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Bad signals? Foreign aid and tax morale across Sub-Saharan Africa

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ABSTRACT

Does exposure to foreign aid projects affect citizens' attitudes towards the state? We examine this question by combining geo-coded data on World Bank aid projects and survey data for 30 Sub-Saharan African countries. We compare individuals across administrative units that vary in the presence and type of aid projects and complement this approach with an unexpected event design that accounts for potential selection concerns. In both analyses, we find that projects focusing on public goods that do not involve the state reduce citizens' tax morale. However, in locations where the state is not expected to be a public goods' provider, externally provided public goods do not curb citizens' tax morale. We interpret these results as evidence of foreign aid sending a public signal of the state's inability to deliver basic services. Our results can inform multilateral donors on the types and targets of interventions that can backfire on the state.

1. Introduction

Developing fiscal capacity is vital for economic growth and the quality of government (e.g., Baskaran & Bigsten, 2013; Besley & Persson, 2009). States that invest in effective tax collection gain reliable access to the resources needed to provide public goods and services—such as national defence, law and order, free education, and efficient communication networks—to their citizens. Countries with a low tax revenue-to-GDP ratio often need to rely heavily on alternative sources of income, such as foreign aid (Morrissey, 2015a). Aid allows governments in fiscally constrained countries to maintain public spending. However, it can also foster dependency or distort political incentives, as governments may provide services without raising taxes—thereby delaying the politically unpopular decision to implement taxation (Benedek et al., 2014; Combes et al., 2016; Morrissey, 2015a, 2015b; Moss et al., 2006; Savoia & Sen, 2023).

In addition, researchers have recently highlighted the indirect effects of aid on the broader state-building process, particularly regarding the role of taxation in shaping state-citizen relations (Bräutigam, 2008; Everest-Phillips & Sandall, 2009; Levi, 1988; Prichard, 2010). When international donors substitute the state by providing services that citizens expect from it, what then is the state's role in the fiscal contract with its citizens? Several works have empirically tested the effects of aid on tax morale, the citizens' willingness to comply with tax laws. Tax morale is not only a crucial element of fiscal capacity (Besley, 2020; Besley & Dray, 2022; Luttmer & Singhal, 2014) but it is also at the

very “heart of state-building and the citizen-state relationship” (OECD, 2013, p.7). Theoretically, one might expect state legitimacy to decline in countries receiving more aid as donors take over critical state functions; however, empirical evidence is, at best, mixed (Benedek et al., 2014; Blair & Roessler, 2021; Dietrich & Winters, 2015; Moss et al., 2006; Timmons, 2005), with some experimental studies revealing no effect of aid on legitimacy and related outcomes, such as tax compliance (Blair & Roessler, 2021; Dietrich & Winters, 2015; Sacks, 2012).

One potential explanation for these inconclusive results is that these studies do not consider the heterogeneity of foreign aid types. Ziaja (2020), for example, argues that the types and number of external donors are crucial in determining the effectiveness of foreign aid, as they can help compensate for a lack of local resources. To disentangle these findings, in this paper, we consider how *different* aid projects can affect the fiscal contract between the state and ordinary citizens (Timmons, 2005). Our argument is that foreign aid projects differ in the type of signal they send regarding the state's capacity to fulfil the contract. Do aid projects focused on public goods provision negatively affect the citizens' view of the state?

We argue that the impact of foreign aid on tax morale varies by the type of foreign aid projects, how they are implemented, and pre-existing citizens' relationship with the state. More specifically, we argue that aid projects intended to *replace* the state in providing public goods are likely to undermine citizens' willingness to pay taxes, as they may

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signal state weakness or a lack of competence. In addition, projects focusing on public goods provisions that are implemented with more limited state involvement may further undermine the legitimacy of the state. This is because public goods provided by third parties highlight the state's inability to fulfil its contractual obligations to its citizens and its reliance on external actors for service provision. Hence, such projects can signal state weakness, which can reduce citizens' willingness to contribute to state-building processes. Conversely, external interventions implemented in collaboration with the local state or aimed at building and consolidating state institutions are expected to be more beneficial.

The second part of our argument focuses on how citizens will update their attitudes towards taxation (and the state) depending on their pre-existing relations with the state. In areas of limited statehood, where citizens have little experience with the state as a provider of public goods, the negative signal sent by externally provided public goods aligns with their existing beliefs and experiences. As a result, these individuals may already hold unfavourable views of the state and are unlikely to revise their perceptions in response to signals of state weakness. Hence, in areas where perceptions of corruption are heightened, foreign aid projects focusing on public goods are less likely to backfire on the state.

To test the effect of aid projects on tax morale, we assemble an individual-level dataset that combines geocoded data on all World Bank aid projects from AidData (Tierney et al., 2011) with survey data from the Afrobarometer (BenYishay et al., 2017). The main identifying variation in the analysis is the start date of foreign aid projects in the administrative area where the respondent resides. We thus compare individuals across various subnational units to examine if their recent exposure to the beginning of a project affects their tax morale level at the time of the survey. We focus on projects that recently started and are in progress at the time of the survey, as this enables us to explicitly study *aid salience*. In other words, we can evaluate whether aid has any short-term impact through a pure signalling mechanism without any capacity building that could occur upon project completion. Ongoing projects provide a better assessment of the direct effect of foreign aid that does not involve citizens' performance evaluation (Blair & Winters, 2020).

The key identification assumption of our analysis is that the presence of a project in a region is not correlated with unobserved determinants of citizens' attitudes. To strengthen this identification assumption, we add a wide range of observable characteristics at the individual level and include fixed effects at the regional level (along with round fixed effects and country-by-round fixed effects). To further mitigate endogeneity concerns and substantiate the short-term signalling mechanism, we complement this analysis with a quasi-experimental design exploiting the occurrence of an unexpected event (the start date of an aid project) during the fieldwork of the Afrobarometer survey (e.g., Muñoz et al., 2020; Nussio et al., 2021).

This additional analysis addresses some shortcomings of the main analysis presented above as it can (i) leverage within-project variation across interviewees (thus addressing concerns about the endogenous location of a project) and (ii) compare individuals interviewed the days immediately after the start of the project (i.e., exposed to the signal) with those interviewed the days before (not exposed to the signal). Although this strategy reduces the number of projects we can investigate, it enables us to observe citizens' reactions immediately after the project's start date, thereby allowing us to better identify the impact of the aid projects' salience.

We find that the exposure to public goods provision projects carried out *without* state participation indeed decreases citizens' tax morale. This effect is also economically significant: In both analyses, we estimate that exposure to these projects explains a reduction of around 35% of a standard deviation in tax morale. Conversely, the exposure to projects that instead involve the local institutions in the provision does not change the willingness to pay taxes. Finally, we do not find

statistical evidence that projects aimed at building institutions increase tax morale by signalling a higher future level of state capacity, possibly because these interventions are less visible to the citizens. Notably, we find that the estimated negative effect of the former type of intervention is driven by citizens residing in areas with better public goods provision (i.e., stronger statehood) and by those who report lower perceptions of corruption among state actors. This evidence suggests that individuals with higher expectations of the state as a service provider are more responsive to the negative signals conveyed by externally delivered public goods. Consistent with our findings, we observe that the reduction in tax morale is also linked to a decrease in confidence in state institutions (Besley & Dray, 2024).

This article contributes to two key debates: the effect of foreign aid on state-building and the relationship between tax authorities and taxpayers. To address seemingly contradictory findings in the literature (Baskaran & Bigsten, 2013; Dietrich & Winters, 2015; Gehring et al., 2022; Gibson et al., 2015; Jones & Tarp, 2016), we shift the focus from aid's impact on the state's *actual ability* to generate domestic revenues and provide public goods to its *signalling function*, regardless of tangible outcomes. Foreign aid can undermine state legitimacy by highlighting the shortcomings of the fiscal contract between the state and its citizens (Timmons, 2005), with different projects sending varying signals about the state. Additionally, this article contributes to the literature on the relationship between institutions, tax authorities and taxpayers' tax morale (Koessler et al., 2019; Kouamé, 2021), incorporating pre-existing beliefs that citizens hold about the state as filters for the signals sent by foreign aid projects (see e.g., Canen & Wantchekon, 2022; Hodler & Raschky, 2014). We explore why citizens in contexts of state neglect might still be willing to pay more taxes and support a stronger state. Our findings suggest that certain aid initiatives are perceived as signals of state weakness, particularly when they bypass the state and are implemented in areas where the state is, in fact, a provider of public goods.

2. How does aid signal state capacity?

Tax morale, encompassing non-pecuniary motivations for citizens to pay taxes, is a key factor determining tax compliance (Luttmer & Singhal, 2014). In countries with low fiscal capacity, the lack of revenue collection can result in poor governance and service delivery, leading to reduced tax morale and perpetuating a poverty trap (e.g., Besley, 2020). Foreign aid can contribute to breaking this vicious cycle through two channels illustrated in Fig. 1. The first channel entails the long-term fiscal capacity-building process through technical assistance and institutional changes. Improved fiscal capacity enhances the cost of not paying taxes, making it more likely for the state to punish tax evaders. Additionally, increased fiscal capacity results in better provision of public goods, which can boost tax morale.¹ The second channel, which is the focus of our paper, works through a short-term signalling effect on tax morale, independent of tangible improvements in the state's fiscal capacity level. Foreign aid projects are expected to increase the state's salience and convey information on its current capacity to citizens. Hence, aid can affect citizens' willingness to support the state by contributing to public goods provision via taxation. The extent of this effect varies depending on the focus of the aid project. We argue that certain projects can signal state failure by indicating the state's current inability to meet citizens' demands and its reliance on parties that are external to the fiscal contract between states and citizens.

Indeed, research on the effect of foreign aid on domestic institutions has increasingly focused on the fiscal contract model. The model posits that citizens are willing to pay taxes in the expectation that the

¹ Notably though, as Morrison (2012) points out, protracted aid flows may generate a dependency not dissimilar to the so-called resource curse (Masi et al., 2024).

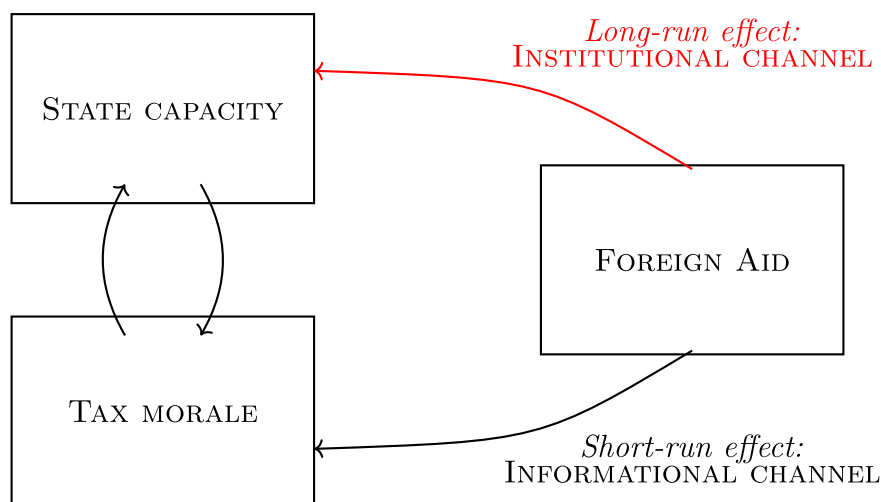


Fig. 1. Channels through which foreign aid affects state-building.

government will deliver services. States can enforce tax compliance with coercion, but boosting tax morale with the expectation of public goods provision allows the state to collect revenues without using costly coercive measures (Besley & Dray, 2024; Moore, 1998, 2004; Prichard et al., 2025; Timmons, 2005). By extension, one would expect foreign aid to undermine the fiscal contract for two reasons. First, increased foreign aid flows reduce governments' reliance on revenues, reducing incentives for bargaining with citizens (Bräutigam, 2008; Busse & Gröning, 2009). Second, as the aid provision reveals a gap in states' ability to deliver and fulfil the fiscal contract, this should curb citizens' tax morale. The first mechanism concerns changes in governments' incentives to improve governance and service delivery and is more likely a long-term nefarious effect of aid. The second focuses on citizens' incentives to contribute to public goods and, more generally, state building. This article is concerned with this second mechanism, which has notably found limited support in existing studies.

Sacks (2012) provides one of the most extensive analyses of the fiscal contract model in Sub-Saharan Africa and shows that tax morale is higher when governments fulfil the fiscal contract. Expanding the fiscal contract to include non-state actors, and contrary to what the fiscal contract model would predict, she observes that citizens' perceptions that donors and NGOs are helping the country do not harm governments' legitimacy and tax morale. In line with this, Blair and Roessler (2021) show that foreign aid does not disrupt the fiscal contract; aid *per se* does not negatively affect state legitimacy, tax morale, or compliance. More recent research has uncovered the potential heterogeneous effect of aid types on domestic institutions. Dietrich and Winters (2015) decompose aid in democracy and economic aid and show that the former contributes to democratic transition while the former to democratic consolidation.

We contend that this research has overlooked the heterogeneous effects of aid projects with different goals. We posit that aid projects that aim to fill capacity gaps convey distinct, negative information regarding the state and its current and future performance. External financial support may not necessarily undermine the legitimacy of the fiscal contract, which is rooted in service delivery. However, tax morale is more likely to decline when external actors take over the provision of basic services traditionally the responsibility of the state. In line with the fiscal contract model's predictions, we should expect aid projects that focus on public goods provision to negatively impact tax morale. This effect is exacerbated when the public good is provided without state involvement (Dietrich, 2013). Based on the above discussion, we expect that *foreign aid projects that provide public goods without state participation reduce citizens' motivations to pay taxes.*

Furthermore, we contend that citizens' expectations and experiences of the state as a provider will mediate the effect of aid projects. For example, citizens with high expectations of government service delivery may perceive aid as a signal of weakness or ineffectiveness. In contrast, others may view it as a success for the government, boosting its reputation (Blair & Winters, 2020; Winters et al., 2018). Aid delivered by non-governmental organisations (NGOs) can enhance confidence and trust in national governments, as citizens perceive the ability to attract aid as a sign of governmental competence (Baldwin & Winters, 2020; Dolan, 2020; Sacks, 2012). For others, foreign aid is the only source of service delivery they have ever experienced, meaning that low levels of state legitimacy may remain unchanged by the arrival of foreign aid (Baldwin & Winters, 2020).

We expect that citizens living in well-served areas where expectations of government service delivery are higher should be more responsive to aid as a signal of weakness. Conversely, citizens accustomed to limited or dysfunctional statehood will interpret the aid as a signal consistent with their expectations, making them less likely to update their preferences or levels of tax morale.

To summarise, we expect that *foreign aid projects on public goods provision will have a stronger negative effect among citizens in regions where the state delivers and perceptions of corruption are lower.*

3. Data description

Our article relies on two primary data sources, the AidData database and the Afrobarometer, to examine the impact of foreign aid on attitudes towards tax compliance. AidData provides information on geocoded foreign aid projects funded by several donors, including the project's location, sectors, and themes of the intervention (Tierney et al., 2011). The Afrobarometer provides key individual-level information on attitudes and beliefs in the economic, social, and political spheres. We describe both data sources in more detail below.

3.1. World Bank aid projects

To best isolate the theoretical mechanism we are interested in, we focus on (i) World Bank projects that (ii) started recently and (iii) are implemented in first- or second-order administrative units. World Bank projects are coded from 1995 to 2014. Focusing on World Bank projects allows us to analyse the effect of multilateral aid by partially reducing the impact of donor-specific features. This should minimise concerns over the credibility and legitimacy of the aid programs, which are more acute for bilateral aid (Blair & Roessler, 2021). At the same time, using recently started projects allows us to test our argument

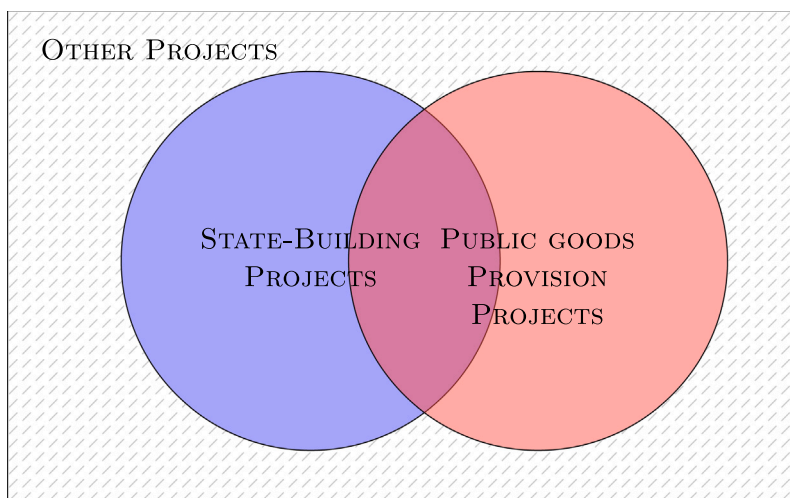


Fig. 2. Foreign aid sectoral composition.

Notes: The Venn diagram illustrates the composition of foreign aid projects in our sample. The diagram consists of two non-exclusive macro-categories: projects that provide public goods (in red) and projects that promote cooperation, technical assistance, and investment in state-building (in blue). The overlapping area represents projects through which the donor, with the cooperation of the government, provides a public good to the recipient. The area outside the two main circles represents a residual category of projects (in white). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

about the informational content that projects convey rather than the tangible outcome of their implementation. We select projects coded at the first- or second-order administrative units within each country (which we refer to as “regions”) for three main reasons. First, focusing on wide-scope projects ensures they are visible and relevant to citizens. In addition, a project’s location does not always coincide with the basin of beneficiaries. For example, an intervention in a village’s school may include beneficiaries from the village and children residing in nearby areas. Restricting the treated individuals to those living in the village can lead to a misidentification of the beneficiary group. Finally, by defining the treatment level at the regional level, we can track the unit of treatment over time and control for all time-invariant characteristics at the regional level that can correlate with tax morale. This helps mitigate the issue of endogenous selection into treatment that has been highlighted in the literature (e.g., Blair & Winters, 2020; Isaksson & Kotsadam, 2018).

Based on this sample of World Bank aid projects, we proceed by classifying the projects based on their sector or theme. Specifically, we distinguish three main types of projects. First, projects focusing on public goods’ provision that do not involve the local state (such as the provision of a school or of a hospital); second, projects involving the provision of public goods implemented with the assistance of a state actor (such as a government ministry); third, state-building projects that focus on building the capabilities of the state (such as institutional reforms or capacity-building for civil servants). We draw these aid categories as circles in a Venn diagram illustrated in Fig. 2. The diagram shows that some projects that we categorise as public goods provision (red area) also fall under the state-building code because they involve collaboration with the recipient state (purple area)—a circumstance that allows us to investigate how the state’s involvement in the provision of public goods affects the impact of foreign aid on tax morale. Our expectation is that lack of state involvement in public goods provision is particularly detrimental to tax morale as it contravenes the fiscal contract. More detail on the categories and a technical description of the codes and themes used can be found in Online Appendix Section B.

It could be argued that no World Bank project will even start without the state’s involvement, which should at least authorise the project implementation in its territory. Our argument, though, is about the extent of state involvement, which is expected to vary across projects. Dietrich (2013)’s work on “bypass aid” shows that there are several channels through which aid projects may not directly involve the state as an implementing partner. A different concern would be

whether citizens can effectively separate public goods projects implemented with the government. The research suggests that “[d]espite having no actual involvement in the allocation of aid, incumbents claim credit for foreign development projects in their communities by advertising that their personal effort and ability to attract resources have led to the receipt of the project” (Cruz & Schneider, 2017, 396). If politicians claim credit undeservedly (see also Baldwin & Winters, 2023), this implies a negative effect of no-government aid on tax morale is likely downward-biased.

3.2. Afrobarometer

Our second key source of data is the geocoded version of the Afrobarometer (AfB) (BenYishay et al., 2017), which has been collecting information on public opinion and attitudes in African countries since 2001. To ensure a stable sample size, we focus on Sub-Saharan countries in rounds 3, 4, and 5 of the AfB. The sample we examine covers 30 Sub-Saharan African countries and is mapped in Fig. 3. Rounds 1 and 2 are excluded as they do not include information on tax morale and/or other key variables we use to tease out mechanisms; also, as AidData only covers projects up to 2014, round 5 is the last AfB round we can use for our analysis. More specifically, round 3 took place between March 2005 and March 2006, involving 25,389 individuals across 18 countries; round 4 was conducted between March 2008 and June 2009 across 20 countries, with a total of 27,684 respondents; round 5 was conducted between October 2011 and June 2013 in 34 African countries (30 in Sub-Saharan Africa), with 46,105 individuals interviewed. The survey includes probability weights that enable comparisons within and across sampled countries. Fig. 3 shows our sample from the Afrobarometer and the location of World Bank projects. Darker shades of blue represent countries that appeared in more rounds.

The surveys are based on face-to-face interviews that are nationally representative, and they utilise standardised questionnaires across countries within the same round. These surveys provide critical information on the provision of public goods and the interview date. Our main variable of interest is tax morale, which is measured by respondents’ self-reported attitudes towards tax compliance (see e.g., Luttmer & Singhal, 2014). We code responses based on whether respondents agree that “the tax authorities always have the right to make people pay taxes”, with answers ranging from 1 (“strongly disagree”) to 5 (“strongly agree”). On average, respondents have a tax morale level of

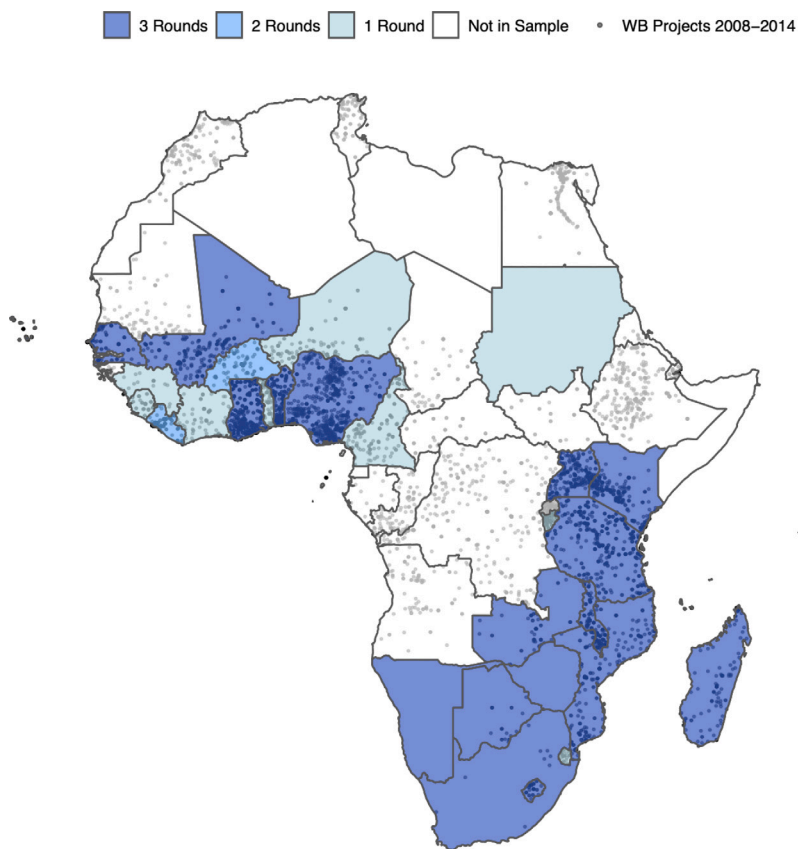


Fig. 3. Afrobarometer sample (Rounds 3 to 5) and World Bank projects.

Notes: Countries in white are not fielded by AfB or are not included in our sample of Sub-Saharan African countries. Dots indicate the centroids of the region where a World Bank project is implemented.

approximately 3.70. However, there is considerable variation around this mean, with a standard deviation of 1.18, as indicated in Online Appendix Table A.1, where we report the summary statistics of the variables used in this study. Additionally, we use a range of respondents' characteristics and variables to investigate the mechanisms driving the effect of foreign aid on tax morale.

3.3. Matching Afrobarometer interviewees with aid projects

Notably, the geocoded version of the AfB provides location information for each interviewee, enabling us to match them with World Bank aid projects based on space and time. Our matching process involves defining a relevant time interval within which a project's start can provide citizens with relevant information about the country's state capacity level. In doing so, one would likely face the following trade-off. Restricting the study window as close as possible to the project's start date would allow us to observe the most genuine citizens' reactions that may occur when a project is launched. However, it would make our matching strategy very demanding, potentially narrowing the sample of units exposed to aid projects. To resolve the trade-off, we employ two complementary empirical strategies. We will first investigate our research question by setting a 6-month interval length, allowing us to maximise the number of respondents reached by aid and exposed to the new information related to the state. Then, we will zoom into those units that, by accident, were surveyed during the start of an aid project—thus allowing us to study the change in attitudes of the citizens interviewed immediately after the event. In other words, our empirical strategy combines two analyses that achieve a sufficient degree of generalisation and a satisfactory level of internal validity. In the next section, we will describe these two strategies in detail.

4. Empirical strategy

To investigate the impact of foreign aid on tax morale, we start comparing the levels of tax morale among individuals living in treated regions with those residing in the non-treated areas. To operationalise treatment, we create a dummy variable, $Projects_{rt}$, which takes a value of 1 if the AfB country-round, where an individual was interviewed, coincides with the 6-month interval from the project's start date. In other words, if one or more projects began within six months of the AfB round t roll-out date in region r , and 0 otherwise. We illustrate the treatment selection in Fig. 4, which outlines two hypothetical scenarios. Panel (a) shows a project that started around four months before the roll-out of round 4 of the AfB survey (AfB-4) in Region 1, while (panel b) shows two projects that started seven months before and a month after AfB-4 in Region 2. In this illustrative example, only respondents to AfB-4 in Region 1 are treated, i.e., exposed to a signal of state capacity. As one can see, the treatment varies across regions and AfB rounds, allowing us to track the same region over time.

The coefficient β in our regression equation captures the impact of differential exposure to aid on the individual level of tax morale, y_{irt} , and is given by:

$$y_{irt} = \alpha + \beta Projects_{rt} + X_i' \gamma + \phi_r + \Lambda_t + \theta_{ct} + \varepsilon_{irt}. \tag{1}$$

Here, X_i is a vector of individual controls (that is, age, age squared, gender, education, whether the interviewee lives in a rural area, unemployment status, whether the interviewee is a member of a religious group or a member of the major ethnic group, the number of public goods provided in the village, and the usage intensity of TV or radio) and of interview characteristics (that is, the interviewer's gender and education level, language, and perceived influence during the interview). ϕ_r and Λ_t are the region and round fixed effects, respectively.

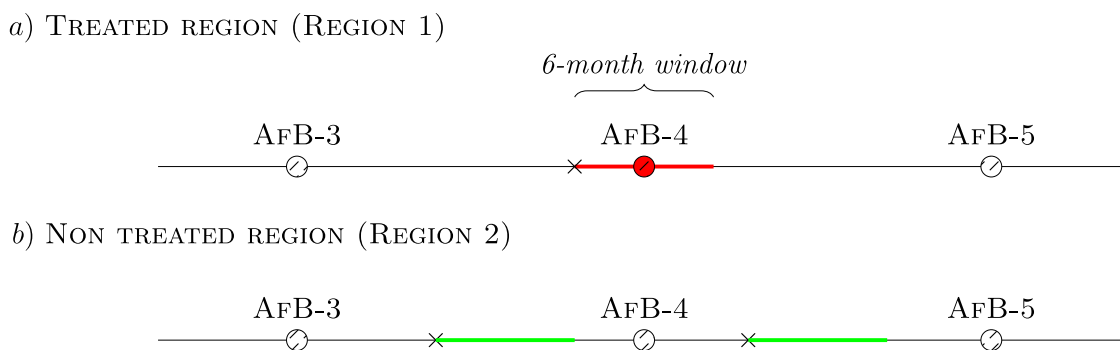


Fig. 4. An illustration of the treatment at work.
Notes: Each cross represents a project start date. The red line in panel (a) represents the time interval during which the start of a project conveys information on state capacity to citizens. For instance, in Region 1, a project began just before the AfB-4 survey, meaning respondents in that region received a state-building signal, while those in the non-targeted areas did not. At the same time, the two projects in Region 2 do not provide information on state capacity to citizens interviewed as the AfB-3 and AfB-4 surveys do not coincide with the 6-month exposure windows used in this study (green line in panel b). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

Region-fixed effects are included to control for time-invariant unobservables that may affect tax morale or selection into treatment. θ_{ct} is the interaction between country and round fixed effects and controls for country-specific policies and the common factor in aid delivered to a given country at a given time. Finally, ε_{irt} is the error term we cluster at the region level (our treatment level).

This empirical setup assumes that (i) World Bank projects are visible and (ii) citizens are informed about them at or reasonably close to the start date. On the first point, donors have incentives to publicise their projects and use so-called “branded aid” to ensure visibility and awareness among target populations. Some have raised concerns about this practice, as it is expected to erode the social contract between citizens and the state (in line with our argument) (Koch, 2024). Furthermore, the World Bank strategy includes outreach and education programs targeting citizens of recipient countries, which suggests some degree of awareness of such projects within targeted communities (Prichard et al., 2019). Yet, as we cannot determine which citizens receive the project’s information signal, our estimated effects must be interpreted as an *intention-to-treat* (ITT). The second problem is that among those we believe receive the signal, we do not expect citizens to become aware of the project exactly on the rollout date. That is why we define a six-month window since the project started. Citizens may learn about the project either from information campaigns or because there are visible signals of a public good project (e.g., construction sites). Some information on an upcoming project may be disseminated in advance, but this is unlikely to be widespread and to be a signal as strong as the actual, visible implementation phase.

As we discussed above, we contribute to the literature on the effects of foreign aid on tax morale by unpacking foreign aid and analysing how the heterogeneity in its sectoral composition affects citizens’ views of their own state. To do so, we divide foreign aid into categories that are expected to affect citizens’ tax morale differently. We utilise the sectoral heterogeneity of aid in the regression framework below:

$$y_{irt} = \beta_0 + \sum_k \beta_k \text{Projects}_{rt}^k + \gamma' X_i + \phi_r + \Lambda_t + \theta_{ct} + \varepsilon_{irt}. \tag{2}$$

Here, k represents the type of aid (e.g., public good-related projects or state-building projects), and Projects_{rt}^k is a dummy variable that equals 1 if one or more projects of type k started within 6 months of the AfB round t roll-out date in the region r . It is important to note that these categories of aid are exhaustive and represent the entire composition of foreign aid in our sample. However, they are not mutually exclusive, as two projects in different sectors can be implemented simultaneously within a region. Hence, the coefficient β_k represents the difference in tax morale between individuals living in regions where projects of type k have recently started, relative to those living in areas where no aid has been recently implemented, and controlling for other types

of projects. As we do in Eq. (1), we also control for respondent and interviewer characteristics, region fixed effects, AfB round fixed effects, and country-by-AfB round fixed effects. Standard errors are clustered at the regional level, but we will show below that our results do not change when we employ alternative clustering methods.

The above analysis assumes that region-fixed effects can effectively control for all regional characteristics that influence the likelihood of receiving aid, particularly those that are stable or change slowly over time. However, this assumption may not hold for factors that vary over time, such as natural disasters or conflicts, which could affect a region’s probability of being targeted for aid. Furthermore, evaluating the parallel trend assumption is challenging because the area under study had already been exposed to aid before our analysis period. Hence, it is difficult to assess whether there were any divergent trends between regions that received aid and those that did not in this set-up. Lastly, to ensure statistical power, we examine the effects six months after a project’s initiation. However, this approach may fail to capture the immediate or short-term signalling effect that may occur when a project is launched.

To address these concerns, we propose the following complementary empirical strategy. We use the start of a project as an unexpected event during the fieldwork of an AfB survey to assign respondents into treatment and control groups as good as randomly. The start date of each project is, in fact, plausibly exogenous to the timing of the interviews, as the survey roll-out is typically planned well ahead. By comparing the tax morale levels of respondents interviewed immediately after the project’s start date with those interviewed immediately before, we can interpret any difference in levels as causal. Additionally, this strategy allows us to leverage variation across interviewees within a project and include project-fixed effects in our regression framework. In sum, this approach helps to control for time-varying factors that can affect selection into treatment.

Fig. 5 visually depicts the matching process between the AfB and World Bank aid projects. The vertical bands indicate the period of survey roll-out in the surveyed areas, while the crosses represent the exact start day of each project. Only the eight aid projects matched with surveyed areas are shown in the figure: two during AfB-3, one during AfB-4, and five during AfB-5.² To estimate the effect of the start of an aid project on tax morale, we use the following regression equation:

$$y_{ij} = \alpha + \beta \text{Post}_{ij} + \gamma' X_i + \mu_j + \varepsilon_{ij}, \tag{3}$$

² Online Appendix Figure A.2 shows all the projects’ start dates in our sample and the AfB interviews range. The eight projects that matched the AfB roll-out are described below in Table 2.

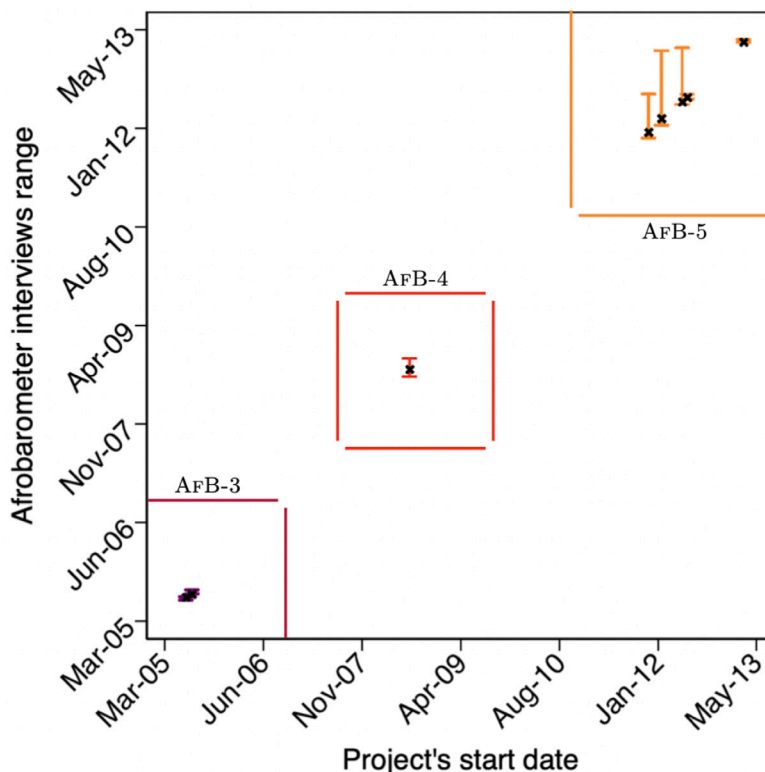


Fig. 5. AFB survey fieldworks and matched projects' start dates. Notes. Cross marks indicate the starting date of a project; vertical bands define the interview roll-out period that intersects with the start of a project; the squares show, approximately, the overall roll-out period of an AFB round (which may vary by country). Dark red stands for Afb-3, red for Afb-4, and orange for Afb-5. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

where i refers to individuals and j to projects. y_{ij} denotes the level of tax morale and $Post_{ij}$ is a dummy variable that equals 1 if individual i was interviewed after the start of project j . We identify the coefficient β using X_i , a vector of baseline individual controls and interview characteristics (the same covariates used above in the primary analysis). The error term ε_{ij} is clustered at the PSU level since the treatment now varies at that level (within a region). Crucially, the equation includes project fixed effects, denoted by μ_j , which allows us to compare individuals in proximity to each other, interviewed during the same period, and exposed to the same informational shock. Finally, as above, we turn our attention towards a regression analysis that allows us to investigate the heterogeneous effects of aid using its sectoral composition. Denoting $Project_j^k$ as a dummy variable equal to 1 if project j falls in sector k , we can rewrite the regression equation as follows:

$$y_{ij} = \alpha + \beta_k (Post_{ij} \times Project_j^k) + \gamma' X_i + \mu_j + \varepsilon_{ij}. \tag{4}$$

The identifying assumption of the β s is that the individuals interviewed in the days immediately following the project's start date and those interviewed in the days immediately before are the same, except for having received the news about the actual state capacity level. Below, we will provide a number of validation analyses in support of this analysis' identifying assumption.

5. Results using within-region variation in aid exposure

5.1. Main results

We start by investigating the effect of foreign aid on tax morale by estimating Eq. (1). As discussed earlier, the extant literature finds no evidence of such an effect. We replicate these results in column 1 of

Table 1. Consistent with prior research, we find a statistically imprecise effect (with the point estimate close to zero), suggesting that foreign aid projects, taken together, do not significantly impact citizens' level of tax morale. In columns 2 to 4 of **Table 1**, we split foreign aid into categories that are expected to affect the citizens' view of the state differently. In column 2, we start by investigating the effect of foreign aid related to the provision of public goods. Our results show that these projects have a negative but insignificant impact on tax morale. Yet, as we move across the table's columns, the importance of further considering the heterogeneity in the type of aid emerges. In column 3, we categorise foreign aid projects aimed at public good provisions into two groups based on their level of government participation: Those with government participation and those without. As we argued above, this is important because aid that provides public goods and services without the participation of any state actor (and therefore bypasses and substitutes it) may be seen as a negative signal of state capacity. Indeed, we estimate a negative and significant impact of all interventions donors implement without the collaboration of a government actor. In contrast, those donors implement in partnership do not deteriorate tax morale. The former estimated effect is equal to -0.409 , equivalent to around 35% of a standard deviation in tax morale (which is 1.18).

Finally, in column 4, we add a further category of foreign aid, namely projects aimed at building state institutions (excluding those delivering public goods). As one can see, the estimated coefficient is not statistically different from zero. Although one could expect this type of aid to raise tax morale (for instance, by sending positive signals about the future levels of state capacity in the country), the start of these projects may be less visible to the citizens, thus resulting in a noisy and weaker signal of state capacity.

In Online Appendix Table A.2, we further investigate whether the reduction in tax morale in areas exposed to aid on public goods provision (without the collaboration of the state) is associated with further

Table 1
Tax morale and foreign aid composition.

	Dependent variable is: Tax morale			
	(1)	(2)	(3)	(4)
All foreign aid projects	-0.001 (0.056)			
Public good provision		-0.050 (0.097)		
Public good provision (no govt)			-0.409*** (0.137)	-0.410*** (0.138)
Public good provision (with govt)			-0.047 (0.102)	-0.047 (0.100)
State building projects (no pg)				-0.059 (0.091)
Other projects		0.022 (0.059)	0.024 (0.056)	0.040 (0.066)
Adm Unit FE	Yes	Yes	Yes	Yes
Round FE	Yes	Yes	Yes	Yes
Country × Round FE	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes
Interviewers controls	Yes	Yes	Yes	Yes
Dep. var. mean (standard dev.)	3.699 (1.180)			
N	88,816	88,816	88,816	88,816
adj. R ²	0.074	0.074	0.074	0.074

The unit of observation is the AfB respondent. The dependent variable is tax morale. All columns control for a vector of individual controls (such as age, age squared, gender, education, whether the interviewee lives in a rural area, unemployment status, whether the interviewee is a member of a religious group or a member of the major ethnic group, the number of public goods provided in the village, the usage intensity of TV or radio) and of interview characteristics (such as the interviewer's gender and education level, language, and perceived influence during the interview). Regressions also include ADM1 fixed effects, AfB round fixed effects, and country-by-round fixed effects. Standard errors clustered at the ADM1 level in parentheses. Symbols: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2
Description of the sampled foreign aid projects.

Project's title	Start date	Countries	Main theme	Purpose code	Public good provision (no govt)	Public good provision (with govt)	State-building project	Others
Environmental Management and Capacity Building (Additional Finance)	2008-09-04	Uganda	Pollution management and environmental health	312	1	0	0	0
Tanzania - Basic Health Services Project	2011-12-20	Tanzania	Health system performance	120	1	0	0	0
Agricultural Competitiveness and Diversification Project	2005-07-05	Mali	Rural services and infrastructure	151	0	1	0	0
Malawi: Shire River Basin Management Program (Phase-I) Project	2012-06-14	Malawi	Rural non-farm income generation	151	0	1	0	0
Zambia: Livestock Development and Animal Health Project	2012-02-28	Zambia	Infrastructure services for private sector development	151	0	1	0	0
Marine and Coastal Environment Management	2005-07-21	Tanzania	Participation and civic engagement	151	0	0	1	0
Cameroon Social Safety Nets	2013-03-21	Cameroon	Gender	310	0	0	0	1
West Africa Agricultural Productivity Program 2A	2012-05-22	Ghana, Mali, Senegal	Regional integration	311	0	0	0	1

reactions. One of the most important mechanisms highlighted in the literature is the confidence level in the state institutions. By sending a bad signal of state capacity, this external intervention can lessen the level of trust in these institutions, especially the local ones (e.g., Schmelzle & Stollenwerk, 2018; Winters et al., 2018). We therefore re-estimate Eq. (2) by including as a left-hand side variable a measure of institutional trust. Specifically, in column 1 we use trust towards the President; in column 2 we use trust towards the Parliament, and in column 3 we focus on local governments. While the estimated coefficients associated with this type of aid are negatively signed, they are statistically imprecise, possibly because we can only measure a delayed adjustment due to the treatment. Indeed, as we illustrate in Section 6, we estimate a negative and statistically significant effect on the level of trust in the local government when observing the citizens' reaction to the start of projects in the shorter term.

5.2. Harmless foreign interventions

In the previous section, we found that aid on public goods provision, not carried out in partnership with the state, deteriorates citizens' views of their state, making them less prone to pay taxes. Does that mean there is no scope for this type of external intervention? As we have argued, if citizens have a negative prior belief about the state (due to poor performances and/or negative beliefs), their updating will be minor after observing the donor's intervention, which signals weakness. In this section, we examine two possible sources of variation in these prior beliefs: limited statehood (i.e., poor public goods provision) and perceptions of corrupt institutions.

To proxy statehood, we gather PSU-level information on whether critical public goods and services are available near respondents. During the fieldwork, AfB's interviewers collect invaluable information

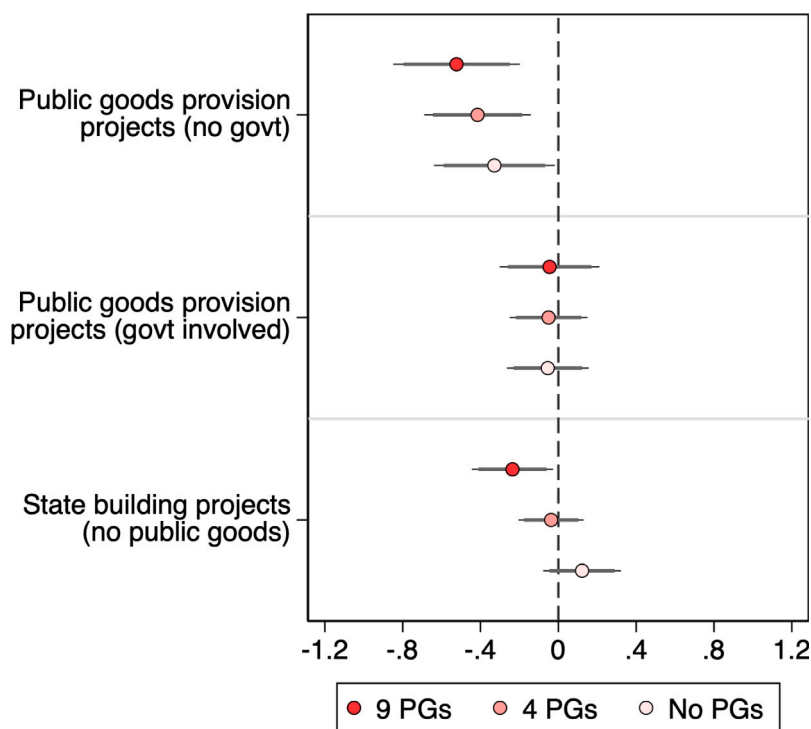


Fig. 6. Tax morale and aid in areas with varying state presence.

Notes: The figure shows the estimated effects of different aid on tax morale for varying degrees of statehood. The red circles indicate the effects of the exposure to each type of aid in PSUs with 'high state presence' (i.e. all services available); pink circles in PSUs with 'middle state presence' (i.e. 4 services available); light pink circles in PSUs with 'no state presence' (none of them available). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

about the availability of electric power, sewage, piped water, cell phone service, post office, schooling, police stations, health clinics, market stalls, and tarred or paved roads in the PSU. Next, we categorise PSUs as having 'high state presence' (i.e., all services available), 'middle state presence' (i.e., 4 services available), and 'no state presence' (none of them available). We, therefore, estimate an interaction term regression model in which we interact the dummies, indicating exposure to a certain type of aid with this proxy of statehood. We illustrate the marginal effects in Fig. 6. As one can see, while, as expected, the negative effect of public goods provision projects (without the state) on tax morale is larger for individuals residing in PSUs with a high state presence, the difference is not statistically significant.

Second, we use further questions from AfB that try to elicit the citizens' perceived level of corruption of public servants (tax officers and civil servants in general), as well as the President of the state. All these questions are coded from 0, meaning 'None of them are corrupt,' to 3, 'All of them.' For each of these measures, we compute regional-level averages to capture more stable proxies at the constituency level that capture shared beliefs of institutions' performances. As with public goods provisions, we use each of these measures on the right-hand side and estimate an interaction term regression model interacting exposure to aid and perceived corruption. Marginal effects are reported in Fig. 7. The red circles indicate the effects of the exposure to each type of aid in regions with low corruption perceptions (with an average value of 1, i.e. 'Some of them are corrupt'), whilst pink circles depict the effects in regions that are perceived as relatively highly corrupt (with an average value of 2, i.e. 'Most of them are corrupt'). As shown in the three panels in Fig. 7, the effect of public goods provision projects (that do not involve the state) is negative and statistically significant only in areas where the prior view about the state is not that bad, irrespective of the specific category of servants we look at. In areas where corruption is perceived as high, the effect is not statistically different from zero, suggesting that in these areas, these interventions do not convey further negative information about the state's capacity.

6. Using the start of a project as an unexpected event

As explained in Section 4, we complement the above analysis using within-project variation in the exposure to foreign aid. Accidentally, eight projects have their actual start date during the rollout of one of the AfB waves, covering 9206 interviewees across the continent. In Table 2, we list the eight projects we could match. In the last four columns, we use the categorisation outlined in Section 3 to divide the projects into the usual four categories. Two of them fall under the public goods provision (without the state) category; three are related to the provision of public goods in partnership with the state; one is a project aimed at building state institutions. The last two projects are related to neither of the two goals. This heterogeneity across projects allows us to test whether aid provided by donors in substitution of the state institutions reduces the citizens' level of tax morale.

In the remainder of this section, we will first provide evidence in favour of the analysis's identifying assumption and then present the estimation results.

6.1. Validation analysis

The identifying assumption of the effects of aid exposure on tax morale is that the individuals interviewed in the days immediately after the project's start date and those interviewed in the days immediately before are the same if not for the receipt of the news regarding the actual state capacity level. We back-check this assumption in two ways. First, we demonstrate that the variables included in the vectors X_i and R_i are, to a large extent, balanced between the two respondent groups. In column 1 of Online Appendix Table A.3, we present the estimated differences in mean values between the two groups. Each regression is specified with project-fixed effects, and PSU-level clustered standard errors are reported in brackets. Although some differences between the two groups appear, column 2 shows that they likely originate from only a small subset of observations (with an average of 125 PSUs per

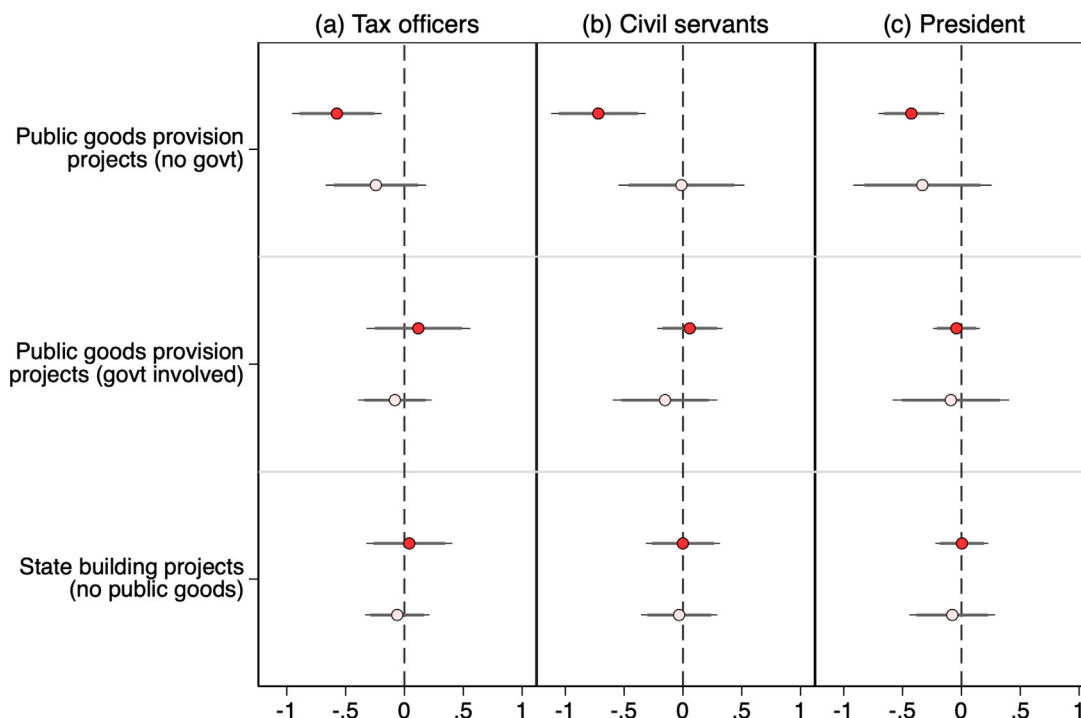


Fig. 7. Tax morale and aid in areas with various perceived corruption levels.

Notes: Each panel focuses on the perceived corruption of different state actors (tax officers, civil servants, and the president). The red circles indicate the effects of exposure to each type of aid in regions with lower perceptions of corruption; pink circles depict the effects in regions with higher perceptions of corruption. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

project). In fact, when we use a test that is not sensitive to sample size, such as the one suggested by Imbens and Wooldridge (2009),³ most of these differences disappear. However, two differences exceed the threshold of 0.25 recommended by Imbens and Rubin (2015): Living in a rural area and whether the interviewer speaks the same respondent’s language. To account for potential bias introduced by these differences (for example, a higher share of urban areas in the treatment), we include them as controls in our regression analysis, as stated earlier. Second, we replicate an event study and estimate the effect of all aid projects on tax morale on a daily basis. Reassuringly, this analysis shows that the parallel trend assumption is likely to hold (see Online Appendix Figure A.3). Note that the non-significant coefficients post-treatment align with the null effect of pooled aid projects.

6.2. Results

In Table 3, we present the estimates of the effect of the start of aid on the individual level of tax morale. In column 1, we do not distinguish among aid sectors (as in Eq. (3)) and estimate a negative difference between the two samples of interviewees, which is not, however, statistically significant. When we include project fixed effects (column 2), the magnitude of the coefficient increases (becoming a little more statistically precise). Our interpretation of this estimated negative sign is a potential over-representation of projects related to the public good provision, which we have previously shown to curb tax morale. Indeed, as reported in Table 2, the sample of matched projects includes five projects related to public goods provision and only one aimed at developing state capacity.

³ The differences in column 2 of Table A.3 are calculated by dividing the difference between the two means (m_{pre} and m_{post}) by the square root of the sum of the variances:

$$\frac{m_{post} - m_{pre}}{\sqrt{v_{post} + v_{pre}}}$$

In column 3 of Table 3, we use this heterogeneity in the aid sectors to distinguish the differential effects of the informational content embedded in different types of projects. The estimation of Eq. (4) indeed yields a negative and statistically significant effect of aid related to public goods provision (not performed in partnership with the state) on tax morale, which is similar in magnitude to what was obtained in Table 1. Likewise, we do not find further evidence that aid providing public goods in collaboration with the state deteriorates tax morale, nor that state-building projects improve these motivations to pay taxes.

Once again, we check whether a reduction in the confidence of state institutions is a possible mechanism behind the negative effect of public goods provision projects. With this purpose, we re-estimate Eq. (4) using a different left-hand side variable and report the estimation results in Online Appendix Table A.4. In column 1, we use the level of confidence in the President. Citizens interviewed the days immediately after the start date of a project that provides a public good in substitution of the state develop a more negative view of the President of the state; however, the estimated coefficient is not statistically different from zero. Likewise, we find a similar result when we examine variation in the trust in the Parliament (column 2). When we get closer to a state institution that is more in charge of the provision of these services, such as the local government, we estimate an adverse effect that is statistically significant at a 1% level (column 3).

7. Conclusions

Tax revenues are crucial to alleviating poverty, providing public services, and building infrastructure, especially in less-developed countries. However, large informal sectors, weak fiscal capacity, and tax avoidance make mobilising domestic financial resources challenging. These issues create a vicious cycle where weak institutions lead to ineffective governance, further straining the relationship between citizens and the state. In this context, the state often fails to provide essential goods and services due to its inability to raise taxes. At the same time, citizens lack the motivation to contribute as they receive little

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