

War and Institutions: New Evidence from Sierra Leone

By JOHN BELLOWS AND EDWARD MIGUEL*

Scholars of economic development have argued that war can have adverse impacts on later economic performance: war destroys physical capital and infrastructure and disrupts human capital accumulation, and it may also damage institutions by creating political instability, destroying the social fabric and endangering civil liberties (World Bank, 2003).

Understanding war's impact on development is particularly important for Sub-Saharan Africa, where two-thirds of all nations suffered from armed conflict during the 1980s and 1990s. The proliferation of armed conflict in the world's poorest region begs the question of what role conflict may be playing in Africa's disappointing economic performance.

Yet the net long-run effects of war are ambiguous from the point of view of economic theory. To the extent that war impacts are limited to the destruction of capital, the neoclassical model predicts rapid economic growth postwar, converging back to steady-state growth. Several recent papers that study war impacts—including in Japan (Donald R. Davis and David E. Weinstein, 2002) and Vietnam (Miguel and Gerard Roland, 2005)—find few persistent local impacts of U.S. bombing, with heavily bombed areas experiencing rapid recovery to prewar population and economic trends. This is consistent with the neoclassical model if war's main consequence is to destroy capital.

War could also affect long-run growth—either positively or negatively—by modifying the scale parameter in the neoclassical growth model. For example, while the World Bank (2003) argues that war has adverse institutional

consequences, Charles H. Tilly shows how war promoted state formation and nation building in Europe historically, ultimately strengthening institutions (Tilly, 1975).

We study the aftermath of the recent civil conflict in Sierra Leone. One notable aspect of this project is the extensive household data for Sierra Leone on conflict experiences and on local institutions. Our results are complementary to the other recent studies mentioned above, none of which examines institutional impacts.

I. The Sierra Leone Civil War

Sierra Leone was ravaged by a civil war that started in 1991 and lasted until 2002. During the war an estimated 50,000 were killed, over one million were displaced from their homes, and thousands more were victims of brutal amputations, rapes, and assaults (Human Rights Watch, 1999).

The war began when rebels from the Revolutionary United Front (RUF) invaded the country from its eastern border with Liberia. The conflict eventually reached all regions of the country and led to major political instability. At the national level, Sierra Leone experienced two coups and saw a serious deterioration of discipline within the Sierra Leone Army (SLA). According to most reports, elements of the SLA were colluding with the rebels throughout the war. There were few battles between the army and RUF, and a faction of the SLA even briefly entered into a formal political alliance with the rebels after the 1997 coup. As a result, the main victims of violence were civilians rather than soldiers.

At the local level, the RUF rebels generated political and institutional instability by specifically targeting chiefs—the traditional rulers in rural areas—for massacres, burning schools and courthouses, and scattering the civilian population. Young RUF recruits were often deliber-

* Bellows: Department of Economics, University of California-Berkeley, 549 Evans Hall #3880, Berkeley, CA 94720-3880 (e-mail: jbellows@econ.berkeley.edu); Miguel: Department of Economics, University of California-Berkeley, 549 Evans Hall #3880, Berkeley, CA 94720-3880, and NBER (e-mail: emiguel@econ.berkeley.edu). We thank Rachel Glennerster, Kate Whiteside, Yongmei Zhou, David Zimmer, and Leonard Wantchekon (our discussant) for useful comments. The usual disclaimer applies.

ately sent to attack their own home villages, leaving deep scars within their families and communities (David Keen, 2005, p. 60).

Yet the violence also led to the creation of new local institutions, as communities throughout the country organized Civil Defense Forces (CDF) to protect themselves. CDF fighters were civilians, often linked to traditional hunter groups, and they relied primarily on local fundraising for supplies. Though initially admired for their defense of civilians, later in the conflict some CDF units lost discipline and began to abuse civilians (Keen, 2005, pp. 268).

The role of diamonds in igniting and perpetuating the Sierra Leone conflict has attracted widespread media and scholarly attention. Diamonds are easily smuggled, providing both income for militia leaders and funding for arms. Because large-scale diamond smuggling was possible only so long as the country remained in chaos, diamond profits represented an important incentive for all armed groups to continue fighting (Keen, 2005, p. 50).

Another factor thought to have ignited the violence was the Sierra Leone state's failure to provide public services and promote economic development. Over the two decades preceding the conflict, a one-party state served the interests of a small group of politicians and foreign diamond merchants, while basic public services disintegrated. As a result, in 1990 Sierra Leone had the second lowest human development ranking in the world (United Nations, 1993). The total failure of the state to provide education and generate employment opportunities created a large pool of disenfranchised youth ready to rise up violently against the system (Paul Richards, 1996). In contrast, neither ethnic nor religious divisions played a central role in driving the conflict.

Following the brutal 1999 RUF attack on Freetown, United Kingdom and UN troops intervened and finally brought an end to the war, conducted a disarmament campaign, and secured a peace treaty in 2002. Donor and nongovernmental organization (NGO) assistance has since played a major role in reconstructing physical infrastructure, resettling internally displaced persons, and funding the government budget. National elections for president and parliament were held in 2002, and local government elections were held in 2004.

II. Data

We study local socioeconomic and institutional outcomes in 2004 and 2005, several years after the war ended. The dataset was collected by the Government of Sierra Leone Institutional Reform and Capacity Building Project (IRCBP) in conjunction with Statistics Sierra Leone. The IRCBP national household survey annually assesses individual attitudes and interactions with local institutions. Sierra Leone has 13 districts, 19 local councils (a new administrative unit), and 153 chiefdoms. The sample was designed to be representative at the local council level, but the large number of household observations also allows us to create disaggregated chiefdom measures. The capital, Freetown, is excluded.¹

The 2005 IRCBP survey provides novel information on both local conflict impacts and institutions. The dataset includes responses to four retrospective questions about conflict experiences. Overall, 47 percent of respondents reported that people in their community were injured or maimed, and 68 percent reported that someone in their community had died during the war. The proportion who experienced violence within their own household is lower, though still high.

The conflict index is constructed by taking the chiefdom average of the four conflict experience questions. The data confirm that violence against civilians occurred in every region, with substantial variation across neighboring chiefdoms. These data focus on violence against civilians rather than battles between troops or the bombing measures used in other studies. This focus is arguably a more relevant determinant of local institutional and social outcomes than physical destruction. The survey also contains information on local institutions, including political outcomes (the proportion of respondents registered to vote and the proportion that attended a community meeting), and community group membership.

Three other data sources provide postwar outcomes or controls. The 2004 Sierra Leone Inte-

¹ Data are missing for Gbonkolenken chiefdom, leaving 152 chiefdoms. Median 2001 chiefdom population is 20,325.

grated Household Survey (SLIHS) provides data on recent migration patterns, school enrollment for girls and boys aged 5 to 18, and household per capita consumption expenditures.

Geographic variables are included as basic regression controls throughout. These include the current number of registered diamond mines and nondiamond mines by chiefdom, as well as road and river density. Finally, prewar socioeconomic data are available from the 1989 Sierra Leone Household Survey (SLHS). Measures of school enrollment and per capita expenditures in 1989 are defined analogously to the 2004 measures. The SLHS sample includes only 64 chiefdoms. The dataset lacks complete documentation, making it impossible to know how this sample was selected and difficult to interpret some of the variables.

The key econometric identification issue is the fact that the location of war violence was not randomly assigned. If regions with better trends in local institutional performance were more likely to suffer from violence, for example, this would bias estimated war impacts. Our ongoing research focuses on characterizing the precise causes and location of fighting during the conflict in order to formulate an instrumental variable strategy that addresses these concerns. (This version of the paper does not contain this analysis, however.)

Another approach is to control for prewar local, institutional characteristics and trends. Such data are simply unavailable for prewar Sierra Leone, to the best of our knowledge. In the analysis below, we control for chiefdom-level geographic characteristics, prewar socioeconomic characteristics, and district fixed effects, all of which are plausibly correlated with prewar institutions. The main regressions also control for the number of postwar NGO projects per chiefdom, partially to address the possibility that NGO activity, rather than local collective action, is driving postwar outcomes.

Another important caveat is that the econometric strategy outlined above provides estimates of local impacts based on differences across chiefdoms, but cannot capture aggregate war impacts. This issue is important if the war led to major national changes or cross-region spillovers were large. Keeping in mind these important limitations, the Sierra Leone dataset

is among the most comprehensive datasets from a post-conflict society.

III. Empirical Results

A. *Where Was the Violence in Sierra Leone?*

We first examine the correlation between local characteristics and war violence. Contrary to some observers' claims, there is no strong relationship between the number of registered diamond mines and local war violence against civilians (as proxied by the survey-based conflict index, Table 1). None of the three specifications, each containing different controls, finds a statistically significant relationship between diamond mines and violence. Road density and population are also only weakly related to war violence against civilians.

Prewar 1989 school enrollment is strongly negatively related to war violence in the specification with prewar socioeconomic controls (in this specification the sample falls to 64 chiefdoms). A one-standard-deviation, or 19-percentage-point, increase in 1989 enrollment is associated with a reduction of 0.05 in the conflict index, a moderate impact. This school enrollment result echoes Paul Collier and Anke Hoeffler's (2004) cross-country finding that male secondary school enrollment is negatively related to civil war onset. The interpretation of the school enrollment result is not clear-cut, however, since the relationship could reflect both lower recruitment costs for fighters (as argued by Collier and Hoeffler) and local grievances against the state and ruling elite. Recall that RUF rebels often raided their own home areas, which could in part explain why recruitment may be correlated with violence locally.

B. *War Impacts on Economic Conditions and Local Institutions*

We first summarize war impacts on postwar migration and socioeconomic outcomes. People living in areas with higher war violence intensity are more likely to have been recently displaced, as expected (Table 2, row 1). If migrants are not representative of the local population, however, this could potentially bias war impact

TABLE 1—CORRELATIONS WITH CONFLICT INTENSITY

Explanatory variable	Dependent variable: conflict index		
	(1)	(2)	(3)
Number of diamond mines	-0.0019 (0.0019)	0.0028 (0.0020)	0.0025 (0.0026)
Road density	0.05 (0.21)	-0.27 (0.19)	0.46 (0.35)
Log population density, 1985	0.030 (0.021)	-0.0015 (0.017)	0.082** (0.032)
Proportion children in school, 1989			-0.285** (0.116)
Log per capita expenditures, 1989			0.009 (0.029)
District fixed effects	No	Yes	Yes

Notes: There are 152 observations (chiefdoms) in columns 1 and 2 and 64 chiefdoms in column 3. Additional controls in all regressions include number of nondiamond mines, river density, and log distance to Freetown. Robust standard errors reported.

* Significantly different than zero at 90-percent confidence level.

** 95-percent confidence level.

*** 99-percent confidence level.

estimates. We plan to address this issue in future research.

Perhaps surprisingly, there are no meaningful negative effects of the war on 2004 consumption levels or school enrollment (Table 2, rows 2 and 3). If anything, areas that suffered from more violence have slightly better postwar outcomes, although effects are not significant. The absence of a relationship between violence and socioeconomic outcomes does not appear to be due to increased NGO activity in areas with more conflict: coefficient estimates are similar whether or not NGO projects are included as a control (the estimates in Table 2 control for such projects). The number of postwar NGO projects per chiefdom is also not robustly correlated with violence intensity (Table 2, row 4).

Turning to local political economy results, households in areas that experienced more violence appear somewhat more politically mobilized than those in other chiefdoms. To start, voter registration in the postwar elections is significantly higher in areas that experienced more violence in two of the three regression specifications, and is positive and marginally significant in the third (Table 2, row 5). The relationship is significant in all three specifications when the set of controls is expanded to include 2004 socioeconomic variables (not shown).

The proportion of households attending a community meeting is also statistically significantly higher in two of three specifications and marginally significant in the third (Table 2, row 6). The average number of community group memberships per household (Table 2, row 7) is higher in all specifications, though not robustly significant. Taken together, the positive relationships between war violence and these three measures constitutes suggestive evidence that violence is associated with greater local mobilization and collective action postwar.

This is arguably related to a broader increase in postwar political mobilization in Sierra Leone, manifested, for example, in the rise of the CDF. Descriptive statistics from the 2005 IRCBP survey corroborate this: when asked how the war had an impact on how well their community is able to work together, 60 percent stated that impacts were positive.

Among the various community organizations discussed in the IRCBP survey, religious group membership is most strongly positively correlated with war violence (Table 2, row 8). This provides suggestive evidence of a rise in religiosity in areas most affected by the conflict, though determining the precise explanation demands further investigation. In contrast, neither political group membership nor women's group membership is statistically significantly related

TABLE 2—CONFLICT INTENSITY AND POSTWAR OUTCOMES

Dependent variable	Coefficient estimate (std. error) on conflict index		
	(1)	(2)	(3)
1. Proportion lived elsewhere in last 12 months	0.148** (0.064)	0.119* (0.062)	0.153 (0.143)
2. Proportion children in school, 2004	0.077 (0.12)	0.20 (0.14)	0.44* (0.25)
3. Log per capita expenditures, 2004	0.33 (0.29)	0.33 (0.26)	0.23 (0.48)
4. NGO projects (per 1,000 People), 2004 ^a	1.74* (1.02)	-1.38 (1.14)	-0.34 (1.72)
5. Proportion registered to vote in past year	0.043** (0.019)	0.057** (0.025)	0.065 (0.041)
6. Proportion attended any community meeting	0.133* (0.074)	0.30** (0.082)	0.18 (0.13)
7. Average number of group memberships per household	1.64*** (0.46)	0.65 (0.47)	0.49 (0.78)
8. Proportion of household with a religious group member	0.243** (0.116)	-0.004 (0.097)	0.248* (0.134)
District fixed effects	No	Yes	Yes
1989 pre-war controls	No	No	Yes

Notes: Each coefficient is from a separate OLS regression. Basic controls in all regressions include number of diamond mines, number of nondiamond mines, river density, road density, log distance to Freetown, NGO projects per 1,000 people, and 1985 log-population density. Column 3 includes controls for the proportion of children in school and log per capita expenditure in 1989. In rows 1–3, columns 1 and 2 include 117 chiefdom observations, and column 3 includes 55 observations. In rows 4–8, columns 1 and 2 include 152 observations and column 3, 64 observations. Robust standard errors reported.

* Significantly different than zero at 90-percent confidence level.

** 95-percent confidence level.

*** 99-percent confidence level.

^a Regressions do not include per capita NGO projects as a control.

to war violence. In terms of other social capital measures, neither a survey measure of community cooperation nor the extent of self-expressed trust for others is robustly associated with recent war violence, conditional on other factors (regressions not shown). So war violence does not boost measures of local collective action and social capital across the board.

These results are preliminary and, in the future, we plan to bring further data and analysis to bear in order to draw more definitive conclusions.

IV. Discussion

There is no evidence of persistent adverse effects of civil war violence on local institutions in Sierra Leone. If anything, several local political mobilization measures are somewhat

higher in areas that experienced more violence. Speculatively, these changes in local political mobilization could lead to better postwar political accountability and perhaps even improved public policy in Sierra Leone. Of course, this finding does not imply that the impact of the war was positive overall: the aggregate national impact of the fighting on living standards could be very negative even in the presence of positive localized effects in certain institutional dimensions.

To conclude, our findings resonate with the research of other scholars, including with Keen's (2005, p. 170) claim that the war "seems to have produced a heightened political awareness among many ordinary Sierra Leoneans." Mariane C. Ferme also discusses the potential to forge something positive out of the horrors of the war: "[Sierra Leoneans] have sometimes

turned it [social instability] into a creative, though violent, opportunity to refashion themselves vis-à-vis their own institutions" (2002, p. 228).

REFERENCES

- Collier, Paul and Hoeffler, Anke.** "Greed and Grievance in Civil War." *Oxford Economic Papers*, 2004, 56(4), pp. 563–95.
- Davis, Donald R. and Weinstein, David E.** "Bones, Bombs and Break Points: The Geography of Economic Activity." *American Economic Review*, 2002, 92(5), pp. 1269–89.
- Ferme, Mariane C.** *The underneath of things: Violence, history and the everyday in Sierra Leone*. Berkeley: University of California Press, 2001.
- Human Rights Watch.** *Sierra Leone: Getting Away with Murder, Mutilation, and Rape*. New York: Human Rights Watch, 1999.
- Keen, David.** *Conflict and collusion in Sierra Leone*. London: James Currey Publishers, 2005.
- Miguel, Edward A. and Roland, Gérard.** "The Long-Run Impact of Bombing Vietnam." National Bureau of Economic Research, Inc., NBER Working Papers: No. 11954, 2006.
- Richards, Paul.** *Fighting for the rainforest: War, youth and resources in Sierra Leone*. London: James Currey Publishers, 1996.
- Tilly, Charles H.** *The formation of national states in Western Europe*. Princeton: Princeton University Press, 1975.
- United Nations Development Program.** *Human development report 1993*. New York: Oxford University Press, 1993.
- World Bank.** *Breaking the conflict trap: Civil war and development policy*. Washington, DC: World Bank, 2003.