The Management of Aid and Conflict in Africa*

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Abstract

This study investigates the relationship between the management of development aid and violent conflict in Africa. I exploit variation in World Bank project management quality driven by the assignment of project leaders of varying ability, combined with geo-coded data on all projects linked to performance report cards. I find that better project management reduces violent conflict across sub-national aid receiving regions. Poorly-managed projects increase conflict while well-managed projects do the opposite. Project monitoring is particularly important, and management matters most in regions with a recent history of warfare and for large projects that involve the transfer of appropriable resources.

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1 Introduction

The relationship between development aid and violent conflict is a source of contentious debate (Qian, 2015). Some recent studies suggest that aid can cause conflict (Crost et al., 2014; Nunn and Qian, 2014; Dube and Naidu, 2015; Darden, 2020), while a range of other work finds an insignificant or negative relationship between the two (Collier and Hoeffler, 2002; De Ree and Nillesen, 2009; Crost et al., 2016; Beath et al., 2017). The reasons for these strikingly different results across contexts are poorly understood. Since development aid is one of the primary policy levers used to allay global poverty, understanding when and why it leads to violence, as well as what can be done to prevent it from doing so, is of central importance. Is there a way to minimize aid's potential harm in order to maximize its net benefit?

Qualitative accounts of aid delivery stress that the management practices of aid organizations shape the consequences of development assistance and, in particular, whether or not a given aid project spurs conflict (e.g. Prendergast, 1996; Anderson, 1999; Polman, 2010).[1] Monitoring strategies, for example, have anecdotally been the difference between whether aid leads to violence or not (Prendergast, 1996, p. 84), and aid organizations themselves increasingly prioritize improvement in management practices in order to reduce aid diversion.[2] While well-managed projects may increase local well-being and support for the government, thereby reducing violent conflict, poorly managed projects could be accompanied by local looting and appropriation, fueling violent conflict and opposition to government authority. A key empirical question, therefore, is whether the management of aid design and delivery—processes under the control of policy makers and bureaucrats—mediates the relationship between aid and conflict.

I investigate this question in the context of World Bank development aid in Africa. In 2022, the World Bank invested $49.4 billion in development assistance globally and $16.4 billion in sub-Saharan Africa alone (World Bank, 2022, the number is over $20 billion when North Africa and the Middle East are included). All projects are accompanied by detailed evaluation reports, including numerical performance scores, completed by the World Bank Independent Evaluation Group (IEG). These scores measure the quality of monitoring and evaluation, organization and preparation, and project execution, and provide a unique window into the details of project management.

To identify the causal effect of project management, I use the identity of individual project leaders as instruments for project management quality combined with geo-coded data on the universe of World Bank development projects taking place in Africa from 1995-2014 compiled by AidData.[3] Every World Bank project is assigned one task team leader (TTL or "project leader") in charge of advising the borrowing government, making hiring decisions, and monitoring project design, risk profile, implementation, and financial disbursements. Indeed, local project leaders are exactly the

[1] See also Easterly (2007) on broader criticisms of foreign aid bureaucracies and how bureaucratic structure limits the effectiveness of development assistance.

[2] For example, Oxfam's "commitment to prevent aid diversion," as expressed in this memo: https://www-cdn.oxfam.org/s3fs-public/file_attachments/story/anti-diversion-and-abuse-policy.pdf.

[3] This strategy is most similar to Marx (2017), who uses the portfolio size of project leaders as an instrument for project completion in an analysis of African elections. Also methodologically related are studies that use "examiner designs" in other contexts (e.g. Kling, 2006; Doyle, 2007; Maestas et al., 2013; Doyle et al., 2015).

individuals that oversee aspects of aid delivery that, if poorly executed, could exacerbate conflict. According to Anderson (1999, p. 72), project field staff "make local, specific, daily, and ongoing decisions about how they do their work [that] can affect the impacts of aid on conflict," often to a much greater extent than national or global leadership. Moreover, after broad lending sector specialty is taken into account, TTLs are assigned to a project in a recipient country on the basis of their rolling availability and before project location has even been determined. Therefore, leader assignment provides variation in project management quality that can be used to identify the relationship between project management and local conflict.

Combining leader assignment information and project quality scores with geo-coded conflict data from the Armed Conflict Location and Event Data Project (ACLED), I find that, across subnational aid-receiving regions, conflict is lower in regions with better project management. Changing project quality from the lowest to the highest implementation score reduces the probability of conflict by 10-12%. The estimates are similar after restricting attention to particularly violent forms of conflict, including instances of violence against civilians, as well as conflict deaths. Moreover, project management affects not only the extensive margin of conflict but also conflict scale.

As an alternative strategy to capture the effect of project management on conflict, I directly estimate the impact of each project leader on local conflict using a value added based approach (e.g. Chetty et al., 2014; Koedel et al., 2015). This makes it possible to identify how individual leaders shape project execution and conflict without using any independent project ratings. Moving from a leader in 25th percentile to a leader in the the 75th percentile of the conflict effect distribution increases the probability of a conflict event by about 15%. Moreover, while differences between lending sectors has been highlighted in prior work as a factor mediating the effect of aid on conflict (e.g., Qian, 2015), the variance of leader-specific effects on conflict is nearly three times as large as the variance of sector-specific effects on conflict.

Together, these findings suggest that individuals and organizations that administer aid play a major role in determining aid's impact on conflict.

However, while the baseline estimates document that conflict declines following the arrival of a well-managed project compared to a poorly-managed project, they do not necessarily imply that poorly managed projects lead to more conflict than no aid while well-managed projects lead to less. In order to identify the direct effect of aid, I introduce an additional instrument: an interaction between (i) the share of years that the location received any aid during the full sample period and (ii) the total number of aid projects during the year outside of Africa.[4] Using this instrument in concert with the project leader assignment information, I find that regions with the lowest scoring projects experience more conflict than they would without any aid project, while regions with the highest scoring projects experience less. That is, variation in project management is enough to explain why aid has had a positive effect on conflict in some contexts and a negative effect in others.

A series of empirical tests support the validity of the main identification assumption: that project

[4]This identification strategy is analogous to the one proposed by Nunn and Qian (2014) to study the impact of food aid and also related to the identification strategy in Dube and Naidu (2015), who study military aid to Colombia. The idea is to interact annual fluctuations in the total World Bank aid budget (location invariant) with the region's fixed propensity to receive aid (time invariant).

leader assignment is independent of potential sub-national conflict outcomes. First, to address the fact that project leaders are assigned in part based on their sector specialty, I show that the estimates are similar after including sub-sector fixed effects to control flexibly for differences across lending sectors. The main specification also includes both location and country-by-year fixed effects; thus, project leader sorting based on *persistent* differences across locations (e.g. conflict intensity) or *country-level dynamics* (e.g., civil war) do not violate the identification assumption. Finally, and consistent with the theoretical assignment process, there is no evidence of pre-existing trends or of any relationship between past conflict trends and leader sorting.

The evidence on mechanisms highlights several components of the relationship between aid management and conflict emphasized in qualitative accounts. The main conclusion is that good project management, and monitoring in particular, prevents the arrival of appropriable aid resources from spurring conflict, especially in contexts where armed groups are already present. I argue that these results are all consistent with an important role for "direct predation" by armed groups in regions that are already prone to violent conflict (see Findley, 2018). I also argue that several alternative mechanisms, including violence driven by rebels' attempts to undermine the state or by the greater entrenchment of local armed groups in the vicinity of aid projects (e.g. Crost et al., 2014), do not explain the forms of violence that are mitigated by project management.

First, by estimating the relationship between a series of disaggregated project ratings and conflict, I find that the quality of project supervision is a particularly important driver of the baseline results. This dovetails well with case studies illustrating how monitoring can limit aid diversion and conflict (Prendergast, 1996; Anderson, 1999).

Second, by estimating the relationship between project management and a series of disaggregated measures of conflict, I document that management has large effects on violent forms of conflict, including confrontations between government and non-government forces, but find no effect on non-violent land acquisition, base establishment by rebels, or other strategic but non-violent activity. These findings seem inconsistent with greater overall entrenchment or strategic behavior by armed groups. Instead, the findings are driven by direct clashes between armed groups, between armed groups and civilians, or between armed groups and the government.

Third, I find that the effect of project management on conflict is larger during later phases of aid project development, after which a larger share of project resources have been disbursed, and smaller during the initial years of project development. If the goal of insurgent groups were to undermine the legitimacy of the government by preventing aid implementation, violence might have been most extreme during project initiation (as argued in Crost et al., 2014); however, I find the exact opposite pattern.

Finally, the effects are also larger for projects that involve large financial disbursement values and projects that are in lending sectors involving "divertable" resources (e.g. energy projects). The larger effects for projects with more appropriable resources—measured in a variety of ways—are further consistent with a predation-based mechanism. All effects are also most pronounced in areas with a recent history of conflict, indicating that the presence of armed groups who might attack or fight over resources is important as well.

This study argues that poorly-implemented aid causes conflict whereas well-implemented aid can reduce it. It falls at the intersection of several strands of research. First, it is motivated by a large body of work investigating the relationship between aid and conflict; studies in this area have come to very different conclusions.[5] Most prior work investigating heterogeneity in the consequences of development assistance has highlighted variation in *recipient country* characteristics (e.g. Pritchett and Kaufmann, 1998; Svensson, 1999; Burnside and Dollar, 2000; Bräutigam and Knack, 2004; Werker et al., 2009). This paper, in contrast, shows that aid organizations and donor governments themselves can shape whether or not aid spurs conflict.

Second, this paper is related to a larger body of work on the implementation of development programs. The fact that leader capacity shapes the impact of World Bank projects corroborates work on challenges associated with executing large-scale projects, especially if one of the inputs (e.g. capable project leaders) is supplied inelastically (Davis et al., 2017; Banerjee et al., 2017).

Finally, this study extends work investigating the role of bureaucrats in service provision (Bandiera et al., 2009; Chong et al., 2014; Best et al., 2017; Decarolis et al., 2018). Focusing on the World Bank, Limodio (2021) investigates the sorting of bureaucrats across countries and the relationship between bureaucrat quality and individual characteristics.[6] A related literature studies the impact of management practices in developing countries (Bloom and Van Reenen, 2010; Bloom et al., 2013). The role of management in conflict mitigation, however, has not been the subject of prior work.

This paper is organized as follows. The next section presents qualitative evidence on the relationship between aid management and conflict and describes the organization of World Bank projects. Section 3 describes the data and empirical strategy. Section 4 presents the main results while Section 5 presents additional evidence on mechanisms. Section 6 concludes.

2 Background

2.1 Project Management and Conflict

A large body of qualitative evidence suggests that the management of development aid affects the outcome of aid delivery. Case studies emphasize the role of project monitoring, particularly in conflict zones. When projects are poorly monitored, resources may be more easily diverted or explicitly used for violence. For example, Prendergast (1996, p. 84) recalls: "One agency delivering large amounts of food to Rwanda increased its monitoring rapidly just after the emergency erupted in 1994. 'We went from 120 tons per month diversion to five tons,' [...] recalls a representative of that international agency. 'We did it through monitoring. It's monotonous, boring, but critical in cutting down mis-management."' Different project leaders may be more or less willing or able to organize and execute "monotonous" monitoring activities.

[5]For example, see Collier and Hoeffler (2002); De Ree and Nillesen (2009); Crost et al. (2014); Nunn and Qian (2014); Dube and Naidu (2015); Crost et al. (2016); Beath et al. (2017) and Darden (2020). This body of work has also been recently reviewed in Qian (2015) and Findley (2018).

[6]The data compiled in Limodio (2021) on World Bank bureaucrat CVs is used in Section 5.5 of this study, in order to investigate project leader characteristics associated with conflict mitigation.

Widespread theft and diversion of development assistance has been well documented (Polman, 2010).[7] Local bureaucrats play a particularly important role in limiting aid diversion and appropriation (Anderson, 1999, p. 72). While "headquarters' policies" are often important, management decisions made by staff often have a more immediate and wide-ranging impact on conflict activity. Hiring decisions and the haste with which personnel decisions are made affect the perceived legitimacy of the project, the community's ability to monitor aid disbursement, and the likelihood of appropriation (Anderson, 1999, p. 45); local wage rates and payment monitoring can be similarly impactful. Project managers improvise a range of strategies to reduce the likelihood that aid is appropriated by armed groups (Anderson, 1999).[8]

The existence of variation in management quality across World Bank projects was recently documented by the Special Inspector General for Afghanistan Reconstruction audit report (SIGAR, 2018). The report—subtitled "the world bank needs to improve how it monitors implementation, shares information, and determines the impact of donor contributions"—provides a unique level of detail about the operation of World Bank projects. For example, in many cases it was never verified that local salary recipients even existed; the report cites evidence of faulty monitoring across the board that exacerbated corruption and conflict. The potential role of management in mitigating violent fallout from development assistance is apparent in a range of case studies.

2.2 World Bank Project Leaders

Each year, World Bank country offices select a set of country priorities and determine how to allocate funds across ten broad lending sectors.[9] Once the sector-specific allocations are determined, country-specific sector managers are in charge of assigning the task team leader (TTL) for each project. The TTL is the "Bank's principal point of contact for the borrower for [each] project" (World Bank, 2003, p. 12). They specialize in one or several of the ten principal lending sectors and advise the borrower in project development and design. This includes hiring consultants and personnel and monitoring project implementation, including financial disbursements. According to World Bank (2013) protocol, TTLs "regularly monitor the performance of their projects: contracts, disbursements, technical progress, and risk flags." Thus, the TTL oversees exactly the practices that qualitative evidence suggests, if done wrong, could lead to conflict.

[7] This is not restricted to a handful of cases. Polman (2010) documents large-scale aid theft in Chad, Ethiopia, Kenya, Nigeria, Rwanda, Sierra Leone, South Africa, Sudan, Uganda, and Zaire, as well as several countries outside of Africa.

[8] For example, Anderson (1999) notes "Some agencies deliver goods unannounced, episodically, according to no fixed schedule, and never to the same location twice...Some agencies broadly advertise planned aid deliveries through radio, megaphones, bulletins, or TV so that communities for which aid is intended can hold thieves accountable...Some agencies consciously lower the resale value of their aid goods without damaging their usefulness, thus undermining thieves' incentives. Others make theft so inconvenient that the effort required is not worth the return" (pp. 39-40). Project managers also improve solutions to prevent aid diversion on the ground. As one example, Anderson (1999, p. 40) notes, "In a West African country, one agency was helping women with public health issues. As part of this program, the agency distributed inexpensive radios to the village women so they could listen to a weekly series on rebuilding civil society. Soon all of the radios had been stolen. The agency reissued radios—this time painted bright pink. Any man seen with a pink radio was immediately accosted and challenged by others. No one could easily get away with stealing the radios."

[9] These operations also follow guidelines set in longer-term World Bank Group Country Partnership Frameworks (CPF), drafted in order to "guide WBG support to a member country." See http://www.worldbank.org/en/projects-operations/country-strategies for a more detailed discussion.

TTLs are assigned during the first stage of project development—the "Identification" stage—before any project specifics have been determined (World Bank, 2013, p. 12). Assignment to projects is based on their current workload and availability, as well as their broad sector specialty. When the TTL is assigned, only a general project description is known and specifics, including project location, design, and sub-sector, have not yet been determined (Vermehren, 2017).[10] In theory, the borrowing government is largely responsible for determining the location of project sites; while the Bank and TTL might emphasize certain criteria that the project location must meet, location decisions are ultimately the responsibility of the government.[11] In practice, there are cases where TTLs and other Bank consultants take a more active role in project design, particularly in the poorest contexts. However, the behavior of the Bank and TTL are restricted by guidelines outlined in the Country Partnership Framework (CPF) and project agreement, making it unlikely that a project leader could affect local conflict through any channel other than the performance of their project.

Thus, the official timing and process of project development and TTL assignment make it unlikely that high or low performing TTLs are systematically assigned to sub-national regions that are becoming more or less conflict prone. Nevertheless, project dynamics on-the-ground may differ from the ideal protocol of the World Bank; Section 4.1 reports a series of empirical tests of bias introduced by TTL sorting that show no evidence of problematic sorting dynamics.

3 Methodology

3.1 Data

World Bank Projects Geo-coded data from AidData (`https://www.aiddata.org/`) provide information on the universe of World Bank lending projects in Africa from 1995-2014. In addition to the precise latitude and longitude of each World Bank project site, the data set includes the approval and end date for each project, the primary sector(s) that the project covered, and the name of the TTL who managed the project. The data also include information on each project's Independent Evaluation Group (IEG) report.

All completed World Bank projects are reviewed by the World Bank IEG and assigned a series of project scores. The IEG is an independent unit within the World Bank Group that reports directly to the Executive Board; its primary goal is to evaluate development assistance in order to identify shortcomings and improve future effectiveness. IEG scores, measuring various components of project performance, are computed on a scale from one to six. In the baseline results, I use the composite project rating as the project quality measure. The composite performance measure is "based on three separate criteria—the relevance of the project's objectives and design, the...efficacy, and efficiency." To investigate which components of management performance are most important, I also use more detailed performance scores that separately rate project supervision and project per-

[10] One TTL said that examples of project descriptions at the stage when TTLs are assigned include "Agricultural Value Chains" or "Education in Country X"—additional details are often not yet known (Vermehren, 2017).

[11] According to Vermehren (2017), Bank criteria are typically only binding for disaster relief, when the Bank demands that aid must go to a particular set of affected areas.

formance at the project's outset ("performance at entry").[12]

Conflict I use the Armed Conflict Location and Event Data Project (ACLED) to measure subnational conflict over time. ACLED provides detailed information about all known politically violent events in Africa from January 1, 1997 to the present.[13] ACLED only includes conflict events when at least the province in which the conflict event took place is known, meaning that the geographic information in the database is precise.

A key feature of the ACLED data is that it reports detailed information about conflict actors and conflict characteristics. I use this information to investigate which conflict actors and which types of conflict drive the results. I first divide conflicts into two groups: conflicts that involve the government (civil conflicts) and conflicts that do not involve the government (non-civil conflicts).[14] I also use ACLED's conflict event coding to break the analysis down by conflict type, including instances of violence against civilians, battles, riots, and strategic movements by conflict actors. Finally, ACLED also reports the number of fatalities associated with each conflict event. For many of the auxiliary results, I report estimates using a summary measure of violent conflict as the dependent variable, which excludes all non-violent strategic activity and land transfers by conflict actors, as well as riots and protests. This is designed to make sure that the findings are driven by true confrontations, rather than non-violent or strategic events in the ACLED database.

Summary Statistics Using the latitude and longitude of each World Bank project and conflict event, I link both to one-by-one degree grid cells covering all of Africa. Summary statistics of the main dependent and independent variables are reported in Table 1. Panel A focuses on the World Bank aid data. There is an aid project in 23% of grid cell-years and the average project score is 3.8.

Panel B focuses on the conflict data. In the results below, the main dependent variable is an indicator that equals one if there is any conflict event in a cell-year. Roughly 19% of grid cell-years have at least one conflict event, and over half that number have a conflict event that leads to at least one death. I also focus on a series of disaggregated measures of conflict based on who the participants are (i.e. civil vs. non-civil conflict) and the type of violence (i.e. battles vs. violence against civilians, etc.). The mean and standard deviation of each conflict type is also reported in Panel B. Finally, I display the average total number of conflicts, top-coded above the 95th or 98th percentile to avoid the influence of extreme observations. The average grid cell-year has about one conflict incident, but this masks substantial heterogeneity across regions.

The data are displayed visually in Figure 1. Figure 1a shows the pattern of conflict events across

[12]Ratings criteria are described in more detail here: http://ieg.worldbankgroup.org/sites/default/files/Data/HarmonizeEvalCriteria.pdf.

[13]The ACLED data set originally focused exclusively on Africa and was only extended to areas outside of Africa in recent years. Alternative conflict data sources (for example, the Uppsala Conflict Data Program Georeferenced Event Dataset) do not contain as detailed information about conflict characteristics and also do not include any conflict events outside the context of civil wars. Therefore, while similar mechanisms may be at play elsewhere in the world, the analysis in this paper focuses exclusively on Africa.

[14]In the ACLED database, civil conflicts include all incidents for which the interaction variable is any integer from 10-28 and non-civil conflicts include all incidents for which the interaction variable is any integer from 30-67.

Table 1: Summary Statistics

(1) Variable Name	(2) Mean	(3) Variable Name	(4) Mean
		Panel A: Aid Data	
Project Indicator	0.233	Supervision Project Score (in cells with a project)	4.073
	(0.423)		(0.856)
Project Score (in cells with a project)	3.869	Entry Project Score (in cells with a project)	3.803
	(0.862)		(0.924)
		Panel B: Conflict Data	
Conflict Indicator	0.193	Riot or Protest Indicator	0.076
	(0.395)		(0.265)
Conflict Death Indicator	0.111	Base Establishment Indicator	0.006
	(0.314)		(0.075)
Civil Conflict Indicator	0.139	Non-Violent Transfer of Territory Indicator	0.01
	(0.346)		(0.097)
Non-Civil Conflict Indicator	0.129	Any Violent Conflict Indicator	0.142
	(0.335)		(0.349)
Battles Indicator	0.105	Number of Conflicts (topcoded 95th pctile)	0.632
	(0.307)		(1.580)
Violence Against Civilians Indicator	0.097	Number of Conflicts (topcoded 98th pctile)	0.98
	(0.296)		(3.020)

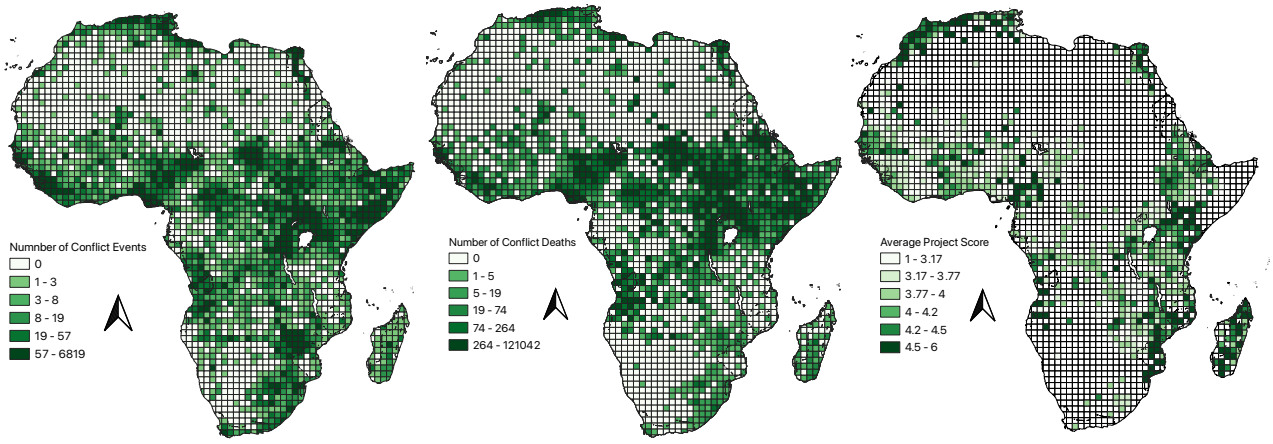
Notes: The unit of observation is a grid cell-year. Columns 2 and 4 report the mean and standard deviation of variables listed in columns 1 and 3 respectively. Panel A focuses on the data from aid projects and Panel B focuses on conflict data.

grid cells in the analysis and Figure 1b shows the pattern of conflict deaths. Both figures report the sum over the full sample period, 1997-2014. Finally, Figure 1c displays the average aid project quality during the sample period across all aid-receiving cells. There is substantial variation in aid project quality, including across projects within relatively small geographic regions. While this cross-sectional variation is useful for illustration, in all the empirical analysis to follow I focus on within-cell changes over time in a panel regression specification to identify the effect of aid project management on conflict. The next section describes that empirical strategy in detail.

3.2 Empirical Strategy

I exploit the assignment of World Bank project leaders in order to identify the impact of aid project management quality on conflict. While management quality itself might be endogenous to local conflict, leader assignment (i) has a strong effect on management quality, (ii) is plausibly independent of potential sub-national conflict outcomes, and (iii) only affects local conflict through World Bank project implementation. The empirical analysis is conducted on a balanced yearly panel (1997-2014) of one-by-one degree grid cells that cover all of Africa, displayed in Figure 1.[15] Grid cells are a convenient spatial unit that allow me to match World Bank projects to nearby conflict events in a consistent manner over time. In the first stage, I use project leader indicators as instruments for

[15] At the equator, a one-by-one degree grid cell is approximately 111 km by 111km.



(a) Conflict Events (b) Conflict Deaths (c) Aid Project Quality

Figure 1: **Geographic Distribution of Conflict and Aid Quality** Figure 1a displays the number of conflict events in each grid cell and Figure 1b displays the number of conflict deaths in each grid cell, summing over all years from 1997-2014. In both cases, all cells with positive conflicts or positive deaths were divided into quintiles, and all cells with zero conflict events or deaths are colored white. Figure 1c displays the average aid project quality of each grid cell over the entire sample period (1997-2014). Grid cells colored white had no aid projects.

project quality. The estimating equation is:

$$P_{it} = \alpha_i + \delta_t + \sum_{\ell} \phi^{\ell} \cdot \text{Leader}_{it}^{\ell} + \zeta \cdot A_{it} + \mathbf{X}_{it}'\Sigma + e_{it} \tag{1}$$

Here and throughout the analysis, i indexes grid cells and t indexes years. A_{it} is an indicator variable that equals one if there is an aid project in the grid cell, and α_i and δ_t are grid cell and year fixed effects respectively. The instruments ($\text{Leader}_{it}^{\ell}$) are indicators that equal one if project leader ℓ is operating a project in grid cell i in year t. P_{it} is the IEG performance score of of the aid project. If there are multiple ongoing projects in grid cell i in year t, P_{it} is computed as the average IEG score of all ongoing projects and $\text{Leader}_{it}^{\ell}$ is divided by the number of projects. If there are no ongoing projects, both take value zero.

The corresponding second stage estimating equation is:

$$\text{Conflict}_{it} = \alpha_i + \delta_t + \gamma \cdot A_{it} + \beta \cdot P_{it} + \mathbf{X}_{it}'\Omega + \epsilon_{it} \tag{2}$$

where Conflict_{it} is a measure of conflict in grid cell i in year t; in the baseline analysis, the outcome is an indicator that equals one if there is any conflict event in cell i in year t. The coefficient of interest is β. Conditional on a region receiving any aid, β captures the effect of aid project performance on violent conflict; if $\beta < 0$, better project management reduces conflict. Since project leaders are assigned in part on the basis of their sector specialty, $\mathbf{X}_{it}'$ includes a set of project sub-sector indicators to absorb any relationship between project sector and conflict. To fully absorb any country-level trends, in a more conservative specification I also assign each grid cell to the country in which its

centroid is located and include country-by-year fixed effects in estimates of Equation 2.

Thus, in the most conservative specification, β is identified by project leader-driven changes in management quality over time in a specific grid cell, holding fixed any average differences between projects from different sectors and any country-level dynamics. The main identification assumption is that the assignment of project leaders of high vs. low-quality to project locations within countries is independent from sub-national conflict trends. This assumption would fail only if low-quality (high-quality) leaders, in a specific sector and country, were systematically assigned to projects in locations with increasing conflict—the leader assignment procedure outlined in Section 2.2 and the event study analysis below are inconsistent with this pattern.

Many potential leader sorting patterns are *not* a concern because they are absorbed by the included fixed effects. For example, any systematic sorting of low-quality (high-quality) leaders into sub-national regions with more conflict *on average* is absorbed by the location fixed effects, α_i. Any sorting of low-quality (high-quality) regions into *countries* where conflict is on the rise is absorbed by the country-by-year fixed effects, $\delta_{c(i)t}$. Any relationship between project sector and local conflict dynamics (e.g. if certain types of projects are carried out in places with rising conflict or high conflict risk) are absorbed by the sub-sector fixed effects.

In order to compare regions with and without any aid, I introduce an instrument for the direct effect of aid computed as the interaction between: (i) the fraction of time periods not including t during which i receives any aid and (ii) the fraction of total aid project-years outside of Africa taking place during time t. Specifically, the instrument, Z_{it}, is constructed as:

$$Z_{it} = \left[\frac{\sum_t A_{it}}{T} \right] \cdot \frac{\text{Projects Outside Africa}_t}{\sum_t \text{Projects Outside Africa}_t} \tag{3}$$

The first stage relationship between Z_{it} and A_{it} is reported in column 1 of Table A1. Since temporal variation in the instrument is driven by variation in World Bank aid outside of Africa, the positive correlation between the instrument and the actual presence of aid is driven by fluctuations in World Bank capacity common to Africa and the rest of the world and not changes within Africa.[16] Grid cell fixed effects absorb the direct effect of a region's propensity to receive aid.

3.2.1 Additional Empirical Approaches

In addition to the main empirical strategy outlined above, I also report results from two additional sets of analysis that further probe the relationship between project management and conflict. The first, which involves separately estimating the effect of the arrival of well-executed and poorly-executed projects on conflict, more clearly makes the point that well-executed projects lead to less conflict than no aid at all while poorly-executed projects lead to more conflict than no aid at all. It also makes it possible to non-parametrically estimate the relationship between project quality and

[16] All results are very similar using a version of the instrument constructed using aggregate project counts *in* Africa instead of aggregate project counts *outside* of Africa (Table A2). The first stage relationship for this version of the instrument is reported in column 2 of Table A1.

conflict. The second, which involves directly estimating leader-specific effects on conflict directly, allows me to both circumvent the use of potentially subjective measures of project performance and benchmark the impact of project leadership against other project characteristics.

Poorly-Executed vs. Well-Executed Projects I use Equation 1 to predict the project score in each grid cell on the basis of project leader assignment. I then define an indicator that equals one in cell i at time t if there is an aid project whose predicted project score is in the range that the Bank considers "Satisfactory" ($\mathbb{I}\{\widehat{\text{Satisfactory}}\}_{it}$) and an indicator that equals one in cell i at time t if there is an aid project whose predicted score is in the range that the Bank considers "Unsatisfactory" ($\mathbb{I}\{\widehat{\text{Unsatisfactory}}\}_{it}$). I then estimate:

$$\text{Conflict}_{it} = \alpha_i + \delta_t + \phi_1 \cdot \mathbb{I}\{\widehat{\text{Unsatisfactory}}\}_{it} \times A_{it} + \phi_2 \cdot \mathbb{I}\{\widehat{\text{Satisfactory}}\}_{it} \times A_{it} + \mathbf{X}'_{it}\Omega + \epsilon_{it} \quad (4)$$

where A_{it} is again an indicator that equals one if there is an and project in cell i and year t. In this specification, ϕ_1 captures the effect of a poorly-executed project on conflict and ϕ_2 captures the effect of a well-executed project on conflict. Due to the potential endogeneity of A_{it}, I focus on IV-2SLS estimates of Equation 4 that use the instrument Z_{it}, defined in Equation 3. This specification is designed to capture the direct effect of poorly-executed vs. well-executed projects on patterns of conflict.

Leader-Level Effects As a final empirical approach, I estimate the direct effect of each project leader on both project quality and conflict, following empirical Bayesian methods outlined in Chetty et al. (2014) and Koedel et al. (2015). Estimation details are described in Appendix Section A. These estimates are designed to capture all the ways that different project leaders shape project quality and conflict and I use them in three ways.

First, I estimate leader "value added" at the project-level with the project performance score as the outcome, and document a negative relationship between project-level leader effects and conflict. This analysis corroborates results from the main empirical strategy.

Second, using the grid-cell level data, I randomly select half of the grid cells and estimate the effect of each project leader on conflict. Then, on the remaining sample, I investigate the relationship between the leader-level estimated conflict effect and realized conflict. I repeat this procedure for a large number of random sample splits. The advantage of this strategy is that it does not rely on any subjective project score and instead documents that there are persistent features of project leaders that cause their projects to promote or abate conflict.

Third, I compare these leader-level conflict effects to the effect of project lending sectors, which have been featured in existing work on conflict, and find that across specifications, differences in project leadership explain substantially more variation in conflict than variation across project sectors or across countries. This is an alternative strategy for benchmarking the magnitude of the relationship between project management and conflict.

Table 2: Main Results: Aid Management and Conflict

	(1)	(2)	(3)	(4)	(5)
	Dependent Variable is a Conflict Indicator				
	Panel A: OLS Estimates				
Project Indicator	0.0438	0.0419	0.0388	0.0376	0.0484
	(0.0251)	(0.0255)	(0.0246)	(0.0256)	(0.0339)
Project Score	-0.0208	-0.0193	-0.0177	-0.0162	-0.0134
	(0.0063)	(0.0065)	(0.0062)	(0.0065)	(0.0086)
	Panel B: IV Estimates, Score				
Project Indicator	0.0567	0.0533	0.0466	0.0458	0.0793
	(0.0271)	(0.0281)	(0.0277)	(0.0288)	(0.0422)
Project Score	-0.0241	-0.0223	-0.0197	-0.0184	-0.0215
	(0.0069)	(0.0073)	(0.0071)	(0.0075)	(0.0107)
	Panel C: IV Estimates, Indicator & Score				
Project Indicator	0.0574	0.0542	0.0480	0.0469	0.0794
	(0.0272)	(0.0282)	(0.0278)	(0.0288)	(0.0423)
Project Score	-0.0243	-0.0225	-0.0201	-0.0187	-0.0216
	(0.0069)	(0.0073)	(0.0072)	(0.0075)	(0.0107)
Observations	49,644	49,644	49,554	49,554	49,554
Mean of Dependent Variable	0.194	0.194	0.194	0.194	0.194
Grid Cell Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	-	-	-
Sub-Sector Fixed Effects	No	Yes	No	Yes	Yes
Country x Year Fixed Effects	No	No	Yes	Yes	Yes

Notes: The unit of observation is a grid-cell-year. Project Indicator is an indicator variable that equals 1 if there is a world bank aid project in a grid-cell-year. Project Score was determined by the IEG and is on a scale from 1-6 in order of increasing overall project performance, and equal to zero in cells with no aid project. Panel A reports OLS estimates. Panel B reports IV-LIML estimates in which Project Score is instrumented using the full set of project leader indicators. Panel C reports IV-LIML estimates in which Project Indicator is also instrumented. The specification in column 5 is weighted by the total number of project-years in the grid cell during the sample period. Standard errors, reported in parentheses, are clustered by grid cell.

4 Main Findings

4.1 Baseline Results

Panel A of Table 2 reports OLS estimates of Equation 2. While I estimate a positive correlation between development aid and conflict, this correlation decreases as project performance increases ($\beta < 0$). Conditional on receiving any aid, project performance is negatively correlated with conflict. The correlation between project performance and conflict, however, does not necessarily reflect the causal effect of project management on conflict.

I next turn to IV estimates of the relationship between aid project quality and conflict. Panel

B of Table 2 reports IV estimates of Equation 2; the first stage estimating equation is Equation 1.[17] Estimates of β are negative and significant: conditional on having a World Bank project in a region, conflict in that region is significantly decreasing in the project performance score. The point estimates are similar after controlling for sub-sector fixed effects (column 2), absorbing country-specific trends by controlling for country-by-time fixed effects (column 3), and including both the sub-sector fixed effects and country-by-time effects in the same regression (column 4). The estimates are also similar after weighting the regression by the total number of project-years in the grid cell during the sample period, indicating that the findings are not driven by regions with limited or sporadic aid exposure (column 5). The point estimates suggest that a project that scores one point higher in the performance metric is 1.8-2.4% less likely to lead to conflict. Changing overall project quality from the lowest to the highest implementation score reduces the probability of conflict by 9.5-12%. This is a quantitatively large effect and over half the sample average of the dependent variable.

The results in Panel B compare aid-receiving regions with well-managed projects to aid-receiving regions with poorly-managed projects. However, since receiving an aid project in the first place is endogenous, these estimates are not able to compare regions with well-managed or poorly-managed projects to regions with no project at all. That is, it could be the case that all projects lead to more conflict but that well-managed projects do so to a lesser extent; or it could be the case that poorly-managed projects lead to more conflict while well-managed projects lead to less conflict.

To identify the direct effect of having any aid project, in Panel C I also include the instrument for aid receipt in the instrument set, and include the direct effect of aid in the set of endogenous variables. Again, the coefficient on project quality is negative and statistically significant across specifications.[18] Moreover, causal estimates of the direct effect of aid on conflict remain positive and similar in magnitude. These specifications suggest that an aid project with the lowest possible score can increase the likelihood of conflict by as much as 5.8% ($p = 0.07$), while a project with the highest possible score can reduce the likelihood of conflict by as much as 8.8% ($p < 0.01$). Moreover, as will be described in Section 5, these estimates mask substantial heterogeneity in the relationship between aid project management and conflict, and there are contexts in which the effect is even larger in magnitude, including in the regions most prone to violent conflict.

4.1.1 Robustness and Extensions

Robustness Tests I conduct a series of tests of the robustness of the baseline results, described in more detail in Appendix Section B. First, while the main analysis uses LIML IV estimators because of the fact that there are many instruments (Flores-Lagunes, 2007; Anderson et al., 2010), the results are very similar using the more standard 2SLS approach (Table A3). Second, I show that the findings are also robust to the inclusion of a broad set of controls, including trends in natural resource

[17] Since the estimation strategy uses many instruments—in total, 876 project leader indicators—I report limited information maximum likelihood (LIML) estimates in the baseline specification to reduce finite sample bias (Flores-Lagunes, 2007; Anderson et al., 2010). However, standard 2SLS estimation produces similar results (see Table A3).

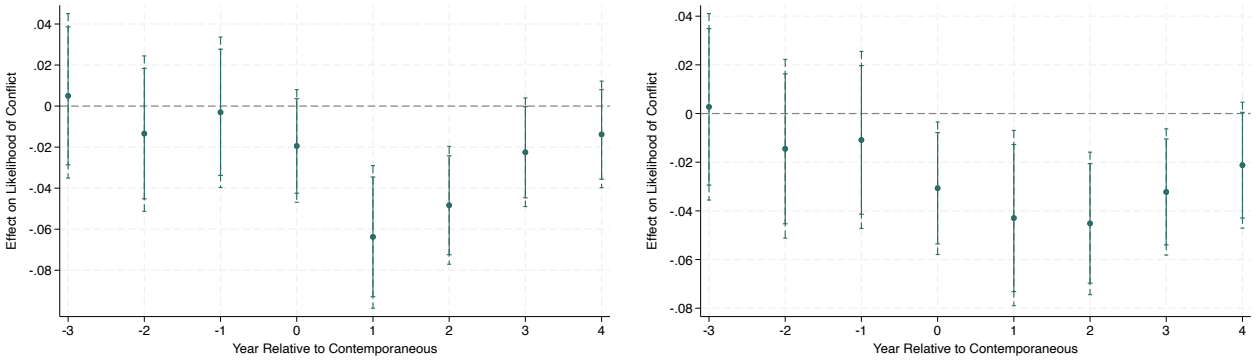
[18] Analogous specifications to Panel C of Table 2 in which Z_{it} is constructed using annual fluctuations in the total number of projects *inside* Africa instead of outside of Africa are reported in Table A2. The findings remain very similar using this alternative approach.

presence, agricultural suitability, and bisection by an international border, as well as lags of the dependent variable (Tables A4). The estimates are also similar after controlling directly for total project disbursements, indicating that differences in disbursement across projects is not what is driving the main finding (Table A5).[19] Finally, the results are similar using additional inference techniques that are potentially more robust to omitted confounders. Table A7 shows that the main findings remain precise if standard errors are clustered by country (54 clusters). While countries are very large geographic units in the studied context, and conflict patterns often vary substantially across regions within countries, it is nevertheless reassuring that the estimates are similar with these large clusters. Next, following Young (2019), I use the bootstrap to study the distribution of coefficients for all IV estimates and rule out the possibility that the findings are driven by a handful of influential observations. In all IV estimates reported in Panel B of Table 2, the implied p-value for the coefficient of interest from this strategy is below 0.05. Last, following recommendations in Andrews et al. (2019) for situations with many instruments, I conduct Anderson-Rubin and Conditional Likelihood Ratio tests and again, all implied p-values are below 0.05.

Spatial Spillover Effects The baseline estimates could be over or under estimates of the equilibrium impact of project management if management also affects conflict in adjacent regions. For example, conflict actors might move toward poorly executed projects if resources are easier to steal, thereby reducing conflict in nearby regions. Large spillover effects would suggest that the units of analysis used in the main analysis might be too small. To investigate these possibilities, I estimate the relationship between conflict and aid project quality in adjacent grid cells by augmenting Equation 2 to include an indicator for an aid project in adjacent grid cells and the quality score of that project. I use indicators for leaders operating in adjacent grid cells to predict the project score in those grid cells. I do not find strong evidence of spillovers. If anything, compared to regions adjacent to low-quality projects, regions adjacent to high-quality projects experience slightly less conflict, suggesting the baseline estimates could understate the true effect of project management. However, the spillover effect estimates are small in magnitude, especially once country-year fixed effects are included. These results are reported in Table A8.

Dynamic Effects One identification concern is that regions that received projects led by better or worse leaders would have been on different trends regardless of the arrival of poorly or well-managed aid. As one strategy to investigate this possibility, I estimate the relationship between conflict and both contemporaneous and leading values of project leader performance. If the identification strategy is valid, leading values of project performance should be uncorrelated with conflict. For ease of presentation, the independent variable of interest is a one-dimensional *predicted* grid-cell level project score, estimated from Equation 1, and I restrict the sample to cell-years in which there is a change in the number of aid projects in a cell. I also report estimates of the lagged effect of

[19] The results are also not driven by projects related to Development Policy Financing (DPFs), which fund general budget expenditure and are less closely linked to a specific project site. A version of the baseline results after excluding all DPFs is presented in Table A6 and the estimates are very similar.



(a) All Conflict

(b) Violent Conflict

Figure 2: **Dynamic Effects of Project Management on Conflict** Each figure reports the effect of leading and lagged values of the predicted project performance on conflict. Each coefficient is estimated from a separate regression using the fully-controlled specification. In Figure 2a, the outcome variable is an indicator that equals one if there is any conflict in the cell-year and in Figure 2b it is an indicator that equals one if there is any violent conflict in the cell-year. 90 and 95% confidence in intervals are reported.

predicted project performance in order to investigate the persistence of the effect.

These dynamic effects are reported in Figure 2. Reassuringly, leading values of the project performance score are statistically insignificant and close to zero. Thus, the main results do not appear driven by differential pre-existing trends between cells with well- versus poorly-managed projects. Moreover, the lagged coefficients remain negative, suggesting that the effects of aid management on conflict has some persistence, although only for 2-3 years. The pattern is similar, though with a slightly longer lag, focusing only on violent forms of conflict (Figure 2b).

Intensive Margin Effects To this point, the estimates have captured the effect of aid project management on whether or not there is any conflict in a grid cell (the extensive margin). I next explore the effect of project management on the intensive margin, i.e. the intensity of conflict.

To do this, I directly estimate the effect of project quality on different levels of conflict intensity. I construct a series of indicator variables that are equal to one if there are greater than n conflicts in the cell-year; that is, I construct $\mathbb{I}\{\text{Conflict}_{it} > n\}$ for $n = 0, 1, 5, 10, 15, 20$ and use each as a separate dependent variable. Each regression captures the effect of project quality on the probability that a grid cell has greater than n conflict events.

The estimates from this specification are reported in Figure 3 in green (left y-axis). Project quality has the largest marginal effect when focusing on all conflict events (leftmost point estimate); the effect declines as the measure of conflict intensity increases. However, the likelihood of each conflict scenario also declines moving from left to right. Grid cell-years with more than 15 conflict events, for example, comprise only 2.4% of the sample. Therefore, to capture the proportional effect of project quality on the likelihood of each level of conflict, I divide each coefficient estimate by the mean probability that the corresponding conflict scenario occurs. These proportional estimates are

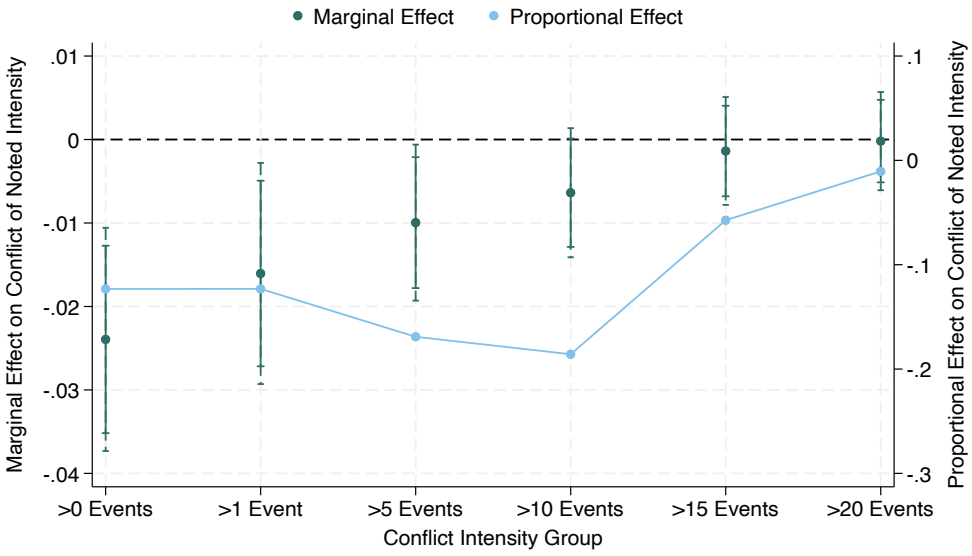


Figure 3: **Effect of Project Quality on Different Conflict Intensities.** This figure reports estimates in which the outcome variable is an indicator that equals one if there are more than n conflicts in a grid cell (for $n = 0, 1, 5, 10, 15, 20$). Each coefficient estimate, displayed in green, corresponds to a separate regression with a different value for n, noted on the x-axis. 90 and 95% confidence intervals are reported. The proportional effect of project quality on each measure of conflict intensity is displayed in blue (right y-axis).

plotted in blue (right y-axis) and show that project management has the largest proportional effect on conflict scenarios of middle to high intensity.[20] Better quality management reduces the likelihood of all but the most intense conflict scenarios.

4.2 Direct Effects of Well vs. Poorly Managed Projects

In the baseline specification, I use a separate instrument for aid receipt in order to estimate the causal effect of aid on conflict and hence investigate the absolute effect of well-managed and poorly-managed projects on conflict. To make this point even more clearly, and to allow for a potentially non-linear relationship between project quality and conflict, Figure 4 reports estimates of Equation 4 that separately identify the effect of the presence of a poorly-managed project and the presence of a well-managed project. The first two bars display IV estimates of the effect of the arrival of a poorly-managed and well-managed project respectively. The positive and significant estimate displayed by the first bar indicates that the presence of a poorly-managed project increases the likelihood of conflict, compared to a region with no aid. The negative and significant estimate displayed by the second bar indicates that the presence of a well-managed project reduces the likelihood of conflict,

[20]The fact that the effects are not restricted to small-scale conflict is important for interpretation because large-scale conflicts, especially conflicts involving the government, are more likely to affect economic growth (see Polachek and Sevastianova, 2012). Figure 3 documents directly that project management affects larger conflicts and broad patterns of conflict activity, while Figure 8 (below) shows that management quality directly affects conflict involving the government.

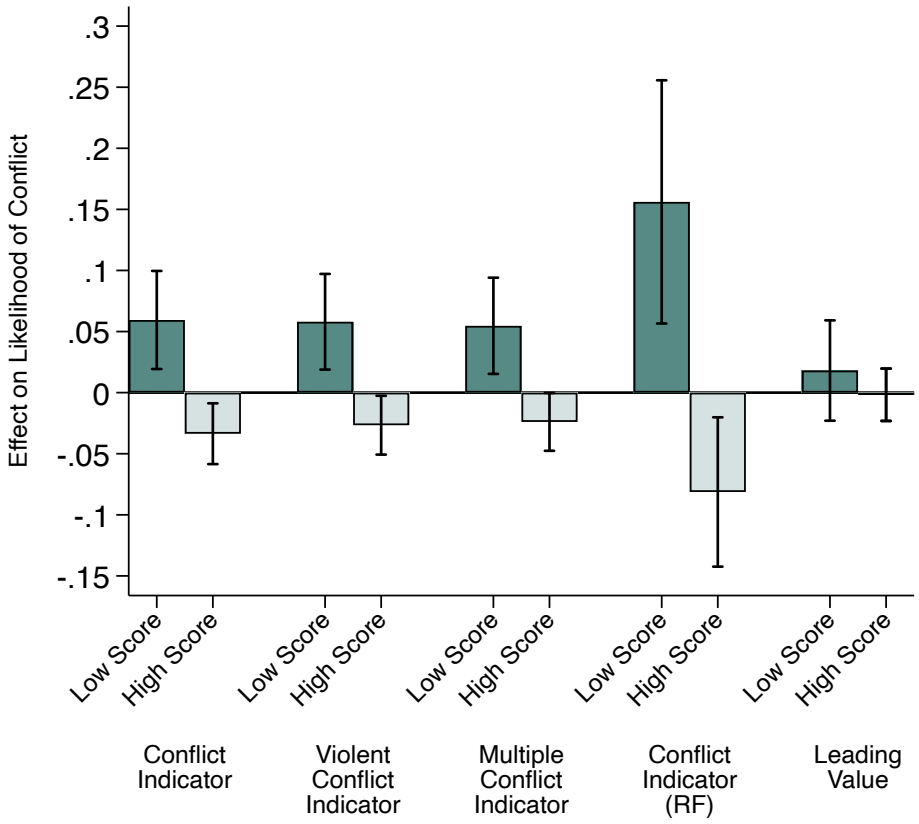


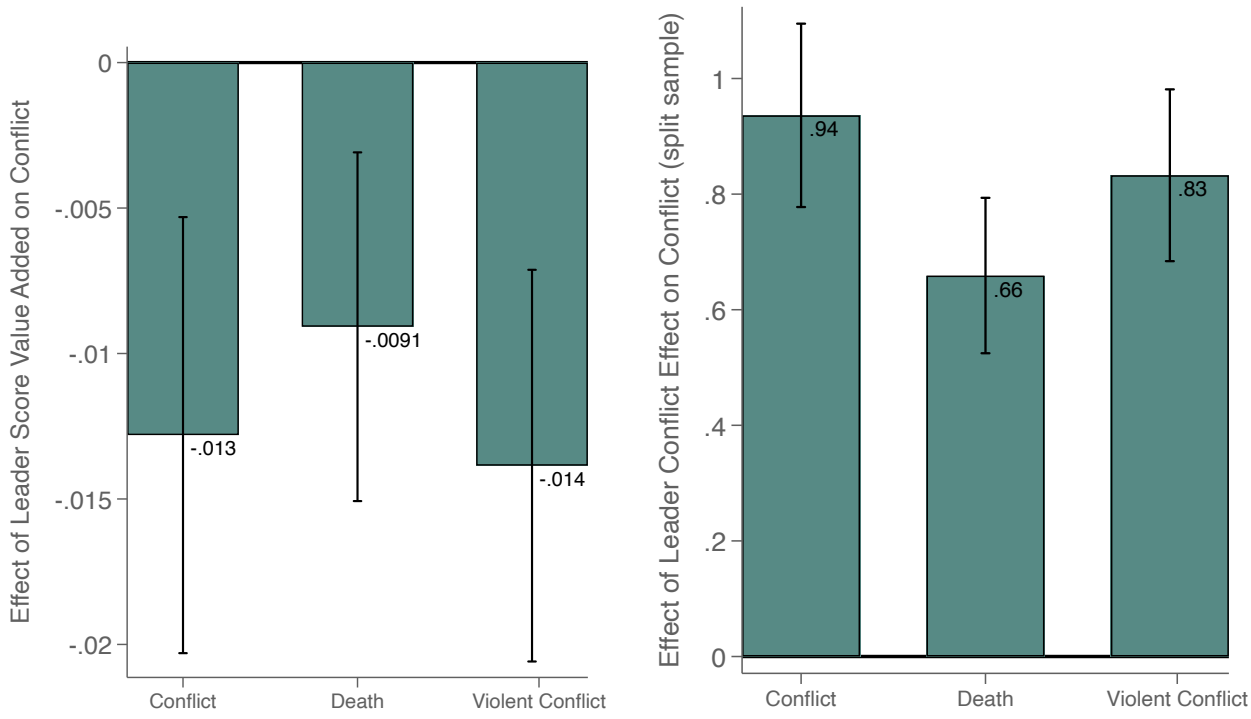
Figure 4: **Well-Managed vs. Poorly-Managed Projects and Conflict** This figure reports estimates of Equation 4 in which the green bars report ϕ_1 and gray bars report ϕ_2. Each pair of bars is from a separate regression specification and the outcome variable in each case is listed below the x-axis. 95% confidence intervals are reported.

compared to a region with no aid.

The effects are similar after restricting attention only to the most violent forms of conflict (bars 3-4) and when the outcome is an indicator for the presence of *multiple* conflicts in the cell-year (bars 5-6). Bars 7-8 present reduced form estimates of Equation 4 rather than IV estimates. Finally, bars 9-10 show that there is no relationship between the *future* arrival of a well- or poorly-managed project (i.e., leading value) and conflict. Together, these estimates highlight the fact that poorly-managed projects tend to increase the likelihood of conflict while well-managed projects can have the opposite effect.

4.3 Leader-Level Effects

To this point in the analysis, I have used project leader fixed effects as instruments for the measured project performance score and estimated the effect of differences in project performance on conflict. An alternative strategy is to directly measure the effect of each project leader and investigate the relationship between these leader-specific effects and conflict.



(a) Project Score Effect

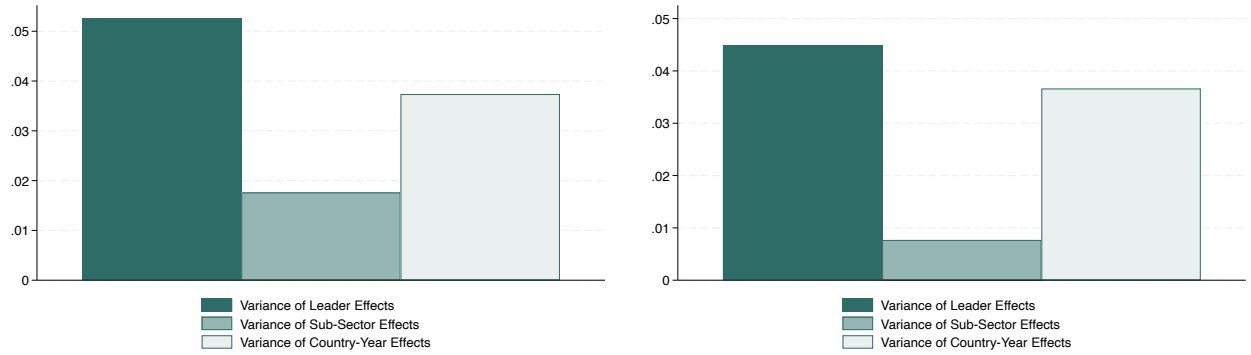
(b) Split-Sample Conflict Effect

Figure 5: **Leader-Level Effects and Conflict** This figure displays the relationship between project leader effects and conflict. The dependent variable is the leader-level project score effect in 5a and the leader-level conflict effect in 5b. In each sub-figure, the outcome variable is a conflict indicator in the first bar, a conflict death indicator in the second bar, and a violent conflict indicator in the third bar. 95% confidence intervals are reported.

First, using project-level data on performance and leader identity, I estimate the effect of each leader on the performance score. Figure A1 displays the full distribution of estimates. Consistent with a strong first stage in the baseline estimates, individual project leaders have large effects on measured project performance. A project leader that is one standard deviation higher in this distribution of estimates leads to a 1.6 standard deviation increase in the reported project score (corresponding to 1.56 points on the 6-point scale). Moreover, consistent with the main IV estimates, this measure of the leader-level effect on project quality is strongly negatively associated with conflict. Figure 5a reports OLS estimates of Equation 2, in which P_{it} is replaced with the project score "value added" of the leader of the project in cell i at time t.[21] There is a strong, negative relationship between leader-level project score effect and conflict. The effect is similar when focusing only on conflicts that lead to fatalities (second bar) or only on violent conflict event types (third bar).

Second, focusing on a randomly-selected half of the grid cells (a training set), I estimate the effect of each project leader on conflict directly. These estimates capture the direct effect of different project leaders on conflict and do not rely on any (potentially subjective) project quality measure as an

[21] When there are multiple leaders operating in a cell-year, I take the average over their value added estimates.



(a) Any Conflict

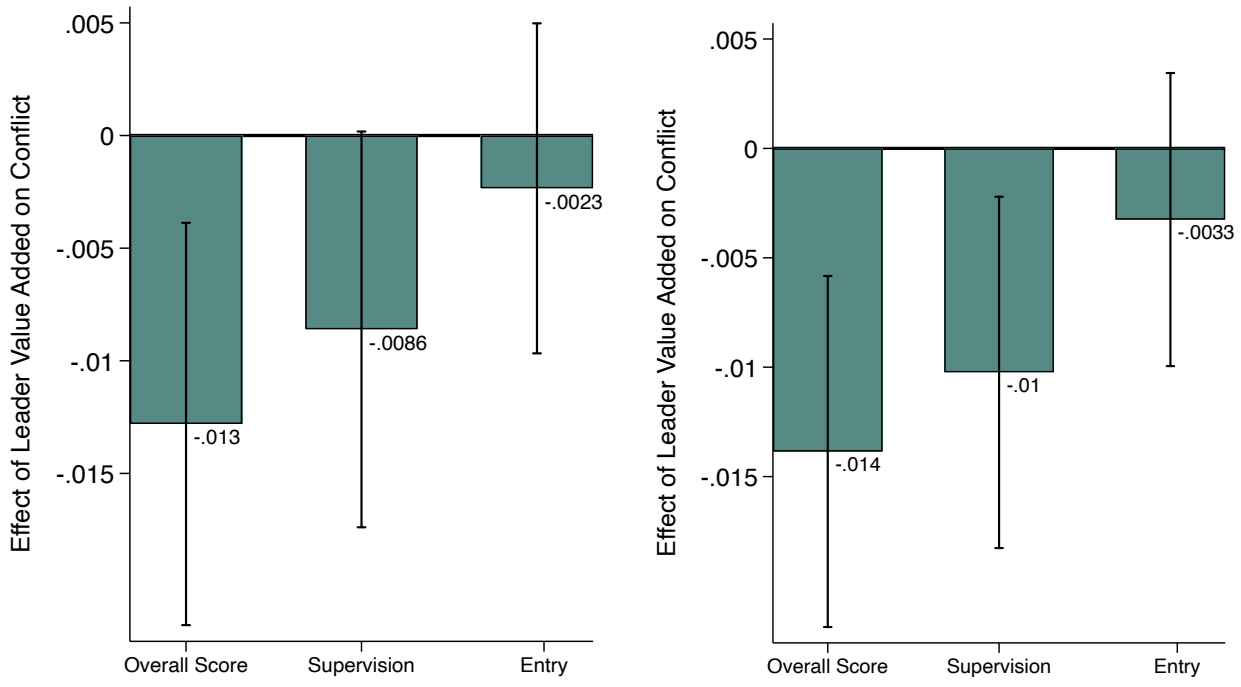
(b) Violent Conflict

Figure 6: **Variance Fixed Effect Estimates for Leaders, Sectors, and Country-Years** The variance of (appropriately shrunken) fixed effect estimates for leaders, sub-sectors, and country-year fixed effects are displayed. In 6a the outcome variable is an indicator for any conflict and in 6b it is an indicator for violent conflict.

intervening variable. Using the remaining half of the sample, I show that the "conflict effect" of each leader estimated on the training set is strongly positively correlated with conflict. Figure 5b presents the results for one such sample split, and shows that the leader-level conflict effect estimated using the conflict indicator is also positively associated with more violent forms of conflict activity.[22] The point estimates suggest that moving from the top to the bottom quartile of leader quality, measured in this way, increases the likelihood of conflict by over 15%. Moreover, the findings are not driven by the particular chosen sample split: the median coefficient estimate from 1000 random sample splits is 0.936 and also implies that moving from the top to bottom quartile of leader quality increases the likelihood of conflict by over 15% (the lowest implies a 14.03% increase). This finding indicates that whether or not conflict occurs in the vicinity of an aid project is a persistent feature of the project leader, suggesting that existing conflict event data (without any project evaluation data) can be used to predict how individual project leaders will affect conflict.

Last, I benchmark the effect of variation in project leadership against the effect of other project and location-level characteristics. Differences between lending sectors has been highlighted in prior work as a potential factor mediating the relationship between aid and conflict (see e.g. Qian, 2015). However, the variance of project leader effects is over three times as large as the variance of sub-sector effects (Figure 6a) and the gap is even wider when restricting to violent conflict events (Figure 6b). Variance in leader fixed effects is also consistently larger than the variance of country-year fixed effects, which flexibly capture country-specific shocks and time trends. Taken together, these estimates, without using any parametric measure of project performance, document that there is substantial variation across project leaders in the likelihood that their aid project sparks conflict.

[22] See Bergeron et al. (2022) for a more detailed discussion of related methodology and split-sample estimation of individual value added.



(a) All Conflict

(b) Violent Conflict

Figure 7: **Project Leader Effects and Conflict: Divided by Performance Metric.** The relationship between project leader "value added" and conflict. Value added is estimated separately for the overall score (first bar), the supervision score (second bar) and the performance at entry score (third bar). In 7a, the outcome variable is a conflict indicator and in 7a, it is a violent conflict indicator. 95% confidence intervals are reported.

5 Mechanisms and Additional Results

5.1 Which management qualities matter?

Qualitative accounts highlight the role of monitoring — this section presents evidence consistent with their emphasis. In addition to the overall project performance measure used in the main results, the IEG reports a series of additional scores that capture components of Bank's project performance, including a measure of the quality of the Bank's preparation at the project outset ("performance at entry") and a measure of the quality of project supervision.[23] The former captures project design, including whether the project meets several social, economic, and environmental goals, as well as risk assessment and fiduciary aspects of project development. The latter captures the adequacy of supervision of project "inputs and processes," as well as the quality of project performance monitoring and transition arrangements.

I separately estimate the effect of each leader on the project supervision and project entry performance scores (see Section 4.3) and investigate the relationship between each measure of leader

[23]Detailed descriptions of the criteria determining each rating can be found here: http://ieg.worldbankgroup.org/sites/default/files/Data/HarmonizeEvalCriteria.pdf.

project score value added and conflict. These estimates are reported in Figure 7. The effect using the overall score is also reported for comparison. The effect of better leader-level project supervision has a substantially larger effect that the effect of better leader-level performance at entry, which is statistically indistinguishable from zero. These estimates indicate that the main results are driven by project monitoring and supervision.

5.2 What types of conflict drive the findings?

Next, I investigate the types of conflict that drive the main results. The ACLED database provides additional information that makes it possible to identify the characteristics of each conflict. The first is the fatalities associated with each conflict, which I use to construct a more extreme measure of conflict that equals one only if there is a conflict death. The second is information about the conflict actor, which I use to define each conflict as civil (i.e. involving the government) or non-civil. The third is information about the event type. ACLED categorizes conflict events into a series of event types, including battles, violence against civilians, riots and protests, as well as non-confrontational strategic moves by conflict actors, including establishing a headquarters or base and the non-violent transfer of territory between conflict participants.

Aid project performance may not affect all types of conflict equally. For example, project management may affect small, localized conflicts, but have no impact on conflicts that are part of civil wars. Alternatively, if governments intervene to defend local investments, if diverted aid resources are used to fund conflict with the government, or if conflicts over local resources scale up to the point that they merit government intervention, there could be large effects on civil conflict.

Estimates of the effect of project performance on conflict of each type and with each set of actors are reported in Figure 8. Each group of three bars is devoted to a specific type of conflict (e.g. violence against civilians); the first column of each group reports the effect on an indicator for any conflict of that type, the second column of each group reports the effect on an indicator for a conflict of that type involving the government, and the third column of each group reports the effect on an indicator for a conflict of that type that does not involve the government.

The first conclusion, comparing estimates from the first column of each group, is that aid management particularly reduces the likelihood of violent forms of conflict, including the likelihood of conflict death (group 2), of any form of violent conflict activity (group 3), and of violence against civilians (group 5).[24] As in the baseline results, the estimated magnitudes are large: in each case, changing overall project quality from the lowest to the highest implementation score reduces the probability of conflict by an amount over half as large as the sample average (see Table 1). Project management also reduces the likelihood of riots and protests, which involves active confrontation but combines both more and less violent encounters. This could be driven by the fact that well-managed projects are less likely to frustrate the local population.

However, project management does not have a quantitatively meaningful effect on non-violent actions and strategic behavior of conflict actors, including the establishment of a base (group 7), the

[24] While the estimates for these conflict sub-groups are slightly smaller, they are very similar to the baseline result when compared to their mean value (see Table 1).

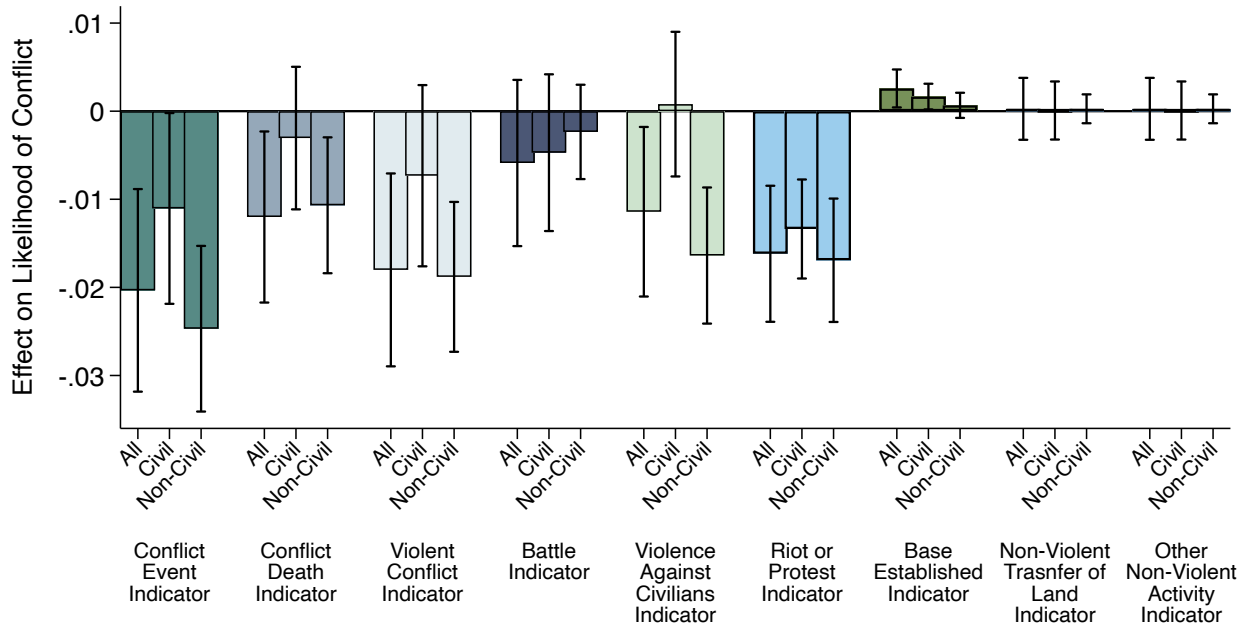


Figure 8: **Types of Conflict** This figure reports the effect of predicted project performance on different types of conflict. Each set of three bars focuses on a different conflict type, labeled below the x-axis. Within each set of three bars, the first focuses on all conflicts of the relevant type, the second focuses on civil conflicts (i.e., conflicts involving the government), and the third focuses on non-civil conflicts (i.e., conflicts not involving the government). The direct effect of aid is included in each specification but not reported for ease of presentation. All specifications include grid cell and country-by-year fixed effects. 95% confidence intervals are reported.

non-violent transfer of territory (group 8), or other non-violent activity by conflict actors, like the formation of an alliance or new armed group (group 9). Taken together, these patterns seem more consistent with management reducing the likelihood of direct confrontation and violence due to predation, rather than management affecting the strategic behavior of conflict actors to undermine the government (see Crost et al., 2014).

The second conclusion, comparing the second and third columns of each group, is that there is significant heterogeneity in terms of which types of conflict involve the government and which do not. For example, focusing on all conflict (group 1), well-managed projects reduce both civil and non-civil conflict, with larger effects on non-civil conflict. The effect on violence against civilians, however, is strongly driven by non-civil conflicts (group 5). This is intuitive, since it seems unlikely that the government would attack civilians in the vicinity of its own aid projects.

5.3 When in the project lifecycle is most critical?

Next, I investigate which part of the project lifecycle drives the main findings. The answer to this question could help distinguish between key competing mechanisms. If the goal of insurgent groups is to undermine the legitimacy of the government by preventing aid implementation,

Table 3: Effects Over the Project Lifecycle

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Conflict Indicator				Multiple Conflict Indicator			
Project Indicator	0.0216	0.0321	0.0434	0.0431	0.0070	0.0128	0.0260	0.0277
	(0.0291)	(0.0287)	(0.0329)	(0.0314)	(0.0271)	(0.0270)	(0.0313)	(0.0303)
Project Indicator x Late Stage	0.0397	0.0405	0.0450	0.0424	0.0284	0.0318	0.0330	0.0342
	(0.0123)	(0.0127)	(0.0118)	(0.0127)	(0.0117)	(0.0130)	(0.0112)	(0.0127)
Project Indicator x Early Stage			-0.0284	-0.0217			-0.0263	-0.0287
			(0.0186)	(0.0204)			(0.0174)	(0.0187)
Predicted Project Score	-0.0150	-0.0175	-0.0208	-0.0204	-0.0067	-0.0085	-0.0117	-0.0125
	(0.0075)	(0.0074)	(0.0085)	(0.0081)	(0.0071)	(0.0070)	(0.0081)	(0.0079)
Predicted Project Score x Late Stage	-0.0095	-0.0099	-0.0112	-0.0105	-0.0082	-0.0090	-0.0096	-0.0099
	(0.0032)	(0.0032)	(0.0029)	(0.0032)	(0.0031)	(0.0034)	(0.0028)	(0.0033)
Predicted Project Score x Early Stage			0.0079	0.0059			0.0072	0.0080
			(0.0045)	(0.0049)			(0.0041)	(0.0044)
Grid Cell Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sub-Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stage Time Window (Years)	3	2	3	2	3	2	3	2
Observations	49,644	49,644	49,644	49,644	49,644	49,644	49,644	49,644
R-squared	0.4607	0.4606	0.4608	0.4607	0.4511	0.4509	0.4512	0.4512

Notes**:** The unit of observation is a grid-cell-year. Late Stage is the number of projects in their final three years (columns 1, 3, 5, 7) or in their final two years (columns 2, 4, 6, 8) and Early Stage is the number of projects in their first three years (columns 3, 7) or first two years (columns 4, 8). The outcome variable is listed at the top of each column. Even when not listed, all components of the interaction terms are controlled for in the regression. Standard errors, reported in parentheses, are clustered by grid cell.

violence would likely be most extreme during the initiation and early phases of aid project development. This is related to an argument made by Crost et al. (2014), who write that violence during the early stages of a project is consistent with insurgents' attempts to "sabotage the program." If violence is driven by predation and fighting over lootable resources, however, we might expect the opposite pattern, where violence is more extreme during later phases of aid project development after which a larger share of the resources has been disbursed.

To investigate this question, I estimate an augmented version of the baseline specification in which I interact the project indicator and predicted project score with the number of projects in the cell-year that are in their later stages (i.e., within two or three years of completion) and with the number of projects in the cell-year that are in their early stages (i.e., in their first two or three years).

The estimates are reported in Table 3. I find that the effects are substantially more pronounced for projects in their later stages. The interaction term between the project indicator and the number of projects in their later stages is positive and significant across specifications. The direct effect of the predicted project score remains negative albeit smaller in magnitude. I also find that the effects are muted when projects are in their early stages. The coefficient on the interaction term between the predicted project score and the number of projects in their early stages is positive and weakly significant ($p < 0.1$) across specifications (columns 3-4 and 7-8). These findings seem inconsistent with a situation in which conflict actors are attempting to sabotage a project before it gets off the

Table 4: Heterogeneity by Past Conflict

	(1) Conflict Indicator	(2) Multiple Conflict Indicator	(3) Death Indicator	(4) Violent Conflict Indicator
Predicted Project Score	-0.0128	-0.0036	-0.0011	-0.0090
	(0.0074)	(0.0066)	(0.0062)	(0.0070)
Predicted Project Score x Recent Conflict	-0.0154	-0.0168	-0.0108	-0.0148
	(0.0031)	(0.0026)	(0.0026)	(0.0029)
Grid Cell Fixed Effects	Yes	Yes	Yes	Yes
Sub-Sector Fixed Effects	Yes	Yes	Yes	Yes
Country x Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	49,554	49,554	49,554	49,554
R-squared	0.5186	0.5180	0.4437	0.4905

Notes**:** The unit of observation is a grid-cell-year. Recent Conflict is an indicator that equals one if there was a conflict event in the grid cell within the past 5 years. Recent Conflict takes the value one for 31% of observations in the sample. The outcome variable is listed at the top of each column. The direct effect of an aid project as well as recent conflict are also included in each regression specification. Standard errors, reported in parentheses, are clustered by grid cell.

ground. Instead, the results are more consistent with predation-based motives that emerge after resources arrive (Findley, 2018).

5.4 Conflict Zones and Appropriable Resources

Existing accounts highlight the important role of project management in conflict zones, where the risk of stealing and appropriation by armed groups is particularly high (see Section 2.1). Moreover, there are myriad news stories of development aid projects facing looting or attack in areas with recent or ongoing conflicts.[25] To investigate this possibility, I first include an interaction term between predicted project performance and an indicator that equals one if there was a conflict in the grid cell within the past five years. This heterogeneity analysis is reported in Table 4. Across dependent variables, the coefficient on the interaction term is negative and significant: the impact of project management on conflict is over twice as large in conflict zones. The estimates are similar if conflict zones are instead defined as grid cells with conflict in the past ten years or with conflict in the immediately preceding year (not reported). This is consistent with the hypothesis that project management matters most when armed groups are most likely to be present.

If the findings are driven by predation of aid resources, a second hypothesis is that the effect of management quality should be largest when a large amount of resources is being transferred (i.e. when the potential "prize" is largest). This would also dovetail well with the finding from Section 5.5 that management matters most during later project stages when more resources have been distributed. To investigate this possibility, I explore heterogeneity in the main effect based

[25]For example, the April 2023 attack on a social safety net project in Sudan (see https://www.worldbank.org/en/news/statement/2023/04/17/world-bank-group-statement-on-sudan-attack-wfp-bnmb) as well as threats to aid projects in several West African countries following the rise of Boko Haram (Look and Kindeza, 2014).

Table 5: Heterogeneity by Financial Flows

	(1) Conflict Indicator	(2) Multiple Conflict Indicator	(3) Death Indicator	(4) Conflict Indicator	(5) Multiple Conflict Indicator	(6) Death Indicator
Predicted Project Score	0.0398	0.0597	0.0308	0.0197	0.0373	0.0172
	(0.0267)	(0.0241)	(0.0233)	(0.0271)	(0.0239)	(0.0234)
Predicted Project Score x log Disburs.	-0.0031	-0.0037	-0.0019	-0.0016	-0.0020	-0.0009
	(0.0014)	(0.0013)	(0.0012)	(0.0014)	(0.0012)	(0.0012)
Predicted Project Score x log Disburs. x Recent Conflict				-0.0011	-0.0013	-0.0008
				(0.0003)	(0.0002)	(0.0002)
Grid Cell Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Sub-Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country x Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	49,554	49,554	49,554	49,554	49,554	49,554
R-squared	0.5179	0.5160	0.4430	0.5187	0.5183	0.4438

Notes**:** The unit of observation is a grid-cell-year. Log Disburs. is log of the total disbursements associated with the cell-year. Its mean value for cell-years with an aid project is 18.7 and its minimum value is 11.6. Recent Conflict is an indicator that equals one if there was a conflict event in the grid cell within the past 5 years. It takes value one for 31% of the sample. All two-way interactions and individual variables themselves are also included in the regression and are not reported for ease of presentation. The outcome variable is listed at the top of each column. Standard errors, reported in parentheses, are clustered by grid cell.

on the total amount of money disbursed to each project site. Columns 1-3 of Table 5 document that the baseline results are larger in magnitude for projects that receive more financial resources. Moreover, the amplifying effect of greater financial flows is itself amplified in areas with recent conflict (columns 4-6). When I include a triple interaction term between the project score, (log of) total disbursements, and the indicator for recent conflict in the grid cell, its coefficient is negative and statistically significant across outcome variables.

Thus, the effect of project management is largest when a large amount of resources are being managed and in contexts where armed groups are active. This is consistent with the point made in case study accounts that monitoring is particularly important when there is the possibility that armed groups steal or divert abundant aid resources (e.g. Prendergast, 1996; Anderson, 1999).

Finally, I investigate heterogeneity across lending sectors. The previous set of findings suggest that the effects could be very different for different sectors, which are differentially prone to predation. While projects related to energy and mining, for example, may be particularly vulnerable and attractive to armed groups, projects involved with building administrative capacity may not.[26] Table 6 reports heterogeneity by sector in the effect of project management by including interaction terms between the predicted project score and indicators for the main lending sector of each project. The excluded sectors, which are far smaller than the rest, are Finance, Industry and Trade, and Information and Communications.

[26]See, for example, Moyo (2009) on mining-related aid projects and conflict. There is also a large literature on appropriable natural resources and conflict (e.g. Collier and Hoeffler, 2005).

Table 6: Heterogeneity by Sector

	(1) Conflict Indicator	(2) Multiple Conflict Indicator	(3) Death Indicator
Predicted Project Score x Agriculture	-0.0522	-0.0395	-0.0513
	(0.0172)	(0.0164)	(0.0149)
Predicted Project Score x Education	-0.0300	-0.0434	-0.0140
	(0.0214)	(0.0186)	(0.0185)
Predicted Project Score x Health and Social Services	-0.0165	-0.0131	-0.0359
	(0.0132)	(0.0115)	(0.0112)
Predicted Project Score x Energy and Mining	-0.0121	-0.0043	-0.0208
	(0.0101)	(0.0098)	(0.0108)
Predicted Project Score x Public Administration	0.0143	0.0327	0.0088
	(0.0177)	(0.0155)	(0.0138)
Predicted Project Score x Transportation	-0.0082	-0.0043	-0.0134
	(0.0153)	(0.0127)	(0.0116)
Predicted Project Score x Water and Sanitation	-0.0021	-0.0138	0.0067
	(0.0159)	(0.0150)	(0.0146)
Grid Cell Fixed Effects	Yes	Yes	Yes
Sub-Sector Fixed Effects	Yes	Yes	Yes
Country x Year Fixed Effects	Yes	Yes	Yes
Observations	49,554	49,554	49,554
R-squared	0.5182	0.5165	0.4437

Notes**:** The unit of observation is a grid-cell-year. The independent variables of interest are interaction terms between the predicted project score and indicators for the main project sector. The outcome variable is listed at the top of each column. Even when not displayed, the components of each interaction term, as well as the aid project indicator, are included in each regression specification. Standard errors, reported in parentheses, are clustered by grid cell.

The estimates from Table 6 suggest that the effect of project management is most pronounced for projects related to agriculture, energy and mining, health and social services, and (to a lesser extent) education. While these results are admittedly imprecise after slicing the data by lending sector, these estimates seem consistent with the previous set of analyses suggesting that the effects are most pronounced when the project is "diversion prone" and involves the transfer or extraction of appropriable resources. In sectors like public administration or transportation, on the other hand, there may be less scope for resource stealing or aid diversion and, as a result, the importance of management for diverting conflict may be more limited.

5.5 Which leader characteristics matter?

In this section, I perform a more speculative analysis and investigate which leader-level characteristics (if any) are associated with their ability to mitigate conflict. I use two strategies to construct leader characteristics. First, I compile a series of characteristics of the projects that they have man-

Table 7: Leader-Level Correlates of Conflict-Inducing Effects

(1) Variable Name	(2) Coefficient	(3) Variable Name	(4) Coefficient
Panel A: Work Experience			
Worked for IMF or UN (=1)	0.134	Studied in Home Country (=1)	-0.0299
	(0.0672)		(0.0517)
Worked for National Ministry (=1)	0.0894	Panel C: Project Characteristics	
	(0.0931)	Number of Countries	-0.00568
Worked for Private Sector (=1)	-0.105		(0.00637)
	(0.0693)	Number of Sectors	-0.0135
Years at the World Bank (=1)	0.0139		(0.00636)
	(0.00824)	Average Total Disbursement	0.207
			(0.164)
Panel B: Education		Average Total Commitments	0.0981
Has PhD or MSc (=1)	-0.152		(0.204)
	(0.0881)	Comm. Minus Disburs. (normalized)	-0.282
Has MBA (=1)	0.0893		(0.0401)
	(0.0929)	Panel D: Individual Characteristics	
Studied in US (=1)	0.0857	Female (=1)	-0.0207
	(0.0513)		(0.0567)
Studied in UK (=1)	-0.0514	Number of Spoken Languages	0.0031
	(0.0657)		(0.0304)

Notes: The unit of observation is a project leader. Each coefficient in columns 2 and 4 report the estimate of the relationship between leader-level conflict value added and the characteristics in columns 1 and 3 respectively. Robust standard errors are reported in parentheses.

aged. Second, I link data from Limodio (2021) on elements of the CV of each project leader to compile data on their professional and educational history. I then investigate the relationship between each characteristic and estimates of leader-level conflict effects described in Section 4.3. Higher measures of the conflict effect mean that the leader's projects are *more* likely to be associated with conflict. None of these estimates should be interpreted as causal parameters; instead, this analysis is designed to give a descriptive sense of the types of leaders with high and low effects on the likelihood of conflict.

The results are presented in Table 7; columns 1 and 3 display the leader-level characteristics and columns 2 and 4 report the relationship between each characteristic and the conflict effect. Panel A investigates leaders' employment history. Past experience working at the United Nations or International Monetary Fund is positively correlated with conflict, while past experience in the private sector is negatively (albeit insignificantly) correlated. Panel B investigates leaders' educational history. Having a PhD or Master's degree seem to be negatively correlated with the conflict effect, while the remaining characteristics have a small or statistically imprecise effect.

Panel C investigates features of each leader's aid projects. While the number of countries in which a leader operates is uncorrelated with their conflict effect, the number of sectors in which a leader has projects is negatively correlated with conflict, suggesting there may be some benefit

from working across lending sectors and learning from each setting. Moreover, and perhaps most interestingly, while the total number of financial commitments or disbursements to the project are uncorrelated with the conflict effect, the difference between commitments and disbursements is negatively correlated. This could be because better project leaders are able to accomplish project goals with fewer resources or because they are better able to prevent resources from being lost or stolen. This finding is consistent with the hypothesis that an important way that good management reduces conflict is by reducing the likelihood of aid diversion and expropriation.

Finally, Panel D investigates additional individual-level characteristics. While female leaders are slightly better than male leaders by this measure, the relationship is insignificant. There is also no relationship between speaking additional languages and the conflict effect.

6 Conclusion

This study investigates whether the management of development aid affects violent conflict. The empirical analysis focuses on World Bank aid in Africa, a region that experiences protracted conflict and where development assistance is frequently appropriated for violence. While extensive case study accounts suggest that aid mismanagement causes conflict, this has never been investigated systematically or empirically.

I find that poorly managed aid projects cause conflict while well executed projects have the opposite effect. To derive causal estimates, I exploit the assignment of project leaders with varying ability to World Bank projects. Project leaders drive substantial variation in aid project performance and conflict. Management matters not only for the success of projects themselves but also for mitigating their potentially violent fallout.

These results affirm that the policy makers and bureaucrats that comprise development agencies play an important role in determining the consequences of development aid. One conclusion from this research is that it is important to move beyond claims that aid is "good" or "bad"—at least when it comes to conflict—and beyond the idea that aid policy's failings can be blamed on recipient countries. Reform and accountability within aid organizations themselves could potentially go a long way toward limiting the violent side effects of development assistance, even in the most conflict-prone regions.

More speculatively, these findings suggest that more work may be needed in the field of development economics to understand the extent to which the results of any evaluation can hinge on the quality of implementation. The individuals and teams at the core of program implementation are rarely discussed in academic or policy work. Yet, they may be key for shaping the results of programs and policies being evaluated around the world.

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Online Appendix for "The Management of Aid and Conflict in Africa" by Jacob Moscona

A Leader-Level Effect Estimates: Methods

This section describes estimation of the leader-specific effects in greater detail, and in particular the "value added" approach that I use to report the estimates. In order to limit estimation-error variance in the project leader effect estimates, I estimate empirical Bayesian (EB) shrinkage estimators $\hat{\phi}_\ell^{EB}$ (see Koedel et al., 2015) – of course, this adjustment is not necessary when estimating IV-2SLS or IV-LIML models and is only used to estimate the reported leader fixed effect estimates. I follow the shrinkage procedure outlined in Chetty et al. (2014) and Koedel et al. (2015). After estimating the raw coefficients, $\hat{\phi}_\ell$ (where ℓ indexes leaders), I compute the empirical Bayesian (EB) shrinkage estimator $\hat{\phi}_\ell^{EB}$ as a weighted average of the estimated coefficient and the mean of all coefficients, interpreted as the Bayesian prior:

$$\hat{\phi}_\ell^{EB} = a_\ell \hat{\phi}_\ell + (1 - a_\ell)\bar{\phi} \tag{5}$$

$$a_\ell = \frac{\hat{\sigma}^2}{\hat{\sigma}^2 + \hat{\lambda}_\ell} \tag{6}$$

where $\hat{\sigma}^2$ is the variance of the estimated coefficients, corrected for estimation error, and $\hat{\lambda}_\ell$ is the estimated error variance of coefficient k (i.e. the squared standard error).

I estimate two versions of the leader effect: one with respect to the project score and one with respect to conflict.

In the former case, I first estimate the regression:

$$P_k = \sum_\ell \phi^\ell \cdot \text{Leader}_k^\ell + \mathbf{X}_k'\Sigma + \epsilon_k \tag{7}$$

where k indexes projects and Leader_k^ℓ is the project leader for project k.[27] $\mathbf{X}_k'$ is a vector of project-specific controls, including approval-year and end-year fixed effects, sector fixed effects, and country fixed effects. I combine estimates of $\hat{\phi}^\ell$ with Equations 5 and 6 in order to construct the leader-specific value added estimates with respect to the project score. Higher value added estimates imply that the leader has higher-quality projects as measured by the World Bank IEG.

In the latter case, I first estimate the regression:

$$\text{Conflict}_{it} = \alpha_i + \delta_t + \sum_\ell \phi^\ell \cdot \text{Leader}_{it}^\ell + \mathbf{X}_{it}'\Omega + \epsilon_{it} \tag{8}$$

where the indexing is the same as in the main text. Again, I combine estimates of $\hat{\phi}^\ell$ with Equations 5 and 6 to shrink the estimates. In this case, a lower leader-level effect implies that the leader

[27] The regression is estimated at the project level and each project can have only a single leader. Thus, only one leader effect will be equal to one for any given observation and no normalization of the leader effect is required.

is associated with less conflict i.e., is a higher-quality leader from the perspective of the paper. To construct Figure 6, I use an analogous procedure to construct shrinkage estimators for the sub-sector fixed effects and country-by-year fixed effects.

B Detailed Discussion of Additional Results

B.1 Alternative IV Estimators

The estimation strategy relies on the inclusion of many instruments and this may introduce inconsistency. In order to address this concern, in the baseline results I present LIML IV estimates (Flores-Lagunes, 2007; Anderson et al., 2010). Table A3 shows that the results are robust to using 2SLS estimation. In all cases, the coefficient of interest is very similar. Moreover, the similarity between LIML and 2SLS estimates suggests that the presence of many instruments does not bias the baseline results (Angrist and Pischke, 2008, p. 157).

B.2 Additional Controls

As an additional test of the identification strategy and robustness of the main finding, I control for trends in a range of baseline characteristics that have been shown in prior work to affect conflict dynamics. Estimates from regressions that include these additional controls are reported in Table A4. The controls include year indicators interacted with (i) the grid-cell-level agricultural suitability; (ii) variables that equal one if petroleum or diamonds are present in the grid-cell; and (iii) a variable that equals one if a grid cell is intersected by a national border. Natural resource presence has dynamic effects on conflict onset and escalation (e.g. Humphreys, 2005; Weinstein, 2006; Ross, 2004, 2006) and arbitrary national boundaries play a particularly important role in African conflict (Michalopoulos and Papaioannou, 2016). Column 6, for example, reports estimates from a regression that includes all of the above controls (80 in total, on top of the baseline fixed effects and controls). Columns 7 and 8 also include lag(s) of the dependent variable, in addition to the full control set.[28] The coefficient of interest is similar across specifications.

Finally, Table A5 controls for project size as measured by total project-level disbursements from the World Bank. It is worth noting that disbursements could be considered a bad control if, over time, the Bank sends fewer resources to poorly managed projects (for example). Therefore, estimates from specifications controlling for disbursements should be interpreted with caution. Reassuringly, across specifications, the baseline results remain very similar. Thus, the main results are not driven by differences in project size or total spending.

[28] Including lags of the dependent variable in this fixed effects regression model is unlikely to result in substantial bias since the panel contains many time periods. Nickell (1981) derives the formula for the bias in the case without covariates as: $\text{plim}_{N\to\infty}(\hat{\gamma}-\gamma) \approx -(1-\gamma)/(T-1)$, where γ is the correlation between the dependent variable in period t and period $t-1$. In my setting, $T=18$ and $\hat{\gamma}=0.54$. Note also that this formula gives an upper bound for the bias since the bias is strictly lower when controls are included, as shown in Nickell (1981).

B.3 Geographic Spillovers

In order to better understand the equilibrium effects of better project management, I investigate spatial spillover effects. High-quality project performance may reduce overall conflict in a region or shift where conflict takes place. For example, conflict actors might move toward poorly executed projects if resources are easier to steal, thereby reducing conflict in nearby regions. This substitution pattern would dampen the overall benefit of high quality project performance.

To distinguish between these two possibilities, I estimate the relationship between conflict and aid project quality in nearby regions (i.e., adjacent grid cells).[29] Analogous to the main analysis, I use indicators for the presence of project leaders in adjacent grid cells to predict project quality in those grid cells (the spillover effect), and I continue to use project leader indicators as instruments for the direct effect of project quality. I use the following regression specifications to predict the project score in cell i (P_{it}) and in the cells adjacent to cell i (P_{ict}^{SPILL}), respectively:

$$P_{it} = \alpha_i + \delta_{c(i)t} + \sum_{\ell} \phi_{\ell} \text{Leader}_{it}^{\ell} + \sum_{\ell} \phi_{\ell}^{\text{SPILL}} \text{Leader}_{it}^{\text{SPILL},\ell} + \zeta_1 A_{it} + \eta_1 A_{it}^{\text{SPILL}} + \mathbf{Z}_{it}' \Sigma_1 + e_{it} \quad (9)$$

$$P_{it}^{\text{SPILL}} = \alpha_i + \delta_{c(i)t} + \sum_{\ell} \psi_{\ell} \text{Leader}_{it}^{\ell} + \sum_{\ell} \psi_{\ell}^{\text{SPILL}} \text{Leader}_{it}^{\text{SPILL},\ell} + \zeta_2 A_{it} + \eta_2 A_{it}^{\text{SPILL}} + \mathbf{Z}_{ict}' \Sigma_2 + u_{it} \quad (10)$$

where A_{it}^{SPILL} is an indicator that equals one if there is an aid project in a cell adjacent to cell i. $\text{Leader}_{it}^{\ell}$ are indicators that equal one if leader ℓ is operating a project in cell i, and $\text{Leader}_{it}^{\text{SPILL},\ell}$ are indicators that equal one if leader ℓ is operating a project in a grid cell adjacent to cell i (i.e. in the spillover region). P_{ict}^{SPILL}, the independent variable of interest in this part of the analysis, is the IEG score of the project (if any) in the cell adjacent to cell i. As in the baseline analysis, if there are multiple ongoing projects in grid cell i in year t or in the spillover region of grid cell i in year t, P_{it} and P_{it}^{SPILL} are computed as the average IEG score of all ongoing projects, and $\text{Leader}_{it}^{\ell}$ and $\text{Leader}_{it}^{\text{SPILL},\ell}$ are divided by the number of projects.

The second stage estimating equation is:

$$\text{Conflict}_{ict} = \alpha_i + \delta_t + \gamma A_{ict} + \beta \hat{P}_{ict} + \gamma^{\text{SPILL}} A_{ict}^{\text{SPILL}} + \beta^{\text{SPILL}} \hat{P}_{ict}^{\text{SPILL}} + \mathbf{X}_{ict}' \Omega + \epsilon_{ict} \quad (11)$$

where $\hat{P}_{it}$ and $\hat{P}_{it}^{\text{SPILL}}$ are estimated using Equations 9 and 10 respectively. The coefficient on $\hat{P}_{it}$ (β) captures the direct effect of project quality on conflict, and the coefficient on $\hat{P}_{it}^{\text{SPILL}}$ (β^{SPILL}) captures the spillover effect from project quality in nearby regions. If $\beta^{SPILL} < 0$, high quality projects reduce conflict in nearby regions while if $\beta^{\text{SPILL}} > 0$, high quality projects increase conflict in nearby regions. Estimates of Equation 11 are reported in Table A8. The spillover effect estimates are imprecise and small in magnitude compared to the direct effect, suggesting that the presence of spillover effects should not affect interpretation of the main results. The point estimates, however,

[29] In the main analysis, each observation is a one-by-one degree – or approximately 111 square kilometer – grid cell. All grid cells that are not adjacent to the coast or other large bodies of water have eight adjacent grid cells: four with which they share an edge and four with which they share a corner. Therefore, for the vast majority of observations, the spillover region is roughly 98,568 square kilometers in size (eight 111km by 11km grid cells i.e. $8 * 111^2 = 98,568$).

are all negative ($\beta^{SPILL} < 0$) suggesting that, if anything, the main results may understate the total effect of project management quality on conflict.

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C Supplementary Figures and Tables

Figure A1: **Histogram of Project Score Leader Effect Estimates** This figure displays a histogram of value added estimates for all project leaders when the overall project score is the dependent variable. Value added measures were computed from estimates of Equation 7.

Table A1: First Stage Relationship, Direct Effect of Aid

	(1)	(2)
	Outcome is the Project Indicator	
	Instrument constructed with yearly variation outside Africa	Instrument constructed with yearly variation inside Africa
Z	2.6784	1.2566
	(0.0686)	(0.0646)
Grid Cell Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Observations	49,644	49,644
R-squared	0.9714	0.9707

Notes**:** The unit of observation is a grid-cell-year. The independent variable of interest is the instrument for aid delivery. In column 1, it is the version constructed using year-to-year fluctuations in the total number of projects outside of Africa, and in column 2 it is constructed using year-to-year fluctuations in the total number of projects inside Africa. Standard errors, reported in parentheses, are clustered by grid cell.

Table A2: Baseline Results, IV for Aid Receipt Constructed Using Only Aid to Africa

	(1)	(2)	(3)	(4)	(5)
	Dependent Variable is a Conflict Indicator				
Project Indicator	0.0570	0.0534	0.0473	0.0459	0.0793
	(0.0271)	(0.0281)	(0.0277)	(0.0288)	(0.0422)
Project Score	-0.0242	-0.0223	-0.0199	-0.0184	-0.0215
	(0.0069)	(0.0073)	(0.0071)	(0.0075)	(0.0107)
Grid Cell Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	-	-	-
Sub-Sector Fixed Effects	No	Yes	No	Yes	Yes
Country x Year Fixed Effects	No	No	Yes	Yes	Yes
Observations	49,644	49,644	49,554	49,554	49,554
Mean of Dependent Variable	0.194	0.194	0.194	0.194	0.194

Notes**:** The unit of observation is a grid-cell-year. Project Indicator is an indicator variable that equals 1 if there is a world bank aid project in a grid-cell-year. Project Score was determined by the IEG and is on a scale from 1-6 in order of increasing overall project performance, and equal to zero in cells with no aid project. All columns report IV-LIML estimates in which Project Indicator is also instrumented using the version of the instrument constructed only using projects within Africa. The specification in column 5 is weighted by the total number of project-years in the grid cell during the sample period. Standard errors, reported in parentheses, are clustered by grid cell.

Table A3: Aid Management and Conflict: 2SLS Estimates

	(1)	(2)	(3)	(4)	(5)
	Dependent Variable is a Conflict Indicator				
	Panel A: IV Estimates, Score (2SLS)				
Project Indicator	0.0560	0.0527	0.0462	0.0454	0.0735
	(0.0268)	(0.0278)	(0.0275)	(0.0285)	(0.0399)
Project Score	-0.0239	-0.0221	-0.0196	-0.0183	-0.0200
	(0.0068)	(0.0072)	(0.0071)	(0.0074)	(0.0101)
	Panel B: IV Estimates, Indicator & Score (2SLS)				
Project Indicator	0.0566	0.0535	0.0476	0.0465	0.0736
	(0.0270)	(0.0279)	(0.0275)	(0.0286)	(0.0400)
Project Score	-0.0241	-0.0223	-0.0200	-0.0186	-0.0200
	(0.0069)	(0.0072)	(0.0071)	(0.0074)	(0.0101)
Observations	49,644	49,644	49,554	49,554	49,554
Mean of Dependent Variable	0.194	0.194	0.194	0.194	0.194
Grid Cell Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	-	-	-
Sub-Sector Fixed Effects	No	Yes	No	Yes	Yes
Country x Year Fixed Effects	No	No	Yes	Yes	Yes

Notes**:** The unit of observation is a grid-cell-year. Project Indicator is an indicator variable that equals 1 if there is a World Bank aid project in a grid-cell-year. Project Score was determined by the IEG and is on a scale from 1-6 in order of increasing overall project performance, and equal to zero in cells with no aid project. Panel A reports IV-2SLS estimates in which Project Score is instrumented using the full set of project leader indicators. Panel B reports IV-2SLS estimates in which Project Indicator is also instrumented. The specification in column 5 is weighted by the total number of project-years in the grid cell during the sample period. Standard errors, reported in parentheses, are clustered by grid cell.

Table A4: Additional Controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent Variable is a Conflict Indicator							
Project Indicator	0.0458	0.0454	0.0456	0.0483	0.0460	0.0481	0.0448	0.0443
	(0.0288)	(0.0287)	(0.0288)	(0.0288)	(0.0288)	(0.0288)	(0.0267)	(0.0265)
Project Score	-0.0184	-0.0183	-0.0182	-0.0185	-0.0184	-0.0184	-0.0168	-0.0166
	(0.0075)	(0.0075)	(0.0075)	(0.0075)	(0.0075)	(0.0075)	(0.0069)	(0.0069)
Diamond Mine x Year Fixed Effects		✓				✓	✓	✓
Petroleum x Year Fixed Effects			✓			✓	✓	✓
Agricultural Suitability x Year Fixed Effects				✓		✓	✓	✓
International Border x Year Fixed Effects					✓	✓	✓	✓
Lag of Dependent Variable (t-1)							✓	✓
Second Lag of Dependent Variable (t-2)								✓
Grid Cell Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sub-Sector Fixed Effects	Yes	Yes	No	Yes	Yes	Yes	No	Yes
Country x Year Fixed Effects	Yes	No	Yes	Yes	Yes	No	Yes	Yes
Observations	49,554	49,554	49,554	49,554	49,554	49,554	49,554	49,554
Mean of Dependent Variable	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194

Notes: The unit of observation is a grid-cell-year. Project Indicator is an indicator variable that equals 1 if there is a world bank aid project in a grid-cell-year. Project Score was determined by the IEG and is on a scale from 1-6 in order of increasing overall project performance, and equal to zero in cells with no aid project. All columns report IV-LIML estimates in which Project Score is instrumented using the full set of project leader indicators. The additional controls included in each specification are noted at the bottom of each column. Standard errors, reported in parentheses, are clustered by grid cell.

Table A5: Controlling for Project Disbursements

	(1)	(2)	(3)	(4)
	Dependent Variable is a Conflict Indicator			
Project Indicator	0.0336	0.0458	0.0327	0.0398
	(0.0289)	(0.0293)	(0.0288)	(0.0294)
Project Score	-0.0244	-0.0228	-0.0200	-0.0188
	(0.0069)	(0.0073)	(0.0071)	(0.0075)
Grid Cell Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	-	-
Sub-Sector Fixed Effects	No	Yes	No	Yes
Country x Year Fixed Effects	No	No	Yes	Yes
Control for log of Total Disbursements	Yes	Yes	Yes	Yes
Observations	49,644	49,644	49,554	49,554
Mean of Dependent Variable	0.194	0.194	0.194	0.194

Notes**:** The unit of observation is a grid-cell-year. Project Indicator is an indicator variable that equals 1 if there is a world bank aid project in a grid-cell-year. Project Score was determined by the IEG and is on a scale from 1-6 in order of increasing overall project performance, and equal to zero in cells with no aid project. All columns report IV-LIML estimates in which Project Indicator is also instrumented using the full set of leader indicators. All columns also control for log of total project disbursements. Standard errors, reported in parentheses, are clustered by grid cell.

Table A6: Baseline Results, Excluding Development Policy Financing

	(1)	(2)	(3)	(4)
	Dependent Variable is a Conflict Indicator			
	Panel A: OLS Estimates			
Project Indicator	0.0422	0.0399	0.0371	0.0350
	(0.0251)	(0.0255)	(0.0245)	(0.0255)
Project Score	-0.0206	-0.0190	-0.0175	-0.0158
	(0.0063)	(0.0065)	(0.0062)	(0.0065)
	Panel B: IV Estimates, Score			
Project Indicator	0.0548	0.0506	0.0446	0.0424
	(0.0270)	(0.0280)	(0.0276)	(0.0286)
Project Score	-0.0238	-0.0219	-0.0194	-0.0178
	(0.0069)	(0.0073)	(0.0071)	(0.0075)
	Panel C: IV Estimates, Indicator & Score			
Project Indicator	0.0556	0.0516	0.0461	0.0436
	(0.0272)	(0.0281)	(0.0276)	(0.0286)
Project Score	-0.0241	-0.0221	-0.0198	-0.0181
	(0.0069)	(0.0073)	(0.0071)	(0.0075)
Observations	49,644	49,644	49,554	49,554
Mean of Dependent Variable	0.194	0.194	0.194	0.194
Grid Cell Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	-	-
Sub-Sector Fixed Effects	No	Yes	No	Yes
Country x Year Fixed Effects	No	No	Yes	Yes

Notes**:** The unit of observation is a grid-cell-year. Project Indicator is an indicator variable that equals 1 if there is a world bank aid project in a grid-cell-year. Project Score was determined by the IEG and is on a scale from 1-6 in order of increasing overall project performance, and equal to zero in cells with no aid project. Panel A reports OLS estimates. Panel B reports IV-LIML estimates in which Project Score is instrumented using the full set of project leader indicators. Panel C reports IV-LIML estimates in which Project Indicator is also instrumented. All Development Policy Financing projects (DPFs) are excluded from the sample. Standard errors, reported in parentheses, are clustered by grid cell.

Table A7: Aid Management and Conflict: Clustering by Country

	(1)	(2)	(3)	(4)	(5)	(6)
	Dependent Variable is a Conflict Indicator					
	OLS Estimates		IV Estimates (Score)		IV Estimates (Indicator & Score)	
Project Indicator	0.0388	0.0376	0.0466	0.0458	0.0480	0.0469
	(0.0219)	(0.0256)	(0.0267)	(0.0290)	(0.0268)	(0.0291)
Project Score	-0.0177	-0.0162	-0.0197	-0.0184	-0.0201	-0.0187
	(0.0056)	(0.0066)	(0.0068)	(0.0076)	(0.0068)	(0.0076)
Grid Cell Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country x Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Sub-Sector Fixed Effects	No	Yes	No	Yes	No	Yes
Mean of Dependent Variable	0.194	0.194	0.194	0.194	0.194	0.194
Observations	49,554	49,554	49,554	49,554	49,554	49,554

Notes**:** The unit of observation is a grid-cell-year. Project Indicator is an indicator variable that equals 1 if there is a world bank aid project in a grid-cell-year. Project Score was determined by the IEG and is on a scale from 1-6 in order of increasing overall project performance, and equal to zero in cells with no aid project. Columns 1-2 report OLS estimates. Columns 3-4 report IV-LIML estimates in which Project Score is instrumented using the full set of project leader indicators. Collumns 5-6 report IV-LIML estimates in which Project Indicator is also instrumented. Standard errors, reported in parentheses, are clustered by country.

Table A8: Geographic Spillover Effects

	(1)	(2)	(3)	(4)
	Dependent Variable is a Conflict Indicator			
Project Indicator	0.0336	0.0279	0.0374	0.0368
	(0.0287)	(0.0294)	(0.0274)	(0.0283)
Predicted Project Score	-0.0165	-0.0144	-0.0171	-0.0158
	(0.0074)	(0.0077)	(0.0070)	(0.0073)
Project Indicator Spillover	0.0083	0.0166	0.0022	-0.0025
	(0.0230)	(0.0222)	(0.0247)	(0.0246)
Predicted Project Score Spillover	-0.0094	-0.0108	-0.0058	-0.0047
	(0.0057)	(0.0055)	(0.0062)	(0.0062)
Observations	49,572	49,572	49,536	49,536
Mean of Dependent Variable	0.194	0.194	0.194	0.194
Grid Cell Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	-	-
Sub-Sector Fixed Effects	No	Yes	No	Yes
Country x Year Fixed Effects	No	No	Yes	Yes

Notes: The unit of observation is a grid-cell-year. Project Indicator is an indicator variable that equals 1 if there is a world bank aid project in a grid-cell-year and Project Indicator Spillover is an indicator that equals 1 if there is a world bank project in any adjacent grid cells. Predicted Project Score is the value of the IEG project score predicted by the project leader fixed effects and Predicted Project Score Spillover is the value of the average IEG project score in adjacent grid cells predicted by leader fixed effects. Standard errors, reported in parentheses, are clustered by grid cell.