CHINESE AID AND TRUST IN LOCAL INSTITUTIONS IN GHANA

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Abstract

Trust in political institutions is critical for both the functioning of democracies and the stability of political systems. This research uses a spatial difference-in-difference methodology to examine the impact of Chinese aid on political trust in local institutions and actors in Ghana. Drawing on the institutional approach to trust, this thesis argues that Chinese aid is associated with a decline in trust toward local institutions, primarily due to its association with a perceived decline in local government performance and an increase in perceived corruption. The analysis is based on geographically matched Chinese aid projects and Afrobarometer surveys conducted between 2008 and 2014 in Ghana. By comparing the levels of trust in local institutions among respondents living near ongoing Chinese development projects with those living near projects that will be implemented in the future, this study identifies an association between Chinese aid projects and a decline in trust toward local institutions. Although the paper primarily focuses on formal institutions, findings also indicate that Chinese aid is associated with a decline in trust in traditional authorities. The exploration of potential causal mechanisms for the decline in trust shows that proximity to Chinese aid projects is associated with a significant increase in perceived local government corruption, with suggestive yet inconclusive evidence associating aid with a decline in perceived local government performance.

Résumé

La confiance dans les institutions politiques est essentielle au bon fonctionnement des démocraties et à la stabilité des systèmes politiques. Cette étude emploie une méthodologie *spatial difference-in-difference* pour examiner l'impact de l'aide chinoise sur les niveaux de confiance politique à l'égard des institutions et des acteurs politiques locaux au Ghana. Fondée sur une approche institutionnelle de la confiance, cette étude soutien que l'aide chinoise est associée à une diminution de la confiance dans les institutions locales, en raison de l'association de cette aide avec une détérioration de la perception de la performance des gouvernements locaux et une hausse de la perception de leur corruption. L'analyse se base sur des projets d'aide chinois géolocalisés couplés à des enquêtes de sondage Afrobarometer réalisées entre 2008 et 2014 au Ghana. En comparant la confiance dans les institutions locales des répondant.e.s vivant à proximité de projets de développement chinois en cours avec celles et ceux vivant près de projets futurs, cette étude a identifié une association entre la présence d'aide chinoise et une baisse de la confiance dans les institutions locales. Bien que l'étude se concentre principalement sur les institutions formelles, les résultats indiquent également que l'aide chinoise est associée à une baisse de confiance dans les autorités traditionnelles. L'exploration des potentiels mécanismes de causalité de cette diminution de la confiance politique révèle que la proximité avec des projets d'aide chinois est liée à une augmentation significative de la perception du niveau de corruption au sein du gouvernement local. De plus, les résultats suggèrent, sans permettre de tirer une conclusion définitive, que la présence d'aide est associée à une détérioration de la perception de la performance du gouvernement local.

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1. Introduction

An ongoing debate around the impact of aid has historically been focused on Western donors. A significant body of literature has explored the impact of aid on the quality of political institutions in recipient countries and the relationship between citizens and these institutions (e.g.: Baldwin and Winters 2020; Bräutigam and Knack 2004; Dietrich, Mahmud, and Winters 2018; Jones and Tarp 2016). Recently, this debate has expanded to include emerging donors, such as China, to analyze the impact of aid provided by these donors on the quality of recipient countries' institutions often in comparative terms to Western aid (e.g.: Blair and Roessler 2021; Isaksson and Kotsadam 2018; Wako 2018).

This research investigates whether Chinese aid affects the levels of political trust in local institutions and actors in Ghana. Political trust is a key concept to describe the relationship between citizens and political institutions, and it is considered vital for the functioning of democracy (Godefroidt, Langer, and Meuleman 2017; Hetherington 1998; Mishler and Rose 2001, Wong, Wan, and Hsiao 2011). Trust is not only essential for democracy but also for "good governance, legitimacy, the sustainability of the political system, and regime stability" (Wong, Wan, and Hsiao 2011, 263). Existing literature has primarily examined the impact of aid on trust by focusing on Western or international organizations as donors and by investigating political trust toward national institutions and their legitimacy (e.g., Bräutigam and Knack 2004; Dietrich, Mahmud, and Winters 2018; Dolan 2020; Watkins 2022).

The choice of Ghana as the country of focus was based on the availability of extensive survey data and the relative completeness of the information on Chinese aid initiatives in the country. Additionally, Ghana allows the study to explore the relationship between aid and trust in a free and democratic country that has "held competitive multiparty elections and undergone

peaceful transfers of power in the last four decades" (Freedom House 2022). By focusing on one country, the study follows an emerging acknowledgment that political trust and its determinants are context-specific (Wong, Wan, and Hsiao 2011; Godefroidt, Langer, and Meuleman 2017). As such, it allows the analysis of the results to take national characteristics into account such as the role of the local traditional chiefery system in Ghanian local governance and the country's ethnic diversity.

Drawing on the institutional approach, trust is determined by citizens' rational evaluations (Wong et al. 2011). According to this theory, citizens' trust in institutions is determined by their evaluation of government performance (Godefroidt, Langer, and Meuleman 2017; Hetherington 1998; Mishler and Rose 2001; Wong, Wan, and Hsiao 2011), as well as their perception of corruption levels (Catterberg and Moreno 2006, 46; Wong et al. 2011, 266). Building upon existing literature, aid signals to local populations that their government is failing to fulfill its duties, thereby negatively impacting their perception of government performance (Batley and Mcloughlin 2010; Watkins 2022). Moreover, aid can contribute to increased corruption due to the availability of funds that increases the benefits of engaging in rent-seeking opportunities (Isaksson and Kotsadam 2018), particularly when transparency mechanisms associated with Chinese aid are lacking (Brautigam 2010). A combination of worsening perception of government performance and increased level of perceived corruption lead, following an institutional approach, to lower levels of political trust.

Following this theoretical mechanism, the study investigates the primary hypothesis that ongoing Chinese development projects in Ghana are linked to a decrease in political trust in local institutions. While the focus of the research is on formal local authorities, this hypothesis is also tested regarding ongoing Chinese aid projects' impact on trust in traditional authorities.

Additionally, a second hypothesis is explored, examining whether Chinese aid is associated with a deterioration of perceived local government performance and an increase in the level of their perceived corruption. These factors are potential causal mechanisms through which aid impacts trust in local institutions.

To test these hypotheses, this research employs a spatial difference-in-difference method, comparing the levels of political trust toward local institutions among survey respondents residing near active Chinese aid projects with those located near future projects. The assumption is that these locations are similar in terms of institutional characteristics and, more generally, potential confounders associated with project location selection. This study relies on a combination of Afrobarometer survey rounds 4 (2008), 5 (2012), and 6 (2014) in Ghana, matched with geocoded data on Chinese aid projects. This approach builds upon recent work by Watkins (2021), who investigated the impact of Western aid on trust in Nigeria, Senegal, and Uganda using a spatial difference-in-difference method, as well as Atitianti (2022), who employed instrumental variable estimation to study the effect of Chinese aid on trust in national political institutions across 31 Sub-Saharan African countries. By doing so, this research contributes to an emerging literature using recently available geocoded data of Chinese aid projects. Furthermore, it adds to the existing literature by specifically focusing on the impact of non-Western aid on political trust particularly in relation to local institutions, which have been less explored (Atitianti 2022; Dreher et al. 2021; Watkins 2022).

The empirical findings consistently indicate that residing near active aid locations is associated with a decrease in levels of trust toward local institutions in Ghana. These results are robust to the use of different radiuses to define proximity to projects and various definitions of the term aid. The evidence suggests that this relationship is not driven by differences among ethnic

groups nor by the presence of World Bank projects. Although the data is somewhat limited for traditional leaders, the presence of Chinese aid appears to be similarly linked with a decrease in trust toward traditional authorities. The analysis also demonstrates that Chinese aid is associated with increased levels of perceived local government corruption and worsened perception of local government. Thus, it confirms the impact of Chinese aid on perceived corruption and performance of local government offering suggestive evidence that they potentially are the two mechanisms through which aid impacts trust in local government.

2. Literature Review

2.1. Political Trust

Approaches to political trust have been categorized into two main theories: institutional and cultural. Cultural theories suggest that trust "originates outside the political sphere in long-standing and deeply seeded beliefs about people that are rooted in cultural norms and communicated through early-life socialization". Microcurltural theories suggest that individual socialization experiences along with demographic factors such as age, education, and occupation also shape political trust (Mishler and Rose 2001, 32; Wong et al. 2011, 266).

On the other hand, the institutional approach claims that political trust "is endogenous; that is, that it arises from rational responses by individuals to the performance of political institutions" (Wong et al. 2011, 264). This approach is supported by studies that highlight government performance and other institutional determinants of trust (Godefroidt, Langer, and Meuleman 2017; Hetherington 1998; Mishler and Rose 2001; Wong, Wan, and Hsiao 2011). In other words, institutions that perform well tend to enjoy greater trust and it is often difficult to disentangle performance and trust in institutions (Catterberg and Moreno 2006; Uslaner 2018). While many

authors have understood the performance of institutions as their ability to produce desired economic outcomes, some of them also highlighted the importance of other aspects such as the capacity to reduce corruption (Catterberg and Moreno 2006, 46; Wong et al. 2011, 266). Overall, the relationship between government performance or its capacity to reduce corruption and trust should be understood in light of citizens' expectations. As such, van de Meer (2018) highlighted that most existing studies fail to consider prior expectations that create the benchmark used by citizens for evaluating government performance (602).

Most studies confirming the validity of the institutional approach have investigated political trust in national institutions, but recent literature highlights the need to understand political trust in multilevel governments and at the local and regional levels (Naraidoo and Sobhee 2021; van der Meer 2018). Trust in local institutions, like trust in national institutions, is linked to their perceived performance. However, limited autonomy can hinder local institutions' ability to perform which can affect the level of trust in them (Naraidoo and Sobhee 2021). Additionally, there is an emerging acknowledgment that the determinant of political trust should be understood in a context-specific way (Godefroidt, Langer, and Meuleman 2017; Wong, Wan, and Hsiao 2011). Catterberg and Moreno (2006) identified major regional differences in determinants of political trust, for instance, they found corruption permissiveness as being a determinant of trust in post-communist countries but not in Latin America.

2.2. Aid and Political Trust

Aid, or more broadly, the provision of any public goods and services by non-state actors has been found to cause a decline in political trust in institutions (Atitianti 2022, 4). For instance, Watkins (2022) found that living near active aid projects is associated with a decreased level of political trust in both national and local institutions in Nigeria, Senegal, and Uganda. In a specific

analysis of Chinese aid, Atitianti (2022) found that in Sub-Saharan Africa, Chinese projects reduce trust in national institutions. The author replicated the analysis for World Bank projects and similarly found a negative impact on political trust.

Several mechanisms have been studied to explain a negative causal relationship between aid and political trust. Significant literature has followed the institutional approach to political trust and has explored the importance of the perception of government performance as the mechanism through which aid causes a decline in trust. Researchers have hypothesized that citizens' perception of government performance declines when aid is provided, as they view it as a failure of the government to fulfill its essential missions (Anitianti 2022; Batley and Mcloughlin 2010; Watkins 2022). This theoretical expectation has been supported by empirical evidence, which has focused on aid provided by both OECD bilateral donors (Watkins 2022) and China (Atitianti and Asiamah 2023). However, research has also shown that local authorities can sometimes successfully claim credit for projects leading to improve their perceived performance, even in cases where aid is allocated randomly or based on non-locally controlled criteria (Cruz and Schneider 2017; Guiteras and Mobarak 2015). When citizens are uncertain about the source of funding, successful credit claiming by local authorities can enhance their perceived performance (Guiteras and Mobarak 2015). Moreover, Baldwin and Winters (2020) showed that different forms of aid impact citizens' perception of their government performance in a variety of ways. Precisely, only bypass aid, in this case, funneled through NGOs, was found to have a negative impact on citizens' perception of their government. While this was not the case for aid transferred directly from donor to recipient governments.

The relationship between aid provision and declining political trust has also been explained by another mechanism: perceived corruption. Significant literature has shown that providing aid

leads to increased corruption in recipient countries and regions (Bräutigam and Knack 2004; Knack 2001). This association has been explained mainly by aid making more funds available and thus increasing economic incentives for government officers to engage in corruption (Isaksson and Kotsadam 2018). However, there is no consensus in the literature on this issue, as some studies found that aid is associated with a decrease in corruption (Tavares 2003), while others show no significant effect (Menard and Weill 2016). Nonetheless, studies have shown that aid may diminish political trust by increasing the perceived level of corruption in recipient areas (Watkins 2022; Anitianti 2022).

The literature is not unanimous about the overall relationship between aid and trust and the potential mechanisms that connect them. For example, Dietrich, Mahmud, and Winters (2018) conducted a study specifically focusing on the impact of a USAID health initiative in Bangladesh and found that it increased political trust and confidence in local institutions. Moreover, the assumption that citizens expect their governments to provide public services has been challenged. Using survey and in-depth interview evidence from Kenya, Dolan (2020) argues that the predictions that "individuals expect their governments to be self-sufficient […] are ill-suited to developing countries contexts" (143). In other words, people in developing countries expect their government to receive foreign aid, and thus, the presence of external actors does not worsen their evaluation of the government's performance or their trust in institutions (Dolan 2020, 143).

The impact of aid on trust varies depending on several factors. Some studies have emphasized the significance of individual characteristics in shaping citizens' political trust levels in regions that received aid. The characteristics include the level of education and political engagement of individuals (Dietrich et al. 2018, 144). Hakhverdian and Mayne (2012) have also noted that similar individual characteristics can have different impacts on trust in different

societies. For example, the level of education was found to be negatively related to institutional trust in highly corrupt contexts and positively related to trust in contexts with low levels of corruption (2). In addition to individual characteristics, numerous studies have established that the impact of aid on political trust is largely dependent on the type of project funded. Atitianti (2022) found that the impact of Chinese projects on political trust in Sub-Saharan Africa varied significantly by sector. Health projects had a robust negative impact, while other sectors like energy and water supply had no significant effect (8). On the other hand, Baldwin and Winters (2020) focused on the impact of Western aid on government performance assessment in Uganda and found significant variation depending on the form of aid provided. Donor-to-government funding had no impact on assessment, while other forms that bypassed government, such as donor aid to NGOs, had a negative impact.

3. **Argument**

3.1. Classification of Chinese Aid

The term "aid" has traditionally been used in the context of North-South relations. Chinese authorities do not acknowledge the use of this term or a donor-recipient framework to describe their work in Ghana or elsewhere. Instead, they emphasize partnership and mutually beneficial cooperation to characterize these relationships (Tan-Mullins, Mohan, and Power 2010). Since there is no official Chinese classification available, this research adopts the AidData classification of Chinese projects following the Tracking Underreported Financial Flows (TUFF) methodology. This methodology categorizes Chinese projects based on the existing and widely used classification by the Development Assistance Committee (DAC) of the Organisation for Economic Co-operation and Development (OECD). It includes Official Development Aid (ODA) activities,

which are provided on highly concessional terms, with a minimum grant element of 25 percent. It also includes Other Official Flows (OOF), which are activities provided on less concessional terms, with a grant element below 25 percent (Custer et al. 2021). Throughout the study, the term "aid" will be broadly defined to include both categories. Moreover, additional robustness checks will specifically focus on ODA-like Chinese projects.

3.2. Chinese Aid in Ghana

Sino-Ghanian relations have a long history, dating back to the early 1960s after Ghana gained independence. The two countries have maintained frequent high-level exchanges throughout the past six decades. However, it was only in the late 2000s that China began providing official financing to Ghana. In 2007, the first major project agreement was signed for the Bui Hydro-Electric Power Dam. This was followed by an important oil extraction project in 2011. Both projects fall under the infrastructure category, which reacquires a minimum of 60 percent of contracts to be awarded to Chinese companies (Swedlund 2017, 401). These projects used a deal structure known as the "resource for infrastructure" system. Under this system, financing was guaranteed through exports of coca for the Bui Dam project, and a fixed daily supply of oil to repay the Western Corridor Gaz debt over 15 years (Nkoana and Legodi, 2021, 216). Chinese international construction and engineering contractors play a crucial role in these projects, as they are responsible for building the infrastructure and are often involved from the early stages of project initiation. While the central Chinese government sets the overall quotas for foreign aid grants and conditional loans, these contractor companies significantly contribute to coordinating between the two governments for specific projects (Zhang 2020, 18).

Overall, China provides various forms of aid to Ghana including building infrastructure projects such as bridges, as well as major projects in health, education, and culture. These projects

can take many forms including technical assistance, loans, and grants. Rejecting a donor-recipient relationship framing, China declined invitations to join the Ghana Joint Assistant Strategy, a coordination initiative involving all major Western donors. Although China attends meetings with other donors as an observer, its refusal to actively participate is interpreted as a deliberate attempt to continuously portray its relations with Ghana as a partnership and to avoid a donor-recipient framework (Tan-Mullins, Mohan, and Power 2010).

3.3. Local Governance in Ghana: A Mix of Formal and Traditional Authorities

During the period under study and until 2018, Ghana consisted of 10 regions, each of which is divided into districts. The governance of these districts is based on the population size, whereby a Metropolitan Assembly is established if the population exceeded 250 000, a Municipal Assembly if the population is over 95,000, and a District Assembly if the group of settlements had a minimum population of 75,000. These assemblies hold both political and administrative authority within their respective districts, with responsibilities encompassing the overall economic and social development, as well as the construction and maintenance of basic infrastructure (Government of Ghana 1993, Act 462).

District Assemblies consist of the District Chief Executive, members elected through direct suffrage, Members of Parliament representing constituencies within the district, and additional members "appointed by the President in consultation with the traditional authorities and any other interest groups in the district" which can make up to 30% of the Assembly (Government of Ghana 1993, Act 462). The focus of this study is on trust towards district assemblies because of the availability of data and their central role in local governance. However, it is important to note that they are other local governance bodies besides district assemblies. These bodies include various sub-district political and administrative structures such as urban councils, zonal councils, town and

areas councils, and Unit Committees. All these bodies at the local level are considered subordinate bodies to the Districts Assemblies (Friedrich-Ebert-Stiftung Ghana 2010, 21).

Local chiefs have historically played a central role in the day-to-day life of Ghana. To this day, they enforce customs, resolve disputes ensuring peace and stability in their area, and manage community resources (Mahama 2009, 9). During the colonial era, the British often employed indirect rule in the country through traditional leaders. Chiefs were granted authority to establish native courts under colonial supervision, allowing them to apply customary law on their land (Mahama 2009, 10). Today, traditional leaders still hold certain powers, particularly in local affairs. The 1992 Constitution of Ghana safeguards the institution of Chieftaincy at the national, regional, and local levels (Mawuko-Yevugah and Attipoe 2021).

Examining the responsibilities of the Traditional Leaders and Metropolitan, Municipal and District Assemblies (MMDAs) shows that they share a common agenda: local community development and poverty reduction (Mahama 2009, 14). However, the Ghanaian constitution does not provide any formal partnership between the MMDAs, and the traditional authorities, and their cooperation is significant but informal. Moreover, significant qualitative studies conducted in rural areas indicate that cooperation between local government actors and rural chiefs is vital for the successful implementation of local development initiatives (Arthur and Dawda 2015). While major projects are typically negotiated with the central government, local authorities are considered accountable for development agendas in their districts. Beyond formal authorities, Chinese projects often involve traditional authorities due to the customary land tenure system, whereby approximately 80 percent of the country's land is held by traditional authorities as stool/skin lands per customary law. Consequently, most infrastructure projects require negotiation or compensation to local authorities (Boafo, Paalo, and Dotsey 2019, 6).

In-depth interviews conducted with chiefs from various regions of Ghana revealed that they all engaged in direct communication with NGOs or donors to foster development in their respective areas. For instance, the World Bank's "Promoting Partnerships with Traditional Authorities Project" in Ghana in 2003 financed traditional authorities directly to implement projects (Ubink 2007, 125). Beyond these major deals, touring Western countries, mobilizing migrants, and associating with international donors are part of the traditional authorities' efforts to bring development into their areas (Kleist 2011, 649).

3.4.Theoretical Mechanisms

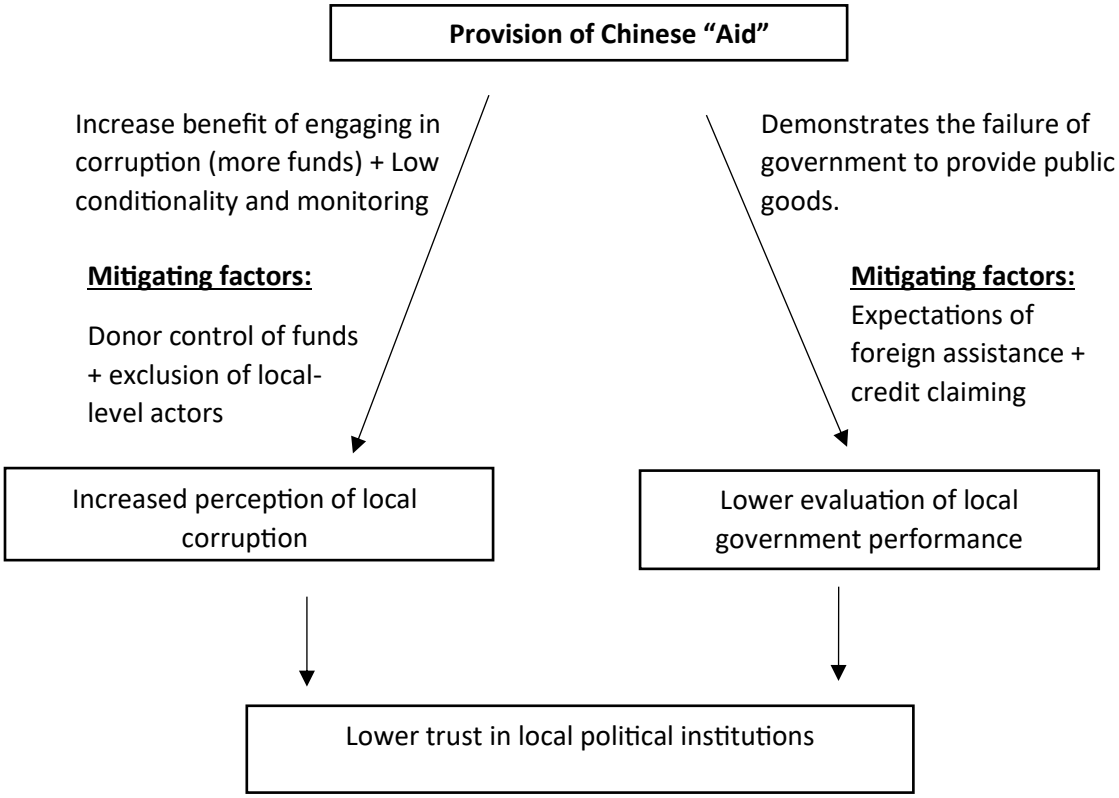
Based on the institutional approach to trust explored in the literature review, this study follows a theory that conceives citizens' trust in institutions as the result of a rational evaluation of their performance (Godefroidt, Langer, and Meuleman 2017; Hetherington 1998; Mishler and Rose 2001; Wong, Wan, and Hsiao 2011). Therefore, the impact of aid on trust will be explored through its potential effects on people's evaluations of their institutions. As shown in Figure 1, two causal mechanisms are highlighted to explain this relationship through which aid impacts trust: perceived government performance and perceived corruption.

The first mechanism is that aid leads to decreased perceived government performance. The provision of aid by foreign donors to fill gaps in services provided by national and local governments has been associated with a negative perception of the government as it indicates its failure to complete its expected functions (Batley and Mcloughlin 2010; Watkins 2022). Following the institutional approach to trust, government performance is the main determinant of political trust (Wong, Wan, and Hsiao 2011; Godefroidt, Langer, and Meuleman 2017; Mishler and Rose 2001; Hetherington 1998). As such, a decrease in perceived government performance associated with receiving aid leads to a reduction in levels of trust.

The second mechanism is that Chinese aid increases the level of perceived corruption of local authorities. Here it is expected that Chinese aid increases the economic incentives for government officers to engage in corrupt practices, given the higher level of economic activity stimulated by aid (Isaksson and Kotsadam 2018, 12). As previously noted, Chinese aid in Ghana, as elsewhere, does not impose governance nor political conditions on recipient countries, including corruption mitigation efforts (Bräutigam 2011, 760). In addition, this is coupled with an absence of conditionality requiring recipients to operate in transparency as well as very low supervision of Chinese companies abroad (Brautigam 2010, 296). Therefore, increased levels of perceived corruption are the result of the availability of additional funds that are not coupled with corruption monitoring requirements. Similarly, increasing levels of perceived corruption have been associated with a decline in levels of trust in institutions (Anitianti 2022; Chang and Chu 2006; Lavallée, Razafindrakoto, and Roubaud 2008; Watkins 2022).

In summary, these two mechanisms of decreased perceived government performance and increased level of perceived corruption both act to decrease trust in political institutions during the projects which is the main hypothesis. While this theoretical framework is built on strong scientific evidence, it is once again important to highlight that many studies argue against the negative impact of aid on government perception (Dolan 2020), and others refute the impact of aid as a driver of corruption (Menard and Weill 2016; Tavares 2003).

Figure 1: Conceptual Model of the Relationship Between Aid and Trust in Local Institutions[1]



4. Data and Variables

4.1. Explanatory Variable

The main explanatory variable examined in this research is the proximity or not to a Chinese development project. As publicly available data on China's foreign development initiatives is not available, this variable is derived from AidData's Global Chinese Development Finance Dataset, Version 2.0 (2020). This dataset represents the most up-to-date and comprehensive data available on Chinese aid initiatives covering the period from 2000 to 2017. However, the study only includes projects for which complete schedules and exact location

[1] This conceptual model follows Watkins (2021)

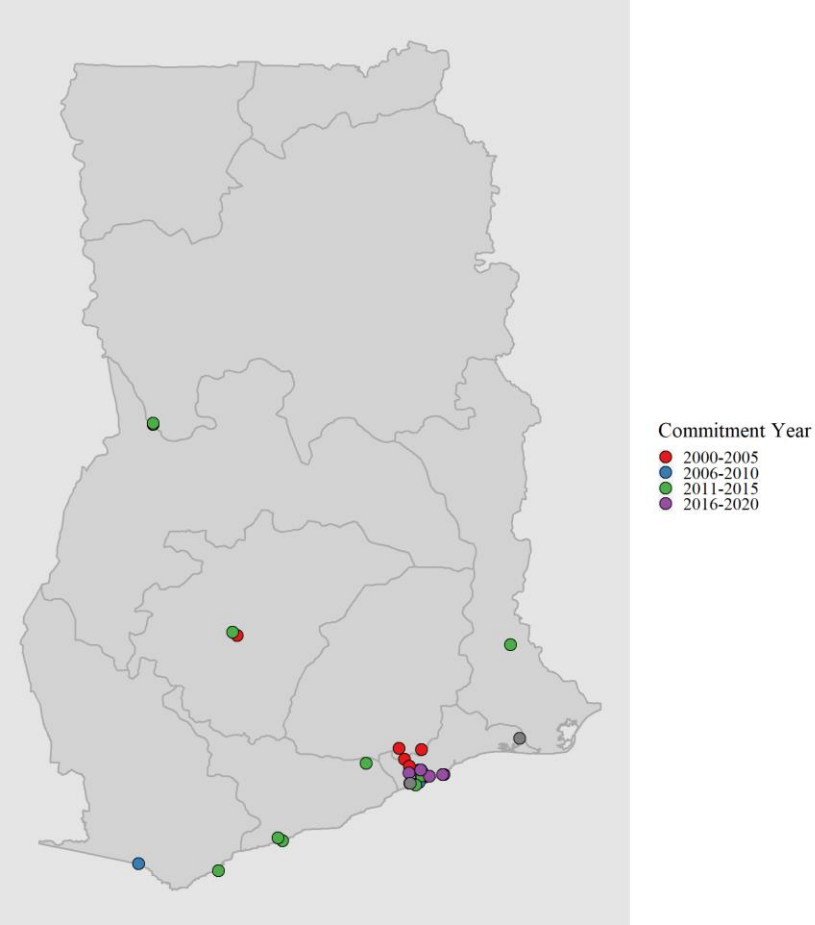
information are included in the dataset. The complete schedule criterion limits inclusion to projects with precise start and end implementation dates. The specific location criterion requires precise geospatial features provided in the dataset. Additionally, location information was manually added when the project description provides sufficient details to identify its exact location with certainty. In total, 48 projects have specific locations, and 37 projects met both the specific location and schedule criteria.

4.2. Dependent variable: Political Trust in Local Institutions

The main dependent variable in this study is political trust in local institutions. The data for this variable is obtained from the survey responses collected during rounds four, five, and six of the Afrobarometer, conducted in 2008, 2012, and 2014. The sample sizes for these rounds were 1200, 2400, and 2400 respondents respectively, covering all regions of Ghana. Previous survey rounds were not considered due to significant variations in the wording of questions on the trust in local government (Afrobarometer 2002). The main question on trust in local institutions for the three rounds of interest was "How much do you trust each of the following, or haven't you heard enough about them to say", specifically focusing on the following sub-question on "Your Metropolitan, Municipal or District Assembly". Respondents had the option to choose from the following categories: "not at all", "just a little", "somewhat", "a lot", "don't know/haven't heard enough" and "refused to answer" (Afrobarometer 2014).[2]

[2] The main survey question on trust refers to formal local political institutions: Metropolitan, Municipal, or District Assemblies (MMDAs) . Section 6.8 will replicate the results by focusing on trust towards traditional authorities.

Figure 2: Location of Chinese aid Projects from 2000-2017 (Only Projects with Complete Location Details and Specific Commitment Year)



5. Methodology

5.1. Spatial Difference-in-Difference

The geographic distribution of aid in Ghana, like elsewhere, cannot be assumed to be random, as evidenced by Figure 2, which illustrates the location of Chinese aid projects in Ghana. Therefore, it cannot be assumed that the selection of project locations is unrelated to the institutional characteristics of those locations, such as population density, economic activity, and the quality of pre-existing local institutions, etc. (Isaksson and Kotsadam 2018, 149). To address

this issue, the present study uses a spatial difference-in-difference method that compares the level of trust of respondents living near ongoing Chinese aid projects with those living near future projects that had not yet begun at the time of the survey. By comparing respondents living near present and future aid, the identification assumption is that these locations are similar in terms of institutional characteristics and, more generally, potential confounders. This method is also used to test the validity of the two potential causal mechanisms: perception of local institution performance and perception of their level of corruption.

This method was first elaborated by Knutsen et al. (2017) to investigate whether mining affects local corruption in Africa and has since then been used to study a wide variety of topics. For instance, Isaksson and Kotsadam (2018) employed this method to explore whether active Chinese aid projects increase local levels of corruption in 29 African countries. Similarly, Briggs (2019) used it to examine the effect of receiving foreign aid on incumbent electoral support in Nigeria, Senegal, and Uganda. More recently, Watkins (2022) used the method to examine the impact of Western aid on trust in political institutions in Nigeria, Senegal, and Uganda. In short, spatial difference-in-difference has been instrumental in providing an accurate understanding of the impact of aid by accounting for institutional differences and non-random allocation of aid.

5.2. Main model

Based on the emerging literature on spatial difference-in-difference, three categories of binary variables are created for three distinct groups of survey respondents. The groups are as follows: 1) Respondents located within 25 km of an active aid project (Active locations); 2) Respondents located within 25 km from a project that has been completed; 3) Respondents located within 25 km from a known future project (Future locations). Respondents located near completed

projects are excluded from the analysis. [3]It is important to note that cut-off distances of less than 25 km have generally been avoided in previous studies because they decrease the sample size of respondents living near projects (Knutsen et al. 2017, 925). However, other larger cut-offs are used as additional robustness checks.

The following baseline model is estimated:

$$\mathbf{Y_{it} = \beta 1\ Active\ locations_{it} + \beta 2\ Future\ locations_{it} + \beta 3\ W_{it} + \varepsilon,}$$

where Y represents the level of trust in local government of individual i at survey round t, and the active locations, and future locations are two binary variables that indicate the geographical proximity to aid projects. Moreover, W_{it} is a vector of individual-level control variables that contain age, gender, level of education, the interaction between proximity to aid and education, employment status, and a binary variable for living in urban areas, and finally, ε is the error term. Following Isaksson and Kotsadam (2018), the standard errors are clustered at the Census Enumeration Areas (EA) which refer to the smallest, well-defined geographic unit identified by the Afrobarometer for which reliable population data are available.

In this equation, β1 captures the effect of living near active locations in comparison to locations with no Chinese aid on the dependent variable, where no aid locations include all respondents not living near active, completed, or future project locations. Moreover, β2 captures the effect of living near future locations in comparison with locations with no aid. To identify the impact of aid, a comparison of the coefficients β1 and β2 is made, which shows the impact on trust

[3] Living near completed projects is also associated with a lower level of trust in local institutions compared to living in locations without aid. The theoretical argument presented in this paper should apply to respondents living near completed projects. However, the effect of aid may diminish over time as its impact on perceived corruption and government performance mechanisms might gradually decrease following project completion. The spatial difference-in-difference analysis required to validate this claim has not been employed due to limited data availability.

of living near an ongoing project, while excluding potential cofounders and institutional reasons for the choice of aid location. The baseline model is replicated with survey-round fixed effects.

In order to investigate the hypothesis that the impact of Chinese aid on political trust operates through a decrease in perceived performance and an increase in perceived corruption of local authorities, a similar model is replicated with those two dependent variables. The study centers on formal local institutions, but the original model is also used to examine whether Chinese aid affects trust in traditional authorities.

6. Results

6.1. Descriptive Statistics

Table 1 presents the count of survey respondents living within a 25 km radius of active, future, or completed Chinese projects in each survey round. Specifically, employing the spatial difference-in-difference method, the study compares respondents living near active aid locations with those living near future aid locations. To ensure unbiased results, all respondents living near completed projects are excluded from the analysis.

Table 1 Number of Survey Respondents Living Near Active, Future, and Completed Projects in Each Survey Round (Distance from Project = 25 Km)

	Survey Round 4	Survey Round 5	Survey Round 6	Total
Active	232	344	520	1096
Future	48	128	40	216
Completed	56	248	288	592

The proportion of survey respondents residing in urban areas is significantly higher near active locations, ranging from 79% to 95% depending on the survey round, compared to no aid locations, in which it fluctuates between 35% and 42%. A glance at the descriptive statistics in Table 2 reveals additional trends across the three survey rounds covered when comparing respondents living near active locations (within 25 km of an ongoing Chinese aid project) with those living in no aid locations (that are not near ongoing, completed, or future Chinese projects). Across all rounds, respondents in active locations tend to have a lower average age and higher educational attainment. They also have a slightly higher average employment status, indicating a greater likelihood of being employed, particularly in full-time positions. Regarding their relation to their local government, respondents living near active projects generally hold a more negative perception of their local government's performance and perceive it as more corrupt. Furthermore, in terms of trust–the primary variable of interest in this study–respondents in active locations tend to have lower levels of trust in both their local government and traditional authorities. This comparison does not allow us to determine whether those differences are caused by Chinese aid or existed prior to the presence of Chinese aid in these areas.

Table 2 Descriptive Statistics: Round 4 (2008), 5 (2012), and 6 (2014)

	Survey Round 4 (2008)				Survey Round 5 (2012)				Survey Round 6 (2014)			
	Active Locations		No Aid Locations		Active Locations		No Aid Locations		Active Locations		No Aid Locations	
Variable	N	mean	N	mean	N	mean	N	mean	N	mean	N	mean
Age	232	34.79	850	39.70	344	32.96	1679	37.96	517	36.91	1530	38.87
Education	231	1.69	860	1.06	344	1.89	1678	1.09	518	1.92	1544	1.38
Employment Status	232	1.97	855	1.95	342	1.93	1676	1.90	509	2.36	1542	2.09
Perception of Local Gov. Performance	211	2.37	812	2.87	318	2.32	1621	2.62	490	2.01	1467	2.26
Perception of Local Gov. Corruption	210	1.31	752	1.04	332	1.26	1607	1.18	479	1.58	1430	1.33
Trust in Local Gov.	217	1.25	827	1.78	336	1.26	1635	1.44	495	0.99	1483	1.24
Trust in Traditional Authorities	215	1.54	844	2.08	NA	NA	NA	NA	497	1.30	1508	1.69

Note: APPENDIX A includes details about each variable including the question in the Afrobarometer and the coding of the responses.
No aid locations include survey respondents that do not live near active, future, or completed Chinese aid projects.

6.2. Are Active and Future Aid Locations Comparable?

Survey round 2 (2002) serves as the pre-treatment round, conducted at a time when only one Chinese project was ongoing, and another had recently been completed.[4] In Table 3, a comparison is made between respondents from 2002 that live near known future Chinese projects to those living no aid locations where no future projects occur in the period covered by the dataset (until 2021). The findings closely align with the descriptive statistics presented in Table 2, implying that disparities between variables in active aid locations and no aid locations predated the allocation of aid to these areas. Consequently, Chinese aid tends to be directed towards areas characterized by a younger adult population, higher education levels, and superior pre-existing employment conditions.

[4] The data covers projects committed starting in 2000 as such it is possible that projects from the previous period were active when survey round 2 (2002) was conducted.

Although the questions regarding perceived government performance and trust were phrased differently in round 2 (see Appendix A), they reveal that future aid locations exhibit a lower average perception of performance and reduced trust in local councils compared to no aid locations. The only noteworthy difference is that, in the pre-treatment analysis, future aid location tends to display a lower perception of corruption in comparison to no aid locations. Overall, the descriptive statistics from the pre-treatment survey round suggest that the differences between respondents in active locations and those in no aid locations, as indicated in Table 3, may to some extent result from pre-existing differences.

Table 3 Descriptive Statistics in Survey Round 2 (Pre-Treatment): Comparison Between Survey Respondents Near Future Aid Locations and No Aid Locations

	Future Aid Location		No Aid Locations	
Variable	**N**	**mean**	**N**	**mean**
Age	359	39.582	774	41.205
Education	358	1.327	806	0.945
Employment Status	359	2.103	794	1.793
Perception of Local Elected Government Corruption	279	0.846	634	0.879
Perception of District Chief Executive Performance	289	2.574	686	2.707
Trust in Local Council	318	1.170	700	1.431

Note: APPENDIX A includes details about each variable including the question in the Afrobarometer and the coding of the responses (the questions are different between survey round 2 and other rounds)
No aid locations include survey respondents that do not live near active, future, or completed Chinese aid projects.

The substantial pre-existing disparities between locations selected to receive Chinese aid and no aid locations render them inadequate for comparison. As previously mentioned, the model assumes that aid-receiving areas should be compared amongst themselves due to their significant difference from the rest of the country. The spatial difference-in-difference method relies on the assumption that accounting for relevant covariates, survey respondents living near future aid locations can serve as a valid counterfactual for citizens living near active projects.

To confirm the validity of this assumption, survey round 2 is employed as the pre-treatment round once again. Survey round 2 respondents (2002) were matched according to their proximity to active and future project locations in 2008 when survey round 4 was conducted. Table 4 shows how trust in local institutions is affected by residing in different types of locations in 2002 (survey round 2), based on whether they were considered active or future locations in 2008 (survey round 4). As displayed in Table 4, residing near an active or future location during the pre-treatment period is associated with lower trust in local government. Specifically, in 2002, before aid projects started, residing in a 2008 active location was linked to a nearly 19% decrease in trust in local government compared to respondents living in locations that will not receive any aid – at least in the 2000-2021 period covered by the dataset. This finding confirms the observations presented in Table 3, indicating that Chinese aid tends to be allocated to areas where the pre-existing levels of trust in local government are significantly lower than in the rest of Ghana. While the allocation process is not the main focus of this study, it highlights the invalid comparison between aid-receiving areas and the rest of Ghana.

As shown in Table 4, the difference-in-difference between the coefficients of active and future locations and their associated F-tests are not significant. This suggests that the areas that will be considered active and future locations in 2008 (survey round 4) do not show significant

differences in pre-aid trust levels. The results are consistent when matching survey respondents from survey round 2 with active and future locations in 2012 (survey round 5) and 2014 (survey round 6).[5]

Table 4: Chinese Aid Locations (2008) and Trust in Local Institutions in the Pre-Treatment Survey Round (2002)

	DEPENDENT VARIABLE: TRUST IN LOCAL GOVERNMENT	
	(1)	(2)
Active location (round 4)	-0.255***	-0.253***
	(0.087)	(0.082)
Future location (round 4)	-0.217*	-0.243*
	(0.123)	(0.125)
Constant	1.425***	1.333***
	(0.042)	(0.119)
Covariates	No	Yes
Difference: active - future	**-0.03845**	**-0.00921**
F-test: active - future = 0	**0.0771**	**0.0044**
p-value	**0.781**	**0.947**
Observations	1,044	1,011
R2	0.017	0.025
Adjusted R2	0.015	0.018
Residual Std. Error	0.880 (df = 1041)	0.878 (df = 1003)
F Statistic	8.933*** (df = 2; 1041)	3.708*** (df = 7; 1003)

Note: Robust standard errors are clustered at the EAs level.
Survey respondents near completed or ongoing Chinese projects in 2002 are excluded (radius = 25 km).
Covariates are age, gender, education, employment status, and a binary variable for urban.
The p-values of the difference-in-differences are based on the F-tests.
*p<0.1; **p<0.05; ***p<0.01

[5] Survey round 2 comprised 288 survey respondents living in a 2008 (round 4) active location, as well as 88 survey respondents living in a 2008 future location. This sample size was the largest among the three pre-treatment matched samples.

6.3.Main findings

Table 5: Chinese Aid and Trust in Local Institutions in Ghana

	DEPENDENT VARIABLE: TRUST IN LOCAL GOVERNMENT		
	(1)	(2)	(3)
Active location	-0.308***	-0.288***	-0.288***
	(0.043)	(0.093)	(0.089)
Future location	-0.051	-0.012	-0.049
	(0.083)	(0.084)	(0.075)
Urban		-0.093**	-0.086**
		(0.039)	(0.037)
Female		-0.055**	-0.042
		(0.027)	(0.027)
Age		0.003***	0.003***
		(0.001)	(0.001)
Employment Status		-0.018	-0.005
		(0.017)	(0.017)
Education		-0.194***	-0.169***
		(0.020)	(0.020)
Near active: Education		0.091*	0.088**
		(0.047)	(0.045)
Constant	1.437***	1.649***	1.843***
	(0.023)	(0.064)	(0.073)
Survey round FE	No	No	Yes
Difference: active - future	**-0.258**	**-0.276**	**-0.238**
F-test: active - future = 0	**8.6**	**5.1**	**4.4**
p-value	**0.003**	**0.024**	**0.035**
Observations	5,200	5,114	5,114
R2	0.013	0.046	0.068
Adjusted R2	0.013	0.044	0.066
Residual Std. Error	1.058 (df = 5197)	1.043 (df = 5105)	1.031 (df = 5103)
F Statistic	35.137*** (df = 2; 5197)	30.708*** (df = 8; 5105)	37.066*** (df = 10; 5103)

Note: Survey respondents near completed Chinese projects are excluded (radius = 25 km).
Robust standard errors are clustered at the EAs level.
The p-values of the difference-in-differences are based on the F-tests.
*p<0.1; **p<0.05; ***p<0.01

Table 5 presents the main results, indicating that the coefficients of active location are significant across all models. This suggests that living within 25 km of active aid locations is associated with lower trust in local government compared to no aid locations. However, as previously noted, the location choice of Chinese aid projects itself cannot be assumed to be

random. Precisely, using the coefficient of active location would overestimate the impact of aid projects on trust, as it disregards the endogenous relationship between trust and aid project location.

The coefficients for future locations are also negative, indicating that aid is allocated to areas with lower levels of trust. However, these coefficients are not significant for any of the models. In this study, the focus is on the difference-in-differences estimates between active and future locations ($\beta 1 - \beta 2$), which are consistently negative across all models. This suggests that active locations tend to be associated with lower trust in local government compared to future locations.

In Model 3, after accounting for all covariates and survey-round fixed effect, the difference-in-difference estimate, and its associated F-test remain statistically significant. More precisely, the difference-in-difference between active and future locations corresponds to a decrease of nearly 13% in trust in local government compared to the average survey respondent living in a location that do not receive Chinese aid. Appendix B replicates Table 5 accounting only for survey respondents with geo-localized details that meet the highest level of precision which excludes locations that are coded at the second-order administrative division, equivalent to the districts in Ghana. Although the number of observations is significantly reduced, the results remain similar, with negative difference-in-difference estimates and their associated F-tests having p-values of 0.05.

The main results on individual-level characteristics and trust show that living in an urban area and being a woman are associated with lower levels of trust in local institutions. Moreover, higher levels of education are also associated with lower levels of trust in local institutions while being older is associated with higher levels of trust. Additionally, the significance of the interaction terms coefficients indicates that the impact of living near active aid locations depends on education. The

higher the level of education, the less the impact of living near aid projects on trust in local institutions. For example, an average woman with a primary school education living near an active aid project would have 13% lower trust in local government compared to an average woman with the same individual-level characteristics living near a future aid location. [6] This difference would decrease to 8% if both women had some level of high school education and would be more than 21% if neither had any formal education.

It is not possible to conclude that this significant interaction effect between proximity to aid and education is particular to trust towards local institutions. A possible explanation for the significance of the interaction term might be that a higher level of education is associated with a better understanding of the limited autonomy and power of local authorities in determining project location. Another explanation could be the increased mobility associated with a higher level of education (Machin, Salvanes, and Pelkonen 2012). More mobility may result in a relation to institutions that are less dependent on nearby activities.

6.4. Distance from the project

The study uses a 25 km radius to determine the proximity of survey respondents to aid projects, distinguishing between those near an active, a completed, or a future project. This choice is based on relevant literature, aiming to ensure awareness among residents about the nearby project's existence, the involvement of local government, and any issues associated with the project. As such, this does not rule out the validity of other radiuses that have been used in the literature such as 40 km (Brazys, Elkink, and Kelly 2017) and 50 km (Isaksson and Kotsadam 2018; Watkins 2022).

[6] The example makes a prediction for an urban woman with part-time employment. It compares a woman with those characteristics living in an active location and future location.

Table 6 presents the outcomes of the replication of the main models, considering a 50 km distance to categorize survey respondents as residing near active, future, or completed locations. The number of observations decreases from 5114 in the main model (Table 5, Model 3) to 4665 observations in Table 6 (Model 3). This decrease can be attributed to a higher number of survey respondents living near a completed project when considering a 50 km instead of a 25 km radius.

Table 6: Chinese Aid and Trust in Local Institutions in Ghana (Distance = 50km)

	DEPENDENT VARIABLE: TRUST IN LOCAL GOVERNMENT		
	(1)	(2)	(3)
Active location	-0.277***	-0.191**	-0.206***
	(0.044)	(0.078)	(0.074)
Future location	0.053	0.062	-0.013
	(0.061)	(0.057)	(0.056)
Urban		-0.130***	-0.116***
		(0.040)	(0.038)
Female		-0.042	-0.030
		(0.028)	(0.028)
Age		0.004***	0.004***
		(0.001)	(0.001)
Employment Status		-0.021	-0.006
		(0.018)	(0.018)
Education		-0.189***	-0.167***
		(0.022)	(0.022)
Near active: Education		0.055	0.055
		(0.041)	(0.039)
Constant	1.472***	1.661***	1.845***
	(0.027)	(0.068)	(0.077)
Survey round FE	No	No	Yes
Difference: active - future	**-0.329**	**-0.253**	**-0.193**
F-test: active - future = 0	**26.1**	**7.9**	**4.9**
p-value	**3e-07**	**5e-03**	**3e-02**
Observations	4,734	4,655	4,655
R2	0.015	0.051	0.073
Adjusted R2	0.014	0.049	0.071
Residual Std. Error	1.060 (df = 4731)	1.043 (df = 4646)	1.031 (df = 4644)
F Statistic	35.789*** (df = 2; 4731)	30.894*** (df = 8; 4646)	36.356*** (df = 10; 4644)

Note: Survey respondents near completed Chinese projects are excluded (radius = 50 km).
Robust standard errors are clustered at the EAs level.
The p-values of the difference-in-differences are based on the F-tests.
*p<0.1; **p<0.05; ***p<0.01

In Table 6, the coefficient of active location is significant across all models. The difference-in-differences estimates reveal that active locations have lower trust in local government compared to future locations across all models. Associated tests confirm the significance of this difference, thereby supporting the hypothesis that active Chinese aid projects are associated with reduced levels of trust in local government. Additionally, the conclusions were similar using a 40 km distance from projects.

6.5.Trust and Ethnic Groups

Ghana is an ethnically diverse country, comprising approximately 92 ethnic groups. Socio-economic disparities combined with variation in historical exposure and incorporation into the colonial order have resulted in inequality among these groups and differences in their respective relationships with institutions (Asante and Gyimah-Boadi 2004). The Akan people constitute the main ethnic group, representing 47.5% of the Ghanaian population, followed by the Ga-Adangbe, Ewe, Guan, and Gume (Ghana Statistical Service 2013). Due to considerable ethnic diversity, it was not feasible to include ethnic groups as a control variable in the model due to insufficient data. However, some divergence exists in trust toward local government. For instance, when considering only survey respondents in no aid locations, the average level of trust in local institutions is 1.29 for the Akan while it is 1.38 and 1.37 respectively for the Ewe and Ga-Andangbe (on a scale from 0 to 4).

It is also plausible that different ethnic groups may react differently to Chinese aid due to cultural, historical, and political reasons. Table 7 presents the results of a replication model focusing exclusively on survey respondents who identified themselves as part of the Akan ethnic community and cultural group (Afrobarometer 2014). It is important to note that this represents a simplification of ethnic identification since the Akan are divided into 20 different heterogeneous

sub-groups (Asante and Gyimah-Boadi 2004). The difference-in-differences estimates indicate that Akan respondents living near active Chinese aid locations tend to have lower levels of trust in local government compared to other Akan individuals living near future aid locations. Model 3 demonstrates that the difference-in-difference estimate remains significant even after accounting for all relevant covariates and survey-round fixed.

The analysis does not allow an investigation of potential variation in the impact of Chinese aid on trust across different ethnic groups. However, the replicated analysis focusing on the Akan suggests that the impact of Chinese aid remains even when reducing ethnic heterogeneity. Similar results were obtained when replicating the model only for respondents who declared Akan as their home language.

Table 7: Chinese Aid and Trust in Local Institutions in Ghana (Ethnic Group: Akan)

	DEPENDENT VARIABLE: TRUST IN LOCAL GOVERNMENT		
	(1)	(2)	(3)
Active location	-0.308***	-0.320**	-0.348***
	(0.059)	(0.139)	(0.129)
Future location	0.048	0.011	-0.027
	(0.114)	(0.112)	(0.095)
Constant	1.290***	1.289***	1.581***
	(0.032)	(0.100)	(0.105)
Covariates	No	Yes	Yes
Survey round FE	No	No	Yes
Difference: active - future	**-0.357**	**-0.331**	**-0.321**
F-test: active - future = 0	**8.9**	**3.7**	**4.3**
p-value	**0.003**	**0.054**	**0.038**
Observations	2,550	2,522	2,522
R2	0.012	0.040	0.082
Adjusted R2	0.011	0.037	0.078
Residual Std. Error	1.084 (df = 2547)	1.071 (df = 2513)	1.048 (df = 2511)
F Statistic	15.078*** (df = 2; 2547)	13.100*** (df = 8; 2513)	22.464*** (df = 10; 2511)

Note: Survey respondents near completed Chinese projects are excluded (radius = 25 km).
Only survey respondents who identified themselves as Akan have been included.
Robust standard errors are clustered at the EAs level.
The p-values of the difference-in-differences are based on the F-tests.
*p<0.1; **p<0.05; ***p<0.01

6.6. Presence of Other Donors

While this research focuses exclusively on the impact of Chinese aid, it is important to acknowledge that a similar relationship was found between aid provided by Western donors and trust (Watkins 2022). The spatial difference-in-difference method assumes that active and future aid locations are comparable. Therefore, the model assumes that citizens living near future Chinese aid projects and those living near active projects are equally exposed to aid from other donors. However, there are no available geographically coded data on OECD bilateral donors' project locations in Ghana, which makes it difficult to verify this claim. Nevertheless, available geo-coded data on World Bank activities in Ghana allow the study to account for them. Out of the 5408 survey respondents included in the analysis from the three rounds, 5016 respondents are located near an active World Bank project (Aid Data 2017).[7]

As a robustness check, the main results are replicated including only respondents who live within 25 km of an active World Bank project location. This did not change the number of respondents living near active Chinese aid locations but reduced the number of people living near future locations by 16 respondents. The coefficient of active locations remains negative and significant, indicating that living near both Chinese and World Bank projects is associated with a decreased trust in local government compared to living near only World Bank projects. The replicated results presented in Appendix C demonstrate similar findings to the analysis mentioned in the previous sections, but associated tests do not meet the required significance level.[8]

[7] For data availability purposes, a World Bank project is considered active based on the year and not the exact day and month.

[8] When accounting only for near WB respondents, in the model including all covariates and survey-round fixed effects, the difference-in-difference estimate is negative, but its F-test has an associated p-value of 0.07.

6.7.The ambiguous nature of Chinese Aid

This study exclusively focuses on the impacts of Chinese aid without making any comparisons to Western aid. However, as previously noted, AidData has categorized Chinese aid based on OECD criteria. According to their classification, 39 out of the 48 geo-coded Chinese projects in Ghana are considered ODA-like. This means that these projects align with criteria similar to the Official Development Aid (ODA) category as defined by the OECD (Custer et al. 2021). Of the remaining projects, six have been classified as Official Financial Flows, which are not considered ODA by the OECD, and three were deemed too vague for classification. To validate the reliability of the findings, the results have been replicated by including only ODA-like projects in the analysis and excluding other types. The results, presented in Appendix D, show that the difference-in-difference estimates are negative, but the associated tests are slightly less significant than in the main model. [9]

6.8.Traditional authorities

This paper primarily focuses on formal institutions of local governance; however, it is important to acknowledge the significant role that traditional leaders play in local governance in Ghana. Due to the diverse structure of traditional authorities, it is not possible to differentiate between attitudes towards local traditional leaders and those with broader regional influence. The analysis relies on a similar trust-related question that specifically targets the traditional leader, which was asked in survey rounds 4 (2008) and 6 (2014).

[9] When accounting only for ODA-like projects, in the model including all covariates and survey-round fixed effects, the difference-in-difference estimate is still negative, but its F-test has an associated p-value of 0.07.

Table 10: Chinese Aid and Trust in Traditional Leaders

	DEPENDENT VARIABLE: TRUST IN TRADITIONAL LEADERS		
	(1)	(2)	(3)
Active location	-0.460***	-0.462***	-0.468***
	(0.056)	(0.130)	(0.127)
Future location	0.100	0.083	0.033
	(0.126)	(0.098)	(0.082)
Urban		-0.259***	-0.249***
		(0.053)	(0.052)
Female		-0.130***	-0.116***
		(0.038)	(0.038)
Age		0.004***	0.005***
		(0.001)	(0.001)
Employment Status		-0.008	0.006
		(0.023)	(0.022)
Education		-0.250***	-0.226***
		(0.026)	(0.026)
Near active: Education		0.146**	0.146**
		(0.061)	(0.060)
Constant	1.830***	2.159***	2.258***
	(0.032)	(0.090)	(0.090)
Survey round FE	No	No	Yes
Difference: active - future	**-0.560**	**-0.545**	**-0.500**
F-test: active - future = 0	**18**	**12**	**12**
p-value	**1.81e-05**	**5.21e-04**	**5.54e-04**
Observations	3,149	3,071	3,071
R2	0.030	0.094	0.107
Adjusted R2	0.030	0.092	0.105
Residual Std. Error	1.104 (df = 3146)	1.070 (df = 3062)	1.062 (df = 3061)
F Statistic	48.899*** (df = 2; 3146)	39.692*** (df = 8; 3062)	40.885*** (df = 9; 3061)

Note: Locations with completed Chinese projects are excluded from the analysis.
No data available for survey round 5 (2012)
Robust standard errors are clustered at the EAs level.
The p-values of the difference-in-differences are based on the F-tests.
*p<0.1; **p<0.05; ***p<0.01

Table 10 shows the link between Chinese aid and trust towards traditional authorities showing a negative and statistically significant coefficient for active location. Moreover, the difference-in-differences estimates, and their associated F-test are significant across all models. Therefore, Chinese aid projects are associated with a decreased level of trust toward traditional authorities in Ghana.

7. Potential mechanisms

As stated in the theoretical framework section, one potential way in which aid affects citizens' trust is through its impact on perceived corruption. Although this study does not examine the causal influence of aid on trust via perceived corruption, it replicates the previous spatial difference-in-difference model, substituting the dependent variable with the perception of local government corruption. The Afrobarometer survey poses the following "How many of the following people do you think are involved in corruption, or haven't you heard enough about them to say" (Afrobarometer 2014). The focus is on the sub-answer related to local government corruption.[10] The available response options include none, some of them, most of them, all of them, don't know, and refused to answer.

Table 8 presents the results with the dependent variable of perception of local government corruption. The coefficients for active location in all models are significant, indicating a correlation between residing near an active aid location and an increased perception of local government corruption. Moreover, the positive difference-in-differences estimates, and their associated test are all statistically significant. This suggests a higher level of perceived corruption near active aid locations compared to future aid locations, thereby supporting the hypothesis' validity that Chinese aid is associated with increased levels of perceived corruption, which may influence trust levels.

[10] The main sub-questions on perceived local corruption are worded slightly differently in each survey round. Survey round 4 (2008) focuses on *elected Assembly men/women*, survey round 5 (2012) focuses on *local government councillors* and survey round 6 focuses on *Assembly men and women*.

Table 8: Chinese Aid and Perception of Local Government Corruption

	DEPENDENT VARIABLE: PERCEPTION OF LOCAL GOVERNMENT CORRUPTION		
	(1)	(2)	(3)
Active location	0.201***	0.262***	0.243***
	(0.034)	(0.085)	(0.073)
Future location	-0.073	-0.081	-0.010
	(0.063)	(0.065)	(0.058)
Urban		0.065**	0.059**
		(0.033)	(0.029)
Female		0.022	0.007
		(0.021)	(0.021)
Age		-0.002***	-0.003***
		(0.001)	(0.001)
Employment Status		0.044***	0.025**
		(0.013)	(0.012)
Education		0.065***	0.033**
		(0.016)	(0.016)
Near active: Education		-0.078*	-0.069*
		(0.040)	(0.036)
Constant	1.275***	1.167***	1.069***
	(0.018)	(0.051)	(0.056)
Survey round FE	No	No	Yes
Difference: active - future	**0.274**	**0.343**	**0.253**
F-test: active - future = 0	**16.6**	**11.0**	**7.9**
p-value	**5e-05**	**9e-04**	**5e-03**
Observations	4,997	4,918	4,918
R2	0.010	0.022	0.069
Adjusted R2	0.010	0.021	0.067
Residual Std. Error	0.835 (df = 4994)	0.829 (df = 4909)	0.810 (df = 4907)
F Statistic	25.119*** (df = 2; 4994)	14.084*** (df = 8; 4909)	36.299*** (df = 10; 4907)

Note: Locations with completed Chinese projects are excluded from the analysis.
Robust standard errors are clustered at the EAs level.
The p-values of the difference-in-differences are based on the F-tests.
*p<0.1; **p<0.05; ***p<0.01

The literature on the institutional approach to trust emphasizes an additional mechanism through which aid may influence trust: the perception of local government performance. To examine this mechanism, the following survey question is considered: “Do you approve or disapprove of the way the following people have performed their jobs over the past twelve months,

or haven't you heard enough about them to say". The focus is also on the sub-answers related to local government performance (Afrobarometer 2014).[11]

Table 9 presents the result of assessing the impact of aid on perceived local government performance. Across all models, the difference-in-differences estimates are negative and significant indicating that active locations tend to be associated with a lower perception of local government performance compared to future project locations. However, in model 3, after accounting for all covariates and survey-round fixed effects, the difference-in-difference estimate, and its associated F-tests do not show significant results. Therefore, it cannot be concluded that Chinese aid is associated with lower perceived local government performance.

Although the assessment of traditional leaders' performance was not included in both survey rounds, the Afrobarometer collected data on perceived traditional leaders' corruption. The results suggest that Chinese aid is linked with increased levels of perceived traditional leaders' corruption, aligning with the theoretical argument that Chinese aid potentially impacts trust through increased perceived corruption (see Appendix E).

[11] The main sub-questions on perceived local government performance are worded slightly differently in each survey round (for more details see footnote 10)

Table 9: Chinese Aid and Perception of Local Government Performance

	DEPENDENT VARIABLE: PERCEPTION OF LOCAL GOVERNMENT PERFORMANCE		
	(1)	(2)	(3)
Active location	-0.357***	-0.330***	-0.306***
	(0.043)	(0.096)	(0.091)
Future location	-0.123	-0.119	-0.191***
	(0.086)	(0.085)	(0.070)
Urban		-0.020	-0.014
		(0.044)	(0.040)
Female		-0.082***	-0.062**
		(0.025)	(0.025)
Age		0.003***	0.004***
		(0.001)	(0.001)
Employment Status		-0.060***	-0.039**
		(0.016)	(0.015)
Education		-0.106***	-0.067***
		(0.019)	(0.018)
Near active: Education		0.037	0.027
		(0.044)	(0.042)
Constant	2.538***	2.697***	2.848***
	(0.024)	(0.063)	(0.074)
Survey round FE	No	No	Yes
Difference: active - future	**-0.234**	**-0.211**	**-0.115**
F-test: active - future = 0	**6.8**	**3.0**	**1.1**
p-value	**0.009**	**0.086**	**0.299**
Observations	5,124	5,041	5,041
R2	0.021	0.040	0.084
Adjusted R2	0.021	0.038	0.082
Residual Std. Error	0.965 (df = 5121)	0.957 (df = 5032)	0.935 (df = 5030)
F Statistic	55.588*** (df = 2; 5121)	26.146*** (df = 8; 5032)	46.147*** (df = 10; 5030)

Note: locations with completed Chinese projects are excluded from the analysis.
Robust standard errors are clustered at the EAs level.
The p-values of the difference-in-differences are based on the F-tests.
*p<0.1; **p<0.05; ***p<0.01

8. Conclusion

This study used a spatial difference-in-difference method to investigate whether Chinese aid influences trust in local government in Ghana. The research geographically matches georeferenced data on Chinese development finance projects with respondents from three rounds of the Afrobarometer conducted between 2008 and 2014 in Ghana. To control for any potential confounding factors related to location selection, the study compares survey respondents living near active aid locations with those living near future aid locations.

The findings indicate that Chinese aid is associated with a decrease in levels of trust toward local institutions in Ghana. These results are validated with various robustness checks, including different distances from aid projects, potential influences from other donors, variations among ethnic groups, and accounting for the diverse forms of Chinese aid flows. Additionally, the study also find that Chinese aid is associated with reduced trust in traditional authorities.

The paper adopts an institutional approach to trust and identifies two channels through which Chinese aid might affect trust in local institutions: perceived local government corruption and performance. The findings show that Chinese aid is associated with a significant increase in perceived local government corruption but the evidence that aid is leading to a worsened perception of local government performance is inconclusive. Furthermore, the study indicates that Chinese aid is also associated with increased perceived corruption of traditional authorities which potentially explains diminishing levels of trust toward them.

It is important to acknowledge several weaknesses in this study that undermine its quality. Firstly, the existing geo-coded data does not encompass the location of all projects, potentially leading to excessively conservative estimates due to the influence of non-geocoded aid projects on the results. In addition, the inclusion of a greater number of data points would allow for additional

controls for regional differences. Although the robustness checks consider ethnic groups, the absence of regional or sub-regional controls might be leading to ignoring certain regional trends that could affect the findings. Secondly, the methodology assumes a similar presence of other donors near both active and future locations, but this assumption can't be verified due to the absence of geo-localized data for aid provided by OECD bilateral aid donors. Thirdly, while robustness checks validate the results when solely considering the Akan ethnic group, the possibility that ethnic differences influence the findings cannot be completely ruled out. Lastly, due to limited data availability, the study could not differentiate between the impacts of various types of projects on trust. As such, the results potentially mask nuances and distinctions between projects in energy and transportation versus those in social sectors like health and education.

Despite these limitations, this research makes valuable contributions to the existing literature by specifically investigating trust in local government, a topic that has been relatively understudied in the current research on aid effects on recipient countries' institutions. Furthermore, focusing on a single country allows the research to make novel contributions by accounting for local ethnic dynamics and examining how Chinese aid impacts trust in Ghanaian traditional authorities. Further research is needed to validate the perceived performance and corruption causal mechanisms. Moreover, future studies could assess the long-term impact of aid on trust after project completion and explore potential variations in the effects of aid on trust among different types of projects.

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APPENDIX A
Variables

For all questions bellow, the following answers have been replaced by NAs: don't know, refused to answer, or missing.

Employment status

- Survey question: Do you have a job that pays cash income? If yes, is it full-time or part-time?
- Re-coded answers to ensure consistency across survey rounds: 1 = No, 2= Yes (part-time), 3= Yes (full-time)

Education

- Survey question: What is the highest level of education you have completed? Variable Label: Education of respondent.
- Re-coded answers following Asomah and Dim (2021): 0 = No formal schooling, 1 = Any primary school, 2 = any high school, 3 = any post-secondary education

Corruption local councils

- Survey question: How many of the following people do you think are involved in corruption, or haven't you heard enough about them to say: survey round 2: elected leaders, such as parliamentarians or local councillors; survey round 4: elected Assembly men/women; survey round 5: local government councillors; survey round 6: Assembly men and women.
- Answers: 0=None, 1=Some of them, 2=Most of them, 3=All of them

Corruption traditional authorities

- Survey question: How many of the following people do you think are involved in corruption, or haven't you heard enough about them to say: Traditional leaders?
- Answers: 0=None, 1=Some of them, 2=Most of them, 3=All of them

Trust local government

- Survey question: How much do you trust each of the following, or haven't you heard enough about them to say: survey round 4, 6 and: Your Metropolitan, Municipal, or District Assemblies; survey round 2: your local council)
- Answers: 0=Not at all, 1=Just a little, 2=Somewhat, 3=A lot

Trust traditional leaders (not available for survey round 5)

- Survey question: How much do you trust each of the following, or haven't you heard enough about them to say: Traditional leaders?
- Answers: 0=Not at all, 1=Just a little, 2=Somewhat, 3=A lot

Performance local government

- Question: Do you approve or disapprove of the way the following people have performed their jobs over the past twelve months, or haven't you heard enough about them to say? round 2: District Chief Executive (DCE); survey round 4: elected Assembly men/women; survey round 5: local government councillors; survey round 6: Assembly men and women.
- Answers: 1=Strongly disapprove, 2=disapprove, 3=Approve, 4=Strongly approve

APPENDIX B

Chinese Aid and Trust in Local Government in Ghana (Only Respondents with Precise Localizations)

	DEPENDENT VARIABLE: TRUST IN LOCAL GOVERNMENT		
	(1)	(2)	(3)
Near Active	-0.314***	-0.289***	-0.289***
	(0.051)	(0.103)	(0.103)
Near Future	-0.025	-0.016	-0.016
	(0.105)	(0.102)	(0.102)
Constant	1.421***	1.843***	1.843***
	(0.030)	(0.088)	(0.088)
Covariates	No	Yes	Yes
Survey round FE	No	No	Yes
Difference: active - future	**-0.289**	**-0.273**	**-0.273**
F-test: active - future = 0	**7.0**	**3.8**	**3.8**
p-value	**0.008**	**0.05**	**0.05**
Observations	3,094	3,046	3,046
R2	0.017	0.075	0.075
Adjusted R2	0.017	0.072	0.072
Residual Std. Error	1.054 (df = 3091)	1.026 (df = 3035)	1.026 (df = 3035)
F Statistic	26.996*** (df = 2; 3091)	24.592*** (df = 10; 3035)	24.592*** (df = 10; 3035)

Note: robust standard errors are clustered at the EAs level.
Survey respondents near completed Chinese projects are excluded (radius = 25 km).
Covariates are age, gender, education, employment status, a binary variable for urban, and interaction between active location and education.
The p-values of the difference-in-differences are based on the f-tests.
Precise localization refers to all survey respondents coded with a precision level of 1. For more details see Benyishay et al. (2017).
*p<0.1; **p<0.05; ***p<0.01

APPENDIX C

Chinese Aid and Trust in Local Government in Ghana (Only Respondents Living Near World-Bank Projects)

	Dependent Variable: TRUST IN LOCAL GOVERNMENT		
	(1)	(2)	(3)
Active Location	-0.306***	-0.287***	-0.283***
	(0.044)	(0.094)	(0.089)
Future Location	-0.063	-0.036	-0.074
	(0.089)	(0.089)	(0.078)
Urban		-0.091**	-0.086**
		(0.042)	(0.039)
Female		-0.055*	-0.040
		(0.028)	(0.028)
Age		0.003***	0.003***
		(0.001)	(0.001)
Employment Status		-0.019	-0.005
		(0.018)	(0.018)
Education		-0.191***	-0.164***
(0.020)		(0.020)	
Near active: Education		0.088*	0.083*
		(0.047)	(0.045)
Constant	1.434***	1.657***	1.850***
	(0.024)	(0.068)	(0.076)
Survey round FE	No	No	Yes
Difference: active - future	**-0.243**	**-0.251**	**-0.209**
F-test: active - future = 0	**6.8**	**4.0**	**3.3**
p-value	**0.009**	**0.045**	**0.070**
Observations	4,821	4,738	4,738
R2	0.014	0.045	0.069
Adjusted R2	0.013	0.043	0.067
Residual Std. Error	1.059 (df = 4818)	1.044 (df = 4729)	1.031 (df = 4727)
F Statistic	33.764*** (df = 2; 4818)	27.687*** (df = 8; 4729)	34.826*** (df = 10; 4727)

Note: Robust standard errors are clustered at the EAs level.
Survey respondents near completed Chinese projects are excluded (radius = 25 km).
Only survey respondents near active World Bank projects are included (radius = 25 km).
The p-values of the difference-in-differences are based on the F-tests.
*p<0.1; **p<0.05; ***p<0.01

APPENDIX D

Chinese Aid and Trust in Local Institutions (ODA-Like Projects Only)

	Dependent Variable: Trust in Local Government		
	(1)	(2)	(3)
Near Active	-0.284***	-0.243**	-0.257***
	(0.044)	(0.096)	(0.092)
Near Future	-0.051	-0.012	-0.048
	(0.083)	(0.084)	(0.075)
Constant	1.437***	1.655***	1.848***
	(0.023)	(0.065)	(0.074)
Covariates	No	Yes	Yes
Survey round FE	No	No	Yes
Difference: active - future	**-0.234**	**-0.231**	**-0.209**
F-test: active - future = 0	**7.0**	**3.5**	**3.3**
p-value	**0.008**	**0.063**	**0.071**
Observations	5,121	5,036	5,036
R2	0.011	0.044	0.065
Adjusted R2	0.010	0.043	0.063
Residual Std. Error	1.060 (df = 5118)	1.044 (df = 5027)	1.032 (df = 5025)
F Statistic	27.995***(df = 2; 5118)	29.017*** (df = 8; 5027)	35.109*** (df = 10; 5025)

Note: Robust standard errors are clustered at the EAs level.
Covariates are age, gender, education, employment status, a binary variable for urban, and interaction between active location and education.
Survey respondents near completed Chinese projects are excluded (radius = 25 km).
Only ODA-like Chinese projects are matched with survey respondents.
The p-values of the difference-in-differences are based on the F-tests.
*p<0.1; **p<0.05; ***p<0.01

APPENDIX E

Chinese Aid and Perception of Traditional Leader's Corruption

	DEPENDENT VARIABLE: PERCEPTION OF TRADITIONAL LEADERS' CORRUPTION		
	(1)	(2)	(3)
Active location	0.265***	0.346***	0.355***
	(0.043)	(0.112)	(0.101)
Future location	0.073	0.046	0.110
	(0.100)	(0.087)	(0.074)
Constant	1.202***	1.004***	0.878***
	(0.024)	(0.073)	(0.072)
Covariates	No	Yes	Yes
Fixed effects	No	No	Yes
Difference: active - future	**0.191**	**0.299**	**0.246**
F-test: active - future = 0	**3.4**	**4.9**	**4.3**
p-value	**0.064**	**0.027**	**0.038**
Observations	2,960	2,888	2,888
R2	0.015	0.034	0.064
Adjusted R2	0.014	0.032	0.061
Residual Std. Error	0.909 (df = 2957)	0.901 (df = 2879)	0.887 (df = 2878)

Note: Robust standard errors are clustered at the EAs level.
Survey respondents near completed Chinese projects are excluded (radius = 25 km).
Covariates are age, gender, education, employment status, a binary variable for urban, and interaction between active location and education.
No data available for survey round 5 (2012)
The p-values of the difference-in-differences are based on the F-tests.
*p<0.1; **p<0.05; ***p<0.01