# Does contemporary armed conflict have "deep historical roots"?*

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**Abstract**

We assess the degree of persistence in armed conflict in particular places over the last two centuries. At the regional level, we find some evidence of *anti*-persistence, consistent with Tilly's arguments about war and state-building: Eastern and Western Europe had large amounts of conflict from 1815-1945 and almost none after, whereas Africa, Asia, and the Middle East had moderate amounts before and large amounts after. Within regions, by contrast, places that experienced colonial and imperial wars before 1945 (or before 1914) were more likely to have civil wars after independence. The degree of persistence is not much affected by controls for durable features that may affect conflict levels in both periods (such as initial population, land area, ethnic diversity, terrain roughness, income, and colonial power), suggesting that at least some of the effect is due to conflict in one period causing conflict later. We can rule out persistence being due to long-lasting ethnic feuds, and find little evidence that places with more developed pre-colonial states were consistently more likely to have fought with colonizers and then with other groups after independence. There is some evidence of persistence in the groups that fought with colonizers before 1945 and then again after independence with other local groups.

## 1 Introduction

A surprisingly high percentage of independent states have experienced at least one civil war in the years since World War II – a bit more than two out of every five at the 1,000 total deaths threshold.

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For some countries affected by large-scale violent conflict, the wars are brief and do not return. For a good number, however, civil war has been terribly persistent. Almost one in ten countries with a population of at least half a million in 2000 had civil war occurring in at least *half* of its years since 1945 or independence. Leading examples include Colombia (65 years), Myanmar (65), Philippines (53), India (57), Ethiopia (51), Chad (48), Indonesia (47), Sudan (40), Iraq (39), and Afghanistan (34). While in some cases the conflicts are low-level peripheral insurgencies, in quite a few the violence has been horrifically intense and destructive for long periods of time. For example, in addition to Afghanistan, Ethiopia, and Sudan, Somalia (32 years), Angola (30), and DRC (25) have suffered many years of highly lethal and destructive violence.[1]

In this paper we ask whether there is evidence of long-run persistence in major armed conflict. Is the frequent armed conflict in countries like those just mentioned a new, post-1945 or post-independence phenomenon, or were these same areas beset by violent conflict going back into the 19th century? If there is no evidence of long-run continuity in conflict, then we might infer that post-1945 civil war is not primarily about, or shaped by, historical legacies of conflict. Instead, this would suggest that some features of the post-1945 international system, interacting with specific characteristics of (mainly) new states, are to blame. By contrast, if we do find substantial persistence over the last 200 years, then this might be due either to relatively unchanging social, political, or geographic features of particular areas that make them conflict-prone, or to a tendency for violence at one time to cause a greater likelihood at later times.

Our findings are mixed. On the one hand, at the level of whole regions, there is no evidence of strong conflict persistence. Europe and Latin America saw a great deal of armed conflict between 1816 and 1945, but significantly or moderately less afterwards. By contrast, Asia, North Africa and the Middle East, and subSaharan Africa experienced amounts of conflict in the earlier period similar to those seen in Europe and Latin America, but much more afterwards. These broad patterns

[1]Statistics are based on an updated version of the civil war list of Fearon and Laitin (2003), which see for criteria; the basic thresholds are 1,000 total dead with a yearly average of at least 100 and at least 100 killed on both sides. Total years are counted here through 2010.




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are plausibly connected to dramatic changes in the international system following World War II: Nuclear stalemate, the European Union, Soviet dominance in Eastern Europe and Central Asia, and greater democracy, economic growth, and international trade. All these contributed (in degrees that are contested) to pacification in Eastern and Western Europe. In Asia, Africa, and the Middle East, by contrast, a colonial "pax" sometimes kept things quiet, while decolonization after 1945 created over a hundred new and often very weak independent states that were at high risk for civil war (Fearon and Laitin, 2003). Not only is this regional pattern inconsistent with a strong tendency for conflict to persist or cause more conflict, but it can be argued that in Europe and Latin America the violence in the earlier period was integral to a state building process that actually caused a lower risk of armed conflict later on (à la Tilly 1975).

However, we also find evidence of a particular form of conflict persistence *within* regions, most of all in Asia, Africa, and the Middle East. In these places, areas that experienced colonial and imperial wars before 1945, especially in the 19th century, were more likely to experience *civil* wars post-independence.

We consider two types of possible explanations for this curious relationship. First, it might arise due to durable factors specific to certain places that cause conflict both before and after 1945. We consider a number of possibilities of this sort – including rough terrain, initial ethnic diversity, initial income level, persistent ethnic feuding, valuable agricultural land, colonial power effects, and strong pre-colonial institutions – and find little evidence to support any of them. Second, it could be that fighting in one period causes increased odds of conflict much later, by creating enmities or something like "conflict capital," or by destroying indigenous institutions that would have better kept peace. Although these mechanisms are much harder to assess because 19th century conflict is of course not randomly assigned, we do find evidence that makes the "enmities" path unlikely. By contrast, the frequent appearance of the same group fighting against colonizers in the 19th century and then against other local groups after independence is consistent with a "conflict capital" or "martial institutions" explanation.

For evidence we rely on two very different lists of armed conflicts: the most recent Correlates




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of War data, which covers 1816 to 2010, and a list developed by Peter Brecke that applies a lower death threshold and covers 1400 to 2000 (Sarkees and Wayman, 2010; Brecke, 1999). For the 653 COW and 1,527 Brecke conflicts after 1815 we coded the locations of significant fighting, using the boundaries of currently existing states as our "grid." COW distinguishes between interstate, intrastate (civil), extra-state (colonial and imperial), and "non state" wars (conflicts between organized political groups that are not members of the interstate system as COW defines it). We coded Brecke's list by the same criteria, which allows us to examine persistence of all armed conflict and of particular types. To estimate persistence we regress logged measures of total conflict years in a country post 1945 on logged total conflict years pre 1945, controlling for region fixed effects, land area, population in 1800, colonial power, and various other durable features. Lacking a good source of random variation in pre-1945 conflict, we cannot cleanly estimate the causal effect of pre-45 conflict on post-45 conflict. However, we can introduce controls for persistent factors such as terrain and ethnic diversity that may cause conflict in both periods, and we can estimate how important omitted variables would have to be in order to there to be no causal effect of conflict "pre" on conflict "post." We find that adding a large number of controls has rather little effect on the persistence coefficient, which suggests that there is probably a non-trivial causal effect of violence in the early period on violence in the later period.

We stress, however, that historical persistence of armed conflict is an interesting and important phenomenon whether it arises from a causal effect of conflict or is due to highly persistent factors that cause conflict in particular places over long periods of time. In both cases we would like to understand the mechanisms in order to understand how, why, and to what degree long-run historical legacies or hard-to-change change factors are making for the seemingly interminable conflicts of today.

The literature on the persistence of armed conflict is sparse and without clear general findings. Besley and Reynal-Querol (2014) have similarly used the Brecke data to ask if conflicts among African groups between 1400 and 1700 predict post-independence conflict in Africa, both at the country level and at level of $120 \times 120$ kilometer grid cells. They find some persistence at

both levels, although at the country level the relationship depends on two extreme outliers (Angola and Ethiopia). Our results for a more recent period differ most notably in that the main type of persistence we find is between colonial war in 1816-1945 and civil war after, rather than between war among indigenous groups and post-independence conflict.[2]

Depetris-Chauvin (2014) finds that within countries in subSaharan Africa, areas with a history of state institutions before 1850 had less low-level conflict after 1988 than areas without such history. At the state level and using Brecke or COW civil war since independence as the dependent variable, we do not find a significant relationship, whether in subSaharan Africa, Asia, or the Middle East (although, as in Depetris-Chauvin the estimates are negative).[3] Voightländer and Voth (2012) report that German towns that had anti-Jewish pogroms at the time of the Black Death (1348-50) showed markedly greater anti-Semitism in the 1920s, including acts of violence, votes for anti-Semitic parties, deportations, and letters to *Der Stürmer*. Using local droughts at the time of the Mexican Revolution as an instrument, Dell (2012) finds the greater insurgency in a Mexican locality causes worse economic outcomes today, although there appears to no persistent effect on levels of violence.

Beyond these few, we are not aware of other papers examining the long-run persistence of armed conflict. This is in sharp contrast to a rapidly growing literature on long-run determinants of economic development; for recent reviews, see Nunn (2009) and Spoloare and Wacziarg (2013). This literature repeatedly finds evidence of highly persistence influences of events, practices, or institutional forms from hundreds of years ago. It seems natural to ask if armed conflicts – which are often dramatic, wrenching events that can shape state development and destruction – likewise show persistence over long periods of time.

In section 2 we briefly develop some theoretical arguments for and against an expectation of conflict persistence, and spell out possible mechanisms. Section 3 discusses our data and design

[2]For Africa we find no evidence that conflicts among locals either in the period 1816-1945 or 1700-1799 predict civil war later on, at least at the country level.

[3]See also Wig (2013), who finds that Africa ethnic groups with more developed pre-colonial state institutions see lower odds of ethnic war with the center than other groups in the same country.

issues. Section 4 presents results at the regional level where, if anything, there is some evidence for "anti-persistence" of conflict. Section 5 then turns to the main empirical results, at the country level, showing that colonial and imperial wars before 1945 predict civil war after 1945 or independence. Three possible additional explanations are examined in Section 6. Section 7 concludes.

## 2 Considerations for and against conflict persistence

The idea that present-day conflicts "have deep historical roots" is so common in contemporary media coverage that one might think that journalists are contractually obligated to include the "Of course, conflict in this area (or between the Xs and the Ys) is nothing new . . . " paragraph whenever they write about new outbreaks of organized violence. "Deep historical roots" is also a common folk wisdom about violent conflict (e.g., Kaplan, 1993). So it is perhaps surprising to note that political scientists and sociologists who study conflict have never systematically investigated how much persistence there is in conflict over time in particular places, despite the fact that without too much additional work, data sets that have existed since the 1970s can be used for this purpose.[4]

At least for political scientists, this may be related to their acceptance of a partially articulated theory of international politics and political development according to which armed conflict is not be expected to be highly persistent. By this story, armed conflict accompanies and furthers the development of modern states (Tilly, 1975). These gradually became strong enough to prevent internal war and, after World War II, dangerous, democratic, or industrial enough to deter – or not care to fight – wars with each other (Schelling, 1960; Waltz, 1979; Jervis, 1986; Mueller, 1989). As they developed these mainly Western modern states expanded, acquiring colonial empires, often violently. But they eventually imposed a rough peace among groups who were assembled into large administrative units with other peoples that they formerly had little or nothing to do with, especially in Africa. With decolonization after 1945, elites in these new states found that they had reasons to capture or defend control of the colonial state apparatus, which led to efforts to

[4]In recent years, when political scientists have addressed the question of "deep historical roots," it has mainly been to debunk claims of "ancient hatreds" in specific ethnic conflicts (e.g., Kaufman, 2001).

mobilize coalitions, often along "ethnic" lines, and in some cases to civil wars. However, most of the fighting among factions was not due to any significant historical legacy of conflict – it was due to the new structural situation. For example, Ibos and Hausas had no reason to mobilize politically and fight as "Ibos" or "Hausas" until there was a Nigeria with a capitol and tax revenues to fight over.[5]

This account implies that we should not expect a great deal of persistence of conflict from states or administrative territories before 1945 to independent states after 1945. We might even expect "*anti*-persistence" in so far as conflict in period $t$ indicates state building, which favors peace in period $t+1$, while lack of conflict in period $t$ indicates a pre-state building phase, which augurs conflict due to state building in $t+1$. Looking to the future, by this theory we might expect warfare in the new states to accompany and further the gradual development of state capabilities, so making for a gradual decline in violence as the new states grow stronger.[6]

But it is also possible to draw on arguments about persistence from other domains (such as institutions) to propose reasons for conflict persistence. From Braudel (1972) to Putnam (1993) to Acemoglu, Johnson and Robinson (2001) and more, a long tradition of scholarship proposes that social, political, and economic institutions – or in some formulations, "cultures" – are highly persistent, and explanatory for important things like present-day democracy and income levels. A recent wave of research mainly by economists has identified numerous instances where some historical event or feature from hundreds of years ago correlates with contemporary variation in income levels, democracy, or individual attitudes.[7]

Armed conflict might be persistent in a territory for two kinds of reasons. First, violent

[5]In fact, much "constructivist" or "instrumentalist" scholarship argues that a great many present day ethnic groups are much larger than traditional precolonial social formations, and that they formed as self-conscious groups only in the course of colonial rule. See Bates (1983) for a classic statement.

[6]Although some argue that facts about the present international system prevent Tilly's mechanism from working well (Jackson and Rosberg, 1982; Herbst, 2000).

[7]Easterly, Comin and Gong's (2010) title "Was the Wealth of Nations Determined in 1000BC?" conveys the flavor of much of this work (they say, Yes, partly). Recent examples in Political Science include Hariri (2012) and Acharya, Blackwell and Sen (2014).

conflict in one period might directly cause an increased risk of conflict in later periods. Call this the *causal effect*. Second, it could be that levels of violent conflict are correlated across periods because there are persistent features of the territory or the peoples who live there that increase conflict odds in both periods. Call this the *proxy* effect, since here a measure of (say) pre-1945 conflict is correlated with post-1945 conflict because it proxies for other, durable determinants of conflict risk.

Candidates for giving rise to the proxy effect include

P1 Strategic locations along rivers, good natural ports, or highly productive land, since these may attract military competition at all times.

P2 Rough terrain – whether mountains, desert, or jungle – might favor guerrilla operations against would-be state builders, or might attract fierce, independence-seeking people trying to escape them (Scott, 2010).

P3 Different colonial powers may have pursued policies or built institutions that caused both a higher risk of war in the colonial period and then again after independence.

P4 Greater ethnic diversity in 1800 could have favored more conflict in the 19th century and then, due to both direct and indirect effects, caused more conflict after 1945.[8]

P5 Relatedly, some places may have long had pairs of feuding ethnic groups that are disposed to fighting each other over land or other resources over long periods of time ("ancient hatreds").

P6 Finally, some groups may have developed political and military institutions before 1800 that disposed them to expansion and conquest, and which survived in some form post 1945, contributing to post-independence conflict with other groups in the new state.

Candidate mechanisms for a causal effect include:

C1 Large-scale violence might create intense enmities that are passed down from generation to generation (that is, violence at time $t$ might create hatreds that increase conflict risk at time $t + 1$).

[8]By "indirect" we mean that, for instance, ethnic diversity might have impeded state-building or economic development and as a result raised post-45 conflict risks. By "direct" we mean arguments holding that ethnic divisions are by themselves likely to generate violent conflict, for example, due to conflicting preferences over public policies.

C2 Armed conflict in period $t$ might destroy political and social institutions that had functioned in part to keep the peace, raising conflict risk in period $t + 1$ due to continued institutional weakness or dysfunction. For example, perhaps colonial and imperial wars in the 19th century tended to destroy traditional institutions and authority where these had been relatively strong.

C3 The experience of armed conflict might endow fighters and leaders with something like "conflict capital" or martial institutions that they might then use again and pass down to subsequent generations. For example, it might be that essentially random factors decided which "native" groups fought with the colonizers, but the experience of doing so increased the likelihood of conflict participation by these groups after independence.[9]

In Sections 5 and 6 below we consider measures for each of the factors invoked by the proxy effect mechanisms. For reasons discussed at greater length below, the causal effect mechanisms are harder to assess, although we are able to rule out C1 (at least for large scale conflicts).

## 3 Data and design issues

To assess degrees and correlates of historical persistence of armed conflict, we need data on where armed conflicts occurred going back at least 200 years, and we need to choose a geographical unit of analysis. In this paper we use as our "grid" the boundaries of currently existing U.N. member states (as of 2012), primarily because we are interested in the question of what explains why some present-day countries have experienced so much more violent conflict than others. For example, we compare the number of years of armed conflict of different types taking place in the boundaries of present-day Nigeria, before and after 1945 (or after the later of 1945 and independence in a robustness check). We say more about the reasons for this choice below.

At this point available data on armed conflict after 1945 are extremely rich.[10] For conflict lists with global coverage for years before 1945, however, there are just two main options: the Correlates of War (COW) list covering the period 1816 to 2007, and Peter Brecke's "Conflict Catalog,"

[9] Jha and Wilkinson (2012) make an argument along these lines to explain the finding that Indian districts with more returning World War II veterans saw more violence in the partition of 1947. We note that a causal factor at one time may become a proxy effect at a later time. For instance, conflict at time $t$ might foster martial institutions that persist, raising conflict odds in periods $t + 1$ and $t + 2$.

[10] See for example http://www.prio.org/Data/Armed-Conflict/ and http://www.pcr.uu.se/research/ucdp/datasets/.

which lists conflicts between 1400 and 2000.[11] The COW project uses a threshold of 1,000 battle deaths per year, which means that it picks out large-scale conflicts that are relatively likely to leave significant traces in the historical record. By contrast, Brecke's list (henceforth, Brecke) employs a much lower threshold of 32 deaths "caused by the conflict" (Brecke, 1999). Accordingly, whereas COW codes 653 wars from 1816 to 2007, Brecke codes 1,523 in the same period, including many small episodes that can be difficult to identify. Despite the likely measurement error introduced by the low threshold, Brecke's list picks up a great deal of conflict in 19th century Africa that does not appear in COW. Further, as we will see, our results are strikingly similar in both data sets, despite the large differences in their threshold criteria and, apparently, source materials.[12]

We coded the 653 COW wars and the 1,523 Brecke conflicts for the principal locales of fighting, using present-day independent states as the territories to which to assign wars. For example, COW codes the "Second Italo-Ethiopian Expedition" from 1895 to 1896. In this and many other cases, Wikipedia entries are sufficient to identify major places of battle – here, present-day Eritrea and Ethiopia. In other cases, and much more often for Brecke, we consulted case-specific secondary literatures.[13]

COW codes four types of armed conflict based on the project's designation of states that are members of the "interstate system" in each year: interstate, intrastate (civil), extra-state, and non-state. An extra-state war – which covers what are often termed "colonial" and "imperial" wars – is a war between one member state and some entity with organized forces that is not a system

[11]For COW see the version 4.0 data presented in Sarkees and Wayman (2010), and for Brecke, the xls file and documentation at http://www.cgeh.nl/data.

[12]Our first version of this paper used only the COW data. We subsequently coded and analyzed the Brecke data due to concerns about whether the COW-based results would be robust to a different data source. We also note that we have found numerous cases in Brecke and, to a lesser degree, COW, where we doubt the death thresholds were met, or where the years of the conflict seem incorrect to us based on the sources we have seen, or where we could not find references to the conflict Brecke names. However we have decided to go with their lists as they are rather than attempt to revise them for this project.

[13]Particularly for a few interstate wars, questions about whether there was "enough" fighting in a territory to merit inclusion sometimes arose. We required evidence of a significant battle, or sustained guerrilla or other local armed opposition in a locale. (A death threshold criterion might be more satisfactory, but this is not implementable for a great many pre 1945 conflicts.)

member. A non-state war is a war between two non-system member political entities. We applied these same criteria to code the types of all Brecke conflicts after 1815.[14]

Table 1 displays basic statistics concerning fighting locales in the two data sets. A remarkably high percentage of conflicts occur entirely within the bounds of present-day states – 88% in the COW data and 81% in Brecke – despite the fact that the borders of almost 70% of the 194 present-day states became international only since 1945. Surprisingly, numbers are almost identical if we restrict attention to conflicts in the period 1816-1945, and of course the numbers are even higher if we exclude the interstate conflicts (which one expects to cross borders). Even in the case of interstate conflicts, in more than half the fighting took place within the bounds of just one present-day state.[15]

Why so few conflicts occurring in multiple present-day states, given that most international borders are less than 60 years old? We suspect that there are two main reasons. First, before 1945 almost all present-day international borders were either interstate borders or, far more often, the internal administrative/provincial borders of various empires (Carter and Goemans, 2011). Just as interstate borders organize and orient armed conflict today, administrative boundaries within empires frequently did before 1945. Second, in places where formal borders had not been delineated – most of subSaharan Africa before 1885 – conflicts tended to be highly local affairs and thus not apt to fall across what became the lines demarcating states.

These observations provide one reason for our choice of present-day borders as our "grid" for associating conflicts with areas: In so far as conflict was typically directed at, or pursued in

[14]COW defines system membership as follows (from the website): "Prior to 1920, the entity must have had a population greater than 500,000 and have had diplomatic missions at or above the rank of chargé d'affaires with Britain and France. After 1920, the entity must be a member of the League of Nations or the United Nations, or have a population greater than 500,000 and receive diplomatic missions from two major powers."

[15]Why are "non-state" conflicts (relatively) often fought in more than one locale? COW's non-state conflicts are a heterogeneous lot, including both fights between pre-modern traditional authorities such as African kingdoms, together with many cases of conflicts between 19th century state armies that are not coded as interstate because one or both sides did not meet the system membership requirements. This is particularly common for Latin America, where COW's system membership criteria imply that many republics that became independent in the 1810s do not become system members till 50 or so years later.

Table 1: COW and Brecke wars and fighting locales

| | COW wars | | | | |
|---|---|---|---|---|---|
| war type | intra | extra | inter | non | all |
| # wars | 334 | 163 | 94 | 62 | 653 |
| Share in 1 locale | 0.97 | 0.92 | 0.57 | 0.76 | 0.88 |
| Share in 2 locales | 0.02 | 0.06 | 0.31 | 0.19 | 0.09 |
| Share in $>$ 2 locales | 0.01 | 0.02 | 0.12 | 0.05 | 0.03 |
| # locales | 348 | 180 | 238 | 84 | 850 |

| | Brecke conflicts | | | | |
|---|---|---|---|---|---|
| conflict type | intra | extra | inter | non | all |
| # conflicts | 636 | 468 | 215 | 204 | 1523 |
| Share in 1 locale | 0.92 | 0.83 | 0.52 | 0.76 | 0.81 |
| Share in 2 locales | 0.06 | 0.13 | 0.34 | 0.16 | 0.13 |
| Share in $>$ 2 locales | 0.03 | 0.04 | 0.13 | 0.08 | 0.05 |
| # locales | 720 | 573 | 463 | 281 | 2037 |

light of the strategies and reactions of the authorities of these administrative boundaries, they form natural units of observation. Put differently, conflicts within them are likely to be correlated with each other by virtue of being in the same administrative unit, and less likely to be correlated with conflicts in other administrative units (subsequently, states).

A second major reason is simply that our primary research motivation is to explain why some states have experienced so much armed violence after 1945 or independence. So it is reasonable to ask how much violence the same territories experienced before independence. The third major reason is practical. It is much easier to measure important covariates of interest circa 1800, such as population, for current state boundaries than for other geographic units.[16]

The most compelling alternative is to divide the earth's land into an arbitrary, square grid and code each cell for the existence and type of armed conflict in each year since 1815. This approach can have benefits, such as allowing one to ask about the relationship between local terrain features, or the presence of cities or ports, and conflict over time. But it has theoretical and practical draw-

[16]Endogeneity of borders to conflict would be a problem if we were using borders in the 19th century to code "before" levels of conflict, and then post-45 borders for "after" levels. But we are fixing the current borders and projecting back (just as if we fixed a square grid), so there is no issue of endogeneity here.

backs as well. In particular, at least for this paper, we are less interested in the question of what makes an arbitrary $100 \times 100$ kilometer cell conflict-prone as we are about what makes a particular country conflict-prone. *There could be zero correlation over time in which parts of a country experienced violent conflict, but the country could nonetheless exhibit very strong historical persistence of conflict.* Finally, there is the practical consideration that for 1800 or before, the only covariates we can obtain for arbitrary grid cells tend to be terrain features, and many present-day covariates may have been influenced by histories of conflict (e.g., per capita income).[17]

Our main specifications considered below take the form

$$\log(\#\text{years of conflict}_{i,post} + 1) = \alpha + \beta \log(\#\text{years of conflict}_{i,pre} + 1) + X\Gamma + \epsilon_i, \quad (1)$$

where the dependent variable is the log of the number of years of conflict measured in the "post" period in country $i$ and the independent variable of interest is the log of the number of years of conflict recorded for the "pre" period in country $i$ (plus one in each case to avoid logging zero). We take the periods as 1816-1945 (pre) and 1946-2000 for Brecke or 1946-2007 for COW (post), although all results are robust to letting the dividing line be the larger of 1945 or the country's year of independence.[18] We also briefly consider making "pre" the years 1816-1913, to see if observed persistence weakens when the more proximate interwar period is omitted (results are unchanged). We use OLS and the log transform of number of conflict years (plus one) for ease of interpretation; count models (negative binomial regression) yield nearly identical results (usually stronger, in terms of $z$ statistics).

$X$ is a matrix of controls, discussed at greater length below. In the baseline models we include region and colonial power fixed effects, and typically land area of the country and an

[17]Besley and Reynal-Querol (2014) use both current state boundaries and $120 \times 120$ kilometer grid cells in their study of the correlation between conflicts in Africa in 1400-1700 and post-independence (or 1997-2010 at the grid level). Wimmer and Min (2006, 2009) were the first (so far as we know) to develop a territory-year data set using current states as the territorial units. They are interested in the relationship between changing principles of political legitimacy and civil war, and do not address questions about persistence.

[18]Since almost all conflict post-1945 is civil war and civil war by definition occurs in independent states, this distinction doesn't make much difference here.

estimate of 1800 population. For controls measured prior to the 19th century or unlikely to have changed much since then, we also have measures of terrain roughness, soil quality, ethnic diversity, and distance to the equator. Of course we can control much more easily for present-day measures of population, ethnic diversity, and per capita income, for example. But these may have been determined in part by levels of conflict in the earlier period – they are "post treatment." Thus, if the coefficient of interest, $\beta$, is significantly reduced by their inclusion in the model, this does not necessarily mean that there is no causal effect of "pre" conflict on "post" conflict (the effects may pass through these channels). On the other hand, if we control for these post-treatment variables and a positive estimate for $\beta$ is unaffected, this suggests both that the reason for the relationship is not a pathway through these variables and that it is more likely that there really is a relationship between "pre" conflict and "post" conflict.

Not necessarily a causal relationship, however. We have no good reason to suppose that years of conflict across territories pre-1945 are "as good as randomly assigned" with respect to other causes of post-45 conflict years. As discussed above, positive "persistence" ($\beta$) could be due either to "pre" conflict causing more "post" conflict, or to both being caused by unmeasured, persistent features of territories or the people in them (or, more likely, both). In sections 5 and 6 we consider what these omitted factors might be; in section 5 we consider how important they would have to be to eliminate the observed relationship if it were directly causal.

We stress, however, that positive persistence is substantively interesting regardless of the degree to which pre violence causes post violence, as opposed to both being caused by durable geographic, social, or political factors. Positive persistence implies that, to a degree we can estimate, durable or deep-rooted historical factors explain a part of why some countries have been so conflict prone since independence. We can also rule out, or cast doubt on, some common conjectures for what these factors might be.

## 4 Anti-persistence, or state-building effects, at the region level?

Figure 1 shows how aggregate amounts of conflict – in years per locale per decade – varied pre- and post-1945 across regions. The patterns are highly similar whether one uses COW or Brecke; the only notable difference is that Brecke has much more conflict in subSaharan Africa before 1945, which could reflect missed cases by COW or more low-level conflicts in that area and time.

Eastern and Western Europe (here including the U.S., Canada, Australia, and New Zealand) saw overall conflict levels similar to the rest of world before 1945, but dramatic declines after. Latin America and the Caribbean also saw some decline, more evident in the COW data than in Brecke. By sharp contrast, Asia, North Africa/Middle East, and subSaharan Africa had substantial amounts of conflict before 1945 and markedly more afterwards.

This pattern is *not* what we would expect if conflict were highly persistent at the regional level. In that case we should find that regions with much conflict before had much conflict after, and those with little before would have little after. Instead the observed pattern is one of divergence. All start with roughly similar years of conflict in 1816-1945, and then the regions with more colonies go one way while the regions with more independent states and generally higher levels of economic development go the other. If we consider only inter-, intra-, and non-state conflicts – which are the types of conflict most likely to be fought between locals – this pattern is even more pronounced (since much of the pre-1945 conflict in Africa, Asia, and the Middle East was extra-state). That is, the regions with the least conflict before have the most after, and vice-versa.

The pattern is arguably more consistent with the anti-persistence story implied the Tilly/Kant/Schelling theory of international politics and political development outlined in Section 2. Figure 1 provides more detail supportive of this account. Using Brecke, it graphs the number of locales with conflict by region and year, with colors indicating the type of conflict. Notice that in the left column, Europe and Latin America mainly have civil and interstate wars before 1945, and next to nothing afterwards except in Latin America, which has some civil war (mainly in Central Amer-

ica).[19] The right column shows the regions with more 19th century colonies. For these, most of the pre-1945 conflict is either colonial or imperial wars between locals and European powers ("extra state" war), or interstate wars that mainly involve European powers fighting each other outside their home territories. After 1945 and with decolonization, these areas see a preponderance of civil war, with some interstate war especially in North Africa/Middle East and Asia.

Thus we have (1) what might be called "state-building" wars within and between countries in the areas with more independent and economically developed states; and (2) in the rest of the world, Europeans fighting against traditional authorities or rebels or among themselves, followed by (possibly) state-building wars after independence.

A surprising aspect of this interpretation is that contemporary development discourse associates civil war with "state failure," not state building. Further, Tilly-esque arguments are thought to apply to interstate war but not civil war. From a short-run perspective it is obviously true that civil war can weaken or cause states to collapse. But from a longer historical perspective, civil wars have provided foundations for "state strength" for many of the most consequential and capable contemporary states. Think of Britain (the 17th century), France (the French Revolution and aftermath), the U.S. (the Civil War), Russia (the Bolshevik Revolution and aftermath), China (the civil war and Mao), and Japan (Meiji Rebellion). Nor is it obvious theoretically why "war made the state and the state made war" should not work for civil war as well as interstate war. Some argue that even today a Darwinian military competition among rebel groups and governments can be a path to more capable states in the developing world, at least in some instances.[20] This is not to recommend civil war as a development strategy, but to suggest that some of the new states may be going through a slow, bloody historical process that bears a relationship to the path followed by

[19]The non-state wars in Latin America in the early years of the 19th century should really be coded as interstate wars; they appear as non-state because some of the smaller new republics in this region did not receive British and French consulates till later. See footnote 15 above.

[20]See Weinstein (2005) and Luttwack (1999). Skocpol (1979) argued years ago that revolutionary wars create stronger states.

some of today's strong states.[21]

# 5 Conflict persistence within regions

## 5.1 Main results

Although at the regional level there is no evidence of conflict persistence, we find moderate persistence when we consider variation across countries within regions. Tables 2 (COW data) and 3 (Brecke) display results for specification (1) with different control variables. Region fixed effects are included in all models but 1 and 5, so that we are estimating a precision-weighted average of the within-region relationships between covariates and post-45 conflict years. We show results both for the global sample (columns 1-4) and for only Africa, Asia, and the Middle East (columns 5-8), in line with the suggestion above that in Europe and Latin America pre-1945 conflict may have been associated with a state-building phase that fostered less conflict after 1945.

Control variables include land area and an estimate of population in 1800, in part because there may be a "mechanical" relationship between population and years of conflict – you can't have conflict without people, and any given death threshold may be more likely to be met the greater the population. But population and land area could also be part of a proxy-effect explanation for positive persistence, for example if larger populations or land areas are harder to govern and administer peacefully (Fearon and Laitin, 2003). Other models include controls for terrain roughness, an estimate of ethnic diversity in 1800, soil quality, distance from the equator, and dummies for colonial power. These are durable or partly durable (ethnic diversity) factors that could affect conflict propensity in both periods, per arguments mentioned in Section 2. Distance from the equator can be interpreted at least in part as a proxy for level of economic development in 1800 that is not caused by pre-1945 conflict levels.[22]

[21] This was a core concern of the first wave of modernization theory (now called development theory) (e.g., Black, 1966). That is, could the new states bypass the bloody process of state formation followed by the rich countries?

[22] Land area is in square kilometers. Population circa 1800 comes from Gapminder (http://www.gapminder.org/data/documentation/gd003/, which is based almost entirely on Maddison (Bolt and van Zanden, 2013), adjusting some areas for current country boundaries by using population proportions in 1950 (in the same manner as,

In all models, we observe a statistically significant coefficient on pre-1945 years of conflict, indicating positive persistence. Thus, within regions, present-day countries whose territories had more years of armed conflict before 1945 have tended to experience more armed conflict after 1945, whether one controls for these several pre-determined influences on post-45 conflict or not.

Probably the best estimate of what might be called "total persistence" – the sum of both causal and proxy effects – is given by the spare model in column 3 of the two tables, which controls only for population and region fixed effects. In terms of magnitude, these imply that doubling years of pre-45 conflict associates with a 21% increase in post-45 COW war years, and a 30% increase in post-45 Brecke conflict years.[23] Estimated persistence at the level of countries is markedly higher when we restrict attention to the areas with fewer independent states before 1945, consistent with the "anti-persistence" arguments of Sections 2 and 3.

While the possibly "mechanical" covariate, population in 1800, reduces the estimated persistence coefficient significantly, none of the others have much effect on it, even though in most cases they are significantly related to post-1945 conflict. The controls behave as expected except for soil quality; after 1945, places with worse soil quality (within regions) tend to have more conflict. Interestingly, soil quality is positively related to conflict before 1945, which is why its inclusion tends to increase the persistence estimates.

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for example, that Nunn and Puga (2012) produce estimates for 1400). Terrain roughness is the average standard deviation of elevation of neighboring cells about one kilometer apart, computed by Nunn and Puga. Other measures, such as percent of country that is mountainous (Fearon and Laitin, 2003), perform nearly identically but are available for fewer countries. Soil quality is percent of land that is "fertile" using FAO data, calculated by Nunn and Puga. "No colonial power" is a category in the colonial power dummies, and distance from equator is absolute latitude; both are based on Nunn and Puga. Language diversity circa 1800 is the log of our estimate of the number of indigenous languages in the territory, using any languages listed currently by Ethnologue, extinct languages listed by Ethnologue, and languages listed by UNESCO as "endangered" but not appearing in Ethnologue. (We add one before logging because a few small island states (mainly in the Caribbean) have only Spanish in these records, which is coded as an immigrant language). For more on the construction of this variable, see the online Appendix. To be clear, the point of including extinct and endangered languages is that we want a measure of ethnic diversity before "state building" led to significant homogenization and reduction of diversity in the last two centuries (and earlier in some places).

[23]These are calculated from $2^{.27}$ and $2^{.38}$. Strictly speaking, .27 and .38 are the estimated elasticities of one plus post-45 conflict years with respect to one plus pre-45 conflict years; for moderate levels of conflict the approximation is pretty good. Mean and median years of conflict pre-1945 are 4 and 8 years for COW, and 16 and 25 years for Brecke. For post-1945, they are zero and 4.8 for COW, and 2 and 10.7 for Brecke.

Figure 8 displays the relationship between pre- and post-45 conflict in the Brecke data for Africa, Asia, and the Middle East, conditional on the covariate sets in Tables 2 and 3.

Table 2: Conflict persistence with COW data, all types of conflict

| | All regions | | | | Asia, Africa, Middle East | | | |
|---|---|---|---|---|---|---|---|---|
| pre45 conflict years[a] | $0.35^{***}$ | $0.46^{***}$ | $0.27^{***}$ | $0.23^{**}$ | $0.69^{***}$ | $0.71^{***}$ | $0.40^{***}$ | $0.39^{**}$ |
| | (0.07) | (0.06) | (0.08) | (0.08) | (0.09) | (0.09) | (0.12) | (0.12) |
| log(pop c. 1800) | | | $0.17^{***}$ | $0.21^{***}$ | | | $0.23^{***}$ | $0.25^{**}$ |
| | | | (0.04) | (0.06) | | | (0.06) | (0.08) |
| log(land area) | | | | $-0.10^{\dagger}$ | | | | $-0.00$ |
| | | | | (0.06) | | | | (0.08) |
| log(ruggedness) | | | | $0.14^{**}$ | | | | $0.23^{**}$ |
| | | | | (0.05) | | | | (0.08) |
| language diversity c. 1800 | | | | $0.13^{\dagger}$ | | | | 0.03 |
| | | | | (0.07) | | | | (0.10) |
| % fertile soil | | | | $-0.81^{**}$ | | | | $-0.89^{*}$ |
| | | | | (0.31) | | | | (0.43) |
| distance from equator | | | | $-0.00$ | | | | $-0.03^{*}$ |
| | | | | (0.01) | | | | (0.02) |
| region fixed effects? | $N$ | $Y$ | $Y$ | $Y$ | $N$ | $Y$ | $Y$ | $Y$ |
| colonial power fe's? | $N$ | $N$ | $N$ | $Y$ | $N$ | $N$ | $N$ | $Y$ |
| $N$ | 194 | 194 | 194 | 191 | 105 | 105 | 105 | 104 |
| adj. $R^2$ | 0.12 | 0.35 | 0.40 | 0.46 | 0.37 | 0.37 | 0.44 | 0.52 |

Notes: DV is logged post-45 conflict years (plus 1). se's in parens. [a] $\log(x+1)$; $^{\dagger}$ $p < .10$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$

## 5.2 Variations

The models of the preceding section computed (in effect) average associations between "pre" and "post" conflict across regions. In the Appendix we present variations and extensions on the basic models of Tables 2 and 3, summarizing the findings briefly here.

Table 8 considers a simple model region by region, for both the COW and Brecke data. Unsurprisingly, there is no relationship for the Western democracies and for Eastern Europe, because there is almost no post-1945 conflict variation to be explained. But for each of the other four regions pre-1945 conflict years are positively related to post-1945 years, controlling for population in 1800. Despite the small numbers of countries at this level, statistical significance is reached except for North Africa/Middle East.

Table 3: Conflict persistence with Brecke data, all types of conflict

| | All regions | | | | Asia, Africa, Middle East | | | |
|---|---|---|---|---|---|---|---|---|
| pre45 conflict years[a] | $0.47^{***}$ | $0.56^{***}$ | $0.38^{***}$ | $0.30^{***}$ | $0.64^{***}$ | $0.66^{***}$ | $0.42^{***}$ | $0.45^{***}$ |
| | (0.07) | (0.06) | (0.07) | (0.08) | (0.09) | (0.09) | (0.11) | (0.11) |
| log(pop c. 1800) | | | $0.18^{***}$ | $0.29^{***}$ | | | $0.23^{**}$ | $0.26^{**}$ |
| | | | (0.05) | (0.07) | | | (0.07) | (0.09) |
| log(land area) | | | | $-0.10$ | | | | 0.03 |
| | | | | (0.06) | | | | (0.09) |
| log(ruggedness) | | | | $0.12^{*}$ | | | | $0.29^{**}$ |
| | | | | (0.06) | | | | (0.09) |
| language diversity c. 1800 | | | | 0.06 | | | | $-0.08$ |
| | | | | (0.08) | | | | (0.11) |
| % fertile soil | | | | $-0.99^{**}$ | | | | $-1.37^{**}$ |
| | | | | (0.34) | | | | (0.48) |
| distance from equator | | | | $-0.02^{*}$ | | | | $-0.05^{**}$ |
| | | | | (0.01) | | | | (0.02) |
| region fixed effects? | $N$ | $Y$ | $Y$ | $Y$ | $N$ | $Y$ | $Y$ | $Y$ |
| colonial power fe's? | $N$ | $N$ | $N$ | $Y$ | $N$ | $N$ | $N$ | $Y$ |
| $N$ | 194 | 194 | 194 | 191 | 105 | 105 | 105 | 104 |
| adj. $R^2$ | 0.20 | 0.44 | 0.47 | 0.53 | 0.34 | 0.37 | 0.43 | 0.54 |

Notes: DV is logged post-45 conflict years (plus 1). se's in parens. [a] $\log(x+1)$; $^{\dagger}$ $p < .10$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$

Table 9 repeats our main results but using log of number of conflicts between 1816 and 1913 as the independent variable of interest, thus dropping the interwar period and conflicts that occurred during the world wars. The results become marginally stronger with the COW data and marginally weaker with Brecke, but there is hardly any change. This argues against the possibility that the relationship is due to mere continuation of conflicts begun in the interwar period or during World War II.

Table 10 controls for population and per capita income as measured in the year 2000, a country's average democracy score from 1945 or independence year to 2010, and ethnic diversity measured (approximately) in the early 1960s.[24] Over such a long period of time, all four of these variables could plausibly have been influenced by levels of pre-1945 armed conflict. For instance, where armed conflict was associated with state-building it was also associated with nationalism

[24]The population data is from the World Bank; the income data is mainly from the most recent Penn World Tables; and the ethnolinguistic fractionalization (ELF) measure is from Fearon and Laitin (2003). Democracy scores are from Polity 4.

and the elimination of ethnic diversity (e.g., Weber, 1976).[25] And of course greater levels of pre-45 conflict could in principle have reduced some countries' income or democracy levels after 1945. Therefore, if controlling for these variables reduces the persistence estimates this does not necessarily indicate lack of relevance of pre-45 conflict for post-45 conflict levels.

It turns out, however, that adding these "post-treatment" variables has little effect on the persistence estimates with the Brecke measures of conflict, and at best moderate weakening with COW. In both cases the conflict coefficients remain statistically significant (albeit at the $p < .10$ level with COW data). Although we cannot be sure (for reasons described by Bullock, Green and Ha 2010), the relatively small changes in the estimates suggest that the observed persistence of conflict is not due to the effect of pre-45 conflict on post-45 per capita income, levels of democracy, ethnic diversity, or population.[26]

Estimates of persistence in the preceding models combine the net causal effect of pre-1945 armed conflict with the impact of unmeasured, durable factors that cause conflict in both periods. Altonji, Elder and Taber (1995) argued that the degree to which adding (measurable) covariates reduces the estimate for the variable of interest can suggest how important omitted variables are likely to be. In Tables 2 and 3, the most relevant comparison is between the minimal models that have only region fixed effects and population (arguably an "exposure" or normalizing variable), and the models in columns 5 and 8 that have the full set of controls. Using their method and the global samples in Tables 2 and 3, we estimate that omitted variables would have to have 5.75 times the impact of the added covariates (in column 4) to completely account for the persistence estimate with the COW data, and 3.75 times the impact with the Brecke data.[27] Shifting to the "post-colonial" sample of Africa, Asia, and the Middle East, there is either no change or a slight increase when ethnic diversity, distance from the equator, soil quality, land area, colonial power

[25] In our data countries that saw large reductions in ethnic diversity across the two periods by our two measures tend to be high income countries.

[26] Adding squared Polity scores to the models in Table 10 does not affect the results.

[27] These are calculated from $\beta_C/(\beta_{NC} - \beta_C)$, where $\beta_C$ is the estimate with all controls, and $\beta_{NC}$ is the estimate in the minimal model (column 4).

dummies, and terrain roughness are added. By the Altonji et al. logic, this would suggest that the persistence estimates represent mainly or entirely causal rather than proxy effects for these regions.

Tables 11 and 12 in the Appendix show how persistence estimates change when we add an even larger number of covariates to the minimal model, for samples that are considerably smaller due to missing data. In addition to colonial power dummies, distance from the equator, soil quality, terrain roughness, and language diversity, we include mean temperature, precipitation, deposits of gold, silver, zinc, and iron, arable land, and whether the country is landlocked.[28] Even with much reduced sample sizes and so many covariates, pre-45 conflict measures stay statistically significant except for COW wars in the global sample. In the models for Africa, the Middle East, and Asia, the size of the reduction in the persistence coefficient suggests that omitted variables would have to have 1.9 times the impact of the included covariates to completely account for the persistence estimate with the Brecke data, and 3.75 times with COW. Although these are not impossibly large numbers, they suggest that there is probably some causal effect of pre-45 armed conflict on post-45 armed conflict in the former colonial areas, in addition to there being durable factors that have promoted conflict in particular places over a long period of time.

Finally, under the assumption that measurement errors in the COW and Brecke conflict variables are uncorrelated, we can use one as an instrument for the other in order to estimate how much the persistence coefficients are depressed by measurement error. For the 'fully loaded' models in Tables 2 and 3 (columns 4 and 8), persistence estimates increase 30% in the global sample and 36% in the more colonized regions when the COW measures instrument for Brecke, and 100% and 54% in the corresponding cases when the Brecke measures instrument for COW.[29]

[28] These measures are taken from Laitin and Ramachandran (2014).

[29] Brecke and COW appear to have used different sources, which favors the identifying assumption here, but we grant that there is likely to be some correlation in the errors. The more correlation, the more these are overestimates.

Table 4: Correlations between types of armed conflict, pre- and post-1945

| COW data | post45 | | | |
|---|---|---|---|---|
| pre45 | interstate | civil | extra-state | non-state |
| interstate | 0.08 | -0.01 | -0.08 | -0.07 |
| civil | 0.05 | 0.08 | -0.05 | -0.10 |
| extra-state | 0.32 | 0.47 | 0.32 | 0.19 |
| non-state | 0.17 | 0.30 | 0.05 | 0.04 |

| Brecke data | post45 | | | |
|---|---|---|---|---|
| pre45 | interstate | civil | extra-state | non-state |
| interstate | 0.13 | 0.04 | -0.10 | -0.10 |
| civil | 0.08 | 0.14 | -0.16 | -0.11 |
| extra-state | 0.46 | 0.48 | 0.33 | 0.02 |
| non-state | 0.38 | 0.37 | 0.16 | 0.05 |

Note: Correlations, all variables log # conflict years plus 1.

### 5.3 Post-1945 civil war and types of armed conflict before 1945

So far we have pooled all four types of conflict in our pre and post measures. Theoretical arguments in Section 2 suggested that different types might have, or proxy for, different effects in different places. For example, in some countries interstate and civil war might contribute to, or go along with, state-building that increases state strength and so reduces levels of civil conflict in subsequent periods. By contrast, colonial and non-state wars might associate with subsequent internal conflict in new post-colonial states, due to any of the proxy and causal effects mentioned in Section 2.

Table 4 displays bivariate correlations between pre- and post-45 conflict years for the four types. The most striking feature is that colonial and imperial ("extra state") wars before 1945 are moderately well correlated with all four types of post-45 conflict, and especially with civil war. Also interesting – and suggestive of the possibility of "anti-persistence" effects in addition to persistence effects – is that pre-1945 civil and interstate war are hardly associated with civil and interstate war after 1945.

Table 5 examines the relationship between post-1945 *civil* conflict and the four types of armed conflict measured as (logged) totals for each country from 1816-1945. The table reports both a minimal model with only population and region fixed effects as controls (columns 1 and 3),

and the full model of columns 4 and 8 in Table 2.

The main finding is that even with the global sample, *country areas that experienced more colonial and imperial ("extra-state") war before 1945 have tended to experience significantly more civil war after independence*.[30] If we consider only Africa, the Middle East, and Asia (not shown), the estimates for extra-state war before 1945 increase moderately.

Note also that places that experienced more interstate and civil war years before 1945 tended to see marginally *less* civil war on average after 1945, although the differences are not statistically significant.[31] This is consistent with the conflict-as-statebuilding arguments mentioned in Section 2. Finally, non-state warfare pre-1945 associates with more civil war after independence; this is hard to interpret due to the heterogeneity of this category (see footnote 15).

## 6 Explanations

So while there is no evidence of strong persistence of armed conflict over the last 200 years at the level of whole regions, outside of Eastern and Western Europe we have found fairly strong evidence for a surprising and interesting version of the "deep historical roots" hypothesis. Namely, areas that experienced colonial or imperial wars before 1945 have tended to have more civil war after independence or 1945 (whichever came later). This is surprising because it is not obvious why 19th century fighting between, for instance, the British and local rulers in Africa or Asia

[30]Results are very similar if we use all forms of armed conflict post-45. We use civil war as the dependent variable here because this is overwhelmingly the most common form of post-45 armed conflict and to show that the relationship is driven by this link – pre-45 extra-state to post-45 civil conflict – rather than other possibilities like extra to extra or extra to inter (although extra to inter is significantly positive with Brecke conflicts, but not COW).

[31]For Table 5 we have used a modified version of the interstate conflict variable – here, it is computed only for states that were independent at the time of the conflicts in question. The reason is to not code as having "interstate war" a number of cases, almost entirely in the world wars, where major powers fought battles on the territories of third parties that were not independent at the time. Arguably one would not expect state-building effects to occur if no organized force from the area in question is involved. If we use the original measure – log number of years in which some interstate war occurred on the territory – estimates are close to zero for COW but we find a positive relationship between and pre45 interstate war and post45 civil war with the Brecke data in the global sample. This could also be a causal effect: It is possible that violence occurring in a territory in one period increases odds of civil conflict in the future in that same territory even if the principal combatants were not from that territory.

Table 5: Civil war after 1945 and different types of pre-45 armed conflict

| | COW | COW | Brecke | Brecke |
|---|---|---|---|---|
| pre45 interstate conflict years | $-0.14$ | $-0.10$ | $-0.14$ | $-0.14$ |
| | $(0.11)$ | $(0.11)$ | $(0.12)$ | $(0.12)$ |
| pre45 civil conflict years | $-0.02$ | $-0.09$ | $0.07$ | $-0.01$ |
| | $(0.10)$ | $(0.10)$ | $(0.09)$ | $(0.09)$ |
| pre45 extra-state conflict years | $0.24^{**}$ | $0.21^{*}$ | $0.24^{**}$ | $0.19^{*}$ |
| | $(0.09)$ | $(0.09)$ | $(0.08)$ | $(0.08)$ |
| pre45 non-state conflict years | $0.26^{*}$ | $0.22^{*}$ | $0.17^{*}$ | $0.10$ |
| | $(0.10)$ | $(0.11)$ | $(0.09)$ | $(0.09)$ |
| $N$ | 194 | 191 | 194 | 191 |
| adj. $R^2$ | 0.32 | 0.38 | 0.34 | 0.42 |

Notes: DV is logged post-45 civil conflict years (plus 1), and pre-45 conflict years are all $\log x + 1$. Region fixed effects and log(1800 population) in all models; colonial power dummies, and controls from column 4 in Table 2 in 2nd and 4th columns. se's in parens. $^{\dagger}$ significant at $p < .10$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$

should make for more civil war among autochthonous peoples in independent states, long after the British have left as the colonial power.

Broadly speaking, there are two possibilities, not mutually exclusive. First, it could be that random factors determined where the colonizers happened to fight in the 19th century,[32] and then direct causal effects of pre-45 conflict produced increased conflict after independence (C2-C3 in Section 2). Second, it could be that some factor or factors – as yet unidentified or very poorly measured by the covariates considered above – increased the odds of colonial or imperial war in a place before 1945, and then continued to operate after independence to raise the risk of civil war. The analysis above suggests that these factors are probably *not* rough terrain, initial ethnic diversity, institutions or policies specific to different colonial powers, quality of agricultural land, or initial level of economic development. It also suggested (in the analysis with contemporary covariates) that causal effects are not likely to be through the impact of pre-45 conflict on post-45 levels of economic development, population, or democracy.

In this section we consider two further "proxy effect" explanations for the correlation between colonial wars and post-1945 civil war. The first concerns precolonial state institutions. Per-

[32]More precisely, random with respect to determinants of amounts of post-45 civil war not measured by the covariates considered above.

haps extra-state wars tended to occur in places where there were more developed precolonial states or state-like structures that could mobilize armed resistance. Then, after independence, either these same state structures made for civil wars between center and peripheral groups in the new state, or colonial destruction of the precolonial institutions made peaceful state-building harder after independence. For an example of the first sort, Britain fought three wars in the 19th century against an expanding Burmese empire. The post-colonial inheritors of those institutions proceeded to engage in near continuous war with hill-tribe minorities within the borders of the independent state; arguably they were continuing an older, precolonial project (Scott, 2010).[33] For an example of the second sort, the British and the Italians fought a total of three 19th century (COW) wars against the Mahdi and his armies in Sudan; they crushed his movement and reinforced tribal divisions as a strategy of colonial rule. The Mahdi can be seen as a state builder whose success might have made for a more unified Sudan, at least in the North (Mamdani, 2009).

A second possibility is that colonial wars were more likely where indigenous groups already had relatively more martial cultures or institutions prior to the 19th century, and that such features are highly durable. For example, the British fought numerous conflicts in northwest India and Pakistan in the 19th century, but very little in Bengal; post-45 there has been much more armed conflict in the former place than the latter. To some degree we can test this by asking if non-state conflicts in the 18th century predict where colonial and imperial wars occurred in the 19th century.

### 6.1 Precolonial state structures

Louis Putterman and collaborators developed a measure of "state antiquity" for 149 current countries (Chanda and Putterman, 2007). This codes 50-year periods from 1 A.D. to 1950 with an index that combines scales for whether there is government above the tribal level, whether the government is foreign or locally based, and the percentage of the modern territory controlled by the government. We construct a measure of precolonial state structures (for the regions Asia, Africa,

[33]Ethiopia is similar example (three extra-state wars and a variety of others before 1945, and seven COW civil wars after 1945).

and Middle East) by taking the average of the Putterman index for the three periods from 1701 to 1850.[34]

In columns 1-3 and 5-8 of Table 6, we consider models in which the dependent variable is years of extra-state war between 1816 and 1945 (columns 1-3 and 5-8), and the independent variables include the precolonial states measure along with covariates described above. Columns 1 (COW) and 5 (Brecke) show that except for population and land area (with the Brecke data), major durable features of territories are strikingly bad at predicting where colonial and imperial wars occurred. When we add the precolonial states measure (columns 2-3 and 6-7), we see a weak positive relationship, statistically insignificant with the COW data and marginally significant in the Brecke data with controls. Looking at cases, one notices that relatively strong precolonial states may either make for colonial-era peace by bargaining successfully with colonial powers – as in Rwanda or Thailand – or colonial-era war by fighting with them – as in, for example, Morocco. On the other hand, areas with little tradition of precolonial state structures, such as Chad, Indonesia, or South Africa (by Putterman et al.'s coding), may nonetheless see significant amounts of extra-state armed conflict between colonizers and small groups with serious martial traditions. So while there may be some tendency for colonial and imperial wars to have been more likely where there were more developed precolonial states, it does not appear to have been strong enough to explain why pre-1945 colonial war predicts post-independence civil war.

A caveat to this inference is that in the models of Table 6 we have controlled for an estimate of population in 1800, and the "total effect" of precolonial state structures could pass through a positive effect on population. The state structures measure is moderately correlated with log population in 1800 ($r = .49$ in Africa, Asia, and the Middle East), probably as a result of a long-run process whereby population favors state-building and successful state-building favors population growth. If we use an estimate of population in 1400, or drop population entirely, the estimates for the precolonial state structures variable get larger and marginally more "significant" with the Brecke data with controls. However, the fact that there is little evidence of a strong relationship

[34]Nearby operationalizations do not affect the results reported.

when we control for 1800 population suggests that state structures per se, separate from the fact of larger numbers of people in a territory, were not consistently making for colonial and imperial wars.

In columns 4 and 8 of Table 6 we show that the presence of precolonial state structures is not related to post-1945 civil war. This remains true if we include pre-1945 years of conflict.

Table 6: Precolonial states, pre-45 and post-45 conflict

| | COW data | | | | Brecke data | | | |
|---|---|---|---|---|---|---|---|---|
| Dep. var. | extrastate, pre45 | | | civil, post45 | extrastate, pre45 | | | civil, post45 |
| state structures, 1701-1850 | | 0.11 | 0.21 | −0.09 | | 0.54 | 0.92$^{\dagger}$ | −0.41 |
| | | (0.44) | (0.50) | (0.60) | | (0.49) | (0.55) | (0.70) |
| log(pop c. 1800) | 0.14$^{*}$ | 0.20$^{\dagger}$ | 0.16 | 0.22 | 0.24$^{**}$ | 0.12 | 0.17 | 0.38$^{*}$ |
| | (0.07) | (0.10) | (0.11) | (0.14) | (0.08) | (0.12) | (0.12) | (0.16) |
| log(land area) | 0.07 | 0.14$^{\dagger}$ | 0.12 | 0.20 | 0.22$^{**}$ | 0.35$^{***}$ | 0.39$^{**}$ | 0.15 |
| | (0.07) | (0.08) | (0.11) | (0.13) | (0.08) | (0.09) | (0.12) | (0.15) |
| language diversity, c. 1800 | 0.09 | | 0.11 | 0.03 | 0.02 | | −0.08 | 0.03 |
| | (0.09) | | (0.11) | (0.13) | (0.10) | | (0.12) | (0.16) |
| log(ruggedness) | −0.02 | | 0.06 | 0.33$^{*}$ | −0.13 | | −0.03 | 0.32$^{\dagger}$ |
| | (0.07) | | (0.12) | (0.14) | (0.08) | | (0.13) | (0.16) |
| % fertile soil | 0.23 | | 0.13 | −0.77 | 0.11 | | 0.17 | −0.91 |
| | (0.36) | | (0.50) | (0.60) | (0.43) | | (0.55) | (0.69) |
| distance from equator | 0.02$^{\dagger}$ | | 0.03 | −0.05$^{*}$ | −0.00 | | −0.02 | −0.05$^{*}$ |
| | (0.01) | | (0.02) | (0.02) | (0.02) | | (0.02) | (0.02) |
| $N$ | 104 | 76 | 76 | 76 | 104 | 76 | 76 | 76 |
| adj. $R^2$ | 0.38 | 0.33 | 0.34 | 0.39 | 0.56 | 0.45 | 0.48 | 0.38 |

Notes: DV in columns 1-3 and 5-7 is logged extra-state wars, 1816-1945, plus one; DV in columns 4 and 8 is logged civil war post-1945, plus one. Sample is Africa, Asia, and Middle East. Region fixed effects in all models; colonial power dummies in all except columns 2 and 6. se's in parens. $^{\dagger}$ significant at $p < .10$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$

## 6.2 Martial groups

Perhaps colonial and imperial wars were more likely where the colonizers encountered traditional authorities or groups with relatively martial institutions or cultures, which they had developed in earlier local interactions. If so, then we would expect to find persistence between 18th century conflict between local parties in Asia, Africa, and the Middle East, and extra-state wars in the 19th and early 20th centuries.

We have coded conflict locales for Brecke's list for the 18th century, including variables that

allow us to separate out those in which the fighting involved "locals" on both sides.[35] Table 7 shows that, at least in the COW data, there is some evidence that places with more 18th century fighting between locals also saw more colonial and imperial war after 1815.[36]

However, if the 18th century conflict variable is added to our main regressions concerning determinants of post-1945 civil war, or all conflict, the estimated coefficients are positive but small and not significant. In so far as conflict persistence is related to certain places having groups with a tradition of warfare even in the 18th century, it would seem to pass through an effect on where colonial wars were fought in the 19th century.

Table 7: 18th century local conflicts and colonial wars, 1815-1945

| | COW | COW | Brecke | Brecke |
|---|---|---|---|---|
| local conflict years, 1700-99 | $0.27^{**}$ | $0.30^{**}$ | 0.16 | 0.15 |
| | (0.09) | (0.10) | (0.12) | (0.12) |
| log(pop c. 1800) | $0.22^{***}$ | 0.08 | $0.39^{***}$ | $0.22^{*}$ |
| | (0.04) | (0.07) | (0.05) | (0.08) |
| log(land area) | | 0.09 | | $0.23^{**}$ |
| | | (0.07) | | (0.08) |
| language diversity c. 1800 | | 0.05 | | $-0.00$ |
| | | (0.08) | | (0.10) |
| log(ruggedness) | | $-0.02$ | | $-0.13$ |
| | | (0.07) | | (0.08) |
| % fertile soil | | 0.26 | | 0.12 |
| | | (0.34) | | (0.43) |
| distance from equator | | 0.02 | | $-0.00$ |
| | | (0.01) | | (0.02) |
| $N$ | 105 | 104 | 105 | 104 |
| adj. $R^2$ | 0.43 | 0.44 | 0.50 | 0.56 |

Notes: DV is logged post-45 civil conflict years (plus 1), and 1700-99 conflict years are $\log x + 1$. Region fixed effects in all models; colonial power dummies in columns 2 and 4. se's in parens. $^{\dagger}$ significant at $p < .10$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$

[35] "Locals" are defined as people native to the area comprised by the current (2010) country boundaries.

[36] The difference between COW and Brecke seems to be due to Brecke coding larger amounts of 19th century conflict in subSaharan Africa. With controls, the relationship is significant in Brecke if we look just at Asia. For both COW and Brecke, the relationship obtains, at similar magnitudes, for Asia and subSaharan Africa, but does not appear at all in North Africa/Middle East.

### 6.3 Long-standing ethnic rivalries?

Thus far we have considered whether amounts of warfare in a territory before 1945 predict more or less conflict after 1945. A more focused notion of the "persistence of armed conflict" would ask about the persistence of fighting *between the same combatants* over time. When journalists reporting on contemporary ethnic conflicts reference "deep historical roots," "ancient hatreds," or "nothing new," they usually have in mind the idea that two groups have been fighting it out for decades or even centuries. Indeed, people who find themselves drawn into violent confrontations with other people previously thought of as neighbors often re-tell their own histories (to themselves, as well as to journalists) with Capulet/Montague imagery.[37] Does the historical record bear out this view of repeated conflict among the same combatants?

We already have reasons to doubt the narrative. In particular, in Asia, Africa, and the Middle East, COW and Brecke "non-state" conflict years are not significantly related to post-1945 civil war years.[38] However, to assess the hypothesis properly we need to code participants to the conflicts in a way that identifies when they are "the same" over long periods of time.

The COW conflict list includes variables naming participants as "Side A" and "Side B." For subSaharan Africa and Asia we have coded the ethnic group of the leaders of sides A and B for intra-, extra-, and non-state conflicts. Remarkably, out of 164 pre-1945 conflict locales, we find only *four* ethnic dyads that appear on the opposite sides of conflicts both before and after 1945 (Pashtuns/Tajiks in Afghanistan, Han/Tibetans in China, Zulu/Xhosa in South Africa, and Amhara/Tigre in Ethiopia).

COW wars have a rather high death threshold and as a result rather few 19th century conflicts coded in subSaharan Africa. It could be that a similar exercise conducted with the Brecke data (which does not have clear side codings) would produce more examples. It is very unlikely,

[37] But see Gould (2000) who finds, after careful archival search, quite limited persistence of revenge killings in 19th century Corsica.

[38] This is from a variant Table 5, restricted to these regions. In these regions, in contrast to Latin America, "non-state" more consistently refers to conflicts that are not interstate wars.

however, that the increase would make long-running ethnic feuds a significant contributor to the persistence of conflict we have found in Africa, Asia, and the Middle East between the 1816-1945 and after. This implies further that if there is a causal effect of conflict before 1945 on conflict after, it is very unlikely to operate through mechanism C1 – conflict causing enduring hatreds between particular groups.

What is more striking from the review of the contenders in the COW data is the frequency with which a particular ethnic group appears in armed conflict in a locale both in the 19th century and after independence, facing different adversaries in the two periods. Fairly often we find members of a large and locally dominant ethnic group fighting with colonizers (on entry or in rebellion) before 1914. Then, after independence members of same group fight with minorities in the new state where they are trying to establish their rule. Examples include Han in China, Burmese in Myanmar, northern Arabs in Sudan, Xhosa in South Africa, Sinhalas in Sri Lanka, Christian Malays in the Philippines, Javanese in Indonesia, Amhara in Ethiopia, Mbundu in Angola, Turks in Turkey, Hausa-Fulani in Nigeria, and Darods (a clan grouping) in Somalia. Alternatively, there are numerous examples of groups that fought with colonizers in the 19th century and then again with members of the (usually larger) group that came to dominate the post-colonial state. Examples include Kashmiris and Sikhs in India, Pashtuns in Pakistan, Zulus in South Africa, Moros in the Philippines, Palestinians in Israel/Palestine, Tigreans in Ethiopia and Eritrea, Acehnese in Indonesia, and Tibetans in China.

This pattern is consistent with the either the "martial groups" hypothesis considered above, or the possibility that conflict at one time creates traditions or capabilities that increase conflict likelihood at later times (or both).

## 7 Conclusion

Contemporary armed conflicts are often described as having "deep historical roots." History obviously matters in every case. There will always be some way that historical events from many years

past shaped or increased the likelihood of violent conflict today. But the more specific question of whether a history of armed conflict in a territory before 1945 correlates with more armed conflict after 1945 has not been considered, except for the case of very long-run persistence of local conflicts in Africa (Besley and Reynal-Querol, 2014). In this paper we examined conflict persistence within and across regions for the last 200 hundred years, a period for which conflicts are better documented and mechanisms easier to assess.

Using conflict lists from two distinct sources, we found that at the regional level there is, if anything, evidence of negative correlation, or anti-persistence. Indeed, if one considers the forms of conflicts most likely to involve locals on both sides (inter-, intra-, and non-state conflicts), then there is a strong pattern: Regions with the most conflict before 1945 had the least afterwards, and those with the least before had the most after. This pattern is consistent with arguments from sociology and political science that see armed conflict as integral to the development of relatively strong states, which eventually become strong or well-run enough to deter or dissuade each other and internal challengers.

By contrast, within regions we found a surprising relationship between colonial and imperial war before 1945 (or before 1914) and mainly *civil* war in independent states after 1945. Extra-state conflict years do not account for a large amount of the variation in post-1945 conflict years. But there is a definite relationship, and a relatively strong one in the regions composed mainly of colonies before 1945. This is not what one would expect in light of the usual interpretation of "deep historical roots" – namely, that the Xs and the Ys are fighting today just as they have for hundreds of years. In fact we find remarkably few cases that fit this image, at least when considering COW wars. Instead, where local forces fought foreign colonizers before 1945, civil wars were more likely after independence.

Because conflicts before 1945 cannot be assumed to have occurred at random with respect to other determinants of post-45 conflict, we cannot be sure how much (if any) of this correlation represents a causal effect of armed conflict. It could also be due to proxy effects – durable features that may influence conflict risk in both periods, such as soil quality, rough terrain, initial (circa

1800) income, initial ethnic diversity, and colonial power. However, controlling for measures of these features does not eliminate or even substantially weaken the persistence estimates. Nor does controlling for measures of pre-colonial state structures, which seem to have been marginally associated with greater odds of colonial war, but are not predictive of post-1945 conflict. By the arguments of Altonji, Elder and Taber (1995), this fact should increase our expectation that some non-trivial part of the relationship is causal.

Among possible causal mechanisms, the hypothesis that conflict causes long-enduring enmities between groups that raise risks much later is not likely to explain the observed pattern, since this is not the sort of persistence we observe. The evidence is more consistent with the idea that conflicts encouraged the development of martial capabilities, institutions, or cultures in particular groups. In Africa, Asia, and the Middle East, conflicts among locals in the 19th century predict extra-state wars in the 19th century, which in turn predict civil wars post-independence. Perhaps fighting in the 18th century (and before) made some groups more disposed to or capable of fighting with the colonizers (consistent with P6), and in turn 19th century extra-state warfare developed capabilities that could be drawn on after independence (consistent with C3). It is striking how much of the persistence from pre-1945 extra-state conflict to post-1945 civil war is due to members of a particular ethnic group fighting with colonizers and then, after independence, with other groups in the new state.

This last hypothesis is conjectural, a best guess based on the data examined above. It is possible that future research will uncover other "proxy effect" factors that explain the observed long-run persistence of armed conflict, and it is possible that other mechanisms may account for whatever part is a causal relationship. Either way, we have hopefully already learned some interesting things about the nature and extent of the "deep historical roots" of contemporary armed conflicts.

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# 8 Appendix

Table 8: Region by region estimates

| | West | LA/Ca | EEur | NA/ME | SSA | Asia |
|---|---|---|---|---|---|---|
| pre-45 COW conflict years[a] | −0.00 | 0.37* | −0.22 | 0.22 | 0.36* | 0.49* |
| | (0.03) | (0.16) | (0.22) | (0.36) | (0.17) | (0.20) |
| log(pop c. 1800) | 0.01 | −0.03 | 0.14 | 0.30 | 0.33** | 0.18* |
| | (0.01) | (0.14) | (0.12) | (0.25) | (0.12) | (0.08) |
| constant | −0.12 | 0.39 | −0.98 | −2.81 | −3.55* | −1.60† |
| | (0.15) | (1.55) | (1.62) | (2.75) | (1.55) | (0.83) |
| $N$ | 27 | 33 | 29 | 20 | 48 | 37 |
| adj. $R^2$ | −0.03 | 0.23 | −0.01 | 0.35 | 0.35 | 0.56 |
| | | | | | | |
| pre-45 Brecke conflict years[a] | 0.05 | 0.51*** | −0.13 | 0.35 | 0.52* | 0.42* |
| | (0.20) | (0.14) | (0.20) | (0.25) | (0.23) | (0.17) |
| log(pop c. 1800) | 0.12 | 0.08 | 0.23† | 0.28 | 0.09 | 0.24** |
| | (0.09) | (0.15) | (0.13) | (0.22) | (0.19) | (0.08) |
| constant | −1.32 | −0.70 | −2.08 | −2.12 | −0.79 | −2.32* |
| | (0.91) | (1.59) | (1.60) | (2.48) | (2.09) | (0.86) |
| $N$ | 27 | 33 | 29 | 20 | 48 | 37 |
| adj. $R^2$ | 0.12 | 0.50 | 0.04 | 0.46 | 0.26 | 0.52 |

Table 9: 19th Century conflicts

| | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| years of conflict, 1816-1913[a] | $0.25^{**}$ | $0.44^{***}$ | $0.20^{**}$ | $0.40^{***}$ |
| | (0.08) | (0.11) | (0.08) | (0.11) |
| log(pop c. 1800) | $0.14^{**}$ | $0.21^{**}$ | $0.26^{***}$ | $0.27^{**}$ |
| | (0.05) | (0.07) | (0.06) | (0.09) |
| language diversity c. 1800 | 0.08 | 0.06 | 0.01 | $-0.05$ |
| | (0.06) | (0.08) | (0.07) | (0.10) |
| log(ruggedness) | $0.13^{*}$ | $0.22^{**}$ | $0.11^{\dagger}$ | $0.26^{**}$ |
| | (0.05) | (0.08) | (0.06) | (0.10) |
| % fertile soil | $-0.55^{*}$ | $-0.89^{*}$ | $-0.70^{*}$ | $-1.33^{**}$ |
| | (0.28) | (0.39) | (0.32) | (0.46) |
| distance from equator | $-0.01$ | $-0.03^{*}$ | $-0.03^{**}$ | $-0.05^{**}$ |
| | (0.01) | (0.01) | (0.01) | (0.02) |
| constant | $-0.46$ | $-0.84$ | $-0.92$ | $-0.39$ |
| | (0.52) | (0.79) | (0.62) | (0.98) |
| $N$ | 191 | 104 | 191 | 104 |
| adj. $R^2$ | 0.46 | 0.54 | 0.52 | 0.52 |

Notes: DV is logged post-45 conflict years (plus 1). Region and colonial power fixed effects in all models. 2nd and 4th columns are for countries in Asia, Africa, and Middle East only. $^{a}\log(x+1)$.

Table 10: "Post-treatment" controls

| | COW | COW | Brecke | Brecke |
|---|---|---|---|---|
| pre45 conflict years | $0.16^{\dagger}$ | $0.24^{\dagger}$ | $0.23^{*}$ | $0.43^{**}$ |
| | (0.09) | (0.13) | (0.11) | (0.13) |
| log(pop in 2000) | $0.19^{**}$ | $0.25^{*}$ | $0.22^{**}$ | 0.11 |
| | (0.07) | (0.10) | (0.09) | (0.12) |
| log(ruggedness) | $0.19^{*}$ | $0.32^{**}$ | 0.13 | $0.32^{*}$ |
| | (0.07) | (0.12) | (0.09) | (0.13) |
| % fertile soil | $-0.74^{*}$ | $-1.63^{**}$ | $-0.95^{*}$ | $-2.51^{***}$ |
| | (0.36) | (0.54) | (0.42) | (0.60) |
| ELF c. 1960 | $0.67^{*}$ | 0.76 | 0.23 | 0.82 |
| | (0.33) | (0.49) | (0.40) | (0.54) |
| log(gdp/capita) | $-0.40^{***}$ | $-0.32^{*}$ | $-0.40^{***}$ | $-0.34^{*}$ |
| | (0.09) | (0.12) | (0.11) | (0.14) |
| democracy | 0.03 | 0.03 | $0.04^{\dagger}$ | $0.06^{*}$ |
| | (0.02) | (0.03) | (0.02) | (0.03) |
| $N$ | 155 | 85 | 155 | 85 |
| adj. $R^2$ | 0.53 | 0.51 | 0.51 | 0.51 |

Notes: DV is logged post-45 conflict years (plus 1). Region and colonial power fixed effects in all models. 2nd and 3rd columns are for countries in Asia, Africa, and Middle East only. democracy is average Polity score from 1946 or independence year to 2010. $^{a}\log(x+1)$.

Table 11: Large set of controls, COW wars

| | minimal | large set | minimal | large set |
|---|---|---|---|---|
| pre45 war years[a] | $0.25^{**}$ | $0.09$ | $0.38^{*}$ | $0.30^{*}$ |
| | $(0.10)$ | $(0.10)$ | $(0.15)$ | $(0.15)$ |
| log(pop c. 1800) | $0.14^{\dagger}$ | $0.05$ | $0.18^{\dagger}$ | $-0.07$ |
| | $(0.07)$ | $(0.10)$ | $(0.10)$ | $(0.17)$ |
| log(ruggedness) | | $0.33^{***}$ | | $0.44^{**}$ |
| | | $(0.09)$ | | $(0.13)$ |
| language diversity | | $0.15$ | | $0.05$ |
| | | $(0.09)$ | | $(0.12)$ |
| % fertile soil | | $-1.18^{**}$ | | $-2.15^{**}$ |
| | | $(0.45)$ | | $(0.62)$ |
| French colony | | $-0.46^{\dagger}$ | | $-0.45$ |
| | | $(0.26)$ | | $(0.28)$ |
| Not a colony | | $-0.18$ | | $0.05$ |
| | | $(0.36)$ | | $(0.45)$ |
| Other Eur. colony | | $0.55$ | | $0.26$ |
| | | $(0.44)$ | | $(0.49)$ |
| Portuguese colony | | $0.66$ | | $1.36^{*}$ |
| | | $(0.50)$ | | $(0.58)$ |
| Spanish | | $1.06^{*}$ | | $1.23$ |
| | | $(0.45)$ | | $(1.01)$ |
| distance from equator | | $-0.00$ | | $-0.02$ |
| | | $(0.02)$ | | $(0.03)$ |
| gold deposits | | $-0.00$ | | $-0.01$ |
| | | $(0.02)$ | | $(0.03)$ |
| iron ore | | $-0.02$ | | $0.06$ |
| | | $(0.08)$ | | $(0.21)$ |
| silver | | $-0.09$ | | |
| | | $(0.07)$ | | |
| zinc | | $0.02$ | | $-0.05$ |
| | | $(0.10)$ | | $(0.17)$ |
| oil reserves | | $-0.00^{**}$ | | $-0.00^{**}$ |
| | | $(0.00)$ | | $(0.00)$ |
| landlocked | | $-0.26$ | | $-0.23$ |
| | | $(0.23)$ | | $(0.34)$ |
| log(arable land) | | $0.09$ | | $0.22^{\dagger}$ |
| | | $(0.09)$ | | $(0.13)$ |
| log(temperature) | | $0.71$ | | $1.39$ |
| | | $(0.91)$ | | $(1.42)$ |
| log(precipitation) | | $0.20$ | | $0.16$ |
| | | $(0.18)$ | | $(0.21)$ |
| constant | $-0.44$ | $-3.30$ | $-1.33$ | $-4.51$ |
| | $(0.99)$ | $(3.88)$ | $(1.40)$ | $(5.92)$ |
| $N$ | 138 | 138 | 77 | 77 |
| adj. $R^2$ | 0.35 | 0.50 | 0.26 | 0.52 |

Notes: DV is logged post-45 COW war years (plus 1). Region fixed effects in all models. First two columns are for global sample; second two are for Asia, Africa, and Middle East only. [a] $\log(x+1)$.

Table 12: Large set of controls, Brecke conflicts

| | minimal | large set | minimal | large set |
|---|---|---|---|---|
| pre45 conflict years[a] | $0.43^{***}$ | $0.20^{\dagger}$ | $0.53^{***}$ | $0.33^{*}$ |
| | (0.10) | (0.12) | (0.15) | (0.15) |
| log(pop c. 1800) | 0.10 | 0.19 | 0.05 | −0.07 |
| | (0.08) | (0.12) | (0.11) | (0.18) |
| log(ruggedness) | | $0.26^{**}$ | | $0.47^{***}$ |
| | | (0.10) | | (0.13) |
| language diversity | | 0.08 | | −0.07 |
| | | (0.11) | | (0.12) |
| % fertile soil | | $-1.61^{**}$ | | $-2.70^{***}$ |
| | | (0.51) | | (0.67) |
| French colony | | $-0.49^{\dagger}$ | | $-0.52^{\dagger}$ |
| | | (0.29) | | (0.30) |
| Not a colony | | −0.42 | | −0.01 |
| | | (0.41) | | (0.48) |
| Other Eur. colony | | 0.24 | | −0.00 |
| | | (0.50) | | (0.53) |
| Portuguese colony | | 0.78 | | $1.39^{*}$ |
| | | (0.57) | | (0.63) |
| Spanish colony | | $1.49^{**}$ | | 1.42 |
| | | (0.53) | | (1.08) |
| distance from equator | | −0.00 | | −0.03 |
| | | (0.02) | | (0.03) |
| gold | | 0.02 | | −0.01 |
| | | (0.02) | | (0.03) |
| iron | | −0.02 | | 0.34 |
| | | (0.09) | | (0.23) |
| silver | | −0.08 | | |
| | | (0.08) | | |
| zinc | | 0.04 | | −0.13 |
| | | (0.11) | | (0.18) |
| oil reserves | | −0.00 | | $-0.00^{*}$ |
| | | (0.00) | | (0.00) |
| landlocked | | −0.17 | | −0.19 |
| | | (0.26) | | (0.37) |
| log(arable land) | | −0.01 | | 0.21 |
| | | (0.11) | | (0.15) |
| log(temperature) | | 1.68 | | $2.58^{\dagger}$ |
| | | (1.04) | | (1.51) |
| log(precipitation) | | 0.25 | | 0.16 |
| | | (0.19) | | (0.22) |
| constant | −0.05 | $-7.56^{\dagger}$ | 0.31 | −7.80 |
| | (1.06) | (4.41) | (1.45) | (6.34) |
| $N$ | 138 | 138 | 77 | 77 |
| adj. $R^2$ | 0.41 | 0.52 | 0.28 | 0.53 |

Notes: DV is logged post-45 Brecke conflict years (plus 1). Region fixed effects in all models. First two columns are for global sample; second two are for Asia, Africa, and Middle East only. [a] $\log(x+1)$.

Figure 1: All conflict years before and after 1945, by region

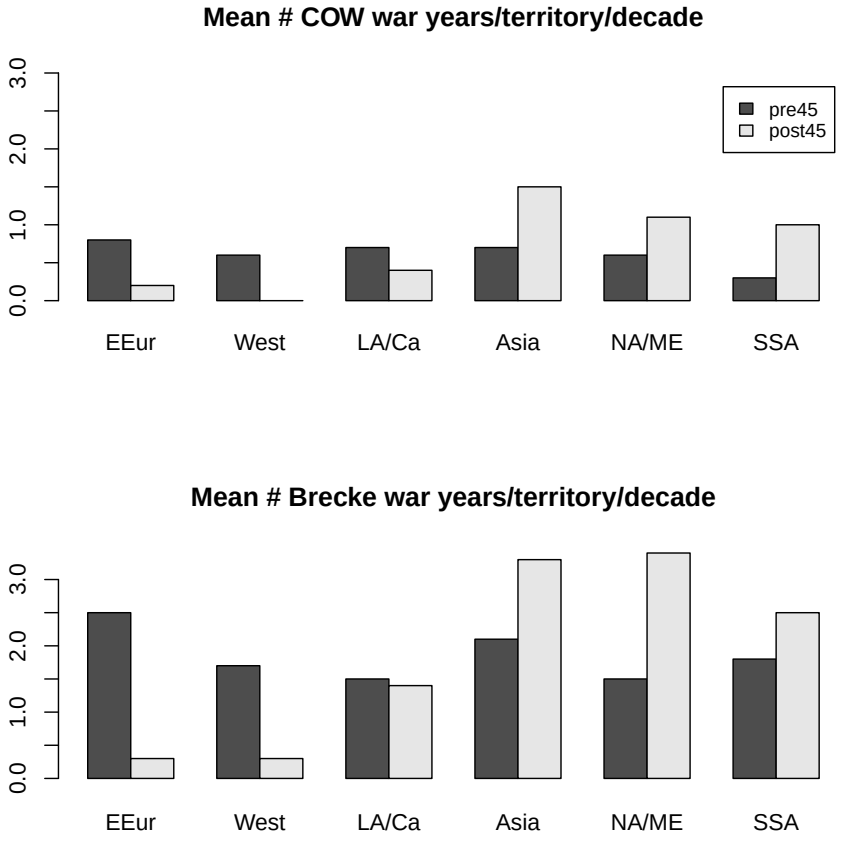

Figure 2: Brecke conflicts by region and type since 1816