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## In whom we trust more? Heterogeneous effects of government assistance on trust in local officials in the Philippines

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assistance on trust in local officials in the Philippines**

by

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# In whom we trust more? Heterogeneous effects of government assistance on trust in local officials in the Philippines\*

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## Abstract

Given the instrumental value of trust to development, knowing what builds trust in government officials is relevant to policy. Also, establishing empirically whether satisfaction with their performances is related to public assistance could guide accountability measures to improve public service delivery. Using two rounds of nationally-representative surveys on local governance in the Philippines, we examine for the possible effects of the receipt of public assistance, which can be in cash or in kind, on trust in and satisfaction with the performances of governors, mayors, vice mayors and barangays (village) captains. To control for various sources of bias in the selection of aid recipients, we estimate treatment effects models that allow the treatment (receipt of assistance) to be exogenous or endogenous. Heterogeneous impacts are found. The receipt of assistance from any government source or a local government increases the probability of trust in the mayor, but has no effect on the probability trust in any other official. Such assistance, however, reduces the probability of satisfaction with the performance of the vice mayor. Assistance from municipal government has same negative effects for barangay captains. Public assistances do not affect the probability of trust in the governor or satisfaction with the performance of governor or mayor. The heterogeneous effects are attributed to the officials' relative reach and resources: relative to governors, mayors are more accessible to their constituents, though control less government resources; while vice mayors, barangay captains and mayors are all easily reached, the latter have greater fiscal authority and means. More than other officials, mayors draw in and provide for people who seek help or favors. The placebo test shows no impacts on the probability of satisfaction with the performance of the Department of the Interior and Local Government or of the Department Secretary, as expected.

**Key words:** Government assistance, trust in officials, satisfaction with performance, treatment effects, Philippines

**JEL Codes:** H31, H49, D72

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## 1. INTRODUCTION

Questions about trust in institutions, including key government officials, are now routinely asked in regular social surveys or public opinion polls conducted in many countries. Among the prominent ones, with the number of countries they cover (in parentheses), are the World Values Survey (60), World Gallup Poll (34), Afro Barometer Survey (37), Asian Barometer Survey (18), Latinobarometro (18), and Eurobarometer Survey (39). Occasionally these cross-country surveys and some regular national surveys (in the Philippines, for example) add questions about access to and satisfaction with public services or the performance of public officials. With this wealth of information, it may be asked thus whether in the course of performing their duties public officials or the offices they represent earn the public's trust.

Knowing what builds trust in government institutions and officials is important to policy partly because of trust's instrumental value to development. The wide literature on trust, alone or as component of social capital, underscore its critical role in managing social conflicts or international disputes (e.g., Gambetta, 1988; Justwan and Fisher, 2016), in citizens fulfilling their civic duties like paying of taxes and voting (e.g., Scholz and Lubell, 1998; Slemrod, 2002; Back and Christensen, 2016), in facilitating market transactions and collective actions (e.g., Arrow, 1972; Choi and Storr, 2020), and in fostering economic growth (e.g., Knack and Keefer, 1997; Beugelsdijk, de Groot and van Schaik, 2004; Algan and Cahuc, 2014), among others.

Ideally, the effect of a public intervention like providing health services, say, on the people's trust in government is established under a controlled setting. Under such a condition, the causal estimate is free of the confounding effects of concurrent business cycles, natural calamities, global news, and even social or personal circumstances. In real-world setting these factors make it hard to attribute the changes in the trust or satisfaction ratings of the country's president or legislator, say, to whatever they said or did, however significant. A few studies that took advantage of the randomized introduction of conditional cash transfer (CCT) programs in many countries report interesting findings. In Tanzania, Evans, Holtemeyer and Kosec (2019) found a local cash transfer program to have large significant effects on trust in local leaders, and on perception of their responsiveness and honesty. In Peru, Camacho (2014) found the *Junto's* program to improve trust in government institutions with whom the beneficiaries interact to fulfill program conditionalities, and negative effects on trust in the ombudsman. In Columbia,



Attanasio, Pellerano and Reyes (2009) reported that program beneficiaries played more cooperatively than non-beneficiaries in public goods game, and they surmised this is due to the improved social capital brought about by greater community interactions fostered by the CCT program. In contrast, MacAusian and Riemenschneider (2011) averred that similar programs in Malawi and Zimbabwe may have cast social stigma and thus undermined social relations among the beneficiaries, an important aspect of social capital. Although the weight of evidence from these selected studies affirms the positive effects on trust in officials, more country evidence is needed since even a randomized implementation of a CCT program does not ensure external validity of its impact.

If a public intervention builds trust in officials, will it have the same influence on the people's satisfaction with the performances of the officials? The importance of establishing the links between trust in and satisfaction with the performances of officials derives from the wide use of customer satisfaction surveys, social audits and other performance measures in the public sector to improve accountability, service quality or efficiency (e.g., Van Ryzin et al., 2004; Ansari et al., 2011). To be sure, previous studies have helped clarify the conceptual links, and some provided evidence of correlation, between trust in government and the performance of public agencies or public officials (e.g, Bouckaert and Van de Walle, 2003a, 2003b; Christensen and Laegreid, 2005; Kampen, Van de Walle and Bouckaert, 2006; Yang and Holzer, 2006; Badri, Al Khaili and Lahej Al Mansoori, 2015; Beeri, Uster and Vigoda-Gadot, 2018). While trust and satisfaction with public services or performance of officials admit may be related in many possible ways, it is crucial to establish empirically which configurations really matter. If they convey different information or respond dissimilarly to the same trigger, for example, then the current practice of using both to monitor overall performance finds additional support.

In this paper, we examine in the Philippine setting the possible influence of the receipt of public assistance on the trust in local officials or the level of satisfaction in their performance. Like most government programs, the types of public assistances considered here are not randomly distributed; rather, they could be targeted to specific groups or sought by anybody. Thus accounting for the bias induced by the selection of actual beneficiaries is paramount. We address this issue by estimating parametric models that control for the confounding effects of observable characteristics of aid recipients and non-recipients, and also for possible unobserved factors that

affect the likelihood of obtaining government aid. We estimate the models using the data from two rounds from nationally-representative surveys on local governance conducted in 2011 and 2012. We classified three types of public assistances by source (national government or local government, any local government, or city/municipal or barangay government) and examined each for their effects on the trust ratings and satisfaction ratings of provincial governors, city/municipal mayors and vice mayors, and barangay (village) captains.

We find heterogeneous effects. Specifically, the receipt of public assistance builds trust in the mayor, but could lower satisfaction in the performance of the vice mayor or barangay captain. While the trust in or satisfaction with the governor are fairly high as well, neither is affected by the receipt of public assistance however. We ascribe these results to the differences among these officials in their accessibility to their constituents and in their effective control over the fiscal and other resources of their local governments. These findings are buttressed by our placebo test results.

To set the context for the paper, the next section briefly describes local governments in the Philippines. Then sections 2 and 3 present the survey data and empirical methods used, respectively. The impact estimates are presented in section 5. The final section discusses the results and concludes the paper.

## 2. LOCAL GOVERNMENTS IN THE PHILIPPINES

In 2011 when the first survey dataset used here was collected, the local elected officials in the Philippines were a year into their fresh three-year mandate, and possibly some were on their last and third consecutive term in the same office. There were then 80 provincial governors, 138 city mayors, 1496 municipal mayors, and over 42 thousand barangay (village) captains. There were corresponding equal numbers of provincial vice governors, city vice mayors, and municipal vice mayors, who mainly preside over their respective local legislative councils. These deputies may elevate to gubernatorial or mayoral positions if the incumbent dies or is disqualified or disbarred from office. Under the fiscal decentralization program started with the passage of the Local Government Code of 1991, these local officials now have broader mandates and more means to earn their constituents' approval of their performances.

The Code endows local governments more revenue-raising powers and a bigger share in the internal revenues (from taxes on income and consumption) collected by the national government (Llanto, 2012; Diokno, 2012). Most local governments however failed to take advantage of their expanded taxation powers, and, instead, increasingly relied on their internal revenue allotments (IRA). During the period 1985-1991, according to Manasan (2017), the average annual share of revenues from local sources (real property taxes and business taxes, principally) in the total local government incomes was about 16.2 percent for provinces, 62.9 percent for cities, and 47.4 percent for municipalities. Then, during period 1992-2016, the shares went up a bit to 16.4 percent for provinces, but went down to 54.1 percent for cities and 21.8 percent for municipalities. Between the two periods, the average annual share of IRA rose from 63.5 percent to about 80 percent for provinces, from 32.4 percent to 44 percent for cities, and from 37 percent to 75.4 percent for municipalities. While the IRA's predictability and relative ease of use partly accounts for this<sup>1</sup>, the meagre local tax bases due to underdevelopment in the countryside is another contributing factor.

The Code further assigned new expenditure responsibilities to local governments as well as imposed certain limits and procedures in local fiscal spending to promote accountability. The major devolved responsibilities are the provision of local health and social welfare services, and the extension of funding support to local public schools (still run by the national government). In preparing their budgets local governments must organize and seek counsel from local consultative bodies consisting representatives from civil society and private sector, among others. Of their IRAs, they may not spend more than half on personnel services, and should devote at least 15 percent for development projects and gender-related programs and activities. While local governments consequently increased their social service expenditures, most allocated the bulk of their budgets on general public services, which include the office of the local chief executive (governor, mayor) and the legislative council.<sup>2</sup> Over the period 2001-2008, on average general public services took up at least 40 percent of the annual local government budgets (Diokno, 2012; Llanto, 2012).

Some evidence suggest inefficiencies in local government outlays, including the spending for general public services. Widely noted, for example, is the inordinate number of local government employees and part-time workers. In 2012 around 89 percent of the 233,806

authorized positions in local governments were filled out (Civil Service Commission, 2012). Of these local government employees, around ten thousand had appointments coterminous with the appointing authorities (usually the governors and mayors). Undoubtedly more could have been appointed to the vacant positions were it not for the civil service restrictions on hiring and promotion. Yet, many more are hired as temporary workers and, especially under the so-called job-order system to do specific tasks for up to six months.<sup>3</sup> In addition to the 47,964 casual employees and 16,456 contractual employees in local governments in 2012, according to the same Civil Service Commission report there were nearly 139,000 job-order workers. Appointments to these positions enabled governors, mayors and other local officials to dispense favors, if only temporarily, to their supporters.

Besides government jobs, access to local public services or assistance is also subject to patronage. Local governments have funds usually lodged in their social welfare departments for medical, burial, unemployment, accident or disaster assistance. Aside from being vetted by the social welfare department, a person who seeks such assistance must be approved by the governor or mayor as well, and possibly endorsed by another elected official. Local officials can and do intercede for and in behalf of their constituents for national government services or support. Since the Code requires that before a national government agency implements its local interventions the concerned local officials must be informed at least, through this process local officials are able to influence the selection of beneficiaries of national programs, like, for example, the social health insurance program and conditional cash transfer program. Elected officials also dispense favors when they stand as sponsors in weddings or baptisms, as donors in social gatherings (fiestas, birthdays, for example), or as sources of funds for hospitalization or burials.

Patronage and clientelistic politics have a long history in the Philippines (Lande, 1965; Holsteinner, 1963). It persists partly because of a weak party system that fostered the political dominance of a few families over many generations (De Dios, 2007; Rivera, 2016). Apparently, these political families especially thrive in poor areas (Mendoza et al., 2016). While doubtless some politicians, dynasts or otherwise, win the people's support because of their good performances, others secure their tenure through vote-buying, harassment, intimidation, or some combination of such during elections, and then neglect service provisions afterwards (Khemani, 2015; Lacaba, 1995). Due to term limits and the proliferation of rival political families however

some incumbents exert effort to provide better services, presumably to improve their chances to another term (Solon, Capuno and Fabella, 2009).

In summary, local officials in the Philippines have the means and motives to cast themselves in a positive light. Through the provision of public services that benefit local communities at large, the distribution of material or nonmaterial aids from public or personal sources to specific individuals or families, or both, their performance may then earn their constituents' approval or even trust. Such could be reward enough for some officials or a recourse for re-election to others.

### 3. DATA

We use the data from the two rounds of the Survey on Local Governance conducted in the Philippines in July 2011 and August 2012 by the Social Weather Stations, a social research institution. Commissioned by the Philippine Department of Interior and Local Government (DILG), the surveys aimed to collect information to assess the quality of local governance at the level of province, city or municipal, and barangay.<sup>4</sup> Interviewed face-to-face using structured questionnaires, household respondents were asked about their socioeconomic and demographic characteristics, self-rated poverty status and receipt of assistance, satisfaction with the performance local government officials and institutions, trust in city/municipal officials and institutions, and attitudes towards corruption, among others.

Each survey round has 1,500 random sample of respondents who are at least 18 years old and considered the household's decision-maker. The respondents were selected following a multi-stage sampling design. In the 2011 round, the first stage involved dividing the country in three broad regions, namely Balance Luzon, Visayas, and Mindanao. This survey round purposively excluded the most populous region, the National Capital Region (NCR) located in Luzon, and included one of the least populous, the Autonomous Region of Muslim Mindanao (ARMM), located in Mindanao. Of the 1500 samples, 400 were apportioned to each broad region, and 300 to ARMM. Then, within each broad region or ARMM, the sub-samples were distributed using probability proportional to population size, first to the provinces, then to the municipalities (and cities) in each chosen province, and then finally to sample spots within each selected municipality. From each sample spot, five respondents were identified by systematic sampling.

A total of 300 sample spots were distributed in 89 sample municipalities located in 26 sample provinces.

A similar sampling design was used in 2012 survey round. In the first stage, however, the country is divided instead into five broad regions – namely, NCR, North/Central Luzon, South Luzon, Visayas, and Mindanao – and each was allotted 300 samples. Then, in each broad region, the sub-samples were distributed to the provinces, municipalities and sample spots, again using probability proportional to population size. In this round, there are 21 sample provinces, 77 sample municipalities, and 300 spots. Also, five household respondents in each spot were identified using systematic sampling. Unlike in the 2011 round, ARMM was not purposively sampled in 2012.

Given the differences in the sampling frames used in the 2011 and 2012 rounds, sampling weights are given to get the overall population averages. Note that even then, however, the estimates for 2011 will be partial because NCR was not included.

### *3.1 Assistance received in the previous three months*

In both surveys, each respondent was asked if during the last three months before the interview she received any help or assistance from relatives, friends, private companies or persons, non-government organizations, and government agencies, including local governments. Respondents were asked to report any and all aids received in the form of money (given or lent), food and non-food items, jobs, support for schooling or training, or others. Around 41 percent and 36 percent of the respondents in 2011 and 2012, respectively, received external support during the reference period (Figure 1).<sup>5</sup>

[Insert Figure 1 here.]

The biggest source of support is relatives and families: 56 percent in 2011 (Figure 2(a)), and 47 percent in 2012 (Figure 2(b)). Public sources – national government or local governments (province, city or municipality, barangay) – account for 22.5 percent and 31.3 percent in 2011 and 2012, respectively. The rest received aids from private companies or persons (not friends or relatives). Of the 621 who gained assistance in 2011, 468 received only once, 108 twice, 37 thrice, 7 four times, and 1 five times. Of the 536, who got support in 2012, 449 received only once, 66 twice, 18 thrice and 3 four times. A few reported multiple sources or multiple support from the same source.

[Insert Figure 2 here.]

### 3.2 *Trust in and satisfaction with local officials*

Further, the respondents were probed how much they trust in their provincial governor, municipal or city mayor and vice mayor, and barangay captain (village head official). The proportions of the respondents in 2011 who declared to have “very much” of “somewhat much” trust is about 80 percent for both mayor and barangay captain, 77 percent for vice mayor, and 70 percent for governor. All trust ratings fell in 2012, by around 18 percentage points (pps) for governor, 4 pps for both vice mayor and barangay captain, and a percentage point for mayor. The big drop in the governor’s ratings however is due to the exclusion in the computation of the 300 respondents from the NCR which does not have a province or a governor. (Figure 3)

[Insert Figure 3 here.]

Additionally, the respondents were asked about their level of satisfaction with the performances of the same set of local officials, and of the DILG and the then DILG Secretary Jesse Robredo. The proportions of respondents in 2011 who reported to be “very satisfied” or “somewhat satisfied” are around 81 percent for mayor and barangay captain, 76 percent for vice mayor, and 70 percent for governor. In 2012 the ratings fell by 20 pps for governor, 6 pps for vice mayor, and 4 pps for both mayor and barangay captain. In contrast, the satisfaction ratings of the DILG and Secretary Robredo were relatively low in 2011 – at 56 percent and 39 percent, respectively – but then both inched up to over 70 percent the following year. (Figure 4)

Since at least 20 percent of the respondents in each survey round obtained some public assistance, could this explain some of the variations in their trust in or satisfaction with key local officials? Our empirical strategy for pursuing this question is described in the next section.

[Insert Figure 4 here.]

## 4. EMPIRICAL METHODS

With only observational data, the public assistances captured in the survey are assumed here non-randomly distributed. More probably the recipients had characteristics that predisposed them to obtain or targeted for government support. Those characteristics will confound the effects of the support itself on their trust in and assessment of the performance of the officials. Drawing heavily from Cameron and Trivedi (2005) and Wooldridge (2010), this

section describes the approach in estimating the support’s impact and for controlling the selection bias.

#### 4.1 *Average treatment effects on the treated*

Our impact estimator is the *average treatment effects on the treated* (ATT), which is appropriate for our purposes since its measurement is limited to those that actually received the treatment (i.e., government support).<sup>6</sup> Following the convention in the literature (e.g., Blundell and Costa Dias, 2005), let  $y_{i1}$  and  $y_{i0}$  denote the outcomes for the  $i$ th individual if she received and did not receive the treatment, respectively. Her treatment status is denoted by  $T_i = 1$  if she received the treatment, and  $T_i = 0$  if otherwise. In this study, the outcome is measured using two sets of binary indicators of trust in and satisfaction with officials, while treatment status is indicated using dummy variables for receipt of assistance from different government sources.<sup>7</sup> The treatment effects for the  $i$ th individual is  $y_{i1} - y_{i0}$ , and the average treatment effects for all those that received treatment (i.e., ATT) is given by:

$$\text{ATT} = E(y_{i1} - y_{i0} | T_i = 1).$$

As defined, the ATT can be estimated only if the counterfactual outcome ( $y_{i0}$ ) is likewise observed. But since only one treatment status is possible for an individual at any given time, the counterfactual has to be constructed from the untreated group. For such a counterfactual to be valid, however, two conditions must be satisfied. The first condition is conditional mean independence (CMI), which means that the treated and untreated units should have balanced average pre-treatment characteristics such that, after conditioning on these characteristics, their mean potential outcomes are independent of their treatment assignment. The other condition is overlap, which ensures each treated individual has a chance, as it were, of being untreated (Wooldridge, 2010). Operationally, this means that probability of treatment, conditional on the covariates, should be greater than 0 but less than 1. Thus, those only those less certain to obtain or not obtain public assistance are included in the evaluation sample.

#### 4.2 *Treatment effects models*<sup>8</sup>

In estimating the ATT, we adopt a parametric approach to address selection bias due to observable and, possibly, unobservable factors. Let  $\mathbf{X}_i$  and  $\mathbf{Z}_i$  be vectors of covariates, possibly with overlapping elements, that influence outcome and assignment to treatment, respectively. The outcomes, treatment assignment and vectors of covariates are assumed related, as follows:



$$y_{i0} = \mathbf{X}'_i \boldsymbol{\beta}_0 + \varepsilon_{i0} \quad (1)$$

$$y_{i1} = \mathbf{X}'_i \boldsymbol{\beta}_1 + \varepsilon_{i1} \quad (2)$$

$$T_i = \begin{cases} 1 & \text{if } \mathbf{Z}'_i \boldsymbol{\delta} + \mu_i > 0 \\ 0 & \text{otherwise} \end{cases} \quad (3)$$

$$y_i = 1 - T_i y_{i0} + T_i y_{i1} \quad (4)$$

$$E(\varepsilon_{ij} | \mathbf{X}_i, \mathbf{Z}_i) = E(\varepsilon_{ij} | \mathbf{X}_i) = E(\varepsilon_{ij} | \mathbf{Z}_i) = 0 \text{ for } j \in \{1, 0\} \quad (5)$$

where  $\boldsymbol{\beta}_0$ ,  $\boldsymbol{\beta}_1$  and  $\boldsymbol{\delta}$  are vectors of coefficients to be estimated, and  $\varepsilon_0$ ,  $\varepsilon_1$  and  $\mu$  are the error terms. Equations (1) and (2) relate the outcomes to observable factors and unobserved components (error terms), while equation (3) relates the treatment status to observable and unobservable components. Model (4) is the Rubin's potential outcomes model, from which the ATT is derived, given estimates of equations (1) to (3), for the subsets of treated units and untreated units with the same average characteristics. To further understand the implications of the estimated ATTs, we also present the mean of the potential outcome when the treatment level is set to zero (i.e.,  $T = 0$ ). This is derived from equation (4) as  $POM_T = E y_T$ .

Equation (5) assumes that the error terms in the outcome equations are uncorrelated with the covariates of outcome and treatment assignment. This assumption controls for one of two potential sources of selection bias due to unobserved factors. The other possible source is the correlation between those same error terms and treatment assignment, i.e.,  $E(\varepsilon_{ij} | T_i) \neq 0$  for  $j \in \{0, 1\}$ . This denotes, for example, the case of a person who, because of her family's connections to a local official, rates the latter favorably and obtains aids from the local government. Since some relevant information like affinity with or proximity to local officials are not captured in the survey (and therefore not in  $\mathbf{X}$  or  $\mathbf{Z}$ ), their omission pose a potential source of bias. We proceed to estimate the ATT under two assumptions regarding the  $E(\varepsilon_{ij} | T_i)$ .

Underlying the so-called exogenous treatment effects (ExTE) model is the assumption that  $E(\varepsilon_{ij} | T_i) = 0$  for  $j \in \{0, 1\}$ . With this assumption and (5), then (1), (2) and (3) will identify the treatment effects (i.e., ATT). In implementing the ExTE model, we first estimate (1), (2) and (3) as probit models, and then proceed to calculate the ATT and  $POM_T$  by inverse-probability weighted regression adjustment method<sup>9</sup>. This method yields estimates that are doubly robust to possible misspecifications of the outcome and/or the treatment models

(Cattaneo, Drukker and Holland, 2013). To ensure the estimated ATT's are valid, we check for covariate balance<sup>10</sup> by computing for each covariate the standardized differences in means and variance ratio both for the raw sample and the matched sample (based on propensity scores). As desired, the standardized differences in the means are close to zero and the variance ratios to one after matching.<sup>11</sup> Additionally we applied the test of overidentifying restriction proposed by Imai and Ratkovic (2014) to examine the specification of the treatment model. To show if the distribution of the covariates is balanced between the treated and untreated units, the associated chi-squared test results are reported in the tables of impact estimates (next section). Finally, the overlaps in treatment probabilities are verified with histograms (shown in the appendix). Passing the covariate balancing tests, however, indicate the ExTE estimates of the ATTs are only provisionally valid until the independence between treatment and the error terms of the outcome equation is established.

Under the so-called endogenous treatment effects (EnTE) model, it is assumed  $E(\varepsilon_{ij}|T_i) \neq 0$  for  $j \in \{0,1\}$ . Effectively rendering  $T$  endogenous (even after conditioning on  $\mathbf{Z}$ ), this assumption further implies  $E(\varepsilon_{ij}|\mu_i) \neq 0$  for  $j \in \{0,1\}$ , and, thus,  $E(y_{ij}|\mathbf{X}_i, T_i)$  would be biased without accounting for  $\mu$  as well. To deal with the endogeneity of  $T$ , the control function approach is used. Specifically, equation (3) is estimated first and then its residuals introduced as an additional regressor in the outcome equations. Again, both the treatment and outcome equations (now with the treatment residuals) are estimated as probit models. Then, the parameter estimates are used to calculate the ATT and  $POM_T$  using the generalized method of moments.

To validate the assumption that treatment is endogenous, we checked for the correlation between treatment variable and the residuals in the outcome equations. With the null hypothesis that the two are uncorrelated, the corresponding chi-squared test results are also reported in the tables of impact estimates (next section). When the null hypothesis of no treatment endogeneity is rejected, then the ATT derived under EnTE model is the valid impact estimator. When the null cannot be rejected, the estimated ATT under the ExTE model is then preferred.<sup>12</sup>

### 4.3 Regression variables

Table 1 shows the list of regression variables and their respective means and standard deviations for the 2994 observations with complete information. Their definitions are presented in Appendix

1. The first set of outcome variables comprises *trust\_governor*, *trust\_mayor*, *trust\_vice mayor* and *trust\_barangay captain*. The first trust variable is set equal to 1 if the respondent trusts very much or somewhat much her provincial governor, and 0 otherwise. The four other trust variables are defined analogously. Their corresponding means are 0.68, 0.80, 0.76 and 0.79.

The other outcome variables are *satisfaction\_governor*, *satisfaction\_mayor*, *satisfaction\_vice mayor* and *satisfaction\_barangay captain*. The first variable takes the value of 1 if the respondent declared to be very satisfied or satisfied with the performance of her provincial governor, and 0 otherwise. The four other satisfaction variables are defined analogously. Their corresponding means are 0.67, 0.78, 0.74, and 0.79. For brevity, we refer to the trust variables as trust ratings, and to the satisfaction variables as satisfaction ratings.

The three treatment variables indicate whether during the three months prior to the interview the respondent received or did not receive any form of assistance from the national government or any local government (*assistance\_any government*, mean=0.12), from the provincial, municipal/city or barangay government (*assistance\_local government*, mean=0.09), and from the city/municipal or barangay government (*assistance\_municipal government*, mean=0.07).

There are 33 covariates, all except three are two dummy variables. Six covariates are used exclusively in the treatment model, namely: *assistance\_family*, *assistance\_private*, *poor*, *member\_PO*, *log household size*, and *highschool*. The first two indicate receipt of assistance, respectively, from families, relative and friends, and from private companies or individuals (not friends or relatives). The rest are binary indicators based on the respondent's declared poverty status (*poor*), membership in people's organizations (*member\_PO*), and completion of at least secondary education (*highschool*). Household size (in natural logarithm) is also included as a possible need indicator. Of the respondents, around half of claimed to be poor or finished high school, and about a fifth belong to local organizations. The average household size is five.

The other covariates pertain to gender (*male*), completion of at least college (*college*), whether married or living in with a partner (*in\_union*), ownership or mortgage status over the real property they currently reside in (*own\_house\_lot*, *owner\_house\_lot*), employment status (*working*), and length of residence in the locality (*years\_residence*). The additional controls for socioeconomic status are coverage by private insurance (*insurance*) or social health insurance

(*PhilHealth*), connection to public utilities (*water, electricity*), and ownership of motor vehicles or boat (*vehicle*).

The respondents are further classified by age groups: *age\_30s, age\_40s, age\_50s, age\_60s, age\_70s\_older*. In the treatment models, only *age\_60s, age\_70s\_older* are used. Additionally, the respondents are characterized by their main language spoken at home (*Filipino, Cebuano, Hiligaynon, Ilokano*), residence in cities (*city*), and location in the three main island groups (*Luzon, Visayas, Mindanao*), National Capital Region (*NCR*), or in the Autonomous Region of Muslim Mindanao (*ARMM*), which is excluded here from Mindanao. The dummy for the year 2011 (*Y2011*) controls for possible temporal influences.

[Insert Table 1 here.]

#### 4.4 *Model specifications and placebo tests*

In estimating the outcome equations (1) and (2) for both the ExTE and EnTE models, we use a common set of covariates, which include all except six of those listed in Table 1. As mentioned above, *assistance\_family, assistance\_private, poor, member\_PO, log\_household\_size* and *highschool* are used exclusively in the estimation of the treatment equation (3). The other treatment covariates include those for outcome, except *college, age\_30s, age\_40s* and *age\_50s*. While assistance received from non-government sources (*assistance\_family, assistance\_private*) may be endogenous<sup>13</sup>, only their possible correlation with public assistance is the concern here. Implicitly, thus, those who consider themselves underprivileged, are less educated, or perhaps are more made aware of available government support through their local organizations or length of residence in the community, or who have not received support from families, friends or private sources are posited to be likelier than others to seek and obtain government assistance, *ceteris paribus*. Note that in nearly all estimations *own\_house\_lot* is used and never with *owner\_house\_lot*. The latter is used as a substitute for the former in only one specification to achieve convergence in the estimation. The same specifications for the outcome and treatment equations and same evaluation sample to ensure the estimated ATTs are comparable.

To provide a benchmark, we also estimate a naïve model of the outcome equation with the treatment variables among the regressors. Also using probit methods, we derive the marginal effects of the treatment variables and compare them with the estimated ATTs using the ExTE and EnTE models. The comparison serves to highlight the possible extent of selection bias when

confounding factors are controlled for, as in the simple probit model. While the ATT estimates should be preferred to marginal effects, we further analyze the diagnostic tests results to determine the correct ATT estimator. As mentioned above, the minimum requirement is that the test of covariate balance must be satisfied. When this is met in the EnTE model, it is likewise met in the corresponding ExTE model, since they have the same specifications for the same treatment and outcome. However, if the test of endogeneity of treatment in the ExTE model is not rejected, then its estimated ATT should be preferred. Otherwise, the EnTE estimate of the ATT is preferred.

To further validate the results, we perform placebo tests using the satisfaction ratings of the DILG and Secretary Jesse Robredo as outcomes. These are reasonable placebos because the DILG, while it supervises all local governments, does not have the mandate or resources like the education, health or social welfare departments to extend services or assistance directly to the local people. Thus, its ratings or that of Secretary Robredo can be expected to be independent of the kind of public assistance examined here.

## 5. RESULTS

There are a total of 210 sets of regression estimates and 18 summary tables of covariate balance. To save space, however, only the key results are reported here.<sup>14</sup> First we establish using tests of means that the recipients and non-recipients of public aid systematically vary in their characteristics.

### 5.1 *Differences between recipients and non-recipients of government assistance*

As shown in Table 1, the non-recipients ([1]) and the recipient ([2]) have unequal means<sup>15</sup> in 26 of the 33 covariates (*t*-tests, last column). Notably, for example, a higher proportion of the recipients than non-recipients consider themselves poor (68.6% vs. 47.9%) or members of local organizations (30.4% vs. 19.3%), and fewer of them finished at least high school (39% vs. 54.5%). The differences between the two groups in terms of their mean *assistance\_private*, *years\_residence*, *age\_70s\_older*, *insurance*, *PhilHealth*, *NCR*, and *Y2011* however appear to be purely random.

## 5.2 Effects on trust

Table 2 presents the estimated effects of the three assistance variables on the trust ratings of the governor, mayor, vice mayor and barangay captain. In all probit estimates, we can reject the null that coefficients are simultaneously equal to zero, while in all ExTE estimates the null of covariate balanced cannot be rejected. Moreover, the potential outcome means range from 42.8 percent to 98.2 percent, and all are highly significant. These suggest that de facto each local officials enjoys a high level of trust.

The results in the top row reveal that, regardless of the evaluation method used, *assistance\_any government* has no statistically significant effects on governor and barangay captain. Based on the probit model and the ExTE model, this assistance variable appears to improve by 5.9 pps ( $p < 0.05$ ) the trust in mayor. The EnTE estimate for the mayor is negative and insignificant, but the Wald  $\chi^2$  test result indicates the null of no treatment endogeneity cannot be rejected. The same result for treatment endogeneity test is obtained for the vice mayor. Both these diagnostic tests result imply the ExTE estimates for the mayor and vice mayor should be preferred. The ExTE estimate however indicates that *assistance\_any government* has statistically nil effects on trust in the vice mayor.

The results in the middle row suggest *assistance\_local government* impact the trust ratings of mayor and vice mayor, but not the governor's or barangay captain's. For the mayor, the probit and ExTE estimates are both 6.2 pps, but the latter has a higher level of significance ( $p < 0.05$ ). While the corresponding EnTE estimate for mayor is negative (-10.5 pps) and highly significant, in this case the assumption of treatment endogeneity is not warranted, as the Wald  $\chi^2$  test result implies. For the vice mayor, only the EnTE estimate (-23.2 pps) is significant (at  $p < 0.01$ ). However, the null of no treatment endogeneity cannot be rejected. Again, this suggests the ExTE estimate (0.6 pp) must be preferred, but which is insignificant however.

Finally, the last row shows the effects of *assistance\_municipal government*. None of the probit or ExTE estimates is significant. Only the EnTE estimates for mayor (-12.2 pps)<sup>16</sup>, vice mayor (-17.8 pps) and barangay captain (-20.1 pps) are significant. For each of these results, however, the assumption of endogenous treatment underlying the EnTE model is not warranted, as indicated by the Wald  $\chi^2$  test results. While these results imply preferring the corresponding

ExTE estimates, the latter however are all insignificant. Thus, *assistance\_municipal government* does not appear to influence trust in any of the four officials.

[Insert Table 2 here.]

### 5.3 *Effects on satisfaction with performance*

Table 3 shows the impact estimates of each assistance variable on the satisfaction ratings of the same set of local officials. Again, in all cases, the diagnostic test results indicate the corresponding null hypothesis for the probit models can be rejected, while the null hypothesis for the ExTE estimates cannot be rejected. Even without assistance, the potential outcome means are all above 55 percent and highly significant.

All the probit, ExTE and EnTE estimates shown in the top row indicate that *assistance\_any government* has no systematic effects on the satisfaction ratings of governor, mayor or barangay captain. For the vice mayor, the estimated effect using the EnTE model is negative (-21.1 pps) and highly significant. Of the three impact estimates for vice mayor, the EnTE result is preferred since in this case the underlying assumption of treatment endogeneity is warranted. The Wald  $\chi^2$  test result indicates the null of no treatment endogeneity can be rejected at the 5-percent level.

Qualitatively the same results are derived for *assistance\_local government* (middle row). While most estimates of the impact on the satisfaction ratings of governor, mayor and barangay captain are now negative, none is significant still. Based on the EnTE model, the impact on the satisfaction rating of the vice mayor is again negative (-30.5 pps) and highly significant. Further, the null of no treatment endogeneity cannot be rejected (at  $p < 0.05$ ).

Finally, the results regarding the effects of *assistance\_municipal government* (bottom row) corroborate most of the findings so far. This type of public assistance also has no statistically significant impact on governor and mayor. But it shows a negative and significant effect on the vice mayor (-29.6 pps), based on the EnTE model. Also in this case, the null of no treatment endogeneity cannot be rejected. The ExTE estimate for barangay captain is -7.9 pps ( $p < 0.05$ ).

[Insert Table 3 here.]

#### 5.4 *Placebo test*

As shown in Table 4, none of the marginal effects or ATT estimates of *assistance\_any government*, *assistance\_local government* or *assistance\_municipal government* is statistically significant. These imply that receipt of public assistance from any source has no influence on the fairly high satisfaction ratings of the DILG and Secretary Jesse Robredo. These results are not surprising since the DILG does not directly provide the types of services or assistances examined here. Since the estimates are statistically nil as expected, the placebo tests results lend credence to the impact estimates reported above.

[Insert Table 4 here.]

## 6. DISCUSSION AND CONCLUSION

Survey results for 2011 and 2012 indicate key local elected officials in the Philippines had fairly high de facto satisfaction and trust ratings in both years. Their approval ratings arguably had some bases. Possibly a few were still basking in their popular mandate or their association with the victorious presidential candidate.<sup>17</sup> For diligently performing their duties, others justifiably earned their constituents esteem. Some kept their supporters' trust possibly by extending public assistance or facilitating access to such, or even by dipping from their own pockets.

In the Philippines, as in many other countries, the performance of or trust in government institutions and key officials are monitored, especially in the media, partly through survey results. While survey results are suggestive, it is however hard to discern from them the specific triggers for the rise and fall in satisfaction or trust ratings of government institutions or officials. Survey-based evidence that purportedly link an official's ratings to her actions or decisions are often confounded by the influence of the prevailing macroeconomic condition, social events or even personal circumstances (of the respondents and the officials alike). While perhaps most officials would want to know their ratings so as to improve their services to their constituents, some may want to manipulate them for purely personal, family or party advantage. It is important to know then if satisfaction and trust ratings respond at all to the actions or decisions of local officials, notwithstanding the underlying motivations behind them.



Here we used the results of two rounds of a nationally-representative survey to examine the influence of receipt of public assistance on the trust in and satisfaction with the performance of governors, mayors, vice mayors and barangay captains. Since the types of public assistances captured in the survey include those dished out by local officials when sought for favors or in times of needs (like medical emergencies, deaths, disasters, loss of job or income), there is a high degree of selection in the aid recipients. Thus, we estimated parametric models that account for the effects of observable characteristics and possible unobserved factors in the determination of the treatment status (i.e., receipt of assistance) and outcomes (i.e., trust and satisfaction ratings). Further, we classified public assistances by source (national and local, any local, and municipal/city or barangay only) to explore the heterogeneous impacts of a given type of public assistance across outcomes and officials. The results are indeed nuanced.

On one hand, the ATT estimates are generally insignificant for the governors and barangay captains. The receipt of assistance from any public source (national or local government) or from any local government (i.e., provincial, municipal/city or barangay government) has no influence on the trust or satisfaction ratings of governors or barangay captains. The satisfaction ratings of barangay captains, however, appears to decline with assistance coming from the municipal/city or barangay government.

On the other hand, there are more significant impact estimates, but also contrasting results, for mayors and vice mayors. Specifically, the receipt of assistances from any public source or from local government sources alone both improve the trust ratings of mayors. None of the assistance indicators however has influence on the satisfaction ratings of mayors. In contrast, the receipt of public assistance, regardless of source, is associated with lower satisfaction rating of vice mayors, even while none of the three types of assistance affects the trust in vice mayors.

The heterogeneous effects of public assistance across the key local officials could be explained by their relative reach and resources. Compared to governors, the three other officials are more directly and easily reached by their constituents. While an average governor controls larger fiscal and organizational resources than an average mayor or barangay captain<sup>18</sup>, she also serves a bigger population and administers over a wider geographical area. Mayors and barangay captains also have control over the budgets and personnel of their local governments, while vice mayors do not have the same powers. A typical barangay captain however controls a far smaller

budget than a typical mayor. When the vice mayor, any member of the local council, or a barangays captain is approached for assistance, she may have to refer the aid seeker to the mayor's office or, otherwise, use her own resources. Relative to the other three officials, the mayors thus are in that Goldilocks position that confers them control over substantial fiscal resources and places them close enough to most of their constituents. While heterogeneous impacts are found for local officials, no impact however is found on the satisfaction ratings of the DILG or Secretary Jesse Robredo. The results of the placebo tests therefore lend credence to the overall findings.

Our finding concerning the trust in mayor is consistent with the reported effects of conditional cash transfers on trust in local leaders in Tanzania (Evans, Holtemeyer and Kosec, 2019). We also found nil effects for other key local officials, however, notwithstanding the differences in our respective treatment variables (government assistance here vs. conditional cash transfers), evaluation methods (quasi-experimental approach here vs. their randomized experiment), and country settings. Like in Romania where targeted government spending also improved trust in local officials (Pop-Eleches and Pop-Eleches, 2012), our findings could also illumine the motivations behind the selective distribution of assistance by local governments in the Philippines. They also shed light on the persistent practice among incumbent officials, especially governors and mayors, to emblazon their names and pictures in government buildings, vehicles, public infrastructures and events. These political advertisements are unsubtle attempts to influence public opinion.<sup>19</sup>

Here we have also shown that the same assistance could have different influence on the trust and satisfaction ratings of the same officials. In other words, some people may be satisfied with the performance of one official but not trust the same, or vice versa. In the Philippine context, trust in officials may be more closely related to interpersonal trust (between the mayor and a local resident, for example) since local officials take the effort to identify their persons rather than their offices with public assistances and services. This is possibly patronage or clientelistic politics in another guise. On the other hand, satisfaction with the performance of the provincial-level or municipal-level official could be based on perception, while with that of barangay-level officials could be based on experience since a person is likely to notice the quality of public services in her neighborhood. The implication for monitoring and evaluation of

government officials is that trust ratings and satisfaction ratings respond differently to the same trigger (i.e. provision of public assistance).

Further, we also demonstrated the usefulness of controlling for both observable and unobservable factors in the determination of treatment status. The usual approach is to control selection on observables alone, which is typically addressed by balancing the distribution of covariates between the treated and untreated units. Equally important, however, is to control for selection on unobservables. As shown in the results for the vice mayor, checking for covariate balance alone would lead one to conclude no effects on satisfaction rating. But when the endogeneity of treatment is tackled as well, the effect is found to be negative.

Admittedly our findings could be undermined by data limitations. One limitation concerns the control group, which comprises those who never sought assistance in the first place and those who sought aid but were denied or backed out later without obtaining support. Possibly out of frustration or disappointment, those in the second sub-group may have given their officials lower ratings. While it is not possible to distinguish the two control sub-groups in the data, hopefully this particular type of selection bias (seek and not obtain assistance) is partly ameliorated by our list of treatment covariates.

Another limitation is the unreported values of the assistance. Were they asked, understandably some respondents may have found it difficult to estimate the value of non-monetary assistance, especially those given out of kindness or in times of needs. Respondents will also appreciate the same amount of money differently if received under varying circumstances. While a binary indicator as a proxy is convenient, it implicitly treats each assistance equally or one assistance and multiple assistances as equivalent. In other words, the treatment dose here is not stable or uniform, which has serious implications on the estimation of the ATTs (Wooldridge, 2010). With finer metric of treatment, impact estimates could be bigger. This topic is ripe for further investigation.

Another possible extension to the present study is to examine the same issue at the more granular level. With survey data at the provincial or municipal level, one can further tease out the relative effect of assistance targeted to persons (like those considered here) from public services that simultaneously benefit more people. Plausibly as well that it is the general condition

in a given locality (like vibrant local economy or high level of social capital) that makes for better quality of public services and generous assistance.

In whom do Filipinos trust more? In concluding this paper, we answer: They trust their mayors and barangay captains more than they trust their governors or vice mayors. By facilitating access to public assistance, however, mayors earn a bit more of the peoples' trust. Even if barangay captains, vice mayors or governors can facilitate access to public assistance, they do not seem to elicit the same approval from their constituents. Moreover, the same public assistance may have different effect on the satisfaction rating of the same officials. The policy implication is that caution must be exercised in using trust or satisfaction ratings to recognize or reward exemplary performances since opportunistic officials may attempt to manipulate them through public assistance.

## NOTES

1. The IRA share of each local government is based partly on its relative population and land area, released every quarter, and can be used following only minimal restrictions. For these reasons, the distribution of the IRA is also much politicized (Hutchcroft, 2012).
2. “General Public Services - this covers expenditures for services which are indispensable to the existence of an organized state and cannot be allocated to specific sectors or subsectors. This includes executive and legislative services; overall financial and fiscal services; civil services; planning; conduct of foreign affairs; general research, public order and safety and centralized services.” (NSCB, 2010)
3. To get around the spending limit for personnel services, the payments for the job-order workers are recorded as part of maintenance and operating expenses. The job-order system is permitted under the Code.
4. The Asia Foundation supported the survey and provided a copy of the survey data used here.
5. No questions were asked about the reasons for or the amount or value of the assistance received.
6. This estimator is widely used in observational studies (e.g., Kijima, Ito and Otsuka, 2012; Masakure, 2016; Adolwa, Schwarze and Buerkert, 2019).
7. Thus, we abstract from the number, type or value of assistances received. While the assistances received can be counted and even classified into monetary (lent or given for free) or in-kind (jobs, others), doing so will require more elaborate treatment models than is assumed here. Thus, this study may be considered as a first pass at evaluating the effect of government assistance.
8. This adopts the exposition in StataCorp (2017).
9. Essentially, under this method, the average treatment-level predicted outcomes are computed using regression coefficients weighted by the estimated inverse probabilities of treatment. (StataCorp (2017), p. 246)
10. Covariate balance satisfies the conditional mean independence condition which means that after conditioning on the covariates, the mean of the potential outcomes are independent of treatment assignment. (StataCorp (2017), p. 155)

11. The tables of standardized differences and variance ratios are submitted as online supplementary materials.
12. The ExTE and EnTE models are implemented using the *teffects ipwra* command and the *eteffects* command, respectively, in STATA. Previous studies that also used the same ExTE model in STATA are Adolwa, Schwarze and Buekert (2019) and Long, Pang, Dong and Zeng (2020), while the EnTE model was used by Boyd-Swan (2019) and Masakure (2016).
13. Or even subject to reverse causality. However, we believe that people are more likely to seek help from their kin and friends first before approaching local officials because of lower transaction costs and their mutual help arrangements established through long-term relationships.
14. There are 90 sets of regression estimates each for the ExTE model and EnTE model and 30 sets for the naïve probit model. All estimations are done in STATA. All the tables of regression results and histograms are submitted as online supplemental materials.
15. Two-sample test of means, assuming unequal variances. For binary indicators, the tests are equivalent to tests of proportions.
16. To achieve convergence in the estimation of the treatment model for the *trust\_mayor\_owner\_house\_lot* is used instead of *own\_house\_lot*.
17. According to Kasuya (2009), in every election in the Philippines both and new local candidates often switch to or align with the parties of the top presidential candidates.
18. Some highly urbanized cities, like those in Metro Manila, are independent of the provinces and richer than provinces. The province's population include the population of its component municipalities.
19. In a randomized experiment study in Argentina, it is found that the provision of information about government performance could affect trust in government (Alessandro et al., 2021).

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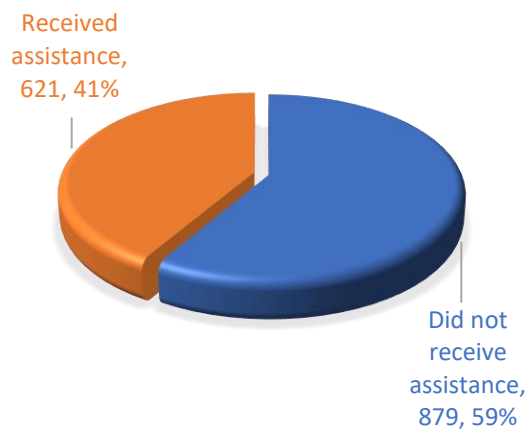
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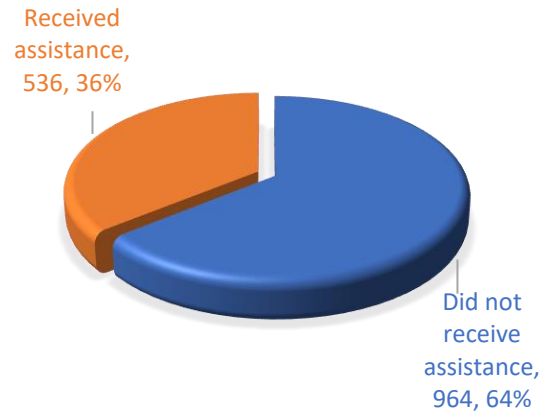
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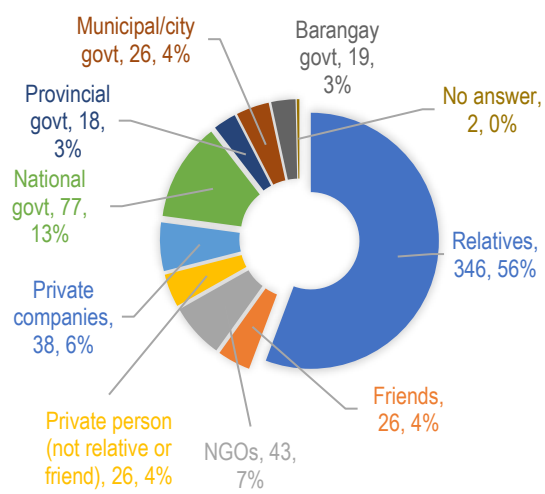
(a) 2011,  $N=1500$



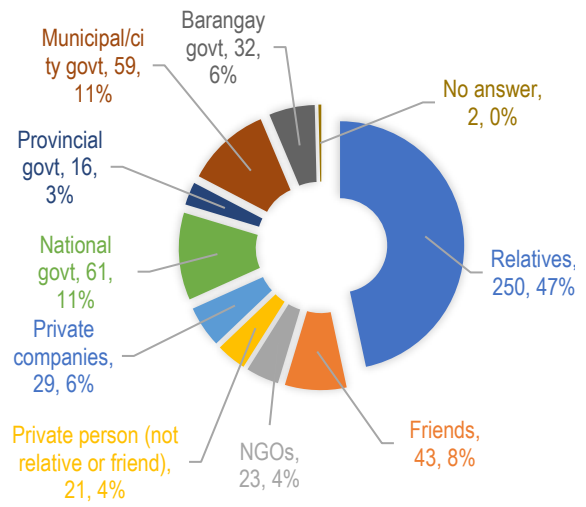
(b) 2012,  $N=1500$

Sources: Survey of Local Governance 2011, Survey of Local Governments 2012.

Figure 1. Distribution of respondents by receipt of any assistance in the previous three months, 2011 and 2012



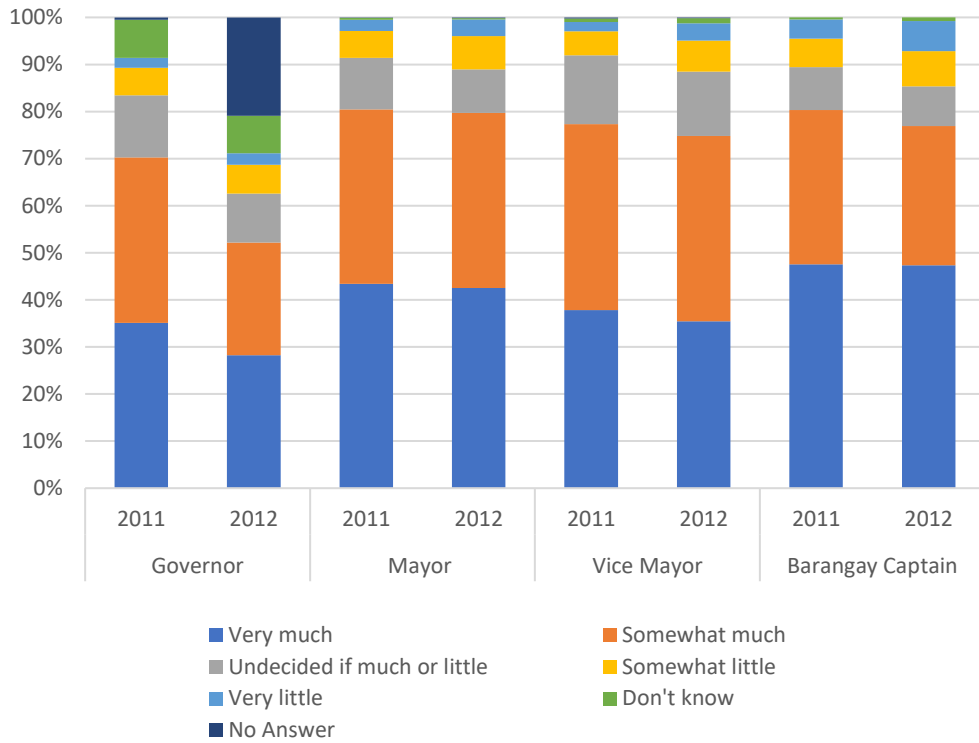
(a) 2011, N=621



(b) 2012, N=536

Sources: Survey of Local Governance 2011, Survey of Local Governments 2012.

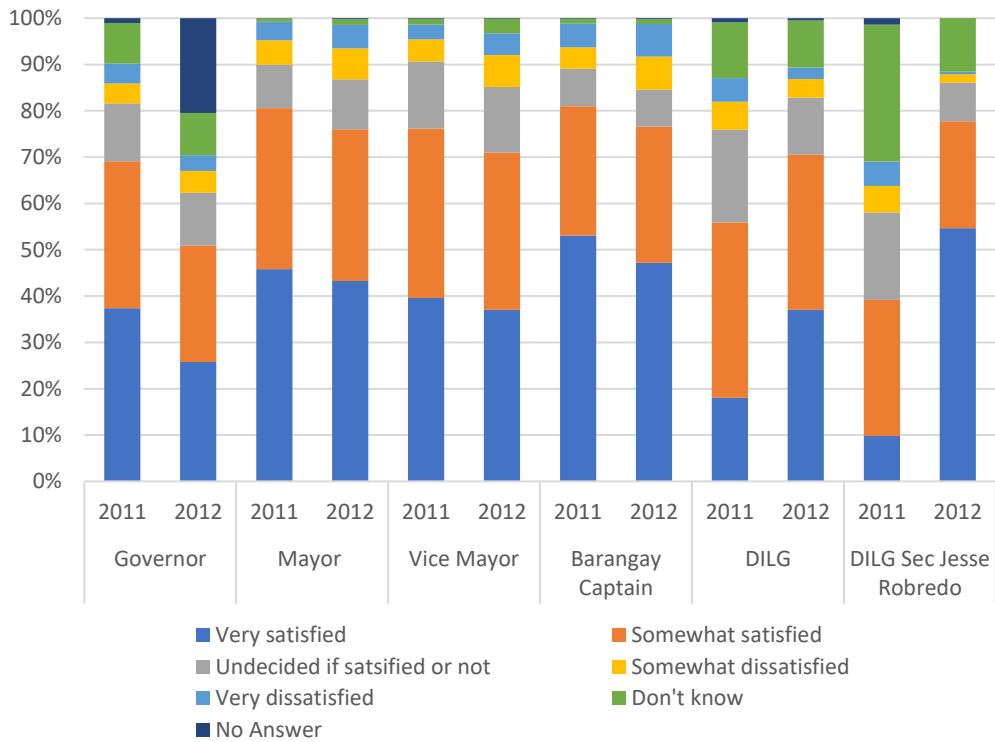
Figure 2. Sources of assistance of those who received assistance in the previous three months, 2011 and 2012



Notes: This figure is based on answers to the question “For the following, please indicate if your trust/faith in (institution/personality) is VERY MUCH, SOMEWHAT MUCH, UNDECIDED IF MUCH OR LITTLE, SOMEWHAT LITTLE, VERY LITTLE, OR YOU HAVE NOT HEARD OR READ ANYTHING ABOUT (GROUP/PERSON) EVER?”

Source of raw data: Survey of Local Governance 2011, Survey of Local Governments 2012.

Figure 3. Percentage distribution of respondents by level of trust in key local officials, 2011 (N=1500) and 2012 (N=1500)



Notes: This figure is based on answers to the question “Please tell me how satisfied or dissatisfied you are with the performance of the following (persons/institutions). Are you VERY SATISFIED, SOMEWHAT SATISFIED, UNDECIDED IF SATISFIED OR NOT, SOMEWHAT DISSATISFIED, VERY DISSATISFIED, or YOU HAVE NOT EVER HEARD OR READ ANYTHING about (person/institution)?”

Source of raw data: Survey of Local Governance 2011, Survey of Local Governments 2012.

Figure 4. Percentage distribution of respondents by level of satisfaction with the performances of key local officials, and Department of Interior and Local Government (DILG) and DILG Secretary Jesse Robredo, 2011 ( $N=1500$ ) and 2012 ( $N=1500$ )

Table 1. Summary statistics and tests of differences in covariate means

Variable	Full sample ( <i>N</i> =2,994)		Received any assistance from government in the past 3 months?		
	Mean <sup>a</sup>	Std. Dev. <sup>a</sup>	No Mean [1]	Yes Mean [2]	H <sub>0</sub> : [1]-[2]=0 <i>t</i> -stat <sup>b</sup>
<u>Outcome</u>					
Trust_governor <sup>c</sup>	0.679	0.467	0.673	0.721	-1.862*
Trust_mayor	0.801	0.399	0.795	0.842	-2.303**
Trust_vice mayor	0.761	0.427	0.755	0.803	-2.178**
Trust_barangay captain	0.788	0.409	0.783	0.816	-1.504
Satisfaction_governor <sup>c</sup>	0.666	0.472	0.660	0.701	-1.540
Satisfaction_mayor	0.783	0.412	0.778	0.821	-2.033**
Satisfaction_vice mayor	0.735	0.441	0.728	0.787	-2.613***
Satisfaction_barangay captain	0.788	0.409	0.784	0.816	-1.468
Satisfaction_DILG	0.633	0.482	0.621	0.633	0.512
Satisfaction_Jesse Robredo	0.585	0.493	0.585	0.579	0.225
<u>Treatment</u>					
Assistance_any government	0.129	0.335			
Assistance_local government	0.078	0.268			
Assistance_municipal government	0.066	0.248			
<u>Covariates</u>					
Assistance_family	0.222	0.416	0.233	0.143	4.620***
Assistance_private	0.078	0.268	0.079	0.073	0.437
Poor	0.505	0.500	0.479	0.686	-8.076***
Member_PO	0.207	0.405	0.193	0.304	-4.496***
Log household size	1.505 [0]	0.478 [2.89]	1.480	1.670	-7.917***
Highschool	0.525	0.499	0.545	0.390	5.815***
College	0.133	0.340	0.142	0.073	4.634***
Male	0.517	0.500	0.507	0.582	-2.767***
In union	0.814	0.389	0.805	0.873	-3.608***
Own_house_lot	0.451	0.498	0.466	0.345	4.626***
Owner_house_lot	0.464	0.499	0.480	0.353	4.818***
Working	0.561	0.496	0.547	0.649	-3.889***
Years_residence	28.679 [0]	19.269 [86]	28.882	27.302	1.576
Age_30s	0.221	0.415	0.215	0.268	-2.206**
Age_40s	0.240	0.427	0.233	0.288	-2.251**
Age_50s	0.216	0.412	0.221	0.182	1.865*
Age_60s	0.154	0.361	0.162	0.101	3.555***
Age_70s_older	0.074	0.263	0.074	0.073	0.142
Insurance	0.261	0.439	0.261	0.255	0.288
PhilHealth	0.114	0.318	0.111	0.135	-1.293
Water	0.461	0.499	0.479	0.340	5.324***
Electricity	0.763	0.425	0.779	0.655	4.872***
Vehicle	0.278	0.448	0.285	0.226	2.562**
Filipino	0.314	0.464	0.323	0.252	2.953***
Cebuano	0.242	0.429	0.233	0.304	-2.831***
Hiligaynon	0.131	0.337	0.137	0.086	3.261***
Ilokano	0.051	0.220	0.054	0.029	2.657***
City	0.507	0.500	0.521	0.410	4.102***
Luzon	0.434	0.496	0.445	0.358	3.287***
NCR	0.100	0.300	0.102	0.088	0.872
Visayas	0.232	0.422	0.241	0.171	3.339***
ARMM	0.100	0.300	0.094	0.145	-2.752***
Y2011	0.500	0.500	0.501	0.494	0.287

<sup>a</sup>Figures in brackets under the mean and standard deviation are the minimum and maximum values, respectively.

<sup>b</sup>Test of differences in means assume unequal variances of the two groups.

<sup>c</sup>Excludes the 300 samples from NCR, which does not have a provincial governor.

\*\*\**p*<0.01, \*\**p*<0.05, \**p*<0.10



Table 2. Effects on trust in key local officials

Sources of assistance	Trust_governor (N=2,694) <sup>a</sup>			Trust_mayor (N=2,994)			Trust_vice mayor (N=2,994)			Trust_barangay captain (N=2,994)		
	Probit [1]	ExTE [2]	EnTE [3]	Probit [4]	ExTE [5]	EnTE [6]	Probit [7]	ExTE [8]	EnTE [9]	Probit [10]	ExTE [11]	EnTE [12]
Assistance_any government <sup>b</sup>	0.046 (0.030)	0.032 (0.030)	0.276 (0.198)	0.059** (0.026)	0.059** (0.024)	-0.041 (0.089)	0.032 (0.028)	0.032 (0.027)	-0.119 (0.076)	0.016 (0.025)	0.019 (0.025)	-0.074 (0.088)
Potential-outcome mean <sup>c</sup> [assistance_any government = 0]	0.688*** (0.011)	0.676*** (0.017)	0.428** (0.200)	0.801*** (0.009)	0.795*** (0.013)	0.896*** (0.087)	0.760*** (0.009)	0.759*** (0.013)	0.912*** (0.073)	0.799*** (0.009)	0.801*** (0.013)	0.896*** (0.086)
<u>Diagnostic tests<sup>d</sup></u>												
Wald $\chi^2$	152.68	31.41	2.00	58.33	33.81	0.91	78.73	33.81	1.94	86.50	33.81	1.08
Prob > $\chi^2$	0.0000	0.2994	0.3675	0.0004	0.2464	0.6337	0.0000	0.2464	0.3791	0.0000	0.2464	0.5818
Assistance_local government <sup>b</sup>	0.006 (0.038)	0.005 (0.037)	-0.130 (0.372)	0.062* (0.033)	0.062** (0.028)	-0.105*** (0.033)	-0.0003 (0.034)	0.006 (0.035)	-0.232*** (0.060)	-0.008 (0.031)	-0.009 (0.032)	-0.159 (0.129)
Potential-outcome mean <sup>c</sup> [assistance_local government = 0]	0.693*** (0.011)	0.685*** (0.017)	0.812** (0.344)	0.803*** (0.009)	0.798*** (0.012)	0.990*** (0.028)	0.764*** (0.009)	0.754*** (0.013)	0.982*** (0.044)	0.801*** (0.009)	0.800*** (0.012)	0.943*** (0.118)
<u>Diagnostic tests<sup>d</sup></u>												
Wald $\chi^2$	150.22	16.9249	0.29	55.94	23.43	2.10	77.45	23.43	2.07	85.27	23.43	0.50
Prob > $\chi^2$	0.0000	0.9811	0.8635	0.0009	0.8644	0.3495	0.0000	0.8644	0.3558	0.0000	0.8644	0.7783
Assistance_municipal government <sup>b</sup>	-0.014 (0.041)	-0.017 (0.041)	-0.181 (0.354)	0.033 (0.036)	0.039 (0.033)	-0.122*** (0.031)	-0.018 (0.037)	-0.008 (0.038)	-0.178*** (0.049)	-0.039 (0.033)	-0.040 (0.037)	-0.201* (0.114)
Potential-outcome mean <sup>c</sup> [assistance_municipal government = 0]	0.695*** (0.011)	0.670*** (0.018)	0.830** (0.340)	0.806*** (0.008)	0.797*** (0.013)	0.995*** (0.017)	0.765*** (0.009)	0.753*** (0.014)	0.980*** (0.050)	0.803*** (0.009)	0.797*** (0.014)	0.956*** (0.104)
<u>Diagnostic tests<sup>d</sup></u>												
Wald $\chi^2$	150.05	17.77	0.59	53.05	20.250	2.46	77.85	20.25	1.69	86.26	20.25	0.67
Prob > $\chi^2$	0.0000	0.9724	0.7427	0.0020	0.9468	0.2917	0.0000	0.9468	0.4299	0.0000	0.9468	0.7171

<sup>a</sup>Excluding samples in NCR, which does not have a provincial governor.

<sup>b</sup>Estimates under “Probit” are marginal effects, while those under ExTE and EnTE are ATTs.

<sup>c</sup>For the probit model, this is the predicted probability when assistance variable is set to 0 and all other covariates at their means.

<sup>d</sup>For the probit model, the test is for joint significance ( $H_0$ : All coefficients are simultaneously equal to zero); for the ExTE model, the test is for covariate balance ( $H_0$ : Treatment model balanced the covariates) and the relevant test statistic is  $\chi^2$ ; and, for the EnTE model, the test is for treatment endogeneity ( $H_0$ : Treatment and outcome unobservables are uncorrelated).

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.10$ .

Table 3. Effects on satisfaction with the performances of key local officials

Sources of assistance	Satisfaction_governor (N=2,694) <sup>a</sup>			Satisfaction_mayor (N=2,994)			Satisfaction_vice mayor (N=2,994)			Satisfaction_barangay captain (N=2,994)		
	Probit [1]	ExTE [2]	EnTE [3]	Probit [4]	ExTE [5]	EnTE [6]	Probit [7]	ExTE [8]	EnTE [9]	Probit [10]	ExTE [11]	EnTE [12]
Assistance_any government <sup>b</sup>	0.009 (0.031)	0.003 (0.032)	0.119 (0.179)	0.023 (0.027)	0.027 (0.027)	0.078 (0.153)	0.018 (0.029)	0.035 (0.029)	-0.211*** (0.039)	0.001 (0.026)	-0.003 (0.026)	0.002 (0.138)
Potential-outcome mean <sup>c</sup> [assistance_any government = 0]	0.684*** (0.011)	0.670*** (0.018)	0.551*** (0.018)	0.789*** (0.009)	0.779*** (0.013)	0.726*** (0.153)	0.735*** (0.010)	0.726*** (0.014)	0.975*** (0.026)	0.793*** (0.009)	0.805*** (0.012)	0.799*** (0.139)
<u>Diagnostic tests<sup>d</sup></u>												
Wald $\chi^2$	139.66	31.41	2.13	60.51	33.81	1.29	92.71	33.81	8.38	74.98	33.81	3.00
Prob > $\chi^2$	0.0000	0.2994	0.3444	0.0002	0.2464	0.5253	0.0000	0.2464	0.0152	0.0000	0.2464	0.2227
Assistance_local government <sup>b</sup>	-0.036 (0.039)	-0.039 (0.040)	0.029 (0.337)	-0.001 (0.033)	-0.003 (0.035)	0.076 <sup>e</sup> (0.343)	-0.026 (0.035)	-0.016 (0.037)	-0.305*** (0.045)	-0.042 (0.031)	-0.051 (0.035)	0.005 (0.387)
Potential-outcome mean <sup>c</sup> [assistance_local government = 0]	0.688*** (0.011)	0.688*** (0.017)	0.616 (0.380)	0.792*** (0.009)	0.787*** (0.012)	0.712** (0.324)	0.739*** (0.009)	0.723*** (0.014)	0.999*** (0.003)	0.797*** (0.008)	0.803*** (0.012)	0.746** (0.368)
<u>Diagnostic tests<sup>d</sup></u>												
Wald $\chi^2$	143.30	16.92	0.59	59.80	23.43	1.62	93.51	23.43	6.29	76.25	23.43	0.33
Prob > $\chi^2$	0.0000	0.9811	0.7447	0.0003	0.8644	0.4446	0.0000	0.8644	0.0430	0.0000	0.8644	0.8467
Assistance_municipal government <sup>b</sup>	-0.052 (0.043)	-0.053 (0.046)	-0.129 (0.310)	-0.002 (0.037)	0.002 (0.038)	-0.090 (0.223)	-0.030 (0.038)	-0.014 (0.040)	-0.296*** (0.047)	-0.068** (0.032)	-0.079** (0.039)	-0.103 (0.242)
Potential-outcome mean <sup>c</sup> [assistance_municipal government = 0]	0.689*** (0.011)	0.673*** (0.019)	0.763** (0.338)	0.792*** (0.009)	0.782*** (0.013)	0.873*** (0.217)	0.739*** (0.009)	0.718*** (0.015)	0.9999*** (0.001)	0.798*** (0.009)	0.802*** (0.013)	0.841*** (0.277)
<u>Diagnostic tests<sup>d</sup></u>												
Wald $\chi^2$	144.61	17.77	1.25	59.89	20.25	0.61	93.94	20.25	8.32	78.95	20.25	0.60
Prob > $\chi^2$	0.0000	0.9724	0.5350	0.0003	0.9468	0.7354	0.0000	0.9468	0.0156	0.0000	0.9468	0.7422

<sup>a</sup>Excluding samples in NCR, which does not have a provincial governor.

<sup>b</sup>Estimates under “Probit” are marginal effects, while those under ExTE and EnTE are ATTs.

<sup>c</sup>For the probit model, this is the predicted probability when assistance variable is set to 0 and all other covariates at their means.

<sup>d</sup>For the probit model, the test is for joint significance ( $H_0$ : All coefficients are simultaneously equal to zero); for the ExTE model, the test is for covariate balance ( $H_0$ : Treatment model balanced the covariates) and the relevant test statistic is  $\chi^2$ ; and, for the EnTE model, the test is for treatment endogeneity ( $H_0$ : Treatment and outcome unobservables are uncorrelated).

<sup>e</sup>N=2987.

Table 4. Effects on satisfaction with the Department of Interior and Local Government (DILG) and DILG Secretary Jesse Robredo ( $N=2,994$ )

Sources of assistance <sup>a</sup>	Satisfaction_DILG			Satisfaction_Robredo		
	Probit [1]	ExTE [2]	EnTE [3]	Probit [4]	ExTE [5]	EnTE [6]
Assistance_any government <sup>a</sup>	0.006 (0.029)	0.010 (0.031)	-0.095 (0.146)	0.017 (0.028)	0.017 (0.030)	-0.100 (0.138)
Potential-outcome mean <sup>b</sup> [assistance_any government = 0]	0.651*** (0.011)	0.624*** (0.016)	0.730*** (0.146)	0.626*** (0.011)	0.585*** (0.018)	0.703*** (0.139)
<u>Diagnostic tests<sup>b</sup></u>						
Wald $\chi^2$	136.25	33.81	0.40	513.39	33.81	0.80
Prob > $\chi^2$	0.0000	0.2464	0.8193	0.0000	0.2464	0.6701
Assistance_local government <sup>a</sup>	-0.108 (0.036)	-0.017 (0.038)	0.028 (0.396)	0.004 (0.034)	-0.0002 (0.036)	-0.157 (0.296)
Potential-outcome mean <sup>b</sup> [assistance_local government = 0]	0.653*** (0.010)	0.650*** (0.015)	0.605 (0.377)	0.629*** (0.011)	0.613*** (0.020)	0.762*** (0.280)
<u>Diagnostic tests<sup>c</sup></u>						
Wald $\chi^2$	135.92	23.43	0.59	513.19	23.43	0.28
Prob > $\chi^2$	0.0000	0.8644	0.7459	0.0000	0.8644	0.8700
Assistance_municipal government <sup>a</sup>	0.0123 (0.039)	0.009 (0.040)	-0.081 (0.326)	0.019 (0.037)	0.017 (0.038)	-0.175 (0.259)
Potential-outcome mean <sup>b</sup> [assistance_municipal government = 0]	0.651*** (0.010)	0.651*** (0.016)	0.745** (0.338)	0.628*** (0.011)	0.621*** (0.022)	0.812*** (0.255)
<u>Diagnostic tests<sup>c</sup></u>						
Wald $\chi^2$	136.27	20.25	0.32	513.86	20.25	1.63
Prob > $\chi^2$	0.0000	0.9468	0.8532	0.0000	0.9468	0.4431

<sup>a</sup>Estimates under “Probit” are marginal effects, while those under ExTE and EnTE are ATTs.

<sup>b</sup>For the probit model, this is the predicted probability when assistance variable is set to 0 and all other covariates at their means.

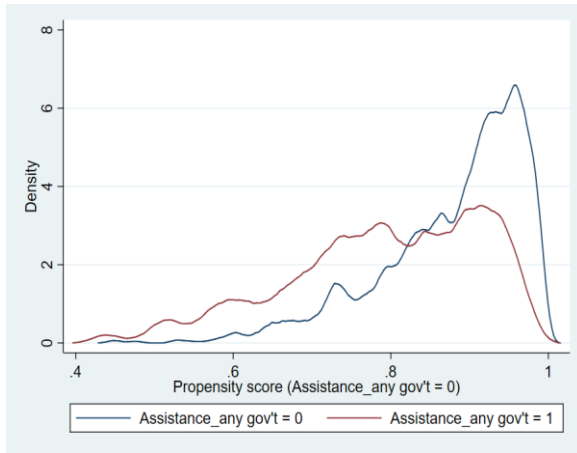
<sup>c</sup>For the probit models, the test is for joint significance ( $H_0$ : All coefficients are simultaneously equal to zero); for the ExTE model, the test is for covariate balance ( $H_0$ : Treatment model balanced the covariates) and the relevant test statistic is  $\chi^2$ ; and, for the EnTE model, the test is for endogeneity ( $H_0$ : Treatment and Outcome unobservables are uncorrelated).

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.10$

## Appendix 1. Variable names and definitions

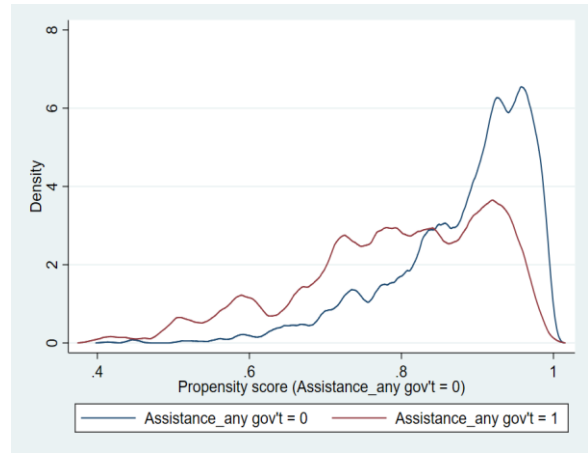
Variable	Definition
Satisfaction_governor	=1 if very satisfied or somewhat satisfied with the performance of governor, 0 otherwise
Satisfaction_mayor	=1 if very satisfied or somewhat satisfied with the performance of mayor, 0 otherwise
Satisfaction_vice mayor	=1 if very satisfied or somewhat satisfied with the performance of vice mayor, 0 otherwise
Satisfaction_barangay captain	=1 if very satisfied or somewhat satisfied with the performance of barangay captain, 0 otherwise
Satisfaction_DILG	=1 if very satisfied or somewhat satisfied with the performance of the Department of Interior and Local Government, 0 otherwise
Satisfaction_Robredo	=1 if very satisfied or somewhat satisfied with the performance of DILG Secretary Jesse Robredo, 0 otherwise
Trust_governor	=1 if trust in governor is very much or somewhat much, 0 otherwise
Trust_mayor	=1 if trust in mayor is very much or somewhat much, 0 otherwise
Trust_vice mayor	=1 if trust in vice mayor is very much or somewhat much, 0 otherwise
Trust_barangay captain	=1 if trust in barangay captain is very much or somewhat much, 0 otherwise
Assistance_any government	=1 if received assistance from the national, provincial, municipal/ city or barangay government in the previous 3 months, 0 otherwise
Assistance_local government	=1 if received assistance from the provincial, municipal/ city or barangay government in the previous 3 months, 0 otherwise
Assistance_municipal government	=1 if received assistance from municipal/ city government or barangay in the previous 3 months, 0 otherwise
Assistance_family	=1 if received assistance from families, friends or relatives in the previous 3 months, 0 otherwise
Assistance_private	=1 if received assistance from private companies or individuals or non-government organizations in the previous 3 months, 0 otherwise
Poor	=1 self-assessed to be poor, 0 otherwise
Member_PO	=1 if member of any people's organization, 0 otherwise
Log household size	Natural logarithm of the number of household members
Highschool	=1 if finished at least high school, 0 otherwise
College	=1 if finished college or higher, 0 otherwise
Male	=1 if male, 0 otherwise
In union	=1 if ever married or living in with a partner, 0 otherwise
Own_house_lot	=1 if owns the house and lot residing in, 0 otherwise
Owner_house_lot	=1 if owns, mortgages or amortizes the house or lot residing in, 0 otherwise
Working	=1 if currently working, 0 otherwise
Years_residence	Number of years residing in the city or municipality
Age_30s	=1 if age is 30-39 years, 0 otherwise
Age_40s	=1 if age is 40-49 years, 0 otherwise
Age_50s	=1 if age is 50-59 years, 0 otherwise
Age_60s	=1 if age is 60-69 years, 0 otherwise
Age_70s_older	=1 if age is 70 years or above, 0 otherwise
Insurance	=1 has insurance other than PhilHealth insurance, 0 otherwise
PhilHealth	=1 covered by PhilHealth insurance, 0 otherwise
Water	=1 if has piped water (billed) into house, 0 otherwise
Electricity	=1 if has electricity(billed), 0 otherwise
Vehicle	=1 if owns 2-, 3- or 4-wheeled motor vehicle, or a boat, 0 otherwise
Filipino	=1 if main language at home is Filipino, 0 otherwise
Cebuano	=1 if main language at home is Cebuano, 0 otherwise
Hiligaynon	=1 if main language at home is Hiligaynon, 0 otherwise
Ilokano	=1 if main language at home is Ilokano, 0 otherwise
City	=1 if residing in a city, 0 otherwise
Luzon	=1 if in Luzon, 0 otherwise
NCR	=1 if the National Capital Region (NCR), 0 otherwise
Visayas	=1 if in the Visayas, 0 otherwise
ARMM	=1 if in the Autonomous Region of Muslim Mindanao, 0 otherwise
Y2011	=1 if year is 2011, 0 otherwise

Trust governor, Satisfaction governor ( $N=2694$ )

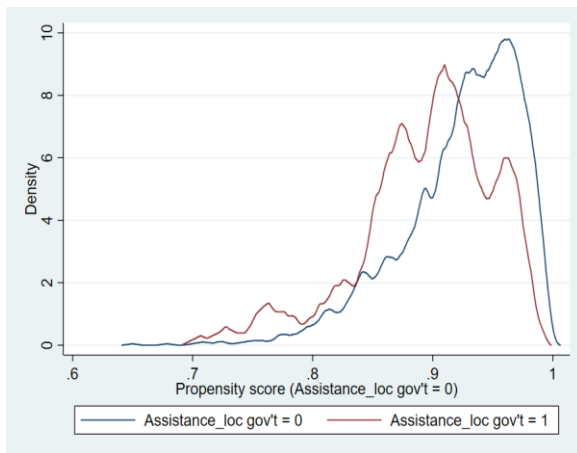


(a)

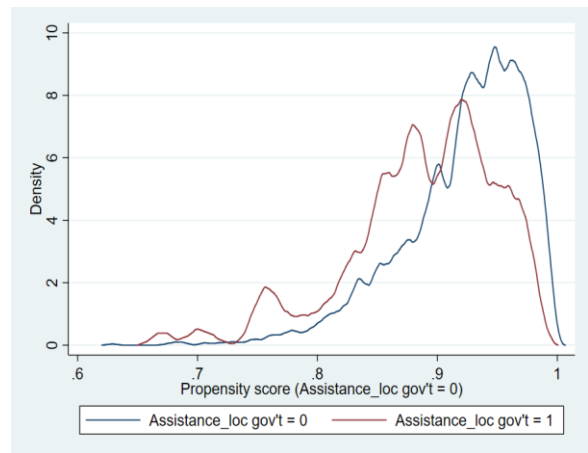
Trust mayor, Satisfaction mayor ( $N=2994$ )



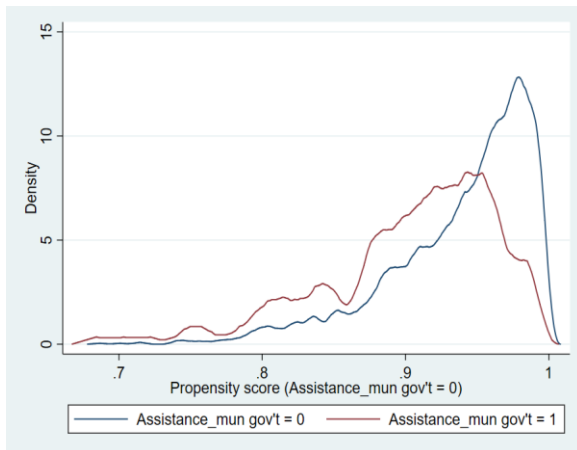
(d)



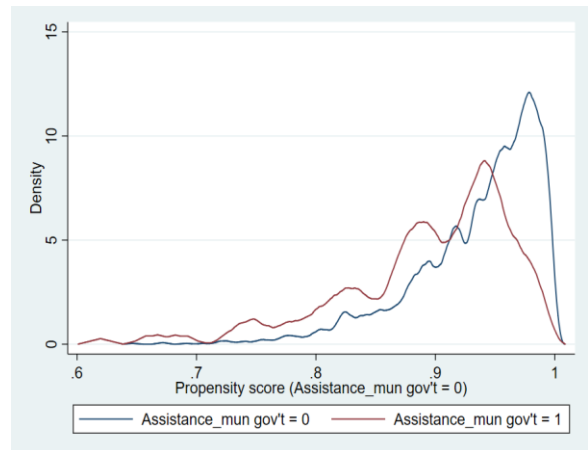
(b)



(e)



(c)

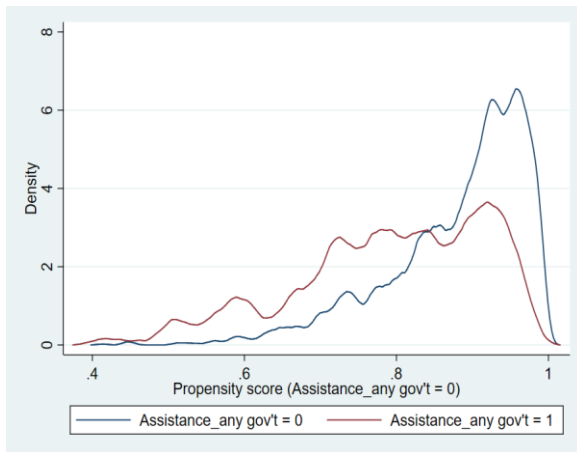


(f)

Notes: The histograms for satisfaction and trust outcomes for the same treatment are the same for each official. The histograms (a), (b) and (c) are for governors, while (d), (e) and (f) are for mayors. The histograms for vice mayors and barangay captains are the same as those for mayors.

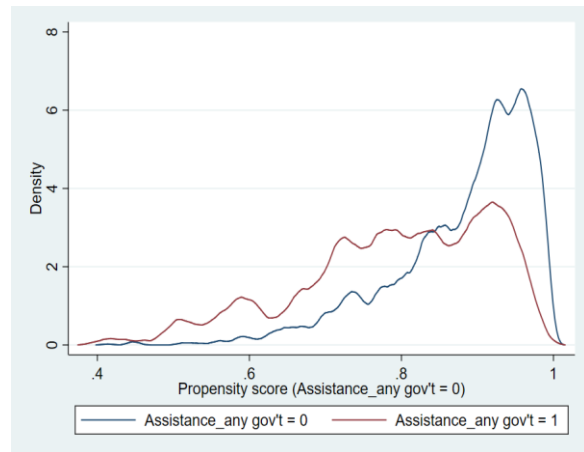
Appendix 2. Histograms of probability of assistance, by source, and by outcomes for governors and mayors

Satisfaction DILG (N=2994)

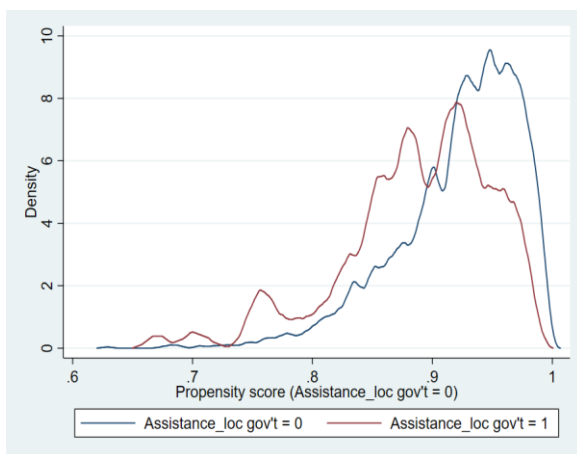


(a)

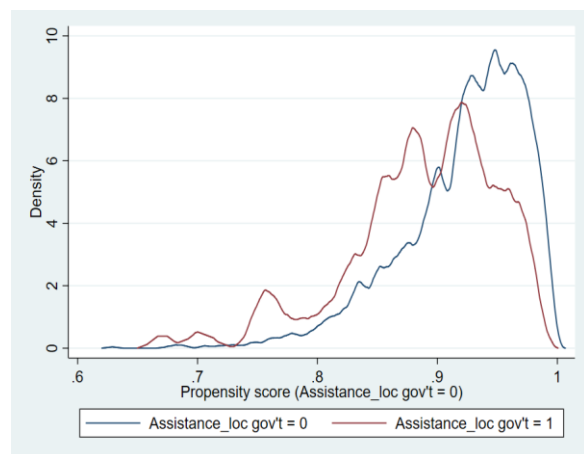
Satisfaction Robredo (N=2994)



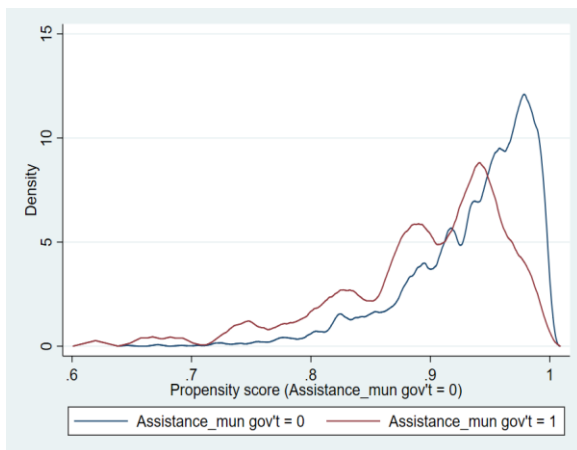
(d)



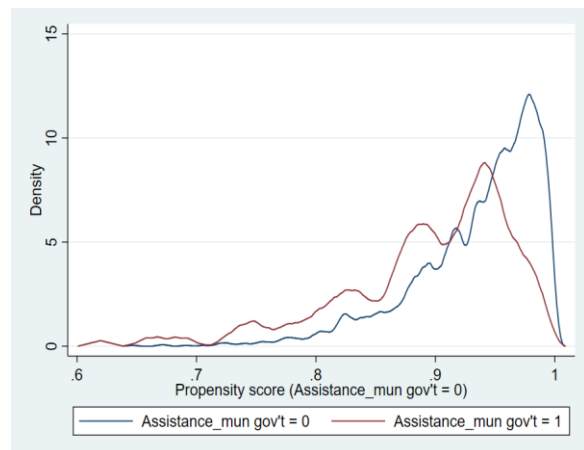
(b)



(e)



(c)



(f)

Notes: The histograms (a), (b) and (c) are for the DILG, while (d), (e) and (f) are for the DILG Secretary Jesse Robredo.

Appendix 3. Histograms of probability of assistance, by source: Satisfaction\_DILG and Satisfaction\_Robredo