

**The Effect of Chinese Foreign Aid on Civil Conflict in Sub Saharan Africa:  
A Study at the Subnational Level**

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**Abstract**

This paper seeks to understand what role Chinese foreign aid has on civil conflict in Sub Saharan Africa at the subnational level. By comparing how state-as-a-prize theory and opportunity cost theory explains how increased foreign aid correlates with rising conflicts, this paper seeks to understand the debate between why conflict intensity and occurrences either increase or decrease due to various types of shocks. Using birth region as a proxy for Chinese foreign aid, it finds that the addition of such aid does have a significant impact on the discourse surrounding conflict, which has traditionally been related to external demand shocks proxied by agricultural commodity shocks and exposure to banking crises. Specifically, it shows that conflict probability is higher in regions where conflict intensity is lower, and lower in regions where conflict intensity is higher.

**Keywords:** Chinese foreign aid, Conflict occurrences and intensity, State-as-a-prize, Opportunity cost

## Introduction

At the level of nation-states, results concerning influencing factors on intensity and instances of civil conflict are mixed and tend to be explained through two theories, though acting in opposite directions. On one hand, opportunity cost theory holds that increased resources caused by positive income shocks decrease conflict due to diminished opportunity and benefit of insurrection or resulted in increasing the state's capacity to suppress conflict. On the other hand, the state-as-a-prize theory claims that better resources would increase stakes and incentivize people to revolt against their governments. Traditionally, income shocks on the country-level, instrumented by various variables, are used to measure for increased resources. Also, in existing research on the county level, external demand shocks are often proxied by agricultural commodity shocks and exposure to banking crises to measure fluctuation in resource availability of counties across countries. The goal of this paper is to introduce a new variable, Chinese foreign aid, as a new contributor to such fluctuations. The results will illuminate the external validity of previous research, which has tried to set a definitive direction on the effects of various shocks. Since Chinese foreign aid, agricultural commodity shocks, and exposure to foreign banking crises are all aspects of international trade patterns, this research identifies meaningful further trends in international trade.

Initially assuming that Chinese foreign aid would increase conflict in Sub Saharan Africa on the subnational level, the paper finds complications to this assertion. In terms of aid, conflict intensity levels are seriously impacted due to the direction of the Chinese foreign aid coefficient. Either way, introducing Chinese foreign aid to civil conflict reviews previous assumptions on agricultural commodity shocks and banking crises. As further explained in the “results” section,

Chinese foreign aid does not only influence civil conflict on its own but also alters the impact of agricultural commodity shocks and that of exposure to banking crises effects on civil conflict.

## **Literature Review**

### **Explaining Civil Conflict with Income Shocks**

Most research explaining civil conflict uses commodity price variations as a proxy for exogenous external income shocks, theorized to influence conflict at the country level. However, results are mixed. While Besley and Persson (2008) find a positive relationship between income shocks and civil war incidence Brucker and Ciccone (2010) find the opposite. At the core of this contention are two a priori ambiguous models of conflict that contradict each other. On one hand, larger incomes reduce conflict by reducing individuals' opportunity cost of insurrection as the state's capacity to prevent rebellion increases, as described by Fearon and Laitin (2003). On the other hand, larger incomes resulting from positive income shocks increase the probability of conflict by enhancing the value of resources to fight over. This is widely known as the "state-as-a-prize" mechanism. The inability to identify the precise influence that income shocks exert on conflict at the country level could partly be explained by the problematic channel of transmission of said foreign aid, which is at the crux of this research method.

### **Contextualizing the Micro level of Analysis**

More recently, Bazzi and Blattman (2014) argue that a significant relationship between commodity prices and conflict incidence can only be ascertained within a very specific context at the micro-level, where disaggregated versus aggregated data is employed. However, there are few studies done at the micro level, apart from Dube and Vargas (2013), who collected geographically disaggregated data but only for a single country, Colombia. Results demonstrated evidence in favor of both the opportunity cost (or state-capacity) and state-as-a-prize theories. More precisely, they

discover that positive commodity price shocks decrease conflict probability in the case of labor-intensive commodities such as coffee but increase conflict probability in the case of a capital-intensive commodity such as oil. Due to the one country nature of Dube and Vargas' research, their results cannot be applied to other countries on the subnational level. Their work, nevertheless, shows that negative shocks to agricultural production and crops prices are closely associated with conflict. Such revelation makes agricultural commodity shocks a good proxy to evaluate the effect of external demand shocks on civil conflict at the subnational level. Another example would be Jia (2011), who finds that droughts in China increased the probability of peasants' revolts over the 1470-1990 period. Following the same logic, Hidalgo et al. (2010) collect data on Brazilian municipalities to conclude that favorable economic shocks, instrumented by rainfall, which is closely associated with agricultural production, reduce the number of land invasions within municipalities. The same phenomenon is found to be true for Bohlken and Sergenti (2010) on Hindu-Muslim riots in India.

Notwithstanding the special case of Dube and Vargas, country-specific research can identify causes of conflict using individualistic behaviors. However, from a statistical viewpoint, country-specific research is subject to external validity concerns and thus cannot be used as generalizations to explain civil conflict overall. For this reason, stand-alone, country-specific studies on conflict should be complemented by data from a range of countries on the micro level. Doing so connects macro, cross-country results, with micro, country-specific ones, as both variations within and between countries are considered. On this note, Berman and Couttenier (2013) use georeferenced data on the location of violent events from multiple countries in Sub Saharan Africa to evaluate effects of agricultural commodity shocks and exposure to banking crises, on the incidence, onset, and ending of conflict. They find that the incidence, onset, and

ending of conflict are negatively correlated with external demand shocks at the county level, but this relationship is weaker the more remote the location is. Their research, therefore, supports the opportunity cost (or state capacity) theory.

Such method differentiates Berman and Couttenier from the others as their level of analysis is simultaneously macro and micro, and their scope, includes various types of shocks previously unexplored. The usual measure of commodity shocks is improved by a region-specific measure of agricultural specialization. Using the world demand for particular agricultural commodities produced by regions within countries reduces generalization of homogenous specialization across cells. If agricultural commodity shocks serve as a proxy for short term external demand, Berman and Couttenier account for long term shocks through the number of banking crises involving the country's trading partners. Finally, they would combine these shocks with cell-specific data on the natural level of trade openness, proxied by the distance to the nearest seaport, in order to account for the fact that more remote locations are naturally less affected by international trade patterns. A combination of long term and short term variables ensures that both the geography and intensity of conflict within countries are captured.

### **Using Foreign Aid to Understand Conflict**

Since Berman and Couttenier mainly find that external demand shocks are negatively related to civil conflict, their research supports the opportunity cost theory of insurrection. However, that does not rule out the state capacity effect, since conflict might equally decrease in times of good financial shocks, should most of the revenue go into fueling the state, which would then gain means to strengthen control and subdue opposition. They prove against the state capacity effect in regressing an interaction term between distance to capital city and shock, which they find to be insignificant. Such statistical insignificance convinces them that distance to the capital city

does not particularly matter to effects on shocks. But the state-as-a-prize mechanism theory cannot be dismissed solely on the basis that Berman and Couttenier find a negative correlation between external demand shock and civil conflict. Conflict could very well increase under good economic conditions given more resources to fight over. Moreover, albeit excellent measures, agricultural commodity shocks and banking crises cannot account for all types of income shocks that influence conflict. Large changes in income driven by resource blooms, for example, may also directly affect state revenue.

With this in mind, relating Chinese foreign aid and civil conflict contextualizes the effect of external demand shocks on conflict. Bluhm et al. (2016) find that countries receiving bilateral aid are more likely to escalate from small to armed conflict. In other words, bilateral foreign aid not only affects conflict incidence, but also conflict intensity as more conflicts burst out in areas already plagued with conflict. Collier and Hoeffler (2004) find that aid may alter the opportunity cost of fighting, while Fearon and Laitin (2003) find that aid increases state capacity and/or the likelihood of the state-as-a-prize mechanism. If aid improves the provision of public goods, it directly decreases civilians' incentive to engage in violent activities. However, if an increase in foreign aid is seen as a "resource bloom," it may either increase state capacity, thereby decreasing conflict, or increase state-as-a-prize incentives, thereby increasing conflict. This associates bilateral foreign aid with the same explanation that binds income shocks. By regressing civil conflict, on Chinese foreign aid clarifies the relationship between both variables as well as their individual impact on conflict.

### **Theory**

If foreign aid, in general, complicates the opportunity cost (or state capacity) versus state-as-a-prize debate, then Chinese foreign aid serves this niche while also accounting for potential

endogeneity if birth region is used as an instrument for Chinese foreign aid. Birth region is an effective instrument because Chinese foreign aid disproportionately flows to places where political leaders are born.

Birth region also makes for a good instrument because it fits under the exclusion restriction required for an instrumental variable to be valid. The instrument  $Z$  cannot affect  $Y$  when the main independent variable  $X$  is held constant. In this logic, birth region of political leaders does not and cannot directly affect conflict in a subnational region because birth region would not be relevant if not for Chinese foreign aid. Just because a certain leader is born in a certain region does not automatically make that region more subject to civil conflicts. A leader's birth region means very little if he/she does not act upon it by disproportionately sending aid into that region. Therefore, birth region is a good instrument for Chinese foreign aid because the former cannot directly affect conflict, reducing endogeneity effects in the latter.

Drehel et al. (2016) find that when leaders hold power, their birth regions receive substantially more distribution of the funding from Chinese foreign aid than other subnational regions. A similar effect is found in regions populated by individuals who share the same ethnicity as the political leader in power. However, this paper will prioritize birth region given the effect with birth region is much stronger than that with ethnicity of political leaders. Drehel et al. find that the amount of Chinese aid sent to a country, once the leader assumes power the funds are distributed to the birth region of said leader at triple the rate than other regions. Such characteristic is unique to Chinese aid, as Drehel et al. find that World Bank aid does not flow disproportionately to birth regions of political leaders the way that Chinese aid does. Long story short, Chinese aid lets the recipient country decide what to do with the external funding, whereas World Bank aid is subject to stringent rules and are consequently, much more difficult to manipulate. Well known

for a principle of non-interference in the domestic affairs of recipient countries, Chinese aid may be easily exploited by those who espouse patronage politics, as described by Tull (2006). Therefore, using birth region to instrument Chinese aid not only eliminates endogeneity but also explains any effect on shocks caused by political favoritism. This paper reinforces Berman and Couttenier in disengaging the effect of income shocks on conflict from a region's proximity to a political center.

Another advantage of using birth region is that this instrument is by default subnational. It would not be possible to pinpoint the effects of birth region without disaggregated geocoded data for many recipient countries over a long period. Should data be aggregated on the country level, the birth region effect would get washed out. Therefore, birth region aligns with the eventual regression. Since existing literature, using subnationally geocoded aid data, tends to focus on a single country, as in Franken et al. (2012) Dreher and al. (2016) stand out for incorporating a large number of recipient countries. Berman and Couttenier also believe that singular findings cannot be used to make statistically significant generalizations.

Through China's activities in Africa, we can see that the choice to only improve subnational development in birth regions of political leaders inadvertently widens spatial inequalities in neighboring and in their own counties. Consequently, conflict increases with more resources to fight over. Positive results between Chinese foreign aid and civil conflict in Sub Saharan Africa, therefore, account for the state-as-a-prize mechanism and reinforce Berman and Couttenier's claim that the opportunity cost mechanism is responsible for the effect of income shocks on conflicts. As Chinese development projects target politically privileged regions, it is likely to incite marginalized regions to react with social unrests. Where the results are a negative correlation with Chinese foreign aid's impact on conflict, it is likely the state capacity mechanism



is at play, congruent with the birth region instrument since both empower the political leader in charge.

### Hypothesis and Methods

The model considers the main independent variables of Berman and Couttenier's research. These include external demand shock variables like world demand for agricultural commodities produced in the region and exposure to banking crises. Furthermore, remoteness is used as an inverse measure natural trade openness. This variable is the log of distance between cell  $c$  and the nearest seaport. The remaining controls in Berman and Couttenier's research would also be replicated. These include time dummies  $t$  and cell-specific characteristics  $c$ , which captures time-invariant traits that affect conflict probability in a given cell. This measure includes distance to the closest port or capital, natural resources, and the region's roughness. The dependent variable is conflict incidence for the most part, except for the last panel, conflict onset and ending are considered. The regressions examine agricultural commodity shocks and banking crises as separate proxies for external demand for goods produced by cell  $c$ . This paper adds Chinese foreign aid to the equation and interacts it with various controls:

$$\text{Conflict}_{c,t} = \beta 1(\text{Aid})_{c,z,t} + \beta 2(\text{shock})_{c,t} + \beta 2(\text{aid})_{c,t} \times \beta 3(\text{remoteness})_c + \beta 4\text{TimeDummy}_t + \beta 5(\text{TimeInvariantCharacteristics})_c + \varepsilon_{C,t}$$

The dependent variable, **Conflict** $_{c,t}$ , captures the incidence, onset, or ending of a conflict in any given cell during any given year. The independent variable  $\beta 1(\text{Aid})_{c,z,t}$  is the natural logarithm of Chinese official finance allocated to region  $c$  in country  $C$  and year  $t$  in constant U.S. dollars. It is instrumented by the birth region of political leaders **Birthregion** $_{i,C,t}$ , a binary variable that takes 1 if the political leader of country  $C$  in year  $t$  was born in administrative cell  $c$ , and 0 otherwise.

The original hypothesis is that as the amount of Chinese foreign aid increases, so will the number of conflict events. Such relationship supports the state-as-a-prize mechanism, which

reinforces Berman and Couttenier that positive external demand shocks decrease conflict in a region—since Chinese foreign aid accounts for the opposite effect. Using OLS panel regression with country-year units, I would test the following hypotheses:

**H1:** An increase in amount of Chinese foreign aid to a subnational region in Sub Saharan Africa will have a significantly positive effect on conflict incidence in that region.  $\beta_1 > 0$

**H2:** An increase in amount of Chinese foreign aid to a subnational region in Sub Saharan Africa will have a significantly positive effect on conflict onset in that region.  $\beta_1 > 0$

**H3:** An increase in amount of Chinese foreign aid to a subnational region in Sub Saharan Africa will have a significantly positive effect on conflict ending in that region.  $\beta_1 > 0$

The main independent variable, Chinese foreign aid, is instrumented by birth region of that region's political leader. This dummy variable takes a value of one if the region receiving aid is also the birth region of that region's leader, zero otherwise. Accounting for endogeneity between the dependent and independent variables, it ensures that Chinese foreign aid is indeed a meaningful addition to existing regressions on conflicts.

### **Data**

Three datasets are used which contain the geolocation of conflict events in Sub Saharan Africa. The first two are different versions of the Armed Conflict Location and Event Dataset (ACLED) and the UCDP-Georeferenced event dataset (UCDP-GED). The purpose of using three sets of conflict data is to cover as many countries and time periods as possible. The first ACLED dataset (ACLED I) covers twelve countries that experienced civil war episodes over the period of study. The forte of this dataset is that it covers a wide range of time, from 1960-2005. The second ACLED dataset (ACLED II) covers all African countries and even a small number of non-African countries, but it is limited in time, only starting in 1997. The final UCDP-GED dataset covers more African nations than ACLED I but less than ACLED II, from 1989 to 2010. The three datasets differ most in how to determine whether an event should be included. While ACLED I and UCDP-

GED only consider conflict events that reach at least 25 battle-related deaths per year, ACLED II includes conflicts under 25 deaths in addition to above. ACLED II records all political violence, including riots and protests within and outside a civil conflict without specifying a battle-related deaths threshold, so that violent events without deaths are very well be included. The problem with the ACLED II dataset is that the broader definition of conflict makes it more difficult to sync with country level analysis. Given how they qualify conflict events, UCDP GED and ACLED I have a higher conflict intensity threshold than ACLED II. To be straightforward, the regressions assume that UCDP GED and ACLED I represent high conflict intensity, and ACLED II represent low conflict intensity.

Sample	UCDP-GED	ACLED I	ACLED II
Number of counties	44	12	44
Period	1997-2006	1997-2005	1997-2006
# of grid cells	8,367	2,700	8,367
Total # of events	8,661	2,384	15,687

**Table 1. Basic Statistics on Each Sample**

Name	Number	Mean	SD	25 Percentile	Median	75 Percentile
<b>Dataset: UCDP-GED</b>	83695	0.030	0.170	0	0	0
# events, UCDP dataset	80295	0.108	1.283	0	0	0
# events (if >0)	2482	3.490	6.442	1	2	3
Distance to closest port (km)	83695	769.740	436.485	403.713	743.501	1111.793
Distance to border (km)	81375	152.381	127.260	51	118	221
Distance to capital (km)	83695	611.224	393.624	303	513	875
Distance to nat. res. (km)	83695	295.065	212.675	126.193	245	410.104

Rel. distance to closest port	83695	0.585	0.242	0.4071	0.624	0.778
Rel. distance to border	81375	0.351	0.253	0.137	0.301	0.534
Rel. distance to cap. city	83695	0.468	0.242	0.269	0.455	0.654
Rel. distance to nat. res.	83695	0.450	0.251	0.241	0.426	0.650
Chinese Foreign Aid (amount in USD)	1602	17.271	2.484	16.045	17.852	18.656
Ln agri. com. shock	72475	10.231	0.906	9.861	10.325	10.756
Exposure to crises	82655	0.069	0.118	0.000	0.024	0.064
<b>Dataset: ACLED I</b>	24300	0.0321	0.1771	0	0	0
# events for ACLED I	24300	0.098	1.014	0	0	0
# events (if >0)	789	3.022	4.782	1	2	3
Distance to closest port (km)	24300	908.992	476.387	505.045	956.558	1296.767
Distance to border (km)	24300	179.369	149.065	56	137	275
Distance to capital (km)	24300	709.117	415.993	358.5	665	1001
Distance to nat. res (km)	24300	289.953	244.730	106.446	210.482	394.024
Rel. distance to closest port	24300	0.5792	0.240	0.403	0.620	0.763
Rel. distance to border	24300	0.366	0.261	0.1464	0.3224745	0.558
Rel. distance to cap. city	24300	0.504	0.234	0.316	0.5102	0.686
Rel. distance to nat. res	24300	0.409	0.251	0.201	0.3603	0.599
Chinese Foreign Aid (amount in USD)	463	16.755	3.433	15.029	17.389	18.656
Ln agri. com. shock	21735	10.0974	0.9555	9.818	10.192	10.489

Exposure to crises	24300	0.116	0.172	0.007	0.038	0.138
<b>Dataset: ACLED II</b>	83695	0.043	0.202	0	0	0
# Events, ACLED II	83695	0.187	2.364	0	0	0
# Events (if >0)	3575	4.385	10.605	1	2	4
Distance to closest port (km)	83695	769.739	436.485	403.711	743.5014	1111.793
Distance to border (km)	81375	152.381	127.260	51	118	221
Distance to capital (km)	83695	611.225	393.625	303	513	875
Distance to natural resources (km)	83695	295.065	212.676	126.193	249.099	410.101
Rel. distance to closest port	83695	0.586	0.242	0.4074	0.624	0.779
Rel. distance to border	81375	0.351	0.253	0.137	0.301	0.533
Rel. distance to cap. city	83695	0.467	0.242	0.266	0.455	0.654
Rel. distance to nat. res.	83695	0.450	0.250	0.241	0.4269	0.6509
Chinese Foreign Aid (Amount in USD)	1602	17.271	2.484	16.045	17.852	18.656
Ln agri. com. shock	72475	10.231	0.906	9.861	10.325	10.756
Exposure to crises	82655	0.069	0.118	0.000	0.024	0.064

**Table 2. Descriptive Statistics**

**\*Note: “Relative distance” is relative to the maximum distance, computed by country**

The observation for all datasets is intensity of conflict events and conflict occurrences. The data is gathered from press accounts, humanitarian agencies, to research publications. The latitude and longitude of each event define a geographical location on the subnational level. All three datasets contain data on the precision of event georeference, and geoprecision is at least at the municipality level in 80% of cases (more than 95% in ACLED’s datasets). In 65% of the cases, observations are even finer (at the village level). Otherwise, the geoprecision would be at the

provincial level, and observations in UCDP-GED where the event cannot be localized at a finer level than the country (less than 2%), are dropped. For each data point, data is aggregated by year in a 0.5 x 0.5 degree cell (55 x 55 kilometers at the equator). While month, week and day are specified for most events, some events in UCDP-GED only include year. Since the goal is to aggregate data over time at a yearly frequency, this limitation has no tangible impact on the results. The unit of observation stays the cell-year across the entire paper. Since the level of geographical aggregation is the same as the one used in PRIO-GRID, PRIO-GRID data on distances to the capital city, national borders and socioeconomic factors are included as controls.

For each conflict event, my dependent variable equals 1 if at least one conflict happened in that cell during the year. This is a cell-specific conflict incidence. To account for country-year fixed effects, cell-specific conflict onset and end are also included. Finally, most events range from 1980-2006 because it is difficult to compute financial data after the 2008 financial crisis. The effect of the 2008 depression on international trade and commodity prices are yet to be fully understood. Since the goal is to investigate the effects of Chinese foreign aid in the context of external demand shocks, it is best to stay congruent with events descriptive of the financial scenario. For any given year the average number of events by cell is between three and four depending on the dataset. Since the majority of cells experience no conflict over the entire period, I run robustness checks with cells in which at least one conflict occurs. These ‘high conflict risk cells’ show a bigger quantitative effect of Chinese aid on conflicts. The USD deflation variable is logged to approximately resemble normal distribution.

The paper merges conflict data on the longitude and latitude of events with Chinese foreign aid data from AidData 1.1 China in Africa dataset for subnational units of 47 African countries over the 2001-2011 period. Subnational units at the ADM1 and ADM2 administrative regions are

matched with conflict data by longitude and latitude such that the eventual product corresponds to the 0.5 x 0.5 cell measurement in the dependent variable. In total, there are 5,835 AMD2 regions in 47 African countries. Once Chinese aid and conflict data are matched, 5,749 of the 222,206 original data points in the Berman and Couttenier paper are retained. A little less than 100 observations from the Chinese aid data are dropped as a result of missing data on longitude and latitude. A series of regressions that include major agricultural/crisis shock and distance data in the context of added Chinese aid follows.

The most important controls adopted from Berman and Couttenier are external demand shock proxies, the first being agricultural demand shocks (short lasting) and the second being exposure to banking crises (long-lasting) in donor countries. Shock variables are based on variations in the foreign demand for goods produced by the region in which the cell belongs. Interacting the share of a certain agricultural commodity  $p$  in a cell  $c$  with the world import value of commodity  $p$  in year  $t$  minus the imports of country  $i$ , the value that agricultural shocks takes is produced. The region-specific data on agricultural specialization is obtained from Food and Agricultural Organization (FAO) Agromaps. Financial crises, on the other hand, make a good long-term measure because they are exogenous to trading partners' economic and political situations. Weighting the average share of the destination country's total imports from the exporting African country, the crisis dummy equals 1 if the destination does experience a banking crisis in a given year. This trade data comes from the International Monetary Fund's (IMF) Direction of Trade Statistics (DOTS) and the crisis data from Reinhard and Rogoff (2011). Finally, the remoteness variable is correlated with non-shock related cell-specific characteristics such as economic activity or closeness to natural resources.

## Results

The results complicate previously stated theories. While the intended results are that Chinese foreign aid increases civil conflict in Sub Saharan Africa, this is only the case for some of the actual results. Each panel contains estimations are supposed to stay consistent across regions: columns 1 and 2 use UCDP-GED conflict data, columns 3 and 4 ACLED I, and columns 5 and 6 ACLED II, but that is not the case. To increase robustness, odd-numbered columns contain fixed effects logit estimations and even-numbered linear probability model ones. All remaining tables follow this format except for table 7.

Dependent Variable	1. Conflict Incidence (FE Logit)	2. Conflict Incidence (FE-LPM)	3. Conflict Incidence (FE Logit)	4. Conflict Incidence (FE-LPM)	5. Conflict Incidence (FE-Logit)	6. Conflict Incidence (FE-LPM)
Chinese Aid	0.081 (0.087)	0.014 (0.018)	-0.333 (0.223)	-0.025*** (0.007)	0.272** (0.138)	0.014 (0.011)
Agri. shock	-7.465*** (2.817)	-0.360* (0.198)	-6.190 (5.173)	-0.465 (0.337)	-2.019 (1.898)	-0.206 (0.168)
# of observations	451	1492	202	418	631	1492
Dataset	UCDP GED	UCDP GED	ACLED I	ACLED I	ACLED II	ACLED II
R-squared		0.019		0.109		0.011

**Table 3. Panel A. Dependent variable: conflict incidence, regressed against main independent variable Chinese foreign aid and main control variable agricultural shocks**

Dependent Variable	1. Conflict Incidence (FE Logit)	2. Conflict Incidence (FE-LPM)	3. Conflict Incidence (FE Logit)	4. Conflict Incidence (FE-LPM)	5. Conflict Incidence (FE-Logit)	6. Conflict Incidence (FE-LPM)
Chinese Aid	-0.176 (0.216)	-0.025 (0.034)	-0.746*** (0.263)	-0.039*** (0.013)	8,846*** (1.828)	0.078*** (0.018)
Agri. shock	-7.551*** (2.888)	-0.365* (0.201)	-6.316 (5.274)	-0.466 (0.338)	-2.028 (1.901)	-0.198 (0.167)



Chinese aid x remoteness	0.049*** (0.040)	0.008 (0.008)	0.114** (0.046)	0.003 (0.002)	-4.126*** (0.879)	-0.013*** (0.003)
Dataset	UCDP GED	UCDP GED	ACLED I	ACLED I	ACLED II	ACLED II
# of observations	451	1492	202	418	631	1492
R-squared		0.020		0.109		0.013

**Table 3. Panel B. Dependent variable: conflict incidence, regressed against main independent variable Chinese foreign aid, agricultural commodity shock, and the interaction variable aid x remoteness (distance to the closest seaport)**

Dependent Variable	1. Conflict Incidence (FE Logit)	2. Conflict Incidence (FE-LPM)	3. Conflict Incidence (FE Logit)	4. Conflict Incidence (FE-LPM)	5. Conflict Incidence (FE-Logit)	6. Conflict Incidence (FE-LPM)
Chinese Aid	-0.544 (0.474)	-0.071 (0.087)	-1.677*** (0.631)	-0.064* (0.032)	1.013*** (0.161)	0.139** (0.059)
Agricultural shock	-7.497*** (2.855)	-0.360* (0.199)	-6.316 (5.274)	-0.466 (0.338)	-2.028 (1.901)	-0.206 (0.168)
Chinese aid x remoteness	0.113 (0.082)	0.015 (0.015)	0.296** (0.119)	0.008 (0.006)	-0.145*** (0.031)	-0.023** (0.011)
# of observations	451	1492	515	782	631	1492
Dataset	UCDP GED	UCDP GED	ACLED I	ACLED I	ACLED II	ACLED II
R-squared		0.020		0.109		0.012

**Table 3. Panel C. Dependent variable: conflict incidence, regressed against Chinese foreign aid, agricultural commodity shocks and the interaction variable aid x remoteness (distance to closest seaport relative to maximum distance, computed by country)**

In Panel A of Table 3, the only two variables included are the main independent variable (Chinese foreign aid) and one of the main controls (agricultural commodity shocks). Results for Chinese aid are statistically significant in columns 3-6 with 3 and 4 pointing in opposite directions to 5 and 6. Underneath such a seeming contradiction is that the ACLED I only include twelve

African countries while ACLED II includes all Sub Saharan African countries. Furthermore, countries included in ACLED I have all experienced civil war in the time frame studied, while ACLED II accounts for a much larger selection of conflicts, including those without battle-related deaths. In countries that already experience civil wars (those in ACLED I), Chinese foreign aid tends to increase state capacity and decrease conflict. Countries included in ACLED II are much more diverse and experience lower level conflicts. According to the results, these countries are subject to the state-as-a-prize theory, where Chinese foreign aid incentivizes people to protest and revolt against their political leadership. As previously stated, ACLED II's more generous definition of conflict tailors it to low-intensity conflicts. UCDP GED and ACLED I, on the other hand, tailor to high-intensity conflicts due to a stricter definition of conflict (at least 25 battle-related deaths). Therefore, the results also show that Chinese aid leads to more low-intensity conflicts and less high-intensity conflicts. Another interesting observation is that the addition of Chinese foreign aid complicates the story so much so that agricultural demand coefficients in Panel A are no longer significant in columns 3-6, regardless of whether the remoteness interaction term is added.

Dependent Variable	1. Conflict Incidence (FE Logit)	2. Conflict Incidence (FE-LPM)	3. Conflict Incidence (FE Logit)	4. Conflict Incidence (FE-LPM)	5. Conflict Incidence (FE-Logit)	6. Conflict Incidence (FE-LPM)
Chinese Aid	-1.388*** (0.278)	-0.218*** (0.012)	-0.313 (0.263)	-0.039*** (0.013)	0.624 (.)	0.167*** (0.014)
Agricultural Shock	7.500*** (2.856)	-0.380* (0.205)	-6.271 (5.270)	-0.466 (0.338)	-2.028 (1.901)	-0.209 (0.174)
Principal Component 1	5.734*** (1.083)	0.024*** (0.049)	-1.479 (.)	0.000 (.)	-1.460** (0.694)	-0.343*** (0.054)
Principal Component 2	-4.363*** (0.470)	-0.907*** (0.026)	-0.895 (.)	0.000 (.)	-3.233 (.)	0.149*** (0.040)

# of observations	451	1472	202	418	631	1472
Dataset	UCDP GED	UCDP GED	ACLED I	ACLED I	ACLED II	ACLED II
R-squared		0.025		0.109		0.013

**Table 4: Robustness check. Dependent variable: Conflict incidence, regressed against Chinese foreign aid, agricultural commodity shock and two principal components accounting for five interaction terms 1) aid x remoteness, 2) aid x ln distance to capital, 3) aid x ln distance to border, 4) aid x ln distance to natural resources and 5) aid x ln GDP area**

In Table 4, more interaction terms are added as controls, including 1) aid x remoteness, 2) aid x ln distance to the capital, 3) aid x ln distance to the border, 4) aid x ln distance to natural resources and 5) aid x ln GDP area. However, since the five interaction terms are so highly correlated with each other, the logistic regression model could not converge normally. As a result, the main effect of Chinese aid is initially not significant. To solve this problem, a principal components analysis reduces the five highly correlated interaction variables to two, each related to a subset of the five. To derive meaning from the principal components, it is necessary to see what variables are most highly related to each. Component one loads heavily on the interaction terms 2) aid x ln distance to the capital, 3) aid x ln distance to the border and 4) aid x ln distance to natural resources. Component two loads heavily on the interaction between 3) aid x ln distance to border and 5) aid x ln GDP area.

These results complicate previous expectation that Chinese foreign aid will reinforce external demand shock alignment with the opportunity cost theory since most significant aid coefficients are negative. In this light, Chinese foreign aid is just as negatively correlated with conflict as various forms of shocks, such that Chinese foreign aid partially explains the opportunity cost theory. Meanwhile, the same pattern in Table 3 holds for Chinese foreign aid, which is negative for ACLED I and positive for ACLED II. After controlling for the above interaction

terms, results for the UCDP GED dataset become significant as well (both negative in columns 1 and 2). It makes sense that results from UCDP GED flow in the same direction as ACLED I versus ACLED II because both UCDP GED and ACLED I account for events of higher conflict intensity. Contrarily, ACLED II accounts for events of lower intensity since it has a more generous definition of conflict. As a result, the state-as-a-prize theory affects low rather than high-intensity conflicts, ascertained by positive results in ACLED II. On the other hand, the state capacity and opportunity costs theories affect high rather than low-intensity conflicts, given that results for UCDP GED and ACLED I are both negative.

Dependent Variable	1. Conflict Incidence (FE Logit)	2. Conflict Incidence (FE-LPM)	3. Conflict Incidence (FE Logit)	4. Conflict Incidence (FE-LPM)	5. Conflict Incidence (FE-Logit)	6. Conflict Incidence (FE-LPM)
Chinese Aid	0.084 (0.081)	0.015 (0.018)	-0.294* (0.170)	-0.023*** (0.006)	0.281** (0.120)	0.014 (0.011)
Exposure to banking crises	0.542 (2.554)	0.124 (0.225)	-2.907 (5.493)	-0.496*** (0.149)	-1.034 (1.609)	-0.093 (0.161)
# of obs.	481	1602	202	463	661	1602
R-sq		0.016		0.110		0.010
Dataset	UCDP GED	UCDP GED	UCLED I	UCLED I	UCLED II	UCLED II

**Table 5. Panel A. Dependent variable: Conflict incidence, regressed against main independent variable, Chinese foreign aid and second main control variable, exposure to banking crises**

Dependent Variable	1. Conflict Incidence (FE Logit)	2. Conflict Incidence (FE-LPM)	3. Conflict Incidence (FE Logit)	4. Conflict Incidence (FE-LPM)	5. Conflict Incidence (FE-Logit)	6. Conflict Incidence (FE-LPM)
Chinese Aid	-0.053 (0.187)	-0.020 (0.035)	-0.621*** (0.215)	-0.031** (0.012)	7.919*** (1.748)	0.081*** (0.015)
Exposure to banking crises	0.557 (2.558)	0.125 (0.225)	-2.898 (5.531)	-0.496*** (0.149)	-1.042 (1.610)	-0.095 (0.161)

Chinese Aid x remoteness	0.027 (0.035)	0.007 (0.008)	0.093** (0.042)	0.002 (0.002)	-3.669*** (0.841)	-0.014*** (0.003)
# of obs.	481	1602	202	463	661	1602
R-sq		0.016		0.110		0.012
Dataset	UCDP GED	UCDP GED	UCLED I	UCLED I	UCLED II	UCLED II

**Table 5. Panel B. Dependent variable: Conflict incidence, regressed against main independent variable, Chinese foreign aid, second main control variable, exposure to banking crises and interaction variable aid x remoteness (closest distance to seaport)**

Dependent Variable	1. Conflict Incidence (FE Logit)	2. Conflict Incidence (FE-LPM)	3. Conflict Incidence (FE Logit)	4. Conflict Incidence (FE-LPM)	5. Conflict Incidence (FE-Logit)	6. Conflict Incidence (FE-LPM)
Chinese Aid	-0.396 (0.386)	-0.071 (0.084)	-1.376** (0.545)	-0.045 (0.030)	0.953*** (0.152)	0.133** (0.064)
Exposure to banking crises	0.562 (2.557)	0.124 (0.225)	-2.898 (5.531)	-0.496*** (0.149)	-1.042 (1.610)	-0.093 (0.161)
Chinese aid x remoteness	0.087 (0.066)	0.015 (0.014)	0.240** (0.108)	0.004 (0.006)	-0.129*** (0.030)	-0.021* (0.012)
# of obs.	481	1602	202	463	661	1602
R-sq		0.016		0.110		0.011
Dataset	UCDP GED	UCDP GED	UCLED I	UCLED I	UCLED II	UCLED II

**Table 5. Panel C. Dependent variable: Conflict incidence, regressed against main independent variable, Chinese foreign aid, second main control variable, exposure to banking crises, and interaction variable aid x remoteness (closest distance to closest seaport relative to maximum distance, computed by country)**

In Table 5, exposure to banking crises is the main control instead of agricultural commodity shocks. In Panel A, the only two variables are the main independent variable, Chinese foreign aid, and main control variable, exposure to banking crises. Results are significant for columns 3-5 and follow the same pattern: negative for ACLED I and positive for ACLED II. In Panel B, the addition

of the interaction term aid x remoteness improves results to make column 6 significant. In Panel C, the interaction term aid x remoteness makes column 4 insignificant, while 3, 5 and 6 remain significant. Overall, the three panels follow the same pattern where results are not significant for UCDP GED (probably because this dataset is less precise with georeference), significant but negative for ACLED I and significant but positive for ACLED II.

Dependent Variable	1. Conflict Onset (FE Logit); agri. shock	2. Conflict Onset (FE-LPM) agri. shock	3. Conflict Onset (FE Logit) crises	4. Conflict Onset (FE-LPM) crises	5. Conflict Ending (FE-Logit) agri. shock	6. Conflict Ending (FE-LPM) agri. shock	7. Conflict Ending (FE-Logit) crises	8. Conflict Ending (FE-LPM) crises
Chinese Aid	0.337 (0.205)	0.047** (0.021)	0.357* (0.189)	0.049** (0.020)	-0.252*** (0.097)	-0.039 (0.023)	-0.267*** (0.098)	-0.042 (0.026)
shock	-5.056** (2.358)	-0.187 (0.120)	2.339 (2.366)	0.164 (0.155)	5.558 (4.292)	0.927 (1.001)	-9.038*** (2.727)	-1.344*** (0.363)
# of obs.	367	1393	392	1498	206	232	219	246
R-sq		0.021		0.021		0.77		0.108

**Table 6. Panel A. Dependent Variables: Conflict onset and conflict ending, regressed against main independent variable Chinese foreign aid and two control variables (agricultural commodity shocks and banking crises)**

Dependent Variable	1. Conflict Onset (FE Logit); agri. shock	2. Conflict Onset (FE-LPM) agri. shock	3. Conflict Onset (FE Logit) crises	4. Conflict Onset (FE-LPM) crises	5. Conflict Ending (FE-Logit) agri. shock	6. Conflict Ending (FE-LPM) agri. shock	7. Conflict Ending (FE-Logit) crises	8. Conflict Ending (FE-LPM) crises
Chinese Aid	-0.577*** (0.173)	-0.035** (0.015)	-0.502*** (0.163)	-0.030** (0.014)	-0.637** (0.281)	-0.228*** (0.073)	-0.744*** (0.210)	-0.247*** (0.055)
shock	-5.175** (2.416)	-0.199 (0.122)	2.338 (2.371)	0.164 (0.154)	5.318 (4.365)	0.815 (0.969)	-8.930*** (2.738)	-1.315*** (0.358)
aid x remoteness	0.314*** (0.063)	0.021 (0.003)	0.307*** (0.068)	0.020*** (0.003)	0.068 (0.055)	0.032** (0.014)	0.085** (0.043)	0.035* (0.011)

# of obs.	367	1393	392	1498	206	232	219	246
R-sq		0.021		0.021		0.77		0.108

**Table 6. Panel B. Dependent Variables: Conflict onset and conflict ending, regressed against main independent variable Chinese foreign aid, two control variables (agricultural commodity shocks and banking crises) and the interaction variable aid x remoteness**

In Table 6, results from UCDP-GED data on conflict onset and ending, instead of conflict incidence, are used. In Panel A, all results are significant except for column 6. In Panel B where the aid variable interacts with remoteness, all results become significant and negative, whereas some are positive in Panel A. In the absence of the interactive variable, Chinese foreign aid has a positive effect on conflict onset and negative effect on conflict ending, but this observation is no longer true once the interaction control term is added. This finding shows that the level of global openness of a specific region has impacts how Chinese foreign aid affects conflicts. Since Chinese foreign aid does not flow to remote locations that the political leader is not concerned with, those regions have less to fight over. In more interconnected areas, however, people are more tangibly affected by the disproportionate distribution of Chinese aid, incentivizing them to act against the government.

### Conclusion

While this paper did not reinforce Berman and Couttenier that external demand shocks fit into the opportunity cost mechanism of civil conflicts, it did reinforce contradictory findings in existing literature. The opportunity cost mechanism upholds that increased external demand shocks decrease the opportunity cost of insurrection and reduce conflict, but the same phenomenon can also be explained by the increased state capacity if resources flow strictly to the political leader's region of birth. However, the state-as-a-prize mechanism holds that increased income shocks increase resources and the probability of conflict. This paper finds that more Chinese aid

increases the incidence of smaller conflicts, as with ACLED II, and decreases civil wars, as with ACLED I. These results show that Chinese foreign aid fits in the state-as-a-prize mechanism in cases of lower conflict intensity, and the opportunity cost/state capacity mechanism in cases of higher conflict intensity.

In demonstrating that the distance to the capital city has little impact on the relationship between shock and conflict, Berman and Couttenier provide evidence that correlates shock with the opportunity cost theory. With Chinese aid, the story is the opposite. The birth region proxy variable is precisely valid thanks to observable instances of political favoritism. Since political leaders could dictate where aid flows, this shows that they control the distribution of foreign assistance, making it easier to fuel such aid into increasing the state's capacity, should an insurrection occur. Therefore, even though the negative results confound Berman and Couttenier at face value, they are intrinsically still in line with the latter for the most part.

In their ambiguity, the results reconcile micro-level with macro-level analysis: the causes and direction of factors affecting civil conflicts are yet to be determined with precision. Because of the nature of the sample (number of countries, type of countries, time frame, and rubric in identifying conflicts) does have an impact on results, micro-level results complement macro-level contradictions in identifying another statistically significant variable that affects conflicts. While results are mixed, Chinese foreign aid is undoubtedly an excellent addition to the civil conflict study because it at once accounts for endogeneity, instrumented by birth region of political leaders, and is quantitatively adequate to work with large and telling samples. Further research should re-evaluate the effect of Chinese aid on conflicts after the 2008 financial crisis, since the way by which income shocks impact conflict might differ greatly given the restructuring of the global financial markets.



## References

- AidData. (2015). Geocoded Data from the World Bank IBRD-IDA, Version 1.0. Available at <http://aiddata.org> (accessed 24 March 2018).
- Bazzi, S., & Blattman, C. (2014). Economic Shocks and Conflicts: Evidence from Commodity Prices. *American Economic Journal: Macroeconomics*, 6, 1–38.
- Berman, N. & Couttenier, M. (2015). External shocks, internal shots: The geography of civil conflicts. *Review of Economics and Statistics*, 97(4), 758–776.
- Besley, T. J., & Torsten P. (2008). The Incidence of Civil War: Theory and Evidence, NBER working paper 14585.
- Bluhm, R., Gassebner, M., Langlotz, S., & Schaudt, P. (2016). Fueling Conflict? (De) Escalation and Bilateral Aid. AidData Working Paper.
- Bohlken, A. T., & Sergenti, E. J. (2010). Economic Growth and Ethnic Violence: An Empirical Investigation of Hindu-Muslim Riots in India. *Journal of Peace Research*, 47, 589–600.
- Bruckner, M., & Ciccone, A. (2010). International Commodity Prices, Growth and the Outbreak of Civil War in Sub-Saharan Africa. *Economic Journal*, 120, 519–534.
- Collier, P., & Hoeffler, A. (2004a). Aid, policy and growth in post-conflict societies. *European Economic Review*, 48(5), 1125–1145.
- Dreher, A., Fuchs, A., Hodler, R., Parks, B., Raschky, P. A., & Tierney, M. J. (2015). Aid on demand: African leaders and the geography of China's foreign assistance. CESifo Working Paper No. 5439.
- Gleditsch, N. P., Wallensteen, P., Sollenberg, M., and Strand, H. (2002). Armed Conflict 1946–2001: A New Dataset. *Journal of Peace Research*, 39, 615–637.
- Hidalgo, F. D., Naidu, S., Nichter, S., & Richardson, N. (2010). Economic Determinants of Land Invasions. *This Review*, 92, 505–523.
- James, F. & Laitin, D., (2003). Ethnicity, Insurgency and Civil War. *American Political Science Review*, 97, 75–90.
- Jia, R. (2011). Weather Shocks, Sweet Potatoes and Peasant Revolts in Historical China, IIES mimeograph.
- Nathalie, F., Minten, B., & Swinnen, J. F. M. (2012). The Political Economy of Relief Aid Allocation: Evidence from Madagascar. *World Development*. 40(3), 486–500.

- Oeindrila, D., and Varga, J. (2013). Commodity Price Shocks and Civil Conflicts: Evidence from Colombia. *Review of Economic Studies*, 80, 1384–1421.
- Melander, E., & Sundberg, R., (2011). Climate Change, Environmental Stress, and Violent Conflict: Introducing the UCDP Georeferenced Event Dataset. paper presented at the International Studies Associations, March 16–19, Montreal, Canada.
- Monfreda, C., Ramankutty, N., & Jonathan A. Foley. (2009). Farming the Planet: Geographic Distribution of Crop Areas, Yields, Physiological Types, and Net Primary Production in the year 2000. *Global Biochemical Cycles*, 221, 1–19.
- Raleigh, C., Andrew, L., Hegre, H., & Karlsen, J. (2010). Introducing ACLED-Armed Conflict Location and Event Data. *Journal of Peace Research*, 47, 1–10.
- Sundberg, R., Lindgren, M., & Padskocimaite, A. (2010). UCDP GED Codebook version 1.0-2011 (Uppsala: Department of Peace and Conflict Research, Uppsala University).
- Tull, D. M. (2006). China's Engagement in Africa: Scope, Significance and Consequences. *Journal of Modern African Studies*, 44(3), 459-479.