

Geo-Referencing Aid and The Study of Violent Armed Conflict

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Most empirical analyses use data that are aggregated to the country-year level, thereby losing project-specific information. In this study, we introduce new data on the geographic location of aid projects in African countries between 1989 and 2008. We discuss why geographically disaggregated foreign aid and armed conflict data are needed to address the theoretical mechanisms in the aid-conflict literature. We then use the disaggregated aid and conflict data in Sierra Leone, Angola, and Mozambique as specific examples of how these data could help disentangle competing causal mechanisms linking aid to conflict onset and dynamics. This area of research offers important new perspectives on the connections between aid and conflict.



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Introduction

Aid potentially has important consequences for the occurrence and severity of violent armed conflict. However, because conflict typically occurs within specific regions of a country, current assessments of the aid and conflict literature, which use country-level data for both aid and conflict, could be problematic.

We introduce new data on the geographic locations of foreign aid projects that enable an examination of the distribution of foreign aid at the province, district, and city level, wherever possible. Specifically, we introduce new data on the geographic location of approximately 65,000 foreign aid projects that have been committed to African countries undergoing armed conflict between 1989 and 2008. We then explore applications of these data in the context of armed conflict.

We do not systematically test the aid-conflict relationship in this article. Instead, we show how the geo-referenced data can be used to gain a better understanding of the aid-conflict relationship.

Spatial Data on Foreign Aid

Prior to our geo-referencing work, very little foreign aid data have been available at the sub-national level. The UCDP/AidData geo-referenced aid dataset introduced in this paper represents the only historic sub-national dataset currently in existence.

The geo-referenced aid projects are drawn from the AidData portal, which provides a comprehensive global database of aid projects funded by multilateral and bilateral donors. Because of our interest in the aid-conflict relationship, we prioritized geo-referencing aid projects since 1989 that were committed to African countries, in which there are ongoing armed conflicts. All country-years where at least 25 battle related deaths occurred have been included. In order to illustrate how aid can affect conflict onset and resurgence, we have also coded inactive years before and after active conflict years in Sierra Leone, Angola, and Mozambique. The system of geo-referencing used here is based on the Uppsala Conflict Data Program's Geo-referenced Events Dataset. Whereas all projects are included in our dataset, we exclude in our maps those projects with no clear location.

Foreign Aid and Armed Conflict

The current literature on aid and conflict is largely negative in tone. Most studies argue theoretically or find empirically a positive correlation between aid levels and increased inci-

dence of conflict. There are, however, at least a couple posited mechanisms linking foreign aid to conflict in less-developed countries: (1) aid increases the prize for capturing the capital, motivating the onset of rebellion or influencing ongoing conflict dynamics, and (2) aid is similar to other resources that trigger rent-seeking behavior to ensure the survival of the ongoing rebellions.

If gaining access to the government will increase aid rents substantially, then potential rebels may choose to participate in rebellion when the expected payout of fighting outweighs the costs (Grossman 1992). This leads to a baseline expectation that reflects what many believe about the incentives that foreign aid creates: civil violence is likely caused, at least partially, by high levels of aid (Arcand & Chauvet 2001; Grossman 1992). But, ideally, a finer level of granularity could help us understand this expectation better.

The incentive to fight for control of the state may depend on the type of aid granted. Fungible foreign aid consists of money originally intended for development purposes but that can be easily diverted to other activities. In particular, aid destined for agriculture, energy, or education projects can be redirected by recipient governments, whereas aid to the transport and communications sectors may not be so easily diverted (Feyzioglu, Swaroop, and Zhu 1998).

Existing studies using aid data aggregated to the country level have not been able to consider the distribution of fungible aid between the capital and other parts of the country. This distinction may be important, however, because fungible foreign aid directed to the capital may create different incentives than aid directed to other parts of the country. Aid fungibility may affect conflict in at least two ways: (1) by increasing government military expenditures, and (2) by creating rent-seeking opportunities throughout the country. If aid increases the incentives for taking control of the state, but simultaneously empowers the government, we might expect to observe that violence will be more likely, but located away from the capital, as the military is likely to be strongest near the capital.

But what about aid flowing to localized regions? And what if that aid is fungible? Rents could provide more incentive for rebels to gain their own income or other forms of material support, such as aid supplies, than to control the government (Collier 2000: 843). From a micro-perspective it is clear that rebels do not have to gain government power to benefit from fungible, or misappropriated aid.

Micro-level studies have shown that rebels can capture a variety of foreign aid resources, such as food, transportation, and supplies, which can free up resources for warfare that local rulers had originally allocated for civilian use (Anderson 1999: 39). Combatants can also appropriate aid directly through theft, corruption, and looting, or via unfair business practices (Anderson 1999: 39; Maren 1997: 94, 169). We would, there-

fore, expect that rent-seeking rebels would strive to access aid on a local level, especially if the aid is fungible. And rebels are especially likely to loot the aid rents after the onset of conflict so that they can fund conflict activities.

There is no consensus on how aid influences conflicts at a disaggregated level. Based on the research reviewed here, the preponderance of evidence suggests that differences in access to aid contribute to conflict at the local level, either by motivating rebellion or providing access to funding that fuels continued rebellion. Our analysis does not resolve the debate, but we contend that using disaggregated geo-referenced data takes a step in the direction of being able to separate out these theoretical mechanisms.

Applications of the Geo-Referenced Data

We now turn to a closer examination of three individual countries to illustrate patterns of aid and violence by mapping separate foreign aid projects and battle locations. The cases were selected for two reasons. First, theoretically they are difficult cases for illustrating the influence of aid. Second, during the time periods for which we have geo-referenced aid data, these conflicts allow us to consider onset, dynamics, and recurrence of conflict.

Sierra Leone

The Sierra Leone conflict started in 1991 when the Revolutionary United Front (RUF) invaded Sierra Leone from Liberia with the aim to oust the government. And although the rebel movement was based on existing grievances, both the government and rebel forces were often guided by rent-seeking behavior.

In the two years preceding the onset of conflict in Sierra Leone, donors report only four large destinations for foreign aid within the country. These locations were primarily in the center of the country, and the capital, Freetown. When conflict broke out in 1991, it occurred largely in the East and South of the country, far removed from any of these major aid locations (see Figure 1). By 1994, as fungible aid centralized in the country's interior, the war spread inward for the first time as conflict seemed drawn towards easily divertible aid (see Figure 2). Terrible humanitarian conditions prompted international relief, which in turn resulted in attempts by the RUF to control aid distribution. This suggests a possible feedback loop in the provision of aid and the occurrence of violence. The conflict cooled in both 1996 and 1997, occurring mostly where the rebellion began near the Liberian border (UCDP Database, Sierra Leone). However, conflict did remain strong near the

only two destinations of fungible aid: Kenema and Freetown.

Throughout the decade-long civil war, Sierra Leone saw a distinct migration of conflict from the Eastern periphery toward the capital, Freetown. During this time, it seemed that battles tended to be heaviest near areas that received high levels of fungible aid. Thus, while the onset of hostilities appears to have been influenced by donors' neglect of the periphery, the continuance and distribution of violence appears to have been driven to some extent by the ability of rebels to seek rents in the form of highly fungible aid -- both in the capital and throughout the country.

Angola

Angola concluded its 27-year civil war between the Popular Movement for the Liberation of Angola (MPLA) and the National Union for the Total Independence of Angola (UNITA) in 2002 (CIA World Factbook).

The data show that higher levels of fungible aid were correlated with the higher frequencies of battles. Conflict in Angola from 1989 to 1990 was remarkably widespread, with each of the 18 provinces experiencing violence. The data suggest that high levels of fungible foreign aid to the capital instigate conflict in underfunded areas.

From 1989 to 1990, there were high levels of fungible aid to seven locations within five provinces, including to the capital city of Luanda. During the same time period, six of these seven cities also experienced battle events, consistent with expectations that rebellion is motivated by the business stemming from aid capture.

From 1991 to 1992, three very noticeable trends emerge. First, there is a substantial increase in destinations of fungible aid. Second, there is a substantial decrease in overall conflict, but nearly every major battle event in 1992 occurred within or near an area that had received a high concentration of foreign aid. Third, despite the association between battle events and aid, conflict seems to become more focused in certain areas of the country.

Even as fungible aid declined, conflict became heated throughout the country once again from 1993 to 1995. Interestingly, every destination of fungible aid was accompanied by armed conflict during this period. However, it does not appear that fungible aid recipients experienced more heated conflict than the rest of the country during this period. From 1996 to 1998, a decrease in conflict coincided with increased levels of fungible aid.

The years 1999 and 2000 saw another spike in battle deaths, with conflict occurring throughout most of the country. How-

ever, in spite of the widespread distribution of battles, only 4 of 10 destinations of foreign aid experienced similar levels of conflict. In the final three years of conflict, 2001–2003, nearly every destination of fungible aid was closely accompanied by a similar level of conflict. By offering moderate support for a general rebellion-as-business logic, Angola provides a mixed picture of the effect of fungible aid on armed conflict.

Mozambique

Mozambique had already experienced almost 15 years of civil war by 1990, with the Mozambique Resistance Movement (RENAMO) attempting to remove the Front for Liberation of Mozambique (FRELIMO) from power.

Throughout the period from 1989 to 1992, conflict seems to follow the allocation of fungible aid in locations across the country. In 1989 and 1990, there were high levels of fungible aid in several of Mozambique's provinces with nearby conflict activity. Nampula, Maputo, Sofala, Tete, and Zambezia each showed some clustering of fungible aid and battle activity. However, perhaps the heaviest conflict occurred within Gaza Province, which received no fungible aid over this two-year period.

In 1991, violence decreased, but the conflict displayed two patterns of particular interest. Firstly, much of the conflict activity occurred near the capital, Maputo, which received a significant portion of the country's fungible aid. Secondly, of the 15 battle locations within Mozambique, eight occurred directly on or nearby destinations of fungible foreign aid. In 1992, 5 of the 10 battle locations occurred directly near fungible aid destinations. The pattern of attacks near aid locations went as far as ambushes on aid columns, which were frequent enough to halt United Nation's food aid operations.

The final years of Mozambique's civil war seem to lend further credibility to the idea that rebels will seek rents wherever they are available, whether it is the capital or a remote region. Rebels seem to be motivated both by the goal of controlling the government and its revenues and of controlling locations which receive high levels of easily divertible funds.

Conclusions

The aid-conflict literature suggests a disaggregated, low-level testing strategy, but until now testing has only been possible at the country-year level. While we did not attempt any tests, the case studies illustrate what is possible using the geo-referenced data, particularly examining the possibilities for capturing foreign aid, given aid allocation within recipient countries.

Examining the case studies of Sierra Leone, Angola, and

Mozambique provides some seemingly consistent findings. Across time and in all three countries, conflict appears to be drawn to those locations where fungible aid has been granted. And in the case of Sierra Leone, the concentration of foreign aid to the capital, and neglect of the periphery seems to have contributed to the instigation of conflict.

This is the first study of which we are aware that explicitly maps large numbers of individual foreign aid projects. It is also the first study that systematically compares geo-referenced aid data alongside specific locations of battle. We expect that the data will be useful in testing the effects of aid on development outcomes, especially as the data are further refined and expanded.

References

- Anderson, Mary B. 1999. *Do no harm: How aid can support peace—or war*. London: Lynne Rienner Publishers.
- Arcand, Jean-Louis and Lisa Chauvet. 2001. Foreign aid, rent-seeking behavior, and civil war. CERDI-CNRS; Université d'Auvergne. 1–46.
- Collier, Paul. Rebellion as a quasi-criminal activity. 2000. *Journal of Conflict Resolution* 44 (6): 839–853.
- Feyzioglu, Tarhan, Vinaya Swaroop, and Min Zhu. 1998. A panel data analysis of the fungibility of foreign aid. *The World Bank Economic Review* 12 (1): 29–58.
- Tierney, Michael J., Daniel L. Nielson, Darren G. Hawkins, J. Timmons Roberts, Michael G. Findley, Ryan M. Powers, Bradley Parks, Sven E. Wilson, Robert L. Hicks. 2011. More Dollars than Sense? Addressing Knowledge Scarcity in Development Finance. *World Development* 39 (11): 1891–1906.
- Uppsala Conflict Data Program. 2010. www.pcr.uu.se/research/ucd

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Figure 1: Shows fungible and non-fungible aid received by Sierra Leone in 1989 and 1990, along with battle locations in 1991. The symbol sizes are based on a graduated scale; the size of points representing aid are based on the amount of aid allocated for the project at a specific location, and the size of points representing battles are based on the number of fatalities associated with a battle.

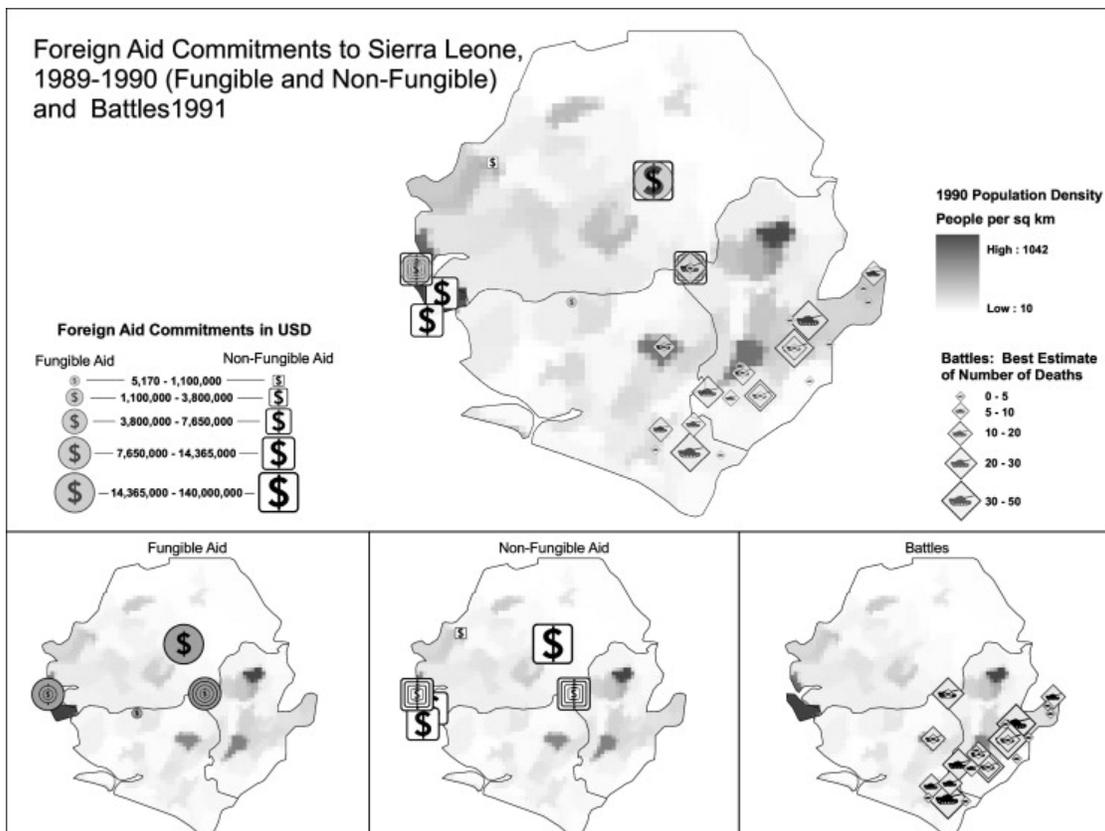


Figure 2: Shows fungible and non-fungible aid received by Sierra Leone in 1993 and 1994, along with battle locations in 1995. The symbol sizes are based on a graduated scale; the size of points representing aid are based on the amount of aid allocated for the project at a specific location, and the size of points representing battles are based on the number of fatalities associated with a battle.

