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**Allocation of implementing power:  
Evidence from World Bank projects**

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# Allocation of implementing power: Evidence from World Bank projects

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Abstract: In this paper we explore the factors that determine the level at which World Bank projects are implemented. In particular, focusing on the importance of informational asymmetry between levels of government, we empirically assess whether this choice is influenced by the relative importance of local information at the recipient country level. Using an AidData dataset that provides information on more than 5800 World Bank projects for the period 1995-2014, and controlling for characteristics at both country and project level, we find that transparency does influence the probability that a project is implemented locally rather than nationally. More specifically, a one standard deviation decline in transparency increases the probability that a World Bank project will be implemented locally by 3 percent.

*Keywords:* World Bank projects, Implementing Agency, Transparency.

*JEL Classification:* F35, O19, D83

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# 1 Introduction

In the last few decades, many developing countries have chosen to decentralize policymaking and implementation authority, particularly in the form of delegation of service delivery systems to local governments. The rationale behind such reforms lies in the efficiency argument, according to which local officials are better informed on local needs and are more capable to provide goods and services, promoting, thereby, efficiency and economic development (among other see Oates, 1993; Bardhan 2002, 2016).<sup>1</sup> Following this reasoning, the World Bank has been actively involved with decentralization policies in many developing countries, both funding projects aimed at building decentralized structures, and allocating loans to subnational governments.<sup>2</sup>

Although it is likely that aid effectiveness could be improved by basing reform and project designs on context-specific knowledge (e.g., Besley and Persson 2011, Easterly 2008, Dixit 2009 and Dreher *et al.* 2017), the extent to which such information is actually used in aid allocation and implementation has rarely been investigated. An exception is provided by Dreher *et al.* (2017), who have shown that bilateral donors may choose to delegate some control rights over policies to recipients in order to exploit their local information.

Relying on this framework, we examine the choice of aid implementing agencies in World Bank projects. In particular, we are interested in exploring factors that might influence the choice of a central versus a local allocation of power. Indeed, it seems that the choice of an implementing partnership is going to be one of the factors determining a project's success. Very recently, Shin *et al.* (2017), focusing on World Bank projects, find that the choice of the implementing agent is a significant factor determining whether a World Bank development project will be successful

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<sup>1</sup> Another argument in favor of decentralization is that it improves accountability since citizens are able to monitor local governments better than central authorities. Bardhan and Mookherjee (2005, 2006), however, demonstrate that accountability, efficiency and equity in service delivery may worsen under decentralization due to the proneness of local governments to pressure from local elites.

<sup>2</sup> During the period 1990-2006, 47% of the World Bank commitments contained decentralization components (Gopal 2008).

or not.<sup>3</sup> Nevertheless, despite the importance of the implementing phase for a successful project, little is known about the choice of the implementation level.

Our specific contribution is then to analyze which factors influence this choice in the case of World Bank projects, focusing particularly on the role of information. Our hypothesis is that, when a recipient country is less prone to release policy-relevant information (it is less transparent), the importance of local knowledge increases relative to that of the donor (in our case the World Bank), and the need to delegate to a local implementing agency increases. Therefore, we want to test whether an informational advantage at the local level can influence the donor’s choice in favor of a local implementing agency.

Analyzing more than 5800 World Bank projects, we find that the probability of a project being implemented locally, rather than nationally, declines with a country’s level of transparency. More specifically, a one standard deviation reduction in transparency increases the probability that a World Bank project will be implemented locally by 3 percent.

The rest of this paper is organized as follows. Section 2 briefly summarizes the related literature, while Section 3 contains some theoretical considerations. Section 4 describes the data. Section 5 presents the empirical method and the results. Section 6 contains some robustness checks, while Section 7 summarizes and concludes.

## 2 Related literature

This paper relates to several strands of literature. The first is the (vast) literature on decentralization and development topical both in economics and in political science (e.g., Asher *et al.* 2017, 2018; Bardhan and Mookherjee 2006; Bardhan 2002, 2016; Gadenne and Singhal 2014; Kholi 1986; Lessmann and Markwardt 2010a, 2012; Oates 1993). Gadenne and Singhal (2014) consider how

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<sup>3</sup>Specifically, one of the factors that may explain the failure of a governmental agency lies in the deficiency of expertise, which determines how resources and technologies are utilized. In contrast, a local implementing agency would be closer to the recipient and hence better able to target aid to its specific needs.

the tradeoffs associated with fiscal federalism apply in developing countries and discuss reasons for their relatively low levels of decentralization. Bardhan and Mookherjee (2005, 2006) demonstrate that accountability, efficiency and equity in service delivery may worsen under decentralization due to the proneness of local governments to pressure from local elites. Lessmann and Markwardt (2010a) find evidence that decentralization increases corruption in countries lacking bodies which can effectively monitor bureaucrats (such as a free press).

More recently, Asher *et al.* (2018) focus on the importance of geographical distance, that is citizens' physical remoteness from their administrators, as an important factor that constrains the state's ability to provide public goods to all citizens. Using rich data on Indian villages, they show that greater distance to administration reduces a village's access to public goods and worsens welfare.<sup>4</sup> At least for roads, these effects are not driven by the higher cost of construction in remote villages, but higher cost of monitoring road quality. Hence, their results suggest that reducing the distance between the state and its citizens can help to mitigate the large spatial disparities in living standards observed within many developing countries. While they focus on the costs to the state of supplying public goods and monitoring their quality, which increases with the distance between citizens and the state, in our paper we focus on the importance of the local knowledge for the optimal allocation of implementing power.

As foreign aid is concerned, despite the increasing number of aid projects allocated locally, the role of the federal structure of aid-receiving countries in affecting both aid allocation and efficiency has generally been neglected by the literature. An exception is provided by Lessmann and Markwardt (2012), who examine whether the degree of fiscal decentralization matters in explaining the effect of aid on growth. Using panel data for 60 developing countries during the period 1966-2001, the authors find that foreign aid increases economic growth in highly centralized economies, while it may be even harmful in decentralized countries. Case study analysis leads them to conclude that increased corruption and coordination problems are the most likely transmission channels through

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<sup>4</sup>Greater distance increases costs for communities to organize and demand public goods from the administration, at the same time increasing the costs to the state of supplying public goods and monitoring their quality.

which decentralization affects aid effectiveness.

The second strand of literature to which this paper relates is primarily concerned with the role of information in designing development reforms. Quite a few papers have argued that institutions, organizations, and policies are context-specific and that conditional programs should suit better recipient countries' specific needs, for their successful implementation (Asmus *et al.* 2017; Basurto *et al.* 2017; Besley and Persson 2011; Dreher *et al.* 2017; Dreher *et al.* 2018, Easterly 2008; Dixit 2009, Honig 2018 and Marchesi *et al.* 2011). Although it is likely that aid "effectiveness" could be improved by basing reform and project designs on context-specific knowledge, the extent to which such information is actually used in aid allocation and implementation has rarely been investigated.<sup>5</sup> An exception is provided by Dreher *et al.* (2017), who have shown that bilateral donors may choose to delegate some control rights over policies to recipients in order to exploit their local information.<sup>6</sup>

More specifically, Dreher *et al.* (2017) examine the role of information transmission in the context of aid programs. They investigate the degree of leeway donors of foreign aid should grant to recipient governments when their preferences over how to implement the project are different, and both the donor and recipient possess some private information about the most effective policies. Their theoretical results show that donors should stay in control (centralized aid) of the use of their funds when their own private information is more important than the private information of the recipient. When local knowledge is instead crucial, an increase in the difference of preferences between donors and recipients can increase the leeway that donors should grant the recipients (decentralized aid), as they become less likely to communicate truthfully. Testing the model using

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<sup>5</sup>In different contexts, Marchesi *et al.* (2011), who—building on the cheap talk literature (Crawford and Sobel 1982, Dessein 2002, Harris and Raviv 2005, 2008)—have identified and tested the conditions under which it is optimal for the IMF to delegate control to a recipient country in order to maximize the quality of a reform program. More recently, Dreher *et al.* (2018) explore the role of information transmission in explaining the optimal degree of decentralization across countries.

<sup>6</sup>Basurto *et al.* (2015) have shown that a decentralized allocation of subsidies in rural Malawi may offer informational advantages, despite of being prone to elite capture. In a recent book, Honig (2018) argues that local information is particularly important to donors when they are working in fragile states (where levels of central government transparency are generally very low).

dyadic data for 28 bilateral aid donors and 112 recipients, over the years 1995-2010, they find that misaligned interests and informational asymmetries indeed influence the shares of aid given as budget and project aid, which represent decentralized and centralized aid respectively.

Finally, the contribution of this paper is also empirical. This paper is related to a growing body of literature which focuses on project-level aid (rather than country-level), especially in the case of World Bank projects. See, for example, Denizler *et al.* (2013), Dreher *et al.* (2013, 2015), Feeny and Vuong (2017), Kilby (2013, 2015), Öhler and Nunnenkamp (2014), Shin *et al.* (2017). Most of these papers actually focus on project performance. Focusing, in particular, on World Bank projects, Shin *et al.* (2017), find that the choice of an implementing partnership seems indeed to be a significant indicator whether a World Bank development project will be successful or not. One of the important factors for a successful allocation would be the expertise of the related implementing partner, such as skills (knowledge and experience) and governance (organizational and institutional aspects). By considering project preparation, Kilby (2015) represents an exception. He finds substantially shorter project preparation periods for World Bank loans to countries that are geopolitically important (especially to the U.S.). This channel of donor influence provides a new angle to examine the cost of favoritism and the impact of project preparation.<sup>7</sup>

Despite the importance of the implementing partner for project effectiveness (e.g., Shin *et al.* 2017), to the best of our knowledge, this is the first paper that investigates the allocation of the implementing power, and, especially, the determinants of a central versus a local allocation of implementing power in this context. In particular, we contribute to the literature analyzing the role of information in the choice of the implementation level, between national and local, of World Bank projects.

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<sup>7</sup>Kilby (2015) assesses also the impact of World Bank project preparation on project outcomes finding that projects with longer preparation periods are significantly more likely to have satisfactory outcome ratings.

### 3 Theoretical considerations

Following previous contributions (Marchesi *et al.* 2011, Dreher *et al.* 2017, Dreher *et al.* 2018), we focus on the saliency of asymmetric information and the related importance of information transmission in projects implementation. By adapting the theoretical model of Dreher *et al.* (2018) to this framework, we identify the transmission of information between government levels, with misaligned interests, as an additional mechanism to understand the degree of decentralization in project implementation.

In the current setting, the choice of a national vs. local level of project implementation resembles the choice of a "decentralization vs. centralization" policy scheme, as modelled in Dreher *et al.* (2018), and we plan to test whether informational asymmetry between central and local government and, more specifically, the importance of local knowledge, may explain (among other factors) the choice of a local implementing agency. Asymmetry of information is assumed to be one-sided, namely it is the local level of government which is assumed to have greater proximity to the 'local business environment' relative to central government officials (and to the donor) and to have better knowledge about the risks and opportunities of local investment projects. The local government is also assumed to be more subject than the national apparatus to the pressure of local interest groups.<sup>8</sup> Information is assumed to be "soft", that is it cannot be verified or it is prohibitively costly to verify.

Whenever the interests of the two levels of government differ, the quality of the information will depend on such conflicts of interest, with the central government rationally expecting the information transmitted by the local to be distorted (cheap talk game). Within this broad perspective, this paper focuses on the comparison of two types of incentive structures, relative to the quality of the transmitted information: "centralization" and "decentralization." Under centralization,

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<sup>8</sup>This is possibly due to the fact that the decisions of the central government are more likely to capture national, or even international, media's attention and, as a result, to be more visible to the worldwide community. Bordignon *et al.* (2008), for example, find that when regional lobbies have conflicting interests, lobbying is less damaging for social welfare under centralization than under decentralization.



project implementation is assigned to the national government, whereas under decentralization it is assigned locally. According to the results derived in Dreher *et al.* (2018), decentralization prevails when the importance of the local government's private knowledge dominates the size of the conflicts of interest. Thus, an immediate empirical implication of the theoretical analysis was to investigate the allocation of "implementation power" to information transmission problems.

In our context, however, there is another agent with its own decision rights, namely the donor (the World Bank), which faces a trade-off between *loss of control* and *loss of information*, when deciding the optimal allocation of implementing power. The World Bank is assumed to be a benevolent multilateral institution, helping countries implement projects to raise quality of people's lives. As we assume a benevolent institution, we do not consider the World Bank's concern for the interests of some "special" shareholders, which is indeed a strong assumption but it allows us to focus on the issue of information transmission and its implications for the choice of the implementation level.<sup>9</sup>

Furthermore, for simplicity of exposition, we also assume that the donor can always take (and enforce) the decision regarding the level of implementation. The results, however, would not change if we assume that this decision is taken by the central government. As previously demonstrated (Dreher *et al.* 2018), it will be in the central government's interest to have the project implemented locally when transparency is low.<sup>10</sup> Therefore, delegation to a local implementing agency should prevail when the advantages of the local information are high enough to dominate the costs due to loss of control, but not for other reasons.<sup>11</sup>

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<sup>9</sup>There is some evidence documenting the influence of political aspects on the World Bank credit allocation (Dreher *et al.* 2009; Kaja and Werker 2010; Kilby 2009). For a recent survey see Dreher and Lang (2016). As a robustness check, in Section 6 below, we will restrict the sample only to countries with good institutions and to projects obtaining a satisfactory evaluation, which, according to the literature, are less likely to be influenced by political influence (e.g., Dreher *et al.* 2013; Kilby 2015).

<sup>10</sup>When transparency is generally lower, information would not be publicly available at the central level, increasing the government's dependency on the local level, with less information being available in cases where no "decentralization" is chosen.

<sup>11</sup>In particular, in this setting we exclude the possibility that the donor delegate control to the local government if it is less trusting of central government institutions, that is unrelated to the donor's need for local information in non-transparent settings.

More specifically, we argue that the availability of information that is recorded can be limited in developing countries. This decreases the share of "hard" information that can easily be transferred and increases the importance of private "soft" knowledge. The relative share of hard to soft information, in turn, may depend on a country's transparency. In fact, such quality may make, *ceteris paribus*, the existing informational asymmetry more salient and lead the donor to maintain control rights over policy implementation (i.e., nationally implemented project). Therefore, we argue that the less transparent a country is, the more critical the local information will be. In more opaque countries, it should be more difficult to obtain information from sub-national government institutions, and the need to delegate authority to a local implementing agency should increase.

## 4 Data

We use the AidData (2016) dataset, which includes 5881 World Bank projects in the International Bank for Reconstruction and Development (IBRD) and International Development Association (IDA) lending lines, approved from 1995 to 2014. Among other project characteristics, AidData provides information on the body which is responsible for implementing the project without explicitly coding them. We decided to consider five main types of implementing agency: national and local government, public and private company, and non-governmental organization (NGO).

Then, we classify an agency as national (local) when the government responsible for project implementation is the national (local) one, and we code as a public (private) company an agency which is owned or regulated by the government (the private sector). When this information was missing, we collected the required data through the World Bank's project-specific documentation.

Following this procedure, we have to exclude 30 projects due to data availability constraint. Furthermore, since we are interested in the determinants of national vs local allocation of power, we exclude projects implemented by supranational agencies in more than one country (115 projects). On the other hand, when projects are implemented simultaneously by several agencies, we attribute

the same project to each of the involved agency. Our sample includes, thereby, 5736 projects that are implemented in 143 countries.

Figure 1 shows the evolution of World Bank projects over the sample period. We observe that the number of projects per year ranges from 250 to 300 until the year 2007 (when it exceeded 300), and it then reaches its peak in 2010 (when 379 projects were approved). After a substantial decline in 2012 and 2013, in the last year of the sample, we detect a sharp increase in the number of projects again. Then, Figure 2 shows the worldwide distribution of World Bank projects. As we can see, Pakistan, Bangladesh, Indonesia, Vietnam, India, China, Brazil, and Argentina obtained more than 100 projects during the sample period (with a maximum of 233 projects in China). On the other hand, a large number of countries was involved in less than 20 projects during the same period. Table A1 in the Appendix lists all countries included in the sample and report the corresponding number of projects.

## FIGURES 1 AND 2 HERE

Table 1a shows the distribution of World Bank projects by our five types of implementing agency. As we can see, the vast majority of the projects is implemented by national governments, typically by the ministries who are directly responsible for the project's sector. On the other hand, there are 767 projects which are implemented by subnational governments. Furthermore, 374 and 22 projects are implemented by public and private companies, respectively. Finally, only 11 projects are carried out by NGOs.

Then, Table 1b presents the distribution of the World Bank projects in our sample, according to our final classification between national and local implementing agency. Public companies are coded as national (local) when the level of the government owning or regulating them is national (local). We need to exclude 11 projects which are exclusively implemented by either private companies or NGOs since in both cases it is impossible to attribute them to any government level.<sup>12</sup> For the

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<sup>12</sup>On the contrary, we can keep the observation when a project implemented by a private company, or an NGO, is simultaneously implemented also by another (local or national) agency.

same reason, we exclude 59 projects involving both local and national agencies simultaneously. Consequently, the resulting dataset includes 5666 projects widely distributed across regions and sectors, as shown in Table 2 and Table 3.

TABLES 1a AND 1b HERE

*Africa* absorbs the largest proportion of World Bank projects, even if local agencies implement only 61 of them. Conversely, in both *Asia* and *Latin America* there is the highest proportion of "local projects".<sup>13</sup> Furthermore, Table 3 shows the distribution across the ten major project sectors, as classified by the World Bank.<sup>14</sup> First of all, we observe that only 13 percent of all the projects in our sample are locally implemented. Then, while most of the projects are concentrated in the *Public Administration, Law, and Justice* sector, these sectors account for only 12 percent of all locally implemented projects. Implementation power is instead more likely to be decentralized when the project falls into the *Transportation* or *Water, Sanitation and Flood Protection* sectors. Finally, while at least 52 projects belong to the *Information and Communications* sector, none of them is implemented by local agencies.

TABLES 2 AND 3 HERE

## 4.1 Variables of interest

We argue that the share of "hard" to soft" information is decreasing with a country's transparency, especially in developing countries. In fact, the local (soft) knowledge would be more important the less transparent a country is.

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<sup>13</sup>Indeed, *ceteris paribus*, the probability of finding a decentralized level of implementation may also depend on the federal structure of the country. In that respect, African countries are generally unitary, while in both Latin America and South Asia there are quite a few large federal countries (think for example of Brazil, Mexico, Argentina, on the one hand, and India, Pakistan and Bangladesh, on the other).

<sup>14</sup>Since the same project can involve more than one sector, we decided to consider the sector in which the project is mostly concentrated.

We use four different proxies for a country’s transparency. The first one is the *Share of No Missing Data (Transparency)* is an indicator of information transparency given by the share of data series included in the World Development Indicators (World Bank, 2013) for which data are available for a given country and year (Dreher *et al.* 2017). Then, we use the *Share of No Missing Economic Data* constructed by Hollyer *et al.* (2014), which is meant to capture the government’s willingness to release information related to areas economic policy and debt. The third proxy is the *Combined Transparency Index* constructed by Williams (2015), which is an indicator of Informational Transparency and Accountability where lower values indicate a lower ability of the donor to get access to reliable information. Finally, we use an indicator measuring the degree of *Press Freedom* (taken from Freedom House 2011, on a scale from 0-100). As widely recognized in the literature, a free press can make politicians and bureaucrats more accountable, applying constraints upon their actions and raising the opportunity cost of engaging in corrupt or unethical behavior (Besley and Burgess, 2001; Besley and Prat, 2006; Brunetti and Weder, 2003). Freedom House assesses the degree of print, broadcast, and digital media freedom and categorizes each country with a score that determines the status designation as free, partly free and not free. However it is measured, higher transparency is associated with lower importance of the local knowledge.

What is more, as an additional way to measure the salience of the informational asymmetry, we include a proxy that takes into account the bilateral relationship between the World Bank and the recipient countries. More precisely, we construct a measure for *World Bank Experience*, calculated by the number of years since the first World Bank project in the country.<sup>15</sup> When the "aid relationship" between the World Bank and the country is long, the recipient’s local knowledge becomes less important. This is because the donor has gathered experience through previous aid projects; thus it is, on average, better informed on the country-specific environment. The need for

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<sup>15</sup>Using the World Bank Projects & Operations dataset (World Bank, 2018), which provides information on all World Bank’s projects from 1947 to present, we compute the number of years from the first project in the country to the year of the specific project, leading to a maximum experience of 68 years.

delegation is therefore reduced by the number of years since the donor had first committed aid to the recipient (see Dreher *et al.* 2017).

## 4.2 Control variables

Following Denizer *et al.* (2013), we consider both project-level and country-level control variables. Among the first group of variables we include the *Total Amount*, that is the amount of commitment measured in million U.S. dollars, to capture project complexity. We also include *Investment Project*, that is a dummy equal to 1 if a specific investment project is financed, and equal to 0 if the project consists instead in development policy lending (i.e., capturing general budget support), and a dummy indicator for *IBRD* projects as opposed to IDA lending. Both investment and IBRD projects are generally implemented at the local level.

As shown in Table A3 in the Appendix, the committed amount varies considerably among types of projects, but the average amount is similar for projects implemented by national and local agencies. Nearly 80 percent of the projects in our sample consist of investment projects, confirming the low and declining importance of budget support, and IBRD projects account for 35 percent of total projects. Finally, we control for project sectors following the same classification presented in Table 3. Controlling for project sectors is indeed fundamental as it allows us to control for the projects that cannot be "arbitrarily" allocated to the central or to the local government, but they need to be implemented either locally or nationally for their intrinsic characteristics.<sup>16</sup>

As country-level variables, we include the *Ethnic Fractionalization* index taken from Alesina *et al.* (2003) to capture the influence of local interest groups, as in previous studies (e.g., Dreher *et al.* 2018). This index is widely used in empirical studies and is available for a large number of countries. We expect that greater diversity of the population will imply, on average, more substantial differences in the policy preferences between the central and the local government.

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<sup>16</sup>As we will show at the end of Section 5, the role of information will not be found to be the same in projects that are more likely to be implemented locally as compared to those related to sector typically dealing with national policies (i.e., the Public Administration and Finance).

Therefore, the higher the fractionalization, the higher the distance between the two levels of government.

We include *Bureaucratic Quality* from the International Country Risk Guide (PRS Group, 2012), in which higher scores indicate that the bureaucracy has the strength and expertise to govern. We expect that the higher the quality of the bureaucracy at the national level, the higher the probability that local governments' bureaucrats are as qualified as those in national governments (Lessmann and Markwardt, 2010b). Thus, the incentives to delegate the project to a local implementing agency is increasing with bureaucratic quality. Moreover, we take into account whether the country has a unitary or federal structure (*Federal System*) using data available from Norris (2008), since the probability of delegation should be higher in federal than in the unitary country.

We also control for *GDP per capita* to consider the level of development, and *Population*, which also captures "need," but can be taken as proxy for the ease of obtaining a country's political cooperation as well, since smaller countries are easier to "buy" (see, e.g., Boone 1996).<sup>17</sup> This choice is also consistent with the standard specification in the decentralization literature according to which bigger and richer countries are more likely to be decentralized.<sup>18</sup>

Table A2, in the Appendix, contains the definitions and sources of the variables included in the regressions below, while we provide descriptive statistics in Table A3. Table A4 shows the correlations of all variables included in the analysis.<sup>19</sup>

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<sup>17</sup>There is substantial empirical evidence linking a country's geopolitical proximity to the World Bank's major shareholders with a variety of types of preferential treatment (e.g., Dreher *et al.* 2009, Kaja and Werker 2010; Kilby 2009, 2013). We, therefore, included UNSC temporary membership, voting in line with the US in the UNGA, commercial ties with the US or the amount of US aid. Neither of those, however, was found to be significantly associated with the decision of a local vs national level of implementation. Results are available on request.

<sup>18</sup>Per capita GDP is included in most studies that try to explain decentralization and a country's (log) population is a proxy for its size that is frequently included in the related literature. See, for example, Panizza 1999, and Treisman 2006.

<sup>19</sup>Note in particular that the correlations between the variables measuring the bias and the informational variables are low.

## 5 Method and results

In this Section, we examine the determinants of decentralized implementing agencies using logit and multilevel logistic models. First, we use logistic regression to estimate:

$$y_{ijt} = \beta T_{it-1} + \gamma X_{it} + \delta Z_{jt-1} + \tau_t + u_{it} \quad (1)$$

where  $y$  indicates whether project  $i$  in country  $j$  at time  $t$  is implemented by a local implementing agency.  $T$  is the information transparency indicator evaluated at time  $t - 1$ ,  $X$  denotes the set of control variables related to project  $i$ ,  $Z$  includes country-level variables evaluated at time  $t - 1$ . We also include sector, regional dummies and time fixed effects in all specifications. Then, we take into account the way in which World Bank projects are nested into clusters (the 143 country sample), and we implement a multilevel logistic regression, considering project level controls only.<sup>20</sup>

Table 4 presents our main results. The first four columns show the results from the logit specification. In column 1, in which we only include project level variables, the probability of having a local implementing agency is negatively correlated with greater *Transparency*, at the one percent level. As for the control variables, the coefficient of the dummy for *IBRD* projects is positive and significant at the one percent level, as expected, while the coefficients of both the committed amount and the investment dummy are not significant at conventional levels.

The coefficient of *Transparency* remains significant but slightly decreases in size in column 2, in which we also control for *Ethnic Fractionalization*. The sign of the coefficient of this variable indicates that, as the racial and linguistic heterogeneity increases, the distance between the preferences of the World Bank and that of the recipient governments also increases, leading to lower incentives to delegate the project implementation to a local agency. The results are quite similar when we control for a country being a federal or a unitary one (column 3). The coefficient of

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<sup>20</sup>Due to lack of enough within-country variation, we cannot obtain consistent results when adding country-level variables.



*Federal System* is positive and significant, at the one percent level, showing that federal countries are indeed more likely to have a local level of implementation of a World Bank project, as the intuition would suggest. The coefficient of IBRD projects now turns insignificant, while the coefficient of the committed amount becomes negative and significant, at the one percent level, but its size is almost negligible.

In column 4, we include all other country-level variables. In this case, the coefficient of our variable of interest is still negative and significant, but its magnitude increases considerably. As for the other country characteristics, we find that the *Bureaucratic Quality* does not play a role in the choice of the implementation level, while the coefficient of *Population* is positive and significant, confirming that the more populated a country is, the higher the incentives to delegate to a lower level of government, as the literature on decentralization suggests. *GDP per capita* has a negative and significant coefficient, which instead goes against a standard result of the decentralization literature, but could be explained by the fact that poorer countries are just more in need of World Bank intervention (independently of the level of project implementation).

Finally, in column 5, we estimate a multilevel logistic model to account for the fact that the observations within the same country are not independent. We consider this specification as our preferred one as it allows us to control for time-invariant country characteristics.<sup>21</sup> The coefficient of *Transparency* is still negative and highly significant, although its size is lower than in previous estimations. Considering its marginal effects, one standard deviation increase in transparency would decrease the probability of having a local implementing agency by about 3 percent. Although this percentage is not very high, the impact of information on the choice of the implementation level has a considerable magnitude in economic terms, given the low proportion of projects implemented by local agencies.

#### TABLE 4 HERE

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<sup>21</sup>Moreover, a likelihood-ratio test comparing this model to the ordinary logistic regression is significantly in favor of the former type of specification.

Besides, we adopt two alternative specifications in which we split our sample distinguishing by different sectors. As sector analysis is concerned, in order to obtain within sector variation, we decided to aggregate the original ten types of sectors into five macro ones. More specifically, we aggregate: a) agriculture, fishing and forestry, and water, sanitation and flood protection (*Agriculture and water*); b) education and health and other social services (*Health and social services*); c) public administration, law and justice, and financial sector (*Public Administration and Finance*); d) energy and mining, and industry and trade (*Energy and industry*); e) information and communications, and transportation (*Transportation and Communications*). Such disaggregation contains at least one macro sector (*Public Administration and Finance*), which relates to the implementation of government policy and should then be centrally managed and four macro sectors, for which the local knowledge is likely to be more critical and should then be decentralized.

We implement a logit (Table 5a) and a multilevel logistic (Table 5b) model using our sector disaggregation. As expected, the results presented in Table 5b show that the coefficient of transparency is negative and significant, at the one percent level, for the four macro sectors that are more likely to be associated to locally implemented projects (*Agriculture and Water*, *Health and other social Services*, *Energy and Industry*, and *Transportation and Communications*). On the other hand, the coefficient of transparency is positive, but not significant at conventional levels, in the case of projects related to *Public Administration and Finance*, a macro sector typically dealing with national policies.<sup>22</sup> Thus, the role of information in determining the choice of a local implementation is only effective in projects related to sectors for which the local information is meant to be more useful.

#### TABLE 5a AND 5b HERE

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<sup>22</sup>The results are similar in the case of the logistic regression presented in Table 5a. The main difference is that the coefficient of the macro sector *Energy and Industry* is negative but not significant.

## 6 Robustness checks

This Section contains some robustness checks. We start by replicating the estimates presented in Table 4 using alternative indicators of a country's transparency. Then, we restrict the sample to i) projects evaluated either as "satisfactory" or "highly satisfactory", ii) countries with "good political institutions".

Table 6a presents the results obtained using four alternative indicators of information transparency. As described in Section 4.1, we use the transparency index provided by Hollyer *et al.* (2014), the indicator of press freedom provided by Freedom House (2012), the Transparency index built by Williams (2015) and our measure for the World Bank experience in the country. We implement a multilevel logistic model using each of these alternative measures for transparency and controlling for project level covariates.

As can be seen in Table 6a, all our proxies for information transparency are negatively and significantly related to the probability that a local agency implements a World Bank project. What is more, we find that the longer the relationship between the World Bank and the country, the less likely that a local agency implements the project. The probability of a locally implemented project decreases with greater donor experience, confirming the importance of information for the donor's preference of national over local allocation of power. In particular, one more year of *World Bank Experience* reduces the probability of "delegation" by 4.6 percent, which represents a sizeable effect. Furthermore, as Table 6b shows, the results are robust to including *World Bank Experience* together with our alternative proxies for a country's transparency. In particular, in column 1, a one standard deviation increase in *Transparency* reduces the probability that a World Bank project will be implemented locally by up to 2.7 percent, whereas one more year of *World Bank Experience* leads to a reduction in this probability of about 1.7 percent.<sup>23</sup>

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<sup>23</sup>These results are robust to a more restrictive definition of Bank Experience, which is obtained computing the number of years from the first WB project in the country to the year before our sample period (1994), leading to a maximum experience of 48 years. Results are available on request.

## TABLE 6a AND 6b HERE

Finally, we test for the role of information in the choice of local implementation in the case of projects which are less likely to be influenced by political aspects. Table 7 presents the results obtained restricting the sample, first, to satisfactory projects, then, to projects implemented by democratic regimes. Since geopolitical factors have generally been found to affect projects' performance negatively (e.g., Dreher *et al.* 2013 and Dreher *et al.* 2018, Kilby 2013 and Kilby 2015), projects obtaining a good rating should, on average, be more likely to be independent of political influence. On the other hand, in countries with good political institutions, the allocation of the implementing power should be less subject to the pressure of interest groups.

In columns 1-4 of Table 7, we replicate the estimates shown in Table 4 considering those projects that are evaluated at least as "satisfactory" by the Independent Evaluation Group (IEG).<sup>24</sup> Consistently with previous results, we find that both information transparency and World Bank experience are negatively and significantly related to the probability that a project will be locally implemented. In particular, in column 2, a one standard deviation increase in *Transparency* would decrease the probability of a local implementing agency by about 2 percent, and, in column 4, one more year of *World Bank Experience* would reduce this probability by 3 percent.

In columns 5-8, we restrict the sample to countries that achieved a score equal to or greater than 6 in the Polity IV Project indicator polity2.<sup>25</sup> This score is both the sample median and the lowest value in order to be categorized as a democracy in the Polity IV dataset. Also in this case, the results hold. More specifically, in column 6, a one standard deviation increase in *Transparency* would decrease the probability of a local implementing agency by about 3 percent, and, in column 8, one more year of *World Bank Experience* would lead to an increase of 2.4 percent

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<sup>24</sup>IEG is an independent unit within the World Bank Group that is responsible for assessing programs and activities, making recommendations, and disseminating lessons learned from experience. We consider the outcome rating that evaluates "the extent to which the operation's major objectives were achieved, or are expected to be achieved, efficiently" (see IEG 2018).

<sup>25</sup>The "Polity Score" captures regimes' characteristics on a 21-point scale ranging from -10 (hereditary monarchy) to +10 (consolidated democracy). See Marshall *et al.* (2018).

of the probability of "delegation" to a local implementing agency.<sup>26</sup>

## TABLE 7 HERE

In summary, we find evidence that, on average, the World Bank allocates the implementation of its projects to either local or national agencies taking a recipient country's transparency into account. Since *Transparency* is an indicator of the importance of the local information, *ceteris paribus*, more transparent countries receive more projects which are implemented at the national level as compared to less transparent ones, which is consistent with both theoretical and empirical results in the related literature (e.g., Marchesi *et al.* 2011; Dreher *et al.* 2017, Dreher *et al.* 2018). This suggests that the World Bank is less in need to rely on the recipient's local knowledge when transparency is high.

## 7 Conclusions

In this paper, we have explored the role of information transmission in explaining the choice of a national vs a local level of implementation in World Bank projects. In particular, we empirically assess whether this choice is influenced by the relative importance of the local information at the recipient country level. Exploiting the AidData (2016) dataset that contains information on more than 5800 World Bank projects for the period 1995-2014, we find that, controlling for characteristics at both the country and the project level, (lower) transparency does influence the probability of a project being implemented locally rather than nationally. More specifically, as transparency increases by one standard deviation, the probability that a project will be implemented locally decreases by 3 percent.

The results hold in particular in the case of sectors in which the local knowledge is expected to be more critical (e.g., Agriculture and water, Health and other social services, Energy and Industry,

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<sup>26</sup>The results do not change including countries with a Polity score equal or greater than 3, that is the sample mean, and are available upon request.

Transportation and communications) but not in sectors typically dealing with national policies (Public Administration and Finance). Moreover, the results are robust to considering alternative indicators of a country's transparency (including the bilateral experience of the World Bank in the country). They also hold when we restrict the sample to projects that obtained at least a satisfactory evaluation, and to countries with good institutions, which should indicate that they are, on average, less influenced by political factors, which are a possible alternative determinant of local implementation.

The analysis is, of course, limited in several respects. We do not claim to draw causal inferences from the empirical analysis, given the nature of the data available, but emphasize that the correlations resulting from our empirical analysis are in line with our predictions. We would also like to clarify that this paper identifies the transmission of information between government levels, with misaligned interests, as an additional mechanism to understand the degree of decentralization in project implementation. We do not claim that informational asymmetry should be taken as the only criterion to explain the choice of implementation level of projects, but we only argue that it is essential to consider it when discussing reform design and their implementation. Related to this, it would be important to explore better the importance of political factors (such as the existence of political ties between central and local governments) as possible alternative determinants of local implementation.

Future research might want to analyze whether those parts of projects that are given considering informational advantages are indeed more effective in improving outcomes than others. For example, greater "decentralization" may contribute to the creation of social capital and also increase the efficiency of aid by encouraging greater use of local knowledge in project implementation. What is more, it might be promising to find more reliable proxies for the specific importance of the local information, such as those deriving directly from local sources. Finally, we would also like to investigate possible heterogeneous effects across regions. Our preliminary analysis shows that the task is worthwhile and that the conclusions can be instructive and we leave all these

questions to future research.

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## Tables and Figures

**Table 1a: Project distribution across implementing agencies**

Implementing agency	Number of projects
National government	4689
Local government	767
Public company	374
Private company	22
Non-Governmental Organization	11

**Table 1b: Project distribution: national vs. local implementing agencies**

		Local implementing agency		
		0	1	Total
National implementing agency	0	11	741	752
	1	4,925	59	4,984
<b>Total</b>		<b>4,936</b>	<b>800</b>	<b>5,736</b>

**Table 2: Project distribution across regions**

	Total		Local implementing agency		
	Number	%	Number	% (local impl. agency)	% (total projects)
South Asia	644	11.4	204	27.5	3.6
Europe and Central Asia	1103	19.5	83	11.2	1.5
Middle East and North Africa	354	6.2	14	1.9	0.2
Africa	1633	28.8	61	8.2	1.1
Latin America and Caribbean	1107	19.5	166	22.4	2.9
East Asia and Pacific	825	14.6	213	28.7	3.8
<b>Total</b>	<b>5666</b>	<b>100.0</b>	<b>741</b>	<b>100.0</b>	<b>13.1</b>

**Table 3: Project distribution across sectors**

	Total		Local implementing agency		
	Number	%	Number	% (local impl. agency)	% (total projects)
Agriculture, fishing, and forestry	521	9.2	110	14.8	1.9
Education	512	9.0	37	5.0	0.7
Energy and mining	459	8.1	58	7.8	1.0
Finance	294	5.2	6	0.8	0.1
Health and other social services	786	13.9	54	7.3	1.0
Industry and trade	314	5.5	30	4.0	0.5
Information and communications	52	0.9	0	0.0	0.0
Public Administration, Law, and Justice	1516	26.8	89	12.0	1.6
Transportation	677	11.9	181	24.4	3.2
Water, sanitation and flood protection	535	9.4	176	23.8	3.1
<b>Total</b>	<b>5666</b>	<b>100.0</b>	<b>741</b>	<b>100.0</b>	<b>13.1</b>

**Table 4: Decentralization of implementing agencies, Logit and Multilevel Logit**

	(1) Logit	(2) Logit	(3) Logit	(4) Logit	(5) ML
Transparency	-2.013*** (0.351)	-1.466*** (0.519)	-2.151*** (0.583)	-12.275*** (1.802)	-4.343*** (0.664)
Total amount	0.000 (0.000)	-0.000 (0.000)	-0.001*** (0.000)	-0.002*** (0.001)	-0.002*** (0.000)
Investment projects	-0.010 (0.136)	0.088 (0.187)	0.162 (0.207)	-0.010 (0.237)	-0.177 (0.194)
IBRD	0.992*** (0.125)	0.763*** (0.163)	-0.070 (0.209)	0.267 (0.370)	0.614* (0.371)
Ethnic fractionalization		-0.024*** (0.003)	-0.027*** (0.003)	-0.010** (0.004)	
Federal system			2.225*** (0.153)	1.355*** (0.257)	
Bureaucratic Quality				0.040 (0.166)	
GDP per capita (log)				-0.531*** (0.191)	
Population (log)				0.529*** (0.087)	
Observations	4,997	2,857	2,857	2,421	4,997
Groups					139
Year FE	YES	YES	YES	YES	YES
Sector dummies	YES	YES	YES	YES	YES
Regional dummies	YES	YES	YES	YES	NO

Notes: Transparency variable is "Share of No Missing Data".

Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 5a: Decentralization of implementing agencies by sectors, Logit**

	(1) Agriculture and Water	(2) Health and other Social Services	(3) Public Administration and Finance	(4) Energy and Industry	(5) Transportation and Communication
Transparency	-14.501*** (3.299)	-16.139** (6.850)	12.994 (11.974)	-2.366 (5.149)	-13.150*** (3.817)
Total amount	-0.001 (0.001)	-0.008*** (0.003)	-0.002** (0.001)	-0.001 (0.002)	-0.004*** (0.001)
Investment projects	1.825** (0.748)	0.355 (0.894)	-1.066** (0.539)	-	-
IBRD	-0.024 (0.612)	0.173 (2.111)	-0.924 (1.575)	0.883 (1.004)	0.369 (0.832)
Ethnic fractionalization	0.006 (0.008)	-0.019 (0.013)	-0.037 (0.076)	-0.032*** (0.012)	-0.032*** (0.009)
Federal system	1.004** (0.474)	3.322** (1.476)	-2.149 (2.194)	1.313 (0.855)	1.881*** (0.628)
Bureaucratic Quality	-0.014 (0.266)	-0.234 (0.738)	0.005 (0.644)	0.153 (0.466)	0.228 (0.407)
GDP per capita (log)	-0.242 (0.310)	-1.371* (0.772)	-0.795 (0.781)	-0.619 (0.496)	-0.380 (0.446)
Population (log)	0.440*** (0.145)	0.922*** (0.267)	2.680*** (0.981)	0.145 (0.253)	0.475** (0.188)
Observations	494	448	610	261	348
Year FE	YES	YES	YES	YES	YES
Regional dummies	YES	YES	YES	YES	YES

Notes: Transparency is "Share of No Missing Data".

Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



**Table 5b: Decentralization of implementing agencies by sectors, Multilevel Logit**

	(1) Agriculture and Water	(2) Health and other Social Services	(3) Public Administration and Finance	(4) Energy and Industry	(5) Transportation and Communication
Transparency	-4.487*** (1.304)	-4.201*** (1.408)	4.988 (3.873)	-7.107*** (1.498)	-6.043*** (1.355)
Total amount	0.001 (0.001)	-0.006*** (0.002)	-0.001 (0.001)	-0.001 (0.001)	-0.002* (0.001)
Investment projects	0.506 (0.541)	-1.052** (0.459)	-0.255 (0.339)	1.350** (0.591)	-
IBRD	0.778 (0.474)	0.875 (0.686)	-0.299 (0.837)	0.684 (0.603)	1.484** (0.603)
Observations	936	1,153	1,406	670	630
Groups	116	129	125	110	115
Year FE	YES	YES	YES	YES	YES
Regional dummies	YES	YES	YES	YES	YES

Notes: Transparency is "Share of No Missing Data".

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 6a: Robustness checks: Alternative transparency indicators, Multilevel Logit**

	(1) Share of No Missing Economic Data	(2) Press Freedom	(3) Combined Transparency Index	(4) World Bank Experience
Transparency	-2.441*** (0.342)	-0.805*** (0.128)	-0.052*** (0.008)	-0.045*** (0.011)
Total amount	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.001)	-0.002*** (0.000)
Investment projects	-0.231 (0.197)	-0.353* (0.181)	-0.166 (0.212)	-0.461** (0.170)
IBRD	0.042 (0.335)	0.224 (0.354)	0.826** (0.381)	-0.595** (0.291)
Observations	4,739	4,937	4,312	5,614
Groups	138	137	135	143
Year FE	YES	YES	YES	YES
Regional dummies	YES	YES	YES	YES

Notes: Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 6b: Robustness checks: Transparency indicators and World Bank Experience, ML**

	(1) Share of No Missing Data	(2) Share of No Missing Economic Data	(3) Press Freedom	(4) Combined Transparency Index
Transparency	-3.680*** (0.768)	-2.210*** (0.379)	-0.662*** (0.134)	-0.044*** (0.009)
World Bank Experience	-0.019* (0.011)	-0.014 (0.011)	-0.038*** (0.011)	-0.025** (0.011)
Total amount	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.001)
Investment projects	-0.157 (0.195)	-0.196 (0.200)	-0.196 (0.190)	-0.091 (0.216)
IBRD	0.672* (0.377)	0.166 (0.351)	0.531 (0.370)	0.914** (0.386)
Observations	4,997	4,739	4,937	4,312
Groups	139	138	137	135
Year FE	YES	YES	YES	YES
Regional dummies	YES	YES	YES	YES

Notes: Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 7: Robustness checks: Subsamples**

	Satisfactory Projects				Good Institutions			
	Transparency		World Bank Experience		Transparency		World Bank Experience	
	(1) Logit	(2) ML	(3) Logit	(4) ML	(5) Logit	(6) ML	(7) Logit	(8) ML
Transparency/WB experience	-7.063** (3.052)	-4.062*** (1.150)	-0.023 (0.033)	-0.033** (0.015)	-0.674 (3.121)	-3.945*** (0.885)	0.032 (0.022)	-0.026** (0.012)
Total amount	-0.003** (0.001)	-0.002* (0.001)	-0.003** (0.001)	-0.002** (0.001)	-0.003*** (0.001)	-0.002*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)
Investment projects	-0.285 (0.459)	-0.560 (0.385)	-0.291 (0.461)	-1.048*** (0.340)	-0.059 (0.269)	-0.212 (0.255)	-0.062 (0.271)	-0.606*** (0.223)
IBRD	0.764 (0.725)	0.427 (0.519)	0.751 (0.701)	-0.040 (0.495)	-1.507*** (0.568)	0.352 (0.483)	-1.622*** (0.512)	-0.899** (0.393)
Ethnic fractionalization	-0.011 (0.009)		-0.014 (0.010)		-0.008 (0.010)		-0.009 (0.009)	
Federal system	1.423*** (0.483)		1.537*** (0.485)		-0.055 (0.412)		0.143 (0.429)	
Bureaucratic Quality	0.559* (0.317)		0.738** (0.318)		0.111 (0.217)		0.169 (0.219)	
GDP per capita (log)	-1.222*** (0.434)		-1.348*** (0.409)		0.230 (0.320)		0.162 (0.340)	
Population (log)	0.549*** (0.179)		0.385*** (0.145)		1.128*** (0.196)		1.047*** (0.198)	
Observations	732	1,299	732	1,299	1,507	2,789	1,507	3,112
Groups		121		121		108		101
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Sector dummies	YES	YES	YES	YES	YES	YES	YES	YES
Regional dummies	YES	NO	YES	NO	YES	NO	YES	NO

Notes: In columns 1-4, the sample is restricted only to projects rated as either “satisfactory” or “highly satisfactory”. In columns 5-8, the sample is restricted to countries with a Polity Score equal or higher than 6. In columns 1,2 5, and 6, the variable of interest is *Share of No Missing data*, whereas in columns 3,4, 7, and 8 it is *World Bank Experience*.

Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Figure 1: Project distribution over time**

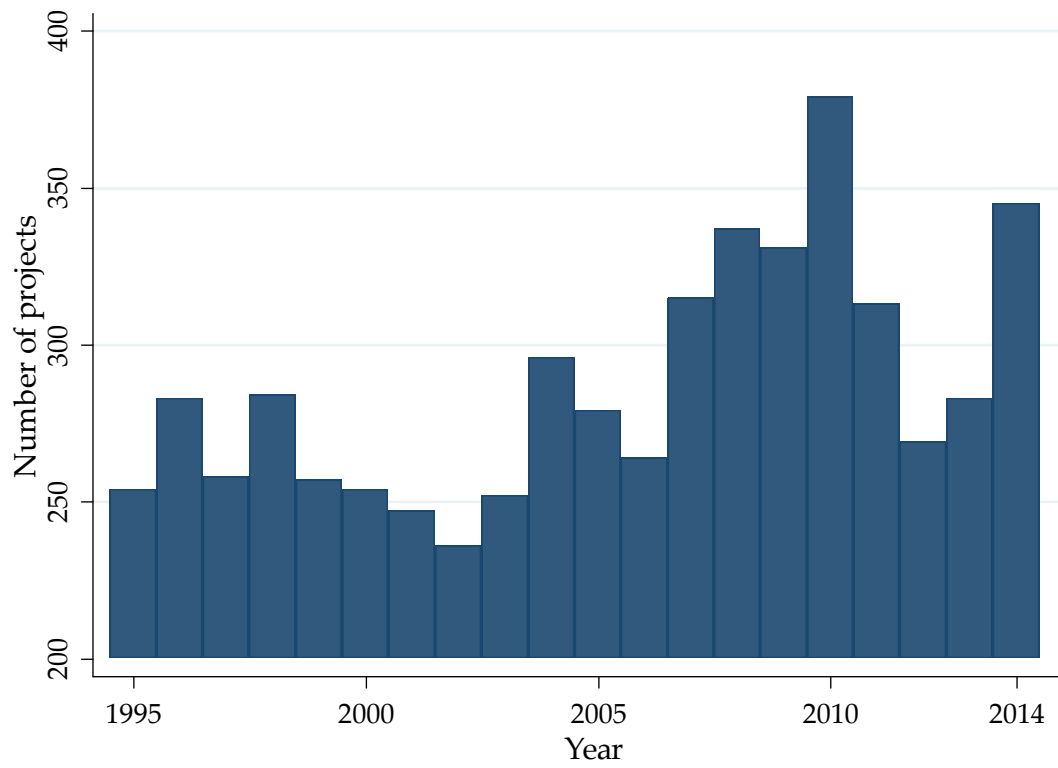
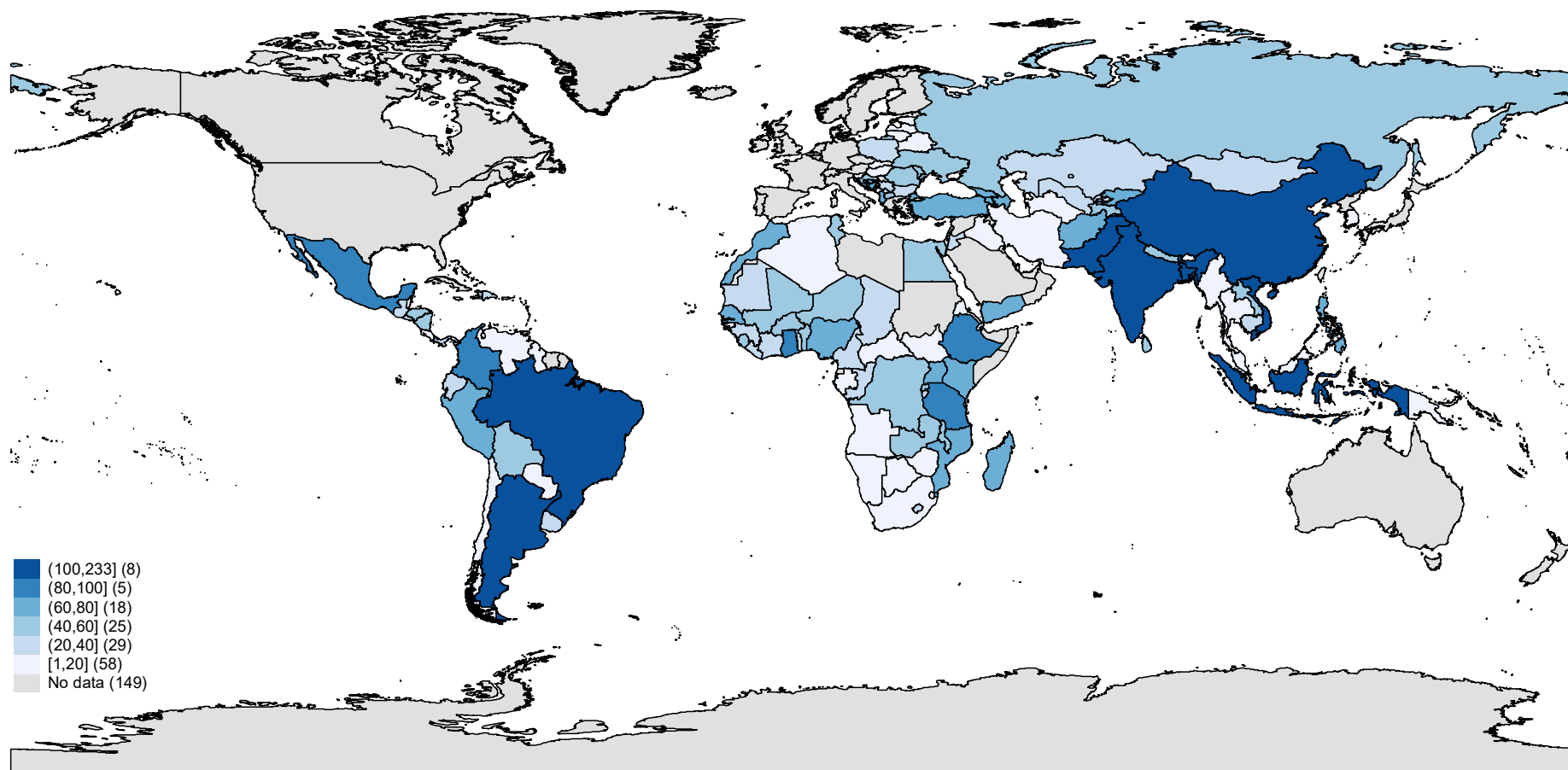


Figure 2: Project distribution across countries



# Appendix

**Table A1: Project distribution across countries**

Afghanistan	67	Dominica	6	Liberia	30	Senegal	69
Albania	64	Dominican Republic	30	Lithuania	14	Serbia	35
Algeria	17	Ecuador	29	Macedonia, FYR	49	Seychelles	6
Angola	15	Egypt	49	Madagascar	63	Sierra Leone	45
Antigua and Barbuda	1	El Salvador	24	Malawi	56	Slovak Republic	7
Argentina	103	Eritrea	16	Malaysia	4	Slovenia	4
Armenia	79	Estonia	4	Maldives	13	Solomon Islands	15
Azerbaijan	62	Ethiopia	84	Mali	54	South Africa	3
Bangladesh	118	Gabon	5	Marshall Islands	2	South Sudan	5
Barbados	2	Gambia, The	19	Mauritania	37	Sri Lanka	56
Belarus	13	Georgia	70	Mauritius	17	St. Kitts and Nevis	4
Belize	5	Ghana	88	Mexico	97	St. Lucia	15
Benin	47	Grenada	13	Micronesia	3	St. Vincent and the Grenadines	6
Bhutan	18	Guatemala	34	Moldova	55	Swaziland	2
Bolivia	55	Guinea	34	Mongolia	38	Tajikistan	56
Bosnia and Herzegovina	71	Guinea-Bissau	20	Montenegro	18	Tanzania	98
Botswana	3	Guyana	17	Morocco	68	Thailand	18
Brazil	203	Haiti	45	Mozambique	71	Timor-Leste	12
Bulgaria	32	Honduras	60	Myanmar	8	Togo	23
Burkina Faso	60	Hungary	9	Namibia	2	Tonga	13
Burundi	37	India	224	Nepal	56	Trinidad and Tobago	4
Cabo Verde	30	Indonesia	139	Nicaragua	59	Tunisia	46
Cambodia	38	Iran	9	Niger	47	Turkey	71
Cameroon	38	Iraq	7	Nigeria	69	Turkmenistan	2
Central African Republic	14	Jamaica	29	Pakistan	108	Tuvalu	4
Chad	32	Jordan	31	Panama	29	Uganda	71
Chile	20	Kazakhstan	38	Papua New Guinea	20	Ukraine	50
China	233	Kenya	64	Paraguay	19	Uruguay	35
Colombia	86	Kiribati	5	Peru	66	Uzbekistan	29
Comoros	16	Korea, Republic of	4	Philippines	64	Vanuatu	1
Congo, DR	47	Kosovo	22	Poland	30	Venezuela	10
Congo, Rep.	24	Kyrgyz Republic	64	Romania	54	Vietnam	140
Costa Rica	8	Lao PDR	54	Russian Federation	58	Yemen, Republic	76
Cote d'Ivoire	39	Latvia	18	Rwanda	54	Zambia	49
Croatia	49	Lebanon	26	Samoa	16	Zimbabwe	6
Djibouti	28	Lesotho	26	Sao Tome and Principe	12		

**Table A2: Variable definitions and sources**

	Definition	Source
Local Implementing Agency	Dummy=1 for project implemented by a local agency	Own elaboration from AidData (2016)
Share of No Missing Data	Share of series included in the World Bank's World Development Indicators for which data are available.	Dreher <i>et al.</i> (2017)
Share of No Missing Economic Data	Share of variables related to Economic Policy and Debt included in the World Bank's World Development Indicators for which data are available.	Hollyer <i>et al.</i> (2011)
Press Freedom	Status of press freedom: 3 = Free; 2= Partly Free; 1= Not Free.	Freedom House (2012)
Combined Transparency Index	Average of Information Transparency and Accountability Transparency	Williams (2015)
World Bank Experience	Number of years since the first World Bank project in the country	Own elaboration from World Bank (2018)
Total Amount	Commitment Amount (US\$, million)	AidData (2016)
Investment project	Dummy=1 for investment project	AidData (2016)
IBRD	Dummy=1 for IBRD projects	AidData (2016)
Ethnic fractionalization	Combined linguistic and racial indicator of fractionalization	Alesina (2003)
Federal type	Dummy=1 for federal type	Norton (2008), updated by Elazar (1995)
Bureaucratic Quality	Quality of bureaucracy	PRS Group, 2012
Per capita GDP (log)	Log of GDP per capita (con 2000 US\$)	World Bank (2013)
Population (log)	Log of total population	World Bank (2013)

**Table A3: Descriptive statistics**

	Obs	Mean	S.D.	Min	Max
Local implementing agencies	5,666	0.13	0.34	0.00	1.00
Share of No Missing data	5,042	0.65	0.14	0.04	0.87
Share of No Missing Economic Data	4,781	0.89	0.26	0.03	0.98
Press Freedom	4,982	1.74	0.64	1	3
Combined transparency Index	4,350	50.98	11.59	15.00	76.00
World Bank Experience	5,666	37.34	16.72	0	65
Total amount	5,666	97.68	176.23	0.00	3,750
Investment projects	5,666	0.81	0.39	0.00	1.00
IBRD	5,666	0.35	0.48	0.00	1.00
Ethnic fractionalization	2,884	45.86	22.37	0.20	93.02
Federal system	2,988	0.39	0.49	0.00	1.00
Bureaucratic Quality	3,983	1.78	0.79	0.00	4.00
GDP per capita (log)	4,988	7.01	1.06	4.78	9.58
Population (log)	5,042	16.89	1.92	9.19	21.02



**Table A4: Correlations**

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Local Implementing Agencies	(1)	1													
Share of No Missing Data	(2)	0.0668	1												
Share of No Missing Economic Data	(3)	-0.0347	0.5135	1											
Combined Transparency Index	(4)	-0.0877	0.0597	0.3819	1										
Press Freedom	(5)	-0.0399	0.4154	0.6906	0.763	1									
World Bank Experience	(6)	0.0195	0.4517	0.1338	0.1566	0.3255	1								
Total amount	(7)	0.0281	0.0831	0.1443	0.0554	0.0748	0.0795	1							
Investment projects	(8)	0.1596	-0.0777	-0.1162	-0.088	-0.1277	-0.0577	-0.3045	1						
IBRD	(9)	0.0282	0.2667	0.5607	0.1475	0.3828	-0.1781	0.1054	-0.0354	1					
Ethnic fractionalization	(10)	-0.1877	0.0305	-0.1618	0.0518	0.0245	0.4353	-0.0756	-0.0803	-0.3732	1				
Federal system	(11)	0.3903	0.2479	0.1924	-0.1172	0.051	0.1212	0.2492	0.0945	0.2688	-0.039	1			
Bureaucratic Quality	(12)	0.2282	0.083	0.185	0.2497	0.2004	0.1421	0.2252	0.028	0.1333	-0.2029	0.3286	1		
GDP per capita (log)	(13)	-0.0172	0.2758	0.6912	0.3954	0.6714	0.0212	0.1502	-0.1138	0.7461	-0.3105	0.144	0.239	1	
Population (log)	(14)	0.5144	0.1586	-0.0093	-0.2671	-0.2147	0.0312	0.255	0.1464	0.0975	-0.2047	0.7552	0.4232	-0.116	1