

COLLECTIVE ACTION IN DIVERSE SIERRA LEONE COMMUNITIES*

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Scholars have identified ethnic divisions as a leading cause of underdevelopment, due partially to their adverse effects on public goods. We investigate this issue in post-war Sierra Leone, one of the world's poorest and most ethnically diverse countries. To address concerns over endogenous local ethnic composition, we use an instrumental variables strategy using earlier census data on ethnicity and include several historical and geographic covariates. Perhaps surprisingly, we find that local diversity is not associated with worse public goods provision across multiple outcomes and specifications, with precisely estimated zeros. We investigate the role of historical factors in generating the findings.

Many scholars have argued that ethnic diversity is an important impediment to economic and political development. Economic growth rates are slower in ethnically diverse societies, and local public goods provision often suffers (Easterly and Levine, 1997; Alesina *et al.*, 1999, 2003). The leading explanation for why diversity affects outcomes in less developed countries is the inability to overcome the public good free-rider problem, due to monitoring and enforcement limitations (Miguel and Gugerty, 2005; Habyarimana *et al.*, 2007, 2009). These issues are particularly salient in Sub-Saharan Africa, the world's most ethno-linguistically diverse region.

This article examines the relationship between ethnic diversity and local collective action in post-war Sierra Leone, using new data sets on public goods and social capital. Sierra Leone is among the world's poorest and most ethnically diverse countries; it is recovering from a decade of civil war that displaced millions and caused untold human suffering, and ethnic divides are salient in national politics. All of these factors make it a good candidate for the Easterly and Levine (1997) and Alesina *et al.* (1999) hypothesis that ethnic divisions stifle cooperation, local public goods and economic development.

Far more than in many developed countries, basic public goods are organised and produced locally in Sierra Leone and many of these outcomes are very important for local economic development. For instance, road maintenance – the clearing of

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tropical brush that quickly engulfs dirt paths, as well as the construction of road drainage ditches and small bridges – is a critical infrastructure investment in rural areas. Without it, trade and contact with the outside world becomes more expensive and less frequent.

The estimation of local diversity impacts is a long-standing empirical challenge (Alesina *et al.*, 1999), due to possible endogenous residential sorting. Only a handful of recent studies have exploited experimental or quasi-experimental variation in local diversity, for instance, Algan *et al.* (2011) and Dahlberg *et al.* (2012), and neither uses data from developing countries. Recent residential sorting is particularly relevant in contemporary Sierra Leone, where many fled civil war violence.

Using new data,¹ we first document that during and immediately after the civil war, there was systematic movement of individuals towards areas where their own ethnic group was historically more numerous. These preferences vary strongly as a function of individual characteristics, with, for example, education being associated with greater movement to diverse areas. These findings highlight the possibility that correlations between local diversity and public goods might reflect endogenous sorting. That said, we do not observe any systematic correlation between ethnic-based sorting and pre-war participation in local community activities, alleviating some of these concerns.

To address possible endogeneity problems created by recent migration, we use historical ethnic composition measures from the 1963 Sierra Leone Population Census as instrumental variables for current ethnic diversity. We find that in rural areas the historical ethnic diversity measures strongly predict current diversity, conditional on our rich set of covariates, with a coefficient estimate of 0.7 in the first stage regression.

The exclusion restriction for this IV is that historical ethnic diversity affects current public goods outcomes only through its impact on current diversity. However, historical diversity may have been a product of older institutional or geographic factors that themselves affect local public goods provision. For instance, if local institutional quality is highly persistent, or if areas with better soils and less rugged geography attract diversity and lower the cost of providing public goods, the IV may not be valid.

To address such concerns partially, we assemble a wide array of historical variables measuring European colonial era contact, indigenous institutions, as well as local climate, geographic and agronomic characteristics, all of which might correlate with historical development patterns, including the public goods outcomes of interest. We also exclude both urban areas and areas in the country's east that benefited from the diamond boom of the 1950s, where extensive historical pre-1963 sorting might have been more important.

Using this IV approach conditional on the extensive set of covariates, the article's main finding is that local ethnic diversity is not associated with worse local public goods or collective action outcomes in Sierra Leone. This holds across various regression specifications and local collective action outcomes, including road maintenance, community group membership and school funding and staffing. We also explore

¹ The authors played a leading role in designing the survey instruments, monitoring the data collection and assembling and cleaning the National Public Services (NPS) data set that forms the basis for the analysis in this article.

multiple diversity measures, such as those based on language families, historical conflict and religion, and we find no diversity impacts with any.

We use a mean effects analysis to jointly consider the effect of diversity on groups of related outcomes (e.g. school construction quality measures). We focus on the overall collective action index – which combines outcomes including community participation, group membership, control of disputes (including over land and other property), school supplies, teaching quality and school construction quality – while also presenting results for specific subsets of outcomes. We measure these ‘zero’ impacts precisely and, thus, with high levels of confidence can rule out that local ethnic diversity has adverse impacts in Sierra Leone of the same magnitude as those estimated in other rural African settings.

Although there are no impacts on any measurable dimension of collective action or public goods provision, we do estimate negative impacts of local ethnic diversity on respondents’ stated trust for others in survey questions, a classic approach to measuring ‘social capital’ (Putnam, 1993). This seeming discrepancy between realised collective action outcomes (e.g. community group memberships and school construction) and reported trust in ethnically diverse areas highlights the importance of measuring actual outcomes rather than relying on self-reports alone in assessing local institutional performance. It also echoes Olken (2009), who finds that residents of ethnically diverse areas in Indonesia report much greater perceived corruption in surveys, although corruption is actually significantly lower in such areas (as objectively measured by audits). A less sanguine interpretation is that the negative ‘trust’ self-reports are a leading indicator, auguring the future breakdown of ethnic cooperation as social ties across groups erode.

The main results quantify and reinforce claims by several scholars that, despite the leading role of ethnic appeals in national politics, ethnic divisions have been much less damaging in Sierra Leone than in many of its African neighbours, and in particular were not a leading factor in the recent 1991–2002 civil war.² Beyond documenting the lack of a relationship between ethnic diversity and local public goods, we also explore the institutional and historical factors that foster inter-ethnic cooperation.

A leading explanation for Sierra Leone’s relatively good inter-ethnic cooperation is the presence of strong traditional local authorities that help overcome the classic free-rider problem in local public goods provision (Ostrom, 1990). In particular, strength could chiefly help account for the fact that actual collective action outcomes in diverse areas are similar to homogeneous areas, although they have less ‘social capital’, as measured by reported trust. One persistent consequence of Britain’s colonial system of ‘decentralised despotism’ in Sierra Leone (Mamdani, 1996) was the empowerment of paramount chiefs, elected from and by tribal ‘ruling families’. These chiefs, who effectively have lifetime tenure, continue to dominate local politics by collecting local taxes, royalties from diamond mining and logging, market fees and punishing

² For instance, during Sierra Leone’s civil war, the Revolutionary United Front (RUF) rebels targeted people from all ethnic groups and statistical analysis of documented human rights violations shows that no ethnic group was disproportionately victimised. There is also no evidence that civilian abuse was worse when armed factions and communities belonged to different ethnic groups (Humphreys and Weinstein, 2006). Ethnic grievances were not rallying cries during the war and all major fighting sides were explicitly multi-ethnic (Keen, 2005).

free-riders through fines, public embarrassment and corporal punishment. However, we find no evidence that ethnic diversity effects differ in areas with ‘strong’ chiefs, as captured using multiple measures. This suggests that other mechanisms may be more important in understanding why local collective action outcomes are no worse in diverse areas.

Another speculative candidate explanation for why ethnic diversity does not appear to undermine local collective action in Sierra Leone involves the nature of historical interactions between different ethnic groups. At the time of the founding of the Sierra Leone colony in the late eighteenth century and through much of the nineteenth century, Krio (Creoles), former slaves who returned to Africa to settle Freetown, enjoyed a relatively privileged political and economic position due to their facility with English and special links with the British even though they were numerically small. Before independence, the key political division in Sierra Leone was Krio *versus* non-Krio but because of growing tensions between the Krio and ‘up-country’ ethnic groups, the British progressively limited their political power. After independence, the fact that the country’s long-serving dictator Siaka Stevens belonged to a relatively small ethnic group (Limba, see Table 1), rather than one of the country’s two dominant groups (Mende and Temne), may have helped to limit the politicisation of ethnicity between the largest groups further.

The Krio people gave Sierra Leone their language, also called Krio, which is a dialect of English with many other linguistic influences. Serving as a national lingua franca for decades, Krio is currently spoken (usually as a second language) by nearly all Sierra Leoneans and is increasingly taught in schools. While the existence of a common national language is clearly insufficient to guarantee social stability – as the African cases of Rwanda and Somalia poignantly illustrate – Krio’s ubiquity in Sierra Leone may (through historical accident) help promote the consolidation of a common

Table 1
Ethnic Population Shares in Sierra Leone (%)

Ethnic group (Tribe)	1963 census	2004 census
Mende	30.9	32.2
Temne	29.8	31.8
Limba	8.4	8.3
Kono	4.8	4.4
Kuranko	3.7	4.1
Sherbro	3.4	2.3
Fullah	3.1	3.7
Susu	3.1	2.9
Lokko	3.0	2.6
Kissi	2.2	2.5
Madingo	2.3	2.4
Krio	1.9	1.4
Yalunka	0.7	0.7
Krim	0.4	0.2
Vai	0.3	0.1
Other	0.2	0.4

Notes. Population shares are constructed from the 1963 Sierra Leone Population Census and the 2004 Sierra Leone Population and Housing Census.

national identity that transcends tribe (Ngugi, 2009), as some have argued has been the case with Swahili in post-independence Tanzania (Miguel, 2004).

The rest of the article is organised as follows. Section 1 provides background on economic development and ethnicity in Sierra Leone. Section 2 presents results on ethnic-based migration patterns, and discusses our historical instrumental variable approach. Section 3 describes the estimation strategy and the data, and Section 4 presents the main results. Section 5 weighs the contrasting mechanisms that might explain our results, and the final section concludes.

1. Background on Ethnicity and Economic Development in Sierra Leone

The two major political parties in post-independence Sierra Leone have always had clear ethnic ties. The first two prime ministers, brothers Milton Margai (prime minister 1961–4) and Albert Margai (1964–7), were leaders of the Sierra Leone People's Party (SLPP) and members of the Mende ethnic group that dominates southern Sierra Leone. Albert Margai was a notoriously corrupt leader who, in attempting to intimidate opposition candidates from the largely northern African People's Congress (APC) in 1967 parliamentary elections, began to weaken the country's nascent democratic institutions.

The election winner, Siaka Stevens, an ethnic Limba (a northern group), survived a subsequent coup attempt organised by pro-Margai officers, and went on to dismantle all remaining democratic checks and balances. Sierra Leone became a one-party state in 1978, and Stevens is widely accused of plundering the country's resources for his own personal gain, while providing few public services (Reno, 1995). Stevens handed over power to his weak successor Joseph Momoh (another Limba) in 1985, before passing away shortly afterwards.

Sierra Leone's civil war started in 1991 and lasted until 2002. An estimated 50,000 people were killed, over half of the population was displaced from their homes, and thousands were victims of assaults, rapes and amputations (Human Rights Watch, 1999). Partially as a result of widespread frustration with government corruption and ineffectiveness, a small group of rebels entering the country from Liberia in 1991 were successful in gaining recruits. As their numbers swelled in 1992, these rebels, known as the Revolutionary United Front (RUF), spread the armed conflict throughout the country. Some scholars claim that the RUF's initial motivations were partly idealistic, and that they promoted an egalitarian non-ethnic national identity within the group (Richards, 1996). Another important factor in the RUF's rise was their desire for and access to diamond wealth. Mining diamonds in Sierra Leone requires no machinery or technology since these alluvial stones sit close to the surface in dried riverbeds.

Viewed from multiple perspectives, Sierra Leone is now one of the world's poorest countries. According to the United National Development Programme's 2007–8 Human Development Report, Sierra Leone's human development index in 2005 was 0.336, the lowest score in the world at 177th of 177 countries with data. Per capita GDP (adjusted for purchasing power parity) is US\$806. Life expectancy at birth is a tragic 41.8 years, ranking Sierra Leone 173rd of 177 countries. Adult literacy is just 34.8% and, while there has been some progress in school enrolment after the civil war, gross secondary school enrolment was only 32% in 2007. In a further indication of the

massive need for additional public investment, nearly half of the population lacked access to an improved water source (such as a borehole well, protected spring or piping) in 2004. While the recent 1991–2002 civil war is undoubtedly a contributing factor, Sierra Leone already had the second lowest human development index in the world before the war began (United Nations Development Programme, 1993). In fact, the country's disappointing economic performance, together with ubiquitous government corruption, arguably contributed to the outbreak and duration of the war.

Sierra Leone is also one of the world's most diverse countries. The household module of the 2004 Population Census identifies eighteen major ethnic groups. The Mende and Temne are numerically dominant, occupying shares of 32.2% and 31.8%, respectively, while the Limba, Kono and Kuranko are the next largest groups, at 8.3%, 4.4%, and 4.1% respectively (Table 1). Other groups occupy a substantially smaller share, including the Krio, whose population share fell to only 1.4% by 2004. Data from the 1963 Census demonstrate the stability of national ethnic composition over time.

These groups are characterised by distinct customs, rituals and history, and most importantly language. With the exception of Krio, an English dialect, the other languages are members of the Niger-Congo language family. Within this family, the most salient distinction is between the Mande languages – including Mende, Kono, Kuranko, Susu, Loko, Madingo, Yalunka and Vai – and the Atlantic-Congo languages, including Temne, Limba, Sherbro, Fullah, Kissi and Krim. These groups are mutually unintelligible, and much further apart linguistically, for example, than English and German.³

The 2004 Census contained an ethnicity question, allowing us to compute ethnicity shares at the chiefdom level. Chiefdom boundaries have been relatively unchanged since independence, and the chiefdom is still the geographic unit by which most Sierra Leoneans self-identify their origins, as well as the administrative level at which traditional authorities are organised. There are 149 chiefdoms in the country, and the median chiefdom population is roughly 22,000. Denote ethnicity shares by $\pi_{ik} = N_{ik}/N_i$, where N_{ik} is the number of individuals of ethnicity k living in a chiefdom (census enumeration area or EA) i and $N_i = \sum_k N_{ik}$ is the total chiefdom population. Using these shares, the standard ethno-linguistic fractionalisation (ELF) measure (which is closely related to a Herfindahl index) is $ELF_i = 1 - \sum_k \pi_{ik}^2$. ELF_i captures the probability that two individuals randomly chosen from the population belong to different groups.⁴

Figure 1 presents non-parametric estimates of the distribution of ELF_i across chiefdoms. The mean of chiefdom ELF in our sample is 0.264 (SD 0.196). Chiefdoms are composed of scores of villages. Figure 2 panels (a) and (b) map chiefdom ethnic diversity currently and historically respectively. Visual inspection indicates that diverse areas were likely to remain diverse between 1963 and 2004, a result we confirm in a regression below, and that diverse areas are found nationwide.

Questions on religious identification were unfortunately not collected in either the 1963 or 2004 censuses, so we use nationally representative household survey data from the 2005 and 2007 National Public Services (NPS) surveys to construct religious

³ See, for example, the World Language Tree of Lexical Similarity, 2009.

⁴ Using Montalvo and Reynal-Querol's (2005) preferred ethnic polarisation measure in place of ELF_i does not change the main result of no ethnic impacts below (estimates not shown).

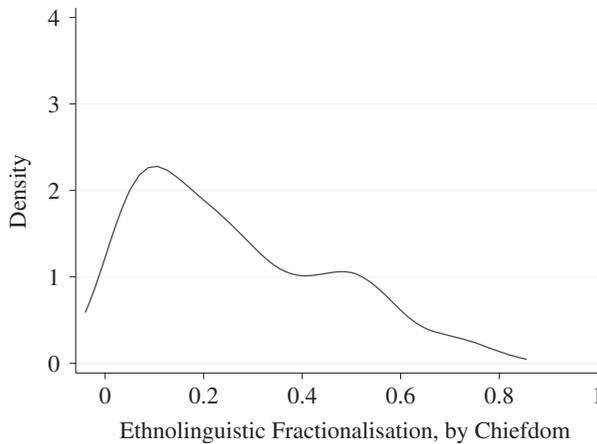


Fig. 1. *Ethno-linguistic Fractionalisation in Sierra Leone (Non-parametric Density) Across Chiefdoms Notes.* The data source is the 2004 Population Census. Estimation of the density uses a Gaussian kernel with bandwidth set to minimise integrated mean squared error. The mean of ELF across chiefdoms is 0.264, with a SD of 0.196.

diversity measures.⁵ We consider the proportion of respondents in each chiefdom who practice the country's two major religions, Islam and Christianity, ignoring their internal subdivisions. Sierra Leone is predominantly Muslim, at 76.8%, but Christianity is also widely practiced (22.4%), with other religions making up the remaining 0.8%. The mean of chiefdom religious fractionalisation is 0.229 (SD 0.179, see online Appendix Figure A1).

2. Migration and the Persistence of Local Ethnic Composition

In this Section, we use data from the nationally representative 2007 NPS household survey to study individual internal migration decisions during and following the war. Many Sierra Leoneans place a high value on living in chiefdoms that were historically settled by members of their own ethnic group, and this preference varies across population sub-groups, as discussed below. This systematic sorting as a function of local ethnic composition highlights the need for the instrumental variables strategy presented in Subsection 2.2.

2.1. Revealed Preferences for Ethnic Sorting

The 2007 NPS survey collected information on respondents' current and 1990 chiefdom of residence.⁶ To understand why individuals moved, we estimate a conditional logit model, which can be derived from the following random utility

⁵ The National Public Services Survey was created by the Evaluation Unit of the Institutional Reform and Capacity Building Project, now known as the Decentralisation Secretariat. Two of the authors of this article (Rachel Glennerster and Edward Miguel) were technical advisors to the evaluation unit during this period, while Katherine Casey was head of the evaluation unit.

⁶ Unfortunately, the 2005 NPS does not contain the earlier 1990 residential data and so it cannot be used here.

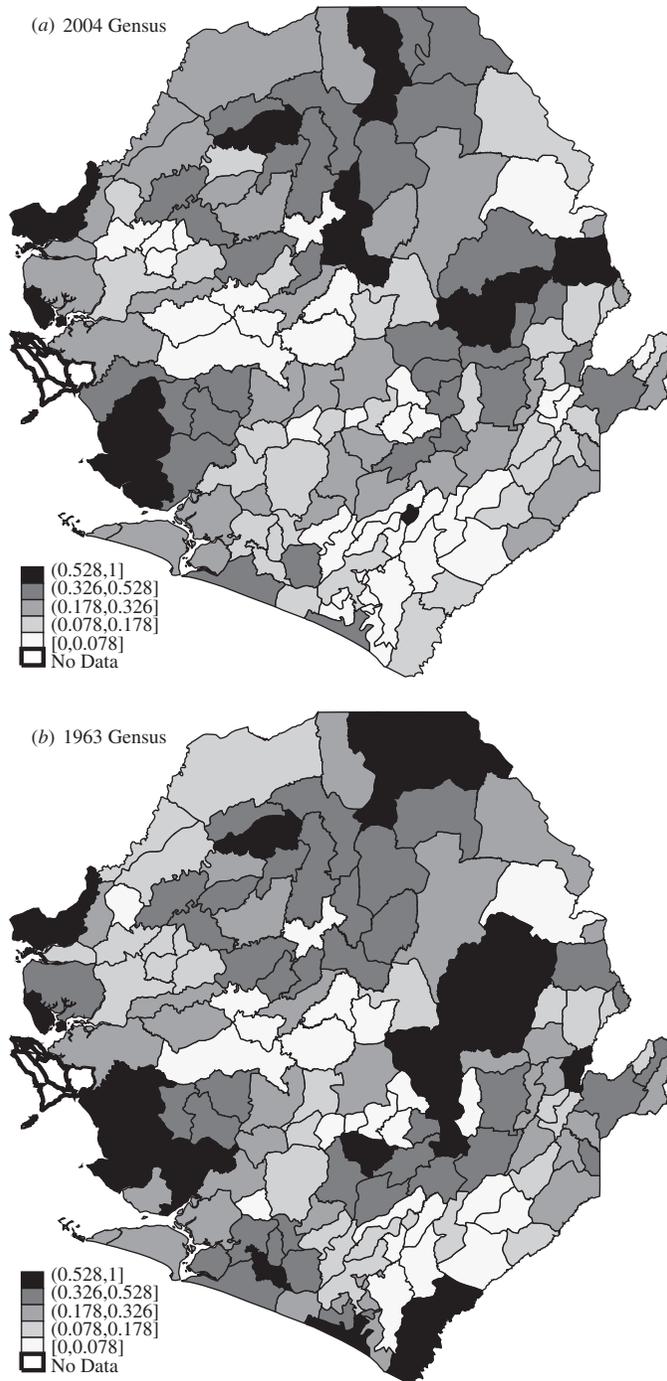


Fig. 2. Ethnic Diversity by Chiefdom

Notes. The mean of ELF across chiefdoms in 2004 (panel a) is 0.264, with a SD of 0.195. and in 1963 (panel b) is 0.304, with a SD of 0.205.

model. Let $i = 1, \dots, N$ index individuals and $j = 1, \dots, J$ chiefdoms. We model the indirect utility of individual i living in chiefdom j as follows:

$$V_{ij} = \mathbf{X}'_{ij}\boldsymbol{\beta} - \alpha D_{ij} + \epsilon_{ij} \quad (1)$$

Here, \mathbf{X}_{ij} denotes a $(K \times 1)$ vector of characteristics for chiefdom j , including certain characteristics of individual i interacted with chiefdom values. For example, one component of this vector is the ethno-linguistic fractionalisation of chiefdom j , and another is this value interacted with individual i 's educational attainment. Other specifications focus on the co-ethnic residential share and its interaction with education. It is through these interactions that the discrete choice model captures preference heterogeneity. The variable D_{ij} denotes the distance between the centroids of individual i 's home chiefdom and chiefdom j . If D_{ij} is thought of as the 'price' individual i pays to move to chiefdom j , we can interpret the ratio $-\beta_k/\alpha$ as the willingness to pay for a one unit increase in characteristic X_{kij} in terms of kilometres moved. Individual i chooses to live in chiefdom j if $V_{ij} > V_{ij'}$ for all other chiefdoms j' . Given these standard assumptions, the probability that individual i chooses chiefdom j , denoted P_{ij} , is as follows:

$$P_{ij} = \frac{\exp\{\mathbf{X}'_{ij}\boldsymbol{\beta} - \alpha D_{ij}\}}{\sum_{k=1}^j \exp\{\mathbf{X}'_{ik}\boldsymbol{\beta} - \alpha D_{ik}\}} \quad (2)$$

We use weighted maximum likelihood estimation to address the choice-based sampling issue.⁷

Of the 5,488 individuals in the sample, 26.5% had moved to a different chiefdom since 1990 and, among those who had moved, nearly two-thirds (62.2%) moved to a different district (there are 19 districts in all); online Appendix Table A1 presents descriptive statistics. The average distance between the centroids of the 1990 and 2007 chiefdoms of residence for movers was 74.3 km. Information was not collected on migration patterns during the war; we only observe retrospective data on the chiefdom of residence before the war started and the post-war chiefdom of residence in 2007. However, we do know whether anyone from the respondent's 1990 household was made a refugee: 23.2% of our sample had 1990 household members who temporarily fled Sierra Leone, often to refugee camps in Guinea.

We do not include 2004 chiefdom ethnicity shares when estimating (2) because they are endogenous to war and post-war migration choices. Instead, we include chiefdom level ethnicity data from the 1963 Population Census for a predetermined measure (and use this data again below in the construction of historical ethnicity instrumental variables). Table 2 shows the conditional logit results. All columns include distance D_{ij} and either the co-ethnic population share in 1963 (columns 1–2) or the 1963 chiefdom ELF score (columns 3–4) as the key explanatory variable. Greater distance between chiefdoms is always associated with a lower propensity to move, as expected, and there

⁷ As the survey was designed as a stratified random sample (based on current location), the sample is choice-based. Under the assumption that migration between 2004 and 2007 was negligible, which is plausible since most post-war resettlement occurred by 2004, weighted maximum likelihood resolves the issue (see Manski and Lerman, 1977 and online Appendix A).

Table 2

Migration Across Chiefdoms (1990–2007) and Ethnic Composition (Conditional Logit)

	(1)	(2)	(3)	(4)
Distance between chiefdoms	-0.021 (0.001)***	-0.015 (0.003)***	-0.024 (0.001)***	-0.016 (0.003)***
Co-ethnic population share	2.184 (0.107)***	2.115 (0.289)***		
Ethno-linguistic fractionalisation (ELF)			1.504 (0.092)***	2.149 (0.295)***
Any education × Distance		0.009 (0.003)***		0.009 (0.003)***
Any education × Co-ethnic		-1.599 (0.220)***		
Any education × ELF				2.590 (0.237)***
Experienced war violence × Distance		-0.055 (0.008)***		-0.062 (0.009)***
Experienced war violence × Co-ethnic		1.852 (0.585)***		
Experienced war violence × ELF				-5.102 (0.737)***
Ruling family member × Distance		0.002 (0.002)		0.002 (0.003)
Ruling family member × Co-ethnic		0.374 (0.244)		
Ruling family member × ELF				-0.555 (0.269)**
Trust outsiders × Distance		0.005 (0.002)**		0.006 (0.002)**
Trust outsiders × Co-ethnic		0.263 (0.212)		
Trust outsiders × ELF				0.429 (0.273)
1990 group leader × Distance		-0.006 (0.004)		-0.008 (0.005)
1990 group leader × Co-ethnic		0.245 (0.289)		
1990 group leader × ELF				-0.032 (0.332)
Log Pseudolikelihood	-1.314	-1.209	-1.366	-1.230
Pseudo R ²	0.772	0.790	0.763	0.786
Number of Individuals	5,488	5,488	5,488	5,488
Number of chiefdoms/locations	154	154	154	154

Notes. Estimation computed from a conditional logit model using weighted maximum likelihood, which addresses the endogenous stratification problem (see online Appendix A). */**/** denotes significantly different from zero at 90/95/99% confidence. Distances are measured in km between centroids. 'Any education' is an indicator variable for any schooling. '1990 group leader' is an indicator for whether or not the respondent had members of his or her 1990 household who were leaders of either women groups, youth groups, or farmers' associations. Variables for population in 1985, population density in 1985, distance to roads, distance to cities, number of attacks and battles in the war, and mining are included in the specification but their coefficient estimates are not shown.

is a significant positive preference for living in areas traditionally dominated by one's own ethnic group. In column 1, the ratio of these two coefficient estimates implies that individuals are on average willing to travel an additional 10 km to live in a chiefdom with a 10 percentage point greater share of her/his own ethnic group. The coefficient

estimate on chiefdom ELF is also statistically significant (column 3) conditional on other factors (including remoteness from cities as well as population size and density), suggesting a positive preference for diversity, though this is smaller than the preference for a higher co-ethnic share.⁸ The coefficient estimates on a variety of other covariates, including historical population, distances to roads and cities, as well as the number of attacks and battles experienced during the war, all have the expected signs (coefficients not shown).

We next explore differential willingness to pay for ethnic homogeneity for people who have ‘some education’ and those who have none (columns 2 and 4); recall that the median Sierra Leonean adult has zero years of schooling. Educated individuals are less responsive to moving distance and care much less about living in chiefdoms with greater shares of their own ethnic group. The ratio of these two coefficient estimates implies that educated individuals are only willing to travel an additional 8.6 km to live in a chiefdom with a 10 percentage point greater share of her/his own ethnic group. This finding suggests that education dampens co-ethnic residential preferences. More educated people are more likely to move to ethnically diverse areas and this finding underlines the potential for bias in simple ordinary least squares (OLS) estimates. For example, if those with higher education are more likely to move to diverse areas and also exhibit greater involvement in collective action, then the OLS estimate on diversity could be biased.

Individuals who directly experienced violence during the war find moving greater distances more costly, prefer living with co-ethnics and dislike ethnic diversity compared to the average Sierra Leonean (columns 2 and 4).⁹ However, individuals from chiefly ‘ruling’ families appear to have largely similar preferences to other Sierra Leoneans. There are also no statistically significant interactions between either chiefdom co-ethnic share or diversity and two measures of individual public spiritedness, namely, trust in those from ‘outside your own community or neighbourhood’ and community group leadership in 1990 before the war (Table 2, columns 2 and 4). We return to a discussion of these results in Subsection 2.2 below.

2.2. *Using Historical Data to Identify the Impact of Ethnic Diversity*

In the absence of random assignment of people to locations, the systematic sorting of individuals from particular ethnic groups, or with certain (unobserved) tastes for public goods, into more or less diverse areas could potentially introduce omitted variables bias into cross-sectional estimates of the impact of diversity on local collective action. Recent sorting, during and after Sierra Leone’s 1991–2002 civil war, is a particular concern for our empirical work. Hundreds of thousands abandoned their homes, fleeing violence and some spent years in refugee camps, while others sought

⁸ Note that this diversity result holds whether the local co-ethnic population share is controlled for.

⁹ A number of different interpretations of this result are possible. For example, those who found it more costly to move in the face of approaching violence may have been more likely to experience it directly, or the effects of experiencing violence (e.g. maiming) may have made it harder for them to move and more reliant on local (including ethnically based) networks. As discussed above, there is no evidence that civil war violence was ethnically targeted, nor do we see that civil war violence experiences lead to less local collective action in higher ELF communities in the next Section.

out regions of the country protected from RUF attacks. As discussed above, while 73.5% returned to their 1990 home chiefdom by 2007, those that did not were different on both observable and unobservable characteristics than those that did. This could bias simple OLS estimates of the effect of diversity in a direction that is difficult to sign.

In the ideal thought experiment, the impact of ethnic diversity on local outcomes would be credibly estimated if individuals were first randomly allocated to jurisdictions and then worked together to provide local public goods. In this subsection, we argue that a historical parallel occurs in areas with stable ethnic land settlement, where the causes of the current residential patterns – in rural west Africa, the slave raids, wars, droughts, famines and epidemics that took place in the 18th century and sometimes earlier – are arguably weakly associated with modern-day socio-economic factors that might affect public goods provision. In particular, we focus on specifications where current chiefdom ethnic diversity is instrumented using historical measures from the 1963 Population Census. The IV exclusion restriction is that historical ethnic diversity affects only current residential diversity and is not correlated with any unobserved local factors that might change the costs of, or preferences for, providing local public goods. While even longer historical lags, that is, census data before 1963, would have made the case even stronger, there is unfortunately no comprehensive national population data for earlier periods. We discuss limitations of this approach, and the data we use to overcome them, further below.

A brief foray into Sierra Leone's settlement history is important for assessing the validity of the identification strategy. In Sierra Leone, most historical ethnic boundaries were shaped during the period of the Atlantic slave trade, as raiding tribes settled in conquered areas and drove weaker groups deeper into the forest. The Mane, progenitors of the Mende ethnic group, arrived after the collapse of the Mali empire and first settled in today's Sierra Leone in 1545 (Oliver and Atmore, 2001). Throughout the sixteenth and seventeenth centuries, Mane tribes invaded and conquered ethnic groups that already lived there, reshaping ethnic boundaries and taking prisoners, either to be kept as domestic slaves or for sale to European slave traders.

In a separate historical episode, the Fulbe of Futa Jallon formed a powerful Muslim state in what is now eastern Guinea (which borders Sierra Leone) in 1726, and declared *jihad* against the neighbouring tribes. Their state conducted regular slave raids throughout the rest of the eighteenth century, putting pressure on groups to move and resettle, especially into Sierra Leone's northern districts. By the time the first British and freed slaves arrived in Freetown in 1787, most of the current ethnic borders had already been drawn. The decline of the external slave trade during the late nineteenth century, combined with an increased British military and administrative presence in the Protectorate by century's end, partially restrained wars between ethnic groups and helped to preserve largely stable ethnic borders for over a century.

The fact that historical ethnic settlement patterns were driven by slave raiding and warfare centuries ago could make it less likely that local diversity is correlated with omitted factors that would affect current public goods, relative to more recent migration. However, there remain many plausible violations of the exclusion restriction – that is, ways in which historical ethnic diversity might still influence current local public goods provision other than through current ethnic diversity – that are important to consider, and we do so in this article.

Given that most related studies find negative relationships between local ethnic diversity and public goods, most of the literature has been concerned with negative biases that could be producing spurious findings. Yet negative bias 'stories' are less of a concern here, given this article's finding of 'zero' impact of diversity on outcomes. Of more potential concern, rather, are historical processes that could have potentially generated spurious positive correlations between local diversity and collective action, since in that case our zero estimated effects might be consistent with a negative causal impact of diversity that is offset by a positive bias. In the discussion below, we thus focus mainly on potential sources of positive bias.

A leading possible explanation for positive bias in cross-sectional estimation of diversity impacts is that omitted location characteristics could attract a diverse population and reduce the cost of public goods provision. For instance, areas with better geographic characteristics, especially higher quality soils, might both attract diversity and, through the channels of higher income or education, facilitate collective action. For this reason, we include a wide range of geographic, elevation, climatic and soil characteristics (from the well-known Harmonised World Soil Database) as covariates in our regressions. Such variables would have been particularly important historical determinants of local economic and institutional outcomes in poor agrarian societies like Sierra Leone.

Beyond this, we also control for measures of the quality of historical institutions, using measures from the colonial era, given the potential persistence of these institutions in affecting collective action today. We make use of information on the locations of colonial era European Christian missionary activity (Nunn, 2010). Missionaries were often early providers of schools and health clinics, and churches served as focal points for local social organisation, so their presence is potentially critical. We also include data on the nature of traditional chieftaincy institutions, namely, the number of ruling families in a chiefdom. Acemoglu *et al.* (2012) argue that the number of ruling families is an inverse proxy for the strength of the paramount chief and find that it strongly predicts local collective action. Several chiefdoms were amalgamated in the late 1940s and early 1950s during an administrative reorganisation, and we also include an amalgamation indicator as a control.

A second potential concern with the IV strategy would be if current levels of public goods were directly determined by historical investments, as would be the case, for instance, in the US, where many present-day libraries and schools were built in the early 1900s. If public goods were persistent and preferences for public goods were persistent then the distribution of ethnic settlement and public goods now would reflect Tiebout (1956) style sorting in the 1960s. In rural Sierra Leone, however, this is unlikely to matter. The vast majority of public goods investments were made after 1963 – there were virtually no rural schools in 1963, for example, as is illustrated in the abysmally low literacy rate – and many of the key public goods measures have very high depreciation rates; road clearing and maintenance, for instance, typically lasts only a few months in Sierra Leone's dense tropical rainforests.

Third, historically strong chiefs may have been more successful at encouraging (or forcing) assimilation of slaves and other 'strangers' into adopting the ethnic identity of the dominant local group, as Posner (2005) argues occurred in Zambia in the early 20th century. However, to the extent that strong rulers did promote actual ethnic assimilation (thus reducing measured ELF), this would bias us towards finding a

negative relationship between local diversity and public goods, making it less of a concern for us given our zero estimated diversity impacts below.

Finally, if certain economic activities (such as trading or mining) require greater inter-ethnic cooperation and also produce higher levels of income, and the geographic distribution of these activities persists over time, this could undermine the validity of our instrumental variable. However, there is no correlation between formal sector employment and chiefdom ethnic diversity in 1963 (see online Appendix Table A3),¹⁰ indicating little sorting along these lines in colonial times, as well as arguing against the view that richer areas saw more ethnic assimilation. The census indicates that the vast majority of households in rural Sierra Leone were engaged in the same economic activities in 1963, namely subsistence farming of rice and cassava. Yet because of this concern, we exclude all urban areas throughout the analysis, and as a robustness check also exclude the diamond mining areas in the country's east (Kono district), which experienced an economic boom in 1940s and 1950s, attracting migrants from throughout Sierra Leone.

There are no historical panel data that would allow us to directly test whether more civic-minded were more or less likely to sort into ethnically diverse areas. However, we are able to directly assess whether such systematic individual residential sorting occurred in the period since 1990. As mentioned above, we first examine interactions of ELF with a survey measure (from the NPS) of trust in those from 'outside your own community or neighbourhood'. There is evidence from other recent research (Guiso *et al.*, 2004, 2006) that people born in low trust areas carry this mistrust with them when they move, increasing our confidence that it is not driven by current outcomes in the local community. The second measure we use is a measure of household community group leadership in 1990 (before the civil war and long before the outcomes analysed in this article). For both measures, we do not find statistically significant interactions between either chiefdom co-ethnic share or diversity and these measures (Table 2, columns 2 and 4), increasing our confidence that local diversity impacts are not mainly driven by the systematic sorting of 'civic-minded' individuals into (or out of) diverse areas during the recent period. If similar sorting patterns held historically, this would provide further support for our identification strategy.¹¹

¹⁰ Online Appendix Table A3 shows that there are some statistically significant correlations between ELF in 1963 and certain socio-economic and geographic characteristics, most notably positive relationships with local literacy and with distance to the coast. These correlations make the inclusion of these historical covariates all the more important. We find below that the article's main findings are unchanged with their inclusion.

¹¹ In fact, for this sorting to lead to undermine the validity of our instrument, it has to be the case that some individuals have different preferences for diversity than society as a whole, relocate based on these preferences and then pass down to their descendants a higher than average preference for cross-ethnic cooperation. There would need to have been considerable relocation based on ethnic cooperation preferences prior to 1963 and very high persistence in these preferences, or in the local norms and institutions that formed in tandem with them, across generations. Similarly, if more educated individuals have greater taste for diversity and for providing public goods, and if these characteristics are passed down through the generations, this could also undermine the validity of our IV strategy. This latter point on education does not appear to be a major concern because only 2.8% of rural Sierra Leoneans were literate in 1963 and thus ancestors' education is not a strong predictor of current education, but there may be other channels. While these concerns might seem far-fetched given the overwhelmingly agrarian and under-developed nature of nearly all of Sierra Leone in 1963, they are difficult to rule out. They are of particular interest to us since they would be likely to produce a positive bias between diversity and public goods.

Table 3
First Stage Regressions

	(1)	(2)
Ethnic fractionalisation (ELF), 1963	0.725 (0.058)***	0.694 (0.064)***
Adj. R ²	0.572	0.597
N	146	146
F statistic	154.28	15.19
Survey covariates		Yes
Geographic covariates		Yes
Soil quality covariates		Yes
Institutional covariates		Yes

Notes. OLS regressions with ethno-linguistic fractionalisation (2004) as the dependent variable, and robust standard errors in parentheses. */**/** denotes significantly different from zero at 90/95/99% confidence. All regressions are estimated with survey weights, where each chiefdom observation is weighted by the inverse of its sampling probability. Coefficients on NPS control variables (listed in Table 4) and coefficients on ruggedness, distance to rivers, distance to coasts, elevation, slope variables, soil quality variables, the number of ruling families in 1896, an indicator for whether the chiefdom was amalgamated in the late 1940s or early 1950s, and the number of catholic and protestant missions and the constant are not reported.

Table 3 presents the first stage regressions of 2004 ethnic diversity on the historical measures, and finds remarkably strong correlations. In the key result, the coefficient estimate on 1963 chiefdom ethno-linguistic fractionalisation is 0.725 (SE 0.058, column 1), for a *t*-statistic of 12. Judging by the R² value of 0.572, 1963 ethnic diversity variable explains the lion's share of the chiefdom-level variation in current ethnicity measures. Results are unchanged if historical ethnic shares (and squared shares) for the largest ethnic groups are also included as instruments for current ethnic shares to capture possible differences in average public goods preferences across groups (not shown). A graphical representation is depicted in Figure 3, panel (a), plotting ELF in 2004 (on the *y*-axis) *versus* 1963 ELF (*x*-axis), where the slope of the line corresponds to the coefficient on 1963 ELF in Table 3, column 1. The first stage relationship is nearly unchanged with the inclusion of the full set of regression controls, both in terms of the coefficient estimate (0.694, SE 0.064, column 2) and graphically (Figure 3, panel (b)).

3. Estimation and Data

We next describe our regression specifications (subsection 3.1) and the data (subsection 3.2).

3.1. Regression Specifications

Let $k = 1, \dots, K$ index the outcome variables Y_k , and let j index observations at the chiefdom level. For each outcome, we first estimate the OLS regression:

$$Y_{jk} = \alpha_k + \beta_k ELF_j + \mathbf{X}'_j \boldsymbol{\delta}_k + \epsilon_{jk}, \quad (3)$$

where ELF_j is the chiefdom ethno-linguistic fractionalisation measure and \mathbf{X}_j is a vector of average socio-economic and demographic controls for households in chiefdom j ,

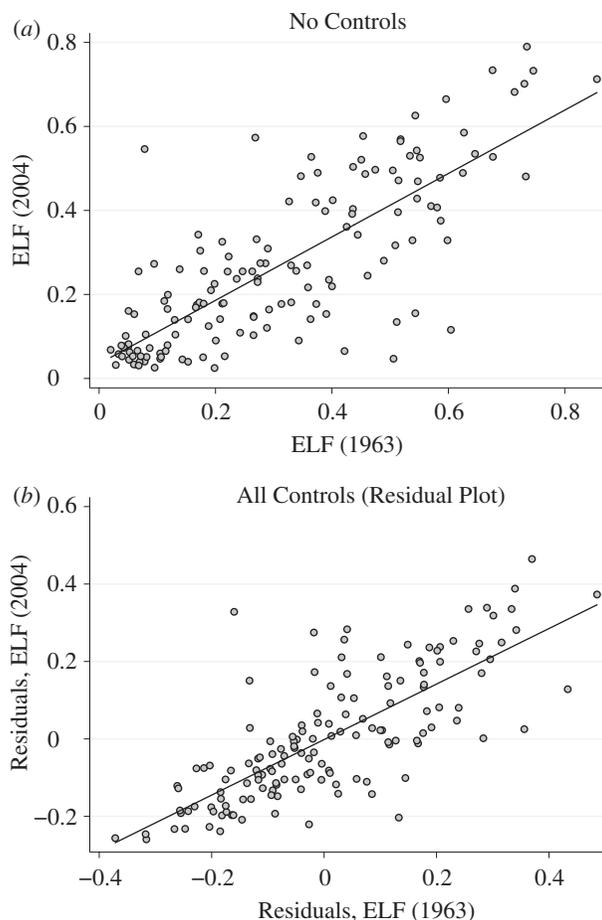


Fig. 3. *Chiefdom Ethno-linguistic Fractionalisation in 2004 versus Ethno-linguistic Fractionalisation in 1963 Notes.* This Figure is a graphical representation of our first stage. Panel (a) displays a bivariate scatter plot, with the y -axis depicting 2004 ELF and the x -axis depicting 1963 ELF. The regression line corresponds to Table 3, column 1. Panel (b) is a residual-on-residual plot. The y -axis depicts residuals from a regression of 2004 ELF on the control variables reported in Table 4, Columns 2 and 5. The x -axis plots residuals from a regression of 1963 ELF on those same controls. This regression fit corresponds to Table 3, Column 2.

and ε_{jk} is the error term. We also interact ELF_j with some characteristics \mathbf{X}_j to explore heterogeneous impacts. We interpret the resulting IV-2SLS estimates as capturing the local average treatment effect of ethnic diversity on outcomes among the chiefdoms that had stable ethnicity patterns over 1963–2004. Because we have a strong first stage relationship (Table 3), we argue that this sub-group of ethnically stable chiefdoms is large and important. However, it is worth emphasising that the IV strategy does not allow us to estimate diversity impacts in areas that experienced large changes in diversity over the period. Examining diversity impacts in these areas is also potentially of interest but is not a topic we can study with this identification strategy.

The specifications below report results with the chiefdom as the unit of analysis. The main reason to focus on chiefdoms is that the 1963 census data are not available at a

more disaggregated geographic level. Moreover, the chiefdom is also a relevant political unit of analysis given the continued power of paramount chiefs in rural Sierra Leone. Paramount chiefs, and the section and village chiefs below them, have a particularly prominent role in organising local collective activities, and are well known and respected among citizens. For some quantitative evidence of this, in 2007 NPS data, 82% of household respondents could name their local paramount chief correctly, while only 44% were able to identify their local council representative or representative in the national parliament.¹²

We investigate ethnic diversity impacts on a number of closely related outcomes, and create summary impact measures using a mean effects analysis, following Katz *et al.* (2007). The groupings of related outcome variables are denoted by Y_k , $k = 1, \dots, K$. We then standardise each outcome by subtracting the mean and dividing by the standard deviation of the outcome variable among below-median ELF areas (a low diversity 'control' group of sorts). The standardised outcome variables are denoted Y_k^* . With these, we form $Y^* = K^{-1} \sum_k Y_k^*$, a single index of outcomes, and we regress this index on ELF as in (3). The coefficient on ELF in this regression is the mean effect size. Note that we defined the outcome variables so that 'better' is always positive; for instance, finding that ELF and disputes were positively correlated means disputes are lower in more diverse areas.

In terms of the sample, we drop all observations from Sierra Leone's six largest urban areas – Freetown, Bo Town, Kenema Town, Makeni, Bonthe Town and Koidu – which together make up the vast majority of the country's urban population (and which includes pieces of several chiefdoms), leaving an analysis sample of 146 chiefdoms. The nature of local collection action and public goods provision is qualitatively different in urban and rural areas – for instance, as a legacy of its settlement history, there are no chiefs in Freetown – and for reasons of comparability we thus focus on rural areas, where most of the population lives.

3.2. *Local Measures of Public Goods, Collective Action, Social Capital and School Quality*

The 2005 and 2007 NPS Surveys are nationally representative surveys that asked over 6,000 respondents questions about their access to and satisfaction with public services.¹³ The survey also contains questions designed to measure participation in local collective action activities and social capital, broadly defined (online Appendix Table A4 contains summary statistics of the specific measures).

School quality data were collected in the 2005 School Monitoring Survey. Enumerators made unannounced visits to a nationally representative sample of 338 schools and collected information on the quality of school buildings, the number of

¹² Moreover, NPS data also reveal that individuals were also much more likely to have visited the chiefdom headquarters than they were to have visited the local council headquarters; self-expressed trust for chiefs (at 43%) is much higher than trust for elected local councillors (29%); and respondents are much more likely to think that chiefs are responsive to local needs (62%) than local councillors.

¹³ NPS data collection was designed so that half are administered to female respondents and half to male respondents, usually the head of household or her/his spouse. The surveys were originally intended to form a panel but because of insufficient funding for respondent tracking, the matching rate is relatively low and thus the data are treated as a repeated cross section.

classes taught, whether teachers were present, and the availability of supplies for instruction. We employ data from the 281 schools not in Freetown or other large towns; descriptive statistics are in online Appendix Table A5.

We create two broad categories of outcome variables, collective action outcomes and stated trust outcomes, and carry out a mean effects analysis for outcomes within each group. Within the collective action outcomes, there are also six subgroups of specific types of outcomes. The first sub-index is community participation. These outcomes include: road maintenance, known in Sierra Leone as 'road brushing', a locally organised activity to keep bush paths between villages passable, which is a critical public good especially in remote villages; participation in communal labour or other community projects (such as school construction); and attendance at community meetings, events where people voice concerns and make decisions about other local activities. These variables all capture some aspect of the effectiveness of local efforts to provide public goods. The local representative of the chiefdom authority often monitors these activities and has the power to fine non-participants (in road brushing, for instance), so we first look for diversity effects across chiefdoms (Table 4). Average participation in road brushing (by men) and in community meetings over the last month was quite high at around 40%, though there is wide variation across chiefdoms.

The second sub-group of collective action outcomes is group membership, which measures participation in community self-help groups, such as women's associations, youth groups and religious groups. It also includes questions on groups with more economic significance, such as trade unions, school management groups and credit groups. The latter may facilitate agricultural investment and boost farm productivity. Decisions to join these groups are made by individuals and their choices plausibly reflect the degree of cooperation within a community. There are high membership rates, with over 80% of individuals having membership in at least one group, though average participation in credit groups and school groups was lower and more variable.

The third sub-group is the control of community disputes. Respondents were asked questions about whether they were the victim of theft, physical attack or were involved in land disputes. Obviously, in this case, in contrast to the previous two categories, higher values reflect worse local outcomes.¹⁴ Physical attacks and land disputes were relatively infrequent. Traditional chiefs and their local representatives (e.g. village headmen) have explicit authority over public safety and they also oversee the local courts which punish these offences. The capability and performance of chiefly authorities may thus directly affect the control of community disputes. Chiefdom level diversity measures are also relevant as some disputes occur between neighbouring EAs which may be dominated by different ethnic groups (e.g. disputes over cattle).

While the public goods measures we just described – road maintenance, communal labour, village meeting attendance and crime control – are plausibly thought of as

¹⁴ In 2005, the average incidence of theft was quite high (27%) but by 2007 it had fallen substantially (though this may be due in part to a change in question wording across the two survey rounds), see online Appendix Table A4.

Table 4
Ethnic Diversity and Road Maintenance (Brushing) Across Chiefdoms

	OLS Regressions			IV Regressions		
	(1)	(2)	(3)	(4)	(5)	(6)
Ethnic Fractionalisation (ELF)	-0.070 (0.096)	-0.157 (0.095)	-0.190 (0.120)	-0.092 (0.131)	-0.173 (0.115)	-0.226 (0.165)
Civil war victimisation index		0.001 (0.112)	-0.015 (0.125)		-0.001 (0.101)	-0.025 (0.113)
Female respondent share		-0.281 (0.312)	-0.275 (0.314)		-0.283 (0.281)	-0.275 (0.283)
Youth (age 16–35) respondent share		-0.299 (0.190)	-0.300 (0.191)		-0.298 (0.171)*	-0.299 (0.171)*
Middle-aged (age 36–50) respondent share		-0.402 (0.179)**	-0.395 (0.182)**		-0.402 (0.160)**	-0.391 (0.163)**
Muslim share		0.397 (0.074)***	0.395 (0.074)***		0.397 (0.066)***	0.395 (0.066)***
Any education share		0.558 (0.130)***	0.535 (0.141)***		0.561 (0.119)***	0.527 (0.126)***
Average socio-economic status index		-0.500 (0.181)***	-0.503 (0.184)***		-0.500 (0.163)***	-0.505 (0.165)***
Community leader respondent share		0.129 (0.102)	0.130 (0.104)		0.129 (0.092)	0.130 (0.094)
Vector ruggedness measure, (3 × 3 window)		-0.028 (0.363)	-0.046 (0.358)		-0.016 (0.329)	-0.040 (0.321)
Distance to nearest river (km)		0.011 (0.007)	0.011 (0.007)		0.011 (0.006)*	0.011 (0.006)*
Distance to the coast (km)		0.002 (0.001)	0.002 (0.001)		0.002 (0.001)*	0.002 (0.001)*
Number of Catholic or Protestant missions		-0.043 (0.056)	-0.048 (0.058)		-0.044 (0.050)	-0.051 (0.052)
Civil war victimisation index × ELF			0.151 (0.384)			0.223 (0.397)
N	146	146	146	146	146	146
Adjusted R ²	-0.003	0.314	0.309			
Kleibergen-Paap rk Wald F statistic				154.28	129.26	30.15

Notes. Robust standard errors in parentheses. */**/** denotes significantly different from zero at 90/95/99% confidence. Ethno-linguistic fractionalisation in 2004 is instrumented using its 1963 value, with the first stage reported in Table 3. All regressions are estimated with survey weights, where each chiefdom observation is weighted by the inverse of its sampling probability. Coefficients on elevation, slope variables, soil quality variables, the number of ruling families in 1896, an indicator for whether the chiefdom was amalgamated in the late 1940s or early 1950s, and the constant included in all regressions are not reported.

truly local, school quality is the result of a combination of village, chiefdom, local council and central government decisions, as well as non-governmental organisation (NGO) investments. For instance, the building of formal schools and hiring of government teaching staff are typically the responsibility of the Ministry of Education in Freetown, national reconstruction agencies and large church organisations and, thus, are partly determined by national policy or political concerns rather than by local collective action alone. Yet many communities supplement government provision by locally funding community teachers, paying for repairs and supplies and even building some community schools. Successful community organisation can also impact the quality of public education through more indirect routes such as lobbying the central

government or attracting NGO support. Ethnic cooperation may also work through the provider side – that is, if teachers show up to work more frequently when working in areas dominated by their own group.

School outcomes were organised into three sub-indices. The first set of school quality outcomes is instructional supplies. Enumerators recorded the number of desks, chairs, blackboards and textbooks in use at the time of their visit. Together with school enrolment data, these allow us to construct a variety of per student input measures. Most supplies are either provided directly by central government or paid for through a small non-salary grant the central government sends to local schools (the so-called school fee subsidy). Communities can affect school supplies by overseeing the school fee subsidy effectively and ensuring it is spent properly on education (rather than being diverted or stolen), and by raising additional local funds.

The second category is teaching quality measures. Enumerators arrived unannounced at the primary schools and noted teacher absence; almost 40% of teachers were not present during these surprise visits, a high but not unprecedented rate (Chaudhury *et al.*, 2006). If teachers were present, they also observed teacher classroom behaviour upon arrival at the school (i.e. were they teaching, grading, sitting idly, chatting with other teachers or talking on the phone), which allows us to compute the proportion of teachers who were actually working when the unannounced visit was made. On average, conditional on being present 80% of teachers were actually working when the enumerators arrived at a school.

The third category is school facilities quality. Enumerators collected information on whether the school had a functioning toilet, electricity and water supply, and whether the roof, floor and walls of the school were made with strong building materials (e.g. concrete) rather than mud or thatch. Once again communities can raise additional funds locally to build or repair a school. Usually, however, communities only raise money to build temporary classroom structures when the central government has not yet built a permanent structure. The vast majority of schools in our sample are central government built structures, so this category is plausibly one where local collective action is somewhat less important in practice.

In terms of the stated trust index, respondents were asked about the extent to which they trusted people in their community, as well as outsiders, local officials (chiefs and local councillors) and members of parliament in Freetown. Perhaps unsurprisingly, self-reported trust is much higher for members of respondents' own communities than for outsiders (at 91% *versus* 48%, respectively, in 2005). Trust for government officials is lower on average and falls noticeably between 2005 and 2007. Some of this decline may be explained by the end of the 'honeymoon' period enjoyed by leaders in the immediate aftermath of the war but some is also the result of a change in question wording between survey rounds.¹⁵

¹⁵ Wording changed for several questions between the 2005–2007 rounds, including the time period for the community meeting participation questions (i.e. annual *versus* monthly), trust questions and control of community dispute questions. While the means of these variables change across rounds, it is still appropriate to 'group' them together in the same index in the mean effect analysis since all variables are first normalised.

4. Impacts of Ethnic Diversity on Local Public Goods, Social Capital, Disputes and Schools

We first present estimates of the relationship between ethnic diversity and participation in road maintenance (brushing) across chiefdoms (Table 4). The first three columns contain OLS estimates, while the second three use the historical instrumental variables based on 1963 population census data. In column 1, we regress road brushing on ELF_j . The coefficient estimate on ELF_j is small and positive but not statistically significant. In column 2, we add controls for civil war conflict experiences and other socio-economic, demographic, historical and geographic covariates. Including controls makes the estimated diversity effect more strongly negative but it is still not significant. The proportion of residents with some education is strongly positively correlated with road brushing, as is the proportion of Muslims. Figure 4 presents these findings graphically, both for the specifications without (panel (a)) and with (panel (b)) the full set of covariates. Column 3 estimates interactions between ethnic diversity and war exposure, and finds that diversity effects are no different in areas that experienced worse war-related violence. The coefficients on ELF_j do not change substantially in the IV specifications (Table 4, columns 4–6), remaining small, negative and not statistically significant. Overall, ethnic diversity does not have a statistically significant impact on participation in road maintenance, one of the most important, time consuming and truly local and non-excludable public goods in rural Sierra Leone.

We next assess whether the failure to find significant diversity effects is due to a lack of statistical power. One way to explore this question is to determine the magnitude that any diversity impact would need to have for us to detect it as statistically distinguishable from zero. Again consider road maintenance. From the IV specification with full controls in column 5 of Table 4, the estimated ethnic diversity effect on road maintenance participation is -0.173 with a standard error of 0.115 . With 95% confidence, then, the true effect of diversity lies in the interval $(-0.398, 0.052)$. If we perform the thought experiment of increasing ELF by one standard deviation (or roughly 0.2), the confidence interval implies that a change in road maintenance would lie inside $(-0.080, 0.010)$ with 95% probability. Road maintenance participation has a standard deviation of 0.21. So considering road brushing alone, we can reject the null hypothesis that a one standard deviation increase in diversity reduces road maintenance by 8 percentage points, or 0.38 SD, a moderate effect magnitude.

For more precise estimated diversity effects, we next consider multiple outcomes simultaneously using the mean effects approach. Table 5 reports mean effect estimates for the groups of local outcomes – the overall collective action mean effect, and each of the sub-indices (community participation, group membership, control of disputes, school supplies, teaching quality and school building quality), as well as the stated trust mean effect – using both OLS and IV specifications. As with road brushing, the IV estimates remain close to zero for the collective action index and for all six component sub-indices; none are significant at traditional levels.

Figure 5 reports 95% confidence intervals (CI) on the ethnic diversity effect estimates for all the mean effects indexes, with all variables standardised (to be mean zero and standard deviation one) to facilitate comparison, based on IV specifications with the full set of controls (as in column 5 in Table 4). The confidence intervals for

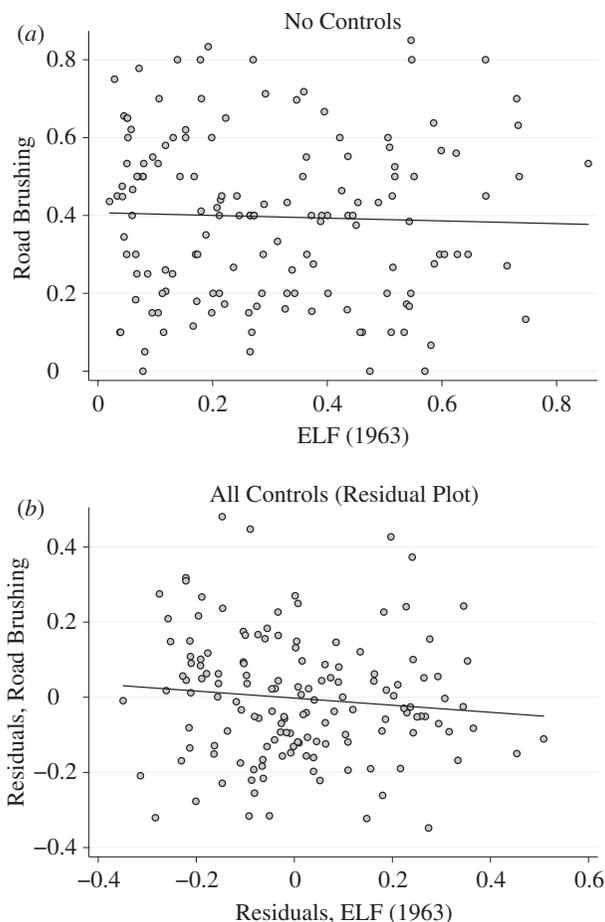


Fig. 4. *Chiefdom Road Maintenance Participation in 2007 versus Ethno-linguistic Fractionalisation in 1963 Notes.* This Figure is a graphical representation of the reduced form. In panel (a), we do not include controls, so this is a bivariate plot of ELF in 1963 on road brushing participation. The regression fit corresponds to the reduced form of Table 4, column 4. In panel (b), we report a residual-on-residual plot, where the y -axis displays residuals from a regression of road maintenance on the control variables reported in Table 4, columns 2 and 5. The x -axis plots residuals from a regression of 1963 ELF on those same controls. The regression fit corresponds to the reduced form of Table 4, column 5.

the overall collective action mean effect and all of its sub-indices contain the vertical zero line, indicating that estimated diversity effects are not statistically significant. Moreover, the estimated zeros are again quite precise. Following the same exercise as above and focusing on the overall collective action mean effect, the 95% confidence on the standardised effect size of a one standard deviation increase in ELF is $(-0.10\sigma, 0.06\sigma)$. This is a tightly estimated zero effect, such that even the quite small impacts falling outside these intervals can be ruled out with 95% confidence.

It is useful to compare this 95% CI to the estimated effects in existing studies. The most closely related study of local ethnic diversity and public goods in a rural African setting is Miguel and Gugerty (2005), who estimate the impact on primary school

Table 5
Ethnic Diversity and Local Outcomes: Mean Effects Analysis

	OLS Regressions		IV Regressions	
	(1)	(2)	(3)	(4)
Collective action mean effect	0.194 (0.156)	0.119 (0.175)	0.034 (0.207)	-0.105 (0.212)
Community participation mean effect	0.201 (0.341)	-0.275 (0.332)	-0.158 (0.484)	-0.606 (0.457)
Group membership mean effect	0.686 (0.219)***	0.467 (0.200)**	0.141 (0.321)	-0.227 (0.241)
Disputes mean effect	0.235 (0.321)	0.142 (0.316)	0.410 (0.375)	0.615 (0.341)*
School supplies mean effect	-0.002 (0.281)	0.091 (0.366)	0.166 (0.329)	0.221 (0.374)
Teaching quality mean effect	0.357 (0.175)**	0.534 (0.253)**	0.244 (0.203)	0.428 (0.293)
School building quality mean effect	0.132 (0.246)	-0.142 (0.357)	0.073 (0.282)	-0.274 (0.366)
Stated trust mean effect	-0.291 (0.229)	-0.233 (0.337)	-0.753 (0.280)***	-1.023 (0.290)***
Survey covariates		Yes		Yes
Geographic covariates		Yes		Yes
Soil quality covariates		Yes		Yes
Institutional covariates		Yes		Yes
Number of chiefdoms	146	146	146	146

Notes. Each entry is the coefficient estimate on ethno-linguistic fractionalisation (ELF) from a separate regression. */**/** denotes significantly different from zero at 90/95/99% confidence. See online Appendix C for details on the mean effects analysis. Ethno-linguistic fractionalisation in 2004 is instrumented using its 1963 value, with the first stage reported in Table 3. The Survey covariates are reported in Table 4. The geographic, soil quality, and institutional regression controls are reported in columns 2 and 5 of Table 4, and descriptive statistics of these variables are reported in Table A2. All regressions are estimated with survey weights, where each observation is weighted by the inverse of its sampling probability. The components of the 'Community participation' category are participation in road brushing, community labour and community meetings. The components of the 'Group membership' category are members of any community group, a credit group and a school group. The components of the 'Disputes' category are the incidence of any local assault dispute, land dispute or dispute involving theft. The components of the 'Stated trust' category include trust of people in own community, people outside community, local councillors and the central government. Descriptive statistics for these outcomes are in online Appendix Table A4. The components of the 'School supplies' category are the average number of desks per student, chairs per student, benches per student, blackboards per student and textbooks per student. The components of the 'Teaching quality' category are the teacher/student ratio, the percentage of teachers present during surprise visit and the percentage of teachers actually working during surprise visit. The components of the 'School building quality' category are the percentage of schools with toilets, with electricity, with piped water and with sturdy buildings. Descriptive statistics are presented in online Appendix Table A5. The components of the 'Collective action' category include all variables within the following categories: 'Community participation', 'Group membership', 'Disputes', 'School supplies', 'Teaching quality', and 'School building quality'.

funding outcomes. They find that the normalised effect magnitude of a one standard deviation increase in local ELF (which is also 0.2 in that sample) on local school fees collected is -0.37σ , while the effect on the number of desks per pupil in the classroom was similar, at -0.33σ . Both of these estimates lie far outside the confidence interval of $(-0.10\sigma, 0.06\sigma)$ that we estimate. In other words, our local diversity effects are sufficiently precisely estimated to rule out the moderate effects found in the existing literature.

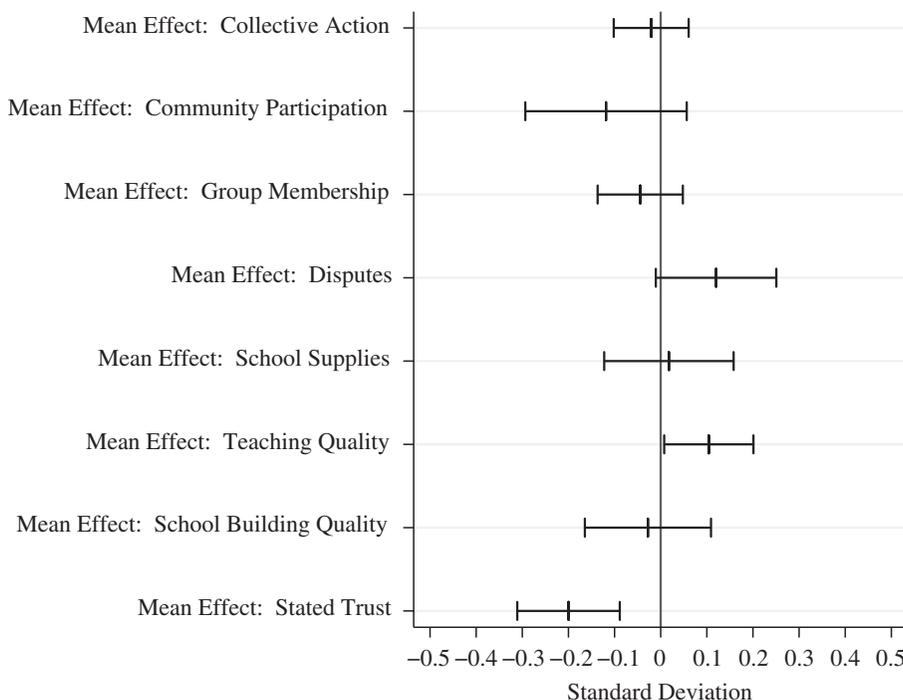


Fig. 5. Point Estimates and 95% CI for a One Standard Deviation Increase in Diversity on the Standard Deviation of Local Outcomes

Notes. Each line represents a 95% CI for the effect of a 1 SD increase of ethnic diversity on local outcomes. Because the dependent variables were standardised before regressions, each confidence interval should be interpreted as the impact in standard deviations of the dependent variable. Individual estimates and confidence intervals taken from IV specifications with full controls, similar to Table 4, column 5. Mean effects are produced in Table 5, column 4. All regressions are estimated with survey weights, where each chiefdom (or enumeration area) observation is weighted by the inverse of its sampling probability.

In contrast, there are large, negative and statistically significant estimated diversity impacts on the stated trust index (Table 5, bottom row), with an estimated effect of -1.023 (SE 0.290) in the specification with all covariates. There are similarly large negative point estimates on all four trust questions. As in Olken (2009), stated measures of cooperation appear to be worse in ethnically diverse areas even when objective measures show no differences. Understanding the source of this ‘pessimism’ in diverse communities is an important topic for future research.

As a robustness check on the main collective action results, we exclude the main diamond mining areas in the country’s east (Kono district), and once again find no statistically significant ethnic diversity impacts on any of the four main mean effects categories (not shown). The results are similarly robust to weighting each chiefdom equally (not shown). In a further robustness check, we created another diversity measure capturing the extent to which ethnic groups differ by language family rather than ethnic group. Recall from Section 1 that the most salient distinction is between groups speaking Mande languages (e.g. Mende and others) versus Atlantic-Congo languages (Temne, Limba, and others). We thus create a fractionalisation index that

captures the probability that two randomly sampled individuals speak languages from different families, and regressed our local public goods measures on this index. In a mean effects analysis (online Appendix Table A6), the overall collective action mean effect is again not significant (-0.031 , SE 0.276).

One concern with ELF is that it treats all ethnic differences identically, regardless of the history of group relations. This potentially introduces noise into the diversity measure and might bias diversity estimates towards zero. We created an alternative diversity measure that only considers ethnic differences if particular pairs of groups had a history of armed conflict. Kup (1961) provides a detailed overview of how different ethnic groups came to settle the territory that is today's Sierra Leone, and their conflicts during the 1400–1787 period. Let s_c denote a $(J \times 1)$ vector of ethnicity shares for chiefdom c . We can define the *historical ethnic conflict index* for chiefdom c as follows:

$$HCON_c = s_c' \Gamma s_c \quad (4)$$

where $\Gamma = [\Gamma_{jk}]$ is a $(J \times J)$ matrix with a typical element equal to 1 if groups j and k had historical conflicts with one another and zero otherwise. This matrix is depicted in online Appendix Table A7, with entries drawn from Kup (1961).¹⁶ The correlation between $HCON$ and ELF is high but not perfect, at 0.783 across chiefdoms. Again using the mean effects approach, there is no robust relationship between this measure and local collective action (online Appendix Table A8, point estimate 0.229, SE 0.313).

Another important dimension of social identity in Sierra Leone is religion. Unfortunately, the 1963 Census does not allow us to construct measures of historical religious diversity, so we rely on the less compelling OLS estimates. There is no evidence of adverse effects of religious diversity on the overall collective action mean effect (online Appendix Table A9, point estimate -0.152 , SE 0.323), although there are some positive estimated effects on schooling measures.

5. Explaining the Weak Relationship Between Diversity and Local Outcomes in Sierra Leone

In this Section, we explore historical factors that could have affected ethnic cleavages in Sierra Leone. We first examine the legacy of Britain's support for chiefs in subsection 5.1. Strong chiefs might simultaneously preserve the salience of ethnicity while also promoting local capacity, although we actually do not find evidence that strong chiefs lead to better local collective action outcomes. We next turn to a broader and more speculative discussion of other historical factors, including the role of Krio as a *lingua franca* that might promote cooperation (subsection 5.2).¹⁷

¹⁶ In constructing this matrix, Kup (1961) provides data for all conflicts between 1460 (when the first European explorers came to Sierra Leone) and 1787 (when Sierra Leone was first colonised). From our reading of history, we assumed that the Krio were in conflict with all other groups. We also assumed that the Mandingo were in conflict with all other groups because they were notorious slave raiders, although they are not mentioned frequently in the Kup (1961) text.

¹⁷ For a more complete discussion of the historical factors shaping ethnic identity in Sierra Leone, refer to the working paper version, Glennerster *et al.* (2010).

5.1. *The Legacies of Colonial 'Decentralised Despotism' and Slavery*

British rule led to the strengthening of traditional chiefly authorities. These rulers had the explicit backing of British military might against any local challengers, dramatically bolstering their political standing relative to the pre-colonial period, provided they remained loyal to their British overlords. This authority translated into unchecked power and growing wealth for chiefs around Africa; Sierra Leonean chiefs are perhaps the epitome of this tendency (Mamdani, 1996). Except in rare cases where villages are roughly equally split between two ethnicities and there are two village chiefs each representing their own ethnicity, village chiefs and paramount chiefs have authority over both their own tribe and over other ethnic groups.

Paramount chiefs in colonial Sierra Leone were the local executive, legislative and judicial authority. They had the power to fine, imprison, banish and even kill; their network of section chiefs and (male) elders stretched into every village in the country. Chiefs were also prominent in the domestic slave trade, which flourished in Sierra Leone legally until the late 1920s, and informally for decades afterwards. Powerful chiefs owned dozens of slaves, allowing them to plant vast tracts of farmland. Even after the formal end of slavery, chiefs were able to press local youth to 'donate' labour to their large farms. Chiefs also laid early claim to much of Sierra Leone's diamond wealth, which was being discovered mid-century, and to this day claim royalties on local diamond finds.

While the role of domestic slavery in the origins of the civil war is somewhat controversial, the arbitrary and undemocratic nature of the Chieftom system and the lack of voice for young men in particular, are widely held to have played a role in fuelling the social discontent that contributed to the RUF uprising. There was, as a result, some public discussion after the civil war about major reforms to chieftaincy institutions but there have not been any meaningful changes since 2002. As discussed above, our survey data indicate that chiefs remain by far the most influential local authorities in rural Sierra Leone today.

A leading explanation for why ethnic diversity might not undermine public goods provision in rural Sierra Leone is the presence of the traditional chiefly authorities as a strong 'third-party enforcer'. Habyarimana *et al.* (2007) find evidence in the lab for the importance of third-party enforcement in sustaining public goods provision in a Ugandan sample, echoing Fehr and Gächter (2000). In Sierra Leone, Chiefs have explicit responsibility for enforcing participation in public goods provision and can levy fines on free-riders. They also have responsibility for dealing with theft and disputes, which in turn can influence levels of trust.

In 2008, every paramount chief in Sierra Leone was surveyed, and information was collected on age, tenure in office and education. We subsequently assembled additional information on chief membership on the national council of paramount chiefs, years since the last chiefly election and on whether the chief has 'interim' or permanent status (from authorities in Freetown). Finally, we use the number of local ruling chiefly families in the chieftom (from Acemoglu *et al.*, 2012) and respondents' expressed 'trust' in their chief from the 2007 NPS data (see online Appendix Table A10 for details). While no single measure perfectly captures the chief's power, taken together they allow us to use several different proxies for the political strength of

chiefs in our analysis, both as stand-alone regressors and in interaction with ethnic diversity. Online Appendix Table A11 reports the mean effects results (for the same two main categories as above, collective action and stated trust) for chiefdom ELF, paramount chief tenure (years since the last election), whether or not the chief was an 'interim' ruler in 2008 (ruling only until the position could be filled on a permanent bases through the traditional selection process),¹⁸ local respondent trust in the chief, the number of ruling families and the interactions between ELF and these characteristics. We find no significant relationship between most of these characteristics, or their interactions with ELF, and local collective outcomes or trust, and this holds both for characteristics presented in the Table as well as for other characteristics that are not shown (e.g. education, age). While Acemoglu *et al.* (2012) find that having a strong chief as proxied by the number ruling families is related to economic outcomes and trust in chiefs, we find that their indicator does not significantly alter the impact of local ethnic diversity on collective action outcomes (column 5). The one partial exception to these null results is that ethnic diversity effects appear to be slightly negative and marginally statistically significant in areas with interim chiefs (column 3), although the possibility that one term out of many would be significant by chance cannot be ignored.

These findings undercut the third-party enforcement theories advanced by Habyarimana *et al.* (2007) as the rationale for our finding. Although the proxies for chief strength may be missing some important dimensions of political influence and this mismeasurement of actual influence could potentially lead to attenuation bias towards zero, the fact that multiple proxies for chiefly strength nearly all deliver the same result is reassuring.¹⁹ The next subsection discusses factors other than 'strong chiefs' that might be playing a role in limiting the negative impacts of ethnic diversity in Sierra Leone.

5.2. *The Role of Krio in Shaping Sierra Leonean Culture and Identity*

One key difference between Sierra Leone and many other African countries is that the 'favoured' ethnic group during early colonialism, the Krio, were not indigenous. The Krio ethnic group are descendants of freed slaves who settled Freetown starting in the late eighteenth century. They were a powerful ethnic group during the nineteenth and first half of the twentieth century but have since shrunk to demographic (and political) insignificance. Thus as Sierra Leone made its transition to independence in 1961, the primary source of political conflict shifted. As stated by Kandeh (1992), 'the salience of the Creole (Krio)-protectorate cleavage was eclipsed after independence by the rivalry between the Mendes of the south and Temnes of the north'. This has plausibly helped shape inter-ethnic relations to the present day.

In 1787, with funding from English philanthropists including Granville Sharp, former slaves arrived at the peninsula of Freetown, now known as Sierra Leone's

¹⁸ This information was collected from the local government ministry's official database of ruling chiefs.

¹⁹ However, note that to the extent that most Sierra Leone chiefs – even weak ones – have sufficient authority to punish free-riders in ethnically diverse areas, chief strength impacts would not be apparent in the cross section.

Western Area, negotiating purchases of land from local chiefs.²⁰ For a brief period, the Creoles, or Krio as they became known, governed themselves but, after attacks on the initial settlement by Temne warriors, Sharp needed to solicit additional funds to defend and repopulate the settlement. To do so, he aligned himself with commercial interests and in 1791 his investors formed the Sierra Leone Company, whose mission was to 'substitute legitimate commerce between Africa and Great Britain for the slave trade' (Spitzer, 1974, p. 10). When the company went bankrupt in 1808, its lands were taken over by the British government and Sierra Leone became a British Colony. While ethnic divisions in Sub-Saharan Africa have often been exacerbated by colonialism – the political rise of the favoured minority Tutsi in Rwanda being perhaps the most notorious example – in Sierra Leone, the British took steps to curb Krio political power, at least temporarily preventing the dominance of one ethnic group over others (Collier, 1970).²¹

One of the principal legacies of Sierra Leone's settlement by former slaves and its long history as a slave trading outpost, is the language now called Krio, which is now believed to be spoken (mainly as a second language) by 95% of the population (Oyetade and Luke, 2008). While its exact origins are debated,²² the popularity of the Krio language throughout Sierra Leone is not in dispute. Speakers of the leading indigenous ethnic languages have adopted Krio, and Krio has had a major impact on spoken Mende and Temne as well as other languages. The widespread knowledge of Krio in Sierra Leone – although the vast majority of adults in the country have no formal schooling – facilitates trade, communication and potentially cooperation across ethnic lines. That Krio is an indigenous language may help provide a common feeling of national identity.

The high degree of interethnic marriage in Sierra Leone, especially in urban areas (Davies, 2002), may also be an indication of favourable ethnic relations and historical interaction, while also potentially promoting inter-ethnic cooperation in the next generation. While large-scale statistical evidence on inter-marriage is limited, it is reinforced by suggestive genetic evidence. Jackson *et al.* (2005) study the nucleotide sequences of mitochondrial DNA in different ethnic groups and find no statistically significant differences between the sequences found in the Mende, Temne, and Loko groups (although there were some significant differences between these groups and the Limba). The lack of a detectable genetic difference between the country's two largest groups, the Mende and Temne, is especially noteworthy.²³

²⁰ For a narrative account of the settling of the colony by freed slaves, including many who gained their freedom by fighting with the British during the American Revolution, see Schama (2006).

²¹ The political marginalisation of the Krio is a striking contrast to the supremacy of their analogues in Liberia, the Americo-Liberians. Liberia was never colonised but in 1822, the capital Monrovia was settled by former US slaves. These individuals and their descendants dominated Liberian politics until they were overthrown in 1980. Recent political violence in Liberia is the result, at least in part, of resentments between Americo-Liberian elites and 'up-country' tribes, divisions that were dampened in Sierra Leone by British policies marginalising the Krio.

²² Schama (2006) claims that Krio evolved from the language used by native (non-Krio) Sierra Leoneans to communicate with slave traders in the sixteenth and seventeenth centuries: 'A pidgin English, much coloured with pidgin Portuguese, had been a lingua franca on the coast for at least a century since the slavers had first leased Bance Island' (Schama, 2006, p. 202). Oyetade and Luke (2008) argue instead that it is closely related to the language spoken by Jamaican Maroons (descendants of escaped slaves) and was transplanted to Freetown when they resettled there. A related view is that Krio evolved as a language through which Freetown's disparate groups could communicate.

²³ Tishkoff *et al.* (2009) contains a detailed discussion of genetic diversity both within and across African populations, and documents the genetic signatures that characterise many African groups.

The sensitivity of the effect of ethnic diversity to local history, formal institutions and social norms has been widely emphasised by other research on other African societies. For instance, Miguel (2004) finds no diversity impacts on local outcomes in Tanzania, a country whose leadership has consistently sought to bridge ethnic divisions by promoting a common language (Swahili) and abolishing traditional tribal chiefs but does find adverse diversity impacts in neighbouring Kenya, where post-independence leaders have exacerbated ethnic divisions for political gain. Posner (2004) examines two ethnic groups that straddle the Zambia-Malawi border and finds that national political rivalry between them translates into worse local relations in Malawi, in contrast to Zambia, where they are not on opposing political sides. In a recent contribution, Dunning and Harrison (2010) argue that cross-cutting 'joking cousinage' institutions limit ethnic salience in Mali. These cousinage institutions are not found among Sierra Leone's main ethnic groups, although they do exist in northern Kuranko areas (Jackson, 1974).

6. Conclusion

Sierra Leone is one of Africa's poorest countries and was devastated by over a decade of civil war. It does not, however, fit the stereotype of a country torn apart by tribal hatred, where different ethnic groups are unable to cooperate to provide public goods. When war came, it did not divide the country along ethnic (or religious) lines and we show in this article that ethnically diverse communities have levels of collective action that are statistically indistinguishable from homogeneous communities. Many basic public goods are provided through local collective action and the outcomes that we study – road maintenance, communal labour, self-help groups, control of crime and school infrastructure – are important determinants of rural Sierra Leoneans' households' well-being and thus worthy objects of study.

The results hold when we address endogenous residential sorting by instrumenting for current ethnic fractionalisation levels with historical levels, restricting the sample to rural areas with stable ethnic composition since the colonial period, and controlling for longer term historical factors, geography and soil types. The civil war generated considerable migration and enables us to carefully examine the process of residential sorting. Our analysis of migration decisions demonstrates that many Sierra Leoneans have a strong preference to relocate to areas where co-ethnics also live, confirming the usefulness of our IV approach.

While ethnic diversity does not impede local collective action in Sierra Leone and ethnic divisions did not feature prominently in the civil war, it would be wrong to conclude that ethnic identity is unimportant in contemporary Sierra Leonean society. Our migration findings show that Sierra Leoneans strongly prefer to move to areas where their own ethnic group is numerous, perhaps to benefit from ethnic job networks, informal insurance, or patronage from co-ethnic chiefs. We find that stated trust in others is considerably lower in diverse communities.

Casey (2009) also finds that ethnicity remains salient in national politics. The two major political parties, SLPP and the APC have strong ethnic ties, the SLPP being connected to the Mende and other ethnic groups in the South and the APC to the

Temne and other northern groups. However, there are limits to ethnic voting in Sierra Leone: while voters strongly prefer the party linked to their own group, Casey uses exit poll data to show that they are much more willing to cross-ethnic-party lines in local elections, where they have better information about candidates. Moreover, the APC won the 2007 election in part because the Mende splinter PMDC party aligned itself with the APC in the presidential run-off rather than their SLPP co-ethnics.

The puzzle, therefore, is how ethnic identity can play such an important factor in decisions such as where to live and how to vote but was not a leading factor in the conduct of the civil war nor the provision of local public goods. A positive interpretation is that it is possible to preserve strong ethnic identities and still achieve inter-ethnic cooperation, perhaps because the common bonds of language and national identity are stronger than the centripetal pull of tribe. We discuss how historical factors may have contributed to this result, for example, through the spread of a lingua franca (Krio) that is unique to Sierra Leone yet not the first language of either of the country's two largest and most powerful ethnic groups (Mende and Temne). Another potentially important factor is the colonial legacy of cooperation between these two groups against a common foe, the Krio community who are now numerically and politically inconsequential.

Scholars have now identified several African cases where high levels of ethnic diversity do not impede successful local collective action. By learning from such cases, we hope to generate insight into how to address ethnic divisions in other societies where they remain a concern. In this regard, the story that emerges from Sierra Leone is different in important respects from others described in the literature. Like Tanzanians, Sierra Leoneans are bound together by a common national language that they strongly feel is theirs, yet the two countries differ fundamentally in their local and national institutions and how these interact. In contrast to Tanzania, the high level of interethnic cooperation in Sierra Leone is not the result of a 'modernising' approach that dismantled chiefdom authorities and replaced them with elected local institutions. Unlike in Zambia, successful local collective action across diverse ethnic groups is maintained in Sierra Leone even when the groups are national political rivals.

While it is difficult – and potentially unwise – to draw general conclusions about how to achieve inter-ethnic cooperation in a continent as diverse as Africa, Sierra Leone provides a stark counterexample to the view that underdevelopment in Africa is inextricably connected to tribal conflict. Looking forward, it is still possible that the post-war transition to democracy, with tightly contested recent national elections fought largely along ethnic lines, will increasingly exacerbate ethnic tensions in Sierra Leone (consistent with the findings in Eifert *et al.*, 2010), perhaps gradually undermining the cooperation documented in this article. The negative impact of local ethnic diversity on stated trust may be an indication that this unravelling is already starting to occur. More optimistically, the strong local inter-ethnic cooperation that we document in this article may continue to provide a robust bulwark against the exploitation of ethnic divisions by national politicians.

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Additional Supporting Information may be found in the online version of this article:

Appendix A. Discrete Choice Models with Choice-based Sampling and Survey Weights.

Appendix B. Mapping 1963 Chiefdoms to 2004 Chiefdoms.

Appendix C. Mean Effects Analysis.

Appendix D. Data Appendix.

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