China's Foreign Aid: Political Determinants and Economic Effects[*]

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ABSTRACT: Can foreign aid foster economic development, even if it is given to satisfy the objectives of the donor country? I study this highly debated question in the context of Chinese infrastructure aid, which has received much attention from policymakers. I link project-level aid data with administrative firm-level data from China to identify political determinants and economic consequences of Chinese aid. I document that when there is labor unrest in a Chinese prefecture, contracts for aid projects are allocated to state-owned firms in the prefecture, and employment by these firms increases. Connections between these firms and other countries mean that China's response to domestic unrest affects the allocation of Chinese aid projects to recipient countries. I exploit this variation to develop a novel instrument for identifying the causal effects of Chinese aid on recipients. I find large positive effects on GDP, consumption and employment.

Keywords: foreign aid, political stability, labor unrest, China

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1. Introduction

Governments have transferred over 3.5 trillion USD in foreign aid to low- and middle-income countries since 1960 (World Bank, 2020). However, the goals and efficacy of foreign aid are still highly debated (e.g., Easterly, 2003; Sachs, 2006). Amidst this debate, China has recently emerged as one of the largest and most controversial donors. Chinese aid is mostly bilateral and ignores the traditional OECD standards of aid conditionality. Critics argue that Chinese infrastructure aid, which brings goods and labor from China, is mostly intended to serve the needs of the Chinese government and firms rather than to foster economic development in recipient countries (e.g., Naim, 2007). Many therefore worry that Chinese infrastructure aid crowds out local jobs and businesses, is economically inefficient, and undermines Western donors' efforts. In contrast, others argue that Chinese aid relieves infrastructure bottlenecks that are crucial for the economic development of poor countries (e.g., Moyo, 2011). There is currently much speculation, but little empirical evidence about the determinants of Chinese aid allocation and the consequences of Chinese aid for recipient countries.

This paper addresses this gap in the literature by providing novel and rigorous empirical evidence on the determinants and consequences of Chinese infrastructure aid, which constitutes the vast majority of Chinese foreign aid (including bilateral grants and loans by Chinese government entities to government entities of low- and middle-income countries)[1]. I face two empirical challenges. The first is the lack of data on Chinese aid and the lack of transparency about its allocation process. The Chinese government does not publish systematic and disaggregated aid data, and the *de facto* process behind its allocation is poorly understood. The second – in any context – is causal identification. Donors may allocate aid based on recipient outcomes, such as income levels or future growth potential, which would result in reverse causality. In addition, both aid and recipient country outcomes may be jointly determined by unobserved factors such as the quality of the recipient's institutions.

The primary goal of this study is to overcome these challenges. I first construct

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[1]Aid in this paper includes official development assistance (ODA-like), such as grants and concessional loans, and other official finance (OOF-like). All main findings in the paper hold when restricting the sample to ODA-like finance. See Section 2 and Online Appendix A.1 for discussion.

a novel dataset at the aid project and contractor level. The granularity of the data provides variation which I use to understand the process and determinants of Chinese aid allocation at a micro level. I then use this granular variation to identify the causal economic effects of Chinese aid on recipient countries.

I construct a firm panel dataset which includes the universe of Chinese aid contractors at the subsidiary level according to previously unused administrative records of the Chinese government. I link these firms to unofficial data on Chinese aid projects from various sources as well as administrative data from China, which includes firm-level customs and tax records. The dataset covers over 1,000 infrastructure aid projects implemented by Chinese contractors during 2005 to 2015. To the best of my knowledge, this is the first comprehensive firm-level dataset that allows for systematically studying the Chinese aid contract allocation process at a micro level.

I use this dataset to identify an important driver of Chinese infrastructure aid. Qualitative evidence suggests that one key goal of China's foreign aid is to help secure stable employment for Chinese workers by generating acyclical demand for Chinese goods and labor. The Chinese government prioritizes stable employment of Chinese workers as a key objective to help secure domestic social and political stability, its paramount policy goal (State Council, 2021). Consistent with this motive, China typically provides foreign aid in the form of loans to recipient countries that are used to pay Chinese firms to deliver goods and services (Brautigam and Hwang, 2020).[2]

To investigate whether the Chinese government uses foreign aid projects to help secure social stability in China, I regress the number and financial value of aid contracts allocated to a Chinese contractor in a year on the intensity of labor unrest in the contractor's home prefecture, controlling for firm and year fixed effects.[3] I measure local unrest intensity as the number of unrest events per million inhabitants in a Chinese prefecture, based on sources unaffiliated with the Chinese government.[4]

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[2]China likely also pursues other economic and foreign policy goals with its foreign aid. These other goals are complementary to the motive I study. See Section 2 for discussion.

[3]A prefecture is roughly equivalent to a city. Note that the firm year fixed effects absorb prefecture year fixed effects since I observe firms at the local establishment level.

[4]I discuss the unrest data and potential concerns related to the reporting of unrest events in Subsection 3.2. The reporting of unrest events is unlikely to affect my results.

I use a sample of state-owned firms that are under the control of the Chinese central government. The central government allegedly uses these firms to implement national policy goals, including securing social stability through job provision (Lin et al., 1998; Bai et al., 2006; Wen, 2020). It is easier for the state to manipulate employment for these firms than others in response to its objectives.

I find that an additional labor unrest event per million inhabitants in a Chinese prefecture is associated with 0.1 additional aid contracts allocated to each central state-owned firm in the prefecture and an increase in the number of workers employed by these firms by 2% in the following year. The cumulative effect is sizeable. A one standard deviation increase in unrest intensity in Beijing on average leads to the additional allocation of 5.5 aid projects with a total value of 1.8 billion USD to firms in the prefecture, as much as around 40% of Beijing's yearly public security spending.

For additional evidence, I use natural language processing to conduct a systematic text analysis of the aid contractors' annual reports. For comparison, I also examine firms that are aid contractors but not controlled by the central government. The text evidence is consistent with China's political objectives driving aid contract allocation. It reveals that central state-owned firms, but not other aid contractors, internalize the state's goal of moderating unrest. I also document that the effect of local unrest on aid contracts is more pronounced in prefectures where the local government is constrained in its ability to address local unrest directly using domestic public spending. Taken together, this first set of results suggests that the Chinese government uses foreign aid as a policy tool to help address domestic unrest.

I address several potential concerns regarding my preferred interpretation of the results: spurious trends, reverse causality and omitted variables. I address the concerns of spurious trends and reverse causality by conducting a placebo exercise which shows that unrest has no effect on aid contract allocation in the previous year, and that the results are robust to accounting for multiple leads and lags of unrest.[5] I also use my granular data to show that the results are robust to controlling for potentially important covariates of unrest that could explain the increases in aid contracts and employment in central state-owned firms, such as firm-specific or local

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[5]Note that reverse causality is not a major concern since I use lagged unrest, and the vast majority of unrest events take place outside of the aid contractors in the sample.

economic shocks. Finally, I conduct a placebo exercise to address the possible concern that aid contracts are explained by unobservable economic shocks.

Having shown that the Chinese government's objective of securing domestic stability influences its foreign aid project allocation, I next explore the causal economic impact of such aid on recipient countries. For this analysis, I use a panel of 141 low- and middle-income countries around the world during 2003–2018. To address the main empirical challenges of reverse causality and joint determination, I predict the amount of Chinese aid received by a country in a given year using a novel instrument.

I construct the instrument for the amount of aid received by a country in a given year as the sum, across all Chinese prefectures, of lagged local unrest in a prefecture interacted with the cross-sectional probability that the country receives aid projects contracted by central state-owned firms in that prefecture.[6] The IV specification controls for country and region-specific year fixed effects as well as the recipient country populations and lagged outcome.

The instrument leverages two sources of variation. First, I exploit the finding that local unrest in Chinese prefectures predicts the allocation of foreign aid contracts to Chinese central state-owned firms based in those prefectures. Second, I rely on the fact that different aid-recipient countries tend to receive aid projects to different degrees and by different sets of Chinese firms. The intuition for the IV first stage is as follows. When there is unrest in a Chinese prefecture, more aid contracts are allocated to central state-owned firms in that prefecture. This aid is then more likely to be directed to countries that have connections with firms in these prefectures than to other countries. Spatial and time variation in unrest in China, together with the connections between countries and Chinese prefectures, should thus predict the amount of aid received by a country in a given year.

Causal identification of the 2SLS estimates assumes that the instrument affects outcomes of the recipient countries only through the provision of Chinese aid, conditional on the baseline controls. The cross-sectional variation in the connections between countries and Chinese prefectures could be correlated with those countries' outcomes

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[6]While my variation is more disaggregated, the idea behind the empirical strategy is similar to Nunn and Qian (2014), who instrument for US food aid with the interaction of shocks to yearly US wheat production and the probability that a country receives any US food aid in a given year.

and the amount of aid received. However, the country fixed effects control for the cross-sectional sources of this variation, and the connections need not be exogenous for the instrument to be valid. Following Borusyak and Hull (2020), identification comes from the assumption that shocks to local unrest in Chinese prefectures are conditionally orthogonal to shocks to future outcomes of connected countries.[7] I conduct several robustness and falsification tests to support the exclusion restriction.

The first stage shows that a one standard deviation increase in the instrument increases the number of aid projects committed to a country one year later by 0.224 (22% of an SD) on average. The first stage is driven by large-scale infrastructure projects in the transportation and energy sectors. Multiplied by the number of countries, a one SD increase in the instrument cumulatively implies a reallocation of 27% of yearly Chinese aid on average (worth around 9 billion USD). In other words, the IV first stage shows that China's response to domestic unrest strongly influences the allocation of its infrastructure foreign aid to recipient countries.

The 2SLS estimates show that an additional aid project on average increases GDP per capita by 128 USD (2.6% of the sample mean) and GDP growth by 0.74 percentage points three years after commitment.[8] The estimates are consistent with recent case studies for projects such as the Mombasa-Nairobi SRG railway in Kenya (Ochieng, 2016). The 2SLS estimates show that Chinese aid also significantly increases government consumption, capital formation, and trade.

The increases in GDP and government consumption do not necessarily translate into an improvement of the economic well-being for the recipient country population. Part of the increases may reflect the direct value of the infrastructure projects. One may also be concerned that the economic benefits of the projects are captured

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[7]The interaction of endogenous and exogenous variables is exogenous, controlling for the uninteracted endogenous variables. Hence, the IV is exogenous if the unrest shocks are conditionally exogenous. A further, subtle concern highlighted by Borusyak and Hull (2020) is that the 2SLS estimates may be biased if expected shocks to unrest differ between prefectures that are more connected and other prefectures. To address this concern, I re-center the unrest shocks by residualizing them on year fixed effects, following Borusyak and Hull (2020). See Section 4 for more discussion.

[8]The average time between commitment and completion of a Chinese aid project is 2 to 3 years in the data. I show results for other leads and lags in the paper.

by political elites (e.g., Werker et al., 2009; Dreher et al., 2019) or hurt the local population via negative labor market spillovers (e.g., Zhao, 2014), especially since the aid is driven by the interests of the Chinese government and without policy conditions attached. To investigate this possibility, I examine variables which better reflect household income: household consumption and local employment. I find sizeable positive effects on these outcomes as well. An additional infrastructure aid project increases household consumption by 53 USD per capita (1.8% of the mean) and decreases the local unemployment rate by 0.34 percentage points on average.

The results are robust to controlling for potential confounders that could be correlated with the instrument and outcomes through channels other than aid, such as local trade shocks. I also conduct a number of falsification tests. Reassuringly, the instrument does not falsely predict aid-unrelated exports, FDI, aid by OECD donors, or lagged outcomes. Finally, I address concerns related to statistical inference (Adão et al., 2019; Borusyak and Hull, 2020) and conduct a placebo exercise by randomly permuting shocks to local unrest across Chinese prefectures. The results go against the possibility that the estimated effects of aid on recipients are driven by noise.

In sum, the results of this paper show that a significant fraction of China's foreign aid is driven by the Chinese government's political need to moderate domestic unrest. Yet, despite this, Chinese aid on average has large positive economic effects on recipient countries, in ways that benefit both governments and households. These findings imply that foreign aid allocated according to the domestic political needs of the donor country and without policy conditions attached need not have mainly deleterious effects on recipient populations as previously suggested by several studies and policymakers. This is important for policymakers since selfless aid is politically unrealistic. See the conclusion for more discussion.

This paper contributes to the large literature on foreign aid. The existing evidence of the impact of aid on recipients, with few exceptions focused on OECD donors, is highly mixed and debated (see the reviews by Easterly, 2003; Qian, 2015). One set of influential studies suggests that the quality of the recipient country's institutions and policies determine the efficacy of aid, motivating the policy conditions attached to aid by Western donors (e.g., Burnside and Dollar, 2000; Svensson, 2000). A different set of studies argues that donors' economic or foreign policy goals drive foreign aid

(see Morgenthau, 1962; Werker, 2012), partly blaming them for a lackluster impact of aid on the recipient populations. Existing studies have typically stopped at showing country-level evidence consistent with economic or foreign policy goals driving aid allocation (e.g., Alesina and Dollar, 2000; Kuziemko and Werker, 2006), and have regularly failed to find evidence of a positive effect of bilateral aid. Several studies have found that such aid is captured by elites and may even harm recipient populations (e.g., Werker et al., 2009; Nunn and Qian, 2014). Consistent with these studies, I find that political objectives drive a major donor's foreign aid. However, I find that these objectives need not undermine the benefits of foreign aid. Given the scarcity of causal evidence of positive effects of foreign aid on recipient population income in the literature, this finding is an important contribution to the debate. My data allow me to exploit more disaggregated variation than previous studies to both examine political-economic drivers of foreign aid at a micro level and to develop a more credible identification strategy to estimate causal effects of aid on recipients. In addition, I contribute to the aid literature by studying China, a prominent donor which has been understudied in this literature.[9] My findings are consistent with a recent cross-country study by Dreher et al. (2021), which finds that Chinese aid has large positive effects on GDP growth. For plausibly exogenous variation, they create an instrumental variable for aid that is the interaction of a country's probability of receiving any Chinese aid with changes in China's total annual construction materials production and foreign exchange reserves. My study differs from theirs in several important ways. First, they do not examine domestic political determinants of Chinese aid, or effects on employment. Second, I exploit a different and more disaggregated source of variation, which allows me to develop an alternative identification strategy. Finally, creating a firm-project-level dataset allows me to study the political-economic process underlying aid allocation at a micro rather than country level.

This paper more generally contributes to research on how governments use economic policy to address political needs. A vast and longstanding literature in economics speaks to governments' responses to domestic economic instability, including

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[9]A few recent studies have examined Chinese overseas finance's scope (Horn et al., 2019), allocation within recipient countries (Dreher et al., 2019), motivations (Dreher et al., 2018) and impacts (Bluhm et al., 2018; Dreher et al., 2021; Guo and Jiang, 2021).

monetary policy (e.g., Blanchard and Galí, 2010), fiscal policy (e.g., Michaillat and Saez, 2019), trade policy (e.g., Melitz and Redding, 2014) and lending to other countries (Horn et al., 2020).[10] Recent studies find that government employment policies contribute to social stability by moderating domestic political conflict (Blattman and Annan, 2016; Fetzer, 2019; Wen, 2020). This paper shows that foreign aid provides another policy tool for governments in need of securing domestic stability.

The paper proceeds as follows. Section 2 provides background on Chinese foreign aid and its allocation process. Section 3 introduces the micro data and shows how China uses foreign aid projects to help address domestic unrest. Section 4 examines how the Chinese government's political need to moderate domestic unrest influences its foreign aid allocation to other countries and quantifies the impact of Chinese aid on recipients. Section 5 concludes.

2. Background

2.1. Characteristics and Controversy of Chinese Foreign Aid

China has provided record amounts of development finance to low- and middle-income countries over the last two decades.[11] With 843 billion USD spent across 165 countries between 2000 and 2021, China's yearly spending now exceeds the United States' foreign aid (AidData, 2021). In addition, there were over 400,000 Chinese overseas workers in low- and middle-income countries by the end of 2015 according to the Chinese National Bureau of Statistics. These trends are likely to continue with the recently launched Belt and Road Initiative.

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[10]For China specifically, several recent studies show that the Chinese government responds to domestic economic and social instability by increasing domestic infrastructure investment and credit (see, e.g., Cong et al., 2019), public employment and welfare payments (Wen, 2020), fiscal transfers and public security spending (Campante et al., 2019), and censorship (Qin et al., 2017).

[11]Chinese development finance, meaning all bilateral official finance by Chinese government entities to government entities of low- and middle-income countries, can be categorized as Official Development Assistance (ODA) and Other Official Finance (OOF). I use the term "foreign aid" to include both in this paper. All main findings in the paper hold when restricting the sample to aid that meets the OECD criteria for foreign aid (ODA). See Online Appendix A.1 for more discussion.

The majority of Chinese foreign aid in terms of financial value is in the form of bilateral loans for large-scale infrastructure projects such as ports, pipelines, and roads.[12] In contrast to Western foreign aid (which also includes loans), Chinese aid famously does not attach policy conditions (State Council, 2011). However, it typically requires that at least 50%, usually more, of goods and labor used in the projects are supplied by Chinese firms (Gelpern et al., 2021).

The scope and characteristics of China's aid have attracted much controversy and attention from policymakers. China is generally thought to embody many negative features of major donors that undermine foreign aid efficacy. China regularly provides aid to countries with poor institutions, such as Angola and Sudan. Its bilateral nature and lack of policy conditions have raised concerns about Chinese aid being captured by elites and undermining Western donors' efforts. Critics have argued that Chinese aid is mostly intended to serve the needs of the Chinese government rather than to alleviate poverty or build capacity in recipient countries (e.g., Naim, 2007). Many also worry that China's use of own goods and labor may crowd out local firms and labor in recipient countries (e.g., Zhao, 2014). In addition, some argue that China is more likely than traditional donors to fund economically unproductive projects, with limited benefits for recipient households. Chinese loans are also said to lead to unsustainable debt levels that may hamper economic development by curtailing the availability of public funds, deterring foreign investment or leading to foreign exchange shortages (Dreher et al., 2021). However, the evidence is mostly anecdotal.

On the other hand, countries with poor institutions may have the most urgent need for aid since they are underdeveloped and have difficulty financing themselves on international markets. Developing countries have trillions of dollars in unmet demand for infrastructure (G20, 2021). Supporters argue that Chinese aid relieves critical financing bottlenecks for infrastructure that is crucial for economic development (e.g., Moyo, 2011). Chinese contractors have the scale and expertise to build large-scale infrastructure, and a large supply of workers at low cost compared to contractors from developed countries, which makes them very competitive (Huang and Chen, 2016).

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[12]The majority of loans is extended by the China Export-Import Bank. There are several other Chinese government entities that extend official finance to other countries. Online Appendix A.2 gives an overview on the most important entities and provides further details.

2.2. *Domestic Stability and Chinese Foreign Aid*

Social stability is one of the most important domestic policy goals of the Chinese government (e.g., State Council, 2021) as it is essential to the political survival of an autocratic regime like China (Gehlbach et al., 2016). Labor unrest, which is common across China, poses a risk to social and political stability.[13] Qualitative and recent empirical evidence (Wen, 2020) show that the Chinese government uses public employment through state-owned enterprises as an important tool to address domestic unrest.[14] Public employment as a pacification policy has several advantages over other tools at the disposal of the government, including direct transfers, censorship, and repression (for an excellent discussion, see Wen, 2020).[15]

However, domestic public employment may be an expensive and inefficient tool to address unrest, especially since demand may be low during times of unrest. Infrastructure foreign aid projects offer a potential solution. First, infrastructure aid projects generate counter- or acyclical demand for Chinese goods, thereby creating jobs in Chinese factories. Second, they allow for sending Chinese workers overseas. In addition, providing foreign aid to other countries likely benefits China in other ways (e.g., by promoting trade and political alliances (Dreher et al., 2018)), and is typically repayable by recipients and thus does not add to Chinese sovereign debt in the long term. Hence, from the Chinese government's perspective, the net return to providing foreign aid may equal or even exceed the long-term net return to domestic measures aimed at securing domestic stability. Hence, from the Chinese government's perspective, allocating foreign aid projects may be a viable tool to complement other

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[13]Despite the autocratic nature of China's regime, collective worker action is common in China and regularly involves protests against the government. See Subsection 3.2.

[14]Wen (2020) shows that Chinese SOEs increase employment in response to ethnic unrest.

[15]By providing a wage income, workers' opportunity cost of protesting increases, decreasing protest participation (Becker, 1968). Direct transfers may be susceptible to fraud, seen as unfair, and create moral hazard. Domestic infrastructure investment to stimulate employment may lead to unsustainable government debt levels and have decreasing returns, especially given China's vast domestic spending in reaction to the 2008/2009 financial crisis (Cong et al., 2019). Violent repression of unrest may increase the risk of uprising (Acemoglu et al., 2010).

measures aimed at securing domestic stability.[16]

Qualitative evidence supports the idea that one important goal of Chinese foreign aid is to help maintain employment and social stability in China. For example, Copper (2016) writes on the Chinese government's reaction to the 2008/2009 financial crisis:

> *The unemployment rate went up and China experienced greater economic and social instability. [...] The government approved more infrastructure projects (roads, railroads, etc.) but that still wasn't enough. One remedy was giving still more foreign assistance in the form of aid. [...] In 2009, the idea was proposed that China launch a 500 billion USD foreign assistance program in the spirit of the Marshall Plan. It was said that financial aid would increase developing nations' purchases of Chinese goods, thus boosting China's export-oriented economy.*

The Chinese aid allocation process is consistent with this motive.[17] The Ministry of Commerce (MOFCOM), rather than the Ministry of Foreign Affairs, manages China's aid program. MOFCOM's mandate includes formulating policy to foster domestic economic growth and employment stability (Zhang and Smith, 2017). It reports to the State Council, the highest organ of the Chinese central government, which formulates the general aid strategy and provides guidelines. Chinese government entities do not disburse loans and other aid directly to recipient countries, but instead pay the (usually Chinese) contractors to deliver goods and services to the recipient countries. The Chinese government contractually ensures that the majority of goods and labor are sourced from China, as financing agreements between the Chinese and recipient governments show (Gelpern et al., 2021).

The Chinese central state-owned firms play a dual role: they are profit-oriented but are also designated to help the government implement its policy goals. They should thus help secure social and political stability in China by providing employment

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[16]Conceptually, it makes sense for the Chinese government to employ different measures to address unrest at the same time until their marginal returns are equalized.

[17]Note that the political process described here corresponds to the period studied in this paper (2005 to 2015). The aid allocation process has changed in some aspects with the creation of China's International Development Cooperation Agency (CIDCA) in 2018.

during times of unrest, not the least through promoting foreign aid projects. In Subsection 3.4, I use systematic text analysis to demonstrate that these firms indeed internalize this policy goal.

Qualitative evidence based on interviews suggests that the state-owned foreign aid contractors play a substantial role in the allocation of aid projects. MOFCOM's Department of Foreign Aid often relies on the subsidiaries of Chinese firms in recipient countries to select projects (Zhang and Smith, 2017). Central state-owned firms have become highly influential in developing countries since China's launch of the "Go Out" policy in the early 2000s, building expertise and relationships in countries in which they regularly implement aid projects. Their relationships allow Chinese firms to create and shape aid projects in recipient countries they typically operate in (Zhang and Smith, 2017). Hence, when firms see the need to contract foreign aid projects, they can direct public funds to – often already planned – projects in countries they typically work with. This process allows the Chinese government to allocate foreign aid projects, through the firms under its direct control, relatively fast and unbureaucratic in response to its needs (Brautigam and Hwang, 2020). Figure A.2 in the Online Appendix provides a summary of this process.

3. Unrest and Aid Contract Allocation to Chinese Firms

In this section, I test the hypothesis that the Chinese government uses foreign aid it provides to other countries to help address local unrest in China. In Section 4, I then examine how this political motive influences China's aid allocation to other countries and how such aid affects the recipients.

3.1. Empirical Strategy

The main threats to identification are reverse causality and joint determination of aid and unrest at the country level. For example, foreign aid likely increases the demand for Chinese products and labor, raising Chinese workers' opportunity cost of engaging in unrest in the future. Alternatively, aid and unrest could be jointly determined by a third factor, such as a global recession that simultaneously increases the levels of unrest across China and the amount of aid China provides in a given year.

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To address these challenges, I exploit variation over space and time in local unrest within China and in the allocation of contracts for foreign aid projects to Chinese firms. Specifically, I test whether the Chinese central government allocates contracts for foreign aid projects to firms under its direct control that are based in Chinese prefectures experiencing local labor unrest.[18] I estimate the following specification at the firm-year level:

$$\text{aid}_{f,t} = \sum_{s=-2}^{S=4} (\text{unrest}_{p(f),t-s}\,\beta_s + X'_{f,t-s}\Gamma_s) + \alpha_f + \delta_t + \epsilon_{f,t}, \qquad (1)$$

where $\text{aid}_{f,t}$ is the total number or financial value of aid contracts allocated to firm f in year t, and $\text{unrest}_{p(f),t}$ is the number of labor unrest events per million inhabitants in firm f's home prefecture p in year t. $X'_{f,t}$ denotes a vector of control variables at the firm-year or prefecture-year level, which I introduce in Subsection 3.4. α_f and δ_t denote the vectors of firm and year fixed effects (note that firm fixed effects absorb prefecture fixed effects). $\epsilon_{f,t}$ denotes standard errors, which are clustered at the prefecture level.

The year fixed effects control for changes over time that affect all firms and prefectures similarly. Their inclusion prevents potential omitted variable bias from unobserved joint determinants of the yearly levels of overall Chinese aid and unrest, including macroeconomic shocks or the level of Chinese foreign exchange reserves (Dreher et al., 2021). The firm fixed effects control for time-invariant differences across firms and prefectures. Omitted variables that are correlated with both the average amount of aid contracts allocated to a firm and the number of unrest events in its home prefecture would bias the estimates of β_s. For example, firms in manufacturing hubs may generally experience more labor unrest but also contract more aid projects on average, biasing β_s upwards. The firm fixed effects prevent such bias.

The coefficient of interest is β_{-1}. It captures the effect of local unrest intensity on the amount of aid contracts allocated to central state-owned firms in the prefecture in the next calendar year. I hypothesize that $\beta_{-1} > 0$ and $\beta_s = 0$ for all other s, i.e., that only local unrest lagged by one year, but not at other leads and lags, has

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[18]Firms may be part of larger conglomerates that have subsidiaries in multiple prefectures. The unit of observation is the subsidiary, which is domiciled in a distinct prefecture (see Subsection 3.2).

an effect on aid contract allocation to local firms.[19] Nevertheless, I also control for other leads and lags of local unrest to deal with potential reverse causality in the presence of serial correlation and to rule out spurious co-movement of unrest and aid over time. Conditional on firm and year fixed effects, as well as other leads and lags of unrest, the amount of foreign aid provided by China should not influence local unrest in the previous year. Also note that most of the unrest events in my sample do not involve aid contractors, which constitute only a small fraction of all Chinese firms, which makes reverse causality unlikely in the first place.

I interpret $\beta_{-1} > 0$ as evidence for the Chinese government using foreign aid to help address domestic labor unrest. The remaining threats to this interpretation are firm- or prefecture-specific, time-varying variables that are spuriously correlated with both local labor unrest and the amount of aid contracts allocated to local firms. For example, a negative economic shock to a prefecture (relative to the fixed effects) may decrease local marginal wages in the short term, potentially leading to local labor unrest (e.g., Campante et al., 2019). At the same time, lower wages decrease local firms' labor costs, allowing them to bid more aggressively on aid contracts. Although the allocation of aid contracts to local firms would also have a stabilizing effect on the Chinese economy through this channel, in this case a positive β_{-1} coefficient would have a different interpretation than aid contracts being allocated specifically to address local unrest. I address such alternative interpretations in several ways.

First, I control for several potential time-varying covariates of unrest and aid contracts at the prefecture and firm level, including prefecture- and firm-specific economic shocks. Second, I use systematic text analysis on firms' annual reports to show that central state-owned firms, but not other aid contractors internalize the central government's political goal of maintaining social stability. This motivates an important placebo check. In response to an increase in local unrest, firms not under the control of the central government should only bid on aid contracts more aggressively if there are unobserved local economic shocks that are correlated with both local unrest and aid allocation. If, as hypothesized, political rather than purely

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[19]As explained in Section 2, the Chinese aid allocation process can react to local unrest relatively rapidly. However, unrest should have no effect on aid allocation in the same calendar year since the aid budget is determined in the previous calendar year.

economic motives drive aid contract allocation to central state-owned firms in response to unrest, we should see no such effect for other aid contractors. Third, I show corroborating evidence for my proposed interpretation by examining the effects of local unrest on employment, and investigating the role of local government spending. Finally, I examine contract allocation by the sector in which unrest takes place. Subsection 3.3 shows the results and provides further details on these checks.

3.2. Data and Descriptive Statistics

Project-level aid data. Since the Chinese government does not publish disaggregated data on its aid, I first build a project-level dataset on China's outward foreign aid in 2005–2015 by combining information from multiple existing databases such as AidData. Online Appendix B.1 describes the databases and how I combine them. The resulting dataset includes all bilateral official finance by a Chinese government entity to a government entity of a non-high income, non-OECD country (as classified by the World Bank) known to involve a Chinese contractor.[20] This includes ODA-like finance (Official Development Assistance), such as grants, in-kind donations, zero-interest loans and concessional loans, as well as OOF-like finance (Other Official Finance), such as loans at commercial rates, buyer credits, and export credits.

For each project, the data include the year of commitment,[21] financial value, recipient country, type of finance, sector, funding agency, and a short description. I identify the exact names of the Chinese contractors implementing each project by searching the documents provided by the sources underlying the dataset. The majority of projects in terms of financial value are supplied by contractors based in China. I exclude contractors based abroad.[22] The resulting dataset includes 1,164 projects in 102 countries committed between 2005 and 2015. The average project is

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[20]I exclude projects financed exclusively by firms and FDI.

[21]This is standard in the literature (e.g., Dreher et al., 2021). Information about the year of disbursement is unavailable for a large share of projects in the data.

[22]While I do not collect information about projects without Chinese contractors, a comparison using Dreher et al. (2021) shows that Chinese firms implement around 80% of the financial value of Chinese aid projects. The aid projects not included in the sample are typically small and supplied by foreign firms or not supplied by any firm (e.g., in-kind donations, stipends, and debt relief).

worth 244 million USD (in constant 2014 USD). Nearly all aid projects implemented by Chinese firms are in the form of hard infrastructure, such as railroads and power plants. Table A.3 in the Online Appendix lists the largest ODA- and OOF-like projects. Online Appendix B.1 provides descriptive statistics.

Firm-level data. There exist no comprehensive data about which firms implement which Chinese aid projects. The names of the contractors listed in some of the existing databases are not harmonized and typically only identify the firm group (conglomerate) rather than the specific contractor that implements the project. This has so far prevented researchers from linking data on aid projects to administrative firm data and from conducting analysis at the firm level. To analyze the impact of local unrest on the allocation of aid projects at the firm level, identifying the firm rather than the conglomerate is important. In addition, not only the *actual* contractors of projects but also the pool of *potential* contractors are needed.

To address these difficulties, I construct a firm-year level dataset by 1) identifying the set of potential aid contractors at the firm (subsidiary) level from archival records by the Ministry of Commerce, 2) linking the contractors to administrative firm-level datasets from China, including detailed customs and tax records, and 3) linking the contractors to the aid projects described above. Online Appendix B.2 provides details. The result is an unbalanced yearly panel of the universe of Chinese firms licensed by the government to contract infrastructure aid projects.

The main outcome variable is the number of aid contracts allocated to a firm in a year. I also calculate the financial value of contracts. However, this is not my preferred measure since it is more likely to suffer from measurement error than the number of contracts and is missing for 10% of all projects.[23] In addition, I use data from the Chinese tax survey data to calculate firm employment as an additional outcome variable as well as firm-level control variables (see Subsection 3.4).

The panel includes 1,265 firms of which 498 are owned by the central government.[24]

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[23]I calculate the financial value of a contract as the financial value of the entire project divided by the number of Chinese firms involved in the project. I do not observe the details of the contracts underlying the projects such as the exact payment made to each firm or subcontracting.

[24]Other firms include private firms and (former) local SOEs. I exclude joint ventures, collective firms and foreign firms, which constitute only a small fraction of aid contractors.

100 central state-owned firms and 71 other firms supply Chinese aid projects at least once during my sample period. Table A.4 in the Online Appendix provides descriptive statistics. The average central state-owned (other) firm is awarded 0.15 (0.05) aid contracts worth 41 million USD (3.6 million USD) per year.[25] On average, central state-owned (other) firms have 1,438 (954) employees, 104 million USD (53 million USD) in assets, 526 million USD (288 million USD) in operating income, and 112 million USD (66 million USD) in exports. The firms are located in 148 different prefectures across China.

Unrest data. I measure local unrest intensity as the number of labor unrest events per million inhabitants in a prefecture and year.[26] I combine data on strikes and worker protests across China from two unofficial sources: *China Strikes*, covering 2004 to 2011, and *China Labour Bulletin* (CLB), covering 2012 to 2014.[27] These data are crowd-sourced from worker reports as well as traditional media and online sources. The data have been used to study trends in worker actions by foreign media and economists (e.g., Campante et al., 2019; Qin et al., 2019). For each unrest event, the data include its date, prefecture, sector, and a short description.

There are 7,646 reported unrest events during the period I study. On average, there are 0.2 yearly unrest events per million inhabitants in a prefecture. Figure 1 shows a map of the average unrest intensity for each prefecture in 2004–2014. Unrest takes place in all of China's densely populated regions, with most in the manufacturing (30%), construction (29%), public transport (20%), and service (11%) sectors.

Most unrest events take place at aid-unrelated firms since aid contractors in my sample are only a small subset of all Chinese firms. According to the CLB data, the majority of unrest events are related to wage arrears. For example, in 2012 over 500

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[25]Note that since many firms get no contracts in some years or no contracts ever, conditional on getting at least one contract, the average value of yearly contracts awarded to a central state-owned (other) firm is 550 million USD (129 million USD).

[26]I use population from the 2010 census in the denominator (following Campante et al., 2019). Information on the number of unrest participants is not available for most unrest events in the data.

[27]The *China Strikes* data are provided by Manfred Elfstrom. See https://chinastrikes.crowdmap.com/. CLB is a non-governmental organization based in Hong Kong. The CLB data generally follow the same scope and method as *China Strikes*. See https://maps.clb.org.hk/.

construction workers blocked the road and protested against a real estate developer in Xi'An who had not paid all wages in two years. Online Appendix B.5 provides details. Online Appendix Table A.6 shows that unrest intensity is negatively correlated with local GDP and wages, although the coefficients are statistically insignificant.

Figure 1: Yearly Number of Unrest Events per Million Inhabitants by Prefecture
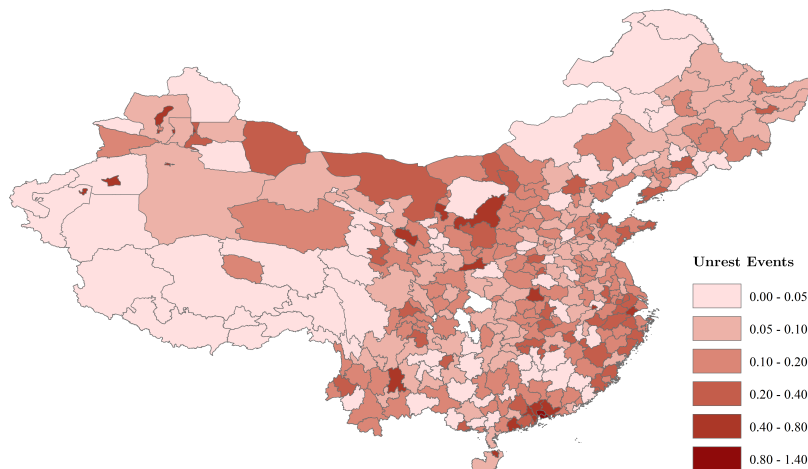
Note: This map shows the yearly average number of labor unrest events per million inhabitants by Chinese prefecture in 2004–2014. Source: author's own illustration based on data from the China Strikes Crowdmap and China Labour Bulletin, and the 2010 Chinese population census.

The Chinese government tolerated reporting on labor unrest events to a significant degree during the study period, presumably to serve as signal for where it needs to allocate resources to secure social stability (Lorentzen, 2014; Campante et al., 2019). Nevertheless, selective reporting is a potential concern. Both *China Strikes* and *CLB* acknowledge that they cannot record all unrest events. In addition, the increasing availability of the internet may have led to more reporting of unrest events over time. For the purposes of this paper, such concerns are likely not major for several reasons: First, I include firm (prefecture) and year fixed effects in the analysis to deal with classical measurement error. Second, selective reporting could only lead to bias in the direction of my results if it were systematically correlated with the allocation of aid contracts, which is implausible. Third, as Campante et al. (2019) show, trends in the *CLB* data are highly correlated with official records on the number of labor dispute cases submitted to the government for mediation or arbitration.

Other micro data. I collect a set of socioeconomic variables at the prefecture-year level from the *China City Statistical Yearbooks* for complementary analyses. I provide prefecture-level descriptive statistics in Online Appendix Table A.5.

3.3. Results: Unrest and Aid Contract Allocation to Chinese Firms

Figure 2 shows the estimated coefficients from Equation (1). One additional unrest event per million inhabitants in a Chinese prefecture is associated with the allocation of 0.1 more aid contracts to each central state-owned firm in the prefecture in the following year, controlling for firm and year fixed effects as well as other leads and lags of unrest. The coefficient is statistically significant at the 5% level. As expected, the coefficients on other leads and lags of unrest are small and statistically insignificant.

Figure 2: The Effects of Leads and Lags of Local Unrest in China on Chinese Foreign Aid Contract Allocation to Central State-Owned Firms
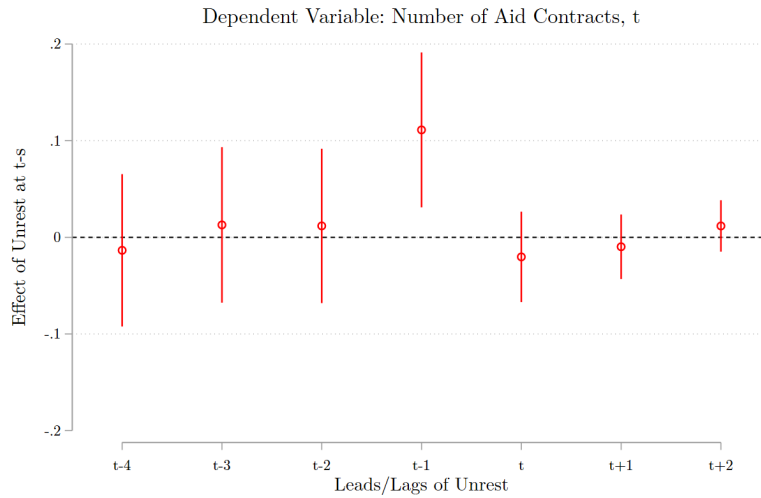
Note: The unit of observation is a firm-year. Each dot shows the coefficients from a regression of the number of Chinese foreign aid contracts allocated to a central state-owned firm in year t on the number of labor unrest events per million inhabitants in the firm's prefecture at all leads and lags shown on the x-axis, controlling for firm and year fixed effects. The vertical lines show 90% confidence intervals. The mean of the dependent variable is 0.159. Standard errors are clustered at the prefecture level. Source: author's illustration based on data described in Subsection 3.2.

To interpret the magnitude of the estimated effect, note that a one standard deviation increase in unrest increases the number of contracts allocated to central

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state-owned firms by 24% of its mean.[28]   This effect is cumulatively large.   A back-of-the-envelope calculation shows that, for example, a one standard deviation increase in yearly unrest in Beijing (around 7 unrest events) is associated with the allocation of 5.5 additional aid contracts with a value of 1.8 billion USD to central state-owned firms in the prefecture, as much as around 40% of Beijing's yearly public security spending according to the Chinese Ministry of Finance.[29]

The specification in Equation (1), which includes several leads and lags of unrest, is restrictive because it limits the sample to a subset of years in the data. To exploit the full data for all years and to maximize statistical power, I keep only unrest lagged by one year in the specifications for the analyses that follow. The point estimate of the effect of lagged unrest on aid contract allocation is unaffected by whether other leads and lags are included in the specification or not (results available on request).

Table 1 shows the effect of lagged unrest on aid contract allocation for different measures of aid. Column (1) is consistent with Figure 2. Columns (2) and (3) show the results for ODA-like (more concessional) and OOF-like (less concessional) aid only. The effects are similar for both kinds of aid relative to their means. Column (4) uses the log of one plus the financial value of contracts allocated to a firm in a year as outcome. A one standard deviation increase in unrest (0.346 events per million inhabitants) on average increases the value of contracts allocated to central state-owned firms by 0.25 log points (22%). The estimates for ODA-like and OOF-like projects are again similar and not statistically distinguishable. The coefficients in Table 1 are significant at the 1% or 5% level, except Column (5) at the 10% level.

3.4. Corroborating Evidence and Robustness

Robustness to controls. To address the concern that local economic shocks may explain the results, I control for a host of variables that are potentially correlated with local labor unrest and aid allocation to central state-owned firms. Online Appendix Table A.7 controls for prefecture-year level variables, including lagged local GDP,

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[28]One standard deviation in unrest is 0.346 events per million inhabitants. The mean number of aid contracts allocated to a central state-owned firm in a year is 0.145. $0.346 \cdot 0.100 \div 0.145 = 0.238$.

[29]The average aid contract supplied by a central state-owned firm in Beijing is worth 311 million USD. There are 171 central state-owned firms in Beijing. $0.346 \cdot 0.100 \cdot 171 \cdot 0.311 = 1.8$.

Table 1: Effect of Local Unrest in China on Chinese Foreign Aid Contract Allocation to Central State-Owned Firms

Dependent Variable:	Number of Aid Contracts			Financial Value of Aid Contracts		
	All	ODA	OOF	All	ODA	OOF
	(1)	(2)	(3)	(4)	(5)	(6)
Unrest,t-1	0.100	0.034	0.046	0.723	0.345	0.579
	(0.038)	(0.014)	(0.016)	(0.283)	(0.173)	(0.200)
Firm and Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,801	3,699	3,699	3,768	3,680	3,694
Adjusted R^2	0.569	0.327	0.175	0.391	0.216	0.161
Dependent Variable Mean	0.145	0.042	0.037	1.330	0.485	0.506
Dependent Variable SD	0.667	0.263	0.270	4.894	2.945	3.104
Unrest Mean	0.270	0.268	0.268	0.270	0.268	0.268
Unrest SD	0.346	0.347	0.347	0.347	0.348	0.348

Note: The unit of observation is a firm-year. The sample includes central state-owned firms only. Number of aid contracts: number of Chinese foreign aid contracts allocated to a firm in year t. Financial value of aid contracts: log(1 + total financial value of Chinese foreign aid contracts allocated to a firm in year t). ODA: Official Development Assistance. OOF: Other Official Finance. Unrest: number of unrest events per million inhabitants in firm′s prefecture in year $t − 1$. Standard errors are clustered at the prefecture level and reported in parentheses. See Subsection 3.2 for sources and details on the data.

exports, employment, average wages, and population. Online Appendix Table A.8 controls for firm-year level variables, including the lagged number of employees, fixed assets, operating income, exports, and materials inventory. Details are provided in Online Appendix C.1. The main coefficient is robust to the inclusion of these controls.

Text analysis of firm reports. I use natural language processing of listed firms' annual reports to show that central state-owned firms, but not other aid contractors, internalize the state's goal of moderating unrest. For each firm and year, I count how frequently firms' annual reports mention each of several keywords related to maintaining social stability relative to the total word count.[30] I use the keywords from Campante et al. (2019) to avoid cherry-picking. I then re-estimate the baseline specification using the keyword count as the outcome variable. I use the first principal

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[30]For unlisted firms, I use the reports of listed firms in their conglomerate and prefecture. Since this may lead to correlation across firms within conglomerates, I two-way cluster standard errors at the prefecture and conglomerate level. I exclude firms with subsidiaries in multiple prefectures and other unlisted firms. I exclude keywords that appear less than 10 times over all firms and years.

component and sum over all key words as additional outcomes. Figure 3 shows the results. Each red dot is the standardized coefficient from a regression of the frequency of the keywords listed on the left-hand side of the figure on lagged local unrest, controlling for firm and year fixed effects, for central state-owned firms. The gray dots are the standardized coefficients for other firms. The figure shows that central state-owned firms, but not other firms, mention keywords related to maintaining social stability significantly more frequently in response to local unrest.

Figure 3: The Effect of Local Unrest in China on the Frequency of Social Stability Keywords in Firms' Annual Reports
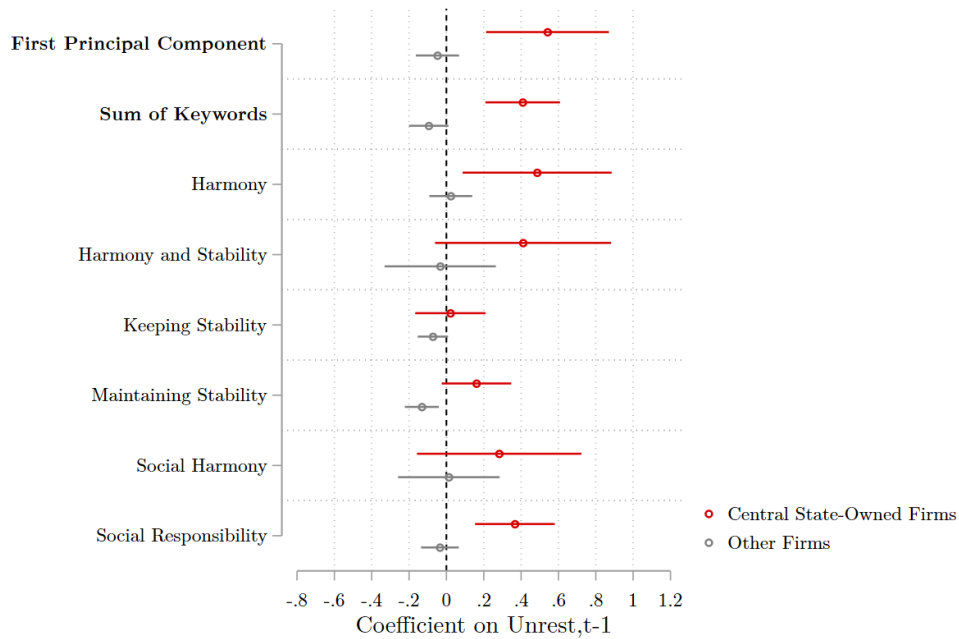
Note: The unit of observation is a firm-year. Each dot shows the coefficients from separate regressions of the frequency of the phrase labeled on the y-axis in a firm's annual report in year t on the number of labor unrest events per million inhabitants in the firm's prefecture in year $t-1$, controlling for firm and year fixed effects. The horizontal bars show 90% confidence intervals. All variables are standardized to have a mean of 0 and a standard deviation of 1. The standard errors are two-way clustered at the conglomerate and prefecture-level. The sample includes Chinese listed firms and their subsidiaries. Source: author's own illustration. See Subsection 3.2 for sources and details on the data.

Placebo check. The exercise above motivates a placebo check. Since aid contractors not owned by the central government are mainly profit-oriented and do not internalize the social stability motive, they should only bid on aid projects when there is more local unrest if there are unobserved local economic shocks correlated

with both local unrest and aid allocation. Figure 4 shows the results of this placebo check, which is analogous to Figure 2 but uses only firms not owned by the central government.[31] Online Appendix Table A.10 shows the analog of Table 1 for these firms. Reassuringly, the estimated relationship between unrest and aid allocation to these firms is small and statistically insignificant for all leads and lags. This placebo check provides further evidence that the central government's need to address local unrest, rather than unobserved economic shocks, explains the relationship between local unrest and aid contract allocation for central state-owned firms.

Figure 4: Effects of Leads and Lags of Local Unrest in China on Chinese Foreign Aid Contract Allocation to Firms Other than Central State-Owned Firms
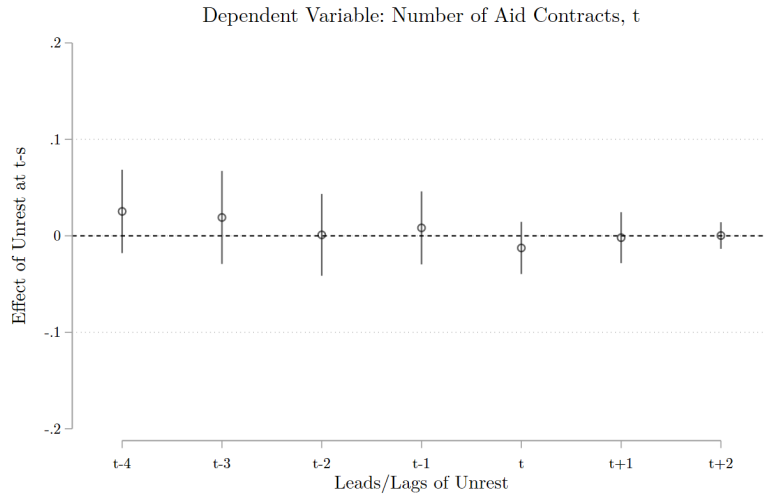
Note: The unit of observation is a firm-year. Each dot shows the coefficients from a regression of the number of Chinese foreign aid contracts allocated to firms other than central state-owned firms in year t on the number of labor unrest events per million inhabitants in the firm's prefecture at all leads and lags shown on the x-axis, controlling for firm and year fixed effects. The vertical lines show 90% confidence intervals. The mean of the dependent variable is 0.043. Standard errors are clustered at the prefecture level. Source: author's illustration based on data described in Subsection 3.2.

Effects on employment. Table 2 examines the effect of local unrest on firm employment. Columns (1) and (2) for comparison replicate the main specification for the observations with information on employment from the tax survey data. As in Table 1 and Online Appendix Table A.10, central state-owned firms, but not other

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[31]I include all firms that are licensed by the government to contract foreign aid projects but not owned by the central government. These firms together implement 35% of all aid projects.

firms, contract more aid projects in response to local unrest. Columns (3) and (4) show that central state-owned firms also increase employment (in logs) in response to local unrest. One additional lagged labor unrest event per million inhabitants increases employment by central state-owned firms by 2% (significant at the 5% level). In contrast, employment by other firms decreases by 1.4% (statistically insignificant). The results are consistent with a stabilizing role of central state-owned firms.

Table 2: Effect of Local Unrest in China on Firm Employment

Dependent Variable:	Number of Aid Contracts		Number of Employees	
Sample:	Central State-Owned Firms	Other Firms	Central State-Owned Firms	Other Firms
	(1)	(2)	(3)	(4)
Unrest,t-1	0.091	0.011	0.020	-0.014
	(0.042)	(0.009)	(0.011)	(0.034)
Firm and Year FEs	Yes	Yes	Yes	Yes
Observations	1,444	1,678	1,444	1,678
Adjusted R^2	0.628	0.400	0.965	0.951
Dependent Variable Mean	0.213	0.033	6.150	5.984
Dependent Variable SD	0.820	0.225	1.576	1.394
Unrest Mean	0.274	0.269	0.274	0.269
Unrest SD	0.334	0.452	0.334	0.452

Note: The unit of observation is a firm-year. The sample includes firms with >10 employees that were selected to participate in the 2007–2015 tax surveys by the State Tax Administration. Further sample restrictions are described in Online Appendix B.4. Number of aid contracts: number of Chinese foreign aid contracts allocated to a firm in year t. Number of employees: log(average number of workers employed by a firm in year t). Unrest: number of unrest events per million inhabitants in firm's prefecture in year $t - 1$. Standard errors are clustered at the prefecture level and reported in parentheses. See Subsection 3.2 for sources and details on the data.

The role of local government spending. The allocation of foreign aid contracts is not the only policy tool for governments to secure domestic stability. The Chinese central government may also encourage local governments to increase domestic spending to shore up public support and address unrest. Local governments in China are responsible for 85% of government budgetary spending and responsible for most domestic infrastructure investment (Wingender, 2018). However, domestic spending is costly and may have decreasing returns, and high existing spending may prevent

local governments from stimulating domestic demand further.[32] This helps explain why the government may use foreign aid to address domestic unrest in addition to or instead of domestic public spending (see also Section 2). To test this channel, I construct a dummy variable that equals 1 (0) if the prefecture government's lagged public income/expenditure ratio is below (above) the sample mean.[33] I interpret this dummy as a proxy for constraints on the local government to stimulate domestic demand using public spending. I then interact this dummy with local unrest to estimate heterogeneous effects of unrest on aid allocation to firms in the prefecture.

Table 3: Effect of Local Unrest in China on Chinese Foreign Aid Contract Allocation to Central State-Owned Firms by Fiscal Capacity of the Local Government

Dependent Variable:	Number of Aid Contracts			Financial Value of Aid Contracts		
	All	ODA	OOF	All	ODA	OOF
	(1)	(2)	(3)	(4)	(5)	(6)
Local Gov. Constrained, t-1	-0.068	-0.017	-0.024	-0.466	-0.041	-0.282
	(0.028)	(0.012)	(0.016)	(0.246)	(0.174)	(0.182)
Unrest, t-1	0.082	0.022	0.043	0.457	0.242	0.533
	(0.032)	(0.011)	(0.016)	(0.258)	(0.160)	(0.208)
Unrest × Local Gov. Constrained, t-1	0.060	0.034	0.019	0.768	0.325	0.295
	(0.032)	(0.016)	(0.014)	(0.360)	(0.223)	(0.280)
Firm and Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,673	3,572	3,572	3,640	3,553	3,567
Adjusted R^2	0.566	0.326	0.173	0.387	0.214	0.159
Dependent Variable Mean	0.149	0.043	0.038	1.371	0.503	0.524
Dependent Variable SD	0.676	0.267	0.275	4.963	2.995	3.157
Unrest Mean	0.262	0.260	0.260	0.262	0.260	0.260
Unrest SD	0.310	0.310	0.310	0.311	0.311	0.310

Note: The unit of observation is a firm-year. The sample includes central state-owned firms only. Number of aid contracts: number of Chinese foreign aid contracts allocated to a firm in year t. Financial value of aid contracts: log(1 + total financial value of Chinese foreign aid contracts allocated to a firm in year t). ODA: Official Development Assistance. OOF: Other Official Finance. Unrest: number of unrest events per million inhabitants in firm's prefecture in year $t-1$. Local Gov. Constrained is a dummy that equals 1 if the yearly prefecture public income / expenditure ratio is below 0.8 (sample mean) in year $t-1$. Standard errors are clustered at the prefecture level and reported in parentheses. See Subsection 3.2 for sources and details on the data.

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[32]The central government in response to the 2008 Great Recession encouraged local governments to massively expand their balance sheets to encourage domestic infrastructure construction. As a consequence, local governments indebted themselves to record levels, raising questions about their ability to stimulate demand using fiscal spening in the future (Copper, 2016; Cong et al., 2019).

[33]Alternatively, I use the continuous income/expenditure ratio. The results are similar.

Table 3 shows the results. As expected, unrest has a significantly higher effect on aid allocation to central state-owned firms in the prefecture if the local government is constrained in its ability to stimulate demand using local public spending.

Unrest by sector. Table A.9 in the Online Appendix shows that only labor unrest in industrial sectors (construction, manufacturing, mining), which supply the majority of Chinese aid projects, has a large and statistically significant effect on contract allocation to central state-owned firms. Reassuringly, unrest in service sectors (mainly strikes by school teachers and taxi drivers) has no significant effect.

4. The Effects of Chinese Aid on Recipient Countries

Section 3 showed that the Chinese government's political need to address domestic unrest influences the allocation of contracts for infrastructure foreign aid projects to Chinese firms. I now examine the economic effects of such aid on recipient countries.

4.1. Empirical Strategy

The main challenges for estimating the causal effects of foreign aid on recipients are the issues of reverse causality and joint determination. To help understand the identification challenges, first consider the simple case where country i's outcome (e.g., GDP per capita) is regressed on the level of aid received by China s years prior:

$$Y_{i,t+s} = \beta \, \mathrm{aid}_{i,t} + \mathbf{X}_{i,t} \Gamma + \alpha_i + \delta_{rt} + \epsilon_{i,t}, \tag{2}$$

where $Y_{i,t+s}$ is an outcome of country i in year $t+s$ (e.g., GDP per capita) and $\mathrm{aid}_{i,t}$ is the number of Chinese aid projects received by country i in year t. $\mathbf{X}_{i,t}$ denotes a vector of control variables. α_i and δ_{rt} denote the vectors of country and region-year fixed effects.[34] The sample includes a panel of 141 low- and middle-income countries during the years 2003 to 2018.[35]

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[34]The regions are as defined by the World Bank: East Asia & Pacific, Europe & Central Asia, Latin America & Caribbean, Middle East & North Africa, South Asia, and Sub-Saharan Africa.

[35]The sample includes non-high income, non-OECD countries, as defined by the World Bank. Due to inconsistencies in the data, I exclude from the sample Equatorial Guinea, Libya, as well as the Democratic Republic of the Congo and Republic of Congo.

The coefficient of interest, β, is the effect of an additional Chinese aid project on the recipient country outcome s years later. However, the coefficient captures reverse causal effects if China allocates aid based on recipient outcomes. For example, if China allocated more aid to countries on a low growth path, then the estimate $\hat{\beta}$ of this OLS regression would be biased downwards. Alternatively, aid and the outcome in the recipient country could be jointly determined by a third factor, such as a change in the political regime of the recipient country, which could bias $\hat{\beta}$ in either direction.

To address these endogeneity issues, I rely on the fact that each central state-owned firm is connected to a set of aid-recipient countries (i.e., there are countries which a given firm usually works with). I exploit the temporal and spatial variation in local unrest in Chinese prefectures, interacted with these connections between recipient countries and Chinese firms, to construct an instrumental variable for the amount of Chinese aid a country receives in a given year. The logic is as follows. When there is labor unrest in a Chinese prefecture, the Chinese central government allocates more aid contracts to firms in that prefecture. As explained in Section 2, central state-owned firms are then more likely to direct the aid to countries they typically work with than to other countries. Hence, variation in local unrest in China predicts the amount and timing of Chinese aid that other countries receive.

Causal identification assumes that the Chinese government's decision to allocate aid contracts to firms in a given Chinese prefecture is driven by the desire to quell local unrest and not by the desire to direct aid to countries more connected to the prefecture specifically in response to an increase in labor unrest in the prefecture. Similarly, I assume that shocks to local unrest in a prefecture are orthogonal to shocks to future economic outcomes in connected countries (conditional on country and region-year fixed effects and controls). Note that I take the connections as given and fixed over time, i.e., it is immaterial why certain countries are more connected to certain firms. The second and first stages of the 2SLS specification are, respectively:

$$\text{Y}_{i,t+s} \;=\; \beta\,\widehat{\text{aid}}_{i,t} \;+\; \mathbf{X}_{i,t}\varGamma \;+\; \alpha_i \;+\; \delta_{rt} \;+\; \epsilon_{i,t}, \tag{3}$$

$$\text{aid}_{i,t} \;=\; \gamma\,\text{Z}_{i,t-1} \;+\; \mathbf{X}_{i,t}\varTheta \;+\; \alpha_i \;+\; \delta_{rt} \;+\; \mu_{i,t}, \tag{4}$$

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where the instrument, which I call "weighted unrest", is the sum of lagged local unrest shocks in Chinese prefectures multiplied by country i's connections to central state-owned firms in each of the prefectures:

$$Z_{i,t-1} \; = \; \sum_p (\text{unrest}^*_{p,t-1} \; \cdot \; \omega_{i,p}). \tag{5}$$

I calculate the local unrest shocks, unrest$^*_{p,t-1}$, as the lagged number of unrest events per million inhabitants in prefecture p. I residualize the local unrest shocks on year fixed effects to re-center them by their conditional expectation (following Borusyak and Hull, 2020). I calculate connections between country i and firms in prefecture p, $\omega_{i,p}$, as the fraction of years between 2005 and 2015 that country i received any aid by central state-owned firms in prefecture p.[36] $\mathbf{X}_{i,t}$ is a vector of country-year level controls, which includes recipient country population and the outcome variable at $t-1$ in the baseline, and other variables introduced in Subsection 4.5.[37] All other variables are as before. The baseline specification clusters standard errors at the country level. I discuss statistical inference and related tests in Subsection 4.5.

The empirical strategy exploits the country and time variation in the receipt of Chinese aid caused by the temporal and spatial variation in local unrest in Chinese prefectures. The specification controls for region-specific year fixed effects that capture changes over time that affect all countries within a region similarly, as well as country fixed effects that capture time-invariant differences across countries, including the cross-sectional variation in connections between recipient countries and firms in Chinese prefectures. The cross-sectional variation in connections could be correlated with countries' outcomes. However, the country fixed effects control for this variation, and the connections need not be exogenous for the instrument to be

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[36]Formally, $\omega_{i,p} = \sum_{t=2005}^{T=2015} \frac{\mathbb{1}[aid_{i,p,t}>0]}{11}$. Although not strictly necessary for identification, one may want to calculate the connections based on a baseline year instead of over all years. However, this is not possible in this setting since most countries did not receive any aid in the baseline year. As a robustness check, I use the fraction of years in which country i received any aid by central state-owned firms in prefecture p prior to t, i.e., $\omega_{i,p,t} = \sum_{s=2005}^{t-1} \frac{\mathbb{1}[aid_{i,p,s}>0]}{s+1-2005}$. See Subsection 4.5.

[37]Controlling for the lagged dependent variable in a fixed effects model may introduce a correlation between the regressors and the error term and bias the coefficient of interest toward 0 (Nickell, 1981). The results are qualitatively similar without the inclusion of this control (available on request).

valid. Conditional on country and region-year fixed effects, the timing of the lagged, re-centered prefecture-level unrest shocks in China is plausibly exogenous to shocks to future recipient country outcomes. Hence, the interaction of shocks to local unrest in China and recipient countries' exposure to this variation generates an exogenous instrument for the amount of Chinese aid received by a country in a year (following the arguments in Borusyak and Hull, 2020).

The IV exclusion restriction requires that the instrument only affects recipient country outcomes through the provision of aid, conditional on controls. The main threat is that local unrest in specific Chinese prefectures is correlated with other factors that differentially affect countries connected to these prefectures. A first concern is that an increase in local unrest in a prefecture, relative to average unrest across China and controlling for country and region-year fixed effects, is correlated with future economic conditions of countries connected to that prefecture. To address the possibility that the instrument at $t-1$ is correlated with the contemporary economic conditions of the recipient country, I control for the recipient country outcome at $t-1$. A related concern is common trade shocks. If a prefecture-specific, negative export demand shock is associated with an increase in unrest in a prefecture and simultaneously with a decrease in future GDP of countries connected to that prefecture, $\hat{\beta}$ is biased downwards. In this case, I would underestimate the true effect of Chinese aid on recipient country GDP. To address this concern, I control for lagged weighted exports per capita in Chinese prefectures connected to a country in robustness tests (see Subsection 4.5).

A second concern is that local unrest in a prefecture leads not only to the allocation of aid projects to countries connected to the prefecture but also to an increase (or decrease) in aid-unrelated Chinese exports or FDI to the same countries. If Chinese exports or FDI affect recipient outcomes independently of aid, the exclusion restriction is violated. I address such concerns by controlling for Chinese exports and FDI to each country. In addition, as placebo checks, I test whether the instrument spuriously predicts Chinese exports or FDI to other countries, and aid received by OECD-DAC donors. See Section 4.5.

For interpreting the 2SLS estimates, note that they reflect the average effect for observations that comply with the instrument, i.e., a local average treatment effect

(LATE). In my setting, compliers are countries that receive more aid because of an increase in unrest in China. This is precisely the effect of interest to address the question of how aid driven by political objectives of the donor affects recipients.

4.2. Country-Level Data and Descriptive Statistics

Table A.11 in the Online Appendix lists the country-year level variables used in this section and provides descriptive statistics. I briefly describe these variables here.

Outcomes. I use data from the World Development Indicators (World Bank, 2020) to measure various recipient outcomes at the country-year level, including GDP per capita growth, GDP per capita in levels, and GDP components (capital formation, government consumption, household consumption, exports and imports). As an additional outcome, I use the unemployment rate of a country in a given year from the ILOSTAT database (International Labour Organization, 2020). I winsorize the outcome variables at the 5th and 95th percentiles to limit the influence of extreme outliers. Results without winsorizing are qualitatively similar (available on request).

Controls. I use data on population and OECD-DAC aid receipt from the World Development Indicators (World Bank, 2020) as well as bilateral trade data at the country-year level from the Atlas of Economic Complexity (The Growth Lab at Harvard University, 2019). I also use data on Chinese FDI from the Global Investment Tracker (American Enterprise Institute, 2019), and Chinese customs data at the country-prefecture-year level (see Subsection 3.2) to construct the weighted amount of exports in Chinese prefectures connected to a country in a given year.[38]

Weighted unrest. I calculate the instrument, $Z_{i,t-1}$, as described in Section 4. I standardize the instrument to have a mean of 0 and a standard deviation of 1 to facilitate the interpretation of the results. Each aid recipient country is on average connected to two prefectures in China. Each central state-owned firm that ever contracts aid projects on average does so in three countries.

Aid. My preferred measure of Chinese aid is the total number of aid projects, implemented by Chinese central state-owned firms, received by a country in a given year. I also calculate the total financial value of Chinese aid projects as an alter-

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[38]I construct a variable analogous to weighted unrest, but replacing the number of unrest events with the value of exports per million inhabitants in a prefecture.

native measure. As explained in Subsection 3.2, the number of aid projects is my preferred measure as it has fewer missing observations and is less likely to suffer from measurement error than the financial value. I construct the variables by aggregating the project-level data described in Subsection 3.2 to the country-year level. Each country in the sample receives 0.33 aid projects per year, each worth 289 million USD on average (in constant 2014 USD). Pakistan, Angola, and Ethiopia are the largest recipients of Chinese aid projects implemented by central state-owned firms.

In Online Appendix D.2, I follow Dreher et al. (2021) and investigate recipient country characteristics that have been said to be associated with Chinese aid. These correlations show that China provides more aid to countries that are poorer, more politically aligned with China, have deeper trade relationships with China, and whose official language is English. However, there is no association between Chinese aid and whether a country is a petroleum exporter or less democratic. The cross-sectional correlations are consistent with the notion that China chooses the countries it gives aid to based on economic and foreign policy goals. While these goals deserve further investigation in future research, I take them as given in my empirical analysis and focus on domestic unrest to predict the timing of Chinese aid.

4.3. First Stage Estimates

Figure 5 shows the relationship between the instrument, lagged weighted unrest, and the number of aid projects (implemented by central state-owned firms) received by a country in a given year, where both measures are residualized on country and region-year fixed effects as well as the baseline controls. The slope of the regression line is equivalent to the coefficient $\hat{\gamma}$ from the first stage Equation (4). A one standard deviation increase in the instrument is associated with a 0.22 increase in the number of aid projects received by a country (22% of a standard deviation). The effect is statistically significant at the 1% level. The Kleibergen-Paap F-statistic is 18.8.

In other words, a country gets significantly more aid following years during which the Chinese prefectures it is connected to experience more local unrest, conditional on country and region-year fixed effects and controls. Multiplied by the number of countries, the estimates mean that a one standard deviation increase in the instrument leads to an allocation of 17.9 aid projects worth 5.2 billion USD in total, or 27%

Figure 5: The Effect of Unrest in China on the Number of Chinese Foreign Aid Projects Received by Other Countries (First Stage Residual Plot)

coefficient: .224. p-value: .000. KP F-statistic: 18.8.
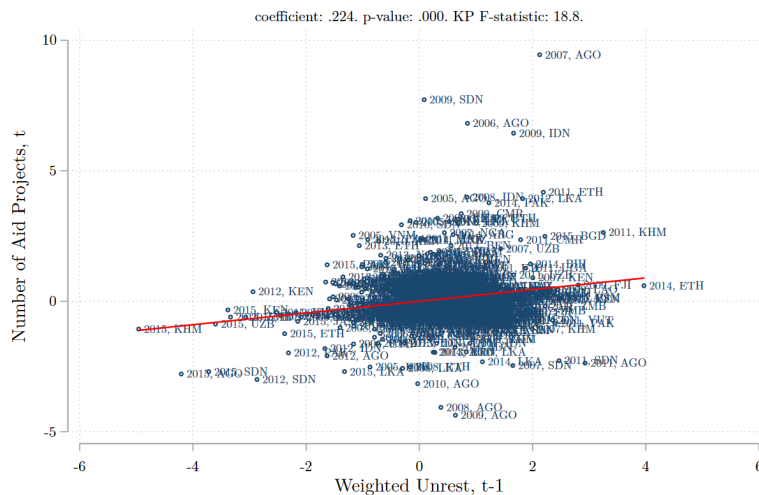
Note: The unit of observation is a country-year. The red line is the line of fit from a regression of the number of Chinese foreign aid projects received by a country in year t on weighted unrest in China in year $t-1$, residualized on country and region-year fixed effects as well as recipient population. Weighted unrest is calculated as the sum (over all Chinese prefectures) of residualized labor unrest in a Chinese prefecture multiplied with the fraction of years in 2005 to 2015 during which the country received any aid projects implemented by Chinese central state-owned firms in that prefecture. The blue dots show the residuals, labeled by year and recipient country code. Standard errors are clustered at the country level. Source: author's own illustration based on data described in Subsection 4.2.

of China's total yearly aid on average.[39] These results imply that the Chinese government's political need to moderate domestic unrest drives a significant part of China's global aid allocation.

Table A.12 in the Online Appendix shows the first stage for other measures of aid. The relationship between the instrument and aid is large and statistically significant at the 1% or 5% level for all measures of aid, although the F-statistic is smaller for measures of aid other than the total number of projects. I use the total number of projects as the baseline measure of aid for the results I describe below. Table A.13 in the Online Appendix shows the first stage by the sector of the aid project. The IV strongly predicts aid projects in the transport and energy sectors, but not in communications, services, health, and other sectors.

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[39]There are 80 countries in the sample that ever receive aid. $1 \cdot 0.224 \cdot 81 = 17.9$. Each project in the sample is worth 289 million USD on average.

4.4. Results: Economic Effects of Chinese Aid on Recipient Countries

The first stage is consistent with Chinese domestic goals driving a significant share of its foreign aid allocation to other countries. However, using plausibly exogenous variation, I find that Chinese infrastructure aid has sizeable economic benefits for both recipient governments and households. This subsection describes these results in detail. Robustness checks are presented in Subsection 4.5.

Table 4 shows the main results. Panel A shows the 2SLS estimates of the causal effect of an additional Chinese aid project on the outcome variable indicated in the column header three years after commitment, where aid is instrumented by lagged weighted labor unrest (coefficient $\hat{\beta}$ in Equation (3)). The average time it takes for Chinese infrastructure aid projects to be completed is 2 to 3 years (for the subsample of the projects in my data for which this information is available). Online Appendix Table A.15 shows the 2SLS estimates for various leads and lags for all outcomes.

Columns (1) and (8) of Panel A in Table 4 show the 2SLS estimates of the effect of Chinese aid on GDP per capita in levels and growth, conditional on country and region-year fixed effects and baseline controls. One additional Chinese aid project on average increases recipient country GDP per capita in levels by around 128 USD (2.6% of the sample mean) and GDP growth by 0.74 percentage points three years after commitment. The coefficients are statistically significant at the 1% and 5% levels respectively. Figure 6 illustrates the 2SLS estimates of the effect of an additional aid project on GDP per capita at other leads and lags.

These estimates are large, but similar in magnitude to recent estimates of the effect of Chinese infrastructure aid by Dreher et al. (2021) and De Soyres et al. (2020) and case studies such as, e.g., Ochieng (2016). Recall that the first stage is driven by large-scale infrastructure projects in the transport and energy sectors. These projects tend to be sizeable relative to recipient countries' economies and potentially have large economic returns given the infrastructure gap in many developing countries (G20, 2021). Many countries in the sample that comply with the instrument, such as Sudan, have low levels of existing infrastructure and thus large potential returns on investment. Consistent with large-scale infrastructure construction driving the results, I find sizeable and statistically significant effects on capital formation and government consumption as well, as Table 4 Columns (2) and (3) show. Table 4

Columns (5) and (6) show positive effects on recipient country trade.

Table 4: Effects of Chinese Foreign Aid on Recipient Countries (Main Outcomes)

Dependent Variable at t+3:	GDP per capita	Capital Formation per capita	Govt. Con-sumption per capita	HH Con-sumption per capita	Imports per capita	Exports per capita	Unemploy-ment Rate (%)	GDP Growth per capita (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Panel A: IV Estimates				
Instrumented Number of Aid Projects,t	128.235	127.736	32.718	53.484	135.267	72.450	-0.341	0.743
	(47.531)	(88.699)	(9.654)	(26.659)	(49.712)	(34.707)	(0.203)	(0.379)
				Panel B: Reduced Form Estimates				
Weighted Unrest,t-1	29.307	24.097	7.710	12.472	31.470	16.861	-0.079	0.170
	(10.463)	(15.351)	(2.892)	(5.364)	(14.500)	(9.471)	(0.041)	(0.086)
				Panel C: OLS Estimates				
Number of Aid Projects,t	5.976	30.733	0.521	-4.630	16.960	7.397	-0.004	0.032
	(9.123)	(19.688)	(1.867)	(4.108)	(7.256)	(10.653)	(0.032)	(0.069)
Country and Region-Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,385	1,058	1,049	1,045	1,087	1,087	1,313	1,389
Kleibergen-Paap F-Statistic	20.43	17.75	16.50	16.45	16.98	16.45	20.15	20.92
Dependent Variable Mean	4,953	1,101	804	2,980	2,086	1,891	7.795	2.048
Dependent Variable SD	4,410	985	786	2,354	2,192	2,316	5.618	2.965
Number of Aid Projects Mean	0.349	0.353	0.388	0.387	0.382	0.382	0.371	0.350
Number of Aid Projects SD	1.025	0.957	1.108	1.110	1.095	1.095	1.051	1.024

Note: The unit of observation is a country-year. All regressions control for country and region-year fixed effects, as well as population and lagged outcome. Panel A shows the coefficient estimates from 2SLS regressions of the outcome variable indicated in the column heading in year $t + 3$ on the number of Chinese foreign aid projects, implemented by central state-owned firms, received by a country in year t, where the number of aid projects is instrumented by weighted unrest in China in year $t - 1$. Panel B shows the coefficient estimates from reduced form regressions of the outcome variable indicated in the column heading in year $t + 3$ on weighted unrest in China in year $t - 1$. Panel C shows the coefficient estimates from OLS regressions of the outcome variable indicated in the column heading in year $t + 3$ on the number of Chinese foreign aid projects, implemented by central state-owned firms, received by a country in year t. The instrument, weighted unrest, is calculated as the sum (over all Chinese prefectures) of residualized labor unrest in a Chinese prefecture multiplied with the fraction of years in 2005 to 2015 during which the country received any aid projects implemented by Chinese central state-owned firms in that prefecture. Weighted unrest is standardized to have a mean of 0 and a standard deviation of 1. The outcome variables are winsorized at the 5th and 95th percentiles. Standard errors are clustered at the country level and reported in parentheses. See Subsection 4.2 for sources and details on the data.

Panel B shows reduced form estimates, which equal the 2SLS estimates multiplied by the first stage. Panel C shows OLS estimates, which I do not interpret as causal. The OLS estimates of the effect of aid on GDP are considerably smaller than the 2SLS estimates. This difference could be explained by China allocating more aid to countries on a lower growth path (e.g., because such countries have a higher demand for aid), consistent with the evidence presented in Online Appendix D.2, or because aid projects allocated in response to domestic unrest are larger and have a higher

Figure 6: The Effect of an Additional Chinese Foreign Aid Project on Recipient Country GDP per capita (2SLS Estimates)

Outcome Variable: GDP per capita
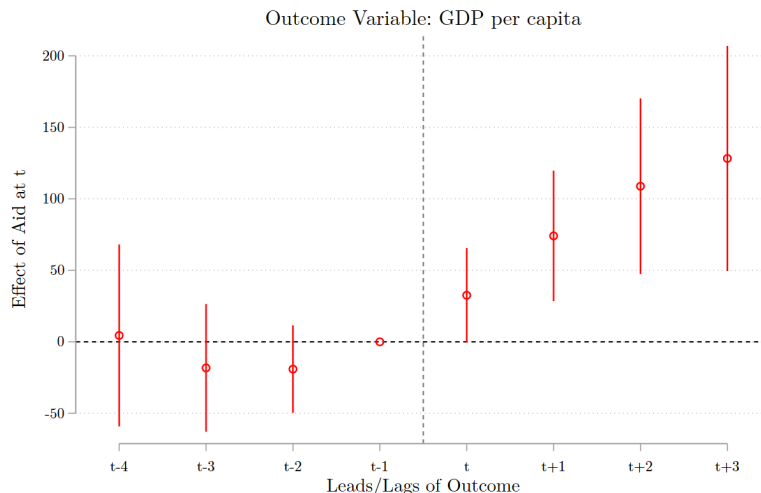
Note: The unit of observation is a country-year. Each coefficient shows the coefficient estimate of a separate 2SLS regression of recipient country GDP per capita at the lead or lag indicated on the x-axis on the number of Chinese foreign aid projects, implemented by central state-owned firms, received by a country in year t, where the number of aid projects is instrumented by weighted unrest in China in year $t-1$. All regressions control for country and region-year fixed effects, as well as population and lagged outcome. The vertical bars indicate 90% confidence intervals. The instrument, weighted unrest, is calculated as the sum (over all Chinese prefectures) of residualized labor unrest in a Chinese prefecture multiplied with the fraction of years in 2005 to 2015 during which the country received any aid projects implemented by Chinese central state-owned firms in that prefecture. The outcome variable is winsorized at the 5th and 95th percentiles. Standard errors are clustered at the country level. Source: author's own illustration based on data described in Subsection 4.2.

impact on recipient country income than other projects, or because the returns to infrastructure are larger in the countries that comply with the instrument.

The increases in GDP and government consumption do not necessarily translate into an improvement for the economic well-being of the recipient country population. Part of the increases may reflect the direct value of the infrastructure projects. One may also be concerned that the economic benefits of the projects are captured by political elites (e.g., Werker et al., 2009; Dreher et al., 2019) or hurt the local population via negative spillovers on local labor markets (e.g., Zhao, 2014), especially since the aid is driven by the interests of the Chinese government and firms. However, such evidence for Chinese aid is largely anecdotal. To investigate this possibility, I examine variables related to household income. I find large, positive and statistically significant effects on household consumption. As Table 4 Column (4) shows, an

additional aid project increases household consumption by 53 dollars per capita on average (1.8% of the sample mean) three years after commitment.

One potential channel is employment. As Table 4 Column (7) shows, an additional aid project decreases the recipient country's unemployment rate by 0.34 percentage points (4.4% of the sample mean). This finding is consistent with a recent study that shows positive short- and medium-term effects of Chinese infrastructure projects on local employment in Africa (Guo and Jiang, 2021). As the study argues, Chinese infrastructure increases employment both directly for low-skill workers in the short run (e.g., during project construction), as well as indirectly for skilled labor in adjacent industries in the medium and long run (after project construction).

Other potential channels include positive spillovers on local firms, e.g., through skill transfers (Tang, 2019), through positive externalities on up- and down-stream sectors (Crescenzi and Limodio, 2021), or by providing local firms with the transport infrastructure necessary to export goods to foreign markets. Consistent with the latter, I find positive effects of Chinese infrastructure aid on recipient country exports, primarily of manufactured goods and natural resources (results available on request). Contrary to claims in the press that Chinese aid is driven by China's hunger for natural resources, however, only a small fraction of these increases can be attributed to natural resources being shipped to China (results available on request). My results are also highly consistent with a recent study by Marchesi et al. (2021), which shows that Chinese aid, in contrast to World Bank development aid, increases firm sales in recipient countries by releasing their infrastructure constraints. Future research should examine these potential channels in more detail at a subnational level.

In sum, my results imply that the Chinese government's political goal to address domestic unrest does not undermine the benefits of its aid to recipient populations. This finding is remarkable since the positive economic effects are also present in countries with poor institutions, such as Angola, Ethiopia, or Sudan, despite Chinese aid coming without policy conditions attached. One potential explanation is that the fact that Chinese aid is aimed at creating jobs for Chinese workers leads to an alignment of the incentives of the donor and recipient countries. Chinese contractors also benefit from improved infrastructure and economic growth of countries they operate in in the form of new business opportunities, which gives them the incentive to

deliver economically productive projects. In addition, aid in the form of non-fungible goods and labor is less prone to elite capture than cash. Future research should examine these directions in more detail.

4.5. Robustness and Falsification Tests

First stage falsification tests. Table A.14 in the Online Appendix presents the results of falsification tests for the first stage. Column (2) replicates the baseline first stage for comparison. In Columns (1), (3) and (4), I replicate the first stage for different leads and lags of the instrument. Consistent with the results in Section 3, weighted unrest in China only predicts the number of aid projects received by a country in the next calendar year. In columns (5) to (7), I regress Chinese imports, Chinese FDI, and OECD-DAC aid received by a country on the instrument. Reassuringly, lagged weighted unrest does not strongly predict any of these variables in the next year. These results provide support for the validity of the instrument.

 Other leads and lags. The main 2SLS specification estimates the effect of Chinese foreign aid on outcomes three years later. Table A.15 in the Online Appendix shows the results for other leads and lags of aid. As expected, the effect of aid projects on GDP per capita and other outcomes continuously increases over time as the projects get completed and start operating. Reassuringly, future aid has no effect.

 Robustness to controls. The exclusion restriction is violated if local unrest in Chinese prefectures is spuriously correlated with other variables that differentially affect recipient outcomes. As explained in Subsection 4.1, the main confounders are trade and FDI. To address such concerns, Table A.16 in the Online Appendix controls for lagged weighted exports in Chinese prefectures, as well as total Chinese exports and FDI to the recipient country per capita. The results are robust.

 Instrument using lagged connections. Online Appendix Table A.17 replicates Table 4 but using only aid up to $t-1$ to construct the vector ω, a country's connections to central state-owned firms in Chinese prefectures. The estimates are qualitatively similar to the baseline specification, albeit less powered.[40]

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[40]Formally, $\omega_{i,p,t} = \sum_{s=2005}^{t-1} \frac{\mathbb{1}[aid_{i,p,s}>0]}{t-2005}$). In this specification, the uninteracted term $\sum_p \omega_{i,p,t}$ is not absorbed by the country fixed effects, so I control for it separately.

Different types of aid. Table A.18 in the Online Appendix shows the effect of Chinese aid instrumented by weighted labor unrest on GDP for different measures of aid (financial value instead of the number of contracts and ODA-like / OOF-like official finance only). I find large effects on GDP for all measures, although the estimates are less precisely estimated due to a weaker first stage compared to the baseline. Seemingly unrelated regressions (SUR) reveal that the effects of ODA-like and OOF-like finance on GDP are not statistically distinguishable from each other, i.e., the type of financing does not appear to influence aid efficacy.

Randomization test and inference. In Online Appendix D.3, I address concerns related to statistical inference highlighted in the recent shift-share literature (Adão et al., 2019; Borusyak and Hull, 2020) and conduct a placebo exercise by randomly permuting shocks to local unrest across Chinese prefectures. The results go against the possibility that the estimated effects of aid are driven by noise.

5. Conclusion

Foreign aid is one of the most important policy tools with which rich countries can transfer resources to poor countries. Yet, what drives aid and whether it benefits recipients remain highly debated questions. Existing studies hypothesize that donors' economic and political goals drive foreign aid, and partly blame them for aid's failure to foster broad-based economic development. However, we know surprisingly little about the processes through which donors' objectives influence aid allocation and efficacy. China's recent rise as one of the largest donors has fueled new debates and much speculation, but little rigorous evidence about its aid's goals and impact.

This paper makes progress on these questions by using novel micro data to dive deep into the opaque process underlying China's aid allocation. I show that a significant fraction of China's foreign aid is driven by the Chinese government's political need to secure domestic stability. However, this goal does not undermine the benefits of Chinese aid to recipients. These findings imply that foreign aid allocated according to the domestic needs of the donor country need not have deleterious effects on recipient households as previously suggested by several influential studies.

These findings have important policy implications. Selfless aid is politically unrealistic. However, as this paper shows, the fact that aid also benefits donors themselves

is by itself not necessarily a cause for concern. Policymakers and donor governments should therefore perhaps focus on other aspects to improve aid efficacy, including the types of projects, the mode of delivery, and the role of contractors. The aspects of Chinese infrastructure aid which make it particularly effective in certain contexts deserve further scrutiny in future research.

Nevertheless, the positive economic benefits of Chinese aid found in this paper must be weighed against potential unaccounted costs, such as increases in corruption, conflict, environmental degradation, and sovereign debt. In addition, the average effects may mask substantial heterogeneity in who benefits and loses from Chinese aid. It also remains to be seen how sustainable the gains from Chinese aid projects are in the long term. The fact that projects are allocated in response to domestic short-term shocks in China suggests that aid flows are unpredictable from the recipients' perspective and may not be allocated optimally to foster long-term growth.

Understanding the causes and consequences of China's overseas finance will remain a first-order issue for decades to come. In 2013, China announced the *Belt and Road Initiative* (BRI), a massive bid to enhance regional connectivity around the developing world. China plans to spend over a trillion dollars on infrastructure projects abroad in the coming years. Some observers have estimated that the BRI will boost world GDP by *7.1 trillion USD per annum* by 2040 (Cebr, 2019). However, the BRI's goals and impacts are currently poorly understood. While much of the BRI falls under the category of commercial investment rather than foreign aid, many BRI projects are similar in nature to the projects studied in this paper. The findings of this paper may thus help inform policy responses to China's global expansion in a broad sense.

The results of this study suggest several important avenues for future research. The first is to examine other donor goals and their implications for aid allocation. The second is to examine the long-term and distributional consequences of Chinese aid as well as other outcomes that are potentially affected by it. Finally, more work needs to be done to better understand the channels through which Chinese aid shapes economic development in practice. As this paper demonstrates, the use of fine-grained micro data to dive deep into the political processes behind foreign aid allocation is a promising approach to make progress on this pressing research agenda.

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ONLINE APPENDIX (not for publication)

Appendix A. Additional Background

A.1. Definitions and Types of Foreign Aid

This paper uses the term "foreign aid" to include any bilateral official finance between government entities of the donor country and government entities of low- and middle-income countries (in line with other scholars of Chinese aid such as Copper, 2016). This definition does not include Foreign Direct Investment or international trade (as long as they are not directly financed using official finance).

Official finance can be categorized into two broad categories: ODA (Official Development Finance), and OOF (Other Official Flows [Finance]). The former is concessional, aimed at fostering development in recipient countries, and meets the conventional notion of Western foreign aid (including grants and concessional loans). The latter may also be aimed at fostering development, but is less concessional (e.g., loans at commercial rates and export credit) (Bräutigam, 2011). It is more often employed by the Chinese government, with the stated intent of fostering development in recipient countries, than by Western donors (AidData, 2021). However, note that a significant fraction of US foreign aid is also in the form of loans (Bräutigam, 2011).

In contrast to most Western donor countries, China is not in the OECD-Development Assistance Committee (OECD-DAC) and does not explicitly distinguish between ODA and OOF (Bräutigam, 2011). Even though OOF-like financing instruments such as export credits do not meet the strict definition of OECD-DAC aid, they constitute a subsidy from the recipient country's perspective since China guarantees the debt and recipients would typically not be able to access credit at the same conditions on international financial markets.

In this paper, I follow the procedures outlined in *AidData's Tracking Underreported Financial Flows (TUFF) Methodology, Version 1.3* (Strange et al., 2017), which adopts the OECD-DAC definitions, to classify Chinese official finance into ODA-like and OOF-like. Table A.1 gives an overview of the different types of official finance extended by Chinese government entities. Note that only the Ministry of Commerce is authorized to provide grants and interest-free loans, and only the China

Export-Import Bank is authorized to extend concessional loans (i.e., loans at an interest rate below a competitive international rate such as the LIBOR).

Table A.1: Types of Chinese Official Finance

Type	Creditor	Approximate Terms
Grants, in-kind donations, technical assistance	Ministry of Commerce	no repayment
Interest-free loans	Ministry of Commerce	0% interest rate, 20 years maturity, 5 years grace period
Concessional loans and export buyer's credits	China Export-Import Bank	2-3% interest rate, 20 years maturity, 5 years grace period
Commercial loans, export credits, other financing	China Development Bank, China Export-Import Bank, commercial banks and other govt. entities	LIBOR plus spread, 13 years maturity, 0-5 years grace period

Note: Drawing on information from Bräutigam (2011), Zhang and Smith (2017) and Horn et al. (2019).

A.2. Chinese Government Entities and the Aid Allocation Process

Figure A.1 gives a stylized overview of the most important Chinese government entities involved in China's foreign aid for the purposes of this paper.[41] The two most important providers of Chinese official finance are the central government's two main policy banks: the China Export-Import Bank (CEXIM), and the China Development Bank (CDB). They are owned and supervised by the State Council, the chief administrative authority of the People's Republic of China (synonymous with the central government). The Chinese central government guarantees the policy banks' debt, allowing them to raise capital on national and international financial markets at favorable conditions (Zhang and Smith, 2017).

CEXIM is the only creditor authorized to issue concessional loans (see Table A.1). It cooperates with the Department of Foreign Aid of the Ministry of Commerce, which is the main entity responsible for ODA-like foreign aid projects (i.e., grants, interest-free loans, and concessional loans). CEXIM raises the principal of the loans on capital markets and the Ministry of Commerce subsidizes the interest rate. In

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[41]Note that the political process described here corresponds to the period studied in this paper (2005 to 2015). The aid allocation process has changed in some aspects with the creation of China's International Development Cooperation Agency (CIDCA) in 2018.

addition, like CDB, CEXIM also extends commercial loans, for example for large-scale infrastructure projects and for the purposes of export promotion.

The large state-owned commercial banks have also started extending overseas finance to developing countries, even though on a much smaller scale than CEXIM and CDB. They include the Bank of China, the Agricultural Bank of China, the Industrial and Commercial Bank of China, and the China Construction Bank. Finally, some other central state-owned enterprises, owned and administered by the central State-owned Assets Supervision and Administration Commission (SASAC), themselves extend financing to developing country governments. However, their share of overall Chinese official finance is small and I exclude them from my analysis.

Figure A.1: Organization Chart of Relevant Government Entities (Simplified)
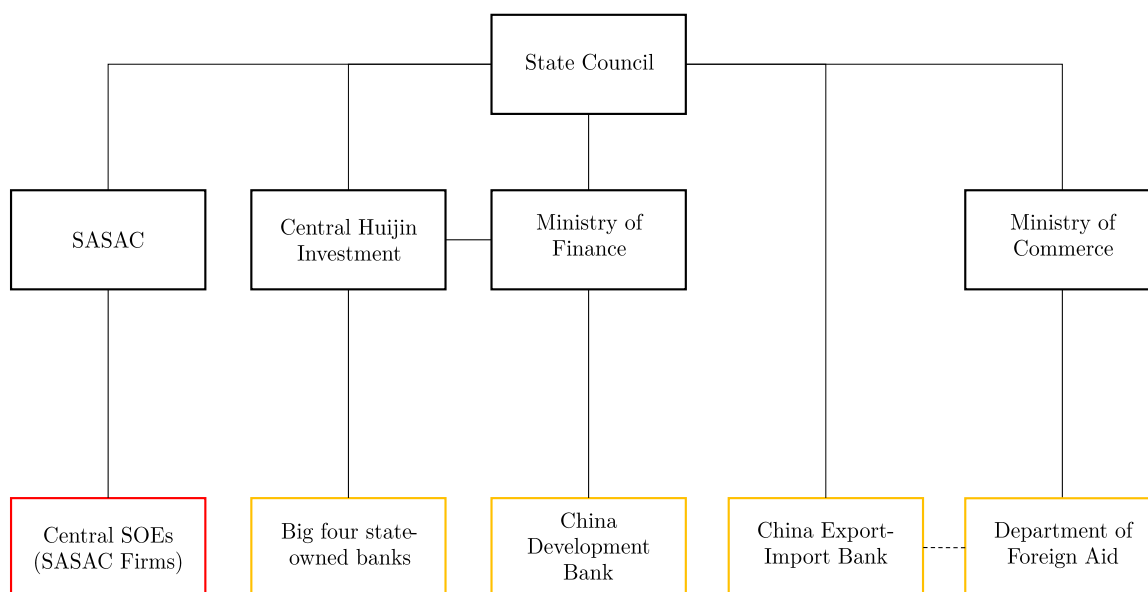
Note: This figure shows a simplified overview of China's official finance agencies and other central government entities. The China Export-Import Bank and the China Development Bank are state-owned policy banks under the direct supervision of the State Council. The big four state-owned banks include the Bank of China, the Agricultural Bank of China, the Industrial and Commercial Bank of China, and the China Construction Bank. SASAC is short for State-owned Assets Supervision and Administration Commission of the State Council, the Chinese government entity responsible for the management of central SOEs. Black lines indicate ownership. Source: author's own illustration based on Zhang and Smith (2017), Horn et al. (2019) and Brautigam and Hwang (2020).

Figure A.2: The Chinese Foreign Aid Project Allocation Process (Simplified)
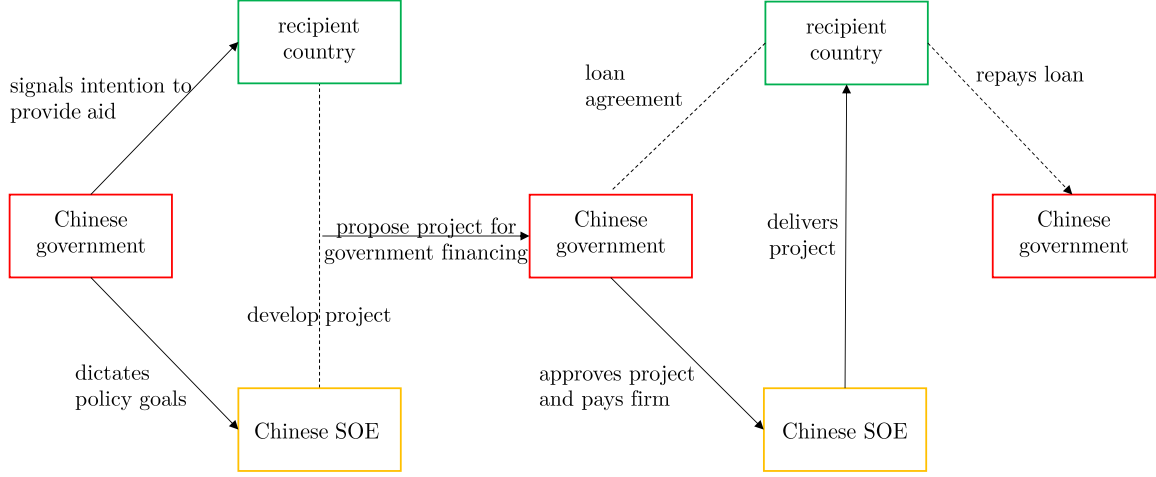
Appendix B. Details on the Micro Data

B.1. Project-Level Aid Data

The Chinese government does not publish comprehensive, disaggregated data on the foreign aid projects it finances. Several academic initiatives have attempted to fill this gap recently by collecting unofficial project-level data, drawing on sources such as news reports, government publications by Chinese embassies and recipient country ministries, and case studies undertaken by scholars and NGOs. These datasets typically specialize on projects in one geographic area, sector or time period.

I combine data from several such sources to construct a project-level dataset encompassing the universe of publicly known Chinese aid projects involving Chinese contractors in 2005 to 2015. I restrict the sample to 2005 to 2015 because of the availability of data on foreign aid projects and other important data used in the paper, such as administrative firm-level data and data on labor unrest events. Table A.2 lists

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the public databases I use to construct my project-level dataset. An excellent overview of these sources and their methodologies is given by Horn et al. (2019). In addition to these secondary sources, I also draw on a number of primary sources, including government and company websites, and news articles.

The starting point of my dataset is AidData's *Geocoded Global Chinese Official Finance Database, Version 1.1.1* (Dreher et al., 2021).[42] The project-level dataset systematically collects publicly available information on all known Chinese official finance, based on the scraping of thousands of primary sources, in 2000 to 2014. The method underlying this data collection effort is described in detail in Strange et al. (2017). I follow the conventions of Dreher et al. (2021) by excluding umbrella agreements, lines of credit, pure FDI, and unconfirmed projects from the sample. Importantly, for the purposes of this paper, the database also records information on the implementing contractors, albeit this information is only recorded at the conglomerate level for many projects. I identify all projects involving Chinese contractors from this database and collect further information on the contractors from the primary sources listed in the AidData database (see Subsection 3.2).

I use several other, more specialized databases to extend the temporal coverage, to find additional foreign aid projects involving Chinese contractors, and to verify the information provided by AidData. First, AidData's *China's Public Diplomacy in East Asia and Pacific Database 1.0* provides data on Chinese foreign aid projects in Asia and Oceania during 2000 to 2016 (Custer et al., 2018). It employs the same methodology as AidData's *Geocoded Global Chinese Official Finance Dataset, Version 1.1.1.* In addition to extending the temporal coverage, it helps fill in gaps with regard to the information on Chinese contractors. Second, the *China-Africa Loan Database* by the China-Africa Research Initiative (SAIS-CARI) (Brautigam et al., 2019) provides data on Chinese loans to 55 countries in Africa from 2000 to 2017.[43] There is considerable overlap with the AidData database. With the help of several Chinese-speaking research assistants, I check the data for potential duplicates

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[42] *AidData's Global Chinese Development Finance Dataset, Version 2.0*, which extends the scope and coverage of Version 1.1.1, was released at the end of 2021. The empirical analysis of this paper had already been concluded by that date.

[43] I use a pre-publication version of the data shared with me by the authors dated July 22, 2020.

and conduct further research using primary sources in the cases where the data are contradictory. When I find discrepancies between the original sources and AidData or other databases, I conduct additional research and adjust the data accordingly. Third, I use data on projects in the energy sector since 2000 from the *Global Energy Finance Database* at Boston University (Gallagher, 2021). Fourth, I draw on the *China-Latin America Finance Database* by the Inter-American Dialogue (Gallagher and Myers, 2021), which provides data on official loans by the Chinese government to governments in Latin America in 2005 to 2018.[44] Finally, I complement my dataset with data from the *Competitiveness Reports* by the US Export-Import Bank since 2013, which focuses on projects financed by the China Export-Import Bank (Export-Import Bank of the United States, 2021). Again, I cross-check and verify the recorded data using the primary sources and make adjustments when necessary. I harmonize the variables across datasets, following the methodology by Strange et al. (2017). Further details are available on request.

Table A.2: Data Sources on Chinese Foreign Aid, 2005–2015

Institution	Dataset / Source	Geography	Time	Type
AidData at William & Mary	Geocoded Global Chinese Official Finance Dataset Version 1.1.1	Global	2000–2014	Loans, grants
AidData at William & Mary	China's Public Diplomacy in East Asia and Pacific Version 1.0	East Asia & Oceania	2000–2016	Loans, grants
Johns Hopkins CARI	China-Africa Loan Database	Africa	2000–2017	Loans
Boston University GDPC	Global Energy Finance Database	Global	2000–2018	Loans
Inter-American Dialogue	China-Latin America Finance Database	Latin America	2005–2018	Loans
US Export-Import Bank	Competitiveness Reports	Global	2013–2018	Loans
Mueller (2021)	Merged database	Global	2005–2015	Loans, grants

Note: This table summarizes the data sources underlying the project-level dataset on Chinese foreign aid used in this paper. References: AidData's Geocoded Global Chinese Official Finance Dataset Version 1.1.1 (AidData Research and Evaluation Unit, 2017; Bluhm et al., 2018; Dreher et al., 2021), AidData's China's Public Diplomacy in East Asia and Pacific Version 1.0 (Custer et al., 2018), SAIS CARI China-Africa Loan Database (Brautigam et al., 2019), Boston University's Global Energy Finance Database (Gallagher, 2021), Inter-American Dialogue's China-Latin America Finance Database (Gallagher and Myers, 2021), and Export-Import Bank of the United State's Competitiveness Reports 2014–2016 (Export-Import Bank of the United States, 2021).

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[44]For both datasets, I use a version of the data shared with me by the authors on July 13, 2019.

The resulting dataset includes 1,164 projects in 102 countries committed between 2005 and 2015. The average project is worth 244 million USD (in constant 2014 USD). Figure A.3 shows that Chinese contractors supply Chinese aid projects all over the world. The largest share of aid projects goes to Africa (44%) and Asia (38%), with the remaining projects going to Latin America (10%), the Middle East (4%), and Eastern Europe (4%). Angola, Ethiopia, and Pakistan are the largest recipients.

Figure A.3: Map of Chinese Foreign Aid to Developing Countries, 2005–2015
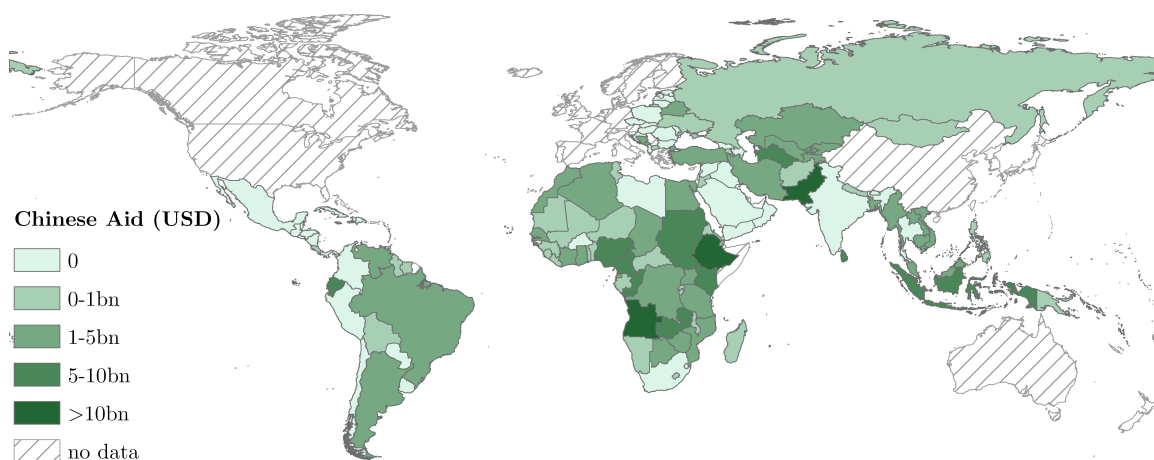
Note: This figure shows the total financial value of Chinese foreign aid projects committed to non-high income, non-OECD countries and contracted by Chinese firms in the sample during 2005 to 2015. Financial amounts are in constant 2014 USD. Source: author's own illustration based on data described in Subsection 3.2.

The majority of projects are in the energy and transport sectors. Nearly all aid projects implemented by Chinese firms are in the form of hard infrastructure, including pipelines, power plants, transmission lines, railroads, highways, ports, government buildings, sports stadiums, telecommunication networks, schools, and hospitals. The Export-Import Bank of China funds the majority of aid projects (70% of financial value). 48% of all projects are classified as ODA-like (e.g., grants and concessional loans), 33% as OOF-like (e.g., loans at LIBOR rates), and 19% as vague (cannot be clearly classified using the available information). OOF-like projects are on average larger in terms of contract value (345 million USD) compared to ODA-like projects (134 million USD).

Table A.3: The Largest Chinese Foreign Aid Projects by Financial Value

Country	Year	Amount	Short Description	Contractor
ODA-like				
Kenya	2014	1600	Mombasa-Nairobi Standard Gauge Railway	China Road and Bridge
Cameroon	2009	1052	Water Distribution Project	China National Machinery Import and Export
Tanzania	2012	973	Mnazi Bay to Dar Es Salaam Gas Pipeline	China Petroleum Technology and Development
Nigeria	2006	920	Modernization of Nigeria Railway	China Civil Engineering Construction
Ivory Coast	2013	890	Abidjan Port	China Harbor Engineering
OOF-like				
Turkmenistan	2009	4551	South Yolotan Osman Field Development	Chuanqing Exploratory Drilling Engineering
Venezuela	2011	4440	Housing Projects	China CITIC Construction
Myanmar	2009	3257	Sino-Myanmar Pipeline	China Petroleum Engineering and Construction
Angola	2010	3144	Kilamba Kiaxi New Town	China CITIC Construction
Belarus	2013	3050	China-Belarus Industrial Park	China CAMC Engineering

Note: This table shows the 5 largest ODA-like and OOF-like Chinese aid projects implemented by Chinese firms in the sample in 2005–2015. Financial amounts are in million constant 2014 USD. See Subsection 3.2 for details on the data.

B.2. Constructing and Linking the Firm Panel

To construct the firm-year panel, I first identify the set of potential Chinese aid contractors from archival administrative records by the Chinese Ministry of Commerce.[45] The records list the names and addresses of all firms and subsidiaries licensed to supply overseas construction projects, in both Chinese and English. I first manually remove duplicates. I next determine during which years each firm was active (i.e., eligible to supply aid projects) by manually linking firms to the official transaction-level *Chinese Customs Trade Statistics* (CCTS) by the Chinese Customs Office, using firm names and addresses (see Online Appendix B.3 for details). For each firm, I keep all years

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[45]URL: http://xzsx.mofcom.gov.cn:80/xzsp/advSearch.jhtml, accessed using the *Internet Archive Wayback Machine* in June 2020 (URL: https://archive.org/web/).

between the first and last year of positive firm exports.[46] I exclude from the sample firms that cannot be linked to the customs data, which are typically faulty entries or old firm names. The result is an unbalanced firm-year panel of the universe of potential domestic Chinese aid contractors.

I link the panel to various other administrative datasets from China. First, I use the Chinese credit registry[47] to manually find each firm's ultimate controller to determine whether the firm is owned by the central government. I classify a firm as a central state-owned firm if it is majority-owned by the central SASAC, either directly or through its parent companies.[48] Second, to get firm characteristics such as the number of employees, assets, and revenue, I link my sample to firm-level data from the *National Tax Survey Database* (NTSD) using names and addresses. Since the tax survey data is a stratified random sample of all Chinese firms, I can only link a subset of my sample. I follow standard procedure in the literature and remove observations with less than ten employees, negative fixed assets, revenue, exports, or wages, as well as outliers. See Liu and Mao (2019) for a detailed description of the data and Online Appendix B.4 for further details. Third, I use the annual reports of firms listed on Chinese stock exchanges which are accessible from firm websites or through platforms such as WIND Financial Terminal.

Finally, I link the project-level data described in Subsection 3.2 to the firm-year panel. I expand on the existing literature by systematically collecting and harmonizing information about the Chinese contractors involved in Chinese aid projects. While some of the existing unofficial databases (see Online Appendix B.1) provide names of contractors implementing a project, the names are not harmonized and typically only identify the firm group (conglomerate) rather than the subsidiary that

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[46]Firms are not included in the panel in years before they entered or after they exited (e.g., due to mergers) because they were not able to supply aid projects in those years. In addition, there may be duplicates in the MOFCOM list, for example, due to name changes of firms over time. The customs data provide a unique 10-digit firm identifier that is constant over time.

[47]Accessed in July 2020 through https://aiqicha.baidu.com/.

[48]Companies supervised by the SASAC have continuously been reduced through mergers and privatization since its foundation in 2003. However, virtually all SASAC-administered firms in my sample remained under the SASAC throughout 2003 to 2015.

actually implements the project. This has so far prevented researchers from linking data on projects to firms and conducting systematic micro-analysis of the role of firms in Chinese foreign aid. To address this challenge, whenever possible I identify the actual implementing contractor (i.e., the subsidiary) from the original sources underlying the unofficial databases on Chinese aid.

I manually find the best match between the MOFCOM list of potential contractors and the firm names mentioned in the projects data, and, when necessary, use firm export patterns in the customs data and additional sources, such as company websites, to improve the matching. Two Chinese-speaking research assistants independently verified the linking. 95% of all projects can be unambiguously linked to a firm in the MOFCOM list. I exclude from my sample the 5% of projects that cannot be linked.

The resulting main variables are the number and financial value of aid contracts committed to a firm in a year. The number of contracts is the preferred outcome variable as it is less likely to suffer from potential measurement error than the financial value of contracts. In addition, information on the financial value is missing for 10% of all projects in the sample. I calculate the financial value of a contract assigned to a firm in a year as the financial value of the entire project committed in that year, divided by the number of Chinese firms involved in the project. I do not observe the confidential details of the actual contracts underlying the projects, such as the exact payment made to each firm or subcontracting.

B.3. Customs Data

The Chinese Customs Trade Statistics (CCTS) by the Chinese Customs Office provides information on the universe of Chinese export and import transactions during 2003 to 2015. For each transaction, the database includes a unique firm identifier, firm name, firm address (including the firm's home prefecture), import/export value and quantity, the product code at the HS 8-digit level, and the country of origin/destination. I aggregate the data to the firm-year level. I use this data to determine during which years a firm was active and thus eligible to contract aid projects (see Online Appendix B.2). In addition, I use the data to help identify the aid contractor in cases where the sources on aid projects are ambiguous, for example because they only provide the name of the conglomerate implementing the aid project,

using patterns in the data such as the destination countries of exports. Finally, I use the data to construct controls and other variables at the country-prefecture level for the analysis in Section 4.

B.4. Tax Survey Data

I complement my firm panel with data from the *National Tax Survey Database* (NTSD) from 2007 to 2015. The firm-year level dataset contains information on firms' financials, tax payments, employment, and other characteristics. The survey is conducted annually by the State Administration of Taxation of China and the Ministry of Finance of China (SAT-MOF). It surveys all large firms as well as a stratified random sample of smaller firms. The database is used by the Chinese government to evaluate the impacts of tax policies such as the "Golden Tax Project". As Liu and Mao (2019) argue, various checks and balances make misreporting by firms unlikely and the data are verified by local tax agencies. The NTSD is unique in that it is the only firm-level database that contains information on Chinese firms' financial values and other variables such as employment, covers all sectors, and covers firms of all sizes.[49]

Despite the checks to ensure the accuracy of the tax data, several data cleaning steps are necessary to reduce noise in the data stemming from potential misentries. First, in line with Liu and Mao (2019), I set as missing entries with fewer than 10 employees and non-positive values in the main variables used in the working sample (fixed assets, operating income, exports, and wages). Second, I trim the top and bottom percentiles of all entries in the data. Third, for each variable, I set as missing entries that exceed one standard deviation from a firm's sample mean, affecting approximately the top and bottom decile of entries within each variable. This last step is necessary since some entries are implausibly different for some years compared to a firm's entries in other years, likely due to data entry errors. Finally, I drop firms that change their tax identification number over time to ensure comparability of the data over time. After imposing these restrictions, I link the NTSD data with my

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[49]The other firm-level dataset used by researchers is the Annual Survey of Industrial Firms conducted by the National Bureau of Statistics of China. In contrast to the NTSD, ASIF contains only large firms in the manufacturing sector and may suffer from reporting bias (Brandt et al., 2014).

main sample using firm names and home prefectures. The resulting sample contains data from the tax survey for 298 central state-owned and 425 other firms.

Table A.4: Descriptive Statistics: Firm-Level Variables

	N	Mean	SD	Min	Max
Panel A. Central State-Owned Firms					
Number of Yearly Chinese Aid Contracts	3,555	0.15	0.68	0.00	13.00
Financial Value of Yearly Chinese Aid Contracts (mn)	3,526	41.05	261.43	0.00	4,550.95
Number of Employees*	1,444	1,438.49	2,530.92	17.00	20,468.00
Fixed Assets (mn)*	1,325	103.90	234.79	0.08	2,206.61
Operating Income (mn)*	1,399	525.88	719.02	0.44	4,344.08
Exports (mn)*	1,063	112.12	199.38	0.01	1,339.98
Panel B. Other Firms					
Number of Yearly Chinese Aid Contracts	5,045	0.05	0.35	0.00	9.00
Financial Value of Yearly Chinese Aid Contracts (mn)	5,001	3.63	40.75	0.00	1,226.56
Number of Employees*	1,678	954.19	1,704.43	18.00	21,463.00
Fixed Assets (mn)*	1,600	52.74	148.19	0.04	1,781.67
Operating Income (mn)*	1,714	287.78	510.79	0.44	4,176.86
Exports (mn)*	1,329	65.76	139.06	0.01	981.71

Note: This table shows descriptive statistics for firm-level variables for firms in the sample, 2005 to 2015. Financial amounts are in constant 2014 USD. *Variables are from the firms in the 2007–2015 tax survey, which includes a subsample of firms. See Online Appendix B.4 for details on the tax survey. See Subsection 3.2 for other data details.

B.5. Unrest Data

I combine data on labor unrest in China from two sources, the *China Strikes Crowdmap* for 2004 to 2011 (https://chinastrikes.crowdmap.com/feeds?page=1762&l=ps&l=fa) and the *China Labour Bulletin* for 2012 to 2014 (https://clb.org.hk/). See Campante et al. (2019) and Qin et al. (2019) for a description of the latter data source. The unrest events are geo-coded by the original authors. However, the location data in the CLB data provided to me sometimes lacked information or appeared to be coded incorrectly (e.g., the Chinese provinces Shanxi and Shaanxi were confused). I completed the missing location data using regular expressions and manual checks, which I shared and verified with the CLB team. In addition, I drop labor unrest events involving foreign companies. I classify labor unrest events into two broad sectors, industry and services, based on variables and keywords contained in the event descriptions in the original datasets.

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Table A.5: Descriptive Statistics: Prefecture-Level Variables

Variable	N	Mean	SD	Min	Max
Number of Labor Unrest Events per Million	1,340	0.19	0.42	0.00	4.32
Population (million)	1,340	6.00	4.52	0.25	31.30
Urban Labor Force Employment Rate, Total	1,247	0.97	0.02	0.59	1.00
Urban Labor Force Employment Rate, SOEs	1,247	0.54	0.12	0.14	0.94
Urban Labor Force Employment Rate, Private	1,247	0.43	0.12	0.05	0.86
Local Government Expenditures (billion USD)	1,268	62.15	94.38	1.18	1,007.84
Local Government Income (billion USD)	1,268	45.57	82.18	0.96	898.44
GDP per capita (USD)	1,267	7,748	4,537	1,028	31,050
Average Wage of Employees in Urban Areas (USD)	1,257	6,749	2,222	2,336	18,406
Exports per capita (USD)	1,340	1,934	3,583	3	26,993
Imports per capita (USD)	1,340	1,355	2,687	0	18,311

Note: This table shows descriptive statistics for prefecture-level variables for prefectures in the sample, 2004 to 2014. Labor unrest data for 2004 to 2011 is from the *China Strikes Crowdmap* and for 2012 to 2014 from the *China Labour Bulletin* (CLB). Data on exports and imports are from the *Chinese Customs Trade Statistics* (CCTS). Population data is from the 2010 census. All other variables are based on data from the *China City Statistical Yearbooks*. Financial values are in constant 2014 USD.

Table A.6: Prefecture-level Correlates with Unrest

	Dependent Variable: Unrest			
	Independent Variable (standardized):			
	GDP per capita	Exports per capita	Employment Rate	Average Wage
	(1)	(2)	(3)	(4)
Variable in Column Header, t	-0.088	0.022	-0.001	-0.046
	(0.086)	(0.093)	(0.009)	(0.130)
Prefecture and Year FEs	Yes	Yes	Yes	Yes
Observations	650	650	650	650
Adjusted R^2	0.521	0.520	0.520	0.520
Unrest Mean	0.217	0.217	0.217	0.217
Unrest SD	0.421	0.421	0.421	0.421

Note: The unit of observation is a prefecture-year. All prefecture-year level regressions include prefecture and year fixed effects and control for prefecture population. Unrest: number of unrest events per 1mn inhabitants. GDP and exports are in logs. All independent variables are standardized to have a mean of 0 and a standard deviation of 1 to facilitate interpretation. Standard errors are clustered at the prefecture-level and reported in parentheses. See Subsection 3.2 for a description and sources of the data.

Appendix C. Additional Results: Firm Level

C.1. Robustness to Additional Controls

A threat to the causal interpretation of the observed effect of unrest on contract allocation is omitted variables that vary across both firms and time and are correlated with both local unrest and aid allocation. I address such concerns here by controlling for a host of potential correlates at the prefecture-year and firm-year levels.

Local economic factors such as local GDP, exports, employment, and wages may be negatively correlated with the occurrence of labor unrest, which is often caused by mass layoffs and wage arrears (Campante et al., 2019). As Table A.6 shows, this may indeed be the case, although the correlations are relatively small and statistically insignificant. At the same time, these factors may affect the marginal costs of aid contractors. For example, if wages in a prefecture decrease due to an economic shock, this may lead to collective action by the affected workers. Moreover, lower wages may in equilibrium also decrease the labor costs of firms, causing firms to bid on aid contracts more aggressively. If this channel were important, this could be a non-political explanation for the observed relationship between local unrest and aid contract allocation to central state-owned firms. To address this concern, Table A.7, which is otherwise identical to Table 1, controls for local economic factors (including lagged GDP per capita, exports per capita, average wages and employment at the prefecture-year level). The results are robust to the inclusion of these controls.

There may also be potential omitted variables at the firm-year level correlated with local unrest and contract allocation. Table A.8 addresses such concerns by replicating the baseline analysis for the subset of firms linked to the tax survey data, controlling for firms' lagged number of employees, fixed assets, operating income, exports, and materials inventory. Due to many missings in the data, I control for these variables in separate regressions. The coefficient of interest is qualitatively robust to the inclusion of these controls, although the estimates are under-powered due to the smaller sample size compared to the main sample.

Table A.7: Effect of Local Unrest in China on Chinese Foreign Aid Contract Allocation to Central State-Owned Firms, Controlling for Prefecture-Level Variables

Dependent Variable:	Number of Aid Contracts			Financial Value of Aid Contracts		
	All	ODA	OOF	All	ODA	OOF
	(1)	(2)	(3)	(4)	(5)	(6)
Unrest,t-1	0.090	0.033	0.042	0.614	0.332	0.504
	(0.034)	(0.013)	(0.017)	(0.269)	(0.158)	(0.211)
Firm and Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,443	3,346	3,346	3,414	3,327	3,344
Adjusted R^2	0.573	0.331	0.175	0.406	0.224	0.152
Dependent Variable Mean	0.152	0.044	0.038	1.379	0.505	0.518
Dependent Variable SD	0.688	0.273	0.276	4.978	3.003	3.139
Unrest Mean	0.267	0.265	0.265	0.267	0.265	0.265
Unrest SD	0.318	0.319	0.319	0.319	0.320	0.319

Note: The unit of observation is a firm-year. The sample includes central state-owned firms only. Number of aid contracts: number of Chinese foreign aid contracts allocated to a firm in year t. Financial value of aid contracts: log(1 + total financial value of Chinese foreign aid contracts allocated to a firm in year t). ODA: Official Development Assistance. OOF: Other Official Finance. Unrest: number of unrest events per million inhabitants in firm's prefecture in year $t-1$. The prefecture-year level control variables include log GDP per capita, log exports per capita, urban employment rate, average wage, and log population (all in year $t-1$). Standard errors are clustered at the prefecture level and reported in parentheses.

Table A.8: Effect of Local Unrest in China on Chinese Foreign Aid Contract Allocation to Central State-Owned Firms, Controlling for Firm-Level Variables

Controlling for:	Dependent Variable: Number of Aid Contracts				
	Number of Employees, t-1	Fixed Assets, t-1	Operating Income, t-1	Exports, t-1	Inventory, t-1
	(1)	(2)	(3)	(4)	(5)
Unrest,t-1	0.114	0.100	0.090	0.059	0.068
	(0.054)	(0.053)	(0.046)	(0.034)	(0.079)
Firm and Year FEs	Yes	Yes	Yes	Yes	Yes
Observations	1,291	1,204	1,245	933	653
Adjusted R^2	0.586	0.578	0.558	0.547	0.579
Dependent Variable Mean	0.229	0.181	0.196	0.189	0.191
Dependent Variable SD	0.824	0.723	0.749	0.703	0.742
Unrest Mean	0.299	0.293	0.295	0.318	0.209
Unrest SD	0.343	0.335	0.326	0.360	0.234

Note: The unit of observation is a firm-year. The sample includes central state-owned firms in the 2007–2015 tax surveys by the State Tax Administration. See Online Appendix B.4 for sample restrictions. Number of aid contracts: number of Chinese foreign aid contracts allocated to a firm in year t. Unrest: number of unrest events per million inhabitants in firm's prefecture in year $t-1$. Controls are in logs. Standard errors are clustered at the prefecture level and reported in parentheses.

C.2. Additional Tables: Firm Level

Table A.9: Effect of Local Unrest in China on Chinese Foreign Aid Contract Allocation to Central State-Owned Firms by Sector of Unrest

Dependent Variable:	Number of Aid Contracts			Financial Value of Aid Contracts		
	All	ODA	OOF	All	ODA	OOF
	(1)	(2)	(3)	(4)	(5)	(6)
Unrest in Industrial Sectors,t-1	0.114	0.042	0.049	0.869	0.455	0.588
	(0.042)	(0.016)	(0.017)	(0.327)	(0.190)	(0.216)
Unrest in Service Sectors,t-1	0.016	-0.003	0.028	0.013	-0.018	0.518
	(0.079)	(0.039)	(0.037)	(0.779)	(0.592)	(0.558)
Firm and Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,801	3,699	3,699	3,768	3,680	3,694
Adjusted R^2	0.569	0.327	0.175	0.391	0.216	0.161
Dependent Variable Mean	0.145	0.042	0.037	1.330	0.485	0.506
Dependent Variable SD	0.667	0.263	0.270	4.894	2.945	3.104

Note: The unit of observation is a firm-year. The sample includes central state-owned firms only. Number of aid contracts: number of Chinese foreign aid contracts allocated to a firm in year t. Financial value of aid contracts: log(1 + total financial value of Chinese foreign aid contracts allocated to a firm in year t). ODA: Official Development Assistance. OOF: Other Official Finance. Unrest: number of unrest events per million inhabitants in firm's prefecture in year $t-1$. Industrial sectors include construction, mining, and manufacturing. Service sectors include education, public transport, and other services. Standard errors are clustered at the prefecture level and reported in parentheses.

Table A.10: Effect of Local Unrest in China on Chinese Foreign Aid Contract Allocation to Other Firms (Placebo Check)

Dependent Variable:	Number of Aid Contracts			Financial Value of Aid Contracts		
	All	ODA	OOF	All	ODA	OOF
	(1)	(2)	(3)	(4)	(5)	(6)
Unrest,t-1	-0.006	-0.002	-0.002	0.037	0.033	-0.042
	(0.012)	(0.005)	(0.003)	(0.060)	(0.050)	(0.045)
Firm and Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,045	5,010	5,010	5,001	4,978	5,008
Adjusted R^2	0.460	0.401	0.168	0.387	0.379	0.127
Dependent Variable Mean	0.055	0.033	0.008	0.476	0.293	0.124
Dependent Variable SD	0.354	0.261	0.106	2.867	2.225	1.505
Unrest Mean	0.255	0.254	0.254	0.255	0.255	0.254
Unrest SD	0.422	0.420	0.420	0.423	0.421	0.421

Note: The unit of observation is a firm-year. The sample includes firms other than central state-owned firms only. Number of aid contracts: number of Chinese foreign aid contracts allocated to a firm in year t. Financial value of aid contracts: log(1 + total financial value of Chinese foreign aid contracts allocated to a firm in year t). ODA: Official Development Assistance. OOF: Other Official Finance. Unrest: number of unrest events per million inhabitants in firm's prefecture in year $t-1$. Standard errors are clustered at the prefecture level and reported in parentheses.

Appendix D. Country-Level Data and Additional Results

D.1. Additional Tables: Recipient Country Level

Table A.11: Descriptive Statistics: Recipient Country-Level Variables

Variable	N	Mean	SD	Min	Max
Number of Aid Projects	1,551	0.33	1.01	0.00	14.00
Number of ODA Projects	1,551	0.13	0.45	0.00	5.00
Number of OOF Projects	1,551	0.12	0.60	0.00	11.00
Financial Value of Aid Projects (log)	1,551	3.20	7.18	0.00	22.62
Financial Value of ODA Projects (log)	1,551	1.61	5.21	0.00	21.19
Financial Value of OOF Projects (log)	1,551	1.35	4.98	0.00	22.56
Lagged Weighted Labor Unrest	1,551	0.00	1.00	-4.39	6.66
Imports from China per capita (USD)	1,551	3.48	7.69	0.00	64.43
FDI from China (bn USD)	1,551	0.22	0.99	0.00	17.47
GDP growth (%)	1,537	4.21	4.63	-36.39	34.50
GDP per capita (USD)	1,528	4,729	4,501	286	21,256
Government Consumption per capita	1,175	807	928	19	6,402
Household Consumption per capita	1,170	2,787	2,282	212	10,336
Capital Formation per capita (USD)	1,179	1,142	1,400	22	13,621
Imports per capita (USD)	1,547	3,715	17,038	39	287,972
Exports per capita (USD)	1,547	1,898	3,268	5	23,861
Unemployment Rate	1,452	8.13	6.42	0.25	37.25

Note: This table shows recipient country-level descriptive statistics for the sample used in Table 4. Financial amounts are in constant 2014 USD. The data sources are described in Subsection 4.2.

Table A.12: First Stage

Dependent Variable:	Number of Aid Projects			Financial Value of Aid Projects		
	All	ODA	OOF	All	ODA	OOF
	(1)	(2)	(3)	(4)	(5)	(6)
Weighted Unrest,t-1	0.224	0.059	0.110	0.754	0.479	0.853
(Standardized)	(0.052)	(0.025)	(0.030)	(0.277)	(0.279)	(0.241)
Country and Region-Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,551	1,551	1,551	1,551	1,551	1,551
Adjusted R^2	0.354	0.230	0.273	0.316	0.205	0.239
Kleibergen-Paap F-Statistic	18.80	5.67	13.25	7.40	2.95	12.55
Dependent Variable Mean	0.334	0.132	0.123	3.204	1.609	1.353
Dependent Variable SD	1.010	0.445	0.603	7.177	5.213	4.984

Note: The unit of observation is a country-year. All regressions control for country and region-year fixed effects as well as population. Number of aid projects: total number of Chinese foreign aid projects, implemented by central state-owned firms, committed to a country in year t. Financial value of aid projects: log(1 + total financial value of Chinese foreign aid projects, implemented by central state-owned firms, committed to a country in year t). ODA: Official Development Assistance. OOF: Other Official Finance. Weighted unrest is calculated as the sum (over all Chinese prefectures) of residualized labor unrest in a Chinese prefecture multiplied with the fraction of years in 2005 to 2015 during which the country received any aid projects implemented by Chinese central state-owned firms in that prefecture. Weighted unrest is standardized to have a mean of 0 and a standard deviation of 1. Standard errors are clustered at the country level and reported in parentheses.

Table A.13: First Stage, by Sector of Project

	All	Transport	Energy	Industry, Mining	Communications	Services, Other
	Dependent Variable: Number of Aid Projects					
	(1)	(2)	(3)	(4)	(5)	(6)
Weighted Unrest,t-1	0.224	0.090	0.093	0.013	0.005	0.024
(Standardized)	(0.052)	(0.036)	(0.032)	(0.009)	(0.005)	(0.015)
Country and Region-Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,551	1,551	1,551	1,551	1,551	1,551
Adjusted R^2	0.354	0.179	0.238	0.138	0.017	0.238
Kleibergen-Paap F-Statistic	18.80	6.10	8.61	1.92	0.78	2.68
Dependent Variable Mean	0.334	0.114	0.111	0.032	0.011	0.066
Dependent Variable SD	1.010	0.510	0.514	0.197	0.136	0.321

Note: The unit of observation is a country-year. All regressions control for country and region-year fixed effects, as well as population. Number of aid projects: total number of Chinese foreign aid projects, implemented by central state-owned firms, committed to a country in year t. Weighted unrest is calculated as the sum (over all Chinese prefectures) of residualized labor unrest in a Chinese prefecture multiplied with the fraction of years in 2005 to 2015 during which the country received any aid projects implemented by Chinese central state-owned firms in that prefecture. Weighted unrest is standardized to have a mean of 0 and a standard deviation of 1. Standard errors are clustered at the country level.

Table A.14: First Stage Placebo Checks

Dependent Variable:	Number of Aid Projects				Imports from China	FDI from China	OECD-DAC Aid
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Weighted Unrest,t-2	-0.068						
(Standardized)	(0.056)						
Weighted Unrest,t-1		0.224			-0.015	-0.019	-0.006
(Standardized)		(0.052)			(0.133)	(0.026)	(0.015)
Weighted Unrest,t			0.064				
(Standardized)			(0.054)				
Weighted Unrest,t+1				0.016			
(Standardized)				(0.046)			
Country and Region-Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,410	1,551	1,410	1,269	1,551	1,551	1,416
Adjusted R^2	0.317	0.354	0.349	0.350	0.829	0.400	0.488
Kleibergen-Paap F-Statistic	1.46	18.80	1.40	0.12	0.01	0.53	0.15
Dependent Variable Mean	0.348	0.334	0.350	0.352	3.477	0.250	0.512
Dependent Variable SD	1.019	1.010	1.046	1.067	7.692	0.800	1.125

Note: The unit of observation is a country-year. All regressions control for country and region-year fixed effects, as well as population. Number of aid projects: number of Chinese foreign aid projects, implemented by central state-owned firms, committed to a country in year t. Imports from China: imports from China received by a country in billion USD (WDI data). FDI from China: FDI from Chinese firms received by a country in billion USD (AEI Global Investment Tracker data). OECD-DAC aid: foreign aid received by OECD Development Assistance Committee donors received by a country in billion USD (WDI data). All financial amounts are in constant 2014 USD. Weighted unrest is calculated as the sum (over all Chinese prefectures) of residualized labor unrest in a Chinese prefecture multiplied with the fraction of years in 2005 to 2015 during which the country received any aid projects implemented by Chinese central state-owned firms in that prefecture. Weighted unrest is standardized to have a mean of 0 and a standard deviation of 1. Standard errors are clustered at the country level.

Table A.15: Effects of Chinese Foreign Aid on Recipients, Other Leads and Lags

Dependent Variable at t+3:	GDP per capita	Capital Formation per capita	Govt. Con-sumption per capita	HH Con-sumption per capita	Imports per capita	Exports per capita	Unemploy-ment Rate (%)	GDP Growth per capita (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Instrumented Number of Aid Projects,t	128.235	127.736	32.718	53.484	135.267	72.450	-0.341	0.743
	(47.531)	(88.699)	(9.654)	(26.659)	(49.712)	(34.707)	(0.203)	(0.379)
Instrumented Number of Aid Projects,t+1	108.803	113.520	29.109	26.677	148.465	95.941	-0.336	0.311
	(37.100)	(80.820)	(9.564)	(25.816)	(45.194)	(32.080)	(0.182)	(0.353)
Instrumented Number of Aid Projects,t+2	74.102	60.606	19.135	21.001	100.845	74.773	-0.198	0.608
	(27.547)	(66.807)	(6.265)	(22.185)	(37.195)	(30.426)	(0.167)	(0.449)
Instrumented Number of Aid Projects,t+3	32.580	37.239	6.927	-1.122	65.181	40.174	-0.128	1.100
	(19.950)	(29.854)	(6.286)	(15.655)	(23.965)	(17.387)	(0.107)	(0.449)
Instrumented Number of Aid Projects,t+4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Instrumented Number of Aid Projects,t+5	-19.075	2.163	-7.882	-26.418	34.689	8.753	-0.120	-0.027
	(18.464)	(26.167)	(6.277)	(22.570)	(20.798)	(16.788)	(0.157)	(0.397)
Instrumented Number of Aid Projects,t+6	-18.237	-27.586	4.204	12.995	6.083	-30.342	0.058	0.532
	(26.978)	(37.393)	(4.672)	(18.510)	(30.556)	(19.586)	(0.212)	(0.537)
Instrumented Number of Aid Projects,t+7	4.466	-16.680	-2.261	19.488	24.039	-9.067	-0.083	-0.089
	(38.422)	(42.301)	(6.205)	(18.721)	(36.342)	(30.828)	(0.216)	(0.512)
Country and Region-Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,385	1,058	1,049	1,045	1,087	1,087	1,313	1,389
Kleibergen-Paap F-Statistic	20.43	17.75	16.50	16.45	16.98	16.45	20.15	20.92
Dependent Variable Mean	4,953	1,101	804	2,980	2,086	1,891	7.795	2.048
Dependent Variable SD	4,410	985	786	2,354	2,192	2,316	5.618	2.965

Note: The unit of observation is a country-year. All regressions control for country and region-year fixed effects, as well as population and lagged outcome. Each row shows the coefficient estimates from separate 2SLS regressions of the outcome variable indicated in the column heading in year $t + 3$ on the number of Chinese foreign aid projects by central state-owned firms, received by a country in the indicated year, where the number of aid projects is instrumented by weighted unrest in China one year prior to the indicated year. The instrument, weighted unrest, is calculated as the sum (over all Chinese prefectures) of residualized labor unrest in a Chinese prefecture multiplied with the fraction of years in 2005 to 2015 during which the country received any aid projects by Chinese central state-owned firms in that prefecture. Weighted unrest is standardized to have a mean of 0 and a standard deviation of 1. The outcome variables are winsorized at the 5th and 95th percentiles. Standard errors are clustered at the country level and reported in parentheses.

Table A.16: Effects of Chinese Foreign Aid on Recipients, Robustness to Controls

Dependent Variable at t+3:	GDP per capita	Capital Formation per capita	Govt. Con- sumption per capita	HH Con- sumption per capita	Imports per capita	Exports per capita	Unemploy- ment Rate (%)	GDP Growth per capita (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Instrumented Number of Aid Projects,t	127.649	132.044	32.845	54.483	137.744	72.525	-0.340	0.740
	(47.512)	(88.393)	(9.881)	(26.804)	(50.791)	(35.077)	(0.199)	(0.381)
Country and Region-Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,385	1,058	1,049	1,045	1,087	1,087	1,313	1,389
Kleibergen-Paap F-Statistic	21.99	17.63	16.67	16.63	17.76	17.22	21.46	22.39
Dependent Variable Mean	4,953	1,101	804	2,980	2,086	1,891	7.795	2.048
Dependent Variable SD	4,410	985	786	2,354	2,192	2,316	5.618	2.965
Number of Aid Projects Mean	0.349	0.353	0.388	0.387	0.382	0.382	0.371	0.350
Number of Aid Projects SD	1.025	0.957	1.108	1.110	1.095	1.095	1.051	1.024

Note: The unit of observation is a country-year. All regressions control for country and region-year fixed effects, population, lagged outcome, imports from China per capita in year t, FDI from China in year t, as well as weighted exports from Chinese prefectures in year $t-1$. Panel A shows the coefficient estimates from 2SLS regressions of the outcome variable indicated in the column heading in year $t+3$ on the number of Chinese foreign aid projects by central state-owned firms, received by a country in year t, where the number of aid projects is instrumented by weighted unrest in China in year $t-1$. The instrument, weighted unrest, is calculated as the sum (over all Chinese prefectures) of residualized labor unrest in a Chinese prefecture multiplied with the fraction of years in 2005 to 2015 during which the country received any aid projects by Chinese central state-owned firms in that prefecture. Weighted unrest is standardized to have a mean of 0 and a standard deviation of 1. The outcome variables are winsorized at the 5th and 95th percentiles. Standard errors are clustered at the country level and reported in parentheses.

Table A.17: Effects of Chinese Foreign Aid on Recipients, Historical Weights

Dependent Variable at t+3:	GDP per capita	Capital Formation per capita	Govt. Con- sumption per capita	HH Con- sumption per capita	Imports per capita	Exports per capita	Unemploy- ment Rate (%)	GDP Growth per capita (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Instrumented Number of Aid Projects,t	194.710	349.158	37.092	84.450	163.583	96.195	-0.487	1.234
	(81.601)	(357.471)	(15.105)	(53.984)	(64.427)	(50.193)	(0.386)	(0.545)
Country and Region-Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,385	1,058	1,049	1,045	1,087	1,087	1,313	1,389
Kleibergen-Paap F-Statistic	7.35	3.18	4.65	4.60	4.44	4.36	7.08	7.39
Dependent Variable Mean	4,953	1,101	804	2,980	2,086	1,891	7.795	2.048
Dependent Variable SD	4,410	985	786	2,354	2,192	2,316	5.618	2.965
Number of Aid Projects Mean	0.349	0.353	0.388	0.387	0.382	0.382	0.371	0.350
Number of Aid Projects SD	1.025	0.957	1.108	1.110	1.095	1.095	1.051	1.024

Note: The unit of observation is a country-year. All regressions control for country and region-year fixed effects, as well as population, lagged outcome and uninteracted time-varying weights. Panel A shows the coefficient estimates from 2SLS regressions of the outcome variable indicated in the column heading in year $t+3$ on the number of Chinese foreign aid projects by central state-owned firms, received by a country in year t, where the number of aid projects is instrumented by weighted unrest in China in year $t-1$. The instrument, weighted unrest, is calculated as the sum (over all Chinese prefectures) of residualized labor unrest in a Chinese prefecture multiplied with the fraction of years in 2005 until $t-1$ during which the country received any aid projects by Chinese central state-owned firms in that prefecture. Weighted unrest is standardized to have a mean of 0 and a standard deviation of 1. The outcome variables are winsorized at the 5th and 95th percentiles. Standard errors are clustered at the country level and reported in parentheses.

Table A.18: Effects of Chinese Foreign Aid on Recipient GDP, Measures of Aid

Measure of Aid:	Dependent Variable at t+3: GDP per capita					
	Number of Aid Projects			Financial Value of Aid Projects		
	All	ODA	OOF	All	ODA	OOF
	(1)	(2)	(3)	(4)	(5)	(6)
Instrumented Aid,t	128.235	468.198	269.541	38.315	58.877	33.486
	(47.531)	(282.702)	(97.658)	(19.827)	(42.433)	(16.243)
Country and Region-Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,385	1,385	1,385	1,385	1,385	1,385
Kleibergen-Paap F-Statistic	20.43	6.35	13.16	7.15	3.33	12.66
Dependent Variable Mean	4,953	4,953	4,953	4,953	4,953	4,953
Dependent Variable SD	4,410	4,410	4,410	4,410	4,410	4,410
Aid Mean	0.349	0.137	0.125	3.387	1.674	1.429
Aid SD	1.025	0.451	0.592	7.343	5.315	5.110

Note: The unit of observation is a country-year. All regressions control for country and region-year fixed effects, as well as population and lagged outcome. Panel A shows the coefficient estimates from 2SLS regressions of GDP per capita in year $t+3$ on the measure of Chinese aid indicated in the column heading by central state-owned firms, received by a country in year t, where aid is instrumented by weighted unrest in China in year $t-1$. Number of aid projects: total number of Chinese foreign aid projects by central state-owned firms, committed to a country in year t. Financial value of aid projects: $\log(1 +$ total financial value of Chinese foreign aid projects by central state-owned firms, committed to a country in year $t)$. ODA: Official Development Assistance. OOF: Other Official Finance. The instrument, weighted unrest, is calculated as the sum (over all Chinese prefectures) of residualized labor unrest in a Chinese prefecture multiplied with the fraction of years in 2005 to 2015 during which the country received any aid projects by Chinese central state-owned firms in that prefecture. Weighted unrest is standardized to have a mean of 0 and a standard deviation of 1. The outcome variables are winsorized at the 5th and 95th percentiles. Standard errors are clustered at the country level and reported in parentheses.

D.2. Correlates of Chinese Aid With Recipient Country Characteristics

In this section, I analyze the factors associated with the global allocation of Chinese aid. Table A.19 shows correlations between recipient country characteristics (data from Dreher et al., 2021) and the amount of Chinese aid received by countries (aid implemented by Chinese central state-owned firms in my sample during 2005 to 2015). Each column in Table A.19 shows the coefficient of an OLS regression of the measure of Chinese aid indicated in the column heading on the listed lagged country characteristics, controlling for year fixed effects.

Consistent with Dreher et al. (2021), I observe that conditional on other characteristics, countries are more likely to receive Chinese aid if their voting in the UN General Assembly is more aligned with China and less likely to receive Chinese aid if they have diplomatic relations with Taiwan. This result is consistent with Alesina and Dollar (2000) who show that Western donors reward recipient countries for political alliances. Countries with deeper trade relationships with China, and countries whose official language is English, receive more aid. This is consistent

with China using its aid to create commercial opportunities for the Chinese export economy. Poorer countries receive more concessional Chinese finance (ODA-like aid), perhaps due to a greater need for aid. Other country characteristics, including whether a country is more populous, more democratic or a petroleum exporter, have no large or statistically significant correlation with Chinese aid. The absence of a relationship with democracy and petroleum exports is especially interesting since it is inconsistent with conventional wisdom and claims in the press that China uses aid to prop up autocratic regimes or to secure access to natural resources.

Table A.19: Correlates of Chinese Aid With Recipient Country Characteristics

Dependent Variable:	Number of Aid Projects			Financial Value of Aid Projects		
	All	ODA	OOF	All	ODA	OOF
	(1)	(2)	(3)	(4)	(5)	(6)
UN General Assembly Voting Alignment	1.203	0.472	0.391	8.487	5.591	1.946
	(0.543)	(0.291)	(0.258)	(3.593)	(2.950)	(2.337)
Diplomatic Relations with Taiwan	-0.595	-0.336	-0.154	-5.302	-3.576	-1.665
	(0.152)	(0.098)	(0.057)	(0.887)	(0.757)	(0.445)
Trade with China (log)	0.149	0.032	0.070	0.511	0.122	0.346
	(0.090)	(0.033)	(0.056)	(0.367)	(0.268)	(0.263)
Petroleum Exporter	-0.235	-0.170	-0.036	-2.221	-1.515	-0.852
	(0.235)	(0.126)	(0.118)	(1.152)	(0.896)	(0.903)
Government Debt (% of GDP)	-0.001	-0.002	0.000	-0.013	-0.017	0.001
	(0.002)	(0.001)	(0.001)	(0.008)	(0.006)	(0.006)
Democracy (Polity Score)	-0.013	0.001	-0.009	-0.120	0.016	-0.103
	(0.012)	(0.006)	(0.006)	(0.069)	(0.048)	(0.052)
GDP per capita (log)	-0.271	-0.163	-0.054	-1.541	-1.426	-0.277
	(0.105)	(0.044)	(0.060)	(0.515)	(0.355)	(0.355)
Population (log)	0.004	0.003	0.000	0.385	0.107	0.380
	(0.101)	(0.036)	(0.062)	(0.456)	(0.325)	(0.333)
English is Official Language	0.245	0.254	0.012	2.097	2.781	0.677
	(0.188)	(0.104)	(0.079)	(0.971)	(0.731)	(0.664)
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,177	1,177	1,177	1,177	1,177	1,177
Adjusted R^2	0.106	0.140	0.032	0.169	0.159	0.064
Dependent Variable Mean	0.647	0.307	0.201	5.129	3.098	2.009
Dependent Variable SD	1.506	0.763	0.818	8.464	6.863	5.953

Note: The unit of observation is a country-year. Each column shows an OLS regression of the measure of Chinese aid indicated in the column heading on the country-level variables listed on the left hand side, controlling for year fixed effects. The time-varying independent variables are lagged by one period. Number of aid projects: total number of Chinese foreign aid projects received by a country in year t. Financial value of aid projects: $\log(1$ + total financial value of Chinese foreign aid projects received by a country in year t). ODA: Official Development Assistance. OOF: Other Official Finance. The country-level data other than Chinese aid are from Dreher et al. (2021). Standard errors are clustered at the country level and reported in parentheses.

D.3. Randomization Tests: Recipient Country Level

Adão et al. (2019) note that in the case of shift-share instruments, standard inference such as clustering at the country level, may result in incorrect standard errors. Standard errors may be underestimated if a set of prefectures bears similar importance across multiple recipient countries, generating correlation at the prefecture level across multiple countries. To assess this concern, I run a placebo analysis, replacing the IV with interactions of countries' connections with random prefecture-year level shocks drawn from a normal distribution (as in Adão et al., 2019). I iterate this procedure 1,000 times and document the fraction of times the coefficient of regressions of GDP per capita at $t + 3$ on the placebo IVs shows statistically significant effects. Reassuringly, the coefficient is significant around 1.7% of the time at the 1% level. The results from this placebo test, illustrated in Figure A.4, suggest that the impact of Chinese aid on GDP is unlikely to be driven by noise. As an additional check, I conduct a randomization inference test following Borusyak and Hull (2020). To generate counterfactual shocks, I draw random permutations from the distribution of unrest shocks by city in the data. The two-sided p-value from this conservative test is 0.078. Hence, the main result remains statistically significant at the 10% level.

Figure A.4: Randomization Test
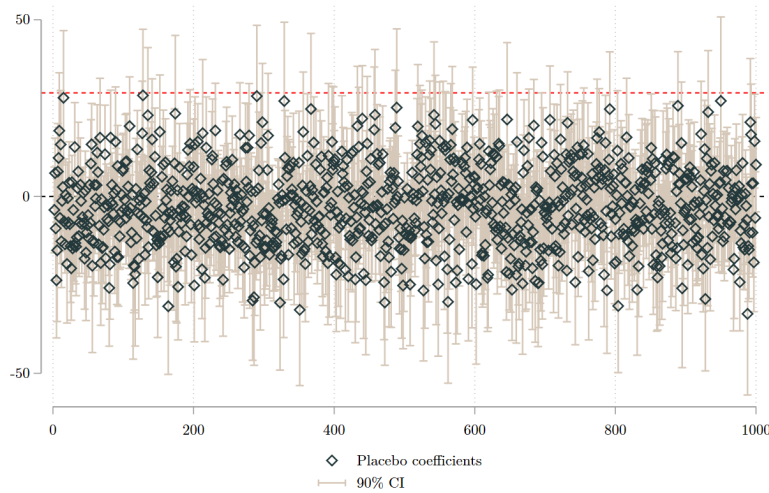
Note: The squares show the coefficients from 1,000 regressions of GDP per capita three years after commitment on weighted unrest, where the unrest shocks are drawn from a normal distribution with mean 0 and variance 5 while exposure weights are held constant (as in Adão et al., 2019). The tan lines show 90% confidence intervals. The dotted red line shows the coefficient from the actual reduced form regression of GDP per capita three years after commitment on weighted unrest in the sample. Source: author's own illustration based on data described in Subsection 4.2.

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