peacekeeping expenditures of the civilian component have been larger than those of the police component throughout this period and, in recent years, they have been just about half of those of the military component. During the period from 2000 to 2018, the military component has increased by 3.12 times but the civilian component has kept up the pace, as it also has increased 2.55 times. These facts indicate that the UN has come to regard civilians as an indispensable part of maintaining peace.

In this paper, I seek to provide empirical evidence that confirms significant contributions civilian peacekeepers make to violence reduction in intrastate conflicts. The existing literature on PKO

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[1]Di Salvatore and Ruggeri (2017) summarize the trend of UN PKO mandates. The mandate was limited to implementing military activities, monitoring, and supporting governments prior to the 1990s but, since then, the variation of mandates has increased enormously.
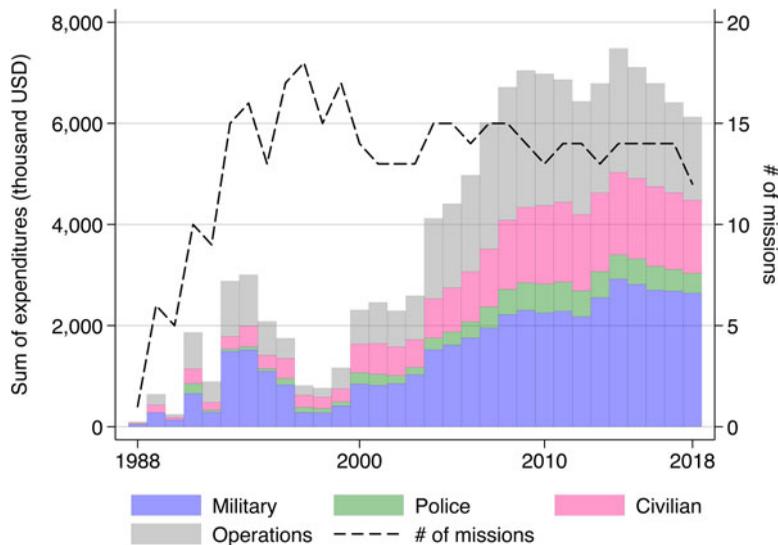
Figure 1. Total expenditures for each component of UN peacekeeping, 1988–2018.

effectiveness focuses primarily on the uniformed peacekeepers, namely military and police, with an emphasis of their robust mandates such as the protection of civilians. However, civilian peacekeepers also play an important role in rebuilding local livelihoods and restoring state institutions, thus increasing both the benefits of peaceful life and the costs of combat. Further, civilian activities, by strengthening the rule of law and political accountability mechanism, contribute to encouraging both the rebels and government to disengage from further violence. Using the original dataset on financial resources for UN peacekeeping, I examine the effect of the civilian component on reducing battle-related deaths in intrastate conflicts. My finding is that spending more on the civilian component reduces government-side casualties inflicted by insurgents, and this result holds with a variety of robustness checks.

The rest of this paper is organized as follows. The next section critically reviews the existing literature, pointing to the lack of attention to civilian peacekeepers in the literature, despite their growing presence. I then present the theoretical argument and hypotheses on civilians' effect on reducing armed violence. In the following sections, I will explain the research design for the quantitative analysis, including a brief introduction of the UN Peacekeeping Operations Financial Resources dataset, present findings from the analysis, and provide robustness checks. Finally, in the concluding section, I discuss the contribution and limitation of the current research.

1. Existing research on peacekeeping

In the existing research, the effectiveness of UN peacekeeping in reducing armed violence has been examined in terms of its presence/absence as well as its size and composition. Many scholars have provided empirical evidence that even mere presence of peacekeeping missions, especially with multidimensional mandates, successfully works (Fortna and Howard, 2008; Walter et al., 2021). The predominant analytical focus of the literature, however, has been on uniformed personnel. There are findings, for example, regarding the relevance of the size of peacekeeping missions in reducing deaths in battle (Hultman et al., 2014), reducing civilian victimization (Hultman et al., 2013; Kathman and Wood, 2016; Fjelde et al., 2019), ending war (Ruggeri et al., 2017; Kathman and Benson, 2019), and prolonging peace (Hultman et al., 2016), but they are all limited to military and police components, only counting the number of those in uniforms and disregarding civilians. When it comes to the

composition of peacekeeping missions, such as nationality diversity (e.g., Bove *et al.*, 2020), performance excellence (Haass and Ansorg, 2018; Belgioioso *et al.*, 2021), and force structure (Dworschak and Cil, 2022), the literature has focused on uniformed peacekeepers but not on civilian peacekeepers. Studies on specific peacekeeping activities conducted by civilians, including intergroup dialogue facilitation (Smidt, 2020*a*), electoral education campaigns (Smidt, 2020*b*), rule of law reform (Blair, 2021), and democracy promotion (Blair *et al.*, 2023) stand as exceptions; and, the scope of these studies is limited to well-anticipated outcomes within non-war or non-violence settings.

Grasping peacekeeping presence mostly, if not exclusively, in the context of military and police deployments, I argue, would miss the key functions of peacekeeping in building institutions that may fundamentally alter the relationship between the governments and rebels. Indeed, the narrow focus on uniformed peacekeepers in the existing literature has yielded a particular perspective on the expected mechanism of PKOs in reducing armed violence, a perspective that emphasizes the importance of resolving information asymmetries and commitment problems between parties to the conflict (cf. Fearon, 1995; Walter, 1997; Kydd, 2010). Many variants of arguments of this perspective are available, highlighting, for example, how the arrival of peacekeeping mission sends a costly signal to conflict parties so that they may know the other side is willing to accept the mission, how ceasefire monitoring remedies misunderstanding and misinformation, and how the creation of a buffer zone reduces the chance of coincidental clashes. However convincing these observations might be, one must suspect that, once they withdraw or reduce their presence significantly, uniformed peacekeepers would not be able to convey mutual intentions of the parties to the conflict, nor could they reliably guarantee that the parties will adhere to the peace agreement.

The maintenance of peace must hinge, at least in part, on the contributions made by peacekeepers not in uniform. In most UN PKO cases, substantial civilians have been tasked with implementing various activities that leave institutions and processes to remain in the field even after their withdrawal.[2] Under the reestablished institution especially for the rule of law, it is more likely for national authorities to develop governing capacities, for local populations to anticipate new job opportunities, and for former combatants to become optimistic about the prospect for peace. For instance, in Timor-Leste and Kosovo, civilian peacekeepers assist in the development of governments' capacity to provide public goods and services, during the post-war periods and even after the states' independence. In Georgia and Tajikistan, civilians provide good offices and facilitate meetings among conflict parties. Even under volatile situations, such as in the Central African Republic and Mali, civilians work for restoring state authorities and establishing the rule of law through rehabilitation, training, and technical support.

UN officials themselves have stressed the functions of multidimensional activities implemented by civilian peacekeepers. Since the former Secretary-General, Boutros Boutros-Ghali, published *An Agenda for Peace* (UN General Assembly and Security Council, 1992), the UN has emphasized such concepts as post-conflict peacebuilding. The current Secretary-General, António Guterres, also explicitly recognizes the critical role of peacebuilding and sustainability of peace in his report (UN General Assembly and Security Council, 2018). Civilian involvement in peacekeeping is thus unambiguously deemed important in the agenda of the UN.

Yet, in the literature, what efforts civilian peacekeepers make and how effective these efforts are remain grossly under-studied. Notably absent are cross-national studies of civilian personnel in peacekeeping missions (for an exception, see Blair, 2021). One reason might be the lack of suitable cross-national, comparable data.[3] The conventional way of quantifying the size of peacekeeping missions is to count the number of personnel but, usually, this quantification is done only for uniformed peacekeepers. Collier *et al.* (2008) and Passmore *et al.* (2023) are exceptions in that they look at the size of expenditures and member states' financial contributions for UN peacekeeping, but they fall short of

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[2]For example, *Civil Affairs Handbook* describes the roles of UN civilian peacekeepers in detail (UN DPKO and DFS, 2012).

[3]The data used by Coleman (2020) and Otto (2019) are not publicly available and only cover the limited time periods, missions, and categories.

classifying or distinguishing different components within peacekeeping financial resources.[4] Thus, as proposed below, in order to conduct cross-national study of how the civilian contribution affects battle-related violence, a new way to gauge the scope of activities of different UN PKO components is warranted by taking full advantage of financial resource data.

2. Theory and hypotheses

This section proposes three hypotheses regarding the effect of civilian peacekeepers on the reduction of armed violence. The first hypothesis is adopted from the theory, already familiar in the literature on UN peacekeeping, about resolving information asymmetries and commitment problems. The other two hypotheses are derived from the context more specific to civilian peacekeeping. First, I argue that civilian activities can raise opportunity costs of fighting and strengthen the rule of law, both of which have the effect of deterring current and potential rebels from engaging further violence. Second, I argue that their activities also help establish the mechanism of electoral process and political accountability, encouraging the government to rely on such mechanism rather than to resort to violent means in resolving conflicts.

2.1 Information asymmetries and commitment problems

As noted earlier, many theorists have indicated that uniformed peacekeepers are expected to perform critical functions of coping with information asymmetries and commitment problems. There is no reason to doubt that civilian peacekeepers, albeit without armed force, can play a similar role. Information gathering and situation analysis can be effective in updating information on the conflict and peacekeeping context. The knowledge gained through such activities is conveyed to local and international stakeholders through reports and meetings. According to one of the basic principles of UN peacekeeping, these efforts should be carried out impartially to prevent misunderstanding and misinformation among the parties to the conflict precisely for the purpose of resolving information asymmetries. Civilians not only facilitate meetings between the parties but they also provide a forum for discussion over concerns associated with the progress and implementation of the peace agreement. Their activities thus help build credibility for the parties to comply with peacebuilding without fear of the other side unilaterally deviating from that process.

Accordingly, I hypothesize that armed violence is more likely to be reduced when information sharing and communication are facilitated by a greater number of civilian activities.

Hypothesis 1: As the scale of peacekeeping activities by civilians increases, armed violence decreases.

2.2 Opportunity costs and rule of law

Civilian peacekeepers engage in distinct operations of their own, not performed by those in uniforms. Typically, they offer support to rebels and local citizens with access to public goods, administrative services, and better economic and social opportunities. These activities are likely to increase opportunity costs of fighting (cf. Collier and Hoeffler, 1998, 2004). For instance, civilian peacekeepers help repairing infrastructures, such as roads, bridges, and waterworks, which have been damaged by armed violence. They also rebuild government offices, police stations, and courts, for better services. These restoration efforts are important because the provision of public goods and services is likely to improve the confidence for the national economy and their own livelihood among those who otherwise could have potentially joined the rebel forces and prolong the violence.

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[4]The data on UN member states' financial contributions are also available in the International Peace Institute (IPI) Peacekeeping Database, although the IPI data do not classify the components.

Civilian peacekeepers' activities raise opportunity costs also for the rebels already engaged in violence, as they initiate various programs of disarmament, demobilization, and reintegration and community violence reduction. These programs are generally aimed at inducing belligerents to disengage from the insurgency and integrating them into local communities. In this process, rebels themselves get the chance to exit armed organizations and to surrender their weapons in return for access to education, job training, and other social welfare measures. Rebels are entitled to such peace dividends, if and only if they cease armed violence and adhere to peace agreements. If they resume violence, they would lose the opportunity to receive economic and social benefits from peace process; they indeed would also have to forgo all the entitlements that they once obtained. Provided with sustainable livelihoods, as they reintegrate into legitimate work force in the local communities, it may become no longer necessary for some of them to continue to be soldiers and thus to bear the cost of fighting.

Even after peace is achieved, civilian peacekeepers continue to work in order to sustain the rebels' motivation to live in peace. Civilian peacekeepers support establishing state institutions, with an emphasis on the rule of law, to uphold and strengthen the improved living conditions.[5] They help the national security forces restore public order and civilian life with respect for human rights, so that they can operate effectively with adequate compensation and technical assistance. For example, security sector reforms are implemented to build the capacity of local military and police forces through education and training. Judicial reforms involve improving the correctional system: the judicial affairs unit provides technical services and personnel training to local law enforcement officials, while the corrections unit assists with prison maintenance and security enhancements. These measures help bring those responsible for war crimes on free and fair trial and achieve transitional justice on the ground. Further, for the constitutional and legal reforms, civilian peacekeepers support reviewing national legislation in terms of judicial independence and integrity, as per international standards. They also advise the government on the process of drafting and amending constitutions and laws.

These institutional reforms to the justice chain from police, court, prison, and law alter the mindsets and promote incentives not to deviate from the rule of law (O'Neill, 2008; Blair, 2021). The local populace, including the rebels, will gain faith in the rule of law as a result of these improvements (Blair, 2019; Karim, 2019). Civilian peacekeepers thus help the public believe that they are properly and equally brought to justice. Consequently, the local population will be discouraged to take up arms against the government with less fear for any impunity or extrajudicial procedure. The people understand that those around them also trust the reinforced system of the rule of law just as much they do, making the mobilization to rebel against the government difficult. More generally, civilian peacekeepers can help remove public distrust in the security apparatus and the government through rebuilding state institutions (Fortna, 2008). The improved state institutions related to security and legal systems will discourage a corrupt and prejudiced government. Thus, people lose reasons to fight, including grievances born out of inequalities (e.g., Cederman *et al.*, 2013) and low state capacity that feeds impartialities (e.g., Fearon and Laitin, 2003), as they are treated equally in terms of political rights and economic and social opportunities. Because these benefits of peace are guaranteed only when they all continue to choose living peacefully, each person has less incentive to deviate from the situation but more to uphold it.

Accordingly, I hypothesize that rebel groups are less likely to be involved in armed violence that inflict deaths on the government side when civilian peacekeepers support improvement of livelihood and institutional reforms to a greater scale.

Hypothesis 2: As the scale of peacekeeping activities by civilians increases, armed violence by rebels against the government decreases.

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[5]The type of activities does not necessarily depend on the type of peacekeepers: military, police, and civilians. For example, rule of law-related activities are implemented not only by civilians but also by police peacekeepers (Blair, 2021). However, even if an activity is conducted by civilian peacekeepers in cooperation with the military and police, civilians are still expected to be effective through the activity.

2.3 Electoral processes and political accountability

UN peacekeepers' activities are often aimed at deterring not only the rebels but also the government to engage in further violence. Particularly important in this respect is the establishment of regular electoral cycles and hence the mechanism of political accountability.

As noted above, civilian peacekeepers try to rebuild state institutions, but they do so with an anticipation that these institutions should be controlled by the local government after their mission ends. Such a long-term goal can only be achieved when the ordinary citizens come to believe that the government is genuinely dedicated to its own reform (Walter, 2015). Thus, to strengthen these institutions, civilian peacekeepers must cultivate the citizens' trust in them. Civilian peacekeepers' hope is that the local population will come to recognize that it is their state authorities that have to function properly (Blair, 2021). The local population gains knowledge of their political rights and citizenship (Blair et al., 2019) and becomes more willing to participate in politics, especially post-conflict elections (Blattman, 2009). Then, the system of monitoring and checking the government through regular electoral cycles becomes the mechanism of maintaining the performance of state institutions and their public services.

Through post-conflict national elections supported by civilian peacekeepers, political elites may become motivated to adapt themselves to the new mechanism of political accountability. To ensure free and fair elections, civilian peacekeepers assist in the development of laws and guidelines, deliver election supplies and equipment, and provide briefings and education to the local population. Newly elected governments are expected to uphold or strengthen the restored rule of law; if they fail to do so and unfairly favor some locals over others in their legislation and policies, they could create unrest among the populace and provoke a new uprising by former rebel groups (Hegre and Nygård, 2015).[6] Recognizing that their political power now rests in the newly established electoral process and accountability system, the government is less likely to ignore or misuse domestic laws to its own advantage.

Thus, I hypothesize that, with the support from civilian peacekeepers, the government is more likely to refrain from resorting to violent means to fight insurgents.

Hypothesis 3: As the scale of peacekeeping activities by civilians increases, armed violence by the government against the rebels decreases.

3. Research design

Testing the hypotheses laid out in the previous section requires a systematic analysis of battle-related deaths sustained in an intrastate conflict in a month. The intrastate conflicts used for this analysis are not limited to particular country regions, unlike many studies in the literature regarding peacekeeping effects on armed violence (e.g., Hultman et al., 2014; Ruggeri et al., 2017; Carnegie and Mikulaschek, 2020). The dataset covers all conflict-months, starting with the month during which the first death is recorded in that conflict. This configuration disregards the often-made distinction between war spells and peace spells, and thus avoids sample selection based on the dependent variable (i.e., sampling limited by a certain number of battle-related deaths).[7] Using this dataset, I can examine the effect of

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[6]Conversely, Lake (2017) argued that political elites have an incentive to corrupt the state institutions rebuilt by international stakeholders.

[7]Note this design differs from the conventional practice of the existing literature where only war spells and the immediate aftermath are used in examining PKO effectiveness in reducing battle-related deaths (e.g., Hultman et al., 2013). Such a practice often misleads observers to believe that battle-related deaths do not occur during peace spells which are not covered by their analyses. In accordance with the definition by UCDP (Pettersson, 2019: 1) which the exiting literature adopts, conflict is regarded as being active (i.e., in a state of war) when it causes 25 or more battle-related deaths in a calendar year. Thus, by this definition, battle-related deaths do occur even during peace spells.

civilian peacekeepers on the reduction of death even during low-intensity battles.[8] I use the UCDP/ PRIO Armed Conflict Dataset (ACD) version 19.1 (Gleditsch *et al.*, 2002; Pettersson *et al.*, 2019), which includes all intrastate wars starting after 1946, to define this sample. My dataset covers months from January 1989 to December 2018, as the dependent variable, the number of battle-related deaths, is not available before 1989.

3.1 Dependent variables

The dependent variable is the number of battle-related deaths that occurred in intrastate conflicts. The number of fatalities sustained by the government side, the rebel side, civilians, and persons of unknown status in each event is coded in the UCDP Georeferenced Event Dataset (GED) version 19.1 (Sundberg and Melander, 2013).[9] I use the best estimates of the number of battle-related deaths[10] these four types of actors suffered in a month in a given conflict.[11] Namely, in addition to (i) this total number of battle-related deaths, I use (ii) the number of battle-related deaths sustained by the government side and (iii) the number of battle-related deaths sustained by the rebel side, to test the second and third hypotheses on the effects of civilian peacekeepers on each conflict actor. I regard that the rebel side is responsible for the deaths of the government side, and vice versa.

3.2 Peacekeeping variables

I concentrate on peacekeeping activities by civilians as the primary explanatory variable and consider the activities by military and police peacekeepers as control variables. Using my original dataset, the UN Peacekeeping Operations Financial Resources (PKOF) dataset, I measure the size of peacekeeping activities for each component in terms of its respective expenditures. To construct this dataset, I used more than 400 tables on financial resource performances, as reported in the UN Mission Budget Performance Reports issued for each mission's budgetary period. The dataset consists of all budgetary periods for 59 UN PKOs between 1988 and 2019 (i.e., 44th to 74th sessions of the UN General Assembly).[12] The budget performance reports are prepared by the Advisory Committee on Administrative and Budgetary Questions (ACABQ) for each budgetary period, currently 1st July to 30th June, to submit to the General Assembly. The financial resources are categorized broadly into uniformed personnel, civilian personnel, and operational expenses. The dataset records

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[8]The UN deploys PKOs regardless of whether the conflict is active or inactive: in the data, 67.23% of observations with PKO expenditures indeed occurred during peace spells, which, according to UCDP, are defined as periods involving up to 25 deaths in a calendar year. Because theoretical expectations are not constrained by the state of a conflict, PKO effectiveness in reducing battle-related deaths may need to be tested in the sample that includes both war and peace spells.

[9]The UCDP GED records the number of fatalities due to three types of organized violence: state-based conflicts (i.e., intrastate and interstate conflicts), non-state conflicts, and one-sided violence. I use the number of fatalities inflicted only in intrastate conflicts to measure the dependent variable of this analysis. An intrastate conflict is defined as a contested incompatibility over a government or a territory with the use of armed force and erupts between a government and an organized rebel group(s) (Gleditsch *et al.*, 2002). The data on the number of battle-related deaths in the Syrian Arab Republic are sourced from UCDP GED Syria version 652.1601.1911, but all values are missing before December 2015, when the UN Supervision Mission in Syria was deployed.

[10]The UCDP GED records three types of estimates for the total number of battle-related deaths: best, high, and low estimates. I use the best estimates because they are most reliable.

[11]When an event continues over more than one calendar month, I regard all the deaths due to the event as having occurred in the last month of the event, because it is impossible to identify exactly in which month each death occurred.

[12]The PKOF dataset does not include the four missions that operated during the period, but they were all deployed to address international conflicts and would not be used in this analysis. The budgets for the UN Truce Supervision Organization (UNTSO) and the UN Military Observer Group in India and Pakistan (UNMOGIP) are not included in this dataset, because they are part of regular budgets. I could not find data for the other two missions, the UN Aouzou Strip Observer Group (UNASOG) and the UN Good Offices Mission in Afghanistan and Pakistan (UNGOMAP). There is some controversy over which mission should be counted as UN PKOs; here, I refer to my own dataset, the Basics of UN Peace Operations (BAPO) dataset, as explained in online Appendix A1.

apportionments, expenditures, and variances for each of their subcategories, specifically focusing on the categories of uniformed and civilian personnel. To measure the size of peacekeeping activities implemented in the military, police, and civilian components, I aggregate the expenditures for the subcategories of these components, respectively.

These expenditures are primarily spent for personnel and equipment, including daily allowance, reimbursement, and travel expenses (see also Coleman, 2014). While military personnel represent military observers and contingents, police personnel represent UN police (civilian police before 2005) and formed police units. Civilian personnel include a variety of civilian subcategories such as international staff, local staff, UN volunteers, general temporary assistance, government-provided personnel, civilian electoral observers, international contractual personnel, and consultants.[13] Figure 2 shows the time trends of expenditures for the military, police, and civilian components in the three host countries of UN PKOs: Côte d'Ivoire, Haiti, and Liberia. Although the UN missions in these three countries operated at roughly the same time, the trends varied across countries.

3.2.1 Data originality

The PKOF dataset reveals hidden diversity in the size and composition of UN PKOs. Traditionally, peacekeeping has been measured by a dichotomous variable indicating the presence/absence of a mission (e.g., Gilligan and Sergenti, 2008; Costalli, 2014). The dichotomous treatment, however, cannot reveal potential variations in mission size and composition. Furthermore, even when categorical variables specifying types of operations are used, mission size and composition can still vary within each category (e.g., Doyle and Sambanis, 2000; Fortna, 2008; Hegre *et al.*, 2019). Currently, the number of peacekeepers deployed have been used to measure the size of operations, but such studies have little consideration for the civilian component (e.g., Hultman *et al.*, 2014). One exception is Blair (2021), who used the number of peacekeepers associated with the rule of law, but he focused on only a portion of the civilian component and his data covered only UN missions in Africa.[14] My dataset originally created, covering the missions across the globe, is better suited for confirming the validity of the previous findings based on the number of peacekeepers.

Expenditures, not budgets, can be used to measure the scale of activities accomplished by each type of peacekeepers because they were actually spent to generate the activities. The size of expenditures is expected to increase as more peacekeepers work longer hours and expend more effort; the number of peacekeepers, in contrast, remains constant regardless of hours worked or effort performed.[15] One

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[13]To consistently measure the size of expenditures across budgetary periods, military personnel costs include contingent-owned equipment (COE), self-sustainment, and death and disability awards/compensation. Similarly, civilian personnel costs include (international and local) staff assessment.

[14]Online Appendix A3 describes the UN Peacekeeping Operations Personnel (PKOP) dataset, which is my original dataset regarding the number of UN peacekeepers including civilians. Online Appendix C2 presents the robustness check results using the PKOP dataset instead.

[15]Specifically, the size of expenditures is determined in a more complex manner. Civilian staff (and UN Police officers) in the Professional and higher categories or in the field service category (e.g., P, D, and FS levels) are paid on the basis of a worldwide scale in accordance with the Noblemaire principle. The scale of annual salaries for these internationally recruited staff varies according to their category, level, and step. Meanwhile, civilian staff in the general services and related categories or national professional officers are paid on the basis of a local scale in accordance with the Flemming principle. The scale of annual salaries for these locally recruited staffs depends on their category, level, step, and country of service. It indicates that the size of UN PKO civilian expenditures reflects the composition of the civilian subcategories, their work experience, and possibly the quality of their performance. In addition to the base salary, civilian staff are entitled to a variety of allowances and benefits. For example, hazard pay is granted upon to the hazardous level of locations in service. It indicates that the size of civilian expenditures may be partly correlated with the risk of battle-related death, mostly among countries. Lastly, peacekeeping contingents (i.e., military troops and formed police units) are paid from their contributing countries, but the countries are reimbursed at a standard rate of 1,448 USD per person per month, as of 1 July 2022 (UN General Assembly, 2022), and also for their expenses to provide equipment, personnel, and support services to the peacekeepers. See the websites of UN Peacekeeping, UN Careers, and UN Salaries, Allowances, Benefits and Job Classification for more details about the payment and reimbursements to peacekeepers.
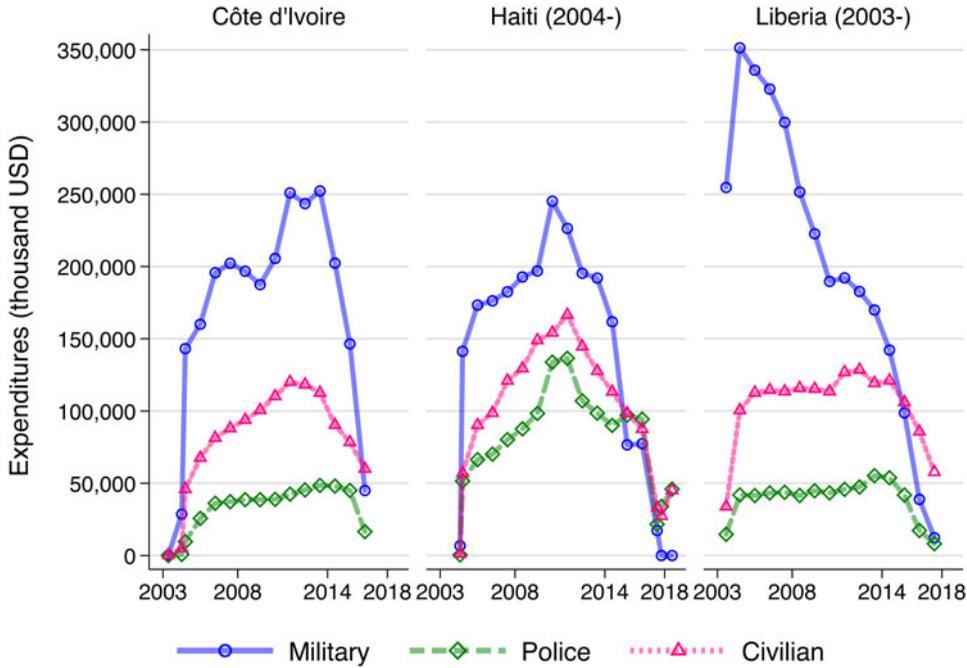
Figure 2. Trend of UN peacekeeping expenditures for the military, police, and civilian component, in Côte d'Ivoire, Haiti, and Liberia.

caveat in using expenditure data is a technical issue related to the measurement. In my original dataset, each observation represents a budgetary period for a mission. The start/end dates and the length of budgetary periods vary by mission and account year. If the length of a budgetary period increases by even 1 day, the overall expenses would increase. Thus, it is necessary to transform the size of expenditures from the total per budgetary period, as reported in the Budget Performance Reports, to the daily average per month, in order to make the size substantially comparable in the analysis.

3.2.2 Data description

Using my original dataset, Figure 3 shows the ratio of military, police, and civilian components to gross total expenditures, by location, in total between 1988 and 2019; the remaining ratio represents operational expenses. On the left side, the names of host locations of UN PKOs are listed in the order corresponding to the civilian component ratio.[16] The civilian component accounted for 56.87% of the total expenditures of the UN Mission in Kosovo (UNMIK), while it accounted for only 6.89% of the UN Verification Mission in Guatemala (MINUGUA). In the 1990s, the percentage of military spending was excessively greater than that of civilian spending for large missions operated in Cambodia, Mozambique, Somalia, and the former Yugoslavia. Smaller missions in El Salvador, Georgia, and Tajikistan, in contrast, have a bigger proportion of the civilian component. After the 2010s, UN

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[16]The host locations listed in Figure 3 include not only countries, but also domestic areas, and multi-country regions. For example, Abyei, Darfur, the Golan, and Western Sahara are not generally recognized as countries but hosted UN PKOs. Multiple countries such as Eritrea and Ethiopia, where interstate conflicts occurred, also hosted UN PKOs. Moreover, a host location can represent multiple UN missions when the location received them consecutively; for example, Angola (UNAVEM I to MONUA), Côte d'Ivoire (MINUCI and UNOCI), and Sierra Leone (UNOMSIL and UNAMSIL). In contrast, the Central African Republic, Haiti, Liberia, and Timor-Leste appear twice in Figure 3 because they hosted multiple UN PKOs at separate times. Online Appendix B1 contains a list of all the missions covered in this analysis and the conflicts in which they were deployed. Note that Figures 2 through 4 follow these rules.
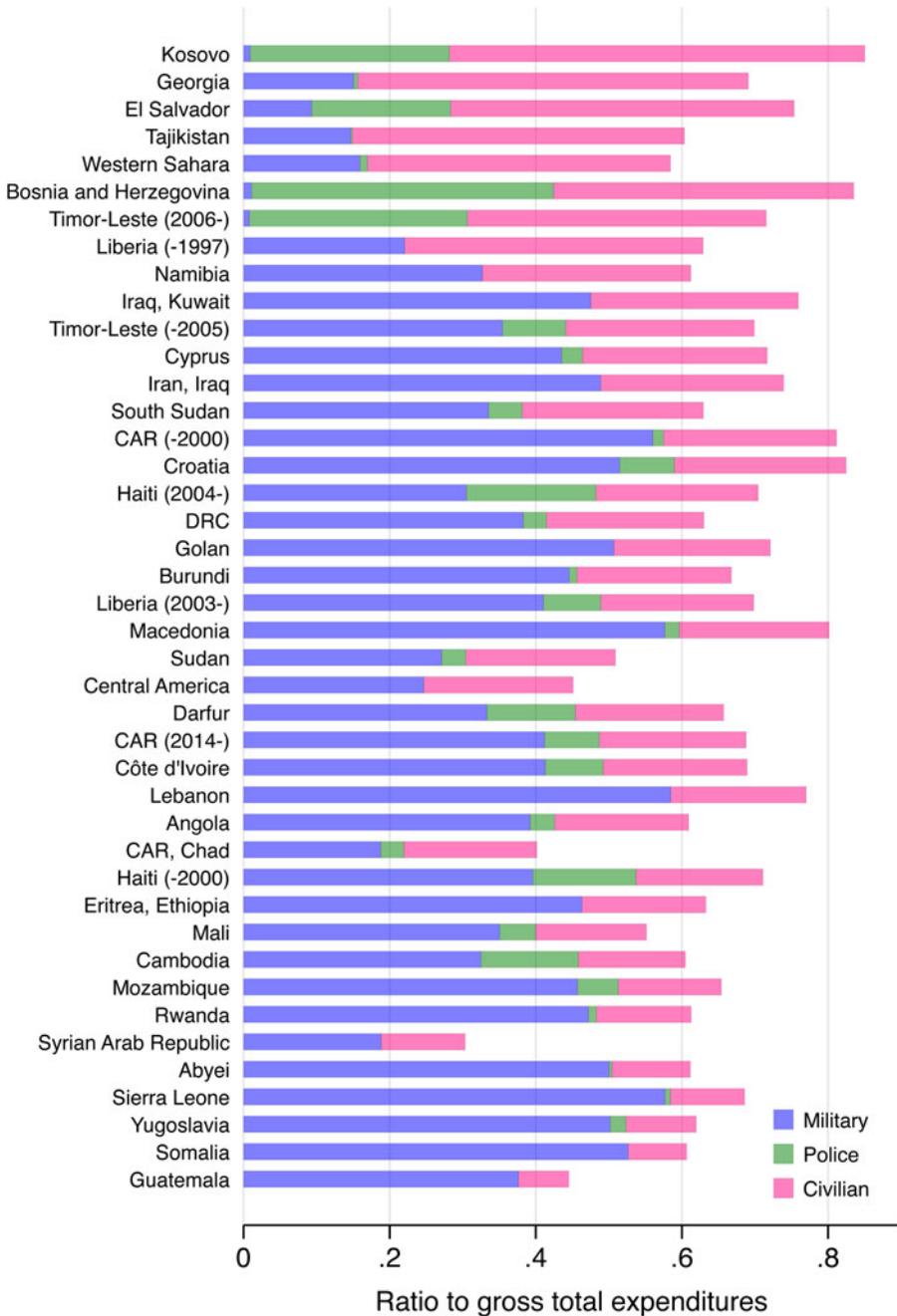
Figure 3. Ratio of the military, police, and civilian component to gross total expenditures for UN peacekeeping, by location.

missions in the Abyei area, the Central African Republic, and Mali spent less on the civilian component, while the UN Mission in South Sudan (UNMISS) spent expenditures on the civilian component to a level that is considerably closer to those of the military.

Next, Figure 4 shows the size of civilian components for UN peacekeeping, limiting the scope to African countries. This map is presented in such a way the darker the color, the larger the size of
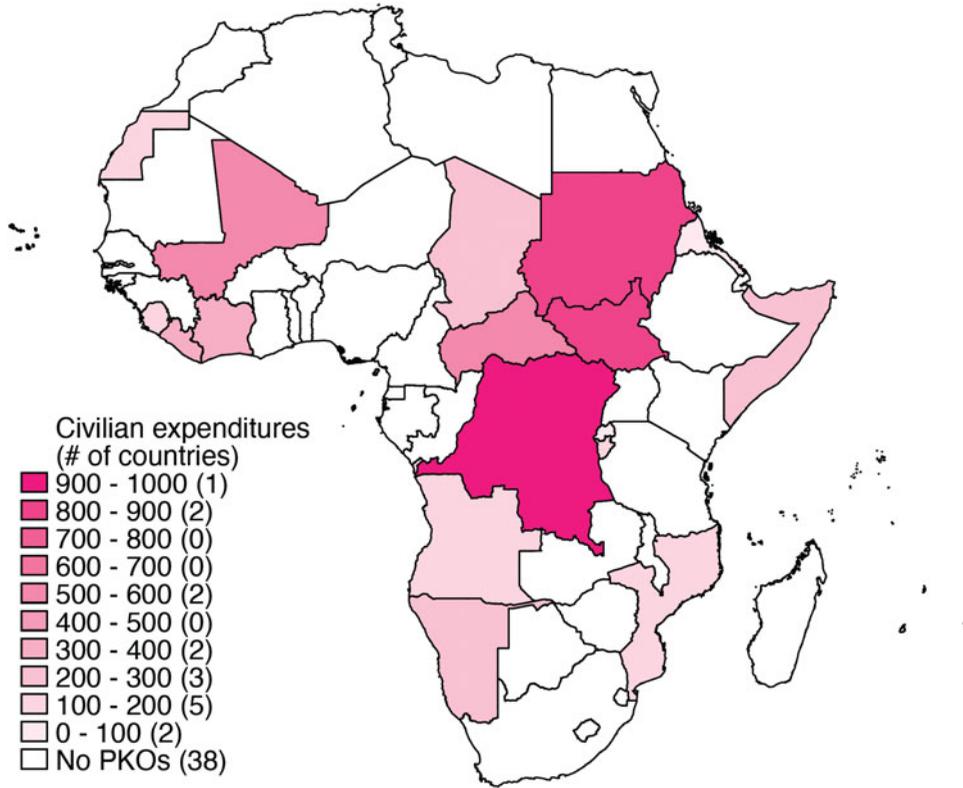
Figure 4. UN peacekeeping expenditures for the civilian component in Africa (at the maximum size; in thousands of US dollars, on a daily average).

the maximum monthly expenditure spent for each mission.[17] The size of civilian expenditures for UN PKOs in Africa ranges, on a daily average, from 83,665 USD for Rwanda to 980,617 USD for the Democratic Republic of the Congo. The missions, like those in Angola, Mozambique, Namibia, and Somalia in the 1990s, generally spent little on the civilian component regardless of the area size. Nevertheless, upon a closer look, the amount of civilian expenditures seems to correspond to the size of the operating areas. To account for the heterogeneity of area size in the analysis, each component of peacekeeping expenditures is divided by the natural logarithmic form of the area size (in square kilometers) in cases where a mission is deployed.[18] Thus, the peacekeeping expenditure for each component is measured in thousands of US dollars, on a daily average, and per logarithmic-squared kilometer, for the regression analysis. See online Appendix B2 for more details about the calculation method for peacekeeping expenditures in the analysis.

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[17]Because the spatial unit of this map is country, domestic areas and multi-country regions cannot be shown specifically. Thus, the expenditure for MINURCAT is plotted in Chad, and that for UNMEE is plotted in Eritrea. The maximum value for Sudan is calculated based on the expenditures for UNISFA, UNAMID, and UNMIS. In the analysis, however, the expenditures for multiple missions deployed simultaneously to the same conflict are combined.

[18]Kathman and Wood (2016) adjusted the number of military and police personnel by the logarithmic form of the population size of host states (160). To avoid missing values of the population size for some location-years (e.g., Darfur), I use the surface area size as an alternative measure of the host location size.

3.3. Other control variables

The estimation models include three types of control variables, in addition to peacekeeping expenditures spent for the military and police components. First, four control variables are related to the conflicts and other types of armed violence. *Peace Agreement* is a binary variable, which is coded one if at least one peace agreement was fully implemented and no parties to the conflict contested the validity of a given agreement. This variable is created using the UCDP Peace Agreement Dataset version 19.1 (Pettersson and Öberg, 2020). The other three variables denote the presence of other types of violence than intrastate conflicts: one-sided violence (OSV) and non-state violence. I focus on the violence event that was initiated by an actor(s) of a conflict and occurred within a country whose government is a party to the given conflict.[19] *Government OSV* and *Rebel OSV* are binary variables; the former is coded one if the government side inflicted a fatality by OSV, and the latter is coded one if the rebel side inflicted a fatality by OSV, respectively. *Non-State Violence* is also a binary variable, which is coded one if the rebel side of a given conflict inflicted a fatality by non-state violence. These variables are sourced from the UCDP GED version 19.1.

Second, five control variables denote political, economic, and military characteristics of a country whose government is a party to the given conflict. *Official Development Assistance* (ODA) denotes the size of net ODA received by a country (in US dollars), which is expected to support conflict-affected countries in sustaining peace, as with UN PKOs. *Army Size* denotes the number of armed forces and measures the military strength of the government side in a conflict. *Gross Domestic Product* (GDP) and *Population* measure the economic and demographic magnitude of a country. These four variables are sourced from the World Bank Open Data (World Bank, 2020) and converted into their natural logarithmic forms. In addition, I use the electoral democracy index, sourced from the Varieties of Democracy (V-Dem) Project Dataset version 9 (Coppedge et al., 2019; Pemstein et al., 2019), to gauge the level of *Democracy* as a political trait of conflict-affected countries. These five variables take the same values in all months of a year because they are measured on an annual basis.

Third, three control variables represent the presence/absence of other peace operations than UN PKOs. *Special Political Mission* (SPM) is another type of field-based peace operations by the UN. SPMs are organized by the UN Department of Political and Peacebuilding Affairs. Their deployments started in the 1990s, and they usually take over UN PKOs to continue peacebuilding tasks. Using my original dataset, I create a binary variable for the presence of SPMs. Regional organizations and ad hoc groups of or individual states also deploy PKOs. *Regional PKO* and *State PKO* are each coded one if these non-UN PKOs were deployed in a given conflict. I use the Military and Non-Military Interventions Dataset (Jetschke and Schlipphak, 2020) to create the two variables. Among these three variables, only *SPM* is lagged by 1 month in the models because it is measured on a monthly basis, as with the variables on UN PKO expenditures.

Table 1 presents the descriptive statistics for all the variables included in the main models. The variables regarding the size of UN PKO expenditures are lagged by 1 month to avoid their simultaneous causal relationship with battle-related deaths at month *t*, as detailed below. A binary variable, *UN PKO*, is referred to see how many observations in the dataset receive UN PKOs. The mean value of *UN PKO* shows that UN PKOs exist in 6% of the sample. The variables regarding UN PKO expenditures take positive values in these observations. Note that the numbers of observations differ among variables because some variables have missing values.

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[19]I use the UCDP Dyadic Dataset version 19.1 (Harbom et al., 2008; Pettersson et al., 2019) to identify the rebel groups that were the parties to the given conflict in a month and might involve one-sided or non-state violence during the conflict. These control variables regarding one-sided and non-state violence do not consider the events recorded in the UCDP GED, (i) if they occurred outside of the given country or (ii) if they were inflicted by a rebel group not engaged in any intrastate conflicts recorded in the UCDP/PRIO ACD.

Table 1. Descriptive statistics

Variables	N	Mean	S.D.	Min.	Max.
Dependent variables					
Total battle-related deaths	56,500	18.893	159.489	0	14,100
Government battle-related deaths	56,500	5.511	103.178	0	13,912
Rebel battle-related deaths	56,500	7.864	64.907	0	4,614
UN peacekeeping variables					
UN PKO$_{t-1}$	56,700	0.060	0.238	0	1
Civilian expenditures$_{t-1}$[a]	56,620	1.207	6.572	0.000	110.287
Military expenditures$_{t-1}$[a]	56,620	2.330	14.350	0.000	215.185
Police expenditures$_{t-1}$[a]	56,620	0.435	2.955	0.000	51.270
Other control variables					
Peace agreement	56,908	0.220	0.414	0	1
Government OSV	56,500	0.137	0.344	0	1
Rebel OSV	56,500	0.069	0.253	0	1
Non-state violence	56,500	0.022	0.146	0	1
log(Official development assistance)[b]	49,142	19.859	1.348	9.210	23.817
log(Army size)[b]	52,693	11.661	1.794	3.912	15.235
log(Gross domestic product)[b]	53,719	24.426	2.112	19.146	30.654
log(Population)[b]	56,807	17.140	1.749	12.892	21.055
Democracy[b]	56,848	0.420	0.235	0.014	0.948
Special political mission$_{t-1}$	56,700	0.043	0.202	0	1
Regional PKO[b]	56,908	0.083	0.276	0	1
State PKO[b]	56,908	0.027	0.162	0	1
t	56,908	350.454	214.231	1	881

OSV, one-sided violence.

Note: The unit of analysis is a conflict-month.

[a]Measured in thousands of US dollars, on a daily average, per logarithmic-squared kilometer; used in UN PKOs.

[b]Measured on a yearly basis.

3.4. Estimation strategy

To address the estimation bias from endogenous explanatory variables, as has been mentioned in the literature on peacekeeping effects, I employ the so-called two-way fixed effects ordinary least squares (OLS) regressions, considering both a unit-specific effect and a time-specific effect in the panel data.

Before detailed explanation about the estimation strategy, a note about potential endogeneity problem is warranted. There may exist two types of causes for the endogeneity in analyzing the relationship between peacekeeping and battle-related deaths. First, the correlation between unobservable risks of death occurrence and PKO expenditures (or the PKO size in general) will result in omitted variables bias. When battle-related deaths are expected to occur at high risk, the UN may spend more PKO expenditures on the military component to protect peacekeepers themselves and fulfill the mandates under the volatile situation. In contrast, the UN may invest less in the civilian component because civilian peacekeepers, unarmed, would be more endangered in the situation. Such potential correlations between the risk of death occurrence and PKO expenditures might lead estimation results in the spurious causality.

Second, simultaneity bias, or reverse causality, can be problematic in the estimation of PKO effects (e.g., Haaß *et al.*, 2017). If there exists the expected causal effect of PKO expenditures, a decrease of battle-related deaths should occur with at least a short time lag, after the UN expends its funds. In an opposite way, the UN may alter the spending in reaction to the frequency of battle-related deaths. Thus, it might be challenging to determine whether deaths or expenditures happened first particularly when monitored over longer time periods, such as years. The possibility of such a feedback mechanism could bias estimates of PKO effects.

To address these kinds of endogeneity problems, previous studies employed two-stage least squares estimations using an instrumental variable(s). For example, Carnegie and Mikulaschek (2020) utilized as-if-random variations of the representation and presidency in the UN Security Council. Four African regions rotate their non-permanent representations regularly, while the presidency rotates monthly in

the alphabetical order of the UN Security Council member names. Unfortunately, the former as-if-random rotation rule cannot be applied outside of their focus of four African regions; plus, both instruments are inapplicable to peacekeeping financing because the budgets are endorsed by the General Assembly but not by the Security Council, unlike personnel numbers of their focus. Other scholars employed recursive bivariate probit regressions to estimate the effect of local PKO presence (e.g., Ruggeri *et al.*, 2017; Fjelde *et al.*, 2019). This estimation models are also inapplicable to the analysis of this paper because the treatment (i.e., peacekeeping variables) is neither binary nor local-level, which the scholars employed, but continuous and mission-level.

Therefore, I employ OLS regressions with conflict-specific fixed effects and year-month-specific dummy variables. The regression models include interaction terms between conflict dummy variables and a time trend t as well to consider not only time-invariant (and unit-invariant) unobservables but also time-varying ones, albeit with the predefined linear time dependence. t denotes the number of elapsed months since the first fatality of a given conflict occurs, sourced from the UCDP/PRIO ACD. In addition to this response to potential omitted variables bias, I use 1-month lags for the key explanatory variable and a relatively short time unit, month, to address potential simultaneity bias.

4. Results and interpretations

In this section, I first present results of my analysis. I then discuss the implications of the results in concrete terms.

4.1 Results

Table 2 presents the coefficients of the fixed effects OLS regression models for battle-related deaths in intrastate conflicts, along with their robust standard errors clustered at conflict. The three models differ in their dependent variables: model 1 is for the total number of battle-related deaths, model 2 is for the government side's deaths inflicted by the rebel side, and model 3 is for the rebel side's deaths inflicted by the government side. A negative coefficient for *Civilian Expenditures* is interpreted as meaning that spending more on the civilian component of UN PKOs will result in fewer battle-related deaths in intrastate conflicts. Nonetheless, any causal interpretation regarding the size of peacekeeping activities must be made carefully, because, as suggested above, it is extremely difficult to identify an exogenous source of variation in expenditures.[20]

Models 1 and 3 show that the coefficients for *Civilian Expenditures* are estimated to be negative but statistically insignificant. These results indicate that the UN spending on the civilian component in peacekeeping does not significantly reduce overall battle-related deaths or the deaths on the rebel side. In contrast to the expectation of hypothesis 3, governments are less likely to stop conflict-related violence even when the political process is supported by civilian peacekeepers. In addition, unlike the findings in the previous literature, the models show that military and police components in UN peacekeeping also do not have a statistically significant effect on reducing these measures of battle-related deaths.

Model 2, on the other hand, shows that a coefficient for *Civilian Expenditures* is estimated to be negative and statistically significant at the 5% level. These findings indicate that when the UN increases peacekeeping spending on the civilian component, a decrease in battle-related deaths can be observed especially on the government side, that is, the deaths inflicted by the rebel side. As expected in hypothesis 2, rebel groups may become more likely to stop conflict-related violence in a battlefield through the implementation of peacekeeping activities by civilians.

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[20]In addition, the effect of the PKO size, as measured by expenditures, contains the effects of the PKO onset and presence, because nonzero (positive) expenditures are spent at the beginning or existence of a mission. In this paper, I similarly interpret the cases where civilian expenditures increase (i) from zero to nonzero and (ii) from nonzero small to large.

Table 2. Fixed effects OLS regression results on battle-related deaths in intrastate conflicts, 1989–2018

	Model 1 Total	Model 2 Government	Model 3 Rebel
Civilian expenditures$_{t-1}$	−1.219	−1.374**	−0.034
	(1.056)	(0.521)	(0.305)
Military expenditures$_{t-1}$	0.188	0.212*	−0.021
	(0.217)	(0.095)	(0.069)
Police expenditures$_{t-1}$	0.415	0.389	−0.313
	(1.376)	(0.549)	(0.422)
Peace agreement	−37.699*	−4.866	−8.525
	(16.261)	(3.524)	(5.697)
Government OSV	21.342*	14.122	1.439
	(10.317)	(9.586)	(1.125)
Rebel OSV	57.764***	9.198***	30.004***
	(14.802)	(2.254)	(7.815)
Non-state violence	50.712**	13.600*	22.888*
	(15.554)	(5.761)	(9.770)
log(ODA)	−3.702	−0.269	−2.452[+]
	(2.411)	(1.149)	(1.313)
log(Army size)	−1.565	5.670	−4.276
	(10.670)	(7.337)	(3.958)
log(GDP)	3.710	12.972	−5.915*
	(15.740)	(14.432)	(2.850)
log(Population)	49.151	−19.491	70.655
	(113.187)	(33.224)	(58.760)
Democracy	−16.295	−8.415	−10.489
	(18.281)	(6.612)	(8.462)
SPM$_{t-1}$	−3.921	1.527	−4.070
	(11.423)	(4.294)	(5.892)
Regional PKO	−28.494	4.605	−30.543
	(32.333)	(4.675)	(21.965)
State PKO	−21.330	3.033	−24.213
	(17.253)	(6.734)	(15.615)
Conflict FEs	Yes	Yes	Yes
Year-month FEs	Yes	Yes	Yes
Conflict FEs × t	Yes	Yes	Yes
N	44,441	44,441	44,441
R^2 (within)	0.122	0.068	0.256

Robust standard errors clustered at conflict in parentheses.
FEs, fixed effects.
[+]$P < 0.10$, *$P < 0.05$, **$P < 0.01$, ***$P < 0.001$.

These estimation results are similar to those of Fjelde *et al.* (2019) in that significant effects are found only for behavioral change by insurgents and not by governments. Fjelde *et al.* (2019) showed that the local deployment of peacekeeping troops significantly reduces the likelihood of civilian victimization by rebels, but the deployment does not significantly reduce the likelihood of the violence by governments. Peacekeeping activities, such as disarmament and demobilization, may strengthen the governments' armed capacity to confront the insurgency. Further, as the scholars interpreted, the governments might be less sensitive to the change in the political accountability mechanism, because UN peacekeepers need to cooperate closely with the governments so that they may not exercise the power of veto over peacekeeping activities.

4.2 Interpretations

According to model 2 for battle-related deaths on the government side, the substantive impact of the civilian component in UN peacekeeping is considerable. A positive shift of civilian expenditures by one standard deviation, that is, an increase of 6,485 USD civilian expenditures on a daily average per logarithmic-squared kilometer, would result in a reduction of eight battle-related deaths on the

government side per month.[21] In the cases where UN PKO expenditures were incurred, an increase in civilian expenditures by one standard deviation is equivalent to 18,502 USD, and this size of increase would result in a reduction of 25 battle-related deaths on the government side per month. A reduction of eight (or 25) deaths per month can be considered to be a huge effect, given that zero or near-zero values account for most of the observations in the sample: the government deaths are zero in 86.93% of the sample, and the 90th percentile of the death toll is three. Even in the cases where deaths occurred, the average number of government deaths per month is 41. This number of battle-related deaths could be adequately eliminated by increasing two units of civilian expenditures on the level of 18,502 USD.

A one standard deviation increase in civilian expenditures is not very large. The level of the civilian expenditure of 6,485 USD per logarithmic-squared kilometer is smaller than that of Rwanda, which had the smallest civilian expenditure in Africa, as shown in Figure 4. Compared to the size of civilian expenditures spent in the Democratic Republic of the Congo, the 6,485 USD per logarithmic-squared kilometer amounts to only 9.70% of the size.[22] The original data show that the median daily expense for UN civilian peacekeepers is 189 USD, regardless of whether they are recruited internationally or locally. It indicates that between 43 and 62 UN civilian peacekeepers are required to reduce one battle-related death on the government side per month in an intrastate conflict in Africa.

It is notable that civilian peacekeepers reduce battle-related deaths even though they are facing a variety of challenges.[23] For example, civilian peacekeepers, unarmed, face the imminent threat of being targeted as insurgent tactics and power structure rapidly change during armed conflict, especially when working for the missions with such mandates as the protection of civilians in the volatile situation of intrastate conflict. The security conditions may easily restrict freedom of movement, which in turn could hinder civilian activities. These local political complexities could make it difficult to consistently achieve consensus on peacekeeping efforts from all stakeholders. At the same time, in order to respond to the security threats, military tasks become likely to take precedence over other multidimensional tasks civilians mainly carry out. Moreover, the complexity of the multidimensional tasks entrusted to civilian peacekeepers may also hinder their smooth implementation. In the face of these challenges, the analysis suggests that civilian peacekeepers make a significant contribution to reducing battle-related deaths on the government side.

5. Robustness checks and additional analyses

To further validate the main results, I have conducted robustness checks with respect to six aspects of the research design. Table 3 summarizes the coefficient estimates for *Civilian Expenditures* from these robustness checks; online Appendix C provides details on these checks. First, in response to the concern that the usage of monthly data may overproduce observations with zero (or nearly zero) battle-related deaths and peacekeeping expenditures, I have analyzed with annual data instead, and confirmed that the results turn out to be similar to those of the main analysis. Second, I have confirmed that the main results hold robustly by utilizing other measures of peacekeeping such as the number of peacekeepers per logarithmic area and the expenditures unadjusted by area size. As

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[21]The one standard deviation shift of 6,485 USD (on a daily average, per logarithmic-squared kilometer) is calculated from the sample for the analysis. The value is different from the standard deviation of *Civilian Expenditures* in Table 1, 6,572 USD, because there are missing values in other variables of the estimation models.

[22]The actual size of civilian expenditures for Rwanda, 83,665 USD, is larger than 66,010 USD, which is calculated as follows: 6,485 USD × log(26,340 km^2), where 26,340 km^2 is the area size of Rwanda. The actual size of civilian expenditures for the Democratic Republic of the Congo, 980,617 USD, is much larger than 95,120 USD, which is calculated as follows: 6,485 USD × log(2,344,860 km^2). Using another measure of one standard deviation change, 18,502 USD, this level of spending on the civilian component is equal to 2.25 times the actual size of civilian expenditures for Rwanda and to 27.67% of the actual size for the Democratic Republic of the Congo.

[23]The UN Peacekeeping website regarding the initiative of Action for Peacekeeping (A4P) lists the challenges for peacekeepers.

Table 3. Coefficients for civilian expenditures in the robustness checks

	Dependent variables		
Robustness checks	Total	Government	Rebel
Other time unit of analysis			
Annual data	−14.847	**−17.883****	−0.744
Other measures of UN peacekeeping size			
The number of peacekeepers per logarithmic area	**−0.203**[+]	**−0.167****	0.019
Expenditures unadjusted by area	−0.100	**−0.109****	0.002
Other combinations of control variables			
Excluding *Military* and *Police Expenditures*	**−0.643****	**−0.757***	−0.201
Excluding *ODA*, *Army Size*, and *GDP*[a]	**−1.690***	**−1.136***	−0.323
Excluding *Peace Agreement*, *OSV*, *GDP*, and *Democracy*[b]	**−2.404**[+]	**−1.464****	**−0.637***
Other estimation strategies			
Conditional logistic regression on war occurrence[c]	−0.009	−0.008	0.012
ZINB regression on the number of BRDs[c,d,e]	0.013/0.013	−0.006/−0.014	0.021/**0.034****
Other sample selections in terms of PKO expenditures			
Excluding cases without PKO expenditures	1.894	0.115	**0.493**[+]
Excluding each case with PKO expenditures	See online Appendix C5 for Government		
Other sample selections in terms of peace/war month duration			
Selected samples by consecutive peace months	See online Appendix C6 for Government		
Selected samples by consecutive war months	See online Appendix C6 for Government		

ZINB, zero-inflated negative binomial; BRDs, battle-related deaths; FEs, fixed effects.
Statistically significant coefficients are shown in bold.
[a]These control variables are excluded as they contain far more missing values than others.
[b]These control variables are excluded as they are suspected to cause post-treatment bias.
[c]Year-month FEs and conflict FEs × *t* are excluded.
[d]Conflict FEs are also excluded.
[e]Coefficients for zero-inflation parts are written after the coefficients for count parts.
[+]$P < 0.10$, *$P < 0.05$, **$P < 0.01$, ***$P < 0.001$.

shown in Table 3, in both cases, the coefficients are estimated in the expected direction with statistical significance. Third, to address possible problems of multicollinearity, missing values, and post-treatment bias, I have estimated models by changing the combination of control variables. The results of these robustness checks not only confirm the effect of civilian expenditures on the battle-related deaths on the government side, as indicated by the original analysis, but they show that the civilian expenditures also have the effect on the toll of death on the rebel side and in total. Fourth, given the concern with the right-skewed distribution of battle-related deaths, I have used other estimation strategies, such as conditional logistic regression and zero-inflated negative binomial (ZINB) regression models. One of the ZINB regression results shows that the higher the civilian expenditures, the lower the incidence of rebel deaths, but in other models, the impact of civilian expenditures is insignificant. These results perhaps reflect that the significant effect of civilian expenditures can be seen only on the size of battle-related deaths including zeros.[24] Fifth, I have analyzed by selecting the sample with some peacekeeping expenditures, thus excluding those cases with no expenditures. The analysis reveals no expected results for the effect of civilian expenditures, probably because, in light of the main analysis result, the significant effect of civilian expenditures can only be seen when PKO cases are compared to non-PKO cases. In addition, I have employed a series of regressions by leaving each conflict with some peacekeeping expenditures out of the sample. The results turn out to be similar to those of the main analysis in most of the cases; when the conflicts in the Democratic Republic of the Congo and Sudan are excluded from the sample, the coefficient estimates for *Civilian Expenditures* turn out to be insignificant, indicating that these conflicts are key to the significant effect

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[24]The binary dependent variable in the conditional logistic regressions indicates the presence/absence of more than one battle-related death and thus ignores huge variance of the death toll. Because the zero-inflation part of the ZINB models is a logistic regression on zero battle-related death occurrence, the positive sign of the coefficient means that civilian expenditures bring more zero occurrence of battle-related deaths.

of civilian expenditures. Finally, sensitivity analysis regressions are employed on the selected samples, each of which is defined by the different threshold for the duration of consecutive peace or war months. This check shows that the significant effect of civilian expenditures is observed especially in the sample including prolonged peace or war periods.

In addition to these robustness checks, two additional analyses below test the potential pathways through which civilian expenditures decrease battle-related deaths.

5.1 Local ownership effect of the civilian component

The UN has considered local ownership to be one of the success factors of peacekeeping (UN DPKO and DFS, 2008). Locals have been increasingly integrated into peacekeeping missions as local civilian staff; according to the PKOF dataset, the expenditures for locally recruited staff accounted for 26.77% of a mission's total civilian expenditures, at the median level, in 2018, an increase of more than 15% since the 1990s. Local civilian staff contribute to the facilitation of intergroup dialogue by providing a good understanding and knowledge about the situation of the country. Further, local staff communicate more closely with the population and build trust in UN peacekeepers, so that they can smoothly implement activities with consistent support on the ground. More importantly, recruiting the local people may strengthen national capacities and promote the rule of law among the local staff who will remain obligated to their country after mission withdrawal.

To test the effect of local ownership in UN peacekeeping, the key explanatory variable, *Civilian Expenditures*, is disaggregated into three main subcategories of the civilian component: international staff, local staff, and UN volunteers; the research design is otherwise identical to the main analysis. The regression analysis shows that only the expenditures on local civilian staff have a significant effect on reducing government battle-related deaths. This result suggests that local ownership may contribute to the reduction of armed violence by rebel groups, but, in an opposite manner, this result may reflect that local staff are more likely to be recruited as the risk of battle-related deaths decreases.

5.2 Interaction effect of civilian and military components

Civilian peacekeepers may not only reduce armed violence by themselves but also support other types of peacekeepers for them to enhance their effects. Information gathering and situation analysis by civilian peacekeepers would allow the military to know where there is the risk and where they need to monitor more frequently. The monitoring results will be reported by civilians to the relevant officials, and on that basis, the Secretary-General determines the next priorities military peacekeepers should address. More substantially, ceasefire monitoring by military peacekeepers would be more effective when they work together with civilian peacekeepers on the maintenance of the rule of law, because former belligerents have more incentive to comply with a peace agreement under the reestablished livelihood and national institutions. Military monitoring becomes more credible as civilians resolve misunderstanding among the conflict parties and help build trust relationship among the local population, thus facilitating the implementation of the peace agreement.

To test the supportive effect of civilian peacekeepers, an interaction term between *Civilian Expenditures* and *Military Expenditures* is added to the main analysis models. The regression analysis shows that the civilian component has a significant effect on reducing government battle-related deaths, regardless of the size of military expenditures, but neither supportive effects of the civilian nor military component on each other are found in a statistically significant way.

6. Conclusion

Despite the growing demand for civilian peacekeepers in multidimensional missions, uniformed peacekeepers remain the sole focus of the peacekeeping literature. This paper is the first academic contribution that explores the effect of UN civilian peacekeepers on reducing armed violence of intrastate

conflicts. Using the original dataset regarding financial resources, the quantitative analysis demonstrates that civilian expenditures reduce battle-related deaths inflicted by the rebels on the government. While uniformed peacekeepers aim to suppress violence, civilian peacekeepers dissuade rebel groups to fight by giving them an incentive to live peacefully through increasing opportunity costs and strengthening the rule of law institutions.

The impact of the civilian component in UN peacekeeping, however, can be further studied in three aspects. First, the causality between peacekeeping by civilians and a decrease of armed violence remains unclear. The estimation models I adopted may not fully address the potential endogeneity problems, such as spurious causation and reverse causal flows. Second, future researches need to examine the long-term effect of civilian peacekeepers. Given that the local population receives benefits from civilian activities, including livelihood improvement and institutional reforms, the effect of reducing battle-related deaths is expected to persist even after mission withdrawal. Finally, an in-depth analysis on which causal mechanism works is needed. Because civilian expenditures include a variety of peacekeeping activities, a measure of specific civilian activities may identify the detailed causal path (cf. Blair *et al.*, 2022).

Albeit with these limitations, this study offers academic and policy implications. Aside from the theoretical contribution about civilian peacekeepers' effect on armed violence, the new data collection, the PKOF dataset, provides an overall picture of peacekeeping, including civilians. This will contribute to the evolution of data availability in peacekeeping research and offer new possibilities for measuring the scale of UN peacekeeping activities. As with what the UN officials have emphasized, multidimensional missions and the role of civilians in them are crucial in reducing armed violence. More light should be shed on civilian peacekeepers who are unarmed but do leave a footprint on the locals.

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