The Legacy of Historical Conflict
Evidence from Africa[*]

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Abstract

There is a great deal of interest in the causes and consequences of conflict in Africa, one of the poorest areas of the world where only modest economic progess has been made. This paper asks whether post-colonial conflict is, at least in part, a legacy of pre-colonial conflict by examining the empirical relationship between conflict in Africa since independence with recorded conflicts in the period 1400 to1700. We find evidence for a legacy of historical conflicts using between-country and within-country evidence. The latter is found by dividing the continent into 120km×120km grids and measuring the distance from 91 documented historical conflicts. We also provide evidence that historical conflict is correlated with lower levels of trust, a stronger sense of ethnic identity and a weaker sense of national identity.

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"Acts of violence, oppression, revolt, civil war, and so forth, chequer the history of every African state." (Fortes and Evans-Pritchard (1940, page 16))

1   Introduction

Understanding the economic and political determinants of civil war has become a major concern among researchers who are anxious to understand why some countries are prone to economically damaging conflicts.[1] However, the relative importance of different factors in generating conflict remains open to debate. Perhaps the most robust observation is that conflicts are prevalent in poor and weakly institutionalized countries. Many factors which make a country susceptible to conflict are, however, slow moving and the two-way causation between conflict and income creates a Gordian knot which is hard to unpick.

Given its weak economic performance in the post-independence period, determinants of conflict in Africa are of particular interest.[2] Moreover, conflict prevalence in Africa is comparatively high; the Armed Conflict Database (ACD) measure of civil conflict based on a threshold of 1000 battle deaths suggests that around 8.5% of country years in Africa since 1950 are conflict years compared to around 5% of country-years in the rest of the world over the same period.

Three main hypotheses are frequently proposed to explain this. First, conflict in Africa is viewed as a reflection of its poverty, lowering the opportunity cost of fighting. Second, conflict is the product of rent-seeking for natural resource rents. Third, conflict is a reflection of polities that are ethnically polarized with weak institutions for conflict resolution. The latter is fuelled by the observation that Africa's modern political geography reflects a rather arbitrary division of territory by colonial powers. This, so the argument goes, creates a particular challenge for nation building, creating effective and peaceful states.

But Africa's history does not begin with colonialism and its legacy. The quote at the start of this paper was an assessment made in 1940 by two lead-

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[1]See Blattman and Miguel (2009) for a comprehensive review.

[2]See Acemoglu and Robinson (2010), Bates (2008), Collier and Gunning (1999) and Easterly and Levine (1997) for discussions of African economic and political development.

ing anthropologists venturing into a comparative analysis of African political organization. As emphasized in Nunn (2008) among many others, slavery and its aftermath was a cornerstone of organized political violence in Africa. But standard efforts to secure and maintain territory and people also provided incentives for conflict, particularly among and within Africa's historic kingdoms. Historical research on Africa between 1400 and 1700, summarized in Brecke (1999) and based on written historical sources, confirms that conflict between its peoples is far from new.

Prior to being carved up by colonial powers, Africa was divided into a patchwork of tribal structures and proto-states (historic kingdoms). The systems of governance embedded in these was highly heterogeneous. Some of these political systems exercised territorial control much in the manner of modern states while others were closer to being stateless. Among the latter were many acephalous forms of political organization. The mantra of colonialism in Africa was "indirect rule" with an attempt to control the African hinterland by incorporating traditional power structures into colonial administration. This ensured the continuation of informal power structures under colonialism. But they were not untouched. In some cases, such structures were weakened while in others, they were strengthened (see Herbst (2000, Chapter 2). Either way, there was a degree of historical continuity whose legacy became part of the post-colonial inheritance.

This paper investigates to what extent the post-colonial period saw patterns of conflict that reflected the pattern observed in pre-colonial times. We use data in Brecke (1999) to generate the precise location of 91 conflicts for the period 1400-1700. We then find robust evidence that patterns of conflict after independence are indeed correlated with these historical conflicts. We also find some evidence supporting the view that the mechanism at work may be a diminution in trust, a stronger sense of ethnic identity and a weaker sense of national identity. All three of these are likely to make it more difficult to establish cohesive states which resolve conflicts of interest in a peaceful manner.

This paper belongs to an emerging body of research which traces the historical roots of contemporary economic and political outcomes.[3] Acemoglu, Johnson and Robinson (2001) is the landmark contribution which brought to researchers' attention the correlation between historic settler mortality and contemporary income levels and institutions around the world. In sim-

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[3]See Nunn (2009) for an overview of such findings.

ilar vein, Banerjee and Iyer (2005) found historical legacies of land tenure systems in India. This paper is particularly related to a number of recent studies which have looked at persistent effects of African history. A key contribution is Nunn (2008) which finds a link between patterns of contemporary development in Africa and the location of slave extraction. Nunn, and Wantchekon (2011) trace this to modern day attitudes towards trust in the Afro-barometer survey. Exploiting historical data on political geography, Michalopoulos and Papaioannou (2011) examine the consequences of how Africa was partitioned between colonial powers and find that partitioned ethnic groups suffered greater conflict compared to those which have not been impacted by the border partition. Gennaioli and Rainer (2007) find a link between the nature of the pre-colonial regime and modern day provision of public goods. They emphasize, as we will, the importance of pre-colonial continuity in the form of political organization in affecting the contemporary performance of African states.

The remainder of the paper is organized as follows. In the next section, we discuss some background issues including our data and measurement. We then discuss between-country evidence in section 3 and within-country (grid level) evidence in section 4. Section 5 concludes.

2   Background

In this section, we discuss some of the background literature and explanations of conflict. We will also introduce our historical conflict data and its sources. It will also serve as useful background to study some background discussion of African political organization in the pre-colonial and colonial periods.

2.1   Explaining Political Violence

The standard economic approach to political violence looks for factors that explain the costs and benefits of using violence to achieve specific ends, particular in the form of either remaining in power or mounting an insurgency.[4]

Benefits from using violence are frequently couched in terms of capturing resources either directly, as in the capture of territory, or through winning political power. Both of these views motivate exploring the link between violence and natural resource rents as discussed in Ross (2004). Early empirical

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[4]See Fearon (2008) for an excellent overview of the issues.

contributions to the literature on conflict such as Collier and Hoeffler (2004) and Fearon and Laitin (2003) find evidence to support this channel.

Since the use of violence is generally thought of as a last resort, civil wars are usually rationalized in terms of commitment and/or information problems. The extent of commitment power depends on the institutional structures in place. Besley and Persson (2011) model this as a constraint on the way that the state can be used for private ends which they refer to as "cohesive political institutions". This could be the product of formal veto threats enhanced by Parliamentary democracy or by greater trust between groups which foster more cooperative policy outcomes. This places an emphasis on the role of institutions and/or trust in affecting the likelihood of conflict.

Conflicts can also be the product of long-standing grievances between groups. But just how to capture this empirically is not clear. Certainly, the early contributions on conflict found little evidence that ethno-linguistic fractionalization, which is negatively correlated with income per capita, is positively correlated with conflict. However, Montalvo and Reynal-Querol (2005a) find evidence that ethnic polarization is positively correlated with conflict. This is consistent with the theoretical approaches of Esteban and Ray (1999), Montalvo and Reynal-Querol (2005b) and Besley and Persson (2011b, Chapter 4).

Another key part of the theoretical mechanism generating conflict is the opportunity cost of fighting. This is generally thought to be lower when there is unemployment and/or low wages since this makes it easier for each side in a conflict to recruit combatants. This ties to the robust finding is a negative correlation between income and conflict found throughout the empirical literature. Of particular note are the contributions by Miguel et al (2004) and Bruckner and Ciccone (2008) who address concerns about the endogeneity of income.

Much of the existing research is conducted by comparing conflict across countries. But there is now a growing body of research that looks at the causes and consequences of conflict at the sub-national level in Africa. One of the earliest contributions is Deininger (2003) who finds that the distance from infrastructure, asset inequality, cash-cropping and lower levels of education increase the likelihood of civil conflict in Uganda. Akresh and de Walque (2010) find that the Rwandan genocide had a negative impact on school attendance. Rohner et al (2011) and Michalopoulos and Papaioannou (2011)

both look at sub-national data in Africa.[5]

2.2 Data and Measurement

We use data on historical conflicts from 1400 to 1700 assembled in Brecke (1999). The core concept of violence conflict used in his study is from Cioffi-Revilla (1996) whom he cites as defining "a (A) war (a war event) is an occurrence of purposive and lethal violence among two or more social groups pursuing conflicting political goals that result in fatalities, with at least one belligerent group organized under the command of authoritative leadership". Brecke (1999) uses a wide variety of published historical sources to document such conflicts.[6]

The aim of the published data base is to cover the universe of documented violent conflicts at any location in the world since 1400 in which 32 or more persons have died due to the conflict.[7] He treats multi-year conflicts as by consecutive years in which that threshold of 32 deaths is surpassed. He follows Luard (1987) in using the 1400 cut off since it falls between major dates for the Chinese (1366) and European and American (1492) populations, and demarcates a point before which the quality and extent of data about many parts of the world falls precipitously. Even then, it is possible that there are conflicts which have not been documented. However, conflicts that are likely to have a modern legacy are precisely those that are important enough to have been documented and hence passed into the historical record.

For each violent conflict listed by for Africa between 1400 and 1700 we have identified the modern country in which it took place as well as the specific geographical location. Where possible, we have cross-checked each data point by reading the history of each war. We focus on the data in the period before 1700 since we are interested in conflicts which predate the colonial period.

For the between-country analysis, the main variable that we use is the incidence of violent conflict in a country between 1400 and 1700, specifically

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[5]Looking at evidence from Medieval Europem Voigtlaender and Voth (2011) show that violence towards Jews shows strong historical persistence.

[6]See this reference for an exhaustive account of the many and varied published and unpublished historical sources that he uses.

[7]This is based on the mathematician Lewis Fry Richardson's famous base 10 log scale for violent conflicts – see Richardson (1960). The criterion of 32 deaths corresponds to a Richardson score of 1.5.

the number of years between 1400 and 1700 in which some area within the country is coded as having been in what would now be regarded as an internal conflict. This variable captures the intensity of pre-colonial conflict and has a mean of 5.13 with a range 0 to 91 and standard deviation of 15.17. As a blunter measure, we also construct a dummy variable that is equal to one if the country has had *any* violent conflict between 1400 and 1700, and zero otherwise.

When we study conflict at the sub-national level, we take the 120km×120km grids from the Yale University Geographically Base Economic Dataset (G-econ).[8] This gives 3546 grid cells spread across 49 countries in Africa. For each grid cell in the data, we construct a dummy variable which is equal to one if there has been a conflict in that grid cell in the period 1400-1700 and zero otherwise. For the purposes of this exercise, we identify not only in which modern country this occurred, but also the precise geographical location (latitude and longitude) of the conflict using historical sources.[9] We then GIS code each conflict. Figure 1 plots the 91 conflicts between 1400 and 1700 that we have located precisely and which we will exploit in the this analysis.[10]

We then match these data with information on the location of recent conflicts from the Armed Conflict and Location Event Data (ACLED).[11] These data give a precise GIS code to episodes of conflict in African countries in the years 1997 to 2010.[12] The dataset contains information on the date and location of conflict events, the nature of the event, and the groups involved.

The G-econ data provide a number of additional variables that we shall use as controls. We will augment these with data that we have extracted from historical maps which we detail below.

2.3 Political Development in Africa

Prior to the scramble for Africa in the late nineteenth century culminating in the Berlin conference of 1884, Africa was characterized by a patch work

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[8]We use G-econ 3.1; see http://gecon.yale.edu/ for details on the grid construction and available data.

[9]We use, in particular, Ade Ajayi and Crowder (1985) and Freeman-Grenville (1973).

[10]There fewer than 91 dots in the map since a few conflicts take place at the same locations.

[11]See http://www.acleddata.com/

[12]Such precise data is not available for the whole post-colonial period.

of heterogeneous political systems. Some of these were organized authority structures of long-standing including a number of historic kingdoms. Other areas were governed in a relatively stateless fashion. Just as in Medieval Europe, the conflicts that we study were in part a reflection of the process of indigenous state building. This was true, for example, of the Bunyoro-Buganda conflict in modern day Uganda in 1600 or the Songhai-Gourma conflict in modern day Mali in 1488, both of which appear in our data. Civil wars within kingdoms were common too (see, for example, Ben-Amos Girshick and Thornton, 2001). Of course, conflicts in organized political jurisdictions are also more likely to form part of the historical record. Anthropologists who have studied African political history draw a similar conclusion on the importance of territorial war in Africa. For example, Radcliffe-Brown (1940) notes that:

> "Amongst the various different kinds of warfare that can be distinguished, what we may call wars of conquest have been important in Africa, as they have been in Europe. When such war is successful it establishes one people as conquerers over another who are thus incorporated into a larger political society, sometimes in an inferior position as a subject people." (page xix).

This process of territorial consolidation lead, at various points in history, to the emergence of a variety of long-lived African kingdoms whose geographical reach is displayed in the hatched areas in Figure 1.[13] The map identifies 23 historic kingdoms in Africa.[14] Herbst (2000, Chapter 2) argues that these kingdoms found it difficult to consolidate power over wide areas because of the ease with which populations could migrate. Thus, the limits and territorial boundaries of such kingdoms were somewhat porous. Examining the locations of the dots which represent conflict locations, it is apparent that there is link between conflict and belonging to the territory of an historic kingdoms. This is confirmed statistically; conflicts are twice as likely to reside in 120km×120km grid cells which belong to historic kingdoms compared to those which do not.

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[13] This is based on maps in O'Brien (1999).

[14] These are Zulu, Merina, Monomotapa, Lozi, Malawi, Kilwa, Lunda, Congo, Luba, Rwanda, Buganda, Ashanti, Yoruba, Ethiopia, Axum, Wolof, Ghana, Mali, Kush, Songhay, Kanem, Classical Egypt and Carthage. Some of the kingdoms of West Africa were overlapping geographically but not temporally.

As European powers somewhat reluctantly extended their rule into the African hinterland, significant use was made of pre-colonial power structures in efforts at indirect rule. But this process showed little respect for historic territorial boundaries. This too is apparent in Figure 1 where we have shaded countries according to colonial control by World War I which is largely a reflection of the aftermath of the 1884 Berlin conference. The map confirms that patterns of colonial control did not seem to respect the boundaries of historic kingdoms.

One of the most significant organizational changes in Africa from the colonial period onwards was the creation and maintenance of political jurisdictions with clearly defined boundaries throughout the continent. As discussed in Herbst (2000), colonialism also had a significant effect on the way that the proto-state structures that preceded it operated. Much of this actually weakened existing authority structures that had been created in pre-colonial times.[15] And this may help to explain why the positive role of historic conflicts in state building identified by Hintze (1911) and Tilly (1990) to be sources of European state strength are much less important in an African context.

The end of colonialism ushered in an era of mostly contrived nation state boundaries which therefore bore little relation to indigenous political structures, largely as a reflection of the arbitrariness of the boundaries created by the colonial division of Africa. On independence, most countries launched efforts to build nation states inside these well-defined boundaries broadcasting their intentions through national symbols such as flags, currencies and citizenship regulations. The great challenge, which has so often not been met, is to move beyond symbolism to create functional polities within state borders that can deliver public goods and security to their citizens.

3 Between-country Evidence

We are interested in whether historical conflict is correlated with the incidence of civil conflict in a country during its post-independence history.

Our basic specification is as follows:

$$y_j = \alpha + \beta c_j + \gamma x_j + \varepsilon_j$$

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[15]In fact, there is heterogeneity in the impact depending on initial conditions. It is likely that in the case where societies were initially stateless, colonialism strengethened the state (see, for example, Fortes and Evans-Pritchard, 1940).

where y_j is the outcome of interest in country j, α is the intercept, c_j is the historical conflict variable and x_j are other controls. In every case, we include dummy variables for different colonizing powers. The controls that we use are very similar to Nunn (2008): latitude, longitude, minimum rainfall, maximum humidity, low temperature, the log of the length of the coastline, a dummy for whether a country is an island, regional variables, measures of natural resource abundance,[16] legal origin, ethnic polarization,[17] proportion of the population that is Muslim, and the ruggedness of the terrain. We will also control for GDP.

The main cross-country results are in Table 1. The outcome variable in columns (1) through (6) is the incidence of civil war between independence and 2007 measured using the Armed Conflict Database (ACD). Column (1) controls only for colonial dummies and finds a positive and significant correlation between the intensity of historical conflicts within a country and more recent experience. For each additional year of an historical conflict, the country suffers an extra 0.15 years (or about 2 months) of additional conflict in the post-independence period. Put another way, comparing a country with no history of conflict in the period 1400 to 1700 to one with 60 years of conflict over this period, then our point estimate predicts an additional 10 years of post-independence conflict.

In column (2), we add in our additional controls and find that the coefficient of interest on historical conflict is marginally smaller in size compared to column (1) and remains significant.[18] Column (3) adds the slave trade variable from Nunn (2008). This variable has a positive and significant coefficient suggesting that a greater incidence of historical slave extraction does make a country more prone to conflict. At the same time, the coeffi-

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[16]We use the log of diamond, gold and oil production per head of population from Nunn (2008).

[17]Unlike Nunn (2008), we use ethnic polarization rather than ethnic fractionalization. This is because Montalvo and Reynal-Querol (2005a) have found that ethnic polarization rather than fractionalization is correlated with civil conflict. Like them, we use the index first introduced for religious polarization in Reynal-Querol (2002). For N ethnic groups with population share π_i, it is:

$$1 - \sum_{i=1}^{N} \left(\frac{0.5 - \pi_i}{0.5} \right)^2 \pi_i$$

[18]The core finding is robust to using ethnic fractionalization rather than ethnic polarization as a control.

cient on the historical conflict variable remains significant and is of similar size to what we found in column (2). Given the interplay between conflict and poverty, it is important to check that the result is robust to including GDP. This we do in column (4) where we also include regional dummies as controls.[19] GDP turns out not to be significant. However, the historical conflict variable does remain positive an significant.[20]

The remaining four columns in Table 1 are motivated by the study of political violence in Besley and Persson (2011a). They argue that, from a theoretical point of view, government repression and conflict are two sides of a coin and should be studied jointly. We follow them and measure repression using Banks' (2005) measure of the extent purges – i.e., the removal, by jailing or assassination, of opponents considered undesirable by the incumbent government. Column (5) shows that countries with a prior history of conflict are more likely to suffer from this form of political violence too (column 5). And this result is also robust to controlling for GDP (column 6). Finally in columns (7) and (8) we run some ordered logits where the ordered variable takes on the value zero when there is no violence, a value of one if there is repression and a value of two if there is conflict. The results also show that there is a significantly higher incidence of political violence when a country has a history of conflict.

Taken together these results paint a pretty robust picture linking the legacy of conflict in a country in the period 1400-1700 with more contemporary experience.[21] Moreover, this effect appears to survive inclusion of a wide variety of controls including GDP raising the question of the mechanism through which the effect is operating.

Table 2 begins our exploration of mechanisms. The theoretical literature on conflict identifies low income as a risk factor and also emphasizes how conflict may reduce incentives to invest and can destroy assets.[22] Columns (1) through (3) in Table 2 explore whether historical conflict is correlated

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[19]These are dummies for five regions as in Nunn (2008): northern, western, central, eastern and southern.

[20]Although significant in global samples of countries, GDP is typically not significant in explaining civil conflict in a sub-sample of African countries.

[21]The results are also robust to including the country-level pre-colonial centralization variable of Gennaioli and Rainer (2007).

[22]For evidence on the negative impact on economic activity, see for example, Abadie and Gardeazabal (2003), Besley and Mueller (2010), Blomberg and Hess (2002), Collier (1999), Goldin and Lewis (1975) and Zussman, Zussman and Orregaard Nielsen (2008).

with low income in the post-colonial period. In all three columns, there is a negative correlation between the historical conflict variable and income per capita but it is only significant (at a 10% level) in column 3. The magnitude of the point estimate suggests that a country with a history of pre-colonial conflict at around its mean will have a 10% lower level of per capita GDP in 2000, compare with a country that has had no historical conflicts between 1400 and 1700.[23] The coefficient is similar in size and significance when other controls are included, such as the slave extraction variable of Nunn (2008). This provides some weak evidence that there may be a channel through economic effects but it is quite possible that this is simply a reflection of the fact that the higher incidence of post-colonial conflict identified in Table 1 is also having a negative effect on the economy rather than via a direct effect from historical conflict.

In columns (4) and (5) of Table 2, we look to see whether historical conflict is correlated with two popular contemporary measures of the quality of the institutional environment: expropriation risk and the strength of checks and balances. In column (4), the dependent variable is the ICRG measure of expropriation risk which Acemoglu, Johnson and Robinson (2001) argue is the channel through which settler mortality affects modern day per capita income. We find no significant correlation between this variable at the country level and historical conflict. Column (5) chooses the extent of checks and balances from the PolityIV data which Besley and Persson (2011) argue is a plausible way of capturing institutional cohesiveness. Here, we use a cut-off value of five and above on the executive constraints scale of one through seven. Again, we find no significant correlation between this variable and historical conflict at the country level. While the measures of institutions here are quite crude, these findings are not particularly encouraging to the view that historical conflict creates a problematic institutional legacy.

Table 3 looks at the possibility that the main historical legacy is working through inter-group trust by looking at evidence from the Afrobarometer survey. This is a household level survey which explores a host of attitudinal questions among the citizens of African countries. The data that we use here are those collected for 2008 (round 3 of the survey). These surveys are available for 18 countries: Benin, Botswana, Cape Verde, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mali, Mozambique, Namibia, Nigeria, Sene-

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[23]The mean of the left hand side variable is 5 years so the effect is calculated as $5\times(-0.02\times100)$.

gal, South Africa, Tanzania, Uganda, Zambia, Zimbabwe. And there is a total of 25397 respondents. Each national survey tries to be representative of the population and interviews are conducted in local languages.

We focus on inter-group trust where the question asks how much the respondent trusts people from other groups. Answers to the question are given on a four point scale where zero is "not at all:, one is "just a little", two is "somewhat" and three is "a lot". We use this categorical variable as our dependent variable to measure trust. Our motivation for looking at this stems from the prospect that well-documented historical conflicts of the kind that Brecke (1999) identifies may be salient in provoking suspicion between groups who have a history of violent conflict, even long ago. Moreover, there could be a link to conflict if greater trust makes it easier for a given set of political institutions to operate on a more cohesive basis or increase the intensity of polarization, i.e. divergence in preferences.

The result is in column (1) of Table 3 which shows a negative correlation between the extent of trust between ethnic groups and the history of conflict. This specification controls for a wide range of personal characteristics which are shown in the notes to the Table. We also control for colonial and regional dummies as well as GDP at the country level. The standard errors are clustered by country.[24]

In columns (2) and (3), we look at how a history of conflict affects the way that citizens in a country report their sense of identity as between a national and an ethnic identity. For this we use the question in the Afrobarometer which asks about feelings of identity and create two dummy variables – the first equal to one if an individual reports only having feelings about their ethnic identity compared to all other feelings of identity and a second dummy variable which takes the value one if an individual expresses only a sense of national identity.[25] Column (2) shows that there is a positive and significant correlation between having only a sense of ethnic identity and the extent of historical conflict within a country. The opposite is found for a sense of national identity in column (3).

The results in Table 3 suggest the possibility that memories of historical conflicts remain salient and have led to a breakdown in trust and have affected

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[24]The results are robust to using an ordered logit specification. Similar results are found for trust in the local council, neighbors, family and within-group.

[25]The underlying variable takes on five possible values: ethnic identity only, ethnic identity more than national identity, national and ethnic identities equally, national identity more than ethnic identity and national identity only.

peoples' sense of identity. However, this could simply be a reflection of the fact that, as we saw in Table 1, historical and contemporary conflict are positively correlated.

To gain some reassurance that the effect is due to historical conflict, columns (4), (5) and (6) repeat the earlier specifications while including the left hand side variable from Table 1 (the incidence of post-colonial civil conflict) as a right hand side variable in explaining trust and identity. The historical conflict variables remain significant and of similar magnitude while contemporary conflict is not significant. These results do provide some evidence on the mechanism by which the historical conflicts have an effect – reducing trust, promoting a stronger sense of ethnic identity and a weaker sense of national identity. This suggests that some of the old conflicts that are document in our data may still be salient in affecting the attitudes that people hold. Even if some conflicts in the past were missed in Brecke (1999) and hence missing from our data, it is those that are documented which are likely to have the strongest effect on subsequent attitudes.

Summing up, the results do provide some encouragement to the view that historical conflict in the period 1400-1700 has a legacy at the country level. Moreover, it seems to show up most robustly in the incidence of post-colonial conflict. Of course, the results are subject to the whole range of caveats which must be taken on board when exploiting cross-country variation. Some of these concerns can be addressed by looking at a sub-national level which is what we do next.

4   Within-country evidence

In view of the limitations of the between-country evidence, in particular concerns about omitted variables at the country level, we now turn to looking at evidence which exploits the more precise location of recent conflicts along with the exact location of the historical conflicts from Brecke (1999). This will permit to us to look at the historical conflict legacy using only within-country variation and hence include a country fixed effect which should capture common factors such as political institutions.

For this we use the 120km×120km grid cells that we described in section 2.2 above.

We use the data to construct a measure of how far each grid cell is from a documented conflict in the period 1400-1700. To construct this distance, assume a spherical Earth with radius R. Then denote the locations of the two points (1 and 2) in spherical coordinates (longitude and latitude) as: longitude1, latitude1 and longitude2, latitude2. Then the formula that we use to calculate distances between those two points is the haversine formula (from spherical trigonometry).Specifically, for any pair of coordinates, define:

$$dlon = longitude2 - longitude1$$
$$\text{and}$$
$$dlat = latitude2 - latitude1$$

Then let

$$\alpha = \sin^2(dlat/2) + \cos(latitude1) * \cos(latitude2) * \sin^2(dlon/2)$$

The great circle distance that we use to measure distance is:

$$d = 2R\arcsin(\min(1, \sqrt{\alpha})))$$

where $R = 6378$ km is the equatorial radius of the earth. (Given that we are working with grid cells, we actually construct a distance measure based on the difference between the coordinates at the southwest corner of a grid-cell and the exact latitude and longitude of each historical conflicts.)

Having measured conflict at the grid level and the distance to historical conflicts, we proceed as follows. Let $y_{j\ell} \in \{0,1\}$ denote whether grid cell ℓ country j has a conflict between 1997 and 2010 according to the ACLED data. Our core empirical specification is then:

$$y_{j\ell} = \mu_j + \beta d_{j\ell} + \gamma x_{j\ell} + \varepsilon_{j\ell}$$

where μ_j is a country dummy, $d_{j\ell}$ is our measure of distance to the nearest conflict, and $x_{j\ell}$ are other grid cell level controls. Standard errors are clustered at the country level.

We will use two core sets of controls $x_{j\ell}$. The first set are physical geography variables which are measured reliably and include: distance of the grid cell to the coast, elevation, the roughness of the terrain, its average temperature and precipitation. We also have a set of less reliable socioeconomic controls which are: income per capita, population and the share of minerals

in locally generated income. These variables are all taken from the G-econ data set.

We will also include controls that we have collected ourselves. These include a measure of ethnic polarization constructed from Murdock (1959), dummy variables for which historic kingdom the grid belongs to and crude measures of the structure of the economy in the 1500-1800 period. We detail how we construct these below.[26]

As a core measure, we will include a variable denoting whether there is a conflict in the grid and the distance to the nearest conflict. We will also explore how the effect varies with distance by constructing a series of dummy variables based on the percentiles in the distance distribution from an historic conflict: 0-10%, 10-25%, 25-50%, 50-75%, 75-90% and 90-100%. Having conflict in the grid itself would register as being at 0% in the distance distribution. In this case, the omitted category in the results below will be furthest distance away from the historic (90-100%).

The results are in Table 4. Column (1) shows that having a conflict in the grid makes it 17% more likely that the grid had a conflict in the 1997 to 2010 period. The linear distance to the nearest conflict is negative and significant. In column (2), we use an array of distance dummy variables which show that proximity of an historic conflict is again positive and declines as the conflict is further away. Using the distance distribution, we find that the effect of conflict disappears at around 1000km.

Column (3) shows that the finding is robust to including geographic and socioeconomic controls from the G-econ data that we detailed above. The results suggest that conflict is more prevalent where there is rough terrain, possibility because rebel forces are better able to mount insurgencies in such locations. There also appears to be a negative and significant correlation with income measured at the grid level. This is in line with the standard negative correlation between income and conflict although, interestingly, that was not found by exploiting only within-country variation in Africa.

As well as using the G-econ controls, we construct a measure of ethnic polarization at the grid level using data on ethnicity in Murdock (1959).[27] His data gives information on the spatial distribution of ethnic groups. We use these to calculate the distribution of ethnic groups in each 120km×120km

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[26]We are grateful to Jim Fearon for the suggestion that we investigate the possibility of using historic kingdom variables as controls.

[27]We make use of the GIS coding of the data by Nathan Nunn available at:
http://www.economics.harvard.edu/faculty/nunn/data_nunn

grid. We then construct an ethnic polarization measure in the same way as Montalvo and Reynal-Querol (2005a). Column (3) shows, in line with the results in Montalvo and Reynal-Querol (2005), that polarization is positively correlated with conflict; if a grid goes from the minimum polarization to the maximum, the probability of conflict increases by around 3 percentage points. But importantly, our core results on distance from an historical conflict remain of similar size and significance.

Column (4) addresses the issue of whether historical conflicts are really proxying for being located near an historic African kingdom where violent conflict was more likely to be organized and documented. To investigate this, we used the historical maps of pre-colonial African kingdoms in the period 1500-1800 to locate each grid cell in an historic kingdom. Thus, we are able to calculate whether each grid is inside the area of influence of an historic African kingdom and thence to construct a dummy variable which is equal to one if the grid is located in an historic kingdom and zero otherwise. These dummy variables are added in column (6) with the core results on distance from conflict remaining robust. The historic kingdom dummies are strongly significant with a p-value of 0.000.[28]

In column (5), we use the historical maps to classify regions according to their principal economic activities in the 1500-1800 period.[29] This addresses a potential concern that historical conflict variable proxies for persistent economic differences between areas which provoke conflict. We include these economic activity dummy variables in column (5) of Table 4 and the results on the importance of the distance to an historical conflict remain robust. The historic economic activity variables are however strongly jointly significant with a p-value of 0.000.[30]

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[28]Positive and significant dummies are found for Zulu, Kilwa, Luba, Rwanda, Songhay and a negative and significat effect for Merina, Malawi, Lunda, Axum, Kush, Classical Egypt. The remaining dummies are not significant different from zero, i.e. not different from parts of Africa that are not classified as parts of any historic kingdom.

[29]The activities are growing/producing/mining bananas, barley, camels, cattle, co-conuts, copper, cotton, donkeys, ensete (a type of banana), fish, goats, gold, honey, horses, iron, ivory, leather, millet, palm oil, plantain, raffia cloth, rice, salt, sorghum, timber, wheat, and yams.

[30]A positive and significant effect is found for regoins producing barley, goats, honey, ivory, plantain, and timber with a negative and significant effect for camels, donkeys, ensete, fish, iron, leather, palm oil, raffia cloth and yams

5 Conclusions

This paper has shown that there is a correlation between conflicts in Africa between 1400 and 1700 and the more recent experience of civil conflict (and political violence). The results hold both when we exploit between-country and within-country variation They are robust to including a wide variety of controls. They add fuel to the notion to notion that many phenomena that we see in the world today are, at least in part, the product of historical legacies. The most plausible explanation of the results is that historical conflict weakens trust, encourages ethnic identification and weakens a sense of national identity.

One reaction of the findings could be to create a sense of despair that much of what we see is historically determined and hence not easily amenable to manipulation. But that conclusion is too bleak. To the extent that there are headwinds in the face of progress which are due to historical legacies, it is better to understand them than to ignore them. The need to embed our theories of institutional change in an understanding of social structures shaped by history opens up many possibilities for research and for providing policy advice which is appropriately tailored to the particular circumstances in which it is given.

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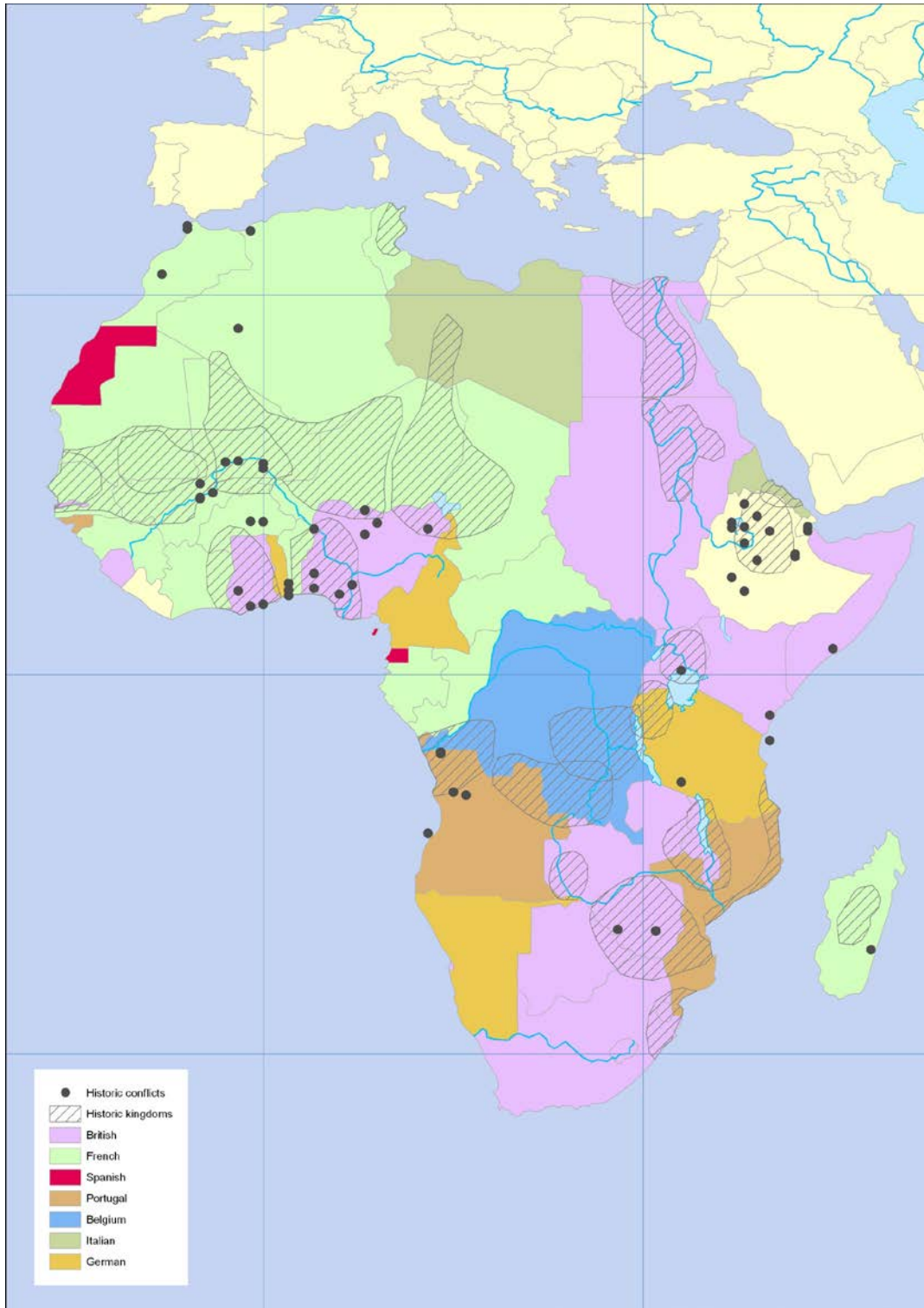
Figure 1:

Conflicts, Colonialism and Kingdoms in Africa

Notes: Historic conflicts are from Brecke (1999) as described in the text and are for the period 1400 to 1700. Colonialism by modern country is for the period preceding World War I. Historic kingdoms are for the period 1500-1900 and based on maps in O'Brien (1999).

TABLE 1:
CONFLICT in AFRICA

Dependent variable	(1) Civil war incidence	(2) Civil war incidence	(3) Civil war incidence	(4) Civil war incidence	(5) Purges	(6) Purges	(7) Conflict (ordered variable)	(8) Conflict (ordered variable)
War incidence 1400-1700	0.15*** (0.05)	0.11** (0.05)	0.08** (0.04)	0.12*** (0.05)	0.002*** (0.000)	0.002*** (0.000)	0.06*** (0.02)	0.06** (0.03)
Other controls		Yes	Yes					
Slave trade (Nunn)			0.71** (0.29)					
GDP (2000)				-0.46 (0.99)		-0.009 (0.018)		-1.68*** (0.61)
Regional dummies				Yes		Yes		Yes
Colonial dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	49	47	47	48	49	48	49	48
R^2	0.3045	0.7756	0.8121	0.4236	0.4380	04860		
Pseudo-R^2							0.1058	0.2630

Notes: Standard errors are clustered by country. Sample is all African countries for which data is available. Other controls are as described in text.

TABLE 2:
GDP (2000) in AFRICA

	(1)	(2)	(3)	(4)	(5)
Dependent varible	GDP	GDP	GDP	Expropriation Risk	Checks and Balances
War incidence 1400-1700	-0.01	-0.01*	-0.01	-0.007	-0.002
	(0.005)	(0.006)	(.006)	(0.007)	(0.002)
Other controls		Yes	Yes		
Slave trade			-0.10*		
(Nunn)			(0.05)		
Colonial dummies	Yes	Yes	Yes	Yes	Yes
Observations	49	48	48	35	48
R-squared	0.1424	0.8088	.8465	0.1682	0.1685

Notes: Standard errors are clustered by country.

TABLE 3 :
TRUST

Dependent variable	(1) Inter group	(2) Ethnic Identity	(3) National Identity	(4) Inter group	(5) Ethnic Identity	(6) National Identity
War incidence 1400-1700	-0.01*** (0.002)	0.002*** (0.0002)	-0.005*** (0.0005)	-0.01*** (0.002)	0.002*** (0.0002)	-0.005*** (0.0006)
Civil war incidence				0.005 (0.003)	0.0004 (0.0009)	-0.001 (0.002)
Colonial dummies	Yes	Yes	Yes	yes	Yes	Yes
Observations	19875	20044	20044	19875	20044	20044
R-squared	0.0941	0.0259	0.0997	0.0943	0.0259	0.0998

Notes: Standard errors are clustered by country. Regressions are individual level and controls for age, age squared, gender, education, occupation, religion, living conditions, district level ethnicity. We also include GDP per capita in 2000, colonial dumies and regional dummies. The results are robust to including all of the additional controls included in column 2 of Table 1 and outlined in the text.

TABLE 4
CONFLICT AT GRID LEVEL (grids of 120m*120km)

	(1)	(2)	(3)	(4)	(5)
Dependent variable	Conflict 1997-2010	Conflict 1997-2010	Conflict 1997-2010	Conflict 1997-2010	Conflict 1997-2010
Distance from the closest old conflict	-0.14*** (0.03)				
Old coflict in grid	0.17*** (0.04)				
Distance 0-10%		0.18*** (0.4)	0.17*** (0.05)	0.17*** (0.05)	0.18*** (0.05)
Distance 10-25%		0.12*** (0.03)	0.15*** (0.05)	0.15*** (0.04)	0.16*** (0.05)
Distance 25-50%		0.09*** (0.02)	0.14*** (0.06)	0.13** (0.06)	0.14** (0.06)
Distance 50-75%		0.02 (0.018)	0.09* (0.04)	0.09* (0.04)	0.09* (0.05)
Distance 75-90%		-0.02 (0.04)	0.03 (0.04)	0.03 (0.04)	0.04 (0.04)
Distance to coast (1000 km)			-0.02 (0.04)	-0.06 (0.04)	-0.03 (0.04)
Elevation(1000km)			-0.04 (0.06)	-0.01 (0.05)	-0.04 (0.06)
Roughness			0.35*** (0.15)	0.30** (0.12)	0.36** (0.15)
Average temperature			-0.01 (0.01)	-0.012 (0.01)	-0.016 (0.01)
Average precipiation			0.001** (0.0003)	0.001*** (0.0003)	0.001** (0.0003)
Per capita income			-121.79*** (20.45)	-123.79*** (22.21)	-127.20*** (19.62)
Population			0.01* (0.006)	0.01* (0.005)	0.01* (0.006)
Share of minerals income			-0.002 (0.004)	0.01 (0.05)	-0.01 (0.04)
Ethnic polarization			0.03** (0.015)	0.032** (0.016)	0.027* (0.015)
Pre-colonial kingdom dummies (p-value)				Yes (0.000)	
Economic activity dummies (p-value)					Yes (0.000)
Country dummies	Yes	Yes	Yes	Yes	Yes
Observations	3546	3546	3361	3361	3361
R-squared	0.3652	0.3638	0.4133	0.4254	0.4191

Notes: Standard errors are clustered by country.   Variable descriptions are explained in text.