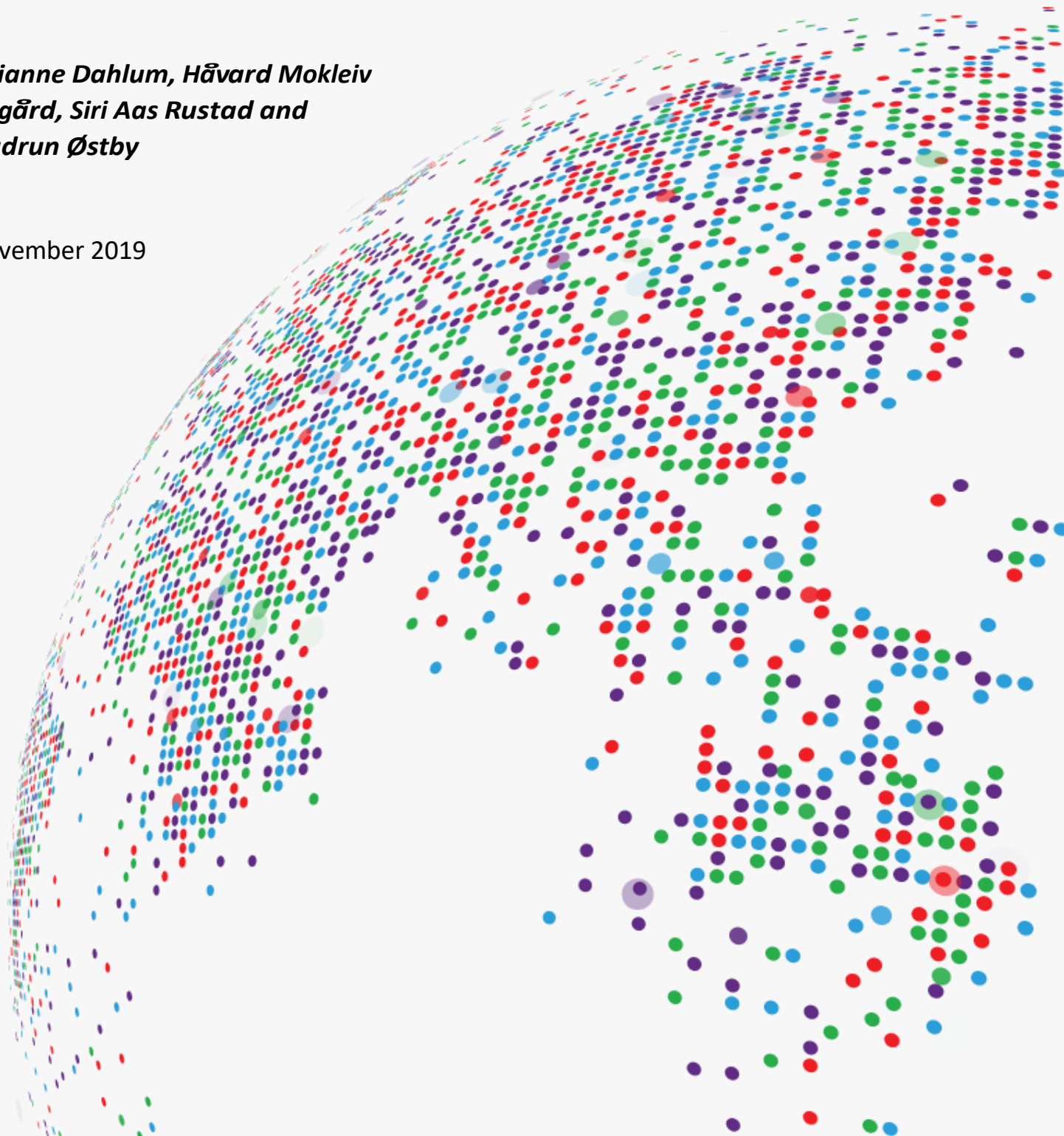




The Conflict–Inequality Trap: How Internal Armed Conflict Affects Horizontal Inequality

*Sirianne Dahlum, Håvard Mogleiv
Nygård, Siri Aas Rustad and
Gudrun Østby*

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Sirianne Dahlum is a senior researcher at the Peace Research Institute Oslo (PRIO). She holds a PhD in political science from the University of Oslo (2017), and has been a postdoctoral fellow at the Varieties of Democracy Institute and Harvard Kennedy School. Her current research deals with short- and long-term explanations for non-violent and violent mobilization, democratization and democratic backsliding.

Håvard Mokleiv Nygård, with a PhD in political science from the University of Oslo (2014), is the Research Director at PRIO. His current research interests centre around the political economy of violence and social order, conflict escalation, forecasting of armed conflict and modelling regime shifts.

Siri Aas Rustad is a senior researcher at PRIO. She has a PhD in political science from the Norwegian University of Science and Technology (2012). Her main research areas are trends and patterns in conflict data, issues related to natural resources, environment and conflict, as well as the human consequences of conflict, in particular, concerns related to health, education and inequality.

Gudrun Østby holds a PhD in political science from the University of Oslo (2011). She is a research professor at PRIO, Deputy Editor of the Journal of Peace Research and a Fulbright Scholar at the University of Maryland 2019-2020. Her current research interests include the links among armed conflict, health and education, conflict-related sexual- and gender-based violence, and horizontal inequalities as well as the effectiveness of development aid.

ABSTRACT

This background paper examines how conflict affects horizontal inequality. While a large literature looks at how horizontal inequality is linked to the onset of armed conflict, we know very little about if, and how, conflict in turn affects such inequality. We argue that there are good reasons to believe that armed conflict should exacerbate levels of horizontal inequality, and that this dynamic in turn has the potential to create an inequality-conflict trap akin to the already established economic conflict trap. We examine all intrastate conflicts in 120 countries, for the 1989 to 2018 period, drawing on measures of inequalities between regions as a proxy for horizontal inequality. We find that low-intensity conflicts are not systematically linked to levels of horizontal inequality. High-intensity conflicts, i.e., conflicts that incur more than 1,000 battle deaths and last for more than five years, in contrast are associated with substantially higher levels of horizontal inequality in the post-conflict phase. This pattern endures for many years after the conflict has ended. Combined with previous research demonstrating that horizontal inequality may induce armed conflict, our paper provides suggestive evidence consistent with the notion of an inequality-conflict trap.

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Introduction

Horizontal inequality—i.e., inequality between groups—is held to be an important driver of armed conflict. This insight builds on a large and growing literature demonstrating a robust relationship between societies’ level of horizontal inequality and the occurrence of internal armed conflict (for a recent comprehensive review, see Hillesund et al. 2018). Yet we still know very little about the effects of conflict on inequality, and especially about how internal armed conflict affects patterns of horizontal inequality (Davenport et al., 2019). Given that many conflicts emerge precisely out of grievances related to horizontal inequalities (e.g., Cederman, Gleditsch and Buhaug 2013), this lacuna is somewhat surprising. Against this background, we explore whether and how armed conflict shapes subsequent patterns of horizontal inequality. Building on existing findings on the conflict-inducing effect of horizontal inequality, our investigation attempts to shed light on any potentially reinforcing links between conflict and horizontal inequality: In particular, is there a conflict-inequality trap that can lock countries in armed conflict for decades, or is armed conflict more likely to mediate or alleviate levels of inequality, thus leading to social change?

We discuss theoretical arguments suggesting that armed conflict can exacerbate horizontal inequality, as the harmful macroeconomic economic outcomes of conflict are likely to hurt certain groups disproportionately (i.e., those who were worst off prior to conflict). Armed conflicts may also increase horizontal inequality through the direct harmful effects of fighting, especially given that such fighting is often restricted to specific regions or areas of a country. We further suggest that any harmful effects of internal armed conflict on horizontal inequality may be temporary, and could wear off in the post-conflict phase.

In our main analysis, we explore implications of these mechanisms at the national level, covering 120 countries from 1989 to 2017. We combine data on armed conflict incidence from the Uppsala Conflict Data Program (Gleditsch et al. 2002, Pettersson and Eck 2018) with data on regional inequality in human development as a proxy for between-group (horizontal) inequality. Regional affiliation clearly is just one of many social identities that define groups. Regional identities are, nonetheless, a useful proxy for mapping horizontal inequality. Geographical identities are highly salient identities and thereby potential powerful drivers of conflict (Østby, Nordås and Rød 2009). Moreover, regional identities often overlap with ethnic identities—another salient force for within-group conflict (Østby 2008).

A major advantage of this approach to measuring inequality is that newly extended databases on subnational human development allow us to explore the link between armed conflict and regional inequalities across a large number of countries and over time. This permits us to examine general, global patterns, while at the same time accounting for a wide range of potential omitted confounders that may account for the link between armed conflict and regional inequality. In our

baseline tests, our proxy for horizontal inequality considers regional inequality in infant mortality rates (measured using the ratio between the best- versus the worst-performing region) but we also consider regional inequality in other aspects of human development such as wealth, education, and access to electricity.

We present evidence that the onset of internal armed conflict is associated with increases in horizontal inequality in several aspects of human development—including infant mortality, education and wealth. However, this is only the case for higher-intensity conflicts—armed conflicts that result in at least 1,000 battle deaths and last for at least five years. We do not find any evidence that shorter and less deadly internal armed conflicts are associated with increases in regional inequality. This could imply that a conflict needs to pass a certain intensity threshold before it has a visible impact on patterns of horizontal inequality. At the same time, we find evidence that economic inequality declines in the post-conflict phase, but not until 10 to 15 years after the conflict has ended.

We further explore the implications of these arguments at the level of subnational units (regions). We find that regions directly exposed to armed conflict experience more increases in infant mortality rates than other regions. This is in line with arguments suggesting that armed conflict enhances horizontal inequality because those regions where the fighting is located will be harmed (much) more than regions not directly affected. This will enhance horizontal inequality, particularly since those regions directly affected by conflict were often worse off prior to the conflict. At the same time, we cannot rule out that the relationship between armed conflict and horizontal inequality is in fact driven by mechanisms at the *macro level*—through armed conflict incidence affecting patterns of regional inequality *regardless of where the conflict is located*. This would occur, for instance, if conflicts lead to a divergence of public resources from social welfare to military spending. Indeed, for the economic conflict trap, Collier (1999) argues that just such a mechanism is active. Such outcomes could increase horizontal inequality by asymmetrically harming the poorest groups, who are more reliant on public services.

In the next section, we review the literature on inequality and conflict before discussing the theoretical mechanisms that lead conflicts to affect levels of horizontal inequality. This is followed by a presentation of the data used for the analyses and a discussion of the results. The final section concludes the paper and offers some preliminary policy recommendations.

Literature review

A large literature exists exploring the proposition that societies with high levels of inequality are particularly prone to internal armed conflict. Initially, the literature focused primarily on the

relationship between *vertical inequality*, i.e., inequality between individuals, and armed conflict (see, e.g., Hegre et al. 2001, Fearon and Laitin 2003, Collier and Hoeffler 2004). However, this research was limited by its inability to explain how and why such inequality mobilizes certain groups for violence. Theories of *horizontal inequality*—i.e., inequality between ethnically, religiously or linguistically defined groups—were proposed as being better placed to account for the processes that lead to armed conflict. There is an increasing convergence around the conclusion that horizontal inequality is associated with armed conflict, and that this relationship is robust and substantively important (key works include Stewart 2002; Cederman, Gleditsch and Buhaug 2013; Østby 2008).

Reviewing this large literature, Hillesund et al. (2018) argue that although work on horizontal inequality and armed conflict has come a long way, several research gaps are still evident. First, while there is strong evidence of a positive relationship between horizontal inequality and violent armed conflict, and that political context plays an important role in this relationship, the conditions under which certain group identities become relevant for mobilizing people for violence are still unclear. Second, existing literature has not sufficiently distinguished between different types of horizontal inequality (i.e., inequality with regards to *what*), and not explored potential interactions between various forms of horizontal inequality. Third, studies suggest that horizontal inequality influences not only various forms of violent conflict, but also non-violent forms of mobilization. Yet we currently lack an understanding of how horizontal inequality influences the choice between non-violent and violent resistance strategies once the activation of grievances and group mobilization has occurred.

Finally, we still do not know enough about the differences between distinct types of horizontal inequality—social, political and economic—or the relative importance of different types of group identities such as ethnicity, religion, age and gender. While several authors have argued for the centrality of *perceptions* of inequality (Stewart 2000, 2002; Cederman, Gleditsch and Buhaug 2013), the topic remains woefully understudied empirically. The few studies that do exist indicate that perceived inequality and violence are clearly linked (Must 2015). A central issues here is that perceived and ‘objective’ horizontal inequality do not necessarily overlap. Indeed, Bahgat et al. (2017) show that the correlation between the two is quite low.

INEQUALITY AND THE CONSEQUENCES OF CONFLICT

The above-mentioned literature has focused on how inequality can act as a driver, or cause, of conflict. It has not explicitly examined if and how conflict, in turn, can exacerbate levels of inequality. Some recent work does point in such a direction and suggests a crucial link between war and inequality. Scheidel (2018) argues that international wars and revolutions are among the only social processes strong enough to substantially change patterns of inequality, which are usually highly persistent over time. He contends that the unprecedented levels of mass

mobilization in major wars such as the First and Second World War increased demand for labour and thus decreased (vertical) inequality. They also increased State tax collection and active State interventions in the economy in order to finance the war effort. This argument may not, however, apply to internal armed conflicts. As Scheidel himself notes, internal armed conflicts usually do not involve the same full-scale mobilization of people and resources as major international wars, and therefore have not historically been followed by redistribution of wealth.

Insights from the internal conflict literature, moreover, yield the expectation that internal armed conflict should *exacerbate* inequality. There is widespread evidence that armed conflict has harmful social and economic consequences. For instance, conflict is negatively linked to economic growth (Collier 1999, Gates et al. 2012), public health (Urdal and Che 2013, Iqbal 2010), poverty and hunger (Gates et al. 2012) and education (Gates et al. 2012, Lai and Thyne 2007). Building on these findings, a recent study by Bircan, Brück and Vothknecht (2017) considers whether armed conflict also influences patterns of vertical inequality (inequality between individuals). The study argues and shows that vertical inequality should grow due to internal armed conflict, at least during the conflict and in the immediate post-conflict phase. One main reason is that armed conflict hampers economic growth in ways that have disproportionate consequences for the poorest segments of societies. Economic disruption due to armed conflict leads to a scarcity of physical and human capital, which result in rising prices of capital-intensive goods, while, at the same time, falling wages and unemployment for unskilled labour. Conflict may also reduce social spending, as governments lose access to revenues, both due to poor economic performance and low capacities for collecting taxes. Hence, the poorest will absorb the most significant blow from economic hardship imposed by the conflict. Bircan et al. (ibid.) present evidence that internal armed conflict is linked to higher levels of (vertical) income inequality during and in the immediate aftermath of conflict, but not in the medium or long term. It remains to be investigated whether internal armed conflict has similar consequences for horizontal inequality.

Gates et al. (2012) perform the most encompassing analysis of the consequences of conflict. They document detrimental effects of internal armed conflict across the Millennium Development Goals. Systematic treatment of the economic consequences of conflict have also been conducted by Collier et al. (2003); Collier (1999); Collier, Hoeffler and Söderbom (2008); and Dahl and Høyland (2012). A particularly relevant insight from this literature is the notion of ‘the conflict trap’, which suggests not only a contemporaneous effect of conflict, but also that civil wars over time can lock countries into a trap, whereby conflict deteriorates development, which, in turn, increases the risk of renewed conflict (Collier et al. 2003). Collier (1999) argues that this conflict trap operates through four mechanisms, the four D’s: destruction, disruption, diversion and dis-saving. *Destruction* occurs as warring parties destroy production and health facilities, reduce the workforce, hinder economic exchange and increase transportation consequences. *Disruption* occurs through the insecurity created by violence and a general breakdown of the social order, as

well as the effect of large populations fleeing their homes and thus their jobs. Civil wars lead to massive *diversion* of public funds through increased military spending. Finally, war economies suffer from *dis-saving* and massive capital flight (Hegre, Nygård and Ræder 2017, show that this conflict trap is stronger than previously believed). Our focus here is on whether such a conflict trap also exists in the relationship between armed conflict and horizontal inequality.

Mechanisms

Davenport et al. (2019) identify three main frameworks, or arguments, for which past research has understood the consequences of conflict. The first argument, which is primarily associated with Thomas Hobbes (1651/1968), maintains that conflict has devastatingly negative effects on the lives of those who exist within its wake. In a condition of war:

...there is no place for Industry; because the fruit thereof is uncertain; and consequently no Culture of the Earth; no Navigation, nor use of the commodities that may be imported by Sea; no commodious Building; no Instruments of moving, and removing such things as require much force; no Knowledge of the face of the Earth; no account of Time; no Arts; no Letters; no Society; and which is worst of all, continuall feare, and danger of violent death; And the life of man, solitary, poore, nasty, brutish, and short.

This is the conception of conflict that informs work on the ‘conflict trap’, for instance. A second framework takes a very different view and has instead focused on how large-scale contention, especially wars and revolutions, can have incredibly positive effects *for some* while simultaneously bringing negative effects for others. This line of thought appears to originate with the work of Karl Marx and Frederick Engels (Marx and Engels 2010/1848). The central idea is that although conflict leads to significant losses for the ruling class in both political as well as economic terms, it also benefits the working class across the same domains (such as economic equality and political empowerment). Indeed, in this and related work, it is the duality in fortunes that best characterizes the influence of contention. This idea has also found its way into discussions of how nations after civil war ‘rise like a phoenix from the ashes’ (Organski and Kugler 1980) and, returning to the explicit interest of Marx and Engels, how revolution and war impact inequality (Scheidel 2018).

A third, perhaps more sophisticated, line of argument has instead maintained that consequences and costs of conflict ultimately vary depending on (diverse) characteristics and dynamics of conflict. This framework, which can be traced back to the work of Simmel (1964); Simmel and Wolff (1964) stress the importance of information about what is actually happening during the conflict for understanding what the consequences are.

Against this backdrop, we explore the relationship between internal armed conflict and horizontal inequality. This relationship may play out in several ways, as discussed below.

AN INEQUALITY-CONFLICT TRAP

Instead of the more or less explicitly Hobbesian view of conflict, claiming that conflict is always harmful, we take as our starting point the literature focusing more specifically on how the conflict in itself produces winners and losers. In this, we argue that the characteristics of the conflict, and termination of the conflict, are important for understanding if and when a conflict-inequality trap will ensue.

First, if the costs of internal conflict are most considerable for those who are already poorest, as suggested, for example, by increasing rates of poverty seen during and after a conflict (Gates et al. 2012), horizontal inequality may increase. Many countries and areas experiencing armed conflicts had an existing high level of horizontal inequality. Such inequalities will be exacerbated if the most disadvantaged group(s) are disproportionately affected by the conflict. Many of the macro-level effects of conflict studied by Collier and Hoeffler (1999), may indeed have much stronger impacts on the poorest groups or segments of society, thereby enhancing horizontal inequality. For instance, the diversion of public funds towards military spending, and away from spending on public services, is likely to hurt the most for disadvantaged groups that are heavily reliant on public benefits. Other consequences of economic disruption, such as scarcity of physical and human capital, is likely to primarily affect groups in which the majority of members are unskilled labour (Bircan, Brück and Vothknecht 2017).

Second, internal armed conflict is often restricted to or largely focused within certain areas of a country, partly due to the fact that conflicts are often targeted against or initiated by one or several (ethnic and/or political) groups. These areas, and the groups that reside there, may be cut off from the rest of society and the economy, and/or suffer significant repression stifling their economic prospects. Some areas will also suffer disproportionately from the harmful direct causes of conflict such as the destruction of facilities, buildings and loss of life. Consider the example of the long-running internal armed conflict in Colombia between the Government and the Fuerzas Armadas Revolucionarias de Colombia (FARC). Although this was a protracted and at times intense conflict, not all parts of the country were equally affected. More rural areas saw a disproportionate share of the violence. These areas were already characterized by low levels of state-building, even before the conflict started; the conflict intensified this tendency. In short, the potential asymmetrical regional impacts of conflict may increase horizontal inequality.

In the post-conflict phase, these potential immediate negative consequences of internal armed conflict may wear off, as the economy picks up and the conflict is no longer imposing direct costs (on some areas) (Bircan, Brück and Vothknecht 2017). If post-conflict development is focused on the areas

most heavily affected by the conflict, which, for instance, is the plan in Colombia, then any negative impacts of internal conflict on horizontal inequality may be temporary. Moreover, there is some evidence of a beneficial effect of conflict at the level of individual norms and beliefs that also may limit, or at least mediate, a conflict-inequality trap. In particular, exposure to violence has been found to improve pro-social attitudes, strengthen altruism, solidify adherence to social norms and increased social cohesion, and, of particular relevance here, heighten people’s aversion to inequality (Gilligan, Pasquale and Samii 2014, Bauer et al. 2014, Voors et al. 2012, Blattman 2009). Note, however, that these findings only hold for people who have been directly exposed to violence. Even in quite intense internal armed conflicts this usually will only be a small part of the overall population.

The potential of (re-) distribution of power and resources in a post-conflict setting may depend on the outcome of the conflict. If the conflict ends up addressing some of the initial group-based grievances that spurred rebellion, for instance by accommodating the needs of marginalized groups, conflict could reduce horizontal inequalities. If, on the other hand, the conflict ends in (reinforced or novel) exclusion of some groups (such as the losers) to the benefit of other groups (such as the winners), horizontal inequalities may be enhanced. This suggests that patterns of inequality in the aftermath of conflict may be *contingent* upon the specific outcomes of the conflict. Particularly important is whether it ends in a peacekeeping agreement that secures the interests of both the losers and the winners, such as the power-sharing agreements implemented in the post-conflict Balkans, or deepens the political and economic exclusion of one or several (minority) groups, such as in Sri Lanka after the war ended with the defeat of the Liberation Tigers of Tamil Eelam (LTTE) insurgency in 2009.

Analysis

To explore these arguments, we combine data on national and subnational human development with data on internal armed conflict.

In operationalizing horizontal inequality, or between-group inequality, we follow Stewart (2002) who understands it as inequalities that coincide with identity cleavages. These identity cleavages can relate to, for example, ethnic, regional or cultural identities. Our measure of horizontal inequality captures *inequality between regions*. More specifically, we operationalize horizontal inequality between regions using the ratio between the best-performing region in the country and the worst-performing region, as has become standard practice in the literature (Bahgat et al. 2017). We acknowledge that this approach mainly taps into one specific form of horizontal inequality, i.e., between groups defined by their regional affiliation. Still, there are several good reasons to focus on regional inequalities.

First, regional affiliation is a highly salient form of identity. Groups with a shared regional identity will often have a shared history and overlapping regional and cultural cleavages. Such cleavages can be salient sources of conflict (Østby, Nordås and Rød 2009; Cederman, Gleditsch and Buhaug 2013). Second, regional boundaries often give rise to or enforce existing grievances through the ways in which they structure the distribution of state patronage, welfare and political influence. Regional identities may be further enforced by regional institutions and parties (Østby, Nordås and Rød 2009).

Third, in addition to being a source of identity in itself, regional background will often also overlap with ethnic divides. Throughout Africa, for instance, particular regions tend to be heavily dominated by a particular ethnic group (Stewart 2002; Østby, Nordås and Rød, 2009). Fourth, a measure focusing on regional inequalities may quite adequately capture some of the dynamics discussed in this paper, such as potential distributional changes in resources or human development due to certain regions being cut off from the rest of society or being disproportionately exposed to destruction due to fighting. Last but not least, new databases on subnational human development allow us to study the link between regional inequalities in human development and conflict across a large number of countries over time. While the extensive country-coverage allows us to produce generalizable findings, the variation over time lets us move beyond cross-sectional comparisons to also study whether conflict onset (and termination) is linked to changes in human development over time. Importantly, this data structure permits us to draw on panel-data techniques such as country fixed effects and year dummies that substantially improve our ability to rule out that any identified patterns (linking conflict to inequality) are driven by other characteristics, such as cultural, historical or geographic factors.

In the main analyses, we focus on horizontal regional inequality in *infant mortality rates*. A measure of infant mortality rates is arguably a good proxy for the well-being of individuals living in a region, given that it taps into a wide range of benefits such as health, resources and access to public services. It is commonly used to generate measures of both socio-economic development and horizontal inequality (Mancini 2008, Hillesund et al. 2018). Our main measure of horizontal inequality at the national level is thus the ratio between the region with the highest infant mortality rate and the region with the lowest infant mortality rate. The ratio ranges between 0 and 1, where 1 equals perfect inequality. As a secondary analysis, we also explore the link between armed conflict and horizontal inequality in other human development indicators such as mean years of education, wealth and access to electricity. At the subnational level, we consider each region's level of infant mortality (as well as deviations from the country-mean).

Data on horizontal inequality in human development come from the Global Data Lab Area Database (GDL), which contains indicators on health, education, wealth and standard of living at

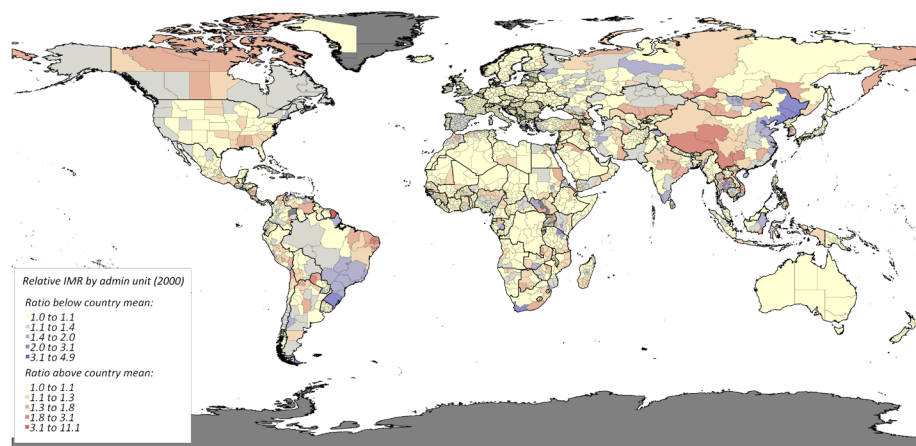
the subnational level, covering 127 countries and 1,237 subnational regions from 1990 to 2017 (Smits and Permanyer 2019). The GDL Area Database is created by aggregation from numerous household surveys such as Demographic and Health Surveys, UNICEF Multiple Indicator Household Surveys, World Health Surveys, Living Standard Measurement Surveys and Pan Arab Family Project Surveys, in total covering around 3 million respondents.

Data on armed conflict come from the Uppsala Conflict Data Program (UCDP), which offers data on three forms of intrastate conflict: State-based conflict, non-state conflict and one-sided violence against civilians (by state and/or non-state actors) (Pettersson and Eck 2018). We consider three different battle death thresholds: More than 25 battle deaths, more than 100 and more than 1,000. Our war incidence variable is coded 1 in all country years with at least one active armed conflict, as defined by the three different thresholds. Reflecting our theoretical mechanisms, and suggesting that the duration of armed conflict is crucial for economic and inequality-related outcomes, we also distinguish between short conflicts and long conflicts. A short war is understood to have lasted less than five years in total, and a long war more than five years. At the subnational level, we use the UCDP Georeferenced Event Dataset to measure armed conflict incidence (Sundberg and Melander 2013).

We further create three variables measuring different stages of post-conflict incidence. ‘Early post-conflict’ is coded 1 if a country observed its last war less than five years ago and 0 otherwise. ‘Medium post-conflict’ is coded 1 if a country observed its last war between 5 and 10 years ago, and ‘late post-conflict’ is coded 1 if the last war was between 10 and 15 years ago.

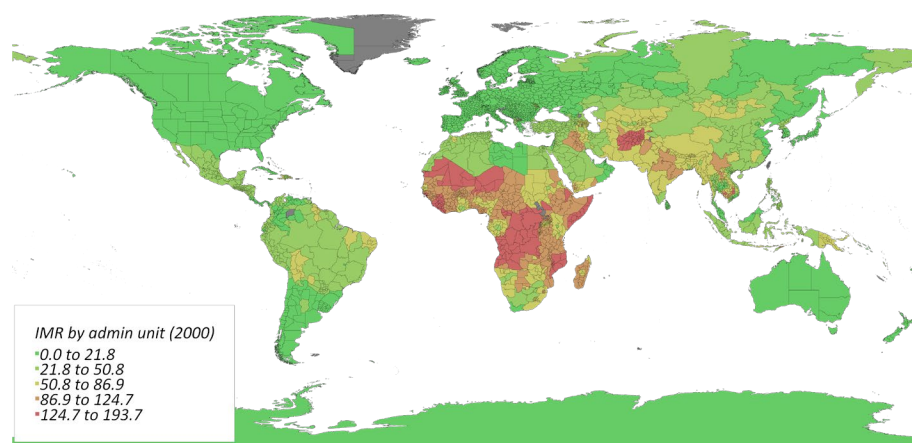
Figure 1 visualizes the horizontal (regional) inequality in infant mortality for the countries covered by the GDL database. In Figure 2, we illustrate the subnational (regional) levels of infant mortality.

Figure 1: Regional horizontal inequality in infant mortality, 2000



Note: The figure shows regional relative deprivation/privilege in terms of infant mortality. Regions are marked according to whether they perform better or worse than the national average.
Source: Bahgat et al. 2017.

Figure 2: Regional infant mortality, 2000



Note: The figure shows the level of infant mortality at the regional level.
Source: Bahgat et al. 2017.

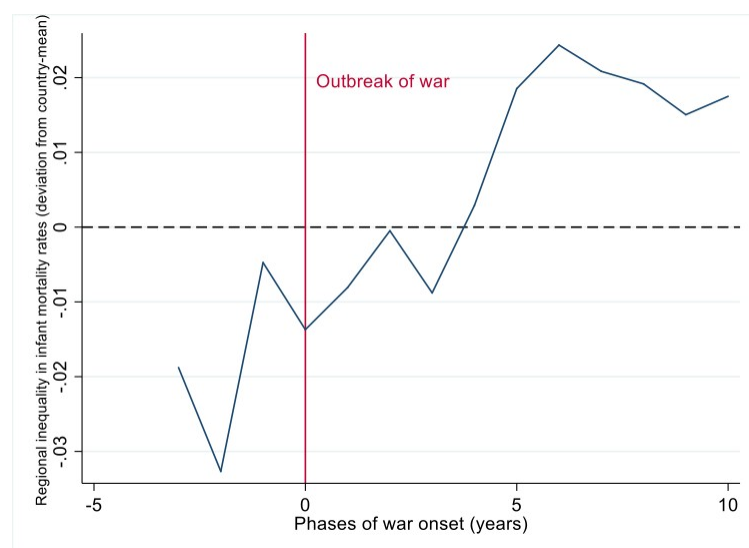
In the next section, we describe the models used to estimate the relationship between armed conflict incidence and horizontal inequality at the national level, and present some of the main results.

CONFLICT INCIDENCE AND HORIZONTAL INEQUALITY

To consider some suggestive evidence of how conflict could affect inequality, refer to Figure 3, which is motivated by the work by Bircan, Brück and Vothknecht (2017) on the link between armed conflict and vertical inequality. The figure illustrates the (global) average levels of developments (across all countries) in horizontal inequality prior to and after the onset of an internal armed conflict. Horizontal inequality is measured by comparing the infant mortality rate of the best-performing region to the worst-performing region in each country. To account for constant country characteristics (e.g., related to context or history) we calculate each country’s deviation in horizontal inequality from the country average. Hence, the figure shows whether countries (on average) overperform or underperform compared to their most common horizontal inequality level. We consider all types of internal conflicts with at least 1,000 battle deaths in at least one year of the conflict; this is similar to the definition of armed conflict used by Fearon and Laitin (2003). The figure suggests that horizontal inequality in infant mortality rates increases in the years prior to the onset of armed conflict. This increase continues in the immediate years (one to five) after onset, which is consistent with an argument that horizontal inequality increases during and as a result of conflict. However, there is evidence that this acceleration in horizontal inequality wears off around 5 to 10 years after conflict begins.

While previous research has shown that armed conflict is induced by horizontal inequality (e.g., Cederman, Gleditsch and Buhaug 2013), this figure suggests that horizontal inequality levels may increase during and in the immediate aftermath of armed conflict. If armed conflict does exacerbate horizontal inequality, we may expect to see a reinforcing pattern—an inequality–conflict trap. The pattern depicted in the figure is consistent with such a trap.

Figure 3: Horizontal inequality in infant mortality rates prior to and after conflict onset



Note: Horizontal inequality is measured using the ratio between the best-performing and worst-performing region in infant mortality rates. Measure ranges from 0 to 1, where 1 equals perfect inequality. Conflict is defined as armed conflict with at least 1,000 battle deaths.

To explore the relationship between armed conflict and horizontal inequality in a more systematic manner, we start estimate OLS regressions with horizontal (regional) inequality in infant mortality as a dependent variable. Our main independent variable of interest is armed conflict incidence. Reflecting expectations that potential outcomes of conflict, such as horizontal inequality, hinge on the duration of the conflict, we distinguish between short conflicts, defined as conflicts lasting from one to five years, and long conflicts, defined as conflicts lasting more than five years. For both short and long wars, we consider three different battle deaths thresholds (> 25, > 100 and > 1000) to explore whether variations in the intensity of conflict also matter for inequality dynamics.

In each model we include four baseline control variables that are likely to influence both conflict onset and horizontal inequality (see Hegre and Sambanis 2006): logged GDP per capita, logged population, infant mortality rate, and electoral democracy from the Varieties of Democracy (V-Dem) database (Coppedge et al. 2018). A major challenge to this research design is the possibility of omitted confounders explaining both armed conflict incidence and horizontal inequality, thereby making it

hard to interpret the coefficient estimates for armed conflict incidence. To mitigate the influence of omitted confounders, we first include country fixed effects in order to account for stable, country-specific characteristics omitted from the model, such as geographic or cultural features. Second, we include year fixed-effects in order to model common global time trends that drive both conflict and horizontal inequality. We also analyse whether the result is robust to controlling for other potential confounders. Notably, all the results are robust when controlling for societies' level of ethnic fractionalization (see the Annex for results).

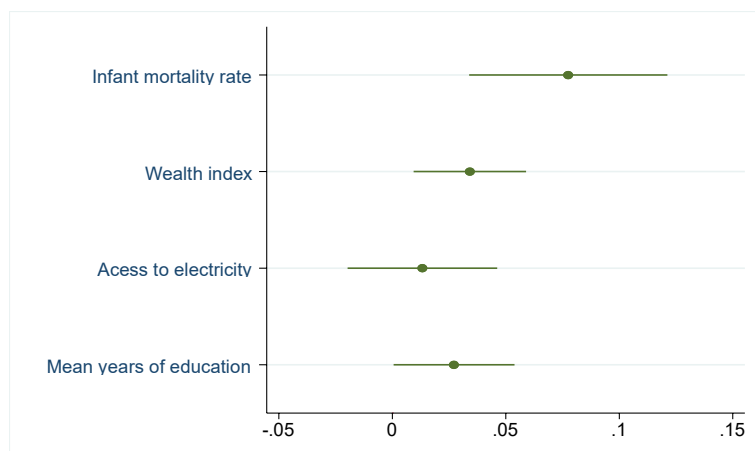
Results from these models are presented in Table 1. Considering short conflicts in Models 1 to 3, there is no evidence that armed conflict incidence is associated with increased levels of horizontal inequality. In fact, the coefficient estimates for armed conflict are actually negative in all three models, although the t-values are consistently low, and the coefficient estimate is only statistically significant at the 0.10 level in Model 1. This result may lend some support to the argument that armed conflict (at least in the short run) could reduce horizontal inequality, for instance, by addressing some of the grievances that motivated the conflict in the first place. But we cannot really draw robust conclusions based on these results. Considering long conflicts, on the other hand, the coefficient estimates for armed conflict incidence are positive in Models 4 to 6. In Model 6, which considers conflicts with at least 1,000 battle deaths, it is also statistically significant at the 0.001 level. Importantly, this result is based on models with both country fixed effects and year dummies, suggesting that this result is not driven by country-specific time-invariant factors or time-specific factors. However, we cannot rule out that the result is driven by country-specific factors that *also change over time*. With this caveat, the conclusion from this analysis is that the onset of large, long-lasting wars is associated with increases in horizontal inequality.

To explore whether the incidence of large, long-lasting war is also linked to inequalities in other aspects of human and economic development, we re-estimate Model 6 using three alternative dependent variables, in addition to the infant mortality measure used in the original analysis: horizontal inequality in wealth, mean years of education and access to electricity. All indicators are from the GDL database. Horizontal inequality is measured using the ratio between the best-performing and the worst-performing region in each country on these three indicators. Figure 4 shows the coefficient estimate for the incidence of large (>1,000 battle deaths), long-lasting (> five years) armed conflicts, and how it varies when using different measures of horizontal inequality. The figure shows that large, long-lasting conflicts are positively linked to horizontal inequality in all four aspects of human development. The coefficient estimate for armed conflict is statistically significant when the dependent variable is horizontal inequality in infant mortality, wealth and education, but not when considering access to electricity. In other words, large, long-lasting conflicts are associated with higher levels of horizontal inequality in several aspects of human development, not only infant mortality.

Table 1: How armed conflict affects patterns of horizontal inequality

Model	1	2	3	4	5	6
	Short conflict	Short conflict	Short conflict	Long conflict	Long conflict	Long conflict
Battle deaths	> 25	> 100	> 1000	> 25	> 100	> 1000
Armed conflict	-0.0127+ (-1.66)	-0.0117 (-1.39)	-0.0148 (-1.25)	0.000820 (0.08)	0.0101 (0.83)	0.0775*** (3.48)
Ln GDP per capita	-0.0446** (-2.96)	-0.0365* (-2.23)	-0.0466** (-3.05)	-0.0333* (-2.05)	-0.0443** (-2.93)	-0.0442** (-2.95)
Ln population	0.338*** (6.71)	0.323*** (6.18)	0.333*** (6.61)	0.323*** (6.16)	0.335*** (6.65)	0.327*** (6.52)
Infant mortality rate	0.00000490 (0.01)	0.000358 (0.91)	0.0000202 (0.05)	0.000342 (0.86)	-0.0000408 (-0.10)	-0.0000230 (-0.06)
Electoral democracy	0.186*** (4.76)	0.0575+ (1.72)	0.183*** (4.69)	0.0572+ (1.69)	0.187*** (4.75)	0.182*** (4.69)
R ²	0.116	0.0887	0.115	0.0870	0.114	0.124
N	1147	1110	1147	1110	1147	1147
Country FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes

Notes: + $p < .10$; * $p < .05$; ** $p < .01$. T-values in parentheses. Standard errors are clustered on country. Country and year dummies are omitted from the table. The unit of analysis is country-year, and the dependent variable is the ratio between the best-performing region and the worst-performing region in average infant mortality rate. All independent variables are measured at $t-1$.

Figure 4: Estimated increase in horizontal inequality in human development, following the onset of armed conflict (long and with more than 1,000 battle deaths (in $t-1$))

Note: Horizontal inequality is measured using the ratio between the best-performing and worst-performing region. Based on specifications from Model 6 in Table A-1.

POST-CONFLICT STABILITY AND HORIZONTAL INEQUALITY

Having established that durable armed conflicts are associated with an increase in horizontal inequality in human development, we now explore post-conflict dynamics. In line with the mechanisms discussed above, it could be the case that any increases in regional inequality that occur during armed conflicts will wear off after the conflict ends, as the economy rebounds and ongoing conflict is no longer imposing direct harmful consequences (targeting certain regions). To explore this argument, we estimate models with horizontal inequality in infant mortality rates as a dependent variable, but now replacing indicators of armed conflict incidence with indicators of post-conflict incidence as an independent variable. Since we only identified clear results for large, long-lasting armed conflicts on increases in horizontal inequality, we here focus on whether horizontal inequality will wear off in the aftermath of such conflict. We distinguish between three phases of post-conflict: the early stage (one to five years after conflict termination), the mid-stage (5 to 10 years after) and the late stage (10 to 15 years).

The results from these models are presented in Table 2. All models control for log GDP per capita, log population, infant mortality and electoral democracy (all in $t-1$), and include country fixed effects and year dummies. The result from Models 1 and 2 suggest that the change in horizontal infant mortality inequality is not statistically distinguishable from zero in the early and mid-post-conflict phases.¹ However, there is evidence that horizontal inequalities in infant mortality decrease in the late post-conflict stage, as the coefficient estimate for late post-conflict incidence is negative and statistically significant at the 0.01 level. This indicates that increases in horizontal inequality during conflict are quite enduring, even after conflicts end. Not until 10 years after conflict termination should we expect to see declines in horizontal inequality, according to these results.

¹ This is in contrast to the Bircan, Brück and Vothknecht (2017) study of vertical inequality and armed conflict. It identifies declines in vertical inequality in earlier post-conflict stages as well.

Table 2: Post-conflict incidence and horizontal inequality in infant mortality rates

DV:	Horizontal inequality in infant mortality rates		
Model	1	2	3
IV:	Early post-conflict incidence	Medium post-conflict incidence	Late post-conflict
Incidence early post-conflict phase		-0.000258	
	(-0.02)		
Medium post-conflict phase		0.0107	
		(0.96)	
Late post-conflict phase			-0.0429**
			(-3.19)
Ln GDP per capita	-0.0436**	-0.0443**	-0.0365*
	(-2.88)	(-2.93)	(-2.38)
Ln population	0.333***	0.332***	0.346***
	(6.60)	(6.60)	(6.88)
Infant mortality rate	-0.0000132	0.0000119	-0.0000744
	(-0.03)	(0.03)	(-0.18)
Electoral democracy	0.183***	0.183***	0.191***
	(4.68)	(4.68)	(4.90)
R ²	0.114	0.114	0.123
N	1147	1147	1147
Country FE	yes	yes	yes
Year FE	yes	yes	yes

Notes: + $p < .10$; * $p < .05$; ** $p < .01$. T-values in parentheses. Standard errors are clustered on country. Country and year dummies are omitted from the table. The unit of analysis is country-year, and the dependent variable is the ratio between the best-performing region and the worst-performing region in average infant mortality rate. All independent variables are measured at either $t-1$ or $t-5$.

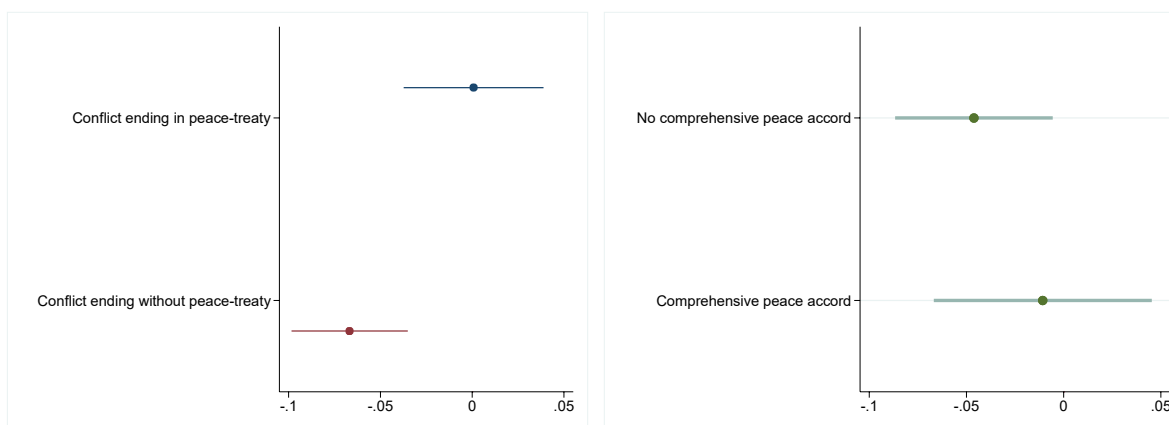
MEDIATING FACTORS

Any potential changes in horizontal inequality in the post-conflict phase could depend on the outcome of the conflict—including on whether the conflict ends up addressing some of the grievances that motivated it in the first place. Along these lines, one potential expectation could be that conflicts that ended in a peace agreement are more likely to lead to declines in horizontal inequality, since such agreements often include provisions to secure (re-)distribution of resources and/or power. To explore this hypothesis, we re-estimate Model 3 from Table 2, but this time distinguishing between conflicts that ended in peace agreements and conflicts that did not end in peace agreements, using data from Kreutz (2010). To measure outcomes of conflict, we draw on data from UCDP that record the number of battle deaths from conflicts ending in peace agreements. Since this information is only available for State-based conflicts, we here only analyse this subset of armed conflicts. We still

consider armed conflicts with at least 1,000 battle deaths, but in order to get a sufficient sample of country-years we do not distinguish conflicts based on their duration.

Figure 5 summarizes some findings from this analysis. The main independent variable in this model is a dummy variable recording whether the country is in a late post-conflict stage (i.e., 10 to 15 years after conflict), and the dependent variable is horizontal inequality in infant mortality rates. The figure shows the coefficient estimates for late post-conflict incidence, when distinguishing between conflicts that ended in peace agreements and conflicts that did not. Contrary to expectations, the results indicate that there is no estimated decline in horizontal inequality in the late aftermath of armed conflicts that ended in peace agreements. Rather, we only find that conflicts that did *not* end in peace agreements are associated with such declines 10 to 15 years after the conflict ended.

Figure 5: Estimated change in horizontal inequality in infant mortality, in the late post-conflict stage, all peace agreements (left) and only comprehensive agreements (right)



Note: Horizontal inequality is measured using the ratio between the best-performing and worst-performing region. Armed conflict is operationalized as > 1,000 battle deaths. Based on specifications from Model 3 in Table 2, but distinguishing based on conflict outcome (peace agreement or not).

This finding is somewhat counter-intuitive. We do not want to draw firm conclusions based on it. Peace agreements are, obviously, not randomly distributed across conflicts. It may very well be that conflicts that typically see peace agreements are systematically different from other types of conflict, and that this, a selection effect, is producing the result. Moreover, peace agreements in themselves are a heterogeneous category, including everything from highly comprehensive agreements, such as the ones currently being implemented in Colombia and South Sudan, and much more restrictive agreements. It may be that certain forms of peace agreements are more likely to lead to a reduction in horizontal inequality, but we currently lack adequate data to test

this. Nonetheless, it may also be that peace agreements, thus far, have not been effective mechanisms for addressing horizontal inequality. If this is indeed the case, this finding does have implications for the design of such agreements and for how they are implemented. This, however, clearly requires more research.

As a partial attempt to untangle some of these issues, we next examine developments in horizontal inequality in the presence of so-called comprehensive peace accords. We utilize data from Joshi, Quinn and Regan (2015) that codify a total of 34 comprehensive peace agreements over the 1989 to 2012 period. A peace agreement is defined as comprehensive if: “(a) the major parties to the conflict were involved in the negotiations that produced the agreement and (b) the substantive issues underlying the dispute were included in the negotiations” (Joshi, Quinn and Regan 2015, p. 552). In the right-hand panel of Figure 5, we present results from models investigating whether the effects of post-conflict experience on horizontal inequality vary depending on whether the country also experiences a comprehensive peace accord. As in Model 6, the main independent variable in this model is a dummy variable recording whether the country is in a late post-conflict stage (10 to 15 years after conflict), after large conflicts lasting at least five years. The dependent variable is horizontal inequality in infant mortality rates. Again, these results suggest, perhaps surprisingly, that there is no statistically significant decline in horizontal inequality associated with the post-conflict phase when there is also a comprehensive peace accord. At the same time, we identify a negative association between post-conflict experience and horizontal inequality if there is no comprehensive peace accord. Again, we stress the need to not draw strong conclusions based on this. For one, having a comprehensive peace agreement is very different from such an agreement actually being *implemented*. For comprehensive peace accords, there may also be selection effects, or other un-modelled factors, that are biasing our results. Nonetheless, these findings are indicative, and, if nothing else, point towards the need for improving our understanding of whether and how peace accords can address fundamental drivers of conflict such as inequality.

Next, and lastly, we consider the presence of peacekeepers as a potential mediating factor. Peacekeeping operations (PKOs) have been found to both reduce the amount of violence seen during and conflict, and facilitate more stable post-conflict peace periods (Hegre, Hultman and Nygård 2019). Over the last two to three decades, PKOs have been given increasingly more tasks. They no longer just patrol a ceasefire line or a buffer zone, but are now routinely mandated to help with the reconstruction of a post-conflict country, including rebuilding institutions (Fortna 2008, Fortna and Howard 2008). Indeed, Hegre, Hultman and Nygård (2019) find that it is precisely these more robustly mandated PKOs that are most effective at securing the peace. We use data on PKO deployments and PKO mandates from Hegre, Hultman and Nygård (2019) and Doyle and Sambanis (2006). In Table 3, we explore whether the effect of post-conflict experience on horizontal inequality holds up when controlling for the presence of PKOs.

Table 3: Post-conflict incidence and horizontal inequality in infant mortality rates

DV: Horizontal inequality in infant mortality rates				
Model	1	2	3	4
PKO present		0.00441 (0.28)		
Traditional PKO			0.0227+ (1.71)	
Transformational PKO			-0.00594 (-1.26)	
Ln PKO budget				- 0.000052 1 (-1.51)
Late post-conflict phase	- 0.0509*** (-3.59)	-0.0498*** (-3.34)	-0.0470** (-3.14)	- 0.0509*** (-3.43)
Ln GDP per capita	-0.0391** (-2.59)	-0.0380* (-2.55)	-0.0388** (-2.61)	-0.0426** (-2.82)
Ln population	0.345*** (6.88)	0.261*** (4.97)	0.268*** (5.10)	0.257*** (4.92)
Infant mortality rate	-0.000129 (-0.32)	-0.000366 (-0.91)	-0.000324 (-0.81)	-0.000310 (-0.77)
Electoral democracy	0.185*** (4.77)	0.174*** (4.53)	0.167*** (4.36)	0.175*** (4.56)
R ²	0.125	0.105	0.110	0.107
N	1147	1108	1108	1108
Country FE?	yes	yes	yes	yes
Year FE?	yes	yes	yes	yes

Notes: + $p < .10$; * $p < .05$; ** $p < .01$. T-values in parentheses. Standard errors are clustered on country. Country and year dummies are omitted from the table. The unit of analysis is country-year, and the dependent variable is the ratio between the best-performing region and the worst-performing region in average infant mortality rate. All independent variables are measured at either t-1 or t-5.

In Model 1, we replicate the finding that late post-conflict incidence (after conflicts with at least 1,000 battle deaths) is associated with a decrease in horizontal inequality in infant mortality rates. When also controlling for the presence of a PKO in Model 2, the coefficient estimate for post-conflict incidence decreases, but only marginally, and it is still statistically significant at the 0.001 level. There is no evidence that the presence of a PKO in itself is related to horizontal inequality levels. This could, however, be due to potential heterogeneous effects of different types of PKOs, particularly depending on the extensiveness of the PKOs mandate. To account for differences between PKOs, Model 3 distinguishes between PKOs with a more narrow mandate and PKOs with a more extensive mandate, following the four-category mandate coding from Doyle and Sambanis

(2006).² The coefficient estimate for post-conflict experience only declines slightly, and there is no evidence that either small or large PKOs are negatively linked to horizontal inequality (indeed, small PKOs are actually positively associated with horizontal inequality, although this coefficient is only statistically significant at the 0.10 level.). Finally, we control for the size of PKO budgets, in log millions of US dollars (data from Hegre, Hultman and Nygård 2019), to explore whether highly expensive PKOs can account for identified declines in horizontal inequality in the late post-conflict phase. There is no evidence that PKO budgets are systematically linked to horizontal inequality, however. These results do not offer much support to the hypothesis that declines in horizontal inequality in the aftermath of conflicts are due to the presence of PKOs, including highly robustly mandated ones. Nor do they offer any evidence that PKOs in themselves can address or reduce horizontal inequalities, although the question of if and when PKOs can influence horizontal inequality levels should be explored more thoroughly in future studies.

SUBNATIONAL ANALYSIS

Having identified some evidence of a positive association between internal armed conflict incidence and horizontal inequality at the national level, we present results from subnational analyses in order to shed some more light on mechanisms driving the conflict-inequality relationship. As discussed in the theory section, armed conflict could induce horizontal inequality due to fighting usually being restricted to some geographical parts of the country. If the direct harmful consequences of armed conflict disproportionately affect those groups residing in these areas, for instance, due to the destruction of health facilities, schools and infrastructure, horizontal inequality should increase. If this mechanism operates, we should observe this at the subnational level: Areas exposed to conflict should experience deteriorated human development compared to areas not directly affected.

In Table 4, we present result from subnational regressions (at the regional level), with the regional infant mortality rate as the dependent variable and exposure to armed conflict as the independent variable. We control for regional wealth (using GDL's International Wealth Index), regional population, as well as conflict incidence in other regions in the same country, to isolate the effect of the conflict occurring locally. Models 1 to 3 consider regional experiences with short conflicts (lasting one to five years) as an independent variable. In brief, there is no evidence that regions experiencing short conflicts have higher levels of infant mortality rates than regions experiencing no short conflict. When considering long armed conflicts (5 to 10 years) in Models 4 and 5, there is some evidence that local experience with long conflicts is associated with higher

²Doyle and Sambanis (2006) distinguish between four types of PKO mandates, from least to most robust: observer, traditional, multidimensional and enforcement. In the estimation we collapse the first two and label these 'traditional', and combine the last two under the label of 'transformational'. The data were updated by Hegre, Hultman and Nygård (2019).

human development rates. The coefficient estimate for armed conflict experience is positive in all three models, but the coefficient estimate is only statistically significant (at the 0.01 level) when considering conflicts with at least 1,000 battle deaths in Model 5. This finding lends some support to the argument that armed conflict may induce horizontal inequality through its direct harmful effects on those areas where the conflict is carried out.

Table 4: Armed conflict incidence and infant mortality rates at the subnational level, controlling for out-of-region armed conflict (in the same country)

Model	Infant mortality rates					
	1	2	3	4	5	6
DV:						
IV:	Short conflict	Short conflict	Short conflict	Long conflict	Long conflict	Long conflict
Battle deaths	> 25	> 100	> 1000	> 25	> 100	> 1000
Armed conflict (short)	0.788 (0.63)	-0.287 (-0.18)	0.449 (0.23)			
Armed conflict (long)				0.686 (0.74)	2.152* (2.29)	0.595 (0.27)
Out-of-region conflict	0.348 (0.70)	-0.0737 (-0.14)	-0.0318 (-0.05)	0.441 (0.78)	0.376 (0.76)	-0.00876 (-0.01)
International wealth index	0.0249 (1.44)	0.0296+ (1.86)	0.0297+ (1.90)	0.0247 (1.43)	0.0314* (2.01)	0.0297+ (1.90)
Population	0.00120 (0.07)	-0.00708 (-0.39)	0.0261 (1.31)	0.000703 (0.04)	-0.00740 (-0.51)	0.0261 (1.31)
R ²	0.747	0.748	0.744	0.747	0.748	0.744
N	11642	11641	11645	11642	11641	11645
Country FE?	yes	yes	yes	yes	yes	yes
Year FE?	yes	yes	yes	yes	yes	yes

Notes: + $p < .10$; * $p < .05$; ** $p < .01$. T-values in parentheses. Standard errors are clustered on country. Country and year dummies are omitted from the table. The unit of analysis is country-year, and the dependent variable is the ratio between the best-performing region and the worst-performing region in average infant mortality rate. All independent variables are measured at t-1.

Discussion and conclusion

The consequences of violent conflict are profound and far-reaching. Modern technologies of war give armies the capacity to kill scores of people efficiently and brutally. But the consequences of war extend far beyond direct battlefield casualties. Although media attention usually stops soon after a ceasefire has been signed, this is often when the most dramatic consequences kick in. In the now famous words of Collier et al. (2003), “conflict is development in reverse.” Following this

groundbreaking work, a great deal of analysis has been carried out in the past decade specifically on the economic consequences of war (see Davenport et al., 2019). A central finding of this literature is that war, especially civil war, is a development issue. But not just a development issue in economic terms. A burgeoning literature has shown that the social, health, demographic, and political consequences of conflict are massive and long-lasting (Ghobarah, Huth and Russett 2003, Gates et al. 2012, Davenport et al. 2019). War is a human development issue.

In this background paper, we have focused on a so far largely neglected aspect of human development: horizontal inequality. Such inequality is a prime driver of internal armed conflict (Cederman, Gleditsch and Buhaug 2013). Indeed, the *Pathways for Peace* report (World Bank and United Nations 2018) concludes that some of “the greatest risks of violence today stem from the mobilization of perceptions of exclusion and injustice, rooted in inequalities across groups.” Yet, we still know next to nothing about how armed conflict affects inequality. If the impact of war on horizontal inequality is similar to the impact of war on economic development, then inequality is liable to be an important driver not just of conflict in itself but an important component of the conflict trap.

To this end, we have investigated 120 countries over a 30-year period. In line with findings on the economic outcomes of war, we uncover no evidence that low-intensity and short-lived conflicts have any meaningful effects on patterns of inequality. For more high-intensity and durable conflicts, those incurring more than 1,000 battle deaths and lasting for at least five years, we do find a substantial relationship with (lower levels of) horizontal inequality.³ Just as war leads to economic underdevelopment, this finding is in line with the argument that war breeds inequality. This is the essence of a trap: horizontal inequality is directly linked to the mobilization of people for war, and such inequality is a driver of conflict onset. War, in turn, exacerbates levels of horizontal inequality. And this sets the stage for unstable post-conflict peace and for conflict recurrence.

In a preliminary set of analyses, we examine potential mediating factors that may help to offset the increase in horizontal inequality in post-conflict societies. We expected to find that conflicts ending in peace accords, and especially those ending in a comprehensive peace accord, would see a more positive post-conflict development in terms of rates of horizontal inequality. Unfortunately, we find no evidence that peace accords have such an effect. We stress that our findings on this are preliminary, but in a set of tests we find no evidence that peace accords

³ Note that these are not ‘extreme’ cases in any sense. An average armed conflict lasts for about seven years and incurs 2,500 battle deaths (Gates et al. 2012).

alleviate levels of horizontal inequality. Given that such accords are meant precisely to help societies to deal with the prime drivers of conflict, this is disconcerting.

We also investigate the role of UN peacekeepers. In later years, PKOs have been given an increasingly large role in post-conflict peacebuilding. Modern multidimensional missions often task PKOs with playing an active role in rebuilding state institutions and addressing the causes of the conflict. Again, however, we find no evidence that deployment of PKOs has any discernible mediating effect on post-conflict horizontal inequality.

In conclusion, we stress the need for more research and evidence on the patterns of conflict and horizontal inequality. This study is a first to cross-nationally examine how war effects horizontal inequality; much more research is needed. In particular, we need new and better data for measuring horizontal inequality across the full range of group-based identities. Second, we need to delve deeper into the theoretical mechanisms linking conflict to an increase in horizontal inequality in order to broaden and deepen our understanding of these dynamics and processes.

Third, and lastly, in order to understand how both the international community as well as local communities can work to reduce post-conflict horizontal inequalities, we need a better understanding of the tools available and how these work.

Annex

Table A-1: How armed conflict affects patterns of horizontal inequality, with additional controls

Model	1	2	3	4	5	6
	Short conflict	Short conflict	Short conflict	Long conflict	Long conflict	Long conflict
Battle deaths	> 25	> 100	> 1000	> 25	> 100	> 1000
Armed conflict	-0.0112 (-1.40)	-0.0107 (-1.15)	-0.0196 (-1.60)	-0.00972 (-0.87)	0.00249 (0.20)	0.0823*** (3.68)
Ln GDP per capita	-0.0603*** (-4.69)	-0.0618*** (-4.78)	-0.0622*** (-4.82)	-0.0598*** (-4.66)	-0.0599*** (-4.64)	-0.0601*** (-4.69)
Ln population	-0.0107 (-0.92)	-0.0113 (-0.99)	-0.0110 (-0.95)	-0.0103 (-0.88)	-0.0115 (-0.98)	-0.0136 (-1.16)
Infant mortality rate	-0.000167 (-0.48)	-0.000162 (-0.46)	-0.000123 (-0.35)	-0.000158 (-0.45)	-0.000180 (-0.51)	-0.000189 (-0.54)
Electoral democracy	0.131*** (3.56)	0.127*** (3.47)	0.128*** (3.49)	0.121** (3.23)	0.129*** (3.49)	0.128*** (3.50)
Ethnic fractionalization	-0.0266 (-0.37)	-0.0267 (-0.37)	-0.0294 (-0.41)	-0.0245 (-0.34)	-0.0250 (-0.34)	-0.0233 (-0.32)
R ²	0.116	0.0887	0.115	0.0870	0.114	0.124
N	1147	1110	1147	1110	1147	1147
Year FE	yes	yes	yes	yes	yes	yes

Notes: + $p < .10$; * $p < .05$; ** $p < .01$. T-values in parentheses. Standard errors are clustered on country. Country and year dummies are omitted from the table. The unit of analysis is country-year, and the dependent variable is the ratio between the best-performing region and the worst-performing region in average infant mortality rate. All independent variables are measured at $t-1$.

Table A-2: Armed conflict incidence and infant mortality rates at the subnational level

DV:	Infant mortality rates					
Model	1	2	3	4	5	6
IV:	Short conflict	Short conflict	Short conflict	Long conflict	Long conflict	Long conflict
Battle deaths	> 25	100	1000	> 25	> 100	> 1000
Armed conflict (short)	0.546 (0.46)	-0.228 (-0.15)	0.470 (0.25)			
Armed conflict (long)				0.397 (0.52)	1.879+ (1.67)	0.601 (0.28)
International wealth index	0.0251 (1.45)	0.0296+ (1.86)	0.0297+ (1.90)	0.0250 (1.44)	0.0314* (1.98)	0.0297+ (1.90)
Population	0.000855 (0.05)	-0.00706 (-0.39)	0.0261 (1.31)	0.000520 (0.03)	-0.00738 (-0.42)	0.0261 (1.31)
R ²	0.747	0.748	0.744	0.747	0.748	0.744
N	11642	11641	11645	11642	11641	11645
Country FE?	yes	yes	yes	yes	yes	yes
Year FE?	yes	yes	yes	yes	yes	yes

Notes: + $p < .10$; * $p < .05$; ** $p < .01$. T-values in parentheses. Standard errors are clustered on country. Country and year dummies are omitted from the table. The unit of analysis is country-year, and the dependent variable is the ratio between the best-performing region and the worst-performing region in average infant mortality rate. All independent variables are measured at t-1.

Table A-3: Armed conflict incidence and deviation from country-mean in infant mortality rates at the subnational level

DV:	Deviation in infant mortality rate from country-mean					
Model	1	2	3	4	5	6
IV:	Short conflict	Short conflict	Short conflict	Long conflict	Long conflict	Long conflict
Battle deaths	> 25	100	1000	> 25	> 100	> 1000
Armed conflict (short)	0.779 (0.62)	3.599* (2.40)	-7.721** (-2.65)			
Armed conflict (long)				-0.600 (-0.78)	-1.230 (-1.15)	-1.187 (-0.67)
International wealth index	-0.633*** (-15.36)	-0.633*** (-15.40)	-0.634*** (-15.42)	-0.634*** (-15.43)	-0.635*** (-15.45)	-0.634*** (-15.42)
Population	0.138*** (4.49)	0.139*** (4.56)	0.138*** (4.51)	0.139*** (4.54)	0.139*** (4.56)	0.138*** (4.50)
R ²	0.212	0.213	0.212	0.212	0.212	0.212
N	11198	11198	11198	11198	11198	11198
Country FE?	yes	yes	yes	yes	yes	yes
Year FE?	yes	yes	yes	yes	yes	yes

Notes: + $p < .10$; * $p < .05$; ** $p < .01$. T-values in parentheses. Standard errors are clustered on country. Country and year dummies are omitted from the table. The unit of analysis is region-year. All independent variables are measured at $t-1$.

Table A-4: Effect of armed conflict on horizontal inequality, varying levels of conflict duration

Model	1	2	3	4	5	6
	All conflicts	All conflicts	Short conflicts	Short conflicts	Long conflicts	Long conflicts
Lag (years)	1-y	5-y	1-y	5-y	1-y	5-y
Armed conflict	0.00686 (0.58)	0.0328** (2.82)				
Armed conflict (short)			-0.0148 (-1.25)	0.0191 (1.62)		
Armed conflict (long)					0.0775*** (3.48)	0.0492* (2.27)
Ln GDP per capita	-0.0422** (-2.76)	-0.0309+ (-1.91)	-0.0466** (-3.05)	-0.0299+ (-1.83)	-0.0442** (-2.95)	-0.0384* (-2.34)
Ln population	0.332*** (6.60)	0.330*** (6.32)	0.333*** (6.61)	0.325*** (6.21)	0.327*** (6.52)	0.329*** (6.30)
Infant mortality rate	-0.0000296 (-0.07)	0.000278 (0.70)	0.0000202 (0.05)	0.000308 (0.78)	-0.0000230 (-0.06)	0.000332 (0.84)
Electoral democracy	0.183*** (4.68)	0.0575+ (1.73)	0.183*** (4.69)	0.0542 (1.62)	0.182*** (4.69)	0.0644+ (1.93)
R ²	0.114	0.0942	0.115	0.0894	0.124	0.0917
N	1147	1110	1147	1110	1147	1110
Country FE?	yes	yes	yes	yes	yes	yes
Year FE?	yes	yes	yes	yes	yes	yes

Notes: + $p < .10$; * $p < .05$; ** $p < .01$. T-values in parentheses. Standard errors are clustered on country. Country and year dummies are omitted from the table. The unit of analysis is country-year, and the dependent variable is the ratio between the best-performing region and the worst-performing region in average infant mortality rate. All independent variables are measured at either t-1 or t-5.

Table A-5: Effect of armed conflict on horizontal inequality, varying levels of conflict duration

Model	1	2	3	4	5	6
	All conflicts	All conflicts	Short conflicts	Short conflicts	Long conflicts	Long conflicts
Lag (years)	1-y	5-y	1-y	5-y	1-y	5-y
Armed conflict	0.00686 (0.58)	0.0328** (2.82)				
Armed conflict (short)			-0.0148 (-1.25)	0.0191 (1.62)		
Armed conflict (long)					0.0775*** (3.48)	0.0492* (2.27)
Ln GDP per capita	-0.0422** (-2.76)	-0.0309+ (-1.91)	-0.0466** (-3.05)	-0.0299+ (-1.83)	-0.0442** (-2.95)	-0.0384* (-2.34)
Ln population	0.332*** (6.60)	0.330*** (6.32)	0.333*** (6.61)	0.325*** (6.21)	0.327*** (6.52)	0.329*** (6.30)
Infant mortality rate	-0.0000296 (-0.07)	0.000278 (0.70)	0.0000202 (0.05)	0.000308 (0.78)	-0.0000230 (-0.06)	0.000332 (0.84)
Electoral democracy	0.183*** (4.68)	0.0575+ (1.73)	0.183*** (4.69)	0.0542 (1.62)	0.182*** (4.69)	0.0644+ (1.93)
R ²	0.114	0.0942	0.115	0.0894	0.124	0.0917
N	1147	1110	1147	1110	1147	1110
Country FE?	yes	yes	yes	yes	yes	yes
Year FE?	yes	yes	yes	yes	yes	yes

Notes: + $p < .10$; * $p < .05$; ** $p < .01$. T-values in parentheses. Standard errors are clustered on country. Country and year dummies are omitted from the table. The unit of analysis is country-year, and the dependent variable is the ratio between the best-performing region and the worst-performing region in average infant mortality rate. All independent variables are measured at either t-1 or t-5.

Table A-6: Post-conflict incidence and horizontal inequality

Model	1	2	3	4
	Early post- conflict	Early post- conflict	Late post- conflict	Late post- conflict
Lag (years)	1-y	5-y	1-y	5-y
Post-conflict incidence (1-5 years after)	-0.00234 (-0.27)	-0.0136 (-1.65)		
Post-conflict incidence (6-10 years after)			-0.0143+ (-1.68)	-0.0285** (-2.92)
Ln GDP per capita	0.0271 (1.06)	-0.0156 (-0.61)	0.0291 (1.15)	-0.0151 (-0.60)
Ln population	-0.395*** (-5.10)	-0.335*** (-3.91)	-0.399*** (-5.20)	-0.309*** (-3.64)
Infant mortality rate	-0.00181*** (-3.39)	-0.00129* (-2.40)	-0.00187*** (-3.50)	-0.00150** (-2.81)
Electoral democracy	0.150* (2.50)	0.0623 (1.31)	0.155** (2.63)	0.0822+ (1.76)
R ²	0.213	0.221	0.220	0.235
N	390	362	390	362
Country FE?	yes	yes	yes	yes
Year FE?	yes	yes	yes	yes

Notes: + $p < .10$; * $p < .05$; ** $p < .01$. T-values in parentheses. Standard errors are clustered on country. Country and year dummies are omitted from the table. The unit of analysis is country-year, and the dependent variable is the ratio between the best-performing region and the worst-performing region in average infant mortality rate. All independent variables are measured at either t-1 or t-5.

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UNDP Human Development Report Office
304 E. 45th Street, 12th Floor
New York, NY 10017, USA
Tel: +1 212-906-3661
Fax: +1 212-906-5161
<http://hdr.undp.org/>

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