Resources and Governance in Sierra Leone's Civil War

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Abstract

We empirically investigate the role of natural resources, and bad governance in explaining variation in the intensity of conflict during the 1991-2002 civil war in Sierra Leone. As a proxy for governance quality we exploit exogenous variation in political competition at the level of the chieftaincy. As a proxy for resources we use data on the location of pre-war mining sites. Our main result is that neither governance nor resources robustly explains the onset or duration of violence during the civil war in Sierra Leone.

1. Introduction

Over two-thirds of African countries experienced an episode of civil conflict in the past decades and the search for determinants of the onset, duration and intensity of conflict remains an important topic of debate. One dominant strand in the literature focusses on the economic motives for groups to enter into conflict. Participants in armed conflicts are motivated by material gains or a desire to improve their economic situation, such as the grabbing of natural resource rents. In the literature on the resource curse, has been referred to as the 'greed perspective'. Other reasons for engaging in conflict have to do with identity, rather than income. This includes concerns about injustice, lack of political rights, social marginalisation, and ethnic or religious divisions. The relative importance of these competing explanations remains ill understood and controversial, and presumably varies from one location to the next.

This paper seeks to explain how natural resources and governance quality affect conflict intensity in the civil war that ravaged Sierra Leone between 1991 and 2002. Bad governance in this context implied the exclusion of certain social groups in the development process. Hence we argue that governance quality is correlated with grievances (but we do not deny that alternative interpretations might exist). We analyse spatial and temporal patterns in the conflict data, and link them to exogenous variation in the quality of governance at the chiefdom level (based on the intensity of competition for the chieftaincy) and georeferenced locations of pre-war (diamond) mines. Sierra Leone is a poster child of the resource-based perspective, and its so-called 'blood diamonds' feature prominently in many essays on African conflict. For instance, Collier and Hoeffler (2009, p. 13) note: 'The most celebrated cases are the diamond-financed rebellions in Sierra Leone and Angola'. However, (other) academics have emphasized and implicated the many weaknesses in Sierra Leone's institutional domain. Authors like Richards (2005, p. 588) point out that 'institutional failure,

and not criminal 'greed', should be regarded as the motor [of violence]'. Both at the level of the state (Fanthorpe, 2001; Keen, 2005), the chieftaincy (Fanthorpe & Maconachie, 2010; Acemoglu, Osafo-Kwaako, & Robinson, 2014a) and the village (Mokuwa, Voors, Bulte, & Richards, 2011), Sierra Leone features a well-documented checkered history in terms of corruption, unaccountable leadership, and policy making that is far from inclusive. Hence, Sierra Leone appears to provide support for both the governance and resource perspective on conflict.

This paper addresses the relative contributions of resource abundance and unaccountable local leadership to the intensity of local conflict in Sierra Leone. While the conflict ended more than a decade ago, we believe it is important to understand its underlying motivations. Natural resources continue to constitute an important share of the Sierra Leonean economy, and recent evidence suggests that bad governance, judicial abuse, and grievances persist until this day (for example, Mokuwa et al., 2011). These grievances may be aggravated by recent attempts of the Sierra Leonean government to decentralise the state (Sawyer, 2008; Fanthorpe, 2010). In addition, resource-related conflict have not disappeared from Sierra Leone. The recent surge in investments in land and extractive industry (iron ore, bauxite) has been implicated as a source of tension (Peters, 2013), in some cases resulting in inequality, exclusion and conflict (Baxter & Schäfter, 2013).

There are several antecedents to our analysis, discussed in more detail below. Early papers typically used cross-country or panel models linking conflict (onset, incidence or duration) to measures of resource abundance or dependence at the macro level. The evidence for resources as a catalyst of conflict in these studies is mixed. This may reflect that conflict observations at the country-year level are simply too coarse to pick up important causal effects. As emphasized by Buhaug and Rod (2006, p. 316), 'most hypotheses [about civil war] actually pertain to subnational conditions'. This insight has inspired a small number of

analysts to change focus from the country to the local level. This includes studies of how (weather or price) shocks affect the incidence of conflict for large samples of administrative regions or grid cells, but also efforts to better understand the dynamics of specific conflicts through case studies. These studies tend to support the view that resources or resource extraction incite conflict, but the evidence remains mixed (see for example, Berman, Couttenier, Rohner, & Thoenig, 2014; Arezki, Bhattacharyya, & Nemera, 2015). Our paper fits in this latter wave of research on the determinants of conflict, and focuses on the disaggregated level – the dynamics of conflict at the chiefdom level within Sierra Leone. This perspective implies that macro issues are automatically controlled for (for example, monetary outcomes, macro policies), and also facilitates consistent measurement of key dependent and explanatory variables. The main innovation and contribution of the paper is that we investigate the motivations for conflict in a single local-level analysis. Such an analysis implies the use of exogenous measures of governance quality at the local level. The main reason why such an analysis is lacking in the literature is simply that coherent sets of local governance data are typically not available for African countries. Fortunately, such data do exist for the case of Sierra Leone (see below). Another reason for the lack of attention to local institutions may be the perception that institutional factors are best studied at the country level. However, in many African countries the presence of the state beyond the nation's capital is quite limited, and there tends to be considerable heterogeneity in terms of policy setting and implementation across localities in the 'hinterland'. The paper's second contribution is based on our effort to unravel the dynamics of conflict. We ask whether resources and governance matter for explaining variation in conflict data, but also probe the temporal relevance of these factors by distinguishing between the onset and duration of conflict.

Our main finding is that neither resources nor the quality of local governance robustly explain conflict intensity within Sierra Leone. There is no support for the hypothesis that the presence of diamond mines incited or prolonged the conflict. Similarly, the lack of political competition at the chiefdom level, measuring a potential lack of political accountability, does not appear to have been a factor triggering or extending the RUF rebellion.

Yet, for Sierra Leone our results may seem surprising given the narratives that surround the civil war in Sierra Leone, and we hasten to add an important caveat. Our analysis does not imply that resources or poor governance played no role in the war. We seek to explain *local* variation in conflict intensity against the backdrop of an intense and prolonged war. We cannot exclude the possibility that diamonds or bad leadership (at the macro level), invited or shaped the war across all chiefdoms.

This paper is organised as follows. In section 2 we briefly summarise the literature on the determinants of conflict, focusing on analyses that include resources and institutions. Section 3 presents the context, introduces our data, and outlines our identification strategy. This section contains evidence from colonial times to support the identification strategy. Section 4 presents the empirical results, showing that neither resources nor governance affect the intensity of local violence. The conclusions ensue.

2. Resources, Governance, and Conflict

A large and rapidly growing literature in economics and political sciences studies the causes and consequences of civil war (refer to Blattman & Miguel, 2010, for a survey). A recent overview focusing on the multifaceted role of natural resources as a determinant of conflict is provided by Nillesen and Bulte (2014). It is impossible to do justice to this literature on these pages, but we will try to summarise some key lessons, setting the stage and motivating our own analysis.

For several years, the leading explanation for conflict were the so-called 'greed' and 'grievances' hypotheses.[2] The work of Collier and Hoeffler (1998, 2004, 2009) has been extremely influential in advancing the former perspective. Among other things, they document an inverted U-shaped relationship between a natural resources exports and the incidence of conflict. This is explained by the interaction between various effects. On the one hand, resource rents constitute a 'prize' that rebels might want to grab, and facilitate or finance on-going rebellions. But resource rents also enable incumbent governments to suppress the opposition (see also Ross, 2004; Humphreys, 2005). The opportunity costs of rebelling also feature prominently in such an economic framework, linking the incidence of violence to public good provision (and allocative decisions by, as well as capacity of, the state – see Basedau & Lay, 2009). The empirical evidence supporting the resource perspective is mixed, and the effects of the presence or exports of commodities like oil and diamonds are more subtle and conditional than envisaged in early studies (for example, Ross, 2004; Lujala, Gleditsch, & Gilmore, 2005, but also Elbadawi & Sambanis, 2002; Fearon & Laitin, 2003). Indeed, several recent studies suggest that the impact of resources on conflict is conditional on for example income (Østby, Nordås, & Rød, 2009) and the physical location of the resource (Lujala, 2010).

While it is easy to use a cross-section model and correlate various measures of resource richness to either the onset, incidence or duration of conflict, it is notoriously difficult to jump to causal inference. In particular, potential problems with omitted variables remain.[3] In an effort to attenuate such concerns, analysts have estimated fixed-effects panel models, often leveraging identification from exogenous variation in the prices of key primary commodities. While also producing mixed evidence, these models tend to (further) erode support for the resource curse hypothesis. For example, Brückner and Ciccone (2010) find that the outbreak of violence is likely to follow a downturn in commodity prices. Similarly,

Bazzi and Blattman (2013) find little evidence that price spikes initiate conflict. In contrast, they argue that higher commodity prices are associated with an increased likelihood of the cessation of violence. Such a finding runs counter to the perception of rebels seeking to grab prizes, but instead suggest that resource rents may increase state capacity (enabling the provision of public goods) or increase the opportunity costs of conflict (through enhanced employment in the primary sector). Other analyses seek to identify causal effects by focusing on (exogenous) resource discoveries. For example, Cotet and Tsui (2013) study the discovery of oil fields and find they do not trigger conflict.[4]

The ambiguity of this literature is rather at odds with insights from case studies, or studies focusing on specific countries such as Colombia (Angrist & Kugler, 2008; Dube & Varges, 2013), Sierra Leone (Humphreys & Weinstein, 2008; Bellows & Miguel, 2009), or Sudan (Olsson & Siba, 2013). These studies, together with others that seek to better understand the perspective of prospective rebels (for example, Weinstein, 2005), provide support for the idea that certain resources can play a role in initiating or sustaining conflict.[5] This micro evidence is corroborated by robust results of a recent disaggregated study of the dynamics of conflict across the African continent (Berman et al., 2014; Arezki et al., 2015).[6] Starting from the premise that conflicts have a spatial dimension, and that country-year variation in conflict status may be too coarse to capture key features, both Berman et al. (2014) and Arezki et al. (2015) adopt a grid-based approach to investigate if mineral mines invite conflict. The studies arrive at opposing conclusions based on the time frame under study. Where Berman et al. (2014) find that minerals invite conflict (and that such conflicts may later spread to other parts of the country), Arezki et al. (2015) extend the time frame and find the evidence disappears.

To sum up, the literature on the resource-conflict nexus provides mixed signals about the impact of natural resources on violence. The leading alternative explanation is related to

governance, typically associated with relative deprivation, social exclusion or marginalisation of specific social groups. In his seminal work, Gurr (1970) argues how relative deprivation – the tension between a person's actual state and her beliefs about what should be achievable – determines the potential for collective violence. Ample anecdotal and case study evidence suggests a clear link between relative deprivation and conflict. For example, considering the case of Sierra Leone, the writings of Keen (2005), Richards (2005) and Peters (2006) clearly sketch how the disconnect between an urban elite and rural hinterland, combined with exploitative agrarian and patronage institutions, has been conducive to widespread support for societal transformation – even through violence (see below).

But capturing such ideas in an econometric framework has been far from straightforward. Early efforts have tried to capture social and institutional variables through aggregate inequality measures (such as Gini coefficients), but largely failed to produce significant associations (for example, Fearon & Laitin, 2003; Collier & Hoeffler, 2004). Other work has focused on so-called horizontal inequality (based on inequality coinciding with identity-based cleavages, see Stewart, 2000; Østby et al., 2009), or on ethnic diversity and conflict (for example, Horowitz, 1985; Montalvo & Reynal-Querol, 2005; Esteban, Mayoral, & Ray, 2012). Østby et al. (2009) adopt a disaggregated approach to studying (horizontal) inequality and conflict. The latter study finds that both inter- and intra-regional inequalities increase the risk of violence, suggesting that the quality of local governance is a key factor explaining conflict – bad governance tends to translate into poor economic performance (say, through inadequate provision of public goods) and does little to ameliorate local income differentials. This is consistent with the interpretation of Fearon and Laitin (2003) that state capabilities are at the heart of many crises of violence. It also naturally links the literature on grievances and conflict to the literature on the quality of governance as determined by precolonial factors (for example, Michalopoulos & Papaioannou, 2013), experiences during

the colonial era (Mamdani, 1996; Acemoglu, Johnson, & Robinson, 2001) or postcolonial reconstruction efforts (see Casey, Glennerster, & Miguel, 2013; King & Samii, 2013).

3. Context, Data and Identification

3.1 Conflict in Sierra Leone

Sierra Leone suffered from a civil war between 1991 and 2002. Over half of the population was displaced, an estimated 50,000 Sierra Leoneans were killed, and thousands were victims of amputations, rapes, and assaults (Smith, Gambette, & Longley, 2004). Explanations for the civil war in Sierra Leone have mainly (and perhaps too simplistically) centred around resource wealth and local grievances. Some authors point to the prominent role of extraction and smuggling of (blood) diamonds in starting or sustaining the conflict. Keen (2005, p. 212) documents how armed groups participated in diamond smuggling during the conflict, and argues that the control of diamond-rich areas was an important objective for warring groups as 'battles were largely restricted to the areas with the richest diamond deposits'. The role of diamonds in shaping the dynamics of the war also featured prominently in the case against the former president of Liberia, Charles Taylor, at the Special Court for Sierra Leone (SCSL), who allegedly aided the RUF rebel group.

Other scholars argue that the insurgency was principally motivated by bad governance. The dismal state of governance at the national level in Sierra Leone is extensively discussed by Reno (1995). But governance issues are also manifest in the rural areas, governed by an intricate system of patron-client relationships, spearheaded by paramount chiefs. Individuals are dependent on these highly exclusionary traditional institutions if they want to access property or gain political rights. Enforced community labour and the lack of opportunities created by this system resulted in a large class of excluded, low-status individuals (mostly young men, descending from slaves) that felt

disenfranchised and who believed they had little stake in economic development (for example, Richards, 1996, 2005; Fanthorpe, 2001; Sawyer, 2008). Matters are worsened by abuse of the local judicial system to advance the interests of the privileged class (Mokuwa et al., 2011). Moreover, in the decades before the war, some chiefs enriched themselves through illicit diamond deals, while doing little to provide public services such as health care and education (Reno, 1995; Bratton, Van de Walle, & Lange, 1997; Richards, 1996). Considering this evidence, Sierra Leone seems to fit the conventional wisdom that African chiefs may be unaccountable despots (Mamdani, 1996), with their position of authority fortified by colonial systems of indirect rule allowing them to avoid accountability to their local constituencies (Boone, 2003). Such (de facto) chiefly powers have persisted over time through systems of clientelism (Acemoglu & Robinson, 2008).

Richards (1996) emphasises that the initial motivations of the main rebel group (the RUF) were idealistic and guided by a strong sense of political grievances related to the perceived failings of the corrupt institutional structure. RUF propaganda complained about exploitation, and railed against 'the raping of the countryside to feed the greed and caprice of the Freetown elite and their masters abroad' (Richards, 1996, p. 27). RUF propaganda also emphasised the almost feudal relationships in the class-based agrarian society that characterises the hinterland, as is evident from their slogan 'no more master, no more slave!'. Indeed, grievances in rural Sierra Leone are more likely to be associated with governance and class-based production relations than with ethnic tensions between the countries major ethnic groups (the Mende and Temne). For example, Glennester, Miguel, and Rothenberg (2013) document that ethnic issues are not important for the provision of public goods.

3.2 Dynamics of the Sierra Leonean war

The civil war in Sierra Leone lasted between 1991 and 2002, and eventually engulfed all 149 chiefdoms of the country. However, there is considerable variation in conflict intensity

across time and space. Figure 1 shows the number of conflict events such as deaths and injuries over time.[7] Conflict dynamics across space are mapped in Figure 2. Violence peaked on several occasions. There was much violence in the eastern part of the country, in 1991, when RUF rebels entered Sierra Leone from Liberia. The violence later spread north and west towards Kenema, Bo and the Freetown peninsula. Subsequent peaks in violence followed in 1994-1995, and again in 1997. In January 2002, the war was declared over, and an internationally-brokered peace agreement was signed. In what follows, we exploit the variation across space and time to examine how resources and governance relate to conflict in Sierra Leone.

<< Insert Figures 1 and 2 about here >>

3.3 Data

***Conflict**:* Our main dependent variable is conflict intensity, derived from two sources. Panel A of Table 1 summarises our data. We use data from a nationally representative household level survey conducted by the Institutional Reform and Capacity Building Project (IRCBP) in 2007. IRCBP was a project funded by the Wold Bank to assist the government of Sierra Leone in the decentralisation process. The dataset contains data on 6,345 randomly selected households from within 635 randomly selected villages across Sierra Leone's 149 chiefdoms.[8] Respondents were asked about a range of war experiences, including death of family members, maiming, fleeing, being a refugee and the destruction of household assets. We use this information to construct an index at the chiefdom level, indicating the average number of events experienced by households during the war. On average, households experienced 2.4 of these events. Importantly, while this dataset provides detailed information on the exposure of households to conflict, it does not contain a temporal dimension, so it is not useful to distinguish between different stages of the conflict.

Time-variant data is available from the 2004 No Peace Without Justice (NPWJ) conflict mapping project (Smith et al., 2004). The project aimed to help identify human rights violations and later helped establish the Special Court for Sierra Leone. As part of the process NPWJ chronologically and geographically mapped all conflict events for Sierra Leone during the war. Data were collected from key persons throughout the country, and supplemented with open source materials (see Smith et al., 2004, for further details). The NPWJ report contains data on 1,997 conflict events. We create an annual conflict event variable counting conflict events per chiefdom. Specifically, for each year we sum observations that involve the killing, raping, maiming or abduction of people, and the burning of houses. Averaging conflict events, there were on average eight conflict events per chiefdom, per year. The total range of this variable is from 0 to 40 events. Correlation between the IRCBP and NPWJ data is modest at 0.2 (p=0.02).

<< Insert Table 1 about here >>

***Governance**:* To proxy the quality of bad governance, we use a measure of power of the paramount chief, created by Acemoglu, Reed, and Robinson (2014b).[9] In Sierra Leone, chiefs must come from so called 'ruling families' (or ruling houses). The number of such families is small and displayed in Figure 3: the average number per chiefdom is four, and across the Chiefdoms the number ranges from one to twelve. Only selected members from these elite families were officially recognised by British colonial authorities in the 19th century as legitimate leaders of the chieftaincy. This institutional arrangement is clearly undemocratic, but was nevertheless perpetuated after independence. Acemoglu et al. (2014b) argue that the number of ruling families is a useful proxy for the intensity of political competition, as it determines the number of potential challengers for the chieftaincy. Political competition is a key factor influencing the quality of governance. The main hypothesis is that as competition for political power intensifies, the spoils of governing will have to be shared

more widely in order to garner sufficient support, so that policies tend to be more inclusive. The number of ruling families per chiefdom is summarised in Figure 3.

This hypothesis is borne out by the data. Acemoglu et al. (2014b), after demonstrating that the number of ruling families is a source of exogenous variation in local political power, proceed to show a reverse relation between political power and the provision of public goods (or specific development outcomes). Following Acemoglu et al. (2014b), we interpret the number of ruling families as a proxy for the quality of governance. We examine whether it explains variation in the intensity of conflict, assuming that the number of ruling families is related to local grievances (through the degree of 'inclusiveness' of policy making). If, as Richards (1996) argues, rebels were motivated by abusive leaders, we expect more conflict in places with a smaller number of ruling families.

***Resources**:* Following the 'blood diamond' narrative, we take the number of diamond mines as our proxy for greed-based explanations for conflict. The data comes from the ACLED dataset from PRIO, and contains all pre-war registered diamond mining sites. Figure 4 provides mining sites, and demonstrates these were mainly clustered in the eastern provinces. However, there are also mines in the northern areas.

<< Insert Figures 3 and 4 about here >>

***Controls*:** To improve the precision of our estimates and to control for factors correlated with both conflict and resources or governance, we also introduce a vector of control variables in some models. We mostly draw from the IRCBP data and use variables commonly used in the conflict literature (see Collier & Hoefler, 1998). Unfortunately, like the IRCBP conflict data, we lack panel data on these variables. As a measure of ethnic fractionalisation, we use a Herfindahl index (one minus the sum of squared fractions of each of the 18 ethnic groups, or the probability that two randomly drawn individuals are from different ethnic groups). Religious fractionalisation is created in the same manner for all 15

religions. As a proxy for per capita income we use an asset index. Respondents were asked to indicate which assets they possessed, from a list of 10 assets that included mobile phones, generator, television, bicycle, and so forth. As a proxy for education we use a household level dummy indicating whether the household head had any education. To control for ease of movement within a chiefdom we use road density (km road per square km area) from the GIS data. Finally, we control for chiefdom surface areas, as incidence and number of conflicts within a chiefdom may be correlated with its size.[10]

3.4 Identification

Our ambition is to explain the spatial variation in the intensity of conflict throughout the war. However, we start with a simple cross-section model based on aggregate data, using both cross-section data from the IRCBP set as well as aggregate conflict data from the NPWJ data:

$$C_i = \alpha_D + \beta_0 Chiefs_i + \beta_1 Mines_i + \beta_2 X_i + \varepsilon_i, \quad (1)$$

where C_i refers to our measure of conflict events for chiefdom i throughout the 1991-2002 war, with $i = 1, \ldots, 149$, $Chiefs_i$ and $Mines_i$ are time-invariant binary variables capturing, respectively, whether the chief in chiefdom i is "strong" and whether the chiefdom contains known diamond sites before the war started. We define 'strong chiefs' as chiefs ruling chieftaincies in which the number of ruling families is smaller than the average value (that is, chiefdoms with less than 4 ruling families)[11]; ε_{it} is an error term. In some models, we control for a range of variables plausibly correlated with violence, X_i and include district fixed effects, α_D ($D = 1,\ldots,12$) to control for common factors at the district level, and zoom in on intra-district variation in resources and governance.

Next, we explore determinants of conflict during different stages of the conflict. We estimate the following panel model:

$$C_{it} = \alpha_D + \beta_0 Chiefs_i + \beta_1 Mines_i + \sum_{t=1991}^{2001} \beta_{2t} Chiefs_i * T_t + \sum_{t=1991}^{2001} \beta_{3t} Mines_i * T_t + \beta_4 X_i + T_t + \varepsilon_{it} \quad (2)$$

where C_{it} refers to our measure of conflict events for chiefdom *i* in year *t*, with *t* = 1991,...,2001.[12] To examine whether the impact of resources and governance varies over the course of the war, we now interact our chief and mine variables with a vector of year dummies, $\boldsymbol{T}_t$. Again, we estimate equation (2) with and without our set of controls, and district fixed effects, α_D.

Figure 2 illustrates how the conflict started in the Gola Forest region, in the east of Sierra Leone, and subsequently spread to other chiefdoms. Augmenting the panel model above, we also control for spatial autocorrelation by including conflict events in neighbouring chiefdoms. Specifically, we estimate models containing a spatial lag, $\sum_{j \in N(i)} C_{j,t-1}$, capturing the sum of all (lagged) conflict events in those chiefdoms *j* bordering chiefdom *i* (see also Zhukov and Stewart, 2012; Van der Windt and Humphreys, 2014). The spillover term allows us to test whether conflict diffuses over space, and attenuates concerns about spurious correlations brought about by geographical factors shaping both clusters of governance quality or resource availability, as well as the intensity of violence. In addition, to capture the persistence of conflict, we also add a measure of lagged conflict in chiefdom *i*: C_{it-1}. In sum, we estimate the following model:

$$C_{it} = \alpha + \beta_0 Chiefs_i + \beta_1 Mines_i + \sum_{t=1991}^{2001} \beta_{2t} Chiefs_i * T_t + \sum_{t=1991}^{2001} \beta_{3t} Mines_i * T_t + \beta_4 X_i + \delta \sum_{j \in N(i)} C_{j,t-1} + \gamma C_{i,t-1} + T_t + \varepsilon_{it} \quad (3)$$

Finally, we create a new dependent variable, C_{it}^o, indicating each time a conflict starts (zero else) in chiefdom *i*, and estimate a conflict onset model. Since conflict is duration-dependent, we now add a count variable indicating the number of years a conflict event lasted: C_{it}^d. We also add its squared term (see Beck, Katz, & Tucker, 1998).[13]

$$C_{it}^o = \alpha + \beta_0 Chiefs_i + \beta_1 Mines_i + \sum_{j=1}^{10} \beta_{2j} Chiefs_i * T_t + \sum_{j=1}^{10} \beta_{3j} Mines_i * T_t + \beta_4 X_i + \kappa C_{it}^d + T_t + \varepsilon_{it} \quad (4)$$

3.5 A Historical Prelude to Grievances and Chiefly Power

Based upon data from archival research in the National Archives in London,[14] we show evidence from colonial times to support the interpretation that the number of chief families is related to the quality of governance. From the archival data we construct a measure of grievances at the chiefdom level between 1920 and 1940, capturing the frequency with which local riots against the chief were sufficiently serious to draw the attention of the British – occasionally inviting a (military or administrative) response. There were on average two such events over the 20 year period per chiefdom. When regressing this grievance variable on the number of ruling families, we find a strong, statistically significant, negative relationship. Specifically, the coefficient of the ruling family variable equals –0.36 (p-value = 0.01).

There is also ample anecdotal evidence in the archives to link powerful paramount chiefs to the abuse of power. One (British) district commissioner stated 'The Kpaka chiefdom [only one ruling family] of the Pujehun district, has for many years been misgoverned' and that '... chief Momo Rogers has proved himself to be a most unsatisfactory and unjust ruler almost from the first years (1916) of his tenure' (CO267/636). The charges against this chief were numerous but centered around the fact that the chief had been enriching himself by levying forced labour, extracting illegal fines and forcing contributions from his people. The acting governor reported that 'the chief had made himself so unpopular among the people of the chiefdom that there has developed an atmosphere of considerable strain and tension… and that severe disturbance of the peace is considerable' (CO260/55). In several cases, the misrule of chiefs was so severe that colonial officials intervened in local affairs to restore order by deposing the chief, despite the fact that they had strict orders not to do so (CO 270/49); for instance in 'the Imperri chiefdom [two ruling families] has for some years shown active discontent against its paramount chief...until the government found it necessary to intervene and steps for the deposition of the chief were taken'.

4. Empirical Results

Table 2 reports results for the cross-chiefdom analysis (coefficients are standardised). In columns (1)-(3) we use data from the IRCBP data set, and in columns (4)-(6) we use aggregated conflict events as reported in the NPWJ dataset. Columns (1) and (2) provide early support for the greed as well as the bad governance perspective, as both the presence of diamond mines and the strong chief dummy are correlated with variation in local conflict intensity. Consider column (1). Chiefdoms with strong chiefs are associated with a 0.32 standard deviation change in victimisation, and chiefdoms with mines have a 0.67 standard deviation increase in victimisation. These are sizable effects (a Wald test reveals that the two coefficients are not significantly different from each other: *p*-value equals 0.26). However, the results suggest, resources and governance do not robustly explain variation within districts. When we include district fixed effects (column 3), the coefficients shrink, and the coefficient of the governance proxy even switches sign. Similar patterns emerge when we use the aggregate NWPJ conflict variable. Across columns (4)-(6), the governance is not significant (and, indeed, of the 'wrong sign'), but the diamond variable is.

<< Insert Table 2 about here >>

Overall, Table 2 provides some support for role resources played in the conflict. However, it is well-known that aggregate data may be too coarse to detect meaningful effects when there is heterogeneity in the underlying data. Specifically, governance or resources may matter during specific stages of the war – inviting conflict, or prolonging it – and such effects may be masked in a cross-section analysis that lumps all conflict events together. To probe this important issue we now turn to our panel data and report our main results in Table 3.

<< Insert Table 3 about here >>

Moving from column (1) to (5), we present the outcomes of increasingly complex models. Column (1) is a parsimonious specification including only diamond mines, our

governance proxy, time interaction effects, and a vector of year dummies; column (2) includes (time-invariant) chiefdom level controls; column (3) introduces district fixed effects; column (4) introduces the spatial lag and lagged dependent variable; and in column (5), we report estimates of our conflict onset model.

Our main result is that neither governance nor resources robustly explains the onset or duration of violence during the civil war in Sierra Leone. Neither variables are significant in any model as level variables, so there is no evidence of a robust effect on conflict intensity spanning the entire war. In addition, none of the interaction terms for early periods (1991 and 1992) enter significantly.

Our results also do not suggest that conflict motivated by the presence of diamonds or poor governance vary over time. The interaction terms with mines tend to be insignificant throughout. The other vector of interaction terms (strong chiefs multiplied by the year dummies) also reject the hypothesis that bad governance prolongs conflict. None of the interaction terms is significant, and the 2000 interaction terms again have the 'wrong sign'. If anything, this finding suggests a *reduced* likelihood of conflict starting in areas with more authoritarian chiefs.

The only interaction term that consistently enters significantly across the incidence models (columns 1-4) is the product of the mining dummy and the 1998 year dummy. Only in that year do we observe that conflict was more intense in diamond chiefdoms than in non-diamond chiefdoms. We are hesitant to take this as evidence, as it need not be surprising that one of our 20 interaction terms enters significantly at the 5 per cent level.

A few additional observations are noteworthy. First, we find that conflict was less intense in ethnically fragmented chiefdoms. This supports claims in the literature that ethnic tensions were *not* a root cause of the conflict in Sierra Leone. In contrast, there is some mixed evidence for the hypothesis that religious fractionalisation is associated with more intense

violence. We also find that violence tends to persist (column 4), the coefficient on lagged conflict events in a chiefdom is positive and significant. In addition we find that the duration of conflict matters for the probability of conflict to start (again) (column 5), the coefficient on conflict duration is significantly and positively correlated with conflict onset.

5. Conclusion

The civil war in Sierra Leone has ended more than a decade ago, and the most pressing current debates concerning conflict and resources are about foreign investment in mineral extraction and farming. Nevertheless, Sierra Leone remains an important case study in the growing literature on resources, governance and civil war. As a poster child for both 'greed' and the 'grievances' hypotheses, the conflict literature stands much to learn from studying Sierra Leone's history. Resources also remain the corner stone of Sierra Leone's economic development in the future, and concerns about the quality of (local) governance are still widespread.

In this study we put two simple explanations to the test. We explore whether the dynamics of local conflict during the war was correlated with the presence of diamonds or with a measure of low-quality governance. We exploit a large nationwide survey documenting how the intensity of local conflict varied across the years during the conflict, and supplement this data with data on the location of diamond mines, and with data on exogenous variation in the (potential) abusive powers of the chieftaincy. The latter data comes from Acemoglu et al. (2014b), who leverage the unique nature of institutions in Sierra Leone, where a chief must come from one of the ruling families originally recognised by British colonial authorities.

We find no support that local measures of resources or bad governance are robustly related to the intensity of local conflict. Our panel results indicate there is no correlation

between the presence of diamonds or the quality of local governance, and the onset or persistence of conflict in Sierra Leone's civil war.

However, it is important to place these results in perspective. In particular; while we find that diamonds and governance do not explain variation in conflict intensity across chiefdoms, this is not the same as arguing that governance or diamonds have nothing to do with the civil war. The extremely unequal sharing of diamond rents during the reign of the (national) Shaka Stevens government (and later the Joseph Momoh government) could have created frustration and fuelled dissatisfaction with the government across *all* Chiefdoms. Similarly, diamonds may have helped the RUF to fund its conflict activities in *all* Chiefdoms – not just the ones where mining activities were concentrated.[15] With this caveat in mind, we believe our findings present a challenge to simple theories of conflict.

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[2] A simplistic analysis would present greed and grievances as opposite or competing explanations, but obviously these perspectives may be naturally linked. For example, state capacity and the quality of (local) governance is likely to determine both the profitability and emotional basis for rebellion (for example, through the spending of resource rents by the state). In addition, there are papers that look at how grievance and greed jointly influence conflict (see Hodler, 2006).

[3] In addition, endogeneity issues may emerge due to reverse causality in case measures of resource dependence (for example, primary exports divided by income) are used instead of (more exogenous) measures of resource abundance (Brunnschweiler & Bulte, 2009).

[4] But see Lei and Michaels (2011) for conflicting evidence.

[5] This is consistent with evidence from other types of economic windfalls as a determinant of conflict (intensity). For example, refer to Crost, Felter, & Johnston (2014) for evidence on the impact of aid on conflict in the Philippines. Some of the micro findings also speak directly to basic economic theory. For an application of trade theory, refer to Dube and Vargas (2013) who focus on local conflict intensity in Columbia, distinguishing between the opposite effects of changes in the prices of labour-intensive goods (coffee) and capital-intensive goods (oil).

[6] Somewhat related, the adverse effect of (weather) shocks on conflict is analyzed at the micro level by Hodler and Raschky (2014) and Harari and La Ferrara (2014). The former paper is based on administrative regions, and the latter adopts a grid cell approach. A similar robust link has been proposed in a historical/colonial context too, see Papaioannou (2014).

[7] The data is based on the 2004 No Peace Without Justice (NPWJ) conflict mapping project (see next section).

[8] Bellows and Miguel (2006, 2009) use the same dataset in their analysis of the consequences of conflict. An earlier round of data was collected in 2005 in the same villages but under different respondents. We make use of the 2007 round as the victimisation data is more complete.

[9] To measure the number of families, Acemoglu et al. (2014b) conducted a survey in 2011 of `encyclopedias' (the name given in Sierra Leone to elders who preserve the oral history of the chieftaincy) and the elders in all of the ruling families of all 149 chiefdoms.

[10] Of course, conflict events may be correlated with population size also. However, we lack pre-war and war-time figures on population size and use land size as a proxy.

[11] Using the actual number of families or mines yields qualitatively similar results.

[12] Last conflict events in data is December 2001.

[13] In addition to this specification, we also estimated a model that included the number of peace years as an explanatory variable (Klomp & Bulte, 2013). This does not change any of our results.

[14] This information is from administration reports and so-called blue books of statistics. The first contains detailed information about the chiefs, grievances towards them, disputes between chiefs and their subjects. The latter contains statistics on the number of prisoners by province, police staff, education, and so forth. The data was collected in the National Archives (TNA) in London over a several month period in 2013 and 2014.

[15] It is also possible that the RUF expelled civilians from mining areas to maintain control. With part of the local population moved elsewhere, perhaps there was less local victimisation, and fewer conflict events. However, our victimisation index captures 'being a refugee' and 'destruction of household assets' (such as houses), so we expect that a strategy based on expelling civilians would correspond with high victimisation outcomes.

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Tables

Table 1: Descriptive Statistics

#	Label	n	mean	stdev	min	Max
PANEL A Victimisation						
1	Number of conflict events (a)	149	8.14	8.11	0	40
2	Chiefdom average of victimisation index (b)	147	2.44	0.80	1	4.6
PANEL B Grievances						
3	# Ruling Families (c)	149	3.95	2.15	1	12
PANEL C Mining						
4	# pre-war mine sites (d)	149	0.17	0.68	0	6
PANEL D Controls						
5	Asset ownership (fraction of 10 assets owned) (b)	147	0.08	0.04	0	0.25
6	Fraction with any education (b)	147	0.24	0.14	0	0.67
7	Ethnic fractionalisation (b)	147	0.21	0.20	0	0.77
8	Religious fractionalisation (b)	147	0.61	0.15	0	0.87
9	Road density (km road per sq km area) (e)	149	0.08	0.06	0	0.28
10	Chiefdom area (sq km area) (e)	149	483.71	375.57	71.09	2428.94

Note: (a) No Peace Without Justice data, (b) refers to data from the Institutional Reform and Capacity Building Project survey, (c) refers to data from Acemoglu et al (2014b), (d) refers to the PRIO data on conflict and (e) refers to the GIS data from the Sierra Leone Information Systems and the Development Assistance Coordination Office data on minerals, provided by Bellows and Miguel 2009, (e) chiefdom area data come from shape-files provided by the RSPB.

Table 2: Cross-section analysis at the chiefdom level

	(1) IRCBP: Victimisation (standardised)	(2) IRCBP: Victimisation (standardised)	(3) IRCBP: Victimisation (standardised)	(4) NPWJ: total # Victimisation events at the chiefdom level	(5) NPWJ: total # Victimisation events at the chiefdom level	(6) NPWJ: total # Victimisation events at the chiefdom level
Strong Chief	0.322**	0.373**	-0.172	-1.043	-0.442	-1.491
	(0.161)	(0.161)	(0.119)	(1.321)	(1.433)	(1.514)
Diamond mine present in chiefdom pre-war	0.675**	0.775***	0.192	5.910***	6.046***	3.716
	(0.265)	(0.259)	(0.187)	(2.164)	(2.252)	(2.323)
Ethnic fractionalisation (standardised)		-0.141	0.013		-1.072	-0.714
		(0.092)	(0.063)		(0.818)	(0.789)
Religious fractionalisation (standardised)		0.322***	0.051		0.307	1.035
		(0.084)	(0.064)		(0.754)	(0.803)
Road Density (standardised)		-0.051	-0.038		0.459	0.140
		(0.083)	(0.057)		(0.724)	(0.711)
Asset ownership (standardised)		-0.191*	-0.067		-0.050	0.698
		(0.102)	(0.068)		(0.906)	(0.863)
Fraction with any education (standardised)		0.031	-0.181**		0.762	-0.131
		(0.094)	(0.070)		(0.830)	(0.870)
Chiefdom land surface (standardised)		-0.071	0.014		1.266*	2.237***
		(0.079)	(0.059)		(0.697)	(0.740)
Constant	-0.222*	-0.256**	1.599***	8.243***	7.945***	6.936***
	(0.114)	(0.111)	(0.198)	(0.932)	(0.980)	(2.450)
N	147	147	147	145	143	143
R^2	0.068	0.207	0.703	0.054	0.098	0.324
Wald test	0.256	0.183	0.079	0.007	0.015	0.045
Spatial dummies	NO	NO	DISTRICT	NO	NO	DISTRICT

Regressions at chiefdom level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Data sources as in Table 1.

Table 3: Panel analysis at the chiefdom-year level

	(1) NPWJ Conflict events	(2) NPWJ Conflict events	(3) NPWJ Conflict events	(4) NPWJ Conflict events	(5) NPWJ Conflict onset
Strong Chief	-0.035	0.029	-0.067	0.014	-0.015
	(0.047)	(0.076)	(0.095)	(0.091)	(0.022)
Diamond mine present in chiefdom pre-war	0.169	0.184	-0.028	-0.003	0.056
	(0.109)	(0.120)	(0.140)	(0.132)	(0.066)
Strong chief * 1991	0.538	0.546	0.546	0.477	0.097
	(0.377)	(0.383)	(0.384)	(0.380)	(0.075)
Strong chief * 1992	0.297	0.302	0.302	0.167	0.067
	(0.277)	(0.282)	(0.283)	(0.270)	(0.053)
Strong chief * 1993	0.083	0.084	0.084	-0.020	0.000
	(0.157)	(0.159)	(0.160)	(0.164)	(0.047)
Strong chief * 1994	0.094	0.083	0.083	-0.001	0.004
	(0.469)	(0.476)	(0.478)	(0.469)	(0.083)
Strong chief * 1995	-0.383	-0.418	-0.418	-0.518	-0.030
	(0.369)	(0.374)	(0.375)	(0.375)	(0.070)
Strong chief * 1996	0.064	0.051	0.051	0.045	-0.002
	(0.147)	(0.150)	(0.150)	(0.151)	(0.056)
Strong chief * 1997	-0.282	-0.315	-0.315	-0.391	-0.059
	(0.264)	(0.267)	(0.268)	(0.268)	(0.066)
Strong chief * 1998	-0.734	-0.756	-0.756	-0.789	-0.085
	(0.474)	(0.481)	(0.482)	(0.492)	(0.071)
Strong chief * 1999	0.092	0.093	0.093	0.134	0.026
	(0.224)	(0.227)	(0.228)	(0.213)	(0.050)
Strong chief * 2000	-0.423*	-0.428*	-0.428*	-0.496**	-0.136***
	(0.220)	(0.223)	(0.224)	(0.243)	(0.048)
Mine * 1991	0.899	0.887	0.887	0.898	0.046
	(0.892)	(0.895)	(0.898)	(0.881)	(0.164)
Mine * 1992	0.421	0.414	0.414	0.300	0.126
	(0.364)	(0.365)	(0.367)	(0.383)	(0.132)
Mine * 1993	-0.023	-0.026	-0.026	-0.099	-0.067
	(0.274)	(0.275)	(0.276)	(0.265)	(0.102)
Mine * 1994	0.000	-0.011	-0.011	-0.027	0.062
	(0.599)	(0.602)	(0.604)	(0.600)	(0.141)
Mine * 1995	-0.368	-0.357	-0.357	-0.385	-0.117
	(0.389)	(0.392)	(0.394)	(0.370)	(0.112)
Mine * 1996	-0.156	-0.155	-0.155	-0.173	-0.053
	(0.256)	(0.256)	(0.257)	(0.246)	(0.124)
Mine * 1997	1.274	1.280	1.280	1.288	0.195*
	(0.795)	(0.797)	(0.800)	(0.780)	(0.117)
Mine * 1998	1.870**	1.855**	1.855**	1.697*	-0.058
	(0.912)	(0.915)	(0.918)	(0.981)	(0.123)
Mine * 1999	0.267	0.273	0.273	-0.018	-0.148**
	(0.457)	(0.458)	(0.460)	(0.423)	(0.063)
Mine * 2000	-0.134	-0.140	-0.140	-0.199	-0.031
	(0.317)	(0.318)	(0.319)	(0.350)	(0.107)
Ethnic fractionalisation (standardised)		-0.480*	-0.320	-0.268	-0.019
		(0.280)	(0.262)	(0.229)	(0.038)

Religious fractionalisation (standardised)		0.190 (0.443)	0.640 (0.401)	0.562 (0.354)	0.026 (0.047)
Road Density (standardised)		0.682 (0.842)	0.208 (0.829)	0.178 (0.744)	0.103 (0.108)
Asset ownership (standardised)		-0.101 (2.068)	1.410 (1.819)	1.303 (1.631)	-0.107 (0.217)
Fraction with any education (standardised)		0.499 (0.458)	-0.086 (0.500)	-0.070 (0.446)	0.069 (0.063)
Chiefdom land surface (standardised)		0.000* (0.000)	0.001*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Spillovers: Total Conflict in Neighbours in previous period				0.013 (0.011)	
Total events in chiefdom in previous period				0.099** (0.041)	
Conflict duration					-0.194*** (0.016)
Conflict duration^2					0.035*** (0.004)
Constant	0.047 (0.045)	-0.318 (0.326)	-0.610** (0.304)	-0.640** (0.271)	-0.035 (0.035)
Observations	1595	1573	1573	1573	1573
R^2	0.089	0.095	0.129	0.141	0.125
Year dummies	YES	YES	YES	YES	YES
Spatial dummies	NO	NO	DISTRICT	DISTRICT	DISTRICT

Regressions at chiefdom level by year. Year dummies included. 2001 is excluded year. * p < 0.10, ** p < 0.05, *** p < 0.01. Standard errors clustered at chiefdom level. Data sources as in Table 1.

Figures

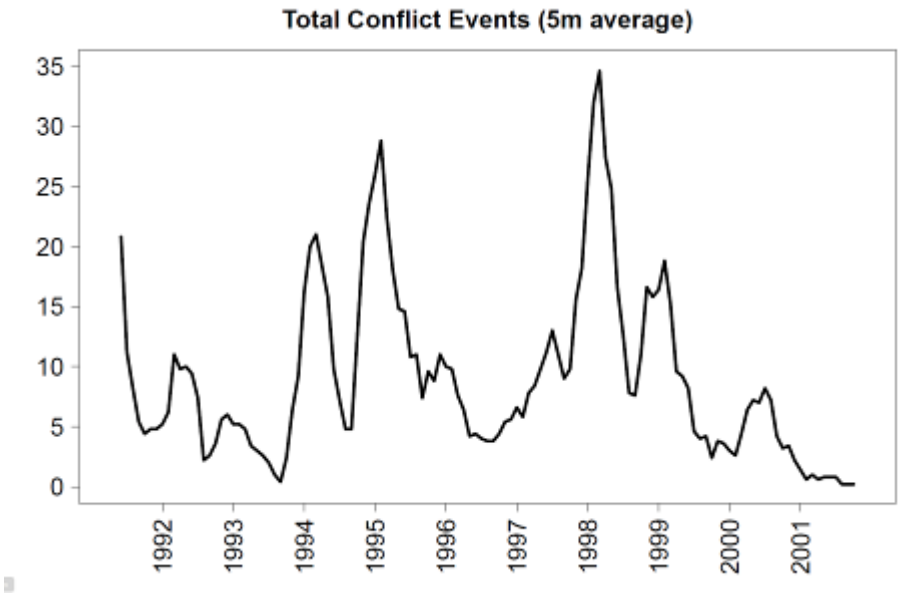
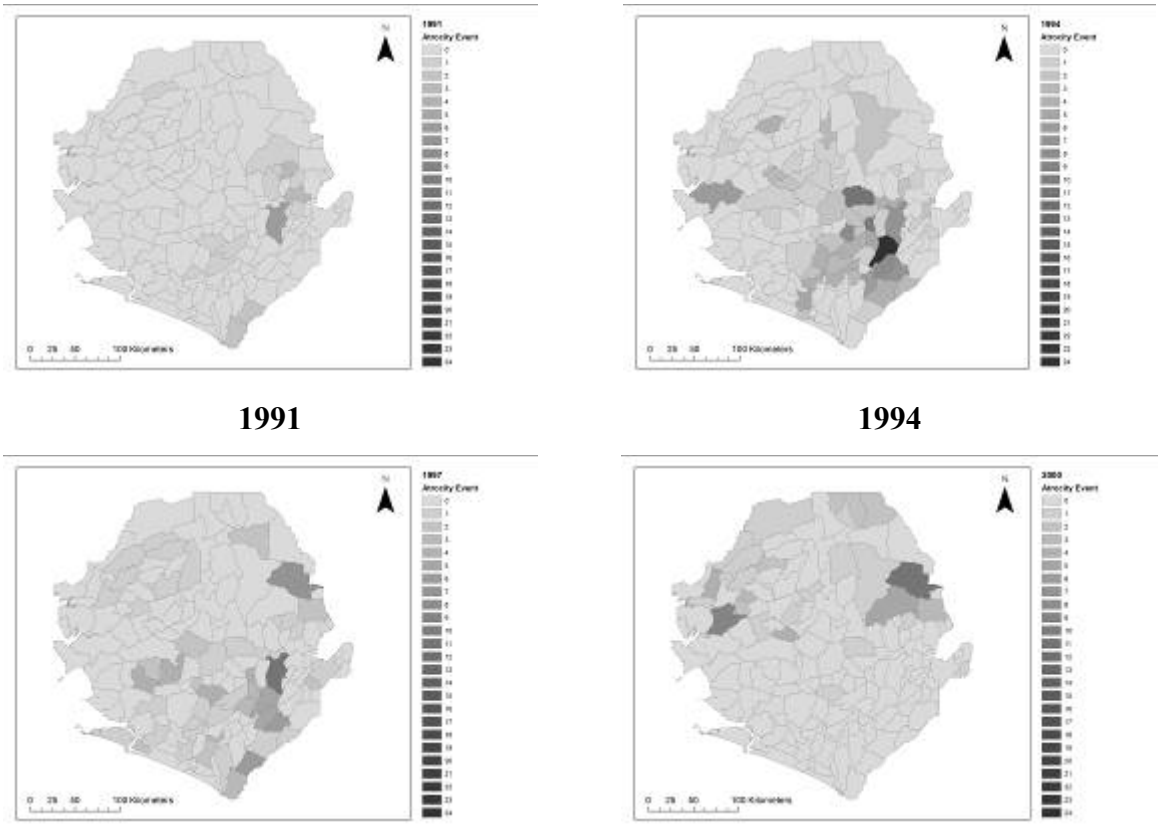


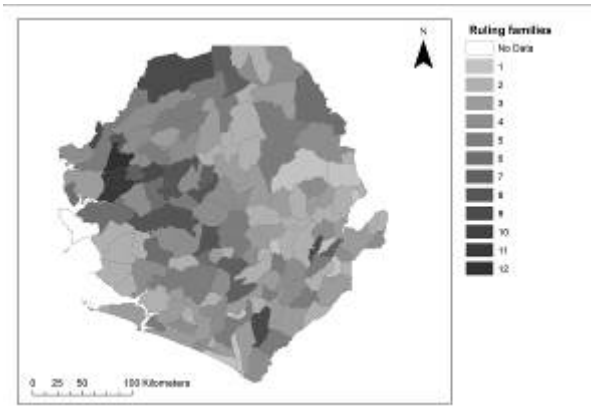
Figure 1: Conflict events over time (months from January 1991 - December 2001)

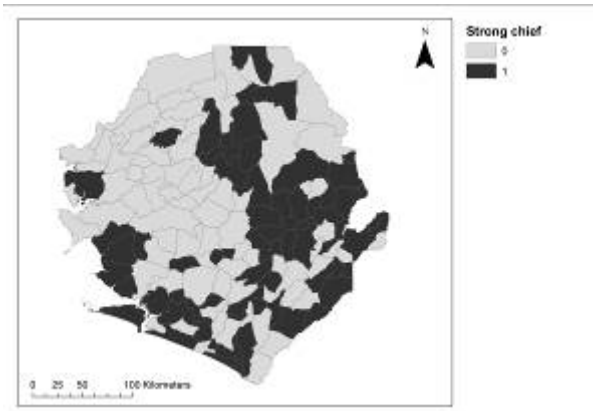


1991 **1994**

1997 **2000**

Figure 2: Conflict events across space





Count **Median**

Figure 3: Chief families

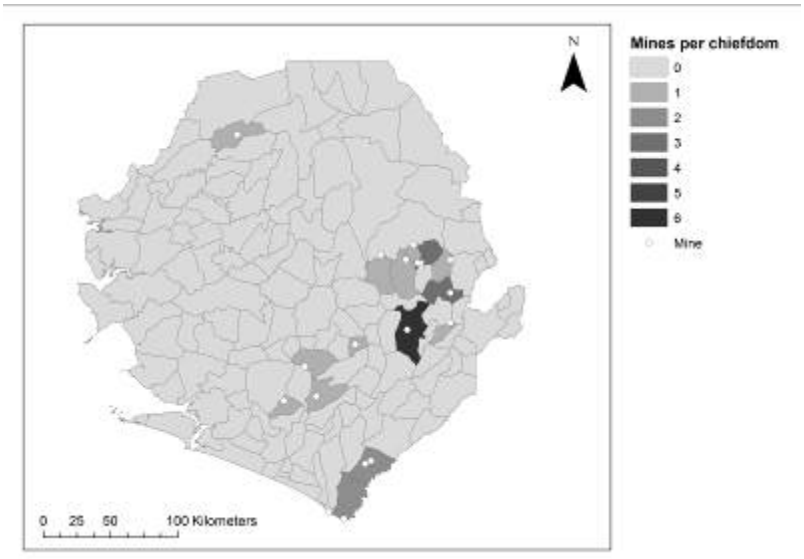


Figure 4: Pre-war mining locations