Why give up the ability to choose? Evidence from a Nepalese land allocation program

By Abraham Holland and Bhishma K. Bhusal*

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In theory, individuals should prefer a choice-based lottery (random serial dictatorship) to a uniform random lottery for allocating private goods. However, data from potential beneficiaries of a Nepalese land allocation program show that almost half of participants prefer uniform random allocation. We observe this fact in both a field laboratory experiment and a randomized high-stakes policy intervention. We test a broad range of explanations. We find no evidence for lack of comprehension, risk aversion, social pressure, and altruism as potential explanations. Our findings suggest that grounding mechanism design choices in local participant preferences could be important for increasing adoption.

The history of lotteries in government administration spans centuries. In ancient Athens, random lots assigned eligible citizens to public office. For many, these uniform random lotteries ensured broad-based citizen participation, due process, and impartiality (Dowlen, 2008). At the same time, lotteries were not universally popular. Socrates famously argued that matching participants to positions based on ability or interest was central to effective policy.

Today, the crux of the Greek debate remains a common policy challenge. Impartial governments remain involved in the distribution of goods such as subsidized housing or unoccupied land (Barnhardt, Field and Pande, 2017; Bleakley and Ferrie, 2014). This type of challenge is commonly described as one-sided house allocation problem. Elegant theoretical solutions, such as random serial dictatorships, produce Pareto optimal outcomes (Abdulkadiroğlu and Sönmez, 1998). Yet, uniform random lotteries remain a common public policy solution.

* Holland: The Institute for Defense Analyses, Cost Analysis and Research Division, 4850 Mark Center Drive Alexandria VA 22311, rholland@ida.org. Bhusal: The Government of Nepal's Ministry of Labour, Employment and Social Security, Kathmandu 44600 Nepal, bkb2032@gmail.com. This research is registered with the AEA RCT Registry, number AEARCTR-0002664. This project was funded by the Abdul Latif Jameel Poverty Action Lab Governance Initiative, the Weiss Fund for Research in Development Economics, the Foundations of Human Behavior Initiative, and the Lynde and Harry Bradley Foundation. The authors thank the staff at Daayitwa, Thomas van den Aarssen from Evidence for Policy Design, and Meghna Rana from Institute for Financial Management and Research for excellent in-country support. We also give particular thanks to Prakat Khati for his numerous contributions as the in-country research officer. Additional thanks to Rohini Pande, Edward Glaeser, Scott Kominers, Ben Roth, Michael Callen, Katie B. Coffman, Maciej Kotowski, and Angela Han for their regular guidance as this project developed.

In addition to its theoretical appeal, the random serial dictatorship's simplicity also make it an attractive policy instrument.[1] The most basic implementation only needs a box filled with participants names and a list of goods to be allocated. An individual is drawn at random from the box. This person, the first dictator, chooses from among all options. Then a second person is randomly drawn from the box. The second dictator chooses from the remaining options. This process continues until all options or people have been selected.

This paper evaluates one obstacle to adopting random serial dictatorships in a real world policy context: beneficiary preferences over allocation mechanisms. Using data from potential beneficiaries of a Nepalese land allocation program, we find that nearly half of respondents prefer uniform random allocation. This apparent puzzle also extends to a field laboratory experiment. Despite our direct manipulation of cash payoffs to deliver higher expected values for choice-based mechanisms, 53% of respondents still prefer uniform random allocation.

We explore two classes of factors that may affect mechanism preferences. First, participants may not recognize the potential benefits of choice-based lotteries. Second, exercising choice may be costly. We investigate these possibilities using two randomized experiments. We conclude that the first explanation is an important factor for influencing preferences between allocation mechanisms. We show that perceived preference heterogeneity affects choices between mechanisms and that it can be manipulated by policy intervention.

Our results are based on a field study of villages participating in a Nepalese post-earthquake recovery program. Each of the 672 households in our sample will relocate from their current location to land in a new, previously unsettled, community. To accomplish this move, local officials must allocate unoccupied land to individual households. At the same time, relocation officials expressed concern over ensuring a fair and transparent land allocation process. We partnered with Nepal's government to support more inclusive policy development. Our community engagement team informed beneficiary households about potential land allocation methods and then reported community-level preferences back to government officials for consideration. As a result, our sample is composed of real households engaged in a policy dialog that will directly impact their livelihoods. In this high-stakes context, we incorporated two experimental studies.

Our first experiment provides clear and convincing evidence that the mechanism preferences puzzle exists, and generates causal evidence on why individuals prefer uniform random allocation. We accomplish this through a multi-round group-based lottery preference game.[2] The experiment's central task is to allocate a set of randomly determined cash prizes worth up to three times the local hourly wage. Only one prize is selected in each game round. Prize values are directly observable, vary by player, and choosing a prize determines the payouts

[1] As highlighted in Abdulkadiroğlu and Sönmez (1998), random serial dictatorships have been used to solve housing allocation problems at Stanford and Carnegie Mellon, as well as clinical positions in at least one medical university.

[2] A more detailed description of this game is in Section II.A.

for *all* players. To determine a round's prize, each player reports their preferred allocation method. The players have two choices: either a uniform random lottery or a random dictatorship. Like a random serial dictatorship, a random dictatorship lottery requires an individual to choose their preferred prize option. Unlike a random serial dictatorship, a single player determines all players payouts in a given round.[3] As the random arrangement of prize values induces variation in whether players agree on their favorite prize, this causes exogenous shifts in the relative attractiveness of random dictatorship allocation. If players are maximizing their expected cash payouts, individuals should strictly prefer random dictatorships when their expected value is positive. Similarly, they should prefer uniform random lotteries only when the expected value of random dictatorships is lower. We find, at every point in the prize distribution, that player choices are significantly different from what is implied by this theory. We also find evidence that respondents are considering potential payoffs. A 1 US dollar increase in random dictatorship's expected benefits result in a 3 percentage point increase in preferences for choice-based allocation. This change is economically meaningful, representing a 7% change in the base rate of preferences for random dictatorship.

In the second experiment, we target the fundamental driver of a random serial dictatorship's performance: preference heterogeneity. We deploy an information intervention based on location preference data drawn from a comparable village. The intervention combined a colorful graphic and verbal narrative emphasizing location preference heterogeneity in the example community. Some locations were relatively popular, with 22% of households identifying a particular plot as their favorite location, while others were preferred by only 1.5% of households. Despite intending to encourage random serial dictatorship support, we found no evidence of an average change in preferences.

Subsequent field testing revealed that the intervention may have unintentionally conveyed a more mixed signal.[4] Anecdotally, some respondents believed the intervention could support the views of people who believed their preferences were relatively uncommon, as well as those who felt their preferences were common (i.e. the intervention was equivocal). Consistent with other equivocal information studies, we extended our analyses to consider community-level attitude polarization based on individuals' prior beliefs (Rabin and Schrag, 1999; Benoît and Dubra, 2016). For those who believed their location preferences were relatively uncommon *ex ante*, random serial dictatorship support increased by 12 percentage points. At the other extreme, their support decreased by 17 percentage points.

These two experiments are the basis for our main conclusion. Respondents mechanism preferences are significantly different from what is predicted with a simple expected value utility maximization framework. This suggests respondents either have an incomplete understanding of the potential benefits and/or

[3]We adopt the random dictatorship mechanism because it allows us to preserve the fundamental trade-off between a choice-based and uniform random mechanism, while enabling us to generate a wider range of differences in the expected value between the two mechanisms.

[4]This was conducted after the pre-analysis plan had been filed.

economists are not fully appreciating potential costs associated with choice-based allocation. Simultaneously, it is possible to influence local mechanism preferences. On the margin, beneficiaries demonstrate the ability to identify and act in situations where choice-based lotteries are more likely to yield benefits. Further, community-level polarization of respondent preferences demonstrates two additional points. First, perceived heterogeneity is a component of how respondents make decisions between mechanisms. Second, manipulating perceived heterogeneity is possible, but difficult without a deeper understanding of how perceptions are formed.

Our approach also allows us to test a range of potential theories that could explain this puzzle. We focus first on verifying that the real world mechanism preferences we observe have implications for welfare. For this to be true, beneficiaries must attach significant value to the land being allocated, they must be unable to freely trade the land following initial allocation, and there must be a difference in the expected outcomes between the random serial dictatorship and uniform random lotteries.

We find that respondents are willing to pay substantial sums, nine months of household annual income on average, to improve their land allocation. Further, land allocation is important for program success. Willingness to relocate to the new community drops from 99% to 53% if respondents receive their least favorite plot. Land trade is also problematic. Not only are there statutory barriers, but only 24-33% of respondents are willing to entertain the possibility of land sales. When pressed as to why, 41% explained that refusing offers from peers would be difficult and 13% explicitly highlighted fearing coerced transactions. Finally, we test for a performance gap between mechanisms. Using a combination of reported location preferences and computer simulation, we find that random serial dictatorships are 440% more likely to assign households their desired plot of land.

The combination of our information intervention and lab-in-the-field experiment in the same context, engaging the same participants, and focusing on a similar decision also delivers unique benefits. Not only do we observe similar mechanism preferences in both instruments, but factors ruled out in one experiment is suggestive evidence that none of those factors are *the* fundamental concern in the other. For example, we included a test for the effects of social pressure on within the field laboratory experiment. We accomplish this by randomizing whether the game is administered in a completely anonymous or non-anonymous setting. Not only can we conclude that social pressure does not appear to influence in-game mechanism preferences, but this finding is a preliminary test of whether social pressure is likely to influence real world mechanism preferences.

Similarly, the lottery preference game can also test for the presence of other-regarding preferences, such as altruism. The random arrangement of prize options creates exogenous variation in opportunities for respondents to engage in selfless behavior.[5] As a result, we propose two simple empirical tests. First, do respon-

[5]In terms of theory, the effect of altruistic preferences on mechanism preferences is ambiguous. Choice-

dents sacrifice individual gain for higher group payouts? Generally no. Out of 1,336 decisions recorded in the field laboratory where individuals had the opportunity to behave altruistically, players opted to maximize their own payouts in 84% of cases. Further, we examine whether being presented with an opportunity to behave altruistically causes individuals to prefer a different mechanism. We find no evidence that this is the case.[6]

Finally, we assemble a range of descriptive results to support our main findings. The same prize-level variation we used to test for altruism also allows us to test another popular theory: risk aversion. If individuals are risk averse, then they are willing to forgo a risky expected gain for a certain cash payment. The greater the degree of risk aversion, the lower this cash certainty equivalent is relative to the expected value of the risky opportunity. Using data from the field laboratory, we can calculate the certainty equivalent for both mechanisms. Not only is the certainty equivalent strictly greater for random dictatorship allocation versus a uniform random lottery, the gap between these mechanism increases as participants become more risk averse.

Another common concern is lack of comprehension. To rule this out, the field laboratory includes one-on-one 30-minute training sessions and individual post-training comprehension assessments. We compare in-game decisions based on pre-game comprehension scores, we find no significant difference between these two groups. We also find no statistically significant correlation between mechanism preferences and comprehension assessments administered during the information experiment. As a result, we believe comprehension is not a primary concern.

This paper contributes to several areas within economics. First, we are not alone in finding that respondent preferences over mechanisms don't always agree with traditional economic theory. Dal Bó, Foster and Putterman (2010) observe a similar tendency among Brown University undergraduates in a controlled laboratory experiment with a prisoner's dilemma game. We also add to the growing literature attempting to understand why certain types of mechanisms are preferred in real-world contexts (Akbarpour and Li, 2018; Pathak and Sönmez, 2008). Next, we contribute to the nascent literature on mechanism design applications for contexts with weak State institutions (Roth, 2018; Rigol, Hussam and Roth, 2018). Our research also complements the literature on attitude polarization, as well as the behavioral economics literature on social pressure and altruism (Rabin and Schrag, 1999; DellaVigna, 2009). Finally, our findings complement the literature on community engagement and policy outcomes (Olken and Pande, 2013).

The paper is organized into VI sections. In Section I, we discuss the policy context and our project's background. In Section II, we discuss our experimental design. Section III develops a simple model to motivate our focus on preference

based allocation could enable individuals to choose prize options that maximize other players' payoffs. Consequently, the appropriate question seems to be whether or not individuals appear to use these mechanisms for redistribution.

[6]On average, players that behaved altruistically gave up 1 Rupee for every 1.87 gained by the other two players.

heterogeneity. Section IV presents the data, empirical specification, and key results. Section V discusses potential alternative explanations and supplemental analyses. Section VI concludes.

I. Institutional Background

A. Global Trends in Government Service Provision

While States are called upon to distribute a range of indivisible non-market goods, one area this has become increasingly salient is land administration. Climate change, natural disasters, and urbanization are forcing countries to reconsider not just how, but where, people live.[7] Unfortunately, the world's poorest citizens are also the most likely to be affected by these factors (United Nations, 2015). Governments are also considering relocation as part of broader anti-poverty campaigns. In China, the government aims to relocate 9.81 million citizens by 2020 as part of such a program.[8] In India, a 'Housing for all by 2022' development drive has resulted in government plans for the construction and allocation of 20 million affordable housing units (Government of India, 2015).

In these types of allocation programs, the need to protect against corruption can result in a desire for impartial and transparent allocation mechanisms (Government of India, 2013). As a result, simple methods are likely to be appealing. At the same time, studies such as Barnhardt, Field and Pande (2017) and Bazzi et al. (2017) suggest that match quality, the fit between location and recipient, may be important for program success. As in the case of Greek sortition, uniform random allocation addresses transparency at the expense of match quality. Random serial dictatorships may be a scalable, efficient, and robust solution for encouraging more effective relocation programs.[9]

B. Nepal's At-Risk Communities

In 2015, a series of earthquakes leveled approximately 800,000 private homes and destroyed entire villages in Nepal. For 112 communities, irremediable geologic risks caused Nepal's National Reconstruction Authority (NRA) to deem the original village location uninhabitable. In response, the NRA launched a village relocation program, enabling whole communities to shift from their current locations to new consolidated settlements on safer land.

[7] In 2017 alone, 30.6 MM people were displaced by either conflict (11.8 MM) or natural disaster (18.8 MM) (Internal Displacement Monitoring Centre, 2018). On average, 24.64 MM people are displaced by natural disaster per year, the bulk are in Asia (*ibid*). It is unclear what share of these will ultimately require permanent relocation assistance.

[8] Phillips, Tom. 2018. "China to move millions of people from homes in anti-poverty drive" *The Guardian*. Last modified January 7, 2018. https://www.theguardian.com/world/2018/jan/07/china-move-millions-people-homes-anti-poverty-drive. [accessed 15 October 2018]

[9] To be clear, relocation programs have historically had a mixed rate of success. They are a last resort and should only be undertaken when absolutely necessary (United Nations, 2014).

Relocation officials expressed concern over ensuring the fair and transparent allocation of land to beneficiary households. While these officials felt a land lottery could address their concerns, they were unclear which lottery-based approach was best suited to the situation. In response, we partnered with the NRA to conduct a series of real stakes community engagement exercises, called a lottery preference survey, before resettlement but after the relocation site had been identified.[10]

These efforts informed beneficiaries of potential allocation approaches, and then solicited their preferences over possible mechanisms. Summary reports and supplemental technical guidance were subsequently shared with government officials. While each report's findings are non-binding, we describe these results as coming from a real-stakes survey. This is the case for two reasons. First, respondents were aware of the pending decision regarding land allocation and that the subsequent policy would have a direct impact on their relocation outcomes. Second, respondents were informed that their preferences would be aggregated and shared with the relevant government decision-makers.

C. Experimental Setting

The study's sample frame are the NRA's village relocation program pilot locations. At the time of field operations, this constituted four villages. These communities had identified a viable relocation location and agreed to shift to a new integrated site. In each village, the decision on how to allocate individual plots in the new site was still pending.

These villages tend to be mountainous, ethnically homogeneous, and dependent on agriculture for their economic livelihoods. The average household has 4.4 members and a monthly income of 14,300 Rupees (130 USD). To put these numbers in context, we turn to the 2015/2016 National Living Standards Survey. Across Nepal, rural households report an average monthly consumption of 20,741 Rupees and have a 4.8 member average household size. Thus, respondent households are smaller and poorer than the rural average. When compared to the national average, village relocation program households are in the third consumption decile (Government of Nepal, 2016). In terms of the relocation sites, distance between a household's current residence and the relocation site is typically less than a mile.[11] In each community, nearly all households are eligible for relocation. These households usually own the land they are living on and are exposed to irremediable unsafe levels of geologic risk. Each household has a single formal beneficiary, typically the recognized land owner. Each beneficiary is the household's official decision maker. As a result, this person is the corresponding target for all study activity. We were able to interview the registered beneficiary in 57% of cases. Overall, the average respondent is 42 years old and female (59%).[12]

[10]Due to the difficulty of coordinating activities, in some locations the surveys were done before specific relocation site plots had been defined, while in others the complete site design had been codified.

[11]Beneficiaries know these areas, virtually all report visiting the relocation site (Appendix Table 1).

[12]Table 2 presents these summary statistics as well as evidence of experimental balance.

D. Preferences Over Land Allocation Mechanisms

In consultation with the NRA, lottery preference survey efforts focused on three possible lottery-based land allocation mechanisms. The first type is a classic random serial dictatorship. In Figure 1, we describe this as RSD Type 1. This lottery is conducted by drawing names from a box and then allowing the person drawn a choice from among all available plots. After the selected dictator chooses a single plot, this process continues until no locations remain.

The second lottery type, RSD Type 2, is also a random serial dictatorship. The distinction being each participant lists their preferences over all locations *prior* to drawing a name from the box. Once drawn, the top-ranked available plot on each person's list is assigned to them. The final lottery type, called a Uniform Lottery in Figure 1, allocates land through a uniform random process.[13]

The lottery preference survey results are supportive of a random serial dictatorship approach (Figure 1). In all comparisons including the Uniform Lottery, the random serial dictatorship is preferred by a majority of respondents. At the same time, the margin is small. A randomly selected respondent is only 2-5% more likely to prefer random serial dictatorship versus a uniform random mechanism. Understanding why a large share respondents appear willing surrender personal choice and understanding what factors influence mechanism preferences is the central puzzle of this paper.[14]

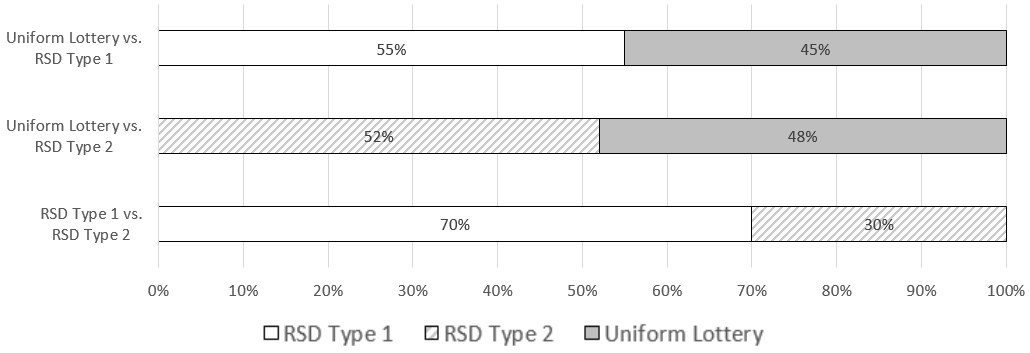


Figure 1. Real Stakes Lottery Preferences: Random Serial Dictatorship (RSD) vs. Uniform Random Lottery Allocation

Source: This figure shows data drawn from a lottery type preference survey across 4 villages and 672 households in Nepal's Village Relocation Program. Both Random Serial Dictatorship (RSD) lottery methods are traditionally considered *ex post* Pareto optimal for this type of 1-sided house allocation problem (Abdulkadiroğlu and Sönmez, 1998).

[13]The interactive narratives used to explain these three mechanisms are available upon request. In the field, we used different names to describe each lottery in order to facilitate explanations.

[14]We agree understanding why preferences between the two types of random serial dictatorships are so different is also a very interesting puzzle. Unfortunately, it is beyond the scope of this paper.

II. Experimental Design

In this section, we describe two complementary interventions. Our field-based research team implemented both experiments as part of a policy-oriented community engagement effort. The first experiment is a stand-alone lab-in-the-field exercise. The second experiment is an information intervention embedded within the survey-based community lottery preference collection process.

A. Preference Heterogeneity Field Lab Experiment

The first experimental instrument is a multi-round three-player lottery preference game. The focus of this experiment is two-fold. First, generate clear evidence of the gap between participants predicted and actual mechanism preferences. Second, to generate causal evidence for additional factors which may explain mechanism preferences. We accomplish this by asking players to allocate a set of three randomly determined cash prizes. In each game round (of five), only one prize can be paid out. For the players, each round's goal is to determine which prize is selected.

To accomplish this task, each player reports the lottery method they prefer for selecting a prize. They choose between two approaches: random dictatorship or a uniform random allocation lottery option.[15] For the uniform random lottery approach, a random prize is selected from a box of chits. Like random serial dictatorship, a random dictatorship lottery requires an individual to choose. A dictator is randomly chosen, and then their preferred prize is selected for a given round.

After each player privately submits their lottery preference, one player is anonymously selected. The game's proctor then enacts the selected lottery type. In the event of a random dictatorship, the proctor conducts a second random draw to identify the seat selected to be the dictator. The dictator's seat number is announced to all players. In the event of uniform random allocation, the proctor immediately conducts a follow up lottery, which determines the prize for the players. After the payouts for that round have been recorded, a new prize screen is displayed and the choices begin again. After five rounds, one round is randomly selected. The players receive the actual cash payouts determined in that round.[16]

Table 1 depicts several prize screen examples presented to each player during a round. As seen in the first set of prize options (Table 1, top), each player

[15] We employed this style random dictatorship because results from Li (2017) indicate it may be less error prone. Further, employing a random dictatorship (vs. random serial dictatorship) allowed us to more easily test a broader range of explanatory theories. We also used different names for these options in the field in order to avoid potential reactions to words like dictator. The uniform random lottery was called a 'Box-Box' lottery. The random serial dictatorship type 1 was called a 'Box-Choice' lottery. The random serial dictatorship type 2 was called a 'List-Box' lottery.

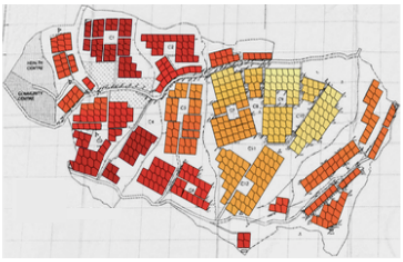
[16] At the time of selecting which lottery type they prefer to allocate prizes, the players also identify which prize they prefer if they are chosen to be the 'dictator'. Further, we also player to identify which prize they hope to win in the event of a uniform random lottery.

knows the prize values for all players. If prize A is selected, the Seat 1 player receives nothing. At the same time, the player in Seat 2 would receive 500 Rupees (Rs), and the player in Seat 3 would receive 100 Rs. The randomized values of the different prize options creates exogenous variation in the potential expected value of different allocation methods, that is the experiment's focus. In the first example, the prize value arrangement results in each player preferring a different option. This arrangement has implications for the potential decision between mechanisms. In this case, the expected value of the random dictatorship and the uniform random lottery are equivalent.

Turning to the second example, it is clear that all players prefer Prize A. As a result, the random dictatorship's expected value is greater than the uniform random lottery. In the final example, we find a more nuanced situation. For the players in Seat 2 and 3, the most preferred option is Prize A. Simultaneously, Prize A is the least desirable choice for the player in Seat 1. For Seat 1, the random dictatorship lottery expected value is actually lower than that for a uniform random lottery.[17]

B. Preference Heterogeneity Information Treatment

In this experiment, we test the impact of an information intervention on lottery type preferences. We accomplish this test by randomly presenting respondents with information immediately prior to soliciting their mechanism preferences.[18] This treatment involves a picture and accompanying narrative (Figure 2). Together, the two pieces highlight potential location preference heterogeneity and its implications for plot preferences in the new community.



...Each square in the map is a plot of land that will be used for a family's new home. The color of each square indicates how many people chose that particular plot as their most favorite plot. Lighter colors represent the more favored plots. As you can see a broad range of colors, this means that no single plot of land was the most favorite of all people. Families appear to have very different preferences over where they want to live in the new community. In fact, the least popular plot in the entire community, was still the favorite location for several families. This makes us believe that while an individual household may have a 'worst plot', that may not be true when considering the entire community...

FIGURE 2. LOTTERY PREFERENCE SURVEY INFORMATION INTERVENTION

Source: This figure displays the information intervention graphic and accompanying verbal narrative used as part of the lottery preference experiment.

Immediately following the intervention, the treatment group participates in an

[17]We develop this further in Section III, but the expected value of a uniform random lottery is 300 NPR, while the expected value of a random dictatorship is 167 NPR.

[18]Due to logistical constraints, treatment group assignment was determined by uniform random allocation.

Table 1—Lottery Preference Game Prize Examples

Example 1: Choice Misalignment

Prize A	Prize B	Prize C
Player 1: 0 Rs	Player 1: 300 Rs	Player 1: 200 Rs
Player 2: 500	Player 2: 400	Player 2: 200
Player 3: 100	Player 3: 200	Player 3: 400

Example 2: Choice Alignment

Prize A	Prize B	Prize C
Player 1: 300 Rs	Player 1: 0 Rs	Player 1: 200 Rs
Player 2: 500	Player 2: 200	Player 2: 400
Player 3: 400	Player 3: 200	Player 3: 100

Example 3: Choice Negative

Prize A	Prize B	Prize C
Player 1: 0 Rs	Player 1: 300 Rs	Player 1: 200 Rs
Player 2: 500	Player 2: 200	Player 2: 400
Player 3: 400	Player 3: 200	Player 3: 100

Notes: This figure shows three examples of randomized prize arrangements for each player during a round of the lottery preference game. In Example 1, players are indifferent between a choice-based or uniform random allocation method. In Example 2, all players prefer the choice-based allocation method. In Example 3, Player 1 prefers uniform random allocation and the other two prefer the choice-based allocation approach. This is the case in Example 3 because Player 1 prefers Prize B, while the other two players prefer Player 1's least favorite option (Prize A).

interactive lottery demonstration, which explains two randomly selected land lottery mechanisms. Participants then report which mechanism they prefer. In the control group, the preference heterogeneity intervention is administered after respondents have reported their initial lottery preferences. As a result, the survey's experimental design allows for the estimation of inter-personal effects. Responses from both groups are then aggregated and reported back to the government for inclusion in the local policy process.[19]

The data used to generate the map image was drawn from a community outside of our project's sample. That particular village was receiving additional sponsorship from a non-profit organization, making it unsuitable for our main study. As a result, it was used as a pilot location for instrument development. In this vein, the village's location preference data was used to design our study's information intervention. The use of actual data is important from a research ethics and policy perspective, as participants would be asked to make decisions that could affect local policy.

Using anecdotal field interviews, we determined that the information intervention described a community with a moderate / moderately high degree of preference heterogeneity (e.g. a 2 or 3 on a Likert scale from 0-4). Following deployment, we discovered that the intervention could have an equivocal interpretation, with some households having both relatively unique and common location preferences. This was reinforced by the intervention narrative, which described both plots where many people preferred the location as well as areas where relatively few families preferred the land.

III. Conceptual Framework

To motivate our empirical analysis, we developed a simple expected value framework to identify how households choose between lottery mechanisms. For each lottery type, a player simply calculates the expected value, and selects the mechanism with the higher estimate. The chief benefit of this approach is highlighting the centrality of individual's perceptions of others' preferences. In a choice-based approach, the probability of receiving a given plot of land is a function of how many prefer that location. An individual who believes their preferences are relatively unique should expect the chances of receiving their preferred location are far greater under random serial dictatorship than under a uniform random lottery. We include the model's development in Appendix Section VI.B and highlight its three key predictions below.

For the lottery preference game, we expect:

1) Individuals should prefer random dictatorship allocation when the expected benefit is positive.

[19]Once respondents report their bilateral preferences, the enumerator introduces a final mechanism and solicits a complete three-way ranking. We do not use three-way preferences for our main analyses due to strategic voting considerations (Satterthwaite, 1975). Only complete three-way preferences are reported back to the government.

2) On the margin, average random dictatorship support should increase with the expected benefit.

For the information intervention, our theoretical results are ambiguous. Changes in random serial dictatorship support are a function of *ex ante* beliefs relative to what is implied by the information intervention. Based on our anecdotal field interviews and the general difficulty of accurately predicting others preferences (Epley et al., 2004; Davis, Hoch and Ragsdale, 1986), we believe:

3. Our information intervention is likely to increase average random serial dictatorship support.

IV. Data and Results

This section begins with a descriptive analysis of the local setting. Next, we present the lottery preference game results. We then explore our information intervention's effect on real stakes lottery type preferences. We then turn to our non-experimental findings, examining respondents *ex ante* preference heterogeneity beliefs. We close with a discussion of this study's main results.

A. Experimental Balance

To test for experimental balance, we regress our treatment variable on six covariates of interest. In Table 2, we present the bivariate regression results for the information intervention in Column 1. Of the 6 variables we examine, only 1 is statistically significant at the 10% level (respondent gender). Column 4 repeats the same analysis with the lottery preference game's experimental variable: exogenous variation in the expected benefit of allocating prizes via a random dictatorship. As before, out of the 6 variables we examine, only 1 (household size) is significant at the 10% level.

A second dimension of balance focuses on selection between the two experiments. While nearly all lottery preference survey households ($> 99\%$) agreed to participate in the lottery preference game and 85% of households actually participated, only 61% of respondents were able to participate in both experiments. We report the control means for the lottery preference survey (Column 2) and the corresponding matched sample from the lottery preference game (Column 5). Differences in sample means across the two experimental arms are also insignificant (Column 2 - Column 5). Those that could attend both instruments appear similar to the original lottery preference survey sample.

B. Respondent Comprehension

A potential concern in many experiments is ensuring respondents understand the relevant information or game protocols. This is a particular challenge in the

Table 2—Household Descriptive Statistics and Randomization Balance Check

	Panel A			Panel B		
	(1)	(2)	(3)	(4)	(5)	(6)
	Information Treatment	Control Mean	N	Field Lab Treatment	Control Mean	N
Household Demographics						
Beneficiary is the Respondent	0.060 (0.038)	0.56 [0.5]	672	-0.012 (0.027)	0.57 [0.5]	572
Respondent Female	-0.069 (0.038)	0.61 [0.5]	672	0.005 (0.026)	0.60 [0.5]	572
Respondent Age (Years)	0.348 (1.364)	43.22 [17.9]	672	-0.007 (0.932)	43.94 [18.4]	572
Household Size (# Members)	-0.012 (0.147)	4.34 [1.9]	672	0.199 (0.117)	4.32 [1.9]	572
Household Income (Rupees, Thousands)	-1.127 (1.149)	14.54 [13.5]	571	0.805 (0.864)	13.60 [10.0]	479
Location Preferences						
Other Villagers Preferences Similar ($0-4$, $0=$ S. Disagree)	0.172 (0.109)	1.47 [1.4]	664	0.055 (0.104)	1.64 [1.5]	566

Notes: Each row in Column (1) reports the coefficient from an OLS regression where the independent variable is whether or not the individual was in the treatment group. Robust standard errors are below each estimate in ( ). Column (2) reports the corresponding control mean and the standard deviations are in [ ]. Column (3) reports the estimation sample size. Unless otherwise reported, control means are affirmative shares. For example, Respondent Female's control mean is .61, which translates to 61% female. Columns (4)-(6) repeat the same analysis for the treatment and sample used in the field laboratory experiment. The control mean reflects that averages for those situations where the expected value of a random lottery and the random dictatorship are the same. Lottery preference and game-related variables restricted to matched sample, those participants that appear in both the survey and field laboratory experiments.

lottery preference game. Participants must focus on a specific decision, despite time constraints and a potentially unfamiliar environment.

Prior to each lottery preference game, we included a 30-minute pre-game training protocol for each player. At the end of each training session, we collected respondent feedback and each trainer's subjective comprehension assessment. We also monitored in-game performance and solicited post-game feedback from both enumerators and respondents. Together, we use this information to describe the likely degree of comprehension for lottery preference game participants (Table 3).

The survey team's pre-game assessments confirm our need for caution. Only 60% of our sample has sufficient literacy/numeracy to be able to read the in-game prompts. Fortunately, 98% of participants have sufficient language skills to be able to listen to instructions. Similarly, the training staff felt that only 2% of participants had significant comprehension problems following pre-game training. The staff dedicated to supporting in-game activity also report a moderate/low degree of additional support required (4 on a 10-point scale). The vast majority of this help was reading aloud potential prize options to the participant.

From the respondents perspective, following the pre-game training, only 3% of participants felt the lottery mechanisms were difficult to understand. Further, nearly all respondents felt the in-game instructions were clear and the initial training facilitated in-game comprehension. Respondents' in-game performance is also consistent with a general understanding of the game's instructions, only 9% of respondents ran out of time during any game round.[20]

Respondent comprehension is also a potential concern within the lottery preference survey. While we have the additional flexibility of operating in a comfortable location and time for each respondent, uninformed responses may generate noise or bias our results. To prevent this from happening, we include a six-question lottery comprehension quiz as part of the lottery preference survey (bottom panel, Table 3). On average, respondents answered five questions correctly (83%) and only 2% of respondents were unable to successfully answer any questions.

To test for comprehension effects influencing our results, we replicated our main empirical strategies for both the lottery preference game and lottery preference survey with respondent comprehension as our key explanatory variable. Appendix Figure 2 and Appendix Table 3 show that there is no statistically significant relationship between comprehension and mechanism preferences.[21]

A second dimension of how comprehension may influence lottery preference game results is through in-game learning. In Appendix Table 6, we test for the influence of learning by examining whether the accumulation of experience across rounds influences mechanism preferences. We accomplish this by restricting our attention to cases where the arrangement of prizes yields an expected value gap between the uniform random lottery and random dictatorship mechanism. Next,

[20] Running out of time could also be a strategic choice.

[21] An extension of this robustness check tests whether pre-game comprehension correlates with a player selecting the expected value maximizing lottery option. Appendix Table 7 tests this theory. We find no significant relationship.

Table 3—Comprehension Summary Statistics

	(1) Mean	(2) SD	(3) N
Lottery Preference Game			
Pre-Game			
Respondent Assessed			
Either Lottery Difficult? (1=Yes)	0.03	0.2	576
Enumerator Assessed			
Read and Understand Written Prompts	0.60	0.5	575
Listen and Understand Verbal Prompts	0.98	0.1	576
Confident Understands Game	0.62	0.5	576
Minor Comprehension Concerns	0.36	0.5	576
Significant Comprehension Concerns	0.02	0.1	576
In-Game			
Enumerator Assessed			
Player Ran Out of Time (Ever)	0.09	0.3	576
Post-Game			
Respondent Assessed			
Instructions Clear/Understandable	1.00	0.0	576
Pre-Game Training Helpful	0.99	0.1	573
Enumerator Assessed			
Degree of In-Game Help (1-10, 10=High)	3.96	3.2	576
Lottery Preference Survey			
Lottery Comprehension Score (1-6, 6=High)	5.18	1.3	549

Notes: Unless otherwise indicated, variables represent affirmative shares (e.g. 60% of respondents could read and understand written game prompts.) We present comprehension measures for both key experimental instruments. For the Lottery Preference Game, there are three points in time when comprehension is assessed pre-game, during, and post-game. The in-game time measure is an indicator variable for if a player ever ran out of time to choose a lottery mechanism in any round. Thus, 9% of players ran out of time at least once during the 5-rounds of game play. For the Lottery Preference Survey, our comprehension measure is a respondent's score on a 6-question multiple choice comprehension quiz focused on testing understanding of how each lottery mechanism functions.

we tabulate the share of individuals that selected the higher expected value mechanism by round. If experience increases a player's ability to identify the higher expected value mechanism, the 'correct' answer share will increase as the game progresses. We do not observe significant behavior differences across rounds.[22]

C. *Lottery Preference Game: Empirical Analysis and Results*

As the lottery preference game is a randomized instrument, our empirical strategy is straightforward. Using the payout randomization for each individual i in group g and round r, we create T_{igr}, which is the expected value of the random dictatorship relative to uniform random allocation.[23] We are interested in T_{igr}'s effect on individual preferences for random dictatorship in each game round.

We focus on two aspects of the relationship between these two variables. First, we examine whether observed game play is consistent with our first empirical prediction: individuals should strictly prefer the mechanism with the highest expected value. Second, we explore the marginal relationship between the expected benefit and preference for random dictatorship.

To test our first prediction, we adopt a non-parametric binned scatter plot approach (Stepner, 2014). At each value of the treatment variable, we calculate the share of individuals that prefer random dictatorship. We display these results in Figure 3, where each point is represented by a gray triangle. For comparison, we also present predicted mechanism preferences. For all cases where the expected benefit is positive, individuals should strictly prefer random dictatorship allocation. Conversely, individuals should strictly prefer uniform random lotteries when the expected benefit of random dictatorships is negative. When the two mechanisms have the same expected value, we have no clear prediction. We represent these predictions as a dashed line in Figure 3.

Using a clustered comparison of means t-test, with the 3-player group (g) being the relevant cluster level, we test whether observed game play is consistent with our predictions. At each value of T_{igr}, we display the resulting 95% and 90% confidence intervals. At every point in the expected benefit distribution, observed game behavior is significantly different from expected game play.

As a final robustness check, we confirm that our understanding of mechanism preferences in Figure 3 is not skewed by players that, despite varying incentives, never change their lottery type preferences. These players constitute 18% of the total sample.[24] We eliminate these players and plot the complier-only sub-

[22] We also pool the observations across all rounds and find a significant difference between the share of individuals that identify the correct mechanism (52%) and what would be implied by completely random choice behavior (50%). This indicates that individuals are not simply choosing randomly in these situations.

[23] Depending on the arrangement of prizes, the expected benefit can vary between negative 130 Rupees to positive 230 Rupees in a given round. Because these two extreme outcomes are fairly sparse, we combine the two tails with the next closest value, negative 100 Rupees and positive 200 Rupees, respectively. Thus, the full range of this variable is from -100 to 200 Rupees.

[24] 70% of non-compliers (13% of the total sample) strictly prefer uniform random allocation.

sample mechanism preferences against our original Figure 3 analysis. Appendix Figure 3 displays these results. At every point in the expected benefit distribution, complier sub-sample behavior closely tracks the findings. As a result, we reject the possibility that our interpretation of our findings is distorted by non-compliers.

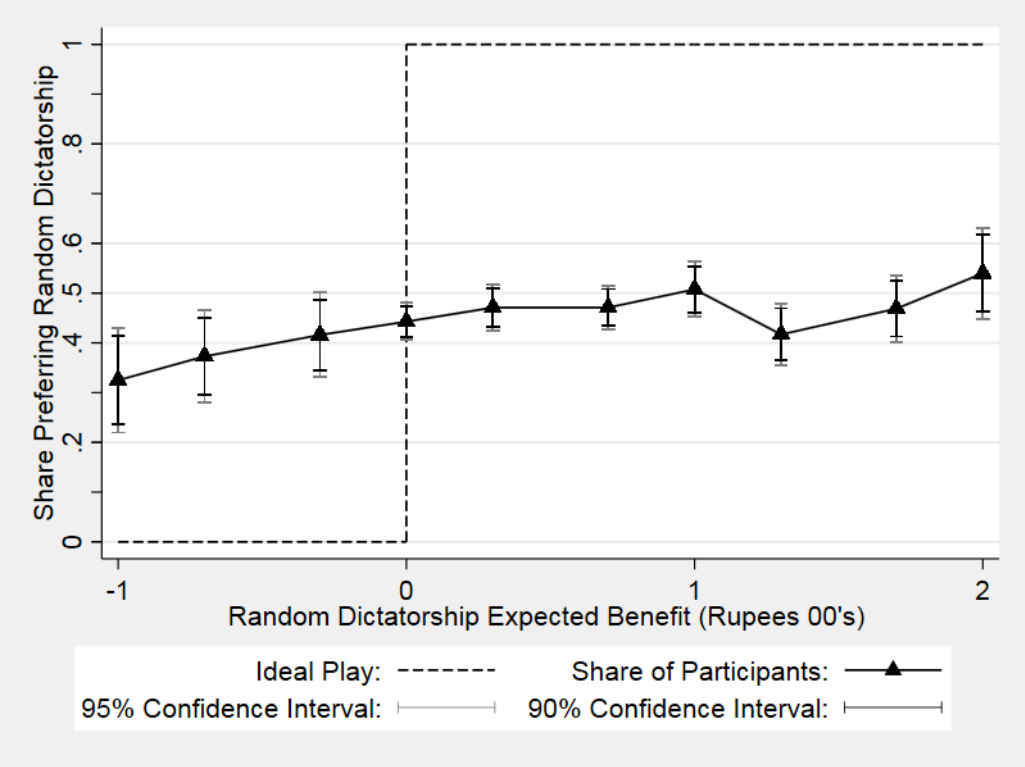


FIGURE 3. LOTTERY PREFERENCE GAME: MECHANISM PREFERENCES AND EXPECTED BENEFITS

Source: This figure tests whether respondents optimally change mechanism preferences according to random dictatorship's expected benefit (expected cash value relative to uniform random allocation). The vertical axis displays the share of respondents that preferred random dictatorship allocation. The horizontal axis is the expected benefit of random dictatorship allocation. If players are perfectly maximizing their own expected value, then they should strictly prefer the random dictatorship lottery when the expected benefit is positive and the uniform random lottery when it is negative.

Next, we shift focus to estimating the marginal relationship between the expected benefits and preferences for random dictatorship allocation. To do this, we employ a logistic regression specification. Using the same dependent variable, an indicator for an individual i in group g and round r's preference for a random dictatorship lottery (Y_{igr}), we estimate:

$$Y_{igr} = \alpha + \beta_1 T_{igr} + C_g + Q_{ir} + M_i + \eta_r + \theta_v + \epsilon_g \tag{1}$$

To improve precision, we add a number of controls to the specification. We control for the randomized game context (C_g), depending on whether the game was played in an anonymous or non-anonymous setting. We also control for the randomized ordering of response options for each individual and round (Q_{ir}). The variables η_r and θ_v are round and village-level fixed effects. We also control for whether the game participant was not a lottery preference survey respondent (M_i). Finally, the variable ϵ_g is the random error term, clustered at the group-level, and α is a regression constant.

Table 4 displays these results. We report our main estimate in Column 1. Using all game rounds and control variables, we find that a 100 Rupee increase in random dictatorship's expected benefit results in a 3 percentage point increase in support. This estimate is significant at the 5% level.

In Column 2, we change our specification to address potential strategic behavior concerns in multiplayer repeated games. We do this by restricting the sample to the first round of games played in a completely anonymous context. Players are able to identify and respond to changes in the expected benefits of choice-based allocation. For a 100 Rupee increase in the expected benefit, players are 6.5 percentage points more likely to prefer allocation by random dictatorship. This result is significant at the 10% level and statistically indistinguishable with our initial point estimate.

Table 4—Lottery Preference Game

Dependent Variable: Preference for Random Dictatorship Allocation		
	(1)	(2)
	All Rounds	Anonymous Context Round 1
Random Dictatorship Expected Benefit	.0302	.0651
	(.0123)	(.0389)
DV Mean (at Expected Benefit = 0)	.44	.36
Additional Controls	Yes	No
Observations	2,801	278

Source: Estimates are average marginal effects, in percentage points, from a player-round level logistic regression with standard errors clustered at the game-level. The dependent variable is a binary indicator of a participant's preference for random dictatorship allocation when compared to a uniform random lottery. The key explanatory variable is the exogenous change in the expected cash benefit of random dictatorship allocation (100 Rupee increments, 1 US Dollar). Column 1 is our main specification, we use all 5 rounds of the lottery preference game and include round-level fixed effects, a control for the randomized question order, and the randomized game context (anonymous or non-anonymous). In order to address potential strategic interactions between players, the specification in Column 2 restricts the analysis to the first round of the anonymous-only sub-sample.

D. Lottery Preference Survey: Real-Stakes Mechanism Preferences

As with the lottery preference game, the experimental nature of the lottery preference survey simplifies our empirical analysis. For an individual (i) in village (v), their reported bilateral lottery preference is Y_{iv}.[25] For simplicity, Y_{iv} is a binary variable indicating a preference for either random serial dictatorship allocation method. We estimate the following logistic regression specification:

$$Y_{iv} = \alpha + \beta_1 T_i + \gamma_i + \theta_v + x_i + \epsilon_i \tag{2}$$

In this equation, α is a constant and T_i is a treatment indicator variable where $T_i = 1$ if respondents receive the information intervention prior to sharing their lottery type preferences. The key coefficient of interest is β_1. This term measures the information intervention's inter-personal effect on reported mechanism preferences. The terms θ_v, γ_i, and x_i are village, randomized lottery explanation ordering, and surveyor fixed effects. The ϵ_i term is an individual-level error term.[26]

We display the experiment's results in Figure 4, and the tabular form of the same findings in Appendix Table 2. As seen in the first row of Figure 4 and Appendix Table 2 Column 1, our results lack precision. We cannot reject the hypothesis that the information intervention had no effect. At the same time, we cannot rule out potentially large effects. Relative to the control mean, a 9 percentage point change is within the 95% confidence interval and represents 16% change in random serial dictatorship support.

E. Ex Ante Beliefs and Choice-Based Allocation

Further field testing after the analysis had begun revealed that the intervention's effect may be more nuanced. In particular, the intervention's information could support multiple interpretations (e.g. the information was equivocal). While this situation was unanticipated, previous equivocal information research suggests a testable hypothesis: attitude polarization.

In general, whether explanations are based in behavior economics (confirmation bias: Rabin and Schrag (1999)) or in traditional theory (fully rational Bayesian updating: Benoît and Dubra (2016)), off-the-shelf economic models predict a divergence of lottery preferences. Using Benoît and Dubra (2016) as an example, the authors demonstrate that equivocal information will cause:

[25] Our decision to explore bilateral versus trilateral preferences was driven by the insights of social choice theory. Two-way rankings are not subject to strategic voting considerations (Satterthwaite, 1975). As a result, we examine bilateral (2-way) versus trilateral (3-way) preference rankings as our outcome of interest.

[26] As per our pre-analysis plan, the question, "It is common for people in the village to discuss how plots should be allocated in the new settlement," determined the appropriate standard error clustering level. The modal response was 1 on a 1-5 Likert-scale, indicating strong disagreement. The mean was 2.58, indicating (slight) disagreement.

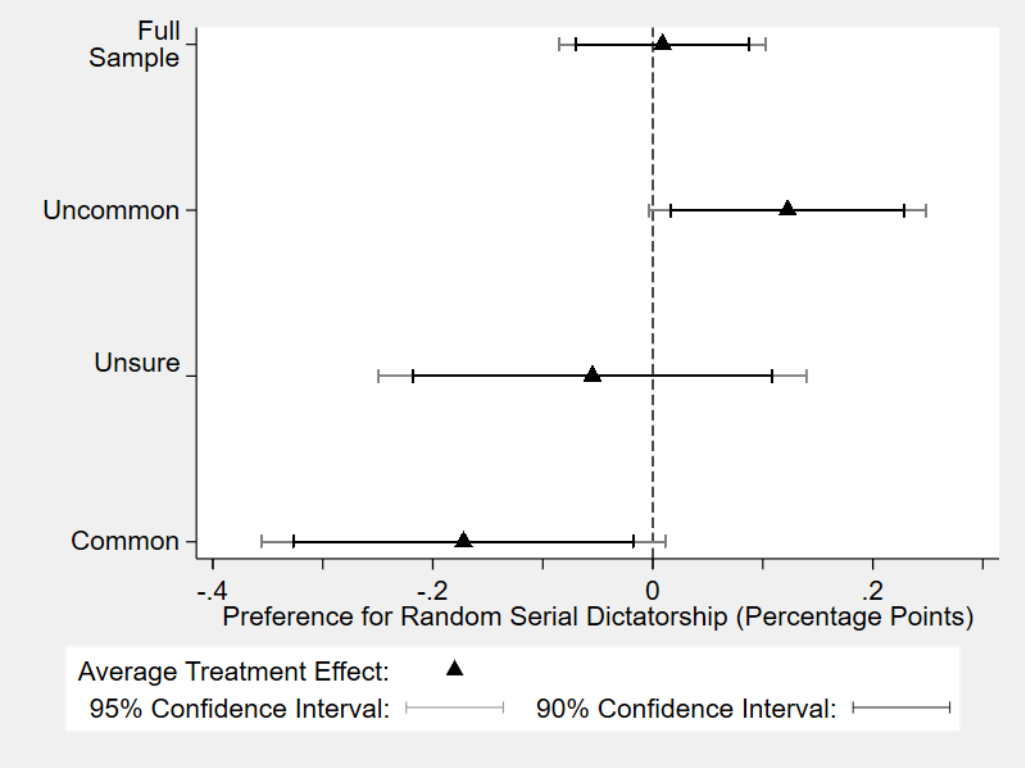


Figure 4. Information Intervention Treatment Effect: Changes in Preferences for Random Serial Dictatorship Allocation

Source: This figure displays the average treatment effect of the lottery preference survey information intervention. The tabular form of these results are in Table 2. The dependent variable is a binary indicator for whether the respondent preferred random serial dictatorship over uniform random allocation. Each point estimate is the result of a household-level logistic regression using robust standard errors and with additional controls for location, question order, surveyor fixed effects. The top row presents results for the full sample. The subsequent three rows divide the sample into those who *ex ante* believed their preference were relatively unique (heterogeneous), unsure, or believed their preferences were similar (homogeneous) relative to the rest of the community. The sub-sample analysis was not part of our pre-analysis plan.

- Groups with stronger opinions will polarize more in response.
- New equivocal information that is unrelated to previous information used to inform prior beliefs will *not* cause community-wide preference polarization.

In order to apply these models to our context, we begin with an exploration of the distribution of *ex ante* beliefs regarding location preferences. As can be seen in the bottom row of Table 2, the average respondent believes their preferences are relatively unique.[27] This is also consistent with what we observe in the distribution of beliefs in the full sample (Figure 5). Respondent's *ex ante* beliefs are skewed toward believing their preferences are less similar than the rest of the community, but their is support across the full spectrum of potential beliefs. Nor is this distribution likely to be noise. If beneficiaries' responses were random, then responses should be uniformly distributed. As a consequence, the corresponding mean should be two. A comparison of means t-test strongly rejects this hypothesis at less than the 1% level.

Based on individual responses to the question in Figure 5, we categorize respondents as believing their location preferences were either heterogeneous (response value > 2), unsure (response value $= 2$), or homogeneous (response value < 2).[28] Next, we sub-divide our primary analysis by these three categories. We present the results of these analyses in rows (columns) 2-4 of Figure 4 (Table 2). In Column 2, we report the intervention's effect on those who believed preferences were more heterogeneous *ex ante*. The result is statistically significant, economically meaningful, and positive. Within this sub-group, the treatment increased random serial dictatorship support by 12.3 percentage points, a 25% change relative to the control mean. In Column 3, we report results for those that were unsure. The point estimate was negative and imprecise. Column 4 reports the result from the respondent sub-sample that believed location preferences were more homogeneous. The intervention's effect was negative, reducing preference for random serial dictatorship by 17 percentage points, and is significant at the 10% level.

F. Summary of Main Results

We have three key experimental results. First, on average, lottery preference game participants' behavior is inconsistent with our theoretical predictions. In theory, respondents should strictly prefer random dictatorships (uniform random lottery) when the expected benefit to choice-based allocation is positive (negative). Over the entire range of potential values, between 33% and 54% of respondents prefer random dictatorship allocation. At every point, these estimates are significantly different from the theoretical prediction.

[27] A value of 2 would be the indifference point on the corresponding Likert scale for this question.

[28] The specific text, "The location preferences of all households in my village are very similar to mine." Respondents are asked to provide a response on a 5-point Likert scale. Non-response rates for this question were less than 2%.

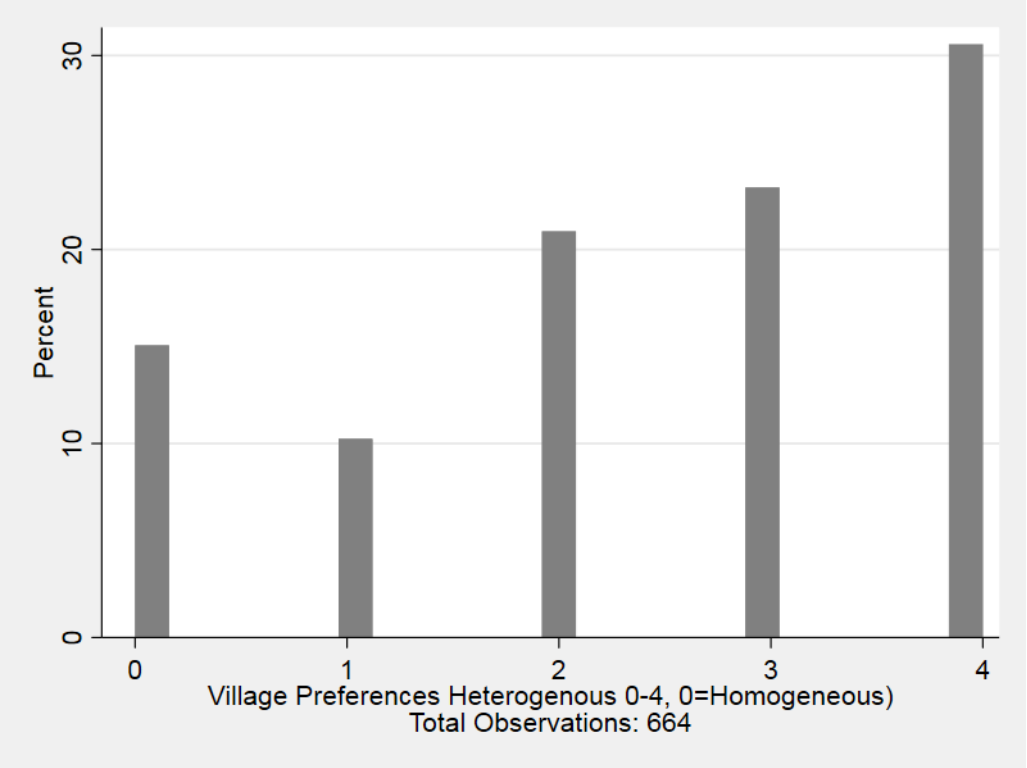


FIGURE 5. EX ANTE PERCEIVED PREFERENCE HETEROGENEITY DISTRIBUTION

Source: This figure displays a binned scatter plot of respondent's responses to the following question, "The location preferences of all households in my village are very similar to mine. Do you strongly agree, slightly agree, neither agree or disagree, slightly disagree, or strongly disagree (a 5-point Likert scale)?" The question focuses on perceived preference conformity with the rest of the community, which is the same as preference heterogeneity when an individual calculates their own expected value of random serial dictatorship allocation. The mean of this distribution is 2.56, which is significantly different from 2 (the mean under a random uniform distribution that could be the result of random guessing) at less than the 1% level.

Second, for the majority of lottery preference game players (82%), mechanism preferences are responsive to marginal changes in incentives. On average, these players increase support for random dictatorship allocation when it benefits them. For a 1 US dollar increase in the expected benefit, participants increase random dictatorship support by 3 percentage points. This represents a 7% increase in support from a situation where the expected values of a uniform random lottery and a random dictatorship are the same.

Finally, we find no experimental evidence that our main information intervention influenced support for choice-based allocation. At the same time, we cannot rule out economically meaningful effects of up to 9 percentage points. An effect of that size could prove pivotal in a majority-rule community plebiscite.

Subsequent sub-sample analysis, does indicate that this finding masks an underlying heterogeneous response. We observe community-level polarization of lottery preferences following our information intervention. This effect is also concentrated among those with the most extreme *ex ante* beliefs. These estimated effects are economically meaningful. Relative to the control mean, our information intervention is associated with a 25% change in support for random serial dictatorships. This finding validates that perceived preference heterogeneity is an important component of how individuals form mechanism preferences in high-stakes situations, but also highlights the potential difficulty of predictably influencing preferences in practice.

V. Alternative Explanations and Analyses

In this section, we focus on identifying potential mechanisms that may influence lottery preferences. To this end, we begin by focusing on two alternative theories where we have causal evidence. First, we explore whether altruism can explain our lottery preference game findings. Second, we determine if social pressure could also influence our lottery preference game results.

Following this, we focus on our descriptive findings. In particular, we examine whether risk aversion may be able to explain lottery preference game behavior. Finally, we shift focus to the lottery preference survey. We examine whether initial plot allocations are likely to be consequential from a policy perspective or mechanism type is likely to influence allocation outcomes.

A. Lottery Preference Game: Lottery Type Preferences are Influenced By Altruism

Within the lottery preference game, we generate exogenous variation in the random dictatorship's expected benefit by manipulating the value and arrangement of prizes among players. In 47% of rounds, a player's highest value prize is not the prize that maximizes the group surplus. This resulted in 1,386 situations where the player faced a choice. They could either maximize their own or the entire

group's prize value. If altruism is a significant factor in individual mechanism preferences, the majority of players will prefer to maximize the group surplus.

We find that this is overwhelmingly not the case. Restricting our attention to cases where players had the opportunity sacrifice their own gain, we count the number of times they opted to behave altruistically. We present these results in Table 5. Across both the random dictatorship and the uniform random lottery, 84% of individuals chose to maximize their own payouts.[29]

Table 5—Lottery Preference Game: Random Dictatorship Lottery Individual Prize Choices

		Selected Highest Group Payout: No	Selected Highest Group Payout: Yes
Selected Highest Personal Value	No	227	223
	Yes	886	

Source: Within the lottery preference game, there were 1,336 situations where a player could sacrifice a higher cash prize for themselves to increase payouts for the other players. In each cell, we categorize those situations by whether the player chose their own highest cash value prize, the group payout maximizing prize, or neither. In 16% of cases, players made the altruistic choice. On average this entailed sacrificing 1 Rupee for a 1.87 Rupee gain for the other players.

We supplement this observation with a specification focused on estimating the marginal effect of being presented with an opportunity to be altruistic on mechanism preferences. Using the same logistic regression approach as our main specification, we present the results of this regression in Table 6. The effect of being presented with an opportunity to be selfless is negative and imprecise.

In summary, altruism is not a central factor behind prize-level preferences or mechanism preferences. Participants typically behave selfishly when choosing prizes. Further, when we consider the effect of being presented with an opportunity to be altruistic on mechanism preferences, we find no causal effect.

B. Lottery Preference Game: Lottery Type Preferences Influenced By Social Pressure

Next, we consider the possibility that lottery mechanism preferences may be influenced by some form of social pressure. A generally recognized strategy for manipulating social pressure is to randomize whether a player is acting anonymously. Within the lottery preference game, We accomplish this by randomly changing the game environment so that games are conducted in either an entirely

[29]On average, this trade-off entailed giving up 192 Rupees to increase the payouts of the other players by 286 Rupees (1.48:1). In those situations where a player decided to behave altruistically, the altruistic player gave up 163 Rupees for a 305 Rupee gain to the other players (1.87:1).

Table 6—Lottery Preference Game Altruism and Mechanism Preferences

Dependent Variable: Preference for Random Dictatorship Allocation	(1) All Rounds	(2) Anonymous Context Round 1
Selfless Opportunity (1=Yes)	-.029	-.0289
	(.0188)	(.0603)
Additional Controls	Yes	No
Observations	2,781	274

Notes: This is a logistic regression specification where we test the marginal effect of being presented with an opportunity to be altruistic on mechanism preferences. The dependent variable is preference for random dictatorship allocation and standard errors are clustered at the group-level. The key explanatory variable is an indicator for whether a player is randomly presented with an altruistic opportunity (i.e. sacrifice some personal expected cash prize gain to increase expected payoffs to other players). Column 1 is our main specification, and uses all 5 game rounds with additional controls for round, choice order, location, whether a respondent participates in both instruments. Column 2 replicates the robustness check from our main specification (Table 4).

anonymous or non-anonymous setting.[30]

The effect of social pressure on mechanism preferences is ambiguous. As a result, we replicate our main lottery preference game empirical strategy and focus on potential differences in mechanism preferences between the anonymous and non-anonymous game contexts. We present these results in Figure 6 and include the marginal effects logistic regression in Appendix Table 5. In both cases, we find no evidence of the effect of social pressure on mechanism preferences.

C. Lottery Preference Game: Lottery Type Preferences Influenced By Risk Aversion

The same lottery preference game prize-level variation we used to test for altruism also allows us to test another potential theory: risk aversion.[31] If individuals are risk averse, then they are willing to forgo a risky expected gain for a certain cash payment. The greater the degree of risk aversion, the lower this cash

[30] A picture of how this is actually done in practice is displayed in Appendix Figure 1. We also include a regression specification in Appendix Table 4 that tests the effectiveness of our anonymity intervention on whether a player reported recognizing another participant. The results are consistent with what we would expect from an attempt to hide the identity of other players and within plausible ranges.

[31] While we cannot test the theory directly, the structure of the lottery preference game also makes ambiguity aversion an unlikely explanation. In order for ambiguity aversion to explain mechanism preferences, we would need to believe that the probability of a given person being selected at random was somehow different than the probability of a given prize being selected at random. By construction, the game forces these two probabilities to be the same. Further, we implement the random draw of both people and prizes in exactly the same highly transparent way within the game protocol.

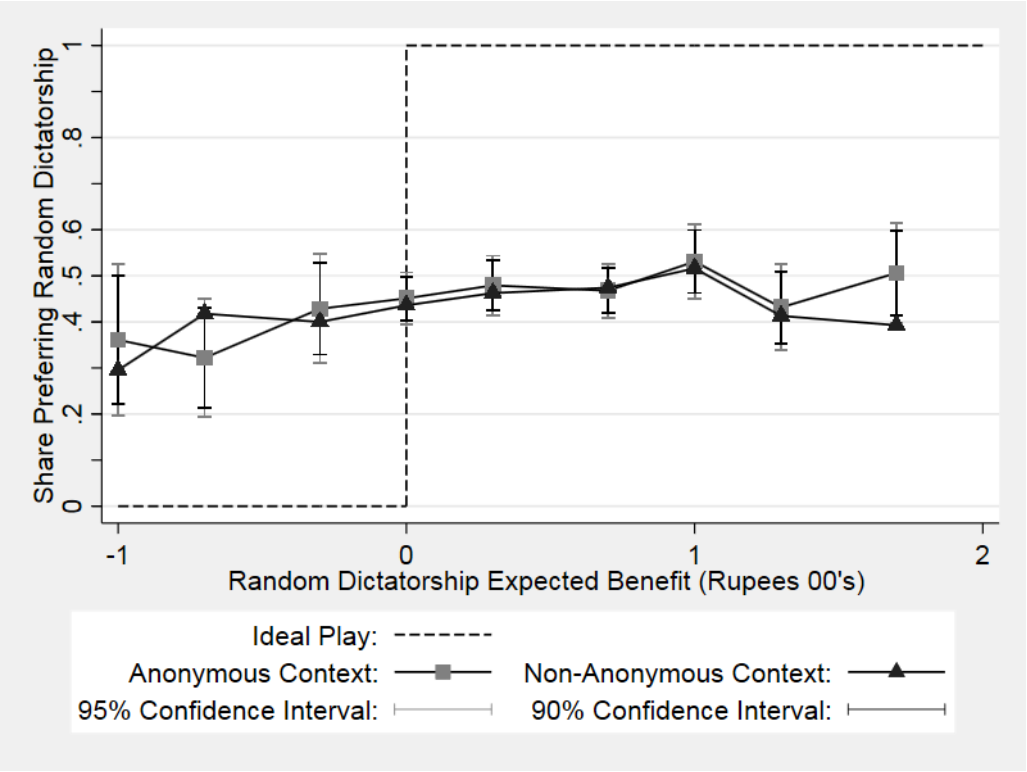


FIGURE 6. LOTTERY PREFERENCE GAME: ANONYMITY AND LOTTERY PREFERENCES

Source: This figure tests whether social pressure influences individual mechanism preferences. We accomplish this by randomizing whether the lottery preference game is conducted in an anonymous versus non-anonymous context. In order to focus on those situations were there may be some form of social conflict, we have excluded all situations where all players agree on the top choice prize (i.e. when social conflict is unlikely to exist). The standard errors are generated via a logistic regression specification with standard errors clustered at the group level.

certainty equivalent is relative to the expected value of the risky opportunity. In theory, the effect of risk aversion on mechanism preferences is ambiguous. A choice-driven lottery's certainty equivalent is a function of participant preferences.

As a consequence, we use lottery preference game prize data to calculate and compare the certainty equivalent for both mechanisms across varying degrees of risk aversion. We present these results in Figure 7. We find that the certainty equivalent for random dictatorship allocation is universally higher. Further, the gap between the certainty equivalent of each mechanism actually *increases* as participants become more risk averse. If participants are risk averse, it would actually deepen the preferences puzzle we observe. Risk averse individuals should strictly prefer choice-based allocation within the lottery preference game.

D. Lottery Preference Survey: Lottery Type Preferences are Inconsequential

A cautious Coasian may view mechanism preferences as inconsequential. Post-lottery land trade allows beneficiaries to achieve a Pareto optimal outcome (Coase, 1960). This perspective is incorrect for three reasons.

First, the Coasian view depends on the possibility of efficient trade. We join a growing list of studies highlighting that this assumption is ambitious (Bleakley and Ferrie, 2014). In our context, there are both statutory and informal barriers to voluntary exchange. According to government regulations, beneficiaries are not allowed to sell their land for at least 10 years. On the informal side, willingness to entertain a government-sanctioned land exchange within the relocation process is low, between 24-33% (Table 7). When asked why they were uncomfortable, involuntary trade is an common concern. Not only did 41% of respondents report fears of having difficulty refusing another beneficiary's request, but 13% explicitly highlighted the possibility of coerced transactions.

Second, beneficiaries' willingness to relocate as part of the program is likely connected to their satisfaction with the land they receive. In the second panel of Table 7 we explore this question. In general, beneficiaries report a near unanimous willingness to relocate if they receive their favorite plot (99%).[32] Yet, when beneficiaries are asked if they would still be willing to move if they had received their least favorite plot, only 53% responded affirmatively.

A second set of questions gauged respondents' willingness to pay to improve their land allocation. A large minority (43%) were willing to pay to improve their land allocation. Over half of these households (54%) were willing to put a more specific cash value on their responses. The average household was willing to pay nearly 9 months of their annual household income in order to improve their land allocation from their least favorite to their favorite location.[33]

[32]The response rate for this question was 73%. In terms of the potential nature of selection, a broader sample was asked the same question without the specificity of receiving their favorite plot. The response rate was 87% and 98% of respondents stated that they were willing to relocate.

[33]A subsequent survey is pending to determine the nature of selection on this question.

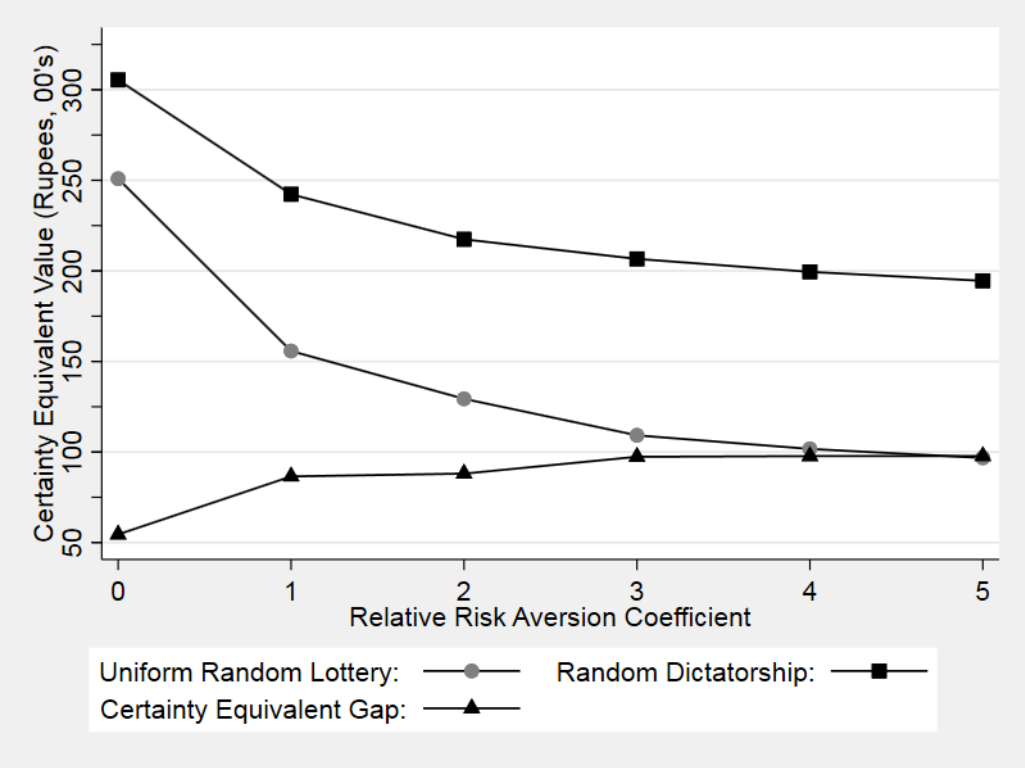


FIGURE 7. LOTTERY PREFERENCE GAME: RANDOM DICTATORSHIP VERSUS UNIFORM RANDOM LOTTERY CERTAINTY EQUIVALENTS

Source: This figure tests whether risk aversion is a plausible explanation for the mechanism preferences we observe in the lottery preference game. On the vertical axis, we display the value of the certainty equivalent (the amount of money that one would have to give a risk averse individual to be indifferent between it and the lottery mechanism). The horizontal axis are different values of the relative risk aversion coefficient in a constant relative risk aversion utility function. Not only do we observe that the certainty equivalent for a random dictatorship is universally higher, the gap between the two mechanisms grows as players become more risk averse. As a result, risk aversion is unable to explain the observed behavior.

Table 7—Initial Land Allocations Are Important

	N	Mean	SD
Land Trade Beliefs			
Willing to Sell/Exchange Plot... to Other Villagers	312	0.33	0.5
Willing to Sell Plot... to Non-Villagers	309	0.24	0.4
Difficult to Refuse Peer's Request for Plot Sale/Exchange	322	0.41	0.5
Respondent Fears Coerced Plot Sale/Exchange	304	0.13	0.3
Initial Land Allocation Implications			
Willing to Relocate if... Received Favorite Plot†	93	0.99	0.1
Willing to Relocate if... Received Least Favorite Plot†	93	0.53	0.5
Willing to Pay to Improve Allocation (From Last to First Preference)	300	0.43	0.5
Willing to Pay Amount (Household Income Months)	70	8.59	13.3
Potential Lottery Type Impact			
Random Serial Dictatorship Likelihood Plot Positively Ranked†	125	0.75	0.2
Uniform Random Allocation Likelihood Plot Positively Ranked†	125	0.17	0.2

Notes: This table's data is drawn from the Lottery Preference Survey control sample (N=327) or the Location Preference Survey (N=128). Location Preference Survey variables are denoted with a †. All sample size deviations are due to non-response. The Willing to Pay Amount (Household Income Months) question was only asked if respondent answered yes to the Willing to Pay: Improve from Last to First Preference prompt. This implies a maximum potential sample size of 129 for this variable. This is a 54% response rate. The response rate for the Willing to Relocate if Received Favorite Plot questions is 76%. Notably, a more general version of the willingness to relocate question was asked of the broader sample (287 out of 327 responded) and 98% responded affirmatively. With the exception of Willing to Pay Amount (Household Income Months) all means on this table are shares. For example, .33 can be read as 33%. For the simulation, the share positively ranked indicates the average share of respondents that received a plot they have expressed a specific positive interest in (e.g. I like that plot). In cases where non-response rates are particularly high, a supplemental randomized phone survey of non-respondents is in-progress to gauge the nature of selection.

Finally, adopting a random serial dictatorship dramatically increases the possibility participants will receive plots they prefer. Using a supplemental location preference survey, we simulate the results of 1000 different uniform random and random serial dictatorship lotteries.[34] As seen in the final panel of Table 7, the likelihood each person receives a plot they've expressed an active interest in climbs from 17% under uniform random allocation to 75% with random serial dictatorship. The explanation for this 440% improvement is straightforward: preference heterogeneity. Households report dramatically different preferences regarding preferred locations within the new community.

To that end, we take the additional step of examining potential drivers of preference heterogeneity. We address this question in two parts. First, we rule out that respondent characteristics are correlated with effort in completing the location preference solicitation exercise. To accomplish this, we explored how understanding of the location preference exercise, respondent age, household size, household income, and respondent gender correlated with the number of reported indifference regions and the size of an individual's indifference regions (share of total plots covered). Using simple bivariate regressions, we find that none of the aforementioned factors demonstrate a significant relationship with either dependent variable. We present these findings in Table 8.

Second, we explore where individuals prefer to live within the new community. We focus on a descriptive analyses along two dimensions. First, using the location preferences from one village as an example, the following Figure 8 displays how average respondent age, household size, household income, and gender balance for the top ranked plots varies in the proposed relocation site. In each of the four figures, lighter colors indicate lower values. In a world where these factors are unrelated to location preferences, the colors across all plots should be uniform.

We also replicate the map used as the basis for the information intervention using data from each community. We present these results, as well as the original image, in Figure 9. Each community has a broad range of location preferences.

In summary, trade is unlikely to affect near term plot allocations. Households have specific preferences over land in the new community. Plot characteristics are plausibly related to program effectiveness. Random serial dictatorships improve the likelihood beneficiaries receive plots in which they've expressed an interest, and preference heterogeneity appears to be a general feature of relocating communities. Considering these facts, it is clear that the choice of allocation mechanism is important for household satisfaction and program-level success.

VI. Conclusion

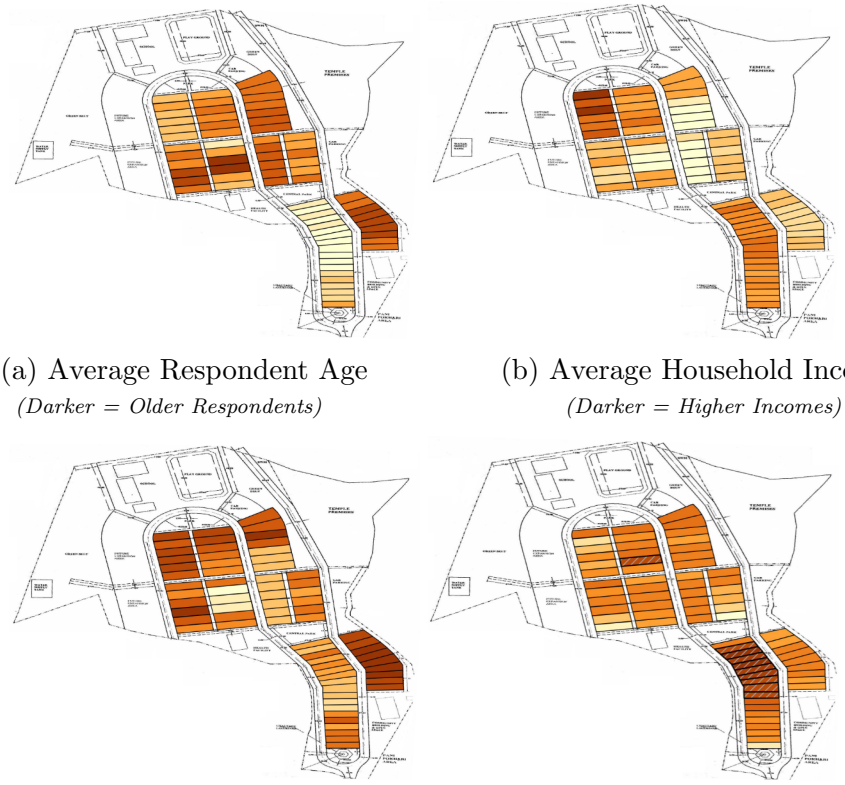
Using data from a Nepalese land allocation program, we observe that random serial dictatorships are 440% more likely to assign participants their desired plot of land. Despite this, nearly half of participants prefer uniform random alloca-

[34] A more comprehensive description of the location preference survey is available upon request.

Table 8—Drivers of Preference Heterogeneity and/or Effort

	Dependent Variables: Share of Plots Ranked			# Indifference Regions		
	(1) Coefficient	(2) Mean	(3) N	(4) Coefficient	(5) Mean	(6) N
Map Comprehension Quiz	-0.120 (0.088)	0.92 [0.2]	254	-1.143 (1.068)	0.92 [0.2]	254
Respondent Age	-0.000 (0.001)	41.33 [15.5]	254	0.012 (0.011)	41.33 [15.5]	254
Household Size	-0.001 (0.009)	4.68 [2.0]	254	-0.052 (0.088)	4.68 [2.0]	254
Household Income	0.001 (0.002)	15.56 [15.7]	236	-0.010 (0.016)	15.56 [15.7]	236
Respondent Female	-0.010 (0.031)	0.47 [0.5]	254	-0.281 (0.329)	0.47 [0.5]	254

Notes: This table describes the relationship between respondent demographic characteristics and performance on the location preference exercise. Each row in Column (1) reports the coefficient from an OLS regression where the dependent variable is either the share of plots ranked (mean: 17%) or the number of indifference regions identified during the location preference collection exercise (mean: 3.86). The independent variable is the identified row variable. Robust standard errors are below each estimate in ( ). Column (2) reports the corresponding mean and the standard deviations are in [ ]. Column (3) reports the estimation sample size. For the Map Comprehension Quiz and Respondent Female, means are affirmative shares. Columns (4)-(6) repeat the same analysis for the second dependent variable, the number of reported indifference regions (e.g. a respondent identifies only 3 regions of the map with desirable plots).



(a) Average Respondent Age
(Darker = Older Respondents)

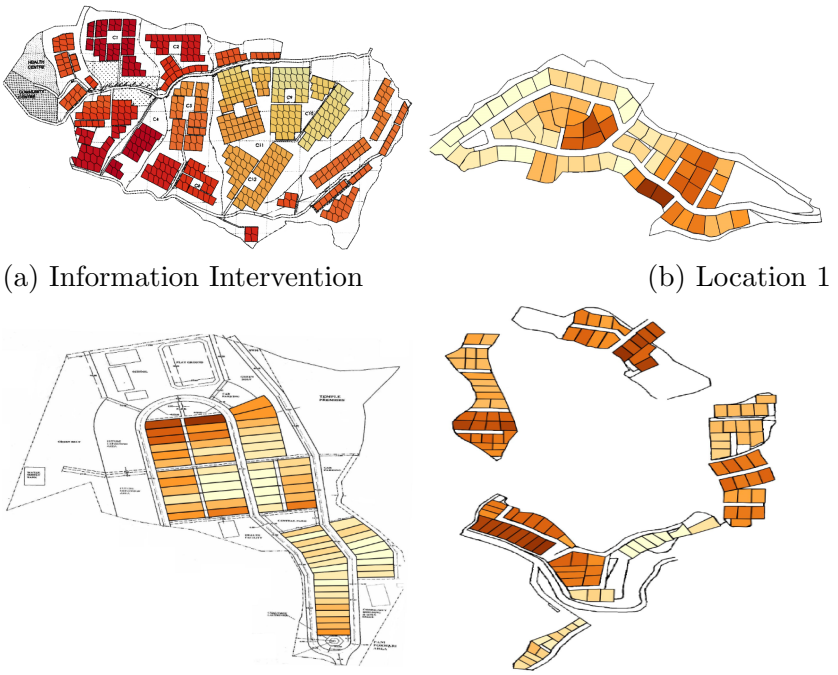
(b) Average Household Income
(Darker = Higher Incomes)

(c) Average Household Size
(Darker = Larger Households)

(d) Gender Balance
(Darker = More Female)

FIGURE 8. FAVORITE PLOT LOCATION BY DEMOGRAPHIC CHARACTERISTIC

Source: This figure displays demographic characteristics that may be related to location preferences. Using a single village as an example, we restrict ourselves to the favorite locations identified by each household. In Panel (d), we also indicate which plots are predominately preferred by women with additional gray striping over the affected plots.



(a) Information Intervention (b) Location 1

(c) Location 2 (d) Location 3

FIGURE 9. FAVORITE PLOT LOCATIONS BY COMMUNITY

Source: This figure displays the degree of location preference heterogeneity in four communities. Each figure describes how popular a given plot (each square) is within the village. Lighter colors mean more popular locations. As is visible in all four locations, there is a broad range of colors, indicating that location preference heterogeneity is a common feature in each community.

tion. This puzzle is compounded by a complementary lab-in-the-field study. We find that a majority of respondents prefer uniform random allocation, even when a choice-based approach has a higher expected value. Using a combination of empirical strategies, we examine factors that may explain this puzzle and enable policy makers to influence high-stakes mechanism preferences.

Using a real-stakes field laboratory experiment, we focus on 4 potential explanations. We find that incomprehension, altruism, social pressure, and risk aversion are unable to explain in-game mechanism preferences. We also find that mechanism preferences are responsive to changes in incentives for 82% of lottery preference game players. On average, players increase random dictatorship support by 3 percentage points for a 1 US dollar increase in expected cash benefits.

Returning to the high-stakes policy context, we focus on influencing mechanism preferences. In theory, preference heterogeneity is essential to decision-making models involving random serial dictatorships. Using an information intervention, we fail to move average preferences, but do induce a heterogeneous response. For individuals with more extreme prior beliefs, our intervention caused statistically significant and economically meaningful changes in mechanism preferences.

While our results confirm perceived preference heterogeneity's role in high-stakes mechanism preferences, further research is needed to transform our intervention into a reliable engagement strategy. On a practical level, preference heterogeneity is an attractive policy lever. It can be collected through standard community engagement strategies and its implications disseminated before key policy decisions. With appropriate development, our approach could lead to more inclusive, informed, and ultimately effective policies.

REFERENCES

Abdulkadiroğlu, Atila, and Tayfun Sönmez. 1998. "Random Serial Dictatorship and the Core from Random Endowments in House Allocation Problems." *Econometrica*, 66(3): 689–701.

Akbarpour, Mohammad, and Shengwu Li. 2018. "Credible Mechanisms." Unpublished.

Aziz, Haris, Felix Brandt, and Markus Brill. 2013. "The computational complexity of random serial dictatorship." *Economics Letters*, 121(3): 341–345.

Barnhardt, Sharon, Erica Field, and Rohini Pande. 2017. "Moving to opportunity or isolation? network effects of a randomized housing lottery in urban india." *American Economic Journal: Applied Economics*, 9(1): 1–32.

Bazzi, Samuel, Arya Gaduh, Alexander Rothenberg, and Maisy Wong. 2017. "Unity in Diversity? Ethnicity, Migration, and Nation Building in Indonesia." Unpublished.

Benoît, Jean-Pierre, and Juan Dubra. 2016. "A Theory of Rational Attitude Polarization." Unpublished.

Bleakley, Hoyt, and Joseph Ferrie. 2014. "Land openings on the Georgia frontier and the coase theorem in the short-and long-run." Unpublished.

Coase, Ronald H. 1960. "The Problem of Social Cost." *Journal of Law and Econmics*, 3: 87–137.

Dal Bó, Pedro, Andrew Foster, and Louis Putterman. 2010. "Institutions and Behavior: Experimental Evidence on the Effects of Democracy." *American Economic Review*, 100(5): 2205–29.

Davis, Harry L, Stephen J Hoch, and E. K. Easton Ragsdale. 1986. "An anchoring and adjustment model of spousal predictions." *Journal of Consumer Research*, 13(1): 25–37.

DellaVigna, Stefano. 2009. "Psychology and economics: Evidence from the field." *Journal of Economic Literature*, 47(2): 315–372.

Dowlen, Oliver. 2008. *The political potential of sortition: A study of the random selection of citizens for public office.* Imprint Academic.

Epley, Nicholas, Boaz Keysar, Leaf Van Boven, and Thomas Gilovich. 2004. "Perspective taking as egocentric anchoring and adjustment." *Journal of Personality and Social Psychology*, 87(3): 327–339.

Government of India. 2013. "Affordable Housing in Partnership Scheme Guidelines." GoI, Delhi.

Government of India. 2015. "Housing for all by 2022." GoI, Delhi.

Government of Nepal. 2016. "Annual Household Survey Major Findings 2015-2016." GoN, Kathmandu.

Internal Displacement Monitoring Centre. 2018. "Global Report on Internal Displacement." IDMC, Geneva.

Li, Shengwu. 2017. "Obviously Strategy-Proof Mechanisms." *American Economic Review*, 107(11): 3257–3287.

Olken, Ben, and Rohini Pande. 2013. "J-PAL Governance Initiative - Governance Review Paper." Jameel Poverty Action Lab.

Pathak, Parag A, and Tayfun Sönmez. 2008. "Leveling the Playing Field: Sincere and Sophisticated Players in the Boston Mechanism." *American Economic Review*, 98(4): 1636–1652.

Rabin, Matthew, and Joel L Schrag. 1999. "First Impressions Matter: A Model of Confirmation Bias." *The Quarterly Journal of Economics*, 114(1): 37–82.

Rigol, Natalia, Reshmaan Hussam, and Benjamin Roth. 2018. "Targeting High Ability Entrepreneurs Using Community Information: Mechanism Design In The Field." Unpublished.

Roth, Benjamin N. 2018. "Market design under weak institutions." *More Equal by Design: Economic Design Responses to Inequality*, 1–5. Oxford University Press.

Saban, Daniela, and Jay Sethuraman. 2015. "The complexity of computing the random priority allocation matrix." *Mathematics of Operations Research*, 40(4): 1005–1014.

Satterthwaite, Mark. 1975. "Strategy-proofness and Arrow's conditions: Existence and correspondence theorems for voting procedures and social welfare functions." *Journal of Economic Theory*, 10: 187–217.

Stepner, Michael. 2014. "Binned Scatterplots: introducing -binscatter- and exploring its applications." Stata Users Group 2014 Stata Conference.

United Nations. 2014. "Forced Evictions Fact Sheet." UN, New York.

United Nations. 2015. "Global Assessment Report on Disaster Risk Reduction." UN, New York.

Online Appendix

A. *Supplemental Figures and Tables*

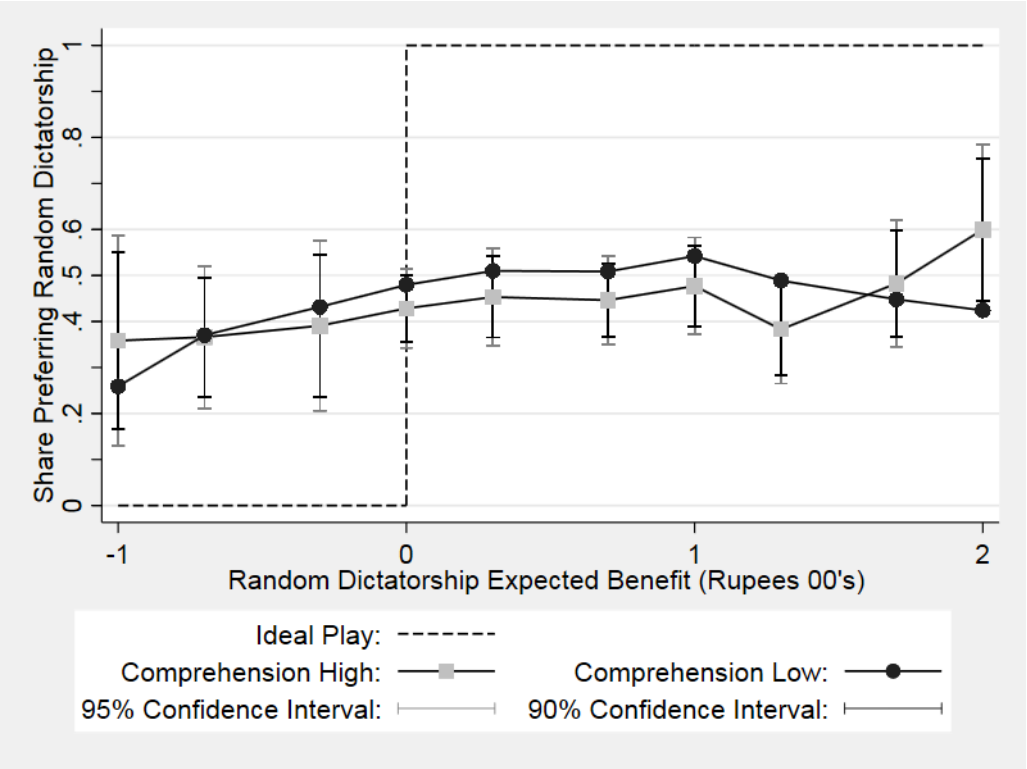
Appendix Figure 1. Example Anonymous and Non-Anonymous LPG Contexts

Notes: This figure shows the randomized arrangement of the lottery preference game play area. In both cases, initial training, entrance, and exit of the gaming area is conducted in a way that preserves participant confidentiality.

Appendix Table 1—Relocation Site Knowledge Summary Table

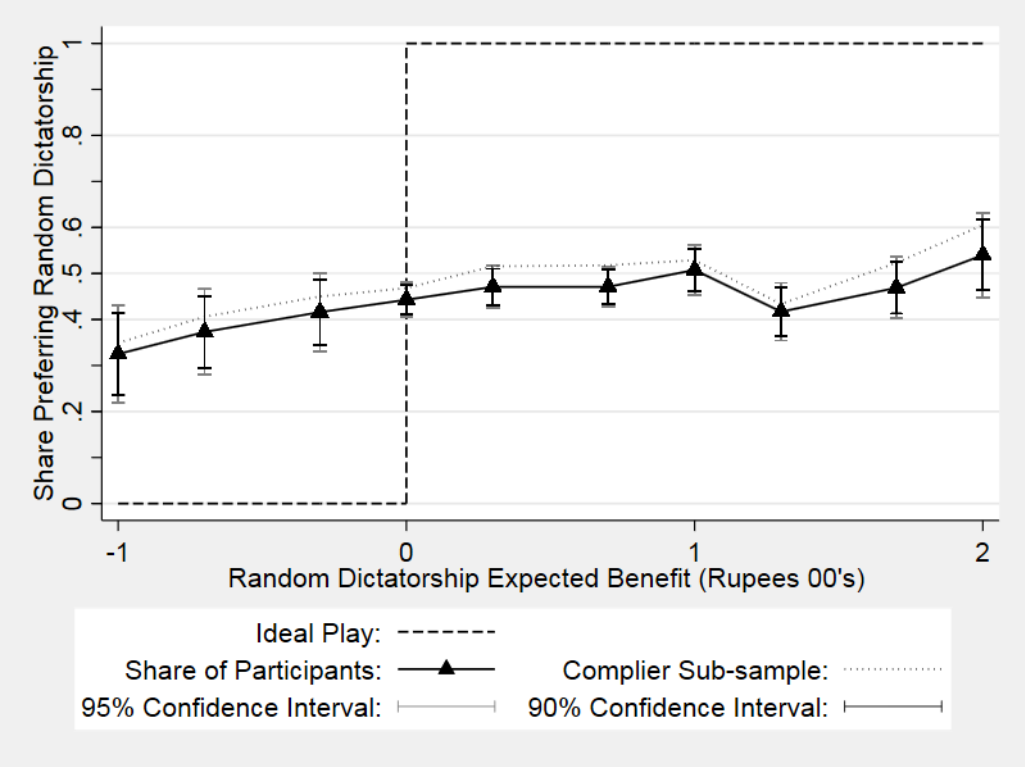
	(1) Mean	(2) SD	(3) N
Map Comprehension Quiz	0.91	0.2	128
Visited Relocation Site Before	1.00	0.0	128
Site Geography & Layout Familiar	0.99	0.1	128

Notes: This table describes respondents' understanding of the relocation site and location preference collection exercise. The table's data is drawn from the Location Preference Survey control sample (N=128). All reported variables are shares. For example, the variable Map Comprehension Quiz reflects the share of landmarks correctly identified on a map prior to reporting location preferences.



Appendix Figure 2. Lottery Preference Game: Analysis of Respondent Comprehension and Mechanism Preferences

Source: This figure shows how random dictatorship preferences differ according to pre-game comprehension. The vertical axis describes the share of respondents that preferred random dictatorship allocation. The horizontal axis is the expected benefit of random dictatorship allocation. At no point can we reject that the high and low-comprehension players have the same mechanism preferences.



Appendix Figure 3. Lottery Preference Game: Mechanism Preferences and Expected Benefits, Comparison with Complier Sub-sample

Source: This figure replicates the analysis in Figure 3, with an additional line describing the lottery preferences of the 'complier' sub-sample. This group removes all players who preferred only one mechanism throughout the entire game, despite varying incentives. These non-compliers are 18% of the total sample. The vertical axis displays the share of respondents that preferred random dictatorship allocation. The horizontal axis is the expected benefit of random dictatorship allocation. If players are perfectly maximizing their own expected value, then they should strictly prefer the random dictatorship lottery when the expected benefit is positive and the uniform random lottery when it is negative.

Appendix Table 2—Preference Heterogeneity Information Experiment

Dependent Variable: Preference for Random Serial Dictatorship				
	(1)	(2)	(3)	(4)
Information Treatment (1=Yes)	.00881	.123	-.0549	-.172
	(.0479)	(.0643)	(.0991)	(.0937)
Additional Controls	Yes	Yes	Yes	Yes
Control DV Mean	.54	.48	.52	.67
Control DV SD	.50	.50	.50	.47
Observations	411	220	92	99

Notes: Estimates are average marginal effects, in percentage points, from a household-level logistic regression with robust standard errors. The dependent variable is an indicator for whether the respondent preferred random serial dictatorship versus a uniform random lottery alternative. The treatment variable is an indicator for whether the respondent received the information intervention just prior to reporting their lottery preferences. The first column reports the treatment effect for the sub-sample who *ex ante* believed their location preferences were more homogeneous relative to the rest of the community. Column 2 focuses on the sub-sample who were unsure and Column 3 reports the treatment effect for the sub-sample that believed their location preferences were more heterogeneous. Controls include location, question order, and surveyor fixed-effects.

Appendix Table 3—Lottery Preference Survey: Comprehension and Mechanism Preferences

Dependent Variable: Preference for Random Serial Dictatorship	(1)
Comprehension Test (0-5, 0=Fail)	.0291
	(.02)
Additional Controls	Yes
Observations	409

Notes: This table describes the correlation between preference for random serial dictatorship and performance on a six-question lottery comprehension quiz. For comparability, this specification mimics the logistic regression approach we employ for our main specification (Table 2).

Appendix Table 4—Anonymous Context's Effect on Recognition

Dependent Variable: Other Game Players Unknown	(1)	(2)
Anonymous Treatment	0.421	0.421
	(0.021)	(0.018)
Clustering Level	Game	Player
Clusters	192	576
DV Mean	0.540	

Notes: This table describes the average treatment effect of the anonymous game context on whether the participant reported either not recognizing or not being able to observe any of the other players in the lottery preference game (field implementation difficulties make it hard to distinguish between these two statements). Estimates are average marginal effects, in percentage points, from a player-round level logistic regression with standard errors clustered at the game or player-level. The actual share of participants in an anonymous game is 48%.

Appendix Table 5—Lottery Preference Game

Dependent Variable: Preference for Random Dictatorship Allocation	(1) Round 1	(2) All Rounds
Anonymous Treatment	.0313	.00503
	(.0457)	(.024)
Additional Controls	No	Yes
Observations	565	2,801

Notes: This table describes the average treatment effect of anonymity on individual preferences for random dictatorship allocation. Estimates are average marginal effects, in percentage points, from a player-round level logistic regression with standard errors clustered at the game-level. Column 1 restricts the analysis to the first round sub-sample. Column 2 uses all 5 game rounds and includes the same control strategy as our main specification (Table 4).

Appendix Table 6—Lottery Preference Game: Evidence of Learning Across Rounds and Mechanism Preferences

	Round Number					
	(1)	(2)	(3)	(4)	(5)	Total
Expected Value	0.50	0.54	0.54	0.51	0.53	0.52
Maximizing Choice	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.01)
Observations	349	358	361	391	375	1834

Notes: For this table, the sample has been restricted to only those situations where the expected values of the uniform random lottery and the random dictatorship mechanisms are unequal. Each column displays the share of players that preferred the expected value maximizing mechanism in a given round of the lottery preference game. The final column displays the share of respondents that made the expected value maximizing choice across all rounds. The standard errors and significance symbols are from a difference of means t-test are in parentheses below each estimate when compared to .5 (the value implied by random guessing).

Appendix Table 7—Lottery Preference Game Altruism and Mechanism Preferences

Dependent Variable: Preference for Expected Value Maximizing Lottery Mechanism		
	(1)	(2)
	All Rounds	Anonymous Context Round 1
Enumerator Assessed	-.0155	-.0299
Player Comprehension (0-4)	(.011)	(.03)
Additional Controls	Yes	No
Observations	2,190	234

Notes: This is a logistic regression specification where we test the marginal effect of game comprehension, as assessed by our field team, on whether players are more/less likely to select the expected value maximizing lottery mechanism during the lottery preference game. The dependent variable is ranked on a 5-point Likert scale, where 4 is the highest level of comprehension. For this table, the sample has been restricted to only those situations where the expected values of the uniform random lottery and the random dictatorship mechanisms are unequal. Standard errors are clustered at the group-level. Column 1 is our main specification, and uses all 5 game rounds with additional controls for round, choice order, location, whether a respondent participates in both instruments. Column 2 replicates the robustness check from our main specification (Table 4).

B. Supplemental Conceptual Framework Construction

Set Up. — We begin with a two-agent community (Agent A and B) facing a house allocation problem. There are two empty houses (House 1 and 2). The task is to assign ownership of one house to each community member. Before implementing a solution, we ask each agent the following question: given a uniform random lottery (RND) or a random serial dictatorship (RSD), which lottery type do you prefer? For simplicity, we assume each agent has a strict ordinal preferences over all homes and is risk neutral.[35] In order to determine which lottery they prefer, each agent selects the highest expected value lottery.

To ease exposition, we focus on Agent A's decision making process. Further, without loss of generality, we assume Agent A gains utility (u) if she receives House 1 and utility $\frac{u}{2}$ if she receives House 2. Agent A must rely on their perception of which house Agent B is likely to prefer. To simplify notation, we will refer to π_B as the perceived probability that Agent B prefers House 1.[36] For a random lottery, calculating Agent A's expected utility is the sum of the probability of receiving each home ($\frac{1}{2}$) multiplied by each homes' utility:

$$V^A_{RND} = \frac{1}{2}u^A_{H=1} + \frac{1}{2}u^A_{H=2} = \frac{3}{4}u \tag{3}$$

While the calculation's structure is identical, a random serial dictatorship's corresponding expected utility is more complex.[37] The probability of receiving a given plot is a function of the number of plots, an individual's preferences over all plots, the remaining community's preferences, the specific allocation order, each participant's decisions in the ensuing rounds of selection, and whether there are any specific costs (c) incurred by expressing a choice in an random serial dictatorship lottery. In our community, Agent A's random serial dictatorship expected utility is:

$$V^A_{RSD} = (\frac{1}{2} + \frac{(1-\pi_B)}{2})u^A_{H=1} + \frac{1}{2}\pi_B\, u^A_{H=2} - c = (1 - \frac{\pi_B}{4})u - c \tag{4}$$

As can be seen from the first term of Equation (4), Agent A's probability of receiving House 1 is now a function of both the probability of being selected first ($\frac{1}{2}$) and the perceived chance Agent B will not select House 1 if Agent A goes second. Similarly, the utility of House 2 is weighted by the compound probability that Agent A will be drawn second ($\frac{1}{2}$) and House 2 will not be chosen by Agent

[35] We test the implications of risk aversion on mechanism preferences in Section V.C.

[36] While we describe π_B as perceived preference heterogeneity, another suitable term is perceived preference conformity. At the individual-level, preference conformity and preference heterogeneity have the same implications for mechanism preferences.

[37] For a large scale random serial dictatorship, calculating the corresponding probability matrix is is actually a #P-complete problem (Aziz, Brandt and Brill, 2013; Saban and Sethuraman, 2015). That is to say, the probability of receiving a given plot under a random serial dictatorship is necessarily uncertain.

B (π_B). Finally, we subtract the cost term (c), which is specific to participating in a choice-based lottery.

Agent A's task is to compare and select the mechanism with a higher expected value. In the equation below, we examine the conditions where an agent prefers a uniform random lottery. In the final expression of Equation (5), we rearrange the terms to highlight the relationship between choice-based lottery costs (c) and the relative utility gains. In essence, individuals should only strictly prefer uniform random allocation when there are costs associated with choice-based allocation ($c > 0$).

$$V^A_{RND} \geq V^A_{RSD} = \frac{3}{4}u \geq (1 - \frac{\pi_B}{4})u - c = 0 \geq (\frac{1}{4} - \frac{\pi_B}{4})u - c \tag{5}$$

Next, we consider how preferences change by comparing the marginal utility of each mechanism. In Equation (6), we find that increasing perceived heterogeneity ($\pi_B \to 0$) makes random serial dictatorship allocation more attractive relative to a uniform random lottery. At the same time, updating perceived heterogeneity in the other direction will decrease support. In short, our information intervention's effect on mechanism preferences is theoretically ambiguous.

$$\frac{dV_{RND}}{du} = \frac{3}{4} \quad ; \quad \frac{dV_{RSD}}{du} = 1 - \frac{\pi_B}{4} \quad ; \quad \frac{dV_{RSD}}{du} - \frac{dV_{RND}}{du} = \frac{1}{4} - \frac{\pi_B}{4} \tag{6}$$

Extension to the Lottery Preference Game. — The lottery preference game does not suffer from the same dependence on *ex ante* beliefs. We directly manipulate cash prize values in the lottery preference game. This generates unambiguous changes in players' preferences over each of the three potential prizes.

In terms of mechanisms, the lottery preference game functions analogously to our central example. With three players, the uniform random lottery's expected utility is still an equally-weighted sum. Like the random serial dictatorship, the random dictatorship mechanism also depends on the perceived preferences of other players (Equation 4). The chief distinction is that there is only one allocation round.

With only a single round, the expected value of a random dictatorship mechanism is a weighted sum where the weights are determined by the relative preferences of the three players. As before, we focus on the expected value for a single individual, Player A. We represent each player-specific prize by the variables X^A, Y^A, and Z^A. We represent the number of players that prefer each prize with the same π symbol, although now π is a count from 1 to 3.

$$V^A_{RD} = \frac{\pi_X}{3}X^A + \frac{\pi_Y}{3}Y^A + \frac{\pi_Z}{3}Z^A \tag{7}$$

Unlike the random serial dictatorship, it is possible for the expected value of uni-

form random allocation to exceed the expected benefits of random dictatorship. This results in a greater range of variation that we can exploit within the lottery preference game. As a result, we expect that individuals should strictly prefer random dictatorship allocation when the expected benefit is positive ($V^A_{RD} > V^A_{RND}$). Further, average support for random dictatorship allocation should increase as the random variation in prize values results in higher expected benefits.