

## CSAE Working Paper WPS/2014-02

### *1807: Economic shocks, conflict and the slave trade*

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Suppression of the slave trade after 1807 increased the incidence of conflict between Africans. We use geo-coded data on African conflicts to uncover a discontinuous increase in conflict after 1807 in areas affected by the slave trade. In West Africa, the slave trade declined. This empowered interests that rivaled existing authorities, and political leaders resorted to violence in order to maintain their influence. In West-Central and South-East Africa, slave exports increased after 1807 and were produced through violence. We validate our explanation using Southwestern Nigeria and Eastern South Africa as examples.

#### 1. INTRODUCTION

African conflicts are particularly deadly. Roughly thirty percent of conflicts over the past five decades have occurred in Africa, and these typically result in twice as many fatalities as conflicts in other regions (Hoeffler, 2014). Many of Africa's conflicts have deep historical roots. Legacies of centuries-old conflict predict present violence (Besley and Reynal-Querol, 2012), as do the locations of borders established more than a century ago (Michalopoulos and Papaioannou, 2011). It is important, then, to understand the history of conflict in Africa. In this paper, we show that British suppression of the transatlantic slave trade after 1807 increased the prevalence of conflict in Africa.

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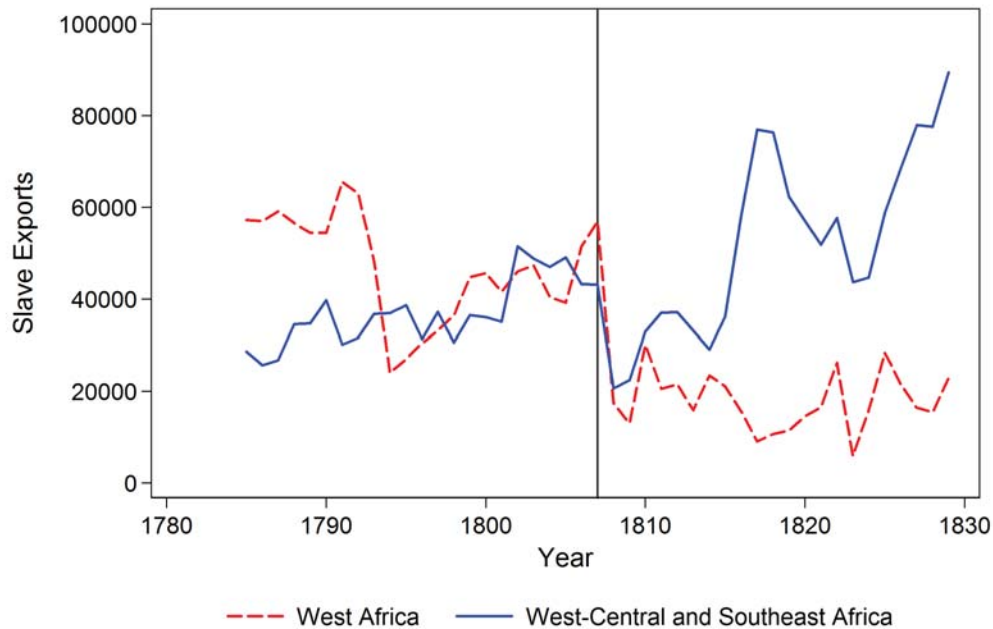
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FIGURE 1. The importance of 1807



Source: Eltis et al. (1999)

The Slave Trade Act of 1807 was enforced through naval patrols on the West African coast. The effect on slave exports was immediate, and is shown in Figure 1. Suppression was only effective at reducing participation by British nationals and north of the equator (Eltis, 1987). As a result, the slave trade was re-organized. Exports from West Africa fell. By contrast, exports from West-Central and Southeast Africa expanded after an initial decline. In this paper, we document that adaptation to economic change in both regions included an increase in the incidence of intra-African conflict.

We use data from Brecke (1999) on conflicts in Africa over the period 1700 to 1900. Assigning coordinates to each of these conflicts, we then use proximity to slave-trade ports to divide Africa into a treatment region that was affected by the transatlantic slave trade and a control region that was not. We show that there was a discontinuous increase in the prevalence of conflict between Africans in the treatment region after 1807 relative to the control region. This difference was sustained over at least three decades.

We show that our results are robust to several different specifications, including alternative divisions of Africa into treatment and control regions, and to changes in the time window that we consider. Further, we show that 1807 did not increase

conflicts with non-Africans, and that we can only find a break around 1807. We show that the result cannot be explained by greater colonial encroachment, by the jihads of the early nineteenth century, or by more detailed measurement of conflict in Africa after 1807.

We show that the sharp increase in conflict occurred in both West Africa, where the slave trade declined, and West-Central/Southeast Africa, which dominated the final decades of the slave trade. We interpret these changes using a simple model. Where demand for slaves increased, they were produced through violence. Where demand declined, non-state interests gained economic power that allowed them to challenge existing authorities. Existing states, by contrast, found that the spoils of conflict provided revenues that enabled them to maintain their position. We show that our interpretation is consistent with the secondary historical literature, and that the mechanisms we describe are visible in the examples of South-Western Nigeria and Eastern South Africa.

**1.1. Related literature.** Our principal contribution is to the literature on the economics of conflict. First, we show that the effects of economic shocks on conflict can be persistent. The literature on economic shocks and conflict focuses largely on immediate responses to transitory income shocks and the factors that mitigate them (Brückner and Ciccone, 2010; Miguel et al., 2004). Though empirical work has tested whether slowly-changing variables such as ethnic differences give rise to conflict (Djankov and Reynal-Querol, 2010; Esteban et al., 2012) and whether violent responses to transient shocks have longer-lasting institutional consequences (Dell, 2012), we are not aware of any study showing that responses to economic shocks persist. We show that the increased incidence of intra-African conflict in response to the 1807 shock was sustained for several years after the initial change.

Second, we add new evidence on the mechanisms by which both positive and negative economic shocks may precipitate conflict. Existing studies explain the apparently contradictory effects of both positive and negative shocks in terms of opportunity costs and returns to conflict (Besley and Persson, 2011; Collier and Hoeffler, 2004; Dube and Vargas, 2013). The set of mechanisms that has been considered by the empirical literature is small, but expanding. Fenske and Kala (2013), for example, focus on the returns to predatory, state-led violence in the context of the slave trade. Here, we focus on the returns to violence and the challenges faced by undemocratic political authorities in adapting to a new economic order.

Third, we add to the existing evidence that study of the past provides lessons about the relationship between economic shocks and conflict. Although most empirical work on conflict has focused on the period after 1945, history provides a larger universe of data with which to test how the response of conflict to economic variables varies by the type of shock, or by institutions, technology, and culture. Other studies of historical conflict have found, for example, that the spread of drought-resistant crops can reduce this responsiveness (Jia, 2011), or that culture

can similarly mitigate the response to shocks (Kung and Ma, 2012). We find conflict to be responsive to trade shocks, and that this response is attenuated by the availability of alternative income sources – in our case the ability to produce oil crops that were central to African trade with Europe after 1807.

We also make a more minor contribution to the literature on the impact of the slave trade on Africa. Although the slave trade had many persistent effects, its impact on conflict has been ignored in the empirical literature. Further, existing studies focus on the long-run impacts on income, trust, ethnic stratification, and polygamy (Dalton and Leung, 2011; Nunn, 2008; Nunn and Puga, 2012; Nunn and Wantchekon, 2011; Whatley and Gillezeau, 2011b). The only empirical study of which we are aware that looks at contemporaneous outcomes is Whatley and Gillezeau (2011a).

**1.2. Outline.** In section 2, we outline our empirical strategy and describe our sources of data. In section 3, we present our main results and demonstrate their robustness to alternative specifications and interpretations. In section 4, we interpret our results. We situate our findings in the historical literature on the African “crisis of adaptation,” present a model of the African response to 1807, and discuss the examples of South-Western Nigeria and Eastern South Africa. In section 5, we conclude.

## 2. EMPIRICAL STRATEGY AND DATA

**2.1. Empirical strategy.** Our principal outcome of interest is the number of intra-African conflicts occurring in either the treatment or control region in a given year. In our baseline analysis, the treatment region includes areas within 1,000 km of a port listed in the Eltis et al. (1999) *Trans-Atlantic Slave Trade Database*, while the control region that includes the rest of Africa that is within 2,000 km of a port.

We use OLS to estimate:

$$\begin{aligned} AfricanConflictIncidence_{it} = & \beta_0 + \beta_1 Post_t \times Treatment_i + \beta_2 Treatment_i \\ & + \beta_3 Post_t + \beta_4 Year_t + \epsilon_{it} \end{aligned} \quad (1)$$

Here,  $AfricanConflictIncidence_{it}$  is the number of intra-African conflicts in region  $i$  in year  $t$ .  $Post_t$  is an indicator for  $t > 1807$ .  $Treatment_i$  is an indicator for the treatment region. We estimate (1) on samples that include years within a window length  $W$  of 1807. We will let  $W$  vary from 15 to 40 years. For a given window length, we will have  $2 \times (2 \times W + 1)$  observations. In our baseline we will use heteroscedasticity-robust standard errors. We use Prais-Winsten estimation to address possible serial correlation as a robustness check. Standard errors produced by bootstrapping or by using a Newey-West correction are very similar to our baseline results (not reported).

We estimate two augmented specifications that allow for separate time trends in the treatment and control regions, and for these trends to also change around 1807:

$$\begin{aligned} AfricanConflictIncidence_{it} = & \beta_0 + \beta_1 Post_t \times Treatment_i + \beta_2 Treatment_i \\ & + \beta_3 Post_t + \beta_4 Year_t + \beta_5 Year_t \times Treatment_i \\ & + \epsilon_{it}, \end{aligned} \quad (2)$$

and:

$$\begin{aligned} AfricanConflictIncidence_{it} = & \beta_0 + \beta_1 Post_t \times Treatment_i + \beta_2 Treatment_i \\ & + \beta_3 Post_t + \beta_4 Year_t + \beta_5 Year_t \times Treatment_i \\ & + \beta_6 Post \times (Year_t - 1807) \\ & + \beta_7 Post \times (Year_t - 1807) \times Treatment_i \\ & + \epsilon_{it}, \end{aligned} \quad (3)$$

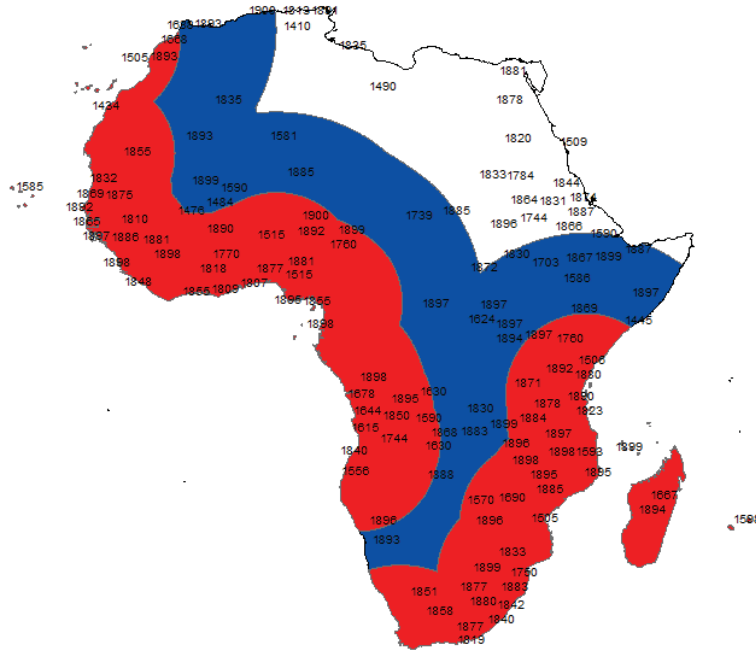
In each of (1), (2) and (3),  $\beta_1$  is our primary coefficient of interest. It captures the degree to which conflict was more common after 1807 than before, above what is predicted by any prior trend. If the effect of abolition on the incidence of conflict in Africa were to occur more gradually, it would appear as a change in the trend – as a positive estimate of  $\beta_7$ . Similarly, it is possible that both  $\beta_1$  and  $\beta_7$  increase. In practice, we typically find a more immediate effect.

**2.2. Data.** Our source of data on the incidence of conflict in Africa is Brecke (1999).<sup>1</sup> His purpose is to document all conflicts over the period 1400 to 1900 in which at least 32 persons are killed in battle. He assembles these from a large bibliography of secondary sources. In particular, he lists the belligerents, dates, locations, and durations of 677 conflicts that took place between 1400 and 1900 in Africa. For example, one entry in his data reads “Tukulors-Segu (Timbuktoo, Mali), 1863.” We use this information to assign each conflict a set of coordinates (in this example, 16.78, -3.01) and an indicator for whether both parties are African (in this case, yes). Besley and Reynal-Querol (2012) show that conflicts from these data between 1400 and 1700 predict conflict and mistrust today. Iyigun (2008) uses these data to track the responsiveness of Protestant-Catholic conflict to Ottoman military activities. We join these data on conflict to several other sources of geographic data, which we discuss as they are introduced.

We show examples of the conflicts in the data in Figure 2. These conflicts are indicated by their start dates. The region colored red in the map is the treatment region that lies within 1,000 km of the slave-trading ports listed in the *The Trans-Atlantic Slave Trade Database*. The blue region is the control region that is further

<sup>1</sup>Data and documentation can be downloaded from [www.cgeh.nl](http://www.cgeh.nl).

FIGURE 2. Conflict, treatment, control




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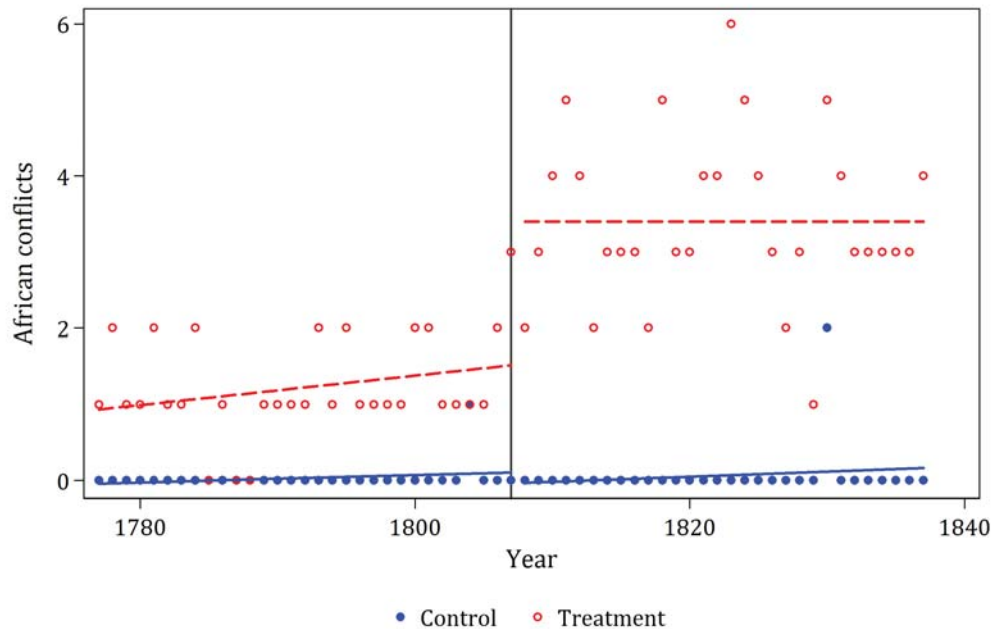
The treatment region is indicated in red, and the control region is indicated in blue. Conflicts are labeled according to their starting year. For clarity, this map only shows a sub-set of the conflicts in the data.

than 1,000 km, but within 2,000 km of the coast. We present summary statistics in Table 1. Two facts are evident from this table. First, the incidence of conflict is greater in the treatment region than in the control region both before and after 1807. Second, the incidence of conflict after 1807 rises in the treatment region, but no comparable increase is evident in the control region.

### 3. RESULTS

**3.1. Main result.** We present our estimates of (1), (2) and (3) in Table 2. Across specifications, the estimated increase in intra-African conflict in the treatment region after 1807 ranges from 1.5 to 2. This is a large effect, compared with a pre-treatment annual mean of roughly one conflict per year. Figure 3 depicts these results pictorially, showing both the raw data and our estimates of (3). The increase in conflict after 1807 occurs rapidly, and appears largely as a level effect, rather than as a break in the trend. This break is sustained over time. Our estimates of the post-1807 trend in the treatment region after 1807 ( $\beta_4 + \beta_5 + \beta_6 + \beta_7$ ) are positive, except when we use 40-year window, in which case the post-1807 trend is -0.034.

FIGURE 3. The break around 1807



Lines in this figure report predicted values from estimates of (3). In particular, these correspond to the results presented in column 4 of Table 2. Points correspond to raw data.

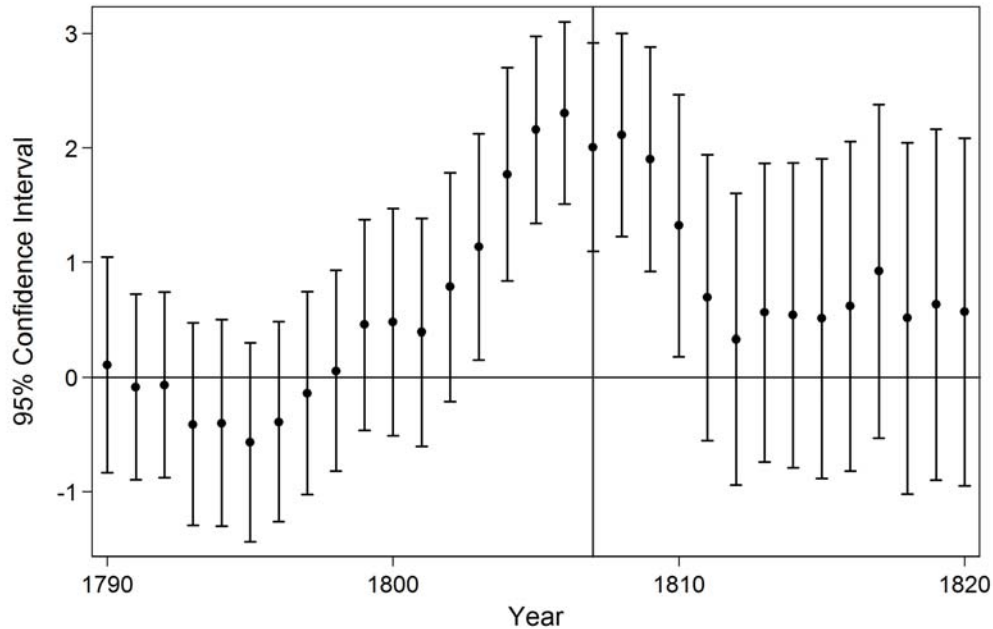
Even if the initial increase were eroded at a rate of 0.034 conflicts per year, it would have taken nearly three decades to erase.

**3.2. Robustness.** The discontinuous increase in intra-African conflict after 1807 is robust to several alternative definitions of the treatment and control regions, to additional checks for robustness, and to alternative interpretations of the data. We present the bulk of our robustness tests in Table 3.

**3.2.1. Definition of treatment.** We begin by changing the rules used to divide Africa into treatment and control. In panel C, we define all areas within 1000 km of the coast as part of the treatment region. Similarly, in panel D, we take as treated all areas within 500 km of a port. Results are similar if we define only areas within 250 km of a port as “treated” (not reported). In panel E, we again take the “treated” region as that within 500 km of a port, but we discard the area between 500 and 1000 km from a port from the analysis. In panel F, we define the treatment zone as the portions of Africa contained within modern-day countries that housed ports listed in the *Trans-Atlantic Slave Trade Database*. In the appendix (Table A5) we remove the control zone altogether, and continue to find a discontinuous break around 1807 within the treatment zone.



FIGURE 4. Trend breaks in alternate years



This figure reports coefficient estimates and 95% confidence intervals from estimates of (2) for alternative selections of the cutoff year that defines  $Post_t$ .

In panel I, we expand our baseline treatment region so that it includes the belt of matrilineal societies south of the equatorial rainforest. Miller (1996) notes that the slaving frontier of the Angolan societies pushed inwards in the nineteenth century, largely into this zone. Similarly, slaves exported from Mozambique came increasingly from this region. In order to capture this area in the treatment region, we include the ethnic groups in this band between Angola and Mozambique that Nunn and Wantchekon (2011) report as having nonzero slave exports.<sup>2</sup> Results remain similar to our baseline analysis.

3.2.2. *Other robustness.* We conduct a variety of other tests in order to verify the statistical robustness of our results. In panel G of table Table 3 we replace our dependent variable with a count of the number of conflict starts in region  $i$  in year  $t$ . Similarly, in panel H, we replace the dependent variable with a count of the

<sup>2</sup>These are: Ambo, Bemba, Bisa, Chewa, Chokwe, Chuabo, Holo, Kaonde, Karanga, Kimbundu, Kisama, Kongo, Kwese, Lala, Lamba, Lomwe, Luba, Lunda, Lupolo, Luvale, Luwa, Magwangara, Makua, Manyika, Matengo, Mbangala, Mbundu, Mbwela, Ndaou, Ndembu, Ndombe, Ngonyelu, Ngumbe, Nsenga, Nyanja, Nyasa, Sele, Sena, Senga, Songo, Suku, Sundi, Teke, Tonga, Tumbuka, Vili, Yaka, Yao, and Yombe.



number of conflicts that continue into year  $t$ , having started in an earlier year. Both specifications give positive results, suggesting that the impact of 1807 on conflict on both the extensive and intensive margins. Conflicts started more frequently and lasted longer after 1807.

We conduct a placebo analysis that we report in Figure 4. We re-estimate (2) using alternative years as the break-point. As shown in the figure, we only find a statistically significant break if we test for one in a narrow band around 1807. This is based off a similar check in Cantoni and Yuchtman (2012).

In the appendix, we report additional statistical checks. Further, we report Prais–Winsten estimates of our main results in Table A1. This allows the error term to follow an AR(1) structure. We include a lagged dependent variable in Table A2. In Table A3, we exclude observations within 3 years of 1807. In each of these cases, the results are substantially similar to our baseline results.

In addition, we employ alternative strategies to identify the break after 1807. We report results from a Clemente et al. (1998) additive outlier unit root test for the conflicts in our treatment region, for the period extending 40 years on either side of 1807. The test indeed finds that there is a structural break, and selects 1807 as the optimal year. In addition, we test for the presence for structural breaks using the methods detailed in Bai and Perron (2003). We consider data from 40 years before and after 1807. We test for the presence, number, and location of structural breaks in the treatment and control group separately. The results are presented in Table 5. All three methods – The Bayesian Information Criterion, Liu Wu Zidek modified Schwartz criterion, and the sequential procedure – estimate the number of structural breaks to be one in the treatment group and zero in the control group. Further, both the sequential and the repartition procedure estimate the date of the break to be 1806 in the treatment group. Additional tests easily reject the null hypothesis of zero breaks in the treatment group, and are unable to reject the same in the control group.

We employ the approach of Abadie et al. (2010) to construct a synthetic control group over the same interval. We divide Africa outside of our treatment region into  $5^\circ \times 5^\circ$  squares (see Figure 10 in the Appendix). We generate weights for the synthetic control group using either their geographic characteristics or the incidence of intra-African conflict before 1807. In neither case does the synthetic control group experience an increase in conflict after 1807 that resembles the increase in the treatment area (see figure 11 in the Appendix).<sup>3</sup>

**3.3. Alternative interpretations.** Having established that there is a discontinuous increase in intra-African conflicts reported by Brecke (1999) after 1807, we now

<sup>3</sup>In a similar exercise (not reported), we divide both the treatment and control regions into  $5^\circ \times 5^\circ$  squares. We run separate regressions a) discarding any regions that experienced no conflict in the century leading up to 1807, and b) including only these regions. We find that conflict after 1807 increased in both samples, and that the increase is larger in areas that had no conflict prior to 1807.

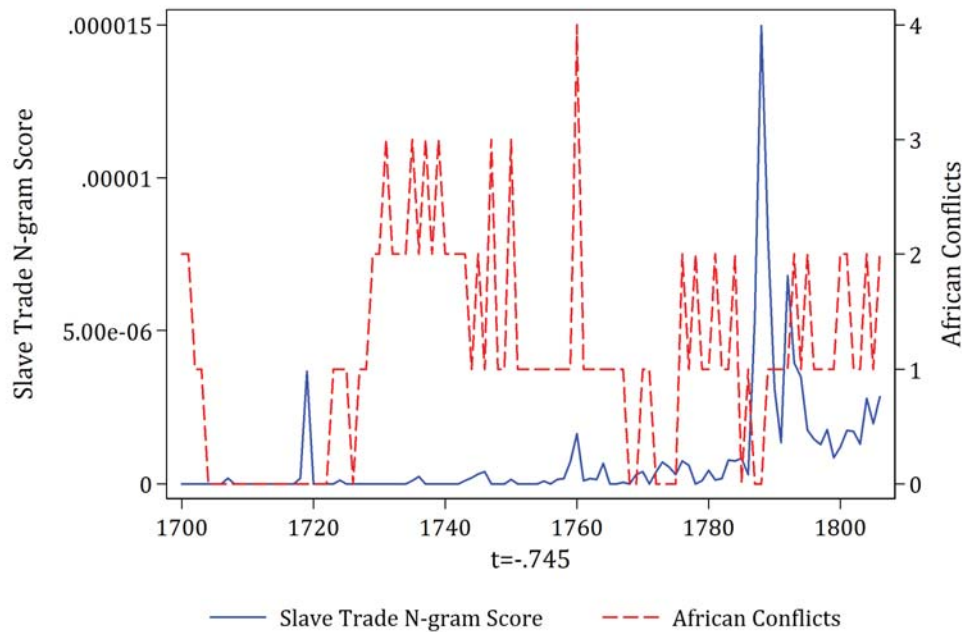
address concerns that this is explained by factors other than adaptation to the suppression of the slave trade. We recognize that, in addition to the Slave Trade Act, suppression included other components such as the American abolition of slave imports from 1808 and prohibitions on British engagement with foreign slave trades after 1806. Rather, we are concerned with other possible explanations of the increase in conflict that did not result from suppression.

3.3.1. *Colonialism.* A first candidate explanation is increasing colonial encroachment by Europeans after 1807. If our main result were simply an artefact of greater conflict between Europeans and Africans (either due to suppression of the slave trade, or due to colonial encroachment), we would expect conflicts in Africa that involve non-Africans to increase discontinuously after 1807. In panel A of Table 3, however, we show that this is not the case. Similarly, to show that white expansion in South Africa is not alone driving the results, we show in panel B that we continue to find an increase in conflict after 1807 when South Africa is excluded from the analysis. Olsson (2009) reports that four African countries were colonized in the period between 1807 and 1840: Sierra Leone (1808), the Gambia (1816), Liberia (1824) and the Ivory Coast (1824). We show in Table A4 in the appendix that the results are similar if these countries are discarded from the analysis.

3.3.2. *Jihad.* Second, the early nineteenth century was a period of jihad throughout West Africa (Curtin, 1971). It is possible that, by chance, these religious conflicts coincided with the suppression of the transatlantic slave trade. To show that this is not driving our results, we discard the “Islamic” zone mapped by Bartholomew and Brooke (1918) from our analysis in panel J of Table 3. The results remain similar to our baseline.

3.3.3. *Suppression as a response to conflict.* Third, if the Slave Trade Act had been a response to an increase in conflict in Africa, our results would be contaminated by this reverse causation. There is, however, no evidence for this in the literature on the Slave Trade Act. Radical writers such as Williams (1944) have argued that the Slave Trade Act was part of a capitalist assault on barriers to trade. More mainstream work focuses instead on ideological opposition to slavery by both influential abolitionists (Eltis, 1987) and the British public (Drescher, 1994). Further, we can show that interest in the slave trade was uncorrelated with the incidence of conflict in Africa before 1807. Using the Google Ngram Viewer, we plot the fraction of books published in English that mention the slave trade in Figure 5. Though there is an increase in interest in the slave trade in years preceding the Slave Trade Act, the correlation between this series and the number of intra-African conflicts reported by Brecke (1999) is insignificant.

FIGURE 5. Interest in the slave trade over time

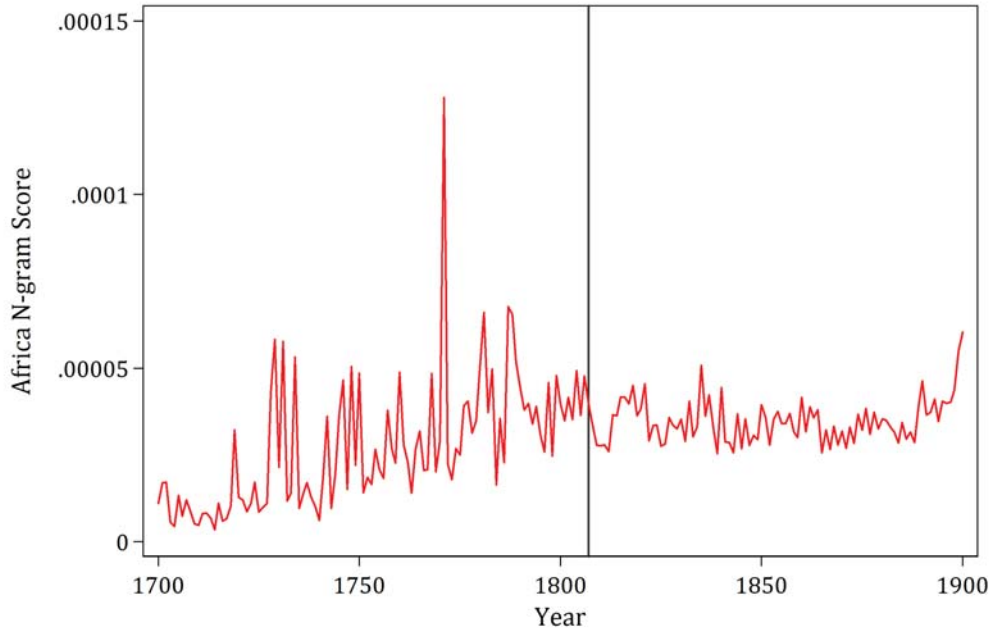


The n-gram score is the fraction of books in English reported by the Google Ngrams Viewer to contain the phrases “slave trade,” “Slave trade,” “Slave Trade” or “SLAVE TRADE”. The number of intra-African conflicts is from Brecke (1999).

3.3.4. *Greater measurement of conflicts.* Finally, it is possible that a greater number of documentary sources were produced after 1807 in which intra-African conflicts were recorded. More missionaries and explorers, for example, may have visited Africa. We show in Figure 6, however, that the Google Ngrams Viewer reports no increase in the number of books published after 1807 that mention Africa.

The survey by Warneck (1901, p. 188-236) reveals the slow progress of Protestant missionaries in West Africa, outside of Sierra Leone, which we show can be discarded in Table A4. The Ivory Coast had no mission by 1901. The Wesleyans began work in the Gold Coast in 1834, while the Basel Mission in the same country dated to 1828. The Bremen Mission in Togo had been in operation since 1847. Church Missionary Society efforts among the Yoruba had their origins in the 1830s and 1840s, while missionary work in other parts of Nigeria and Cameroon was even more recent. Sundkler and Steed (2000) provide a similar chronology; missionary incursion was minor in the years after 1807, and instead gained speed from the mid-nineteenth century onwards. American Baptist efforts did not begin until 1821, and were largely confined to Liberia until the mid-nineteenth century (Gammell, 1854).

FIGURE 6. Interest in Africa over time




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The n-gram score is the fraction of books in English reported by the Google Ngrams Viewer to contain the word “Africa”. The t-statistic reports the significance of the coefficient on African conflicts obtained by regressing the N-gram score on the number of African conflicts.

Further, we show in the appendix that conflicts do not move further from the coast after 1807, as would be expected if Europeans were recording more wars as they gained better knowledge about the interior of Africa (Table A6). We regress the average distance from the coast of the conflicts in a given year on a year trend, a post-1807 dummy, and a post-1807 year trend. We find either that there was no change in the typical distance of a conflict from the coast, or that conflicts became closer to the coast after 1807, depending on the time window used. This is true both for conflicts within the treatment zone, or conflicts in both the treatment and control zones.

In addition, we show in the appendix that discarding all conflicts near the routes of major explorers does not substantially change the results. These are mapped in Century Company (1911), which has been digitized by Nunn and Wantchekon (2011). We identify all conflicts that occurred within 250 km of the route of an explorer who passed through Africa between 1807 and 1847 (the end date of our largest window) and remove these from the counts of conflicts. The results (in Table A7) remain similar to the baseline.

## 4. MECHANISMS

While West African slave exports declined after 1807, West-Central Africa and Southeast Africa expanded their involvement in the transatlantic slave trade. Political authorities in both regions were compelled to adapt to changing circumstances. In both regions, the response included a greater resort to conflict. Where demand for slaves increased, slaves were produced through violence. Where demand fell, non-state interests gained influence, while existing authorities used violence to maintain their power. In this section, we interpret our results within the historical literature on the period, present a simple model, and outline the conflicts that occurred after 1807 in two specific examples – southwestern Nigeria and southeastern South Africa.

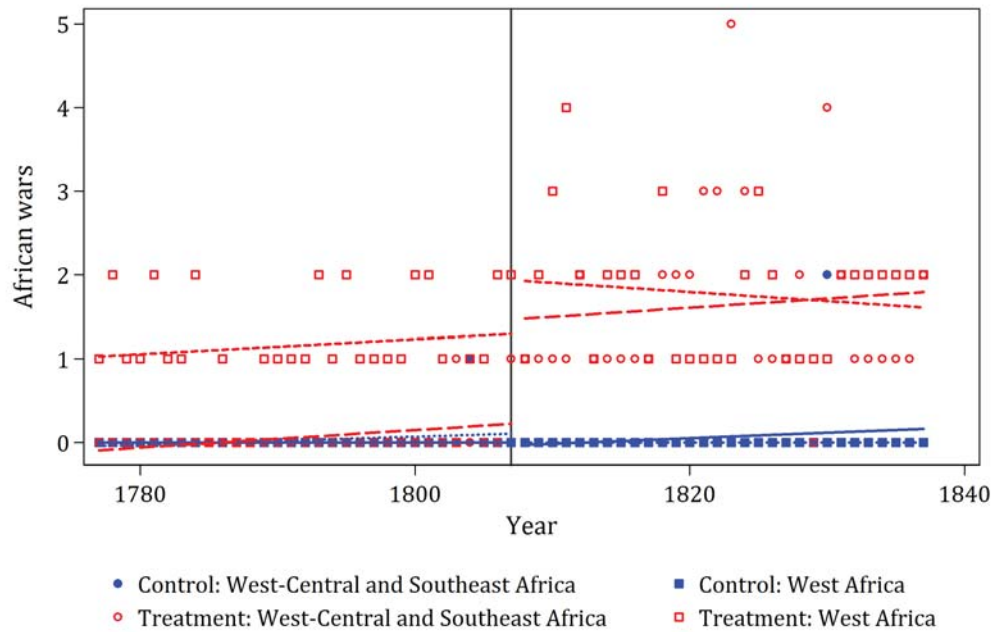
Militarization increased across the continent (Reid, 2012). Lovejoy (1989) in particular claims that the collapse of the Lunda states, the jihads in West Africa, the activities of the Cokwe, insecurity in Igboland, and enslavement during the Yoruba wars are all examples of violence shaped by the slave trade and its suppression. He argues that the external slave trade “shaped slavery and society in Africa, and that internal factors intensified slavery as the external trade contracted” (p. 390).

In Table 4, we show that both West Africa and Southeast/West-Central Africa experienced increases in violence. The break is larger in Southeast/West-Central Africa, and the difference is statistically significant. The fundamental difference between the two regions is the nature of the demand shift after 1807. The relative fortunes of slave suppliers in West Africa and Southeast/West-Central Africa are captured by Figure 8. In West Africa, the prices of slaves fell immediately due to the suppression of demand. In the rest of Africa, slave prices rose after 1807, as demand was diverted southwards. In the model below, we represent the pressures faced by slave-supplying elites as price shocks. The mechanisms by which suppression of the slave trade contributed to increased violence differed across these broad regions.

**4.1. West Africa.** Two general effects of 1807 tended to increase violence in West Africa: the increased power of non-state interests, and the responses by existing authorities to the disruption of the slave trade. Violence was used to suppress rivals. The internal use of slaves in both production and combat increased, and violent enslavement remained worthwhile. Despite the declining external demand for slaves, revenues from their sale remained important in securing imported materials, notably horses and guns, that states relied on to preserve their power.

British suppression of the slave traded provided new economic opportunities to interests that challenged the authority of existing states. In Asante, abolition of the export trade made slaveholding affordable for commoners, weakening the relative power of the elite (Whatley, 2011). Capital accumulation by non-state interests became easier. Further, the prevalence of idle slaves became a matter of social concern as captives began to flood metropolitan Asante (Whatley, 2011). Throughout

FIGURE 7. West Africa v. West-Central and Southeastern Africa



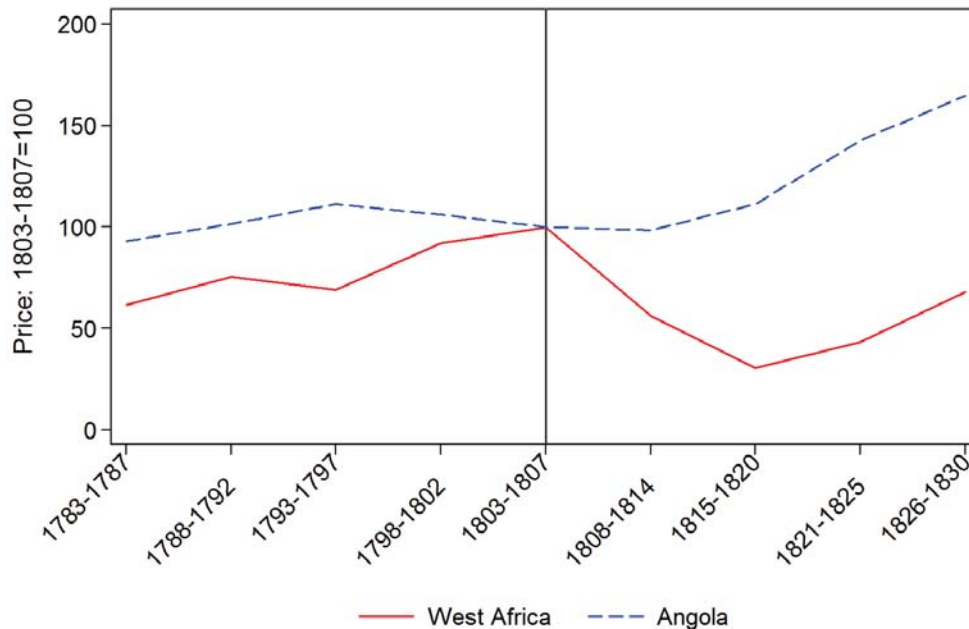
The lines in this figure represent predicted values from results presented in column 4 of Table 4. Points correspond to raw data.

West Africa, suppression of slave exports made it more difficult to dispose of slaves if they threatened stability (Rashid, 2003, p. 143). The jihads in West Africa that threatened existing powers attracted escaped slaves as supporters (Hiskett, 1976, p. 166-7).

Osadolor (2001) provides a similar narrative for the Benin Kingdom. The extraordinary power struggles that plagued the state in the nineteenth century were driven by an economic crisis, which “was the impact of commercial transition, of which the ruling aristocracy attempted to balance economic interests and domestic political constraints through the reorganization of power and the search for a military strategy capable of protecting vital interests” (p. 172). The Oba (king) had maintained a protectionist policy under which outside traders could not operate in Benin, coastal trade with Europeans and Itsekiri middlemen was restricted, trade was heavily taxed, royal monopolies existed over critical products, and the Oba and chiefs were given special privileges (p. 173). Trade shifted the balance of power among the nobility (p. 174). Further, the growth of European trade through Lagos weakened Benin’s control of subject populations. The character of warfare changed



FIGURE 8. Real slave prices



Source: Lovejoy and Richardson (1995a).

over the nineteenth century; “campaigns were no longer embarked upon for the expansion of the frontiers of the empire, but rather were attempts to consolidate the territorial gains of the previous centuries” (p. 174).

In Senegambia, Curtin (1981) suggests that the gradual decline of the slave trade and the progressive shift towards the production of cash crops put European goods, most notably guns, in the hands of the peasantry. As authorities became more oppressive due to their declining revenues, this enabled peasants to respond by supporting Muslim clerics that challenged royal authority. Klein (1972, p. 424) takes a similar view, arguing that “the peanut trade put money, and thus guns, in the hands of peasants.” Trade that had been seasonal became year-round, leading to the permanent presence of outside traders.

Declining Atlantic demand for slaves threatened the power of West African states. Lovejoy and Richardson (1995b, p. 42) suggest that “[a]ll the states in the immediate interior of the Gold Coast and the Bights of Benin and Biafra appear to have experienced political unrest in the period.” In Asante, rulers had used the slave trade to bolster their power by redistributing profits to their loyal supporters (Aidoo, 1977). The shock of 1807 reduced Asante imports by £200,000 to £400,000 per year, substantially affecting living standards (Whatley, 2011). Throughout West Africa,



abolition also restricted the availability of imported currencies such as cowries and copper (Hogendorn and Gemery, 1981).

In Senegambia, Klein (1972, p. 422-3) argues that the slave trade had strengthened political authorities through three main channels. First, participation in the slave trade was necessary to acquire horses and firearms. Second, the slave trade helped elevate the warrior and noble classes above the peasantry. Third, the slave trade enabled rulers to redistribute wealth in order to solve internal tensions and conflicts. Loss of these benefits weakened local states. Smaldone (1977, p. 22), similarly, cites the “relative weakness and decline of Gobir” as one of the events that had paved the way for jihad in 1804.

States were forced to react to these changes. Trade deficits after 1827 led the Asante state to raise taxes on gold mining (Whatley, 2011). Palm oil exports were slow to grow, and did little to offset trade deficits. The state needed to reduce consumption to maintain the trade balance, and accomplished this through a combination of force and fear, collecting more taxes and attempting to tighten its monopoly on trade. Trade in slaves, ivory and gold were all heavily controlled by the Asante state (Aidoo, 1977).

Enslavement increased throughout Africa after 1807 (Lovejoy, 1989, p. 390). By the end of the nineteenth century, slaves accounted for between 18% and 35% of the population in several parts of West Africa (Lovejoy, 1989, p. 391-2). Johnson (1976, p. 488-9) estimates that half the population in the Fulani regions of nineteenth century West Africa were slaves. Many of these slaves were captured violently. Further, the slave raiding and pillaging that were widespread in the nineteenth century did not require destroying the enemy, and so left open the possibility for later conflict (Klein, 1972, p. 426).

The existing literature has argued that the value of slaves in production created an incentive for continued raiding. Slave villages around Kumasi grew in size as a result of abolition (Aidoo, 1977). In Sokoto, slave farms were an important form of capital investment for the wealthy, and these expanded over the nineteenth century (Smaldone, 1977, p. 148). These were acquired through warfare and raiding as much as through purchase (Lovejoy, 1978, p. 342,346,363). In particular, slaves within Sokoto were concentrated in the hands of political leaders, and so it was not commoners who held large plantations (Lovejoy, 1978, p. 352,359). In Masina, “serfs” produced grain both for the benefit of the state and for private individuals (Johnson, 1976, p. 488).

On average, commodity production may have either increased conflict by increasing the return to slave raiding, or reduced conflict by lowering the revenue pressures on local states. Historical literature on Africa after 1807, for example Lovejoy (2011) or Law (2002), refer to this period as a “crisis of adaptation.” Economies that had been dependent on selling slaves struggled to adapt to suppressed demand. Law (2002), similarly, argues that increased warfare resulted from

the shift from slaves to exports of “legitimate” products such as groundnuts and palm oil. In Table 4, we use data from the FAO-GAEZ to divide the treatment region into areas suitable for the cultivation of oil crops and those that are not. Palm oil was Africa’s most important agricultural export in the period after 1807 (Lynn, 2002). Consistent with an interpretation in which the ability to produce export commodities eased the post-1807 transition, we find that the effect of 1807 on conflict was attenuated in these areas. In particular cases, of course, the effect of commodity production may have been heterogeneous.

Slaves were also valuable as soldiers. The infantry of savannah states such as Borno and Bagirmi consisted largely of slaves, while the Oyo cavalry was made up of Nupe, Hausa and Borno slaves (Smith, 1989, p. 43). In Sokoto, slaves were required to perform military service (Smaldone, 1977, p. 76). The use of slave cavalry provided the Caliph with a regular military contingent, and slaves regularly passed their plunder on to their owners (Smaldone, 1977, p. 135). In Masina, a successful campaign using slaves as soldiers could pay for itself (Johnson, 1976, p. 485). In the Sokoto caliphate, pillage by campaigning armies provided both resources and provisions (Smaldone, 1977, p. 76-77). Islamic law required that a fifth of this plunder went to the state treasury (Smaldone, 1977, p. 91).

Despite suppression of the slave trade, slaves remained an important means of acquiring firearms and horses. States along the Gold and Slave Coasts were dependent on imported firearms throughout the eighteenth century (Osadolor, 2001; Richards, 1980). Firearms and horses were expensive, and usually imported, either from the coast or over the Sahara (Law, 1976; Smith, 1989). While bullets were manufactured locally, powder was also imported (Smith, 1989, p. 86). Although local breeds of pony existed in West Africa, larger horses were mostly imported, primarily in trans-Saharan trade due to their vulnerability to sleeping sicknesses spread by tsetse flies (Smith, 1989, p. 89-90).

A “guns-for-slaves” cycle emerged during the slave trade, in which imported firearms were needed to protect against slave raids, but could only be bought through the production of slaves (Inikori, 1977). Societies that attempted to abstain from the slave trade found themselves unable to secure firearms for self-defense and fell victim to their neighbors (Thornton, 2002, p. 5). Hiskett (1976, p. 138-9) describes a similar dynamic in late eighteenth and early nineteenth century Hausaland, in which the recent availability of muskets had contributed to a guns-for-slaves cycle. Borno depended on Ottoman sources for firearms, which were purchased with slaves (Bah, 2003, p. 15). Even where firearms were not used, stateless societies such as the Balanta relied on selling slaves to secure the iron needed to make weapons (Hawthorne, 2003, p. 154).

Further, firearms had changed the nature of warfare in many parts of Africa prior to 1807, including Futa Jallon (Thornton, 2002, p. 46), the Gold Coast (p. 61), and the gap of Benin (p. 81). Islamic states such as Borno and Sokoto raided

their neighbors for slaves that could be sold to passing marabouts; for Smith (1989, p.30-31) “the conclusion cannot be resisted that in such cases religion furnished only a pretext for war.” States could keep firearms and (to a lesser extent) horses under their control in times of both war and peace, as they were typically beyond the purchasing power of an individual soldier (Smith, 1989, p. 66). Forest-zone states such as Ashanti and Dahomey, as well as coastal and riverine powers along the Niger, Cross and Nun rivers were careful to establish royal monopolies over the firearms trade (Smaldone, 1977, p. 103).

Firearms that could be purchased through the sale of slaves were no less essential during the nineteenth century, prompting states to continue their efforts at enslavement despite depressed prices (Smith, 1989, p.31). Tellingly, gunpowder shipments to Africa did not fall after 1807 (Whatley, 2011). A nineteenth-century state that could neither acquire firearms or horses risked military defeat, as in the case of Masina (Johnson, 1976, p. 495). After 1807, the inland reach of imported firearms was extended, particularly through Yorubaland (Smaldone, 1977, p. 103).

While firearms were not particularly important in the savannah after 1807 (Smaldone, 1977, p. 97), the use of regular cavalry by jihadists as early as 1817 “entailed a fundamental change in the nature of the insurgents’ military organization” (Smaldone, 1977, p. 32). For Sokoto, like earlier Sudanic states, the supply of horses was a key priority. These were acquired through: appropriation as taxation, tribute, and war booty from the vanquished; selective and systematic local breeding, and; interstate and inter-emirate commerce (Smaldone, 1977, p. 48).

**4.2. West-Central and Southeast Africa.** The mechanism for increased conflict in West-Central and Southeast Africa was more straightforward. The increased demand for slaves was met in part through greater violent enslavement. According to Thornton (2002, p. 128):

Most were enslaved in Africa as a result of wars between African armies, or by raiders and bandits that arose from these wars, or from the breakdown of social order that often accompanies war, especially civil war.

In West-Central and Southeast Africa, the “[e]ffects of British efforts to abolish the maritime slave trade after 1807 rippled across the slave-trading hinterlands of the African continent, gathering strength, until they became a tumult” (Gordon, 2009). Increased demand came from greater Portuguese and Brazilian purchases, and expansion of slave trading in the interior for African use. Internal African slavery became sharper and more hierarchical. Miller (1996) provides a similar account. Warlords gained political importance, controlling (for example) the trade in ivory. In Gordon’s view,

The British abolition of the slave trade in 1807 intensified the slave trade in the south-central interior, resulting in new forms of violence

that eroded the control of Luba and Lunda rulers over trade and agricultural production, widened social cleavages, and empowered gun-wielding warlords. (p. 937)

Although his focus is on the Indian Ocean slave trade later in the nineteenth century, Reid (2007) highlights an analogous role of slave demand in East African conflicts. Traders such as Tippu Tip wrought “violent and rapid economic upheaval” in the northern Lake Tanganyika area, in their attempts secure dominance of the slave and ivory trades (p. 113). States such as Buganda saw the revenues from sale of captives as a benefit of violence, while some non-state groups and communities devoted themselves entirely to raiding others for sale (p.119).

4.3. **Model.** Consider a coastal African ruler who uses violent conflict with the interior to produce a quantity  $S$  of slaves. He obtains these at a cost of  $C(S)$ , where  $C(0) = 0$ ,  $C_S > 0$  and  $C_{SS} > 0$ . These can be divided between export and domestic uses. If he exports  $X$  slaves, he is able to sell them for a price  $p$ , and so obtains  $pX$  in revenue. This leaves  $D = S - X$  slaves for domestic use. The value of their output is  $Y(D)$ , where  $Y(0) = 0$ ,  $Y_D > 0$  and  $Y_{DD} < 0$ . This can be thought of as the sum of their multiple roles, including cash crop production and services to the state such as military enlistment. The ruler’s revenues are, then,  $pX + Y(S - X)$ . Suppose in addition that these revenues are necessary for the ruler to maintain his authority. In particular, he faces a minimum revenue constraint.  $pX + Y(S - X)$  must be greater than  $\bar{R} > 0$ .

Define  $R(S)$  as the maximum revenue that the ruler can achieve by choosing  $X$ , given  $S$ . It is possible to write the ruler’s problem as:

$$\max_S R(S, p) - C(S) \tag{4}$$

$$s.t. R(S, p) \geq \bar{R}. \tag{5}$$

There are two cases to consider: when (5) is binding, and when it is not. When the revenue constraint is not binding, (4) is concave in its arguments and can be solved from its first order conditions. This yields the comparative static that:

$$\frac{\partial S}{\partial p} = -\frac{R_{Sp}}{R_{SS} - C_{SS}} \geq 0.$$

In this case, which we take to describe the experience of West-Central and South-east Africa, growing the demand for slave exports raises the returns to violence, increasing the incidence of conflict.

This prediction is reversed if (5) is binding. In this event, the ruler will select  $S$  so that  $R(S) = \bar{R}$ . Now, the relevant comparative static becomes:

$$\frac{\partial S}{\partial p} = -\frac{R_p}{R_S} \leq 0.$$

In order to keep up with the demands of retaining power, the ruler is forced to respond to a fall in the demand for slaves by increasing his pursuit of conflict. This might occur because (5) is already binding before the suppression of the slave trade, or because suppression curtails demand so severely that the constraint binds. We take this case to approximate West Africa.

4.4. **Examples.** We now turn to the specific historical examples of Southwestern Nigeria and Eastern South Africa in order to make these mechanisms concrete.

4.4.1. *Southwestern Nigeria.*

*Example: Fulani-Oyo (Nigeria), 1811.*

In the late 18th century, Oyo was the dominant power in the Yoruba-speaking regions of Nigeria. However, from 1780 to 1830, the state was crippled by a series of internal struggles and revolts in its tributary areas that culminated in its conquest by Ilorin in 1830. The city-states that emerged from this collapse descended into a series of conflicts that ended with British conquest in the 1890s.

The collapse of Oyo and subsequent civil war was due in part to the state's loss of revenue from the slave trade (Reid, 2012). Smith (1971, p. 187-8) cites overdependence of the state on the slave trade and its decline after 1807 as a reason for the collapse of Oyo. The slave trade, in his view, crowded out other economic activity, created rivalry with Oyo's neighbors, shifted economic interest towards the coast and away from the capital, and made Oyo vulnerable to a the decline in trade after 1807.

Law (1977, p. 255) argues that a decline in slave exports from the 1790s onwards cut into the revenues of the central state, which led to greater taxation of the outlying regions that soon rebelled against Oyo rule. Further, Oyo had lost the capacity to protect them against raids from the North. In the south, the slave trade shifted eastwards towards Lagos, and was in Ijebu hands by the early nineteenth century. Ijebu acquired slaves by taking captives from other southern Yoruba groups such as the Owu and Egba, or by purchase from northern supply routes that bypassed Oyo (Law, 1977). In 1817, Ilorin broke free of Oyo. Dahomey followed in 1823 (Law, 1977). By the 1820s, Oyo was in an economic depression, brought on by loss of revenues from slave exports and other sources of trade (Law, 1977).

Rulers of the city-state successors to Oyo practiced four "modes of adaptation" to the new economic order: allocating slaves to commodity production, tightening control over trade, exporting slaves despite the blockade, and using military strength to extract plunder and tribute from neighbors (Hopkins, 1968). The palm oil trade was widely viewed as less profitable to rulers than the slave trade (Law, 2002). Despite British suppression, slave exports continued, and numbered in the tens of thousands between 1815 and 1850 (Falola, 1994). Rulers' restrictions on trade were themselves a source of conflict, both between themselves and with Europeans (Law, 2002).

Law (2002) follows Hopkins (1968) in arguing that the last phase of war, from 1877 to 1893, was driven primarily by the economic transition. The commercial transition had undermined the wealth and power of existing rulers, causing them to resort to warfare and plunder to maintain their incomes. The rise of the war chiefs in Yorubaland was a response to the need for political leaders to defend agriculturalists against slave raiding – “one of the most tempting sources of wealth lay in raiding for slaves, selling them, and then in keeping the army profitably employed by plundering the towns and farms of neighboring states” (Hopkins, 1968).

Within southwestern Nigeria, the internal use of slaves rose after 1807. Agriculture grew in extent, and expanded into the production of palm oil and kernels for export. Slaves were used in production, and in transporting produce to coastal towns (Falola, 1994). Slaves were also central to the economies of the larger towns (Falola, 1994). This “domestic” slavery remained integral to the economy, even after slave exports became insignificant in the 1850s (Falola, 1994).

Yorubaland became militarized, and the internal use of slaves was a critical part of this process. Because war provided both slaves and other resources, “economic considerations were as important as the political ones in determining the issues of war and peace” (Awe, 1973). Slaves and other resources were sought in war, kidnapping, and raids (Falola, 1994). Indeed, Falola (1994) argues that the incentives of political actors to maintain large households better explains slave raiding in the first half of the century than the possibility of exporting them.

Taking prisoners was an important aim, even if wars had other political causes. In at least one instance, Ibadan so burdened itself with captives that it delayed the defeat of Ijaye (Ajayi and Smith, 1971). Ajayi and Smith (1971) believe that the ability to take captives increased the incidence of conflict by prolonging wars, rather than causing them. As Reid (2012) puts it, the ultimate aim of war in the nineteenth century was maximization of human resources. Because the war chiefs who dominated Ibadan’s politics (and many other cities) had to be ready to “fight, farm and trade,” war chiefs depended on slaves for power (Awe, 1973). Slaves, then, could be armed by their owners and used to acquire more slaves (Falola, 1994).

#### 4.4.2. *Eastern South Africa.*

*Example: Mtetwa (Bantu)-tribes (South Africa), 1807-17.*

The early nineteenth century was a period of prolonged war between the Ngoni states of eastern South Africa. The main figure in this process was Shaka, who created a Zulu state that expanded aggressively before his assassination in 1828. There is a long historiography on this disorder. A variety of causes have been asserted, including drought, white encroachment, Malthusian pressure, ecological change, Shaka’s personality, and tactical innovations (Ballard, 1986; Gump, 1989; Omer-Cooper, 1976). The “Cobbing critique” (Cobbing, 1988) suggests that the slave trade was a critical component of this period.



In Cobbing's account, slave demand at Delagoa Bay and Griqua slave raids were the main pressures driving conflict in the region. He argues that Ndebele migrations starting in 1817 resulted first from the slave trade at Delagoa Bay and later by Boer and Griqua raids. The slave trade expanded from 1815, due both to demand for sugar that rose after the Napoleonic wars and British suppression of the slave trade in other regions. From 1818 to 1830, he estimates that more than 20,000 slaves were exported from a region with a population less than 180,000. The Zulu actively raided their neighbors for slaves to meet this demand. Gordon (2009) adds that British curtailment of slave imports into the Cape after 1806 prompted white farmers to turn to the interior for their supplies of slaves.

Although this view is controversial, Cobbing's opponents have come to recognize the importance of slave exports in sustaining the Ngoni wars. Hamilton (1992) argues that Cobbing (1988) overstates the size of the slave trade from Delagoa Bay and its importance in perpetuating violence during the period. Eldredge (1992), in particular, suggests that the slave trade from Delagoa Bay only became significant from 1823. Even Eldredge (1992), however, recognizes the slave trade was essential at sustaining these conflicts in the 1820s; war captives were exported. Omer-Cooper (1993), similarly, acknowledges that Ngoni state-building experiments were a response in part to the slave trade.

## 5. CONCLUSION

We have shown that British suppression of the slave trade precipitated an increase in the prevalence of intra-African conflict. The effect we find is large; after 1807, the incidence of conflict roughly doubled in regions affected by the slave trade. This pattern is robust to multiple alternative specifications, and cannot be explained by other contemporaneous events, such as colonial intrusion, jihad, or missionary expansion.

Of course, there are limitations to our analysis. Because we lack data on belligerents' aims and conflict outcomes, direct evidence on the mechanisms for this increase in violence must come from the secondary literature. 1807 was a unique event. This prevents us from making a more general inference about the relationship of the slave trade and warfare in Africa over the longer run. Despite these concerns, our results have general implications. Both positive and negative shocks, then, play a role in generating conflict. The mechanisms we highlight are an increase in the returns to violence and the challenge of responding to economic change. In both directions, the "crisis of adaptation" spurred conflict. Our study thus contributes to the understanding of historical conflict in Africa. To the extent that historical conflict is associated with present conflict and therefore to worse modern development outcomes, our study contributes to a deeper understanding of the causes of both modern conflict and development.



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Table 1. Summary statistics: Number of African-only conflicts, 1757-1857

	(1)	(2)	(3)	(4)	(5)
	Mean	s.d.	Min	Max	N
<i>Summary statistics</i>					
Control/Pre	0.041	0.20	0	1	49
Control/Post	0.061	0.32	0	2	49
Treatment/Pre	1.04	0.76	0	4	49
Treatment/Post	3	1.29	1	6	49
<i>T-tests: Equality of means</i>					
Treatment v. Control: Pre	8.88				
Treatment v. Control: Post	15.48				
Pre v. Post: Control	0.38				
Pre v. Post: Treatment	9.15				

Table 2. Main results

	(1)	(2)	(3)	(4)	(5)	(6)
<i>Number of intra-African conflicts</i>						
Treatment X Post	1.958*** (0.302)	2.310*** (0.295)	2.206*** (0.285)	2.140*** (0.245)	2.260*** (0.237)	2.124*** (0.242)
Treatment, Post, Year	Y	Y	Y	Y	Y	Y
Treatment X Year	N	N	N	N	N	N
(Year-1807) X Post	N	N	N	N	N	N
Treatment X (Year-1807) X Post	N	N	N	N	N	N
Treatment X Post	1.508** (0.679)	1.352** (0.599)	1.800*** (0.536)	2.004*** (0.465)	1.833*** (0.453)	2.150*** (0.471)
Treatment, Post, Year	Y	Y	Y	Y	Y	Y
Treatment X Year	Y	Y	Y	Y	Y	Y
(Year-1807) X Post	N	N	N	N	N	N
Treatment X (Year-1807) X Post	N	N	N	N	N	N
Treatment X Post	1.496** (0.701)	1.369** (0.618)	1.840*** (0.551)	2.025*** (0.472)	1.863*** (0.454)	2.216*** (0.445)
Treatment, Post, Year	Y	Y	Y	Y	Y	Y
Treatment X Year	Y	Y	Y	Y	Y	Y
(Year-1807) X Post	Y	Y	Y	Y	Y	Y
Treatment X (Year-1807) X Post	Y	Y	Y	Y	Y	Y
Observations	62	82	102	122	142	162
Window	15	20	25	30	35	40

Notes: \*\*\* Significant at 1% \*\* Significant at 5% \* Significant at 10%. All regressions are estimated using ordinary least squares, with robust standard errors.



Table 3. Robustness checks

	(1)	(2)	(3)	(4)	(5)	(6)
<i>A. Number of non-African conflicts as dependent variable</i>						
Treatment X Post	0.183 (0.327)	0.043 (0.283)	0.026 (0.266)	0.287 (0.288)	0.244 (0.261)	0.462* (0.243)
<i>B. Excluding South Africa</i>						
Treatment X Post	0.683** (0.282)	1.055*** (0.275)	1.043*** (0.249)	1.138*** (0.218)	1.372*** (0.210)	1.348*** (0.204)
<i>C. Treatment measured by distance from coast</i>						
Treatment X Post	1.833*** (0.296)	2.214*** (0.293)	2.129*** (0.284)	2.075*** (0.244)	2.204*** (0.237)	2.027*** (0.239)
<i>D. 500 km cutoff</i>						
Treatment X Post	1.958*** (0.397)	2.324*** (0.360)	1.991*** (0.335)	1.634*** (0.297)	1.488*** (0.272)	1.402*** (0.257)
<i>E. 500 km cutoff without 500-1000km zone</i>						
Treatment X Post	1.958*** (0.297)	2.317*** (0.278)	2.098*** (0.273)	1.887*** (0.246)	1.874*** (0.227)	1.763*** (0.214)
<i>F. Treatment measured by country having slave port</i>						
Treatment X Post	0.425 (0.323)	0.860*** (0.295)	0.922*** (0.303)	0.503* (0.282)	0.541** (0.273)	0.596** (0.263)
<i>G. War starts</i>						
Treatment X Post	0.825** (0.371)	0.869*** (0.297)	0.775*** (0.286)	0.613** (0.254)	0.554** (0.238)	0.534** (0.214)
<i>H. War continuations</i>						
Treatment X Post	1.133*** (0.211)	1.440*** (0.202)	1.431*** (0.190)	1.527*** (0.167)	1.706*** (0.152)	1.591*** (0.159)
<i>I. Including the matrilineal belt as "treatment"</i>						
Treatment X Post	1.958*** (0.302)	2.310*** (0.295)	2.286*** (0.288)	2.206*** (0.248)	2.317*** (0.239)	2.174*** (0.244)
<i>J. Excluding Islamic Regions</i>						
Treatment X Post	1.833*** (0.299)	2.271*** (0.304)	2.222*** (0.293)	2.156*** (0.261)	2.303*** (0.244)	2.139*** (0.238)
Observations	62	82	102	122	142	162
Window	15	20	25	30	35	40

Notes: \*\*\* Significant at 1% \*\* Significant at 5% \* Significant at 10%. All regressions are estimated using ordinary least squares, with robust standard errors. Other controls, not reported, are Treatment, Year, and Post.

Table 4. Mechanisms

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Number of intra-African conflicts</i>					
Treatment X Post X West Africa	0.550*	0.705***	0.643***	0.638***	0.744***	0.774***
	(0.298)	(0.252)	(0.217)	(0.185)	(0.173)	(0.162)
Treatment X Post X SEA/SWA	1.408***	1.605***	1.563***	1.502***	1.516***	1.351***
	(0.201)	(0.244)	(0.243)	(0.210)	(0.196)	(0.194)
P-value	0.0187	0.0113	0.00526	0.00227	0.00344	0.0231
	<i>Number of intra-African conflicts</i>					
Treatment X Post X Oil suitable	0.271	0.302**	0.363**	0.335***	0.344***	0.302***
	(0.179)	(0.149)	(0.144)	(0.123)	(0.118)	(0.108)
Treatment X Post X Oil unsuitable	1.688***	2.007***	1.843***	1.804***	1.915***	1.823***
	(0.302)	(0.271)	(0.256)	(0.219)	(0.203)	(0.211)
P-value	0.000100	1.44e-07	1.07e-06	1.74e-08	1.22e-10	5.31e-10
Observations	124	164	204	244	284	324
Window	15	20	25	30	35	40

Notes: \*\*\* Significant at 1% \*\* Significant at 5% \* Significant at 10%. All regressions are estimated using ordinary least squares, with robust standard errors. Other controls, not reported, are Treatment X Group 1, Treatment X Group 2, Group 1, Group 2, Year, and Post.

Table 5: Structural Break Tests From Bai and Perron (2003)

	(1)	(2)
	<i>Treatment</i>	<i>Control</i>
<i>Number of breaks selected</i>		
Sequential Procedure	1	0
Liu Wu Zidek Modified Schwartz Criterion	1	0
Bayesian information criterion	1	0
<i>Date of Break Estimated at 1% Level</i>		
Sequential Procedure	1806	N/A
Repartition Procedure	1806	N/A
<i>Test statistics: Known Numbers of Breaks</i>		
One Break v. Zero Breaks	42.3739***	0.4813
Two Breaks v. Zero Breaks	27.7731***	
Three Breaks v. Zero Breaks	21.6094***	
<i>Test statistics: Unknown Numbers of Breaks</i>		
Equal Weighted Double Maximum Test	42.3739***	0.4813
Weighted Double Maximum Test	42.3739***	0.4813

*Notes:* \*\*\* Significant at 1% \*\* Significant at 5% \* Significant at 10%. Results presented here are for conflicts 40 years before and after 1807 (81 observations). The maximum number of breaks allowed is 3, but the results are exactly the same in terms of number and location of breaks selected by the tests if 1 or 2 breaks are allowed. The trimming parameter is set to 0.20 to accommodate the finite sample, but results are exactly the same in terms of number and location of breaks selected by the tests for values of the trimming parameter equal to 0.10, 0.15 and 0.25. We also allow heterogeneity and autocorrelation in residuals, apply AR(1) prewhitening prior to estimating the long run covariance matrix, and allow for the variance of the residuals to be different across segments.

Appendix: Not for publication.

FIGURE 9. Clemente-Montañés-Reyes Unit Root Test



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This graph reports the t-statistic resulting from a test for a breakpoint in the year indicated on the x-axis.

FIGURE 10. Regions for synthetic control analysis

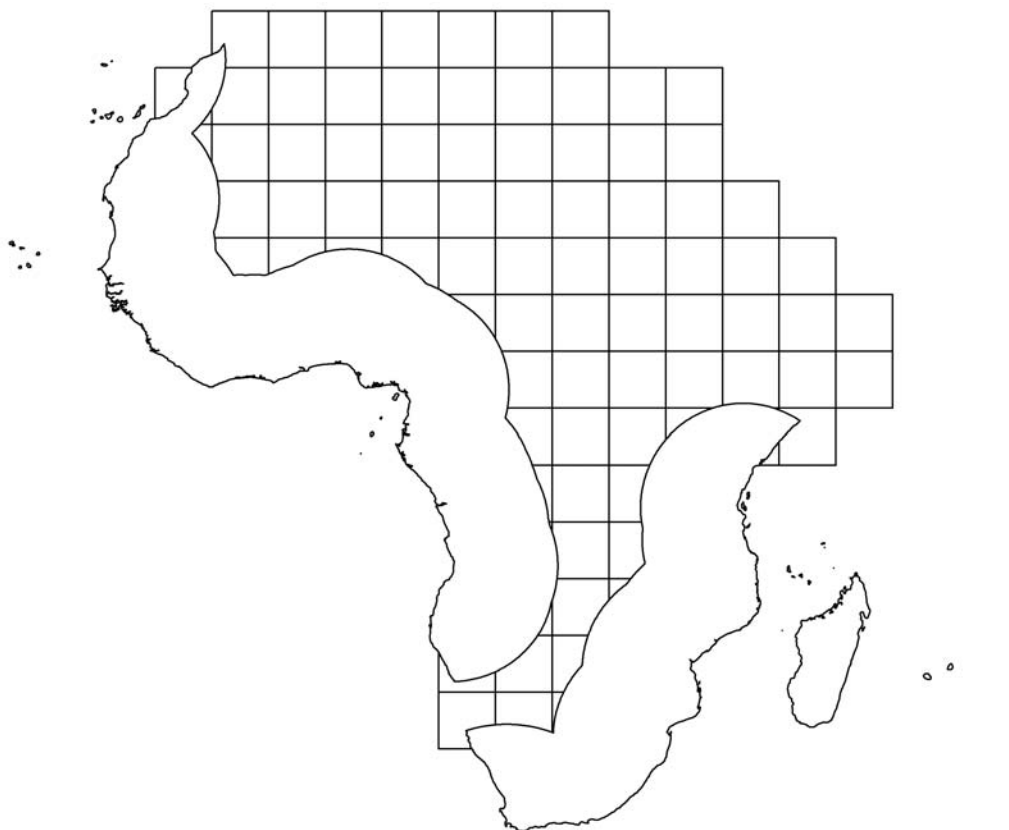
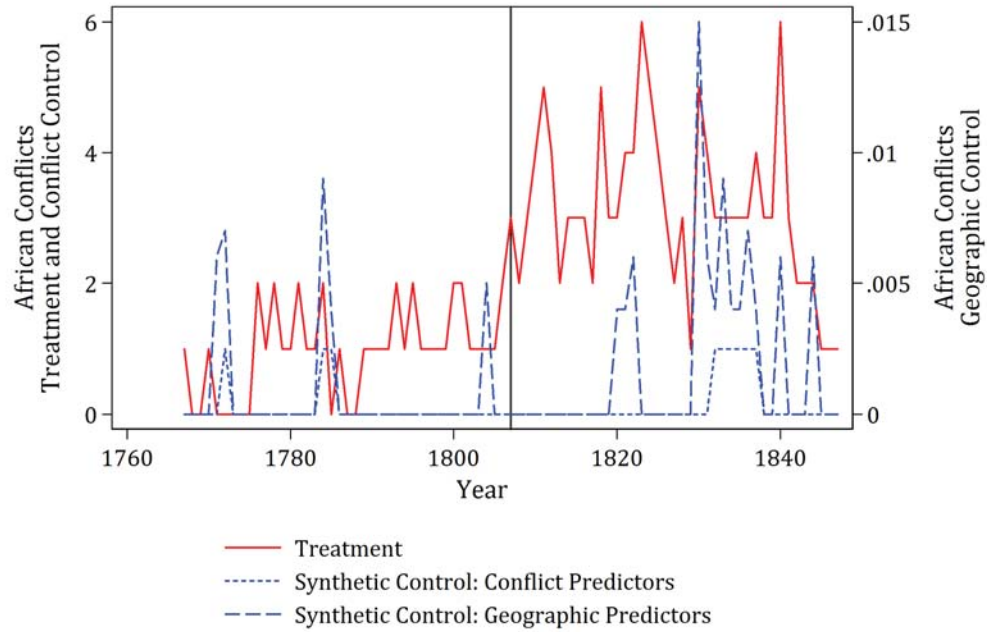


FIGURE 11. Results of synthetic control analysis



This figure reports the results of a synthetic control analysis using the method of Abadie et al. (2010). The weights for the “geographic predictors” synthetic control group are constructed using population density in 1700, malaria suitability, ruggedness, humidity, rainfall, temperature, constraints on agriculture, and elevation. The weights for the “conflict predictors” synthetic control group are constructed using the number of intra-African conflicts every five years from 1775 to 1805.



Table A1. Prais-Winsten Estimation

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Number of intra-African conflicts</i>					
Treatment X Post	1.950*** (0.293)	2.094*** (0.365)	2.169*** (0.314)	2.108*** (0.274)	2.201*** (0.260)	2.003*** (0.332)
Treatment, Post, Year	Y	Y	Y	Y	Y	Y
Treatment X Year	N	N	N	N	N	N
(Year-1807) X Post	N	N	N	N	N	N
Treatment X (Year-1807) X Post	N	N	N	N	N	N
Treatment X Post	1.574** (0.604)	1.181* (0.688)	1.693*** (0.626)	1.898*** (0.547)	1.826*** (0.516)	1.820*** (0.640)
Treatment, Post, Year	Y	Y	Y	Y	Y	Y
Treatment X Year	Y	Y	Y	Y	Y	Y
(Year-1807) X Post	N	N	N	N	N	N
Treatment X (Year-1807) X Post	N	N	N	N	N	N
Treatment X Post	1.566** (0.616)	1.183* (0.696)	1.726*** (0.621)	1.917*** (0.546)	1.850*** (0.507)	1.997*** (0.550)
Treatment, Post, Year	Y	Y	Y	Y	Y	Y
Treatment X Year	Y	Y	Y	Y	Y	Y
(Year-1807) X Post	Y	Y	Y	Y	Y	Y
Treatment X (Year-1807) X Post	Y	Y	Y	Y	Y	Y
Observations	60	80	100	120	140	160
Window	15	20	25	30	35	40

Notes: \*\*\* Significant at 1% \*\* Significant at 5% \* Significant at 10%. All regressions are estimated using Prais-Winsten estimation and allowing errors to follow an AR(1) structure.

Table A2. Including lag intra-African conflicts

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Number of intra-African conflicts</i>					
Treatment X Post	1.814*** (0.534)	1.508*** (0.536)	1.874*** (0.506)	1.789*** (0.433)	1.910*** (0.414)	1.359*** (0.407)
Treatment, Post, Year	Y	Y	Y	Y	Y	Y
Treatment X Year	N	N	N	N	N	N
(Year-1807) X Post	N	N	N	N	N	N
Treatment X (Year-1807) X Post	N	N	N	N	N	N
Treatment X Post	1.418* (0.742)	1.048* (0.605)	1.519*** (0.576)	1.654*** (0.559)	1.634*** (0.510)	1.379*** (0.517)
Treatment, Post, Year	Y	Y	Y	Y	Y	Y
Treatment X Year	Y	Y	Y	Y	Y	Y
(Year-1807) X Post	N	N	N	N	N	N
Treatment X (Year-1807) X Post	N	N	N	N	N	N
Treatment X Post	1.415* (0.755)	1.048* (0.608)	1.551*** (0.585)	1.674*** (0.565)	1.668*** (0.505)	1.605*** (0.506)
Treatment, Post, Year	Y	Y	Y	Y	Y	Y
Treatment X Year	Y	Y	Y	Y	Y	Y
(Year-1807) X Post	Y	Y	Y	Y	Y	Y
Treatment X (Year-1807) X Post	Y	Y	Y	Y	Y	Y
Observations	60	80	100	120	140	160
Window	15	20	25	30	35	40

Notes: \*\*\* Significant at 1% \*\* Significant at 5% \* Significant at 10%. All regressions are estimated using ordinary least squares, with robust standard errors.

Table A3. Removing observations within 3 years of 1807

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Number of intra-African conflicts</i>					
Treatment X Post	2.083*** (0.324)	2.471*** (0.319)	2.318*** (0.306)	2.222*** (0.257)	2.344*** (0.248)	2.189*** (0.251)
Treatment, Post, Year	Y	Y	Y	Y	Y	Y
Treatment X Year	N	N	N	N	N	N
(Year-1807) X Post	N	N	N	N	N	N
Treatment X (Year-1807) X Post	N	N	N	N	N	N
Treatment X Post	2.117* (1.055)	1.529* (0.895)	2.228*** (0.701)	2.430*** (0.541)	2.097*** (0.542)	2.518*** (0.551)
Treatment, Post, Year	Y	Y	Y	Y	Y	Y
Treatment X Year	Y	Y	Y	Y	Y	Y
(Year-1807) X Post	N	N	N	N	N	N
Treatment X (Year-1807) X Post	N	N	N	N	N	N
Treatment X Post	2.117* (1.087)	1.529* (0.880)	2.228*** (0.700)	2.430*** (0.543)	2.097*** (0.532)	2.518*** (0.497)
Treatment, Post, Year	Y	Y	Y	Y	Y	Y
Treatment X Year	Y	Y	Y	Y	Y	Y
(Year-1807) X Post	Y	Y	Y	Y	Y	Y
Treatment X (Year-1807) X Post	Y	Y	Y	Y	Y	Y
Observations	48	68	88	108	128	148
Window	15	20	25	30	35	40

Notes: \*\*\* Significant at 1% \*\* Significant at 5% \* Significant at 10%. All regressions are estimated using ordinary least squares, with robust standard errors.

Table A4. Removing countries colonized between 1807 and 1840

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Number of intra-African conflicts</i>					
Treatment X Post	2.146*** (0.310)	2.452*** (0.297)	2.242*** (0.292)	2.003*** (0.262)	2.029*** (0.249)	1.923*** (0.241)
Treatment, Post, Year	Y	Y	Y	Y	Y	Y
Treatment X Year	N	N	N	N	N	N
(Year-1807) X Post	N	N	N	N	N	N
Treatment X (Year-1807) X Post	N	N	N	N	N	N
Treatment X Post	1.808** (0.724)	1.667*** (0.622)	2.228*** (0.573)	2.561*** (0.511)	2.343*** (0.488)	2.444*** (0.484)
Treatment, Post, Year	Y	Y	Y	Y	Y	Y
Treatment X Year	Y	Y	Y	Y	Y	Y
(Year-1807) X Post	N	N	N	N	N	N
Treatment X (Year-1807) X Post	N	N	N	N	N	N
Treatment X Post	1.783** (0.743)	1.668** (0.641)	2.272*** (0.583)	2.607*** (0.510)	2.397*** (0.475)	2.520*** (0.447)
Treatment, Post, Year	Y	Y	Y	Y	Y	Y
Treatment X Year	Y	Y	Y	Y	Y	Y
(Year-1807) X Post	Y	Y	Y	Y	Y	Y
Treatment X (Year-1807) X Post	Y	Y	Y	Y	Y	Y
Observations	62	82	102	122	142	162
Window	15	20	25	30	35	40

Notes: \*\*\* Significant at 1% \*\* Significant at 5% \* Significant at 10%. All regressions are estimated using ordinary least squares, with robust standard errors.

Table A5. Removing the control group

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Number of intra-African conflicts</i>					
Post	1.333*	1.205**	1.569***	1.865***	1.746***	2.129***
	(0.656)	(0.581)	(0.511)	(0.451)	(0.443)	(0.461)
Year	Y	Y	Y	Y	Y	Y
(Year-1807) X Post	N	N	N	N	N	N
Post	1.334*	1.231**	1.601***	1.884***	1.776***	2.194***
	(0.682)	(0.602)	(0.525)	(0.459)	(0.444)	(0.435)
Year	Y	Y	Y	Y	Y	Y
(Year-1807) X Post	Y	Y	Y	Y	Y	Y
Observations	31	41	51	61	71	81
Window	15	20	25	30	35	40

Notes: \*\*\* Significant at 1% \*\* Significant at 5% \* Significant at 10%. All regressions are estimated using ordinary least squares, with robust standard errors.

Table A6. Wars do not move further from the coast

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Average distance of wars from the coast, by year</i>					
<i>Panel A. Treatment Group</i>						
Post	25.899 (68.638)	-126.657 (77.196)	-144.845* (72.985)	-191.214*** (69.435)	-149.128** (67.857)	-134.696** (61.709)
Year	Y	Y	Y	Y	Y	Y
(Year-1807) X Post	N	N	N	N	N	N
Post	23.156 (67.035)	-111.727 (73.425)	-133.816* (70.718)	-184.339*** (67.614)	-146.240** (66.224)	-132.281** (58.881)
Year	Y	Y	Y	Y	Y	Y
(Year-1807) X Post	Y	Y	Y	Y	Y	Y
<i>Panel B. Treatment and Control Groups</i>						
Post	25.899 (68.638)	-126.657 (77.196)	-157.248** (74.439)	-216.851*** (70.919)	-161.537** (68.750)	-134.948** (61.594)
Year	Y	Y	Y	Y	Y	Y
(Year-1807) X Post	N	N	N	N	N	N
Post	23.156 (67.035)	-111.727 (73.425)	-147.925** (73.365)	-213.264*** (70.441)	-159.899** (67.852)	-132.961** (59.640)
Year	Y	Y	Y	Y	Y	Y
(Year-1807) X Post	Y	Y	Y	Y	Y	Y
Observations	31	41	51	61	70	79
Window	15	20	25	30	35	40

Notes: \*\*\* Significant at 1% \*\* Significant at 5% \* Significant at 10%. All regressions are estimated using ordinary least squares, with robust standard errors.

Table A7. Removing conflicts within 250km of an explorer route

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Number of intra-African conflicts</i>					
Treatment X Post	1.892*** (0.297)	2.110*** (0.312)	1.966*** (0.287)	1.906*** (0.244)	2.002*** (0.223)	1.899*** (0.225)
Treatment, Post, Year	Y	Y	Y	Y	Y	Y
Treatment X Year	N	N	N	N	N	N
(Year-1807) X Post	N	N	N	N	N	N
Treatment X (Year-1807) X Post	N	N	N	N	N	N
Treatment X Post	1.317** (0.647)	1.381** (0.600)	1.809*** (0.523)	1.942*** (0.460)	1.762*** (0.442)	1.985*** (0.464)
Treatment, Post, Year	Y	Y	Y	Y	Y	Y
Treatment X Year	Y	Y	Y	Y	Y	Y
(Year-1807) X Post	N	N	N	N	N	N
Treatment X (Year-1807) X Post	N	N	N	N	N	N
Treatment X Post	1.287* (0.666)	1.422** (0.613)	1.870*** (0.531)	1.975*** (0.461)	1.802*** (0.431)	2.054*** (0.429)
Treatment, Post, Year	Y	Y	Y	Y	Y	Y
Treatment X Year	Y	Y	Y	Y	Y	Y
(Year-1807) X Post	Y	Y	Y	Y	Y	Y
Treatment X (Year-1807) X Post	Y	Y	Y	Y	Y	Y
Observations	62	82	102	122	142	162
Window	15	20	25	30	35	40

Notes: \*\*\* Significant at 1% \*\* Significant at 5% \* Significant at 10%. All regressions are estimated using ordinary least squares, with robust standard errors.