

Targeting, Discretionary Funding, and the Provision of Local Public Goods: Evidence from Kenya

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Abstract

We provide evidence about how politicians value targeting and discretionary funding by conducting an incentive-compatible discrete choice experiment with 179 local-level elected officials in rural Kenya. In the experiment, local politicians choose between different public goods packages that vary with respect to how the location of the good is decided and who controls the funding associated with maintaining the public good. We use an NGO water project as an opportunity to link the discrete choice responses to real public goods outcomes in the politicians' wards. We find that on average, councilors value the opportunity to target the water treatment technology, but not the ability to control funding for maintenance. The results demonstrate substantial heterogeneity in politicians' preferences over the attributes of public goods. In particular, politicians in wards with a higher effective number of parties are more likely to select public good packages in which they control funds for maintenance.

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1. Introduction

Many recent efforts to improve the availability of local public goods in developing countries have focused on decentralization to local governments. One of the assumptions underpinning these reforms is that local politicians are well-placed to direct public goods toward the areas of greatest need, thereby enhancing social welfare. However, local politicians may also adversely affect the efficiency of public goods projects. Politicians may disproportionately implement projects that give them control over targeting, and may favor pork-barrel projects that can be used to reward politically important voters when other types of activities would have a greater impact on social welfare (Keefer and Khemani 2009; Golden and Min 2013; Kramon and Posner 2013). Politicians can also decrease the efficiency of decentralized public goods provision by favoring projects that give them control over discretionary funding, enabling them to use public projects as an opportunity for personal enrichment (Lambsdorff 2002; Kunicova and Rose-Ackerman 2005; Hernandez-Trillo and Jarillo-Rabling 2008).

Little is known about the relative importance of targeting and discretionary funding, or about the extent to which politicians' decisions about public goods are shaped by political competition and personal characteristics. To date, most existing research on local public goods uses observational data on funding allocations for public goods projects (Besley et al 2004; Cleary 2007; Arvate 2013; Diaz-Cayeros et al 2014). Although these studies can explain overall patterns of public goods provision, the use of aggregate data makes it difficult to assess how politicians' preferences regarding targeting and control of funding shape public goods outcomes. Those studies that have directly examined how politicians make decisions have typically used laboratory-style experiments in field settings or survey experiments that are not tied to real world allocations of public goods (Bech 2003; Barr et al 2009; Alatas et al 2009; Butler and Kousser 2015). In addition, a few recent experimental studies with public officials have used field experiments to examine low-stakes behaviors such as responding to communications from voters (Butler and Broockman 2011; Spada and Guimares 2013). These studies provide detailed evidence about how public officials make certain types of decisions, but may or may not shed light on the tradeoffs involved in the allocation of local public goods.

We measure sitting politicians' willingness to trade off opportunities for targeting and access to discretionary funding by conducting an incentive-compatible discrete choice experiment with 179 elected county councilors in 9 counties in Kenya's Central, Eastern, and Rift Valley

Provinces.¹ We partnered with a non-governmental organization (NGO) installing a low-cost water treatment technology (chlorine dispensers) at shared water sources.² Prior to the start of chlorine dispenser installations in the study area, the politicians in our study were informed that those who participated in our research project would be entered into a public lottery through which approximately 40 of them would be chosen to receive a free chlorine dispenser and two years of free chlorine delivery. In order to be entered into the lottery, councilors completed a discrete choice experiment in which they made choices about the types of chlorine dispenser packages that they would like to receive for the electoral areas (wards) they represented.³ The discrete choice experiment consisted of two parts. In the first part, each councilor made a series of choices between pairs of dispenser packages that varied in terms of who would choose where to install the dispenser (the councilor himself, the implementing NGO, or a centrally-appointed bureaucrat) and who would manage the funds allocated to cover the cost of refilling the dispenser with chlorine solution (the councilor or the NGO). In the second part of the survey, the councilor decided which of the water sources in his ward would receive a dispenser if the ward was chosen to receive a dispenser through the lottery. Because there was a nonzero probability that any of their choices would be implemented, politicians had an incentive to make decisions that were consistent with their preferences regarding the implementation of public goods projects in their ward.⁴

To our knowledge, this paper is the first to report the results of a discrete choice experiment in which sitting politicians make decisions that are linked to actual public goods allocations in their constituencies. This unique research design allows us to contribute to two bodies of research: the large literature on the political economy of local public goods provision and a newer literature examining decision-making by sitting public officials. In contrast to existing

¹ Until 2013, Kenya was divided into 8 provinces, which were further divided into districts, divisions, locations, and sublocations. This system of administration existed in parallel with the local governance structure involving town and county councils. In 2013, the system of provinces was replaced by a devolved government structure based on 47 counties, each of which was roughly equivalent to a district in the previous provincial structure. We employ the outdated “province” terminology because it was a relevant unit of administration at the time of our experiment.

² The chlorine dispenser is a device which releases a measured dose of chlorine solution that can be easily added to a container of water immediately after it is collected; Kremer et al (2011) find that the installation of chlorine dispensers at shared water sources leads to a dramatic increase in the fraction of households with detectable chlorine in their water, even years after the dispenser is installed. For more information, see “Chlorine Dispensers for Safe Water,” available online at <http://www.poverty-action.org/work/projects/safewater>.

³ Discrete choice experiments are a widely used mechanism for eliciting individual preferences; see Camerer (1995) for discussion. For a background on the use of discrete choice experiments in the context of international development context, see Bech (2003) and Bennett and Birol (2010).

⁴ For see Camerer (1995) Lusk and Schroeder (2004), and Harrison (2007) for discussion of the role of incentives in choice experiments.

research in these two literatures, the incentive-compatible discrete choice experiment that we use in this study provides us with the ability to precisely characterize the value that politicians place on the ability to target a public project and to control the funding associated with that project.

Our main findings can be summarized as follows. First, councilors value chlorine dispensers. Though this is true across the board, we do observe substantial heterogeneity in the utility derived from receiving a chlorine dispenser. Councilors in their first term in office value dispensers significantly more than other councilors, while those from wards with a higher effective number of parties value dispensers less. Second, councilors value the opportunity to decide where the chlorine dispenser should be installed. This result appears to hold for all of the councilors included in our sample – it does not depend on the political characteristics of either the ward or the councilor. In contrast, the opportunity to manage chlorine provision tended to decrease the attractiveness of a dispenser package, suggesting that local officials do not necessarily seek control over discretionary funds. However, we observe substantial heterogeneity in the valuation of this dispenser attribute: councilors from wards that are smaller and from those that have higher voter turnout or a higher effective number of parties put greater value on the opportunity to manage chlorine provision and the associated funds. Councilors in their first term in office and those from major political parties (as opposed to minor parties) value the opportunity to manage the chlorine funds relatively less.

We find that councilors use the ability to choose the location of dispensers in a variety of ways. On one hand, councilors are more likely to choose water sources with higher numbers of users, sources that are publicly owned, and sources that are a single point source (as opposed to rivers and streams) – guaranteeing that all source users will have easy access to the dispenser. We interpret this as suggestive evidence that local councilors in rural Kenya seek to enhance social welfare through the targeting of public goods projects. On the other hand, a significant portion of the councilors in our sample do appear to target resources to their immediate family and neighbors by installing dispensers in their own village.

The paper proceeds as follows. In the next section, we draw on the political economy literature to articulate research questions regarding the role of targeting and discretionary funding in local public goods projects. Next, we provide an overview of the study context, research design, and data sources. We then present the results of the experiment, discussing the councilors' choices between dispenser packages, the correlates of heterogeneity in councilor choices, and patterns of

dispenser location choices. We conclude by considering the implications of our findings for research on local public goods and for policy related to decentralization.

2. Background and Related Literature

Theories of local government public goods provision model politics as an interaction between politicians and voters: politicians make decisions about the types of public projects they will promise and deliver, and citizens decide who to vote for (Biglaiser and Mezzetti 1997; Persson and Tabellini 2002; Roemer 2007). Two types of models of politicians' behavior are common in this literature. A first set examines politicians' decisions about how to target public goods. In these models, the outcomes of interest are whether a politicians targets public projects towards a narrow subset of the population (Golden and Min 2013; Persson and Tabellini 2002), thereby limiting the project's overall impact, and whether politicians target swing voters or core supporters (Cox and McCubbins 1986; Lindbeck and Weibull 1987; Dixit and Londregan 1996). A second set of models considers how politicians utilize discretionary funding associated with public goods projects. These theories take as their primary outcome whether politicians choose to devote all available funding to implementing and maintaining public projects or whether they appropriate these funds to enrich themselves (Bicchieri & Duffy 1997; Lambsdorff 2002; Shi and Svensson 2003; Kunicova and Rose-Ackerman 2005; Ferraz and Finan 2011).

While decisions about targeting and discretionary funding may both be present in a particular context, few existing models examine politicians' willingness to trade off opportunities for targeting and control over discretionary funding. Our research design allows us to directly address this gap in the literature. In addition, there is little evidence about the extent of heterogeneity in politicians' preferences. The political economy literature identifies two constituency-level factors that shape politicians' decisions about targeting and discretionary funding: the amount of information that voters have about politics and the level of political competition in the constituency (Shi and Svensson 2006, Ferraz and Finan 2011, Arvate 2013). Our research design allows us to test the extent to which each of these factors is associated with a politician's preference for specific attributes of a local public good.

3. Study Context, Data Sources, and Experimental Design

3.1 Study Context: Local Government in Kenya

We conducted an incentive-compatible discrete choice experiment with elected councilors from 9 Kenyan county councils in 2012. County councilors were the elected representatives for rural

electoral wards in the system of local government that existed from independence until the implementation of the country's new constitution in 2013.⁵ Prior to the adoption of the new constitution, most public goods provision in Kenya was centrally controlled. Under this system, power was concentrated among Members of Parliament (MPs) in the National Assembly and civil servants in the Provincial Administration and Ministries (Widner 1992; Branch and Cheeseman 2006). The most notable manifestation of this centralization is the fact that county clerks (the highest ranking county council administrators) were appointed by and accountable to the central Ministry of Local Government rather than to the council in which they worked (Southall and Wood 1996; Onyango 2012).

Despite this high level of centralization, county councilors made important decisions about local-level taxation and spending: they set property tax rates and other fees, allocated funding for managing rural market centers and trust land, and determined levels of local cost-sharing for central government infrastructure efforts in the water, transportation, education, and health sectors (Southall and Wood 1996). County councilors' responsibilities for public goods provision expanded as a result of decentralization reforms implemented in the 1990s (Kibua and Mwabu 2008). These reforms created devolved funds that were to be used by local governments in consultation and collaboration with civil servants and citizens. In practice, councilors often attempted to maintain control over deciding what projects were selected and where they were located (Asaka et al 2011, Menon et al 2008). Given the history of centralized control over local governments, many councilors viewed civil servants distrustfully and were reluctant to cede any of their limited resources and authority back to a bureaucrat appointed by the central government.

Public perception of county councilors in Kenya has historically been poor. In a 2011 Transparency International report, county councils were rated as one of the most corrupt institutions in the country (Transparency International 2011). The Kenyan media frequently describe local politicians as driven primarily by a desire to use public funds to benefit themselves (Gichana 2011; Onyango 2012; "Shock as Members of County Assemblies..." 2014). Data from the most recent Afrobarometer Survey indicates that the overwhelming majority of Kenya's citizens perceive local councilors as being corrupt: 50 percent indicated that either most or all local government councilors were corrupt, and an additional 42 percent reported that some councilors were corrupt (Afrobarometer Data 2015). However, corruption at the local level tends to operate

⁵ The new constitution elevated county councils to "county assemblies" made up of "members of the county assembly" in place of councilors. Rather than being cosmetic changes, the new constitution devolved a number of governance roles to counties, increasing their role in policymaking and service delivery.

on a relatively small scale: the Transparency International report indicated that – in contrast to the high profile cases of central government corruption involving the theft or misallocation of millions of dollars – average amounts of corruption in county councils were around 3200 Kenyan Shillings (35 USD). One example of such petty corruption is the proliferation of “ghost projects” in which funds are allocated, but projects are never built due to interference by councilors (Kibua and Mwabu 2008; Onyango 2012; National Taxpayer Association n.d.).

3.2 Electoral Data

We measure the local political environment in each councilor’s ward using the official results of the 2007 election that were compiled by the Electoral Commission of Kenya (ECK).⁶ For every local electoral ward in the country, the ECK reports the total number of registered voters, the total number of votes cast, voter turnout, the party affiliation of each candidate, and total number of votes that each candidate received.

We use the election results to measure several aspects of ward-level political participation and electoral competition. We measure the size of the electorate in each ward using the number of registered voters at the time of the 2007 election. We measure political participation by calculating the percentage of registered voters that cast votes in the 2007 election (Brady et al 1995; Cleary 2007). We measure the level of electoral competition that each councilor faced in the election by calculating the Effective Number of Parties (ENP) in each ward during the 2007 election. ENP is a measure of the number of viable political parties in a given jurisdiction that is constructed by weighting parties by their vote share (Laakso and Taagepera 1979). This is an appropriate measure of the level of electoral competition because it captures the theoretical intuition that increasing the number of viable challengers in an election creates more of an incentive for politicians to efficiently provide public goods (Ferraz and Finan 2011; Arvate 2013).⁷

⁶ We were given the electoral returns by James Long and Jeremy Horowitz, who obtained them from the ECK. The copy of the returns that we used was printed on March 17, 2008.

⁷ We calculate the ENP in each ward using the standard formula, which is the inverse of the Herfindahl-Hirschman concentration index: $ENP = 1 / \sum_{i=1}^n p_i^2$, where n is the number of parties which received at least one vote, and p_i^2 is the squared proportion of votes received by each party (Laakso and Taagepera 1979). For a methodological discussion of the use of ENP as a measure of electoral competition, see Arvate (2013). Alternative measures of ward-level competition such as a count of the number of parties or the margin of victory are less appropriate for capturing the hypothesized relationship between electoral competition and public goods provision. A count of the parties that contested the election has the disadvantage of overemphasizing the competitive pressure created by small parties that receive a negligible share of votes in the election. The margin of victory between the winning candidate and the runner up has the disadvantage of excluding information about the vote shares of the parties other than the second runner up, and as a result imperfectly characterizes the competitive environment in a given electoral ward.

3.2 Experimental Design and Procedures

Our experimental design built on the Dispenser Choice Evaluation (DCE), an initiative spearheaded by the NGO Innovations for Poverty Action (IPA). As part of that initiative, the NGO allocated funding to install and maintain approximately 40 chlorine dispensers to county council wards in our study area. The allocation of free dispensers through the program was determined through a public lottery, which was conducted by the NGO in May of 2012. We built on this program by eliciting the preferences of county councilors through a discrete choice experiment. Within the experiment, councilors chose among dispenser packages that varied in terms of the system for selecting a dispenser location and managing chlorine refills. Councilors also selected an eligible water source within their district to receive a dispenser. Before a councilor made any decisions, the enumerator explained that the implementing NGO did not have enough funding to install chlorine dispensers in all of the participating wards, and that a public lottery would be used to decide which 40 wards would receive dispensers. Participating councilors were invited to either attend this lottery or to send a representative, and were also informed that, after the fact, they would be able to watch a recording of the lottery.

3.2.1 Choosing a Dispenser Package

The discrete choice experiment consisted of two parts. In the first part of the experiment, councilors made a series of 20 choices between two alternative chlorine dispenser packages. In each of the 20 decisions, councilors were asked to choose which of two dispenser packages they would prefer to receive for their ward. Complete instructions, including a listing of all the decision problems, are included in the Online Appendix.

Two attributes were varied across dispenser packages: the party choosing where the dispenser would be installed, and the party that would receive the money to manage the chlorine refills. Dispenser location could be determined in one of three ways: the councilor himself could decide where to put the dispenser, a centrally-appointed public health bureaucrat (the District Public Health Officer) could decide, or the implementing NGO's staff could decide. If the councilor or the District Public Health Officer was in charge of selecting a location for the dispenser, he was allowed to choose any public water source in the ward that served at least 10 households.

Refilling the dispenser was either the responsibility of the NGO program staff or the councilor himself. If the councilor selected a package that put him in charge of refilling the chlorine,

the NGO would provide him with a sum of 650 Kenyan shillings (7.77 USD) each month to cover the cost of hiring someone to transport the chlorine from the market town to the dispenser site. While this is a small amount of money relative to many narratives about large-scale elite capture and corruption, small, high-frequency transactions typify the sorts of situations in which petty corruption tends to occur; the amount of discretionary funding available through our experiment is also comparable to what Kenyan county councilors encounter in the course of their engagement with decentralized funds and NGO projects (Asaka et al 2011; National Taxpayer Association n.d.). Over the course of the full two-year project, the total value of the chlorine contract is 16,500 shillings (approximately 197 USD), which is substantially larger than the typical bribe paid to a member of a county councils (Transparency International 2011).

In each of the 20 decision problems that the councilors faced, they were asked to indicate which of two dispenser packages they preferred. They were also allowed to indicate that they were indifferent between the two packages (or that they preferred not to make a decision), or that they preferred not to receive either of the packages offered. Since the set of dispenser packages under consideration had only six elements, we were able to offer each councilor every possible combination of choices between two dispenser packages. Our sequence of 20 choice problems included all 15 possible pairs of dispenser packages, presented in a random order, plus an additional 5 questions that were chosen at random from the menu of 15 and presented with the order of the two packages swapped.

Councilors were informed that each of their 20 dispenser package selections had a 5 percent (1 in 20) chance of being implemented if their ward was chosen to receive a dispenser through the public lottery. After the selection of the 40 wards that would receive a dispenser, an additional lottery was conducted to determine which of the 20 dispenser package questions would decide which dispenser the wards would receive. If the councilor chose not to select either of the two dispenser packages offered in that choice set, then no dispenser would be installed in his ward. If the councilor indicated that he was indifferent between the two packages offered in that choice problem, the package to be implemented would be selected through a third lottery with a 50 percent chance of each package being chosen.

3.2.2 Choosing a Dispenser Location

In the second part of the discrete choice experiment, councilors were asked to choose the water source in their ward where they would like to have a chlorine dispenser installed. In the event that the councilor's ward was randomly chosen to receive a dispenser *and* the dispenser package that

the councilor chose allowed the councilor to choose the dispenser location, a chlorine dispenser would be installed at the water source identified by the councilor. To assist the councilors in selecting a water source, we provided each respondent with a booklet containing information on each of the water sources in his ward, using data from the water source survey.⁸

4. Data

4.1 Subject Pool: Councilors and Wards in the Sample

Table 1 presents descriptive statistics characterizing the 179 councilors and wards in our sample. The vast majority – 93 percent – of councilors in our sample are male, reflecting the low proportion of women holding elected office in Kenya.⁹ 90 percent have completed secondary school and 25 percent have some post-secondary education. In addition to holding elected office, approximately half of the sample are also farmers, while a third are business owners. Only 35 percent reported that their salary from being a councilor accounted for more than half of their household income. 61 percent of the councilors in our sample were in their first term in office, and the average number of years of experience in politics is 8. 73 percent were affiliated with one of the three main political parties in the 2007 election (PNU, ODM, and ODM-K).

We observe substantial variation in the political characteristics of the wards in our sample. The number of registered voters varies from 682 voters in the smallest ward to over 16,000 in the largest, and voter turnout in the 2007 election ranges from 35 percent of registered voters to 97 percent. The mean effective number of parties (ENP) is 3.9, and ranges from 1.3 to 10.5.

4.2. Water Sources of Wards in the Sample

Table 2 reports summary statistics on the water sources in the wards in our sample.¹⁰ The number

⁸ We enumerated the set of possible locations for dispenser installation by conducting a survey of village elders in 2011, the aim of which was to create a listing of all the shared water sources in the county council wards in our sample. For each of 7,618 shared water sources in 3,164 villages, the survey recorded the name and local nicknames of each water source as well as other basic information – the type of source (e.g. a river or stream, a public standpipe, a borehole or shallow well, etc.), the number of months that each source is dry, the approximate number of households using the source, whether the source is privately owned, whether users have to pay for water from the source, and the ethnicities and wealth levels of the households using the source.

⁹ The limited variation in individual characteristics observed in our sample precludes the analysis of the associations between individual characteristics and preferences for public goods.

¹⁰ We restrict attention to the 157 wards used in our analysis of dispenser location decisions – omitting 22 wards where the councilor’s first choice for where to locate a dispenser was not a source listed in the water source booklet.

of water sources within a ward ranges from 3 to 209, with an average of 49 sources; while the average number of households using each source within a ward ranges from 23 to 740. Across all wards in the sample, the most common shared water sources are streams and rivers, accounting for an average of 37 percent of sources per ward. On average, 33 percent of sources in each ward are improved sources such as public standpipes and taps, borehole wells, and protected springs.¹¹

5. Analysis and Results

5.1 Choosing Between Dispenser Packages

5.1.1 Graphical Overview

We begin by summarizing the choices made by councilors in our sample graphically. When choosing between two dispenser packages in the first part of our experiment, councilors selected one of four mutually exclusive alternatives: Package A; Package B; a lottery in which Package A and Package B were equally likely; or no dispenser package. Because councilors faced all possible choices between pairs of dispenser packages, package attributes are uncorrelated and we can consider each attribute in isolation.¹²

In Figure 1, we present histograms summarizing councilors' choices between different location choice attributes. Panel A presents a histogram of councilors' choices when asked to choose between a package that allowed the councilor to choose the dispenser location and one that allowed the implementing NGO to choose the location. Councilors expressed a preference for the package that allowed them to choose the dispenser location 62.0 percent of the time; they chose the package that allowed the NGO to choose the location 26.9 percent of the time. Thus, they were approximately 2.3 times as likely to choose packages that allowed them to choose the dispenser location, conditional on other attributes. In Panel B of Figure 1, we consider decision problems where councilors had to choose between a package that allowed the councilor himself to choose the dispenser location and packages that delegated that responsibility to a centrally appointed bureaucrat. Again, councilors overwhelmingly preferred packages that allowed them to decide where to put the dispenser, choosing them 59.0 percent of the time. They were 1.9 times more

¹¹ Our classification of improved sources is based WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation definition (Joint Monitoring Programme n.d.).

¹² See Hainmueller et al (2014) for related discussion. As discussed above, our experiment included 6 different dispenser packages (i.e. combinations of attributes), so there were 15 possible pairs of packages; councilors faced all 15 pairs (in a random order) plus 5 (randomly-chosen) pairs that were presented with Package A and Package B permuted. The graphical analysis restricts attention to the first time a councilor faced a specific pair of alternatives.

likely to choose packages that allowed them to choose the dispenser location than those that allowed the centrally-appointed official to decide where to put the dispenser.

Though we find clear evidence that councilors prefer packages that allow them to choose the dispenser location, Panel C of Figure 1 demonstrates that councilors were almost equally likely to choose packages that allowed the implementing NGO to choose the dispenser location as those that allowed the centrally-appointed bureaucrat to decide. In Figure 2, we consider the other attribute of the dispenser packages: who managed the funds allocated for restocking the chlorine. The figure suggests that councilors were more or less equally likely to choose each of the two alternatives, but showed a slight preference for allowing the NGO to manage the chlorine restocking funds.

5.1.2 Framework for Analysis

Next, we explore councilors' valuation of chlorine dispenser attributes in an additive random utility framework.¹³ Without loss of generality, we assume that the level of utility councilor n derives from dispenser package j is given by:

$$U_{n,j} = V_{n,j} + \epsilon_{n,j}.$$

$V_{n,j}$ is the explicitly-modeled "representative utility" associated with the attributes of dispenser package j and $\epsilon_{n,j}$ is an unobserved stochastic component. As is standard in additive random utility models, $\epsilon_{n,j}$ is assumed to be distributed EV1. The probability that dispenser package $j \in J$ is chosen by councilor n is then given by

$$P_{n,j} = \frac{e^{V_{n,j}}}{\sum_{k \in J} e^{V_{n,k}}}$$

which is strictly positive. Thus, packages that are associated with higher representative utility are more likely to be chosen, but all packages are chosen with positive probability.

In our empirical model, we let ϕ_n denote councilor n 's representative utility from a basic dispenser package – where the NGO chooses the dispenser location and handles the restocking of chlorine. We estimate the change in utility that results from varying the attributes of the dispenser package. We let α_n denote the additional (potentially negative) utility associated with allowing the

¹³ See Train (2003) for a detailed discussion of additive random utility models.

councilor to manage the funds allocated for chlorine provision. Similarly, we let $\beta_n^{councilor}$ and β_n^{dpho} denote the difference in utility associated with devolving the decision about where to locate the dispenser to either the councilor or the District Public Health Officer, respectively. So, for example, councilor n 's utility from a dispenser package which allows him to manage chlorine provision and choose the dispenser's location is:

$$U_{n,j} = \phi + \alpha_n + \beta_n^{councilor} + \epsilon_{n,j}.$$

Councilors also had the option of indicating that they were indifferent between Packages A and B. In this case, if the councilor was selected to receive a dispenser, one of the two packages was chosen at random through a lottery.¹⁴ So, for example, if Package A was the basic one and Package B devolved responsibility for managing the chlorine restocking fund and choosing the dispenser's location to the councilor, the utility of the lottery option would be given by

$$U_{n,j} = \phi + \frac{1}{2}(\alpha_n + \beta_n^{councilor}) + \epsilon_{n,j}.$$

Finally, if counselor n indicates that he prefers not to receive Package A or Package B, then his realized utility will be:

$$U_{n,j} = \epsilon_{n,j}.$$

We take two approaches to preference parameter estimation. We first estimate a parsimonious model that assumes that councilors are homogeneous – estimating the preference parameters ϕ , α , $\beta^{councilor}$ and β^{dpho} in a conditional logit framework. We then test the homogeneity assumption by estimating a mixed logit model that allows the parameters to vary across councilors. In our mixed logit estimation, we assume that ϕ_n , α_n , $\beta_n^{councilor}$, and β_n^{dpho} are normally distributed, and we estimate the mean and the standard deviation of each parameter via simulated maximum likelihood. The mixed logit approach allows us to test the extent to which there is meaningful variation in preferences over dispenser attributes across councilors in our sample. We then return to the more parsimonious conditional logit framework, but allow

¹⁴ Since ϕ_n , α_n , and $\beta_n^{councilor}$ are utility parameters, this gives the expected utility of choosing the lottery even when the councilor is risk averse. We will, however, consider the possibility that the utility of the lottery may be less than its expected utility – for example, because councilors may not be expected utility maximizers. To test this, we will include an additional parameter capturing the disutility of the lottery in some specifications. To test whether councilors are influenced by the order in which options are presented to them, we include a parameter capturing any additional impact (on the probability of being selected) of being randomly chosen to be Package A (which appeared first) as opposed to Package B.

preferences to vary with the observable political characteristics of councilors and wards. This allows us to gauge the extent to which preferences over public goods (specifically, dispenser package attributes) are explained by the political environment facing sitting politicians, as opposed to the unobserved characteristics of the politicians themselves. We estimate all preference parameters via maximum likelihood.

5.1.3 Results – Choices between Dispenser Packages

Table 3 presents results from the estimation of our simplest conditional logit model of councilor choices between dispenser packages. In Column 1, we include only the indicator for alternatives that includes any dispenser (the coefficient on which identifies ϕ , the utility of the reference dispenser package in which DCE chooses the dispenser location and manages the restocking of the chlorine), the indicators for packages in which the councilor or the District Public Health Officer chooses the location, and the indicator for packages that allow the councilor to manage the funds allocated for the restocking of chlorine.

Our results demonstrate that councilors value dispensers: the coefficient on the indicator for alternatives that include any dispenser is positive and significant (p-value <0.001). Additionally, the results indicate that councilors value control over where to install a chlorine dispenser. The coefficient on the indicator for packages that allow the councilor to decide the location is positive and significant (p-value <0.001). The coefficient estimates indicate that councilors derive 70 percent more utility from dispenser packages that allow them to choose the dispenser location than from those that do not. In contrast, the coefficient on the indicator for allowing the centrally-appointed District Public Health Officer (DPHO) to choose where to install the dispenser is negative, though it is small in magnitude and only marginally significant. Taken together, these results suggest that councilors' preference for control over dispenser location is a measure of the value they place on targeting resources within their constituency, and does not simply reflect a preference for local control.

Finally, we find that allowing councilors to manage the chlorine refills makes a dispenser package less attractive (p-value <0.001). This result is somewhat surprising. As noted above, many political economy models of elite capture and corruption assume that politicians highly value control over project funds (Bicchieri & Duffy 1997; Lambsdorff 2002). In Kenya, this assumption is often echoed in the popular belief that local politicians will avail themselves of any opportunity to enrich themselves using public funds (cf. Gichana 2011). The finding that the councilors in our

sample generally preferred not to receive the funds for chlorine refills cuts against the conventional wisdom that politicians universally seek personal or political gain, but resonates with the results reported in Dizon-Ross, Dupas, and Robinson (2015).¹⁵ We return to this point again below.

In the second column of Table 3, we report a conditional logit specification that includes interactions between the indicators for allowing the councilor or the District Public Health Officer to choose the dispenser location and the indicator for allowing the councilor to manage the funds for restocking the chlorine. Coefficient estimates again suggest that councilors value the basic dispenser package and the opportunity to choose the dispenser location (both p-values <0.001). However, the interaction between the indicators for allowing the councilor to choose the location and allowing the councilor to manage the funds allocated for chlorine refills is negative and significant (p-value <0.001), indicating that councilors do not want to be responsible for restocking the chlorine when they are also allowed to choose the dispenser location. After including the interaction term, the coefficient associated with the indicator for packages that allow the councilor to manage the chlorine funds is close to zero and not statistically significant (p-value 0.942). Thus, councilors are averse to managing the chlorine funds when the dispenser is installed in the location of their choosing, but essentially indifferent otherwise.

In Column 3 of Table 3, we include additional variables that control for any additional (dis)utility from lotteries between dispensers and any increase in the probability of selection resulting from being presented first within a decision problem. Reassuringly, we find no evidence that the order in which the packages were presented matters. We do find evidence that councilors derive less utility from the lottery between dispenser packages than from the packages themselves.¹⁶ More interestingly, after controlling for the lottery alternatives, the coefficient on the interaction between the indicators for allowing the District Public Health Officer to decide the dispenser's location and allowing the councilor to manage the funds for restocking the chlorine is negative and significant (p-value = 0.022), though smaller in magnitude than the coefficient on the interaction the indicators for allowing the councilor to choose the location and allowing the councilor to manage the funds allocated for chlorine refills (we can reject the hypothesis that the

¹⁵ Dizon-Ross, Dupas, and Robinson (2015) study the targeting of insecticide-treated bednets in Ghana, Kenya, and Uganda and find relatively low levels of leakage (i.e. distribution of nets to ineligible recipients) in government clinics.

¹⁶ This finding is consistent with a range of behavioral economic models of attitudes toward risk (cf. Andreoni and Sprenger 2011).

two interaction terms are equal – p-value <0.001). The inclusion of the control for lotteries does not impact the sign or the significance level of the other coefficients.

To summarize, our conditional logit estimation suggests three key findings. First, councilors in our sample value free chlorine dispensers.¹⁷ Second, councilors prefer packages that allow them to choose the dispenser location – they derive over 50 percent more utility from packages that give them the opportunity to target the dispenser than from packages that leave that decision in the hands of the implementing NGO. Finally, councilors do not value the opportunity to manage the funds allocated for the restocking of chlorine; instead, delegating this responsibility to a councilor decreases his utility – particularly when either the councilor himself or the District Public Health Officer is also allowed to choose the dispenser’s location.

One possible explanation for this last result is that our finding is driven by the small size of the funds relative to anticipated risks and costs. Because the amount of money available for restocking the chlorine is not much greater than the likely cost of doing so, the associated political or personal benefits of controlling the funds may be outweighed by the responsibilities and potential personal costs, particularly if voters hold councilors responsible when the dispenser is empty. However, as noted above, the amount of funds allocated to chlorine supply are on par with the amount of funding that routinely disappears from local government and NGO projects. An empty chlorine dispenser would not be substantially different from the many missing, incomplete, or poorly constructed public goods projects that exist in many wards (National Taxpayers Association n.d.). As a result, there is little reason to believe that politicians chose to avoid managing chlorine refills primarily because of the small size of the resources.¹⁸

5.1.4 Results – Heterogeneity In Choices between Dispenser Packages

In our next piece of analysis, we examine the extent to which preferences vary across councilors. The results of our mixed logit estimation are reported in Table 4. We report results for only one model which includes interactions between dispenser attributes and a control for the lottery

¹⁷ It is important to note that our experiment does not generate estimates of the willingness-to-pay for chlorine dispensers. We can only claim that councilors’ choices suggest that the provision of free chlorine dispensers increases councilors’ utility – because they choose one of the offered packages over the option of not receiving a dispenser in the overwhelming majority of cases.

¹⁸ From a theoretical perspective, councilors be more likely to appropriate larger amounts of discretionary funding when the expected costs of such appropriation increase less than linearly with the amount appropriated – for example, when there are fixed costs to such practices. There are few empirical tests of such assumptions.

alternative in each decision problem in addition to the main preference parameters of interest, ϕ_n , α_n , $\beta_n^{councilor}$, and $\beta_n^{councilor}$.¹⁹ Our model assumes that each of the preference parameters is normally distributed, and we report the mean and standard deviation of the estimated distribution, along with the associated standard errors. In the last column of Table 4, we use the estimated mean and variance of the parameter distribution to calculate the fraction of councilors in our sample who derive positive utility from each dispenser attribute we consider.

Coefficient estimates suggest substantial heterogeneity in councilors' preferences over public goods: the standard deviations on all parameters are significantly different from zero at the 99 percent confidence level. Nonetheless, our mixed logit results resonate with our earlier findings. Coefficient estimates indicate that 81 percent of councilors derive positive utility from the provision of a dispenser (specifically, the basic dispenser package) to their ward, and 84.2 percent of councilors derive even greater utility from packages that allow them to choose the dispenser location. The mean of the distribution of α_n (the utility associated with allowing the councilor to manage the funds allocated for chlorine refills) is not significantly different from zero, though the standard deviation is. This indicates that approximately equal numbers of councilors derive positive and negative utility from the opportunity to manage the chlorine funds when the NGO decides the dispenser's location. However, the interactions between dispenser attributes indicate that allowing the councilor to manage the funds allocated for restocking chlorine makes dispenser packages less attractive to the overwhelming majority of councilors when either the councilor himself or the DPHO has decided the dispenser location. Thus, while demonstrating considerable heterogeneity across councilors, our mixed logit results reinforce the all of the key findings from the conditional logit estimation reported in Table 3.

Next, we explore the extent to which political characteristics explain the observed preference heterogeneity by allowing the utility of each attribute to depend on the observable characteristics of a councilor or his ward. Specifically, we allow the utility associated with particular dispenser package attributes to be a linear function of the political characteristics of the ward (size, voter turnout, and the effective number of parties) and the individual attributes of the councilor (e.g. party affiliation, term in office). Because the three ward-level political measures we consider have different magnitudes and distributions, we include the quartiles for each variable

¹⁹ That is, we replicate Column 3 of Table 3 in a mixed logit framework, but omit the variable indicating whether a dispenser was presented first since the estimated coefficient in Column 3 of Table 3 is very close to zero and not statistically significant. Mixed logit results are similar when more parsimonious models (analogous to Columns 1 and 2 of Table 3) are estimated.

rather than levels. Results are reported in Table 5. In Columns 1 and 2, we include absolute quartiles of registered voters, turnout, and ENP; in Columns 3 and 4 we control for county council-level differences in political characteristics by constructing within-county quartiles. Columns 1 and 3 do not include interactions between dispenser attributes; these interactions are included, and interacted with councilor ad ward characteristics, in Columns 2 and 4. Interestingly, none of these attribute interaction terms is significant, so they are omitted to save space. All specifications also include controls for alternatives that are lotteries.²⁰

Once again, we find strong evidence that councilors value dispensers: the estimated utility from the basic dispenser package is positive and significant in all specifications. Both the size of the ward (in terms of registered voters) and the effective number of parties are negatively associated with the utility derived from the basic package. These findings are consistent with councilors facing time constraints, particularly in larger and more competitive wards, and with the perceived electoral returns to dispensers being relatively low.²¹ In contrast, we find that first-term councilors derive significantly higher utility from the basic dispenser package.²²

As expected, we also find that the un-interacted indicator for allowing councilors to choose where to locate the dispenser is positive and significant in all specifications, suggesting that all councilors place a premium on the opportunity to target the public good. We find weak evidence that first-term councilors appear to derive less utility from the ability to choose the dispenser location, while councilors from one of the three major political parties in Kenya's 2007 election derive greater utility from targeting. However, neither of these results is statistically significant after implementing the Bonferroni correction for multiple testing.

²⁰ Because of the large number of hypotheses being tested (20 per column in Table 5), these results should be interpreted with some caution. A conservative approach to correcting the problem of multiple testing is to implement a Bonferroni correction by resizing the test. As is clear from a cursory examination of the parameter estimates and standard errors reported in Table 5, the results we discuss below are clearly robust to this form of multiple test correction.

²¹ Interestingly, do not find that same association between the margin of victory, another measure of electoral competitiveness, and the utility that councilors derive from chlorine dispensers (results available upon request). In particular, we find some evidence that councilors in both the highest and lowest quartiles in terms of margin of victory value dispensers more than councilors in the two intermediate quartiles. As discussed above, we focus on the effective number of parties because it is the measure of electoral competitiveness most commonly used in the literature.

²² We obtain similar results if we use an alternative empirical approach: estimating preference parameters at the individual level and regressing the estimated parameters on the political variables (results available upon request). The main drawback to this approach is that, because of the relatively small number of decisions made by each councilor, we are only able to estimate individual-level preference parameters for a subset of the councilors in our sample.

We next examine the interactions between ward and councilor characteristics and the utility associated with allowing the District Public Health Officer to choose where to install the dispenser. We find evidence that councilors in their first term in office are significantly more averse to allowing the DPHO to decide where to locate the public good: the coefficient on the interaction between the DPHO choosing the location and being in one's first term is negative and significant in all specifications (though only robust to a conservative multiple testing correction in two of the four specifications). This finding suggests that newer representatives are less connected to government officials, but that building trust throughout multiple terms in office may be possible.

Finally, we find that the political characteristics of councilors and wards do explain some of the observed heterogeneity in the utility associated with allowing the councilor to manage the funds allocated for chlorine refills. Councilors affiliated with the three major political parties and those in their first term in office are significantly less likely to choose a package if it assigns the councilor the task of managing the restocking of chlorine (though the results are only significant in two of the four specifications). In contrast, councilors from more competitive wards with a higher effective number of parties are more likely to choose packages that allow them to manage the funds allocated for chlorine refills. We also find qualified evidence that councilors from smaller wards and those with higher voter turnout are more likely to choose packages that give them control over the discretionary funding, though these results should be interpreted with caution because they are not robust to a multiple testing correction.

These results are surprising from the perspective of the political economy literature. As noted above, the literature predicts that better monitoring, higher levels of participation, and greater political competition should all decrease politicians' interest in controlling discretionary fund. This prediction is built on the assumption that increased scrutiny and competition should reduce politicians' ability to use public funds for their own enrichment, decreasing the value of discretionary funds to politicians. In contrast, the findings reported here suggest that these political characteristics are associated with significantly more interest in control over discretionary spending.

One possible explanation is that increased scrutiny by voters and opposition parties can serve to displace corruption and elite capture rather than eliminating it entirely (Ferraz and Finan 2011; Sheely 2015). Politicians who face relatively little competition or scrutiny may not value control over the small amount of funds allocated to chlorine dispenser maintenance because they

already have relatively unfettered control over public funds in their ward. In contrast, politicians in wards that are small, competitive, and politically engaged are less likely to exercise discretionary control over public funds, making the small amounts of funds for chlorine dispenser maintenance more value to them relative to their counterparts in less competitive and vigilant jurisdictions.

A second possible explanation for this surprising finding is that the main motive in choosing such bundles is not the opportunity for personal use of funds, but the opportunity to demonstrate one's competence to voters (Besley 2005; Mansbridge 2009). Of course, controlling project funds may also signal incompetence, since politicians can be held accountable for any lapses in service delivery or scandals associated with the project. For politicians who are less closely monitored or face less competition, the risks associated with controlling project resources are may be large relative to the benefits. Politicians facing stiffer competition may be more willing to exert effort managing project funds to minimize these risks, or they may find the opportunity for patronage more valuable.

5.2 Results – Choosing a Dispenser Location

Our results thus far demonstrate that councilors value the opportunity to choose where to install a chlorine dispenser. In our final piece of analysis, we examine councilors' targeting choices. Councilors' decisions about where to install dispensers allow us to analyze the factors underlying their targeting choices in a conditional logit framework. Here, the choice set is the listing of a ward's shared water sources enumerated in the water source survey, and we allow the probability that a water source was chosen to receive a dispenser to depend on source attributes.²³ This analysis is descriptive: because we do not control the choice set facing each councilor or the correlations among attributes, we cannot estimate the causal impact of any individual characteristic on the likelihood that a water source is chosen to receive a dispenser.

We report results in Table 6. The results indicate that councilors target water sources which are point source and partially improved but not protected (i.e. dams and shallow wells) and are less likely to choose water sources that are privately owned. Other characteristics of the water coming from the source (e.g. whether the source runs dry at any point in the year) do not explain councilors' choices.

²³ We also include controls for the page on which a source appeared in the Water Source Booklet, since sources listed early in the booklet may have been particularly salient to councilors. The median number of water sources in a ward is 40, but 7.6 percent of wards had more than 100 water sources. The booklet listed between 3 and 5 water sources per page. Sources were sorted alphabetically by sublocation and village.

The number of households using a source is an important factor explaining councilors' selection of water sources, in spite of the fact that only 16 percent of councilors choose a source which maximizes the number of users who will have access to chlorine: the number of users is positive and significant at the 99 percent level in all specifications. This suggests that councilors are interested in maximizing the social benefits of the chlorine dispenser by installing it where many people will have access to it. However, we also find evidence that councilors target the public good to their home areas: sources in a councilor's village are significantly more likely to be chosen to receive a dispenser (p-values 0.030 and 0.028 in Columns 1 and 2 of Table 6). In Columns 3 through 6 of Table 6, we interact the number of households using a water source with the indicators for sources located in a councilor's sublocation (in Columns 3 and 4) or a councilor's ward (in Columns 5 and 6). These interaction terms are marginally statistically significant (p-values on the coefficients of interest are 0.063, 0.062, 0.107, and 0.097 in Columns 3 through 6, respectively). Coefficient magnitudes suggest that users in a councilor's own sublocation or village carry twice as much weight in councilors' targeting decisions as users in other parts of the ward. Thus, our results provide clear evidence that councilors seek to target core supporters in their home areas (Dixit and Londregan 1996; Golden and Min 2013), and helps to explain the tendency to vote for coethnics and candidates from one's home area observed in many African contexts (Wantchekon 2003).

Finally, in Table 7, we explore the association between outcomes that are related to the distributive implications of politicians controlling targeting and the political characteristics of councilors and their wards. We find evidence that greater political participation (as proxied by higher voter turnout) is associated with an increased likelihood of choosing a water source in the top quartile in terms of the number of users within that ward. Further, councilors from one of the three main political parties in the 2007 election are also more likely to choose water sources accessed by larger numbers of users. We interpret this as evidence that political completion – both within wards and among political parties – does tend to discipline politicians and push them toward more socially desirable public goods outcomes. Interestingly, we find little evidence that the political characteristics of wards and councilors explain the tendency to target the public good to one's own sublocation or village.

7. Conclusion

We conducted an incentive-compatible discrete choice experiment with 179 Kenyan elected representatives who play a major role in the provision of local public goods. By combining a set of structured decision problems with a lottery, the study reported in this paper allows us to explore how councilors value targeting and discretionary funding in local water infrastructure projects, and how heterogeneity in that valuation is shaped by political competition.

This paper showcases the methodological and substantive value of utilizing incentive-compatible experiments to study the behavior of politicians. Our incentive-compatible discrete choice experiment allowed us to gather unique evidence about how politicians trade off opportunities for targeting and access to discretionary funding when choosing among public goods projects. We find that the councilors in our sample have a strong desire to control targeting of resources within their constituencies, but that on average, they prefer to avoid control over a modest amount of discretionary funding. Allowing local politicians to choose the location of water treatment infrastructure doubles their likelihood of selecting an infrastructure package relative to when an NGO chooses the location, while the delegation of this authority to a local public health bureaucrat has little impact on the probability that a package is selected. Our interpretation is that the preference we observe for control over location is a measure of the value politicians attach to the opportunity to target, rather than simply a preference for local control. When given the opportunity to select a location for the dispenser, councilors use the opportunity to target in two ways. On the one hand, councilors seek to increase overall social welfare by choosing sources with larger numbers of users. However, they are also more likely to choose water sources located in their own home villages, and appear to value users in their home areas approximately twice as much as users in other parts of their constituencies.

We also find that, on average, councilors seek to avoid responsibility for managing chlorine refills though this responsibility provides direct access to discretionary funding – and the resources that accompany this responsibility are similar in size and structure to the types of discretionary funding that are typically misused in cases of petty corruption and capture of projects by local elites. Analysis of the individual and ward-level characteristics associated with particular choices reveals patterns that resonate with the literature on the political economy of public goods. Councilors from wards with smaller numbers of registered voters, higher voter turnout, and a larger number of viable opposition parties are more likely to value control over the funding for infrastructure maintenance, which could be evidence of competition either displacing corruption to less salient projects or increasing the need of politicians to take on additional responsibilities that signal competence to voters. We also see individual-level heterogeneity with respect to politicians'

willingness to delegate control over targeting to bureaucrats, with first term politicians less likely to be willing to delegate choice of location to public health officials, possibly due to weaker relationships with other parts of government. There is less heterogeneity in politician demand for control over targeting the good.

More generally, the results of ward-level heterogeneity indicate the importance of taking local politics seriously when designing and implementing public goods projects (Kramon and Posner 2013). Local government wards in Kenya vary substantially with respect to their size, levels of political participation, and degree of political competition, and variation in these local political factors appears to be strongly associated with how politicians make decisions about local public goods. Taken together, these findings indicate that there are grounds for Kenya and other countries to move beyond policy discourses that view politicians as singularly power-hungry and greedy and instead seek to implement reforms that examine and engage with the local political dynamics that lead to sub-optimal public goods outcomes.

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Table 1: Summary Statistics — Councilors and Wards

VARIABLE:	MEAN	S.D.	MEDIAN	MIN.	MAX.	N
Female	0.07	0.25	0	0	1	179
Age	46.88	9.99	46	28	73	179
Married	0.91	0.29	1	0	1	179
Kikuyu	0.68	0.47	1	0	1	179
Christian	0.96	0.21	1	0	1	179
Completed secondary school	0.90	0.30	1	0	1	176
Some post-secondary education	0.25	0.43	0	0	1	176
Farmer	0.53	0.50	1	0	1	177
Business owner	0.34	0.48	0	0	1	177
More than half of HH income from being councilor	0.35	0.48	0	0	1	175
Years in politics	8.34	5.49	5	1	30	178
Member of major political party	0.73	0.45	1	0	1	179
Member of PNU party	0.58	0.49	1	0	1	179
Member of ODM party	0.03	0.17	0	0	1	179
Member of ODM-K party	0.12	0.32	0	0	1	179
Heard about chlorine dispensers	0.10	0.30	0	0	1	177
Number of registers voters in ward	8065.66	3138.85	7874	682	16359	179
Voter turnout	79.12	8.64	81.64	34.72	97.26	176
Effective number of parties	3.91	1.60	3.58	1.32	10.46	175
Margin of victory	0.17	0.16	0.14	0	0.80	178
Central Province	0.63	0.49	1	0	1	179
Rift Valley Province	0.09	0.29	0	0	1	179
Eastern Province	0.28	0.45	0	0	1	179

Table 2: Summary Statistics of Wards & Water Sources — Source Selection Sample

VARIABLE:	MEAN	S.D.	MEDIAN	MIN.	MAX.	N
Number of water sources in ward	48.52	34.28	40	3	209	157
Proportion streams and rivers	0.37	0.21	0.38	0	0.92	157
Proportion shallow wells	0.12	0.14	0.08	0	0.68	157
Proportion borehole wells	0.08	0.12	0.03	0	0.82	157
Proportion standpipes or taps	0.15	0.19	0.07	0	0.97	157
Proportion protected springs	0.07	0.12	0.02	0	0.88	157
Proportion unprotected springs	0.02	0.07	0	0	0.56	157
Proportion of water sources protected	0.33	0.21	0.31	0	1	156
Proportion of private water sources	0.13	0.14	0.09	0	0.63	157
Proportion of free (no charge) water sources	0.81	0.19	0.86	0.07	1	157
Has year-round source	0.99	0.08	1	0	1	157
Average number of dry months (among sources in ward)	0.63	0.55	0.50	0	2.83	157
Average number of users (HHs) per source in ward	138.27	120.28	102.7	25.52	739.13	157
Max users at any source in ward	564.85	398.91	470	40	1200	157
Min users at any source in ward	23.78	22.19	20	10	150	157

Table 3: Conditional Logit Model of Chlorine Dispenser Package Choices

	(1)	(2)	(3)
Ward receives a dispenser	1.349*** (0.078)	1.232*** (0.084)	1.592*** (0.084)
Councilor decides location	0.948*** (0.069)	1.297*** (0.09)	1.011*** (0.08)
Public health official decides location	-0.117* (0.066)	-0.079 (0.098)	0.022 (0.09)
Councilor manages chlorine funds	-0.29*** (0.057)	-0.006 (0.086)	0.065 (0.074)
Councilor decides location \times councilor manages chlorine funds	.	-0.753*** (0.123)	-0.684*** (0.111)
Public health official decides location \times councilor manages chlorine fund	.	-0.171 (0.128)	-0.264** (0.115)
Lottery chosen	.	.	-2.157*** (0.081)
Presented first	.	.	0.004 (0.04)
Observations	14144	14144	14144

Standard errors in parentheses.

Table 4: Mixed Logit Model of Chlorine Dispenser Package Choices

	Coefficient	S.D.	Proportion Positive
Ward receives a dispenser	3.382*** (0.236)	3.854*** (0.238)	0.810
Councilor decides location	1.923*** (0.145)	1.916*** (0.120)	0.842
Public health official decides location	-0.039 (0.152)	2.282*** (0.141)	0.493
Councilor manages chlorine funds	0.019 (0.166)	2.773*** (0.148)	0.503
Councilor decides location \times councilor manages funds	-1.016*** (0.165)	0.892*** (0.308)	0.127
Public health official decides location \times councilor manages funds	-0.437*** (0.161)	0.364** (0.177)	0.115
Lottery	-2.871*** (0.198)	2.007*** (0.149)	0.076

Standard errors in parentheses.

Table 5: Conditional Logit Model of Heterogeneity in Dispenser Package Choices

	(1)	(2)	(3)	(4)
Ward receives a dispenser	2.572*** (0.38)	2.599*** (0.403)	2.910*** (0.376)	2.992*** (0.4)
... × registered voters (quartile)	-0.14** (0.069)	-0.169** (0.074)	-0.295*** (0.072)	-0.32*** (0.077)
... × voter turnout (quartile)	-0.073 (0.072)	-0.063 (0.076)	-0.027 (0.068)	-0.042 (0.073)
... × ENP (quartile)	-0.302*** (0.072)	-0.3*** (0.077)	-0.297*** (0.07)	-0.295*** (0.075)
... × first term in office	0.901*** (0.158)	0.835*** (0.169)	0.773*** (0.159)	0.705*** (0.17)
... × major party candidate	-0.099 (0.182)	-0.187 (0.193)	-0.062 (0.182)	-0.157 (0.193)
Councilor decides location	0.894*** (0.29)	0.965** (0.396)	0.681** (0.284)	0.626 (0.387)
... × registered voters (quartile)	0.043 (0.054)	0.096 (0.074)	0.052 (0.055)	0.098 (0.076)
... × voter turnout (quartile)	-0.106* (0.056)	-0.116 (0.077)	0.015 (0.054)	0.042 (0.074)
... × ENP (quartile)	-0.002 (0.056)	-0.029 (0.077)	-0.059 (0.055)	-0.069 (0.075)
... × first term in office	-0.349*** (0.126)	-0.182 (0.172)	-0.329*** (0.126)	-0.162 (0.173)
... × major party candidate	0.233* (0.138)	0.4** (0.187)	0.262* (0.136)	0.45** (0.185)
Public health official decides location	-0.232 (0.278)	-0.357 (0.424)	-0.347 (0.273)	-0.548 (0.417)
... × registered voters (quartile)	0.034 (0.052)	0.09 (0.079)	-0.019 (0.053)	0.027 (0.081)
... × voter turnout (quartile)	0.101* (0.054)	0.065 (0.082)	0.197*** (0.052)	0.215*** (0.079)
... × ENP (quartile)	-0.009 (0.054)	-0.013 (0.082)	-1.00e-05 (0.053)	-0.02 (0.081)
... × first term in office	-0.536*** (0.121)	-0.425** (0.184)	-0.565*** (0.121)	-0.444** (0.185)
... × major party candidate	0.214 (0.133)	0.384* (0.205)	0.228* (0.132)	0.412** (0.203)
Councilor manages chlorine funds	-0.275 (0.242)	-0.3 (0.367)	-0.142 (0.238)	-0.287 (0.361)
... × registered voters (quartile)	-0.118*** (0.045)	-0.053 (0.069)	-0.121*** (0.046)	-0.064 (0.07)
... × voter turnout (quartile)	0.102** (0.047)	0.082 (0.071)	0.083* (0.045)	0.111 (0.069)
... × ENP (quartile)	0.229*** (0.047)	0.213*** (0.072)	0.22*** (0.046)	0.208*** (0.07)
... × first term in office	-0.399*** (0.105)	-0.235 (0.16)	-0.386*** (0.105)	-0.215 (0.16)
... × major party candidate	-0.361*** (0.116)	-0.164 (0.175)	-0.43*** (0.115)	-0.214 (0.173)
Control for lotteries	Yes	Yes	Yes	Yes
Attribute Interactions	No	Yes	No	Yes
Observations	13744	13744	13744	13744

Standard errors in parentheses. Columns 1 and 2 (3 and 4) include (within-county) quartiles of continuous characteristics, interacted with dispensers package attributes. Columns 2 and 4 also include interactions between dispenser package attributes (who chooses the location and who manages chlorine refills) and councilor and ward characteristics.

Table 6: Conditional Logit Model of Water Source Selection

	(1)	(2)	(3)	(4)	(5)	(6)
Number of users (HHs)	0.02*** (0.004)	0.02*** (0.004)	0.015*** (0.005)	0.015*** (0.005)	0.019*** (0.004)	0.019*** (0.004)
Water from source is clear	-0.013 (0.223)	0.015 (0.229)	-0.041 (0.223)	-0.017 (0.229)	-0.012 (0.224)	0.013 (0.229)
Source does not dry up	0.267 (0.243)	0.259 (0.244)	0.285 (0.244)	0.276 (0.246)	0.28 (0.244)	0.268 (0.245)
Privately owned	-1.177*** (0.382)	-1.111*** (0.382)	-1.175*** (0.381)	-1.111*** (0.381)	-1.182*** (0.382)	-1.118*** (0.381)
Users must pay to use source	0.248 (0.297)	0.476 (0.332)	0.244 (0.299)	0.47 (0.334)	0.268 (0.299)	0.504 (0.334)
In councilor's sublocation	0.095 (0.316)	0.097 (0.318)	-0.213 (0.364)	-0.215 (0.366)	0.12 (0.318)	0.122 (0.32)
In councilor's village	0.877** (0.405)	0.892** (0.405)	0.891** (0.414)	0.909** (0.413)	0.415 (0.515)	0.419 (0.515)
Protected source	0.412 (0.269)	.	0.402 (0.27)	.	0.401 (0.27)	.
Improved (but not protected) source	0.651*** (0.245)	.	0.656*** (0.245)	.	0.668*** (0.246)	.
Shallow well	.	0.598** (0.29)	.	0.61** (0.29)	.	0.621** (0.29)
Water pipe or tap	.	-0.047 (0.393)	.	-0.053 (0.393)	.	-0.075 (0.394)
Borehole	.	0.394 (0.388)	.	0.394 (0.389)	.	0.413 (0.389)
Dam	.	0.695** (0.353)	.	0.69** (0.352)	.	0.71** (0.353)
Protected spring	.	0.604 (0.373)	.	0.584 (0.375)	.	0.587 (0.374)
Unprotected spring	.	-0.666 (0.794)	.	-0.697 (0.805)	.	-0.659 (0.798)
Other type of source	.	.	.	.	.	.
Users (HHs) in councilor's sublocation	.	.	0.015* (0.008)	0.015* (0.008)	.	.
Users (HHs) in councilor's village	.	.	.	.	0.02 (0.012)	0.02* (0.012)
Observations	7438	7438	7438	7438	7438	7438

Standard errors in parentheses. All specifications also include controls for the page on which a source appeared in the Water Source Booklets presented to councilors.

Table 7: Regressions of Targeting Outcomes on Political Characteristics of Councilors and Wards

<i>Dependent Variable: Councilor chose source...</i>	WITH MANY USERS		IN OWN SUBLOCATION		IN OWN VILLAGE	
	<i>Specification:</i>		PROBIT	FES	PROBIT	FES
	(1)	(2)	(3)	(4)	(5)	(6)
Registered voters in ward (1000s)	0.039 (0.036)	0.017 (0.016)	-0.011 (0.045)	-0.004 (0.011)	-0.065 (0.059)	-0.012 (0.011)
Voter turnout	0.04** (0.017)	0.008** (0.004)	-0.007 (0.018)	0.005 (0.006)	0.03 (0.022)	0.006** (0.003)
Effective number of parties	-0.042 (0.081)	-0.025 (0.033)	0.048 (0.074)	0.021 (0.029)	0.182* (0.101)	0.027 (0.017)
First term in office	0.269 (0.223)	0.062 (0.078)	0.174 (0.259)	0.057 (0.056)	0.197 (0.329)	0.026 (0.03)
Member of major political party	0.536* (0.31)	0.186** (0.087)	0.073 (0.135)	-0.038 (0.047)	0.02 (0.378)	-0.035 (0.049)
Constant	-4.460*** (1.428)	-0.558* (0.338)	-0.462 (1.527)	-0.19 (0.54)	-4.326** (1.843)	-0.425* (0.243)
Observations	154	154	154	154	154	154

Robust standard errors clustered at the county level. WITH MANY USERS indicates that the councilor chose a water source in the top quartile of users for his ward. Even-numbered columns include county-level fixed effects.

Figure 1: Attributes of Dispenser Packages Chosen by Councilors: Who Chooses the Dispenser Location?

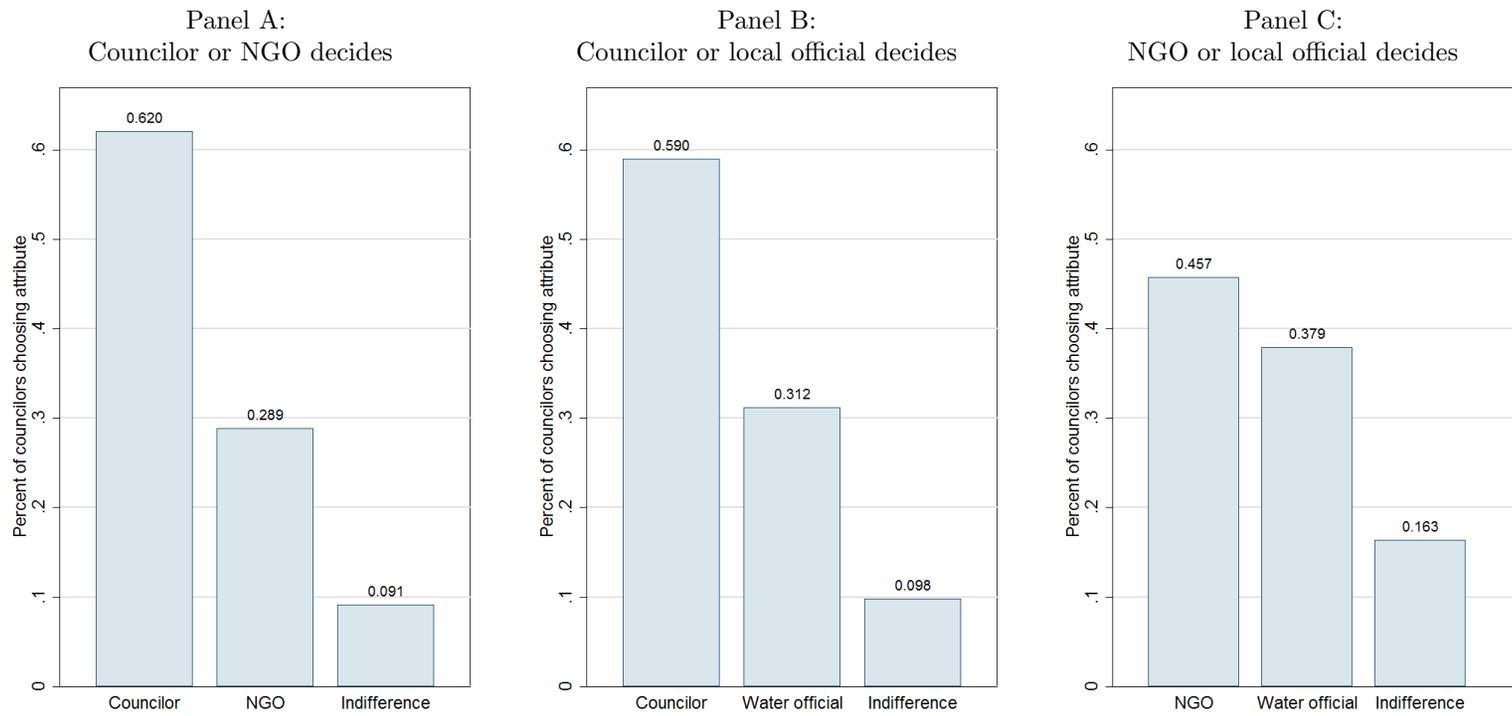


Figure 2: Attributes of Dispenser Packages Chosen by Councilors: Who Manages Funds for Restocking Chlorine?

