Can Legitimacy Affect Public Goods Contributions?

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Abstract

Citizens' perceptions of the legitimacy of government policies are often thought to influence their willingness to act in accordance with those policies. Thus, as Gamson (1968) noted, legitimacy can substitute for more coercive and costly methods of control. This positive effect of legitimacy has, however, generally been assumed and has rarely been put to a test. We analyze a public goods experiment in which a government provides matching contributions but does not rely on coercive methods to induce participation. We find that treatments focused on the qualities of the decision-making process and the program's implementation can influence perceptions of legitimacy but that they have limited effect on the participants' contributions to the public good. In contrast, information about the willingness of others to contribute does appear to encourage larger contributions, thus suggesting that individuals engage in a form of conditional compliance. Our analysis further suggests that the behavior is rooted in conformity as we show that the behavior is inconsistent with evaluations of legitimacy being influenced by the behavior of others.

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Why people comply with authority is a classic question in social science research that has been answered with reference to factors ranging from social-psychological mechanisms and internalized norms to rational calculations of costs and benefits. Compliance is also related to classical issues in political theory, including the origins and maintenance of political order, as well as current-day concerns with legitimacy and trust in political actors and institutions.

Different views of democracy place different weights on the manner in which policies are made and implemented, and what role those factors play in ensuring citizens' compliance. At one end of the spectrum compliance with authority is seen as essentially resting on acceptance of claims of legitimacy, grounded in justifications about the procedure by which decisions are made and implemented. The duty to comply is then seen to exist if appropriate procedures are followed, irrespective of the content of policy or how much individuals agree with its substance. In effect, this view puts a premium on widely accepted democratic procedures.

At the other end of the spectrum, compliance is seen as the result of individual calculations of costs and benefits, irrespective of how people evaluate claims to legitimacy or the justifications for policy. The costs may involve sanctions against those who do not comply, including imprisonment, fines, or social stigma. The benefits may involve selective rewards, entitlements, or social recognition. At this end of the spectrum, legitimacy has no independent force that compels citizens to comply.

Which view better describes reality is an important question that has implications for how governments ensure compliance with laws and regulations. The question has, perhaps, become especially relevant in recent years as dissatisfaction with democracy appears to be on the rise — accompanied by declining political trust and the rise of populism. In many cases, the response has been to consider reforms aimed at influencing political efficacy and legitimacy, for example, through more participatory decision-making procedures. While such approaches may help strengthen democratic governance by influencing political trust and legitimacy, it is less clear whether such reform have any effect on citizens' willingness to comply with rules and regulations.

It is not uncommon for scholars to emphasize the role of citizens' perceptions of the legitimacy of the government and its decision-making processes when it comes to compliance with government policies — the assumption generally being that perceptions of legitimacy will make citizens more likely to voluntarily comply with policies and, thus, reducing the need for coercive measures to achieve policy goals. Interestingly, the positive effects of legitimacy on compliance with government policies are more often assumed than tested.[1] Yet, the view that legitimacy matters is generally taken for granted. We argue that a closer examination is warranted.

[1]There is a small empirical literature on the role of political trust and compliance. For example, Marien and Hooghe (2011) examine the relationship between political trust and willingness to condone illegal behavior. While instructive, it is important to note that political trust and legitimacy are not the same thing, see, e.g., Grimes (2008).

The claim that legitimacy influences behavior is a claim that legitimacy exerts a force on citizens' decisions independent of the other, often more coercive, tools at the government's disposal. Legitimacy can only be said to have behavioral consequences if a citizen behaves differently when they consider a rule legitimate than they do when they do not consider it legitimate. It is, however, possible that citizens perceive a policy to be legitimate, yet they choose not to comply with it. For example, one may accept the state's right to taxation and consider the tax code legitimate but still choose not to pay taxes if the chances of getting caught, or the fines, are sufficiently low.

It is also possible that legitimacy increases citizens' willingness to conform with government policies even when it goes against their narrowly defined self-interest. That is, one may choose to pay taxes if one values legitimacy even if doing so leaves less money in one's pocket — much in the same way as Riker and Ordeshook (1968) suggest 'civic duty' may induce citizens to vote even though the chance of their vote making a difference is vanishingly low. There is a wealth of evidence that suggests that individuals do not always behave in the manner predicted by a rational calculation of costs and benefits. The provision of public goods is one area where such deviations have been observed.[2]

Public goods tend to be underprovided due to the incentive to free-ride on the efforts of others — unless individuals are induced to contribute with the use of coercive or selective incentives. Yet, it is not clear that individuals act on those incentives to free ride. In an early review of the experimental literature, Ledyard (1995) suggests the results tend to be that people contribute more than is compatible with pure free-riding but that the results are not consistent with a fully cooperative or altruistic behavior either (Ostrom, 1992). Much effort has been devoted since to understanding why people contribute to public goods and the factors that affect the degree to which they contribute. The results, in general, are in line with the early findings but offer interesting insights regarding the effects of factors such as repeated interactions, norms, beliefs, preferences, and observability of behavior (see, e.g., Ackermann and Murphy, 2019; Rogers et al., 2016).[3] Regardless of the extent to which citizens can solve their collective action problems, governments are often involved in the provision of public goods.

In this manuscript, we explore whether the focus on legitimacy as a means to improve compliance with policies is justified. We also explore if compliance may be conditional upon other factors, such as the behavior of others. Conditional compliance has been shown to affect behavior in other instances where legitimacy has been established but participants are uncertain about the effectiveness of the policy in question. To address these questions, we conducted a survey experiment, in which we asked respondents to participate in a simple

[2]It is, perhaps, unusual to think about compliance when it comes to public goods contributions. We discuss the connection between public goods provisions and compliance at greater length below but one can think of compliance here as compliance with the intent of the policy.

[3]See Zelmer (2003) for a meta-analysis and Villeval (2020) for a more recent overview.

public goods game in which the government matches the respondents' contributions.[4] Our survey experiment has two stages. In the first stage, we manipulate information about the institutional processes related to policymaking and implementation that are often thought to influence perceptions of legitimacy. In the second stage, we manipulate information about the compliance of others and subsequently ask whether the treatments influence citizens' willingness to go along with government policies by influencing their perceptions of the policy's legitimacy.

We begin by discussing some of the factors that are believed to influence the legitimacy of political decisions and citizens' willingness to comply with those policies. In the following section, we explain our choice to focus on a public goods game in our experiment and the details of our research design. The fourth section examines whether respondents' willingness to contribute to the public good is influenced by the treatments emphasizing positive or negative aspects of the decision-making process as well as the role of information about the contributions of others.[5] Finally, we offer a discussion of what can be learned from our results and the importance of legitimacy.

Legitimacy & Public Goods Contributions

Our interest here is to answer the question of whether legitimacy affects compliance with government policies. While it is unusual to examine legitimacy in the context of public goods games where the individuals' actions are voluntary contributions, rather than compliance with laws that prescribe particular behaviors, there are particular reasons for considering a public goods game. The standard public goods experiment takes the form of individuals contributing a share of their endowment to a public good with the total contributions being multiplied by some constant greater than one and then divided among the individuals. The game captures the idea that by pooling their resources to provide public goods everyone can be made better off. An obvious limitation of the standard public goods experiment when studying legitimacy is that there is no 'government' whose authority might be considered legitimate or illegitimate. To bring the government, and to allow for considerations of legitimacy, into the game, we consider a slightly modified version of the game.

In the version of the public goods game we consider, we focus on the creation of a *government program* that matches the individuals' voluntary contributions with the same amount. This modification does not affect the free-riding incentives of the game, and, in equilibrium, one would still expect an under-provision of the public good.[6] The modified

[4]We acknowledge it is unusual to speak of 'compliance' in public goods games. We discuss the issue further below, but one can think of compliance as being compliance with the intent of the policy.

[5]The analysis of how the treatments in the first stage of the survey experiment affect respondents' perceptions of legitimacy is relegated to appendix C.

[6]In the standard public goods game the value of a contribution to the public good cannot be greater than, N, the total number of individuals. With matching contributions, the value cannot be greater than $\frac{N}{2}$.

game permits consideration of legitimacy and compliance in several ways. Most obviously, the presence of a government making a decision influencing public goods provision invites questions about whether the government has legitimate authority to make that decision. Second, on a related note, as the government must finance the matching grant, it relies on the government having the authority to impose taxes on citizens and, again, raising questions about the legitimacy of its actions. Third, by creating a program that provides an incentive for individuals to contribute to the public good, the government effectively makes its preferences clear. Thus, the decision whether to contribute or not is, therefore, a question of compliance — not compliance with a law but, rather, with the will of the government. Compliance, in this instance, refers to the willingness to play along with government decisions and conform with the norms which the government seeks to establish. While legitimacy and compliance are not features of the standard public goods game, our modification brings those considerations into play. For ease of exposition, and lack of a better term, we will use 'compliance' to refer to compliance in the more general sense discussed above.

There are four reasons why we focus on a modified version of the public good game instead of considering a game in which the citizen faces a clear choice of whether or not to comply with a decision made by the government. First, we want to eliminate government coercion as a possible source of compliance. That is, in our game, the decision to contribute cannot be driven by differing perceptions of the chances of being punished for not complying (with the intent of the program) or the severity of the punishment. Second, the question of whether legitimacy matters in public goods games is interesting in itself.[7] Third, the experiment we analyze here is part of a larger project that includes experiments in which the participants indicate whether they plan to comply in the more standard sense, e.g., whether to comply with a change in the tax code. Fourth, Marien and Hooghe (2011) note that a challenge for observational studies of public trust and compliance is that survey respondents may not be willing to admit to illegal behavior for fear of repercussions. While such concerns are likely to be reduced in an experimental setting, the public goods game avoids concerns about the participants bringing preconceived notions about what kinds of repercussions they might face into the experiment.

In considering legitimacy as a potential explanation of why individuals make voluntary contributions to public goods the literature, with some simplification, emphasizes three types of legitimacy: outcome legitimacy, input legitimacy, and procedural legitimacy. In each case, a greater sense of legitimacy is seen as increasing individuals' willingness to comply with policies and, in our case, to contribute to the public good. We discuss the source of each type of legitimacy in turn before considering how observing or learning about the behavior of others may affect contributions to the public good.

[7] See, e.g., Boyer et al. (2016) for an example of a model of public goods game in which legitimacy is generated in a deliberative process before contributions are made.

The standard public goods experiment places the respondent in a situation in which their rational behavior is in conflict with the behavior that would be socially optimal. A rational individual will reason that they will always be better off by not contributing if they perceive the cost of their contribution to be less than the return on their contribution. That behavior may be further reinforced as they may reason that others will face similar incentives. Thus, their personal benefit is maximized when they withhold their contribution.[8] There are, therefore, reasons to think that perceptions of legitimacy do not influence contributions to the public good — while an individual may value that the government acts in a manner that lends legitimacy to its actions, it does not alter the fact that withholding their contribution will result in the best possible outcome for them.

While the incentive to withhold contributions is always present, this is not to say that the individual does not value the policy. The individual may be strongly in favor of the provision of the public good in question but that does not change the incentives they face.[9] Individuals may vary in terms of how worthy they consider the public good and if the policy aimed at providing the good is to an individual's liking they may view the policy as having *output legitimacy*. That is, if the polity adopts policies that aim to achieve outcomes that benefit an individual then the individual may attribute legitimacy to the polity's decision because they may, for example, think that the polity listens to them, cares about people like them, or seeks to make people's lives better. Note that this does not equate personal benefit with output legitimacy as we are, as before, concerned with a public goods situation where the individual still faces an incentive to free-ride. Instead, output legitimacy essentially refers to the individual considering the goals of the policy worthwhile. According to legitimacy theory, perceptions of legitimacy deriving from 'good decisions' being made, are expected to compel citizens to comply with the policy, or in our case, contribute more generously to the public good.

Thus, we would expect participants who evaluate the policy more highly to indicate that they consider the policy to be more legitimate, and, if legitimacy theory is correct, then those participants should indicate a greater willingness to contribute to the public good:

Hypothesis 1 *Output legitimacy increases voluntary contributions to the public good.*

In the context of political decision-making, behavior may be affected by *how* decisions are made. The basic principle of democracy — that policies should reflect the preferences of its citizens — suggests, for example, a decision-making process that involves consultation with citizens in some shape or form. Decisions made adhering to such processes are expected to enjoy greater legitimacy.

[8]Personal benefit can, of course, be interpreted to include, e.g., satisfaction from adhering to norms, being altruistic, or 'doing the right thing.' Here, however, we use 'personal benefit' to refer solely to the benefits that the individual accrues from consuming the public good.

[9]We are, of course, restricting our attention to situations that can be characterized as public goods games, and the marginal benefit of contributing is smaller than the marginal cost.

If legitimacy matters, citizen's compliance with policies will be influenced by a government's adherence to procedures that involve the input of citizens and allow their preferences to be reflected in the government's decisions. That is, citizens may offer their compliance if the regime holds up its end of the democratic bargain by consulting (in one way or another) with its citizens. In the act of upholding its end of the bargain by engaging in consultations with citizens, we can think of the government developing what often is referred to as *input legitimacy* (Van der Meer and Hakhverdian, 2017; Norris, 1999).

Hypothesis 2 *Input legitimacy increases voluntary public goods contributions.*

Equal treatment, or equality, of citizens is often considered to be another defining feature of democracy. Equality demands that citizens are equal before the law, including when it comes to the implementation of policies. This implies that the implementation of policies should not discriminate among individuals on the basis of arbitrary criteria. Policies need not treat everyone the same, but the rights and duties detailed in the policy must be rule-based where, furthermore, the rule must satisfy anonymity. That is, a policy may specify an income limit for enjoying certain benefits, but it cannot exclude, say, John Smith from receiving the benefits because of who they are.[10] Equal treatment also means that the policy leaves little room for discretion in the implementation of the policy, i.e., a rule-based policy does little to ensure equal treatment if a politician or a bureaucrat has significant leeway in deciding how to apply the rule. Policies are considered to enjoy *procedural legitimacy* when the implementation of policies does not discriminate arbitrarily between individuals.[11]

From the view of legitimacy theory, impartiality in the implementation of the government's decisions is expected to improve perceptions of procedural legitimacy that, in turn, increases the willingness of individuals to participate in public goods provision:

Hypothesis 3 *Procedural legitimacy increases voluntary public goods contributions.*

To summarize, the optimistic message of theories emphasizing the procedures guiding policymaking and its implementation is that by granting citizens greater influence in policy formulation and ensuring procedural equality, governments may improve the overall level of voluntary compliance among citizens and, thus, increase efficiency by reducing reliance on more costly, coercive measures (Gamson, 1968). This argument seems to be the basic motivation driving democratic innovations of various forms, e.g., participatory decision-making processes (Smith, 2009; Tyler, 2013).[12] Given that more participatory forms of

[10] Rules that allocate rights and duties based on immutable characteristics, such as race, can be considered not to satisfy anonymity as such rules offer no condition under which an excluded individual qualifies.

[11] There is a large literature on the importance of procedural fairness. For a couple of recent examples, see, e.g., Martin et al. (2022) and Werner and Marien (2022).

[12] It bears noting that the input and procedural legitimacy can be in conflict with one another. That is, input legitimacy may in some cases not be compatible with people's perceptions of procedural fairness.

decision-making are not free — they demand organization as well as the time and effort of those participating — it is worth considering whether legitimacy actually improves compliance and leads to greater efficiency.[13]

Information

Input and procedural legitimacy can be interpreted as legitimacy reflecting norms dictating compliance or contributions to public goods. That is, the implicit agreement between the government and citizens can be seen as giving rise to expectations of behavior on behalf of both actors, which can be rationalized when the relationship is one of repeated interactions. Citizens, however, are not a unitary actor and individual citizens may well have an incentive to not comply with government policies. Citizens' compliance is, thus, sometimes explained with reference to norms, which can be thought of as "accepted rules or normative principles" (Brennan et al., 2013). How such norms develop and are maintained are, naturally, important questions that have received much attention.[14] Here, we merely allow for the possibility that such norms may exist and consider the implications of perceptions of legitimacy affecting adherence to such norms.

Arguments about the role of norms in guiding contributions to the public good assume that individuals are familiar with those norms. That may not be the case. While individuals may be aware that there is a norm, and they may wish to adhere to it, they may be uncertain about what exact behavior the norm prescribes.[15] If that is the case, information about the behavior of others may help an individual understand what the norm is and allow them to update their beliefs about the norm. The norm described here focuses on a shared understanding of how much to contribute but another possibility is that the norm concerns interpretation of what constitutes a legitimate policy. Observing others provides information about whether they perceive the policy as being legitimate, which, in turn, may affect one's own perception of its legitimacy. In either case, learning that others offer large contributions

Participatory decision-making processes are sometimes majoritarian in nature (e.g., referenda) that may put the interests of minorities at risk. This is not to mention the possibility that participatory processes may not offer everyone the same opportunity to participate. In fact, the role of representative arrangements is often to strike a balance between the aggregation of preferences and the protection of rights. Participatory mechanisms may be designed to do this, e.g., through a system of checks and balances, but their legitimacy is unlikely to depend on this and may even be perceived to be hampered if they place limits on the expression of the 'will of the people'. As Dowding et al. (2004, 5) point out, "there is nothing inherent in democracy that necessarily makes it just."

[13] Compliance and efficiency are by no means the only criteria for evaluating participatory decision-making and other democratic reform. For example, reforms may be aimed at increasing the legitimacy of the political system as a whole with the goal of increasing political stability and the survival of democracy. However, even with such broader goals, legitimacy must have some behavioral consequences, i.e., some form of compliance, for it to matter.

[14] See, e.g., Rege (2004); Villeval (2020); Reuben and Riedl (2013); Chaudhuri et al. (2006).

[15] For example, we may know that there is a norm that you tip for services but one may be unsure about exactly how much to tip.

may, thus, encourage the individual to contribute more while learning that others intend on free-riding may result in the opposite behavior.

Alternatively, the decision of whether to contribute may also be complicated if individuals do not have sufficient information to assess the cost and benefits of their contributions with any degree of certainty. Research on decision-making has shown that people often rely on information shortcuts, or heuristics, rather than a careful analysis of costs and benefits when acquiring information is costly. One such information shortcut is to observe the behavior of others and follow their cue. One rationale for doing so is that where stakes are relatively low the aim may not be to maximize gains but to avoid major errors. Social psychological research has, for example, suggested that loss-aversion trumps opportunities for gain in the calculations of most actors (see, e.g., Tversky and Kahneman, 1991). Thus, if an individual expects enough others to contribute, they may reason that even when they contribute, they will be no worse off than if the program, or the public good, did not exist. In contrast, if an individual expects very few to contribute, their loss aversion may kick in and prevent them from contributing.[16]

Following the lead of others does, however, not have to rely on psychological factors such as loss-avoidance. Confronted with uncertainty, it may be rational for individuals to rely on the observed behavior of others as has been demonstrated in situations where collective and individual decision-making is involved. For example, Feddersen and Pesendorfer (1996) demonstrate that poorly informed voters will rationally choose to abstain and ignore their private information, in effect delegating the decisions to better-informed voters in a phenomenon termed the *swing voter's curse*. A result focused on individual decision-making that is similar in nature due to Bikhchandani et al. (1992) shows that when imperfectly informed individuals observe others make choices ahead of them, they may rationally choose to ignore their own information. Neither of these results is a perfect analogy of the public goods games we consider here but what they do show is that even when individuals have some inkling about what the right decision might be, they may well be justified in taking cues from others — because they believe that other individuals may have better or more information. In essence, both arguments boil down to the question of whether an individual decides to give greater weight to their private information, or the information held by a mass of other individuals. Presumably, that was what RCA Victor had in mind when the record company slapped the "50,000,000 Elvis Fans Can't Be Wrong" label on one of Presley's compilation albums.[17]

[16] Contributing in our game is, of course, never individually rational — the participant is always better off by not contributing. The supposition here is that individuals will be willing to contribute to successful projects, i.e. when their total benefit outweighs their total cost, but not to projects where, effectively, they end up as the 'sucker' that incurs a cost while others free-ride on their effort.

[17] As it turns out, 50,000,000 Elvis Fans may be wrong — the key insights of Feddersen and Pesendorfer (1996) and Bikhchandani et al. (1992) are that following the lead of others can lead to socially inefficient outcomes.

Whether rooted in loss-avoidance or rational decisions about how to best use one's own information, observing the behavior of others may influence individuals' decisions about contributing to public goods, irrespective of norms or cost-benefit calculations. In other words, the substance of the decision is almost irrelevant, and, instead, what matters is the perception of how others behave. This gives rise to what can be considered to be *conditional compliance* with policies, where one opts to comply with policies provided that others do so as well (Traxler, 2010). Conditional compliance undeniably looks a lot like norm-driven behavior. However, we will refer to norms when referring to behavior induced by beliefs about what is right and wrong, whereas conditional compliance involves no such normative considerations and is simply directed at making the best choice in an environment of scarce information.

Whether the role of information is to allow individuals to update their beliefs or to make inferences about the costs and benefits of the policy, those receiving information about the generous contributions of others, ought to contribute more:

Hypothesis 4 *Perceptions that others make large contributions increase an individual's voluntary contributions to the public good.*

As noted above, if legitimacy affects contributions, then information about how much others plan to contribute allows individuals to use that information to update their beliefs about the legitimacy of the policy. Ideally, we directly measure the effect of the information treatment on perceptions of legitimacy as it would provide us with some leverage to say whether the causal chain leading from information to behavior runs through perceptions of legitimacy or through expectations of costs and benefits. If legitimacy is involved, we would expect both increases in perceptions of legitimacy and contributions, whereas only changes in contributions are expected if the information only affects expectations of costs and benefits. Unfortunately, our research design demanded some compromises that involved asking questions about the policy's legitimacy before the respondents received the information treatment.

We can, however, get at the question indirectly if we assume the individuals are uncertain about the legitimacy of the policy initially and our treatments allow them to update their beliefs. For example, the individual may be skeptical about the policy's legitimacy but after learning that it was the result of a process that involved consultation with citizens, they will update their beliefs and assign a higher probability to the policy being legitimate. Thus, after receiving messages that are informative about the legitimacy of the policy, individuals will update accordingly. This is useful as the question of interest here is whether the treatment about the contributions of others is seen as being informative about the legitimacy of the policy or only the expected benefits. If it is the latter, then the effect of legitimacy should be independent of learning that most intend to contribute the maximum amount (and vice

versa). If, on the other hand, the information about contributions is understood as a signal about legitimacy, i.e., that others believe that the policy is legitimate, then there is further updating — given that the individual has learned that consultation took place and that others think the policy is legitimate. The question is whether the effect of learning that others are contributing depends on having received one of the legitimacy treatments. If the causal effect of learning about others does not involve the respondent updating their perception of legitimacy, there is no clear reason to think that the effect depends on prior legitimacy treatments. If, on the other hand, perceptions of legitimacy are affected, and respondents update their beliefs in a Bayesian fashion, then the effect of the conditional compliance treatment should be smaller for respondents who previously received one of the legitimacy treatments.

To see why, let $P(L) = \pi$ be the prior belief of the policy being legitimate and $P(C|L) = \gamma$ the probability of contribution by others when the policy is legitimate. Respondents that have received one or both of the legitimacy treatments before the information treatment is assigned will, on average, assign a higher prior (π) to the policy being legitimate. According to Bayes' Rule: $P(L|C) = \frac{\gamma\pi}{\gamma\pi+(1-\gamma)(1-\pi)}$. The quantity of interest is the size of the difference between the posterior and prior belief and, in particular, how it depends on π or: $\frac{\partial P(L|E)-P(L)}{\partial \pi} = \frac{\gamma(1-\gamma)}{(1+2\gamma\pi-\gamma-\pi)^2} - 1$. As the first term on the right-hand side is bounded by zero and one, respondents who assign a higher prior to the policy being legitimate update less. This implies that respondents who received the input and/or procedural treatments, who should on average perceive the policy as being more legitimate, will update their beliefs about legitimacy less upon learning that others are contributing and, thus, learning that others contribute has a smaller effect on their behavior. Intuitively, that simply means that learning that others contribute has little impact on someone who already thinks the policy is legitimate — the additional information serves to confirm their beliefs rather than shift them.

Hypothesis 5 *The effect of the perceptions of others making large contributions is smaller for respondents who have also received the input and procedural legitimacy treatments.*

Research Design

We conducted a non-incentivized survey experiment in which the subjects were asked to contribute to a hypothetical public good.[18] The public goods game we present the participants

[18]The survey was carried out by the Social Science Research Institute of (redacted) and consisted of a panel of 6 400 respondents. The survey was part of a larger project on legitimacy and about a quarter of the respondents were asked these questions in each of the four waves of the survey panel. A total of 2598 respondents completed the questions related to the public goods vignette, but the number of observations drops to 1299 when we include the full set of control variables. The large drop-off is, in part, due to some of the questions only being asked in a different wave of the survey.

with is a fairly standard 'matching contribution', or 'matching grant', game that involves contributions to a neighborhood improvement fund. That is, any contribution made by the respondent (up to a maximum of about USD 150) is matched by the government. The funds are then to be allocated to neighborhood improvement projects following a solicitation of proposals. Before describing the design of the experiment in greater detail, we briefly discuss our focus on a public goods experiment and our choice of not providing incentives to the respondents.

Government policies generally do not resemble public goods experiments such as the one considered here. However, governments sometimes seek to encourage private contributions to public goods with incentives. Public goods provision is of considerable interest when it comes to evaluating theoretical claims about the effects of legitimacy. Many government policies that depend on the compliance of citizens rely on coercion, e.g., fines, to compel citizens to act in accordance with the policy. Assessing the effectiveness of legitimacy as a tool to induce compliance can then be complicated by citizens' expectations about the consequences of non-compliance.[19] Policies where the government only seeks to incentivize the provision of public goods via matching contributions are, therefore, useful for testing theories of legitimacy and compliance.[20]

While our public goods experiment does not lend itself to a derivation of what the optimal contribution is, one can reason it will be fairly low. In an abstract form of the matching contribution game, in which n individuals make contributions that then are doubled and divided up equally among the individuals, we know that the optimal contribution is zero — the marginal value of contributing one dollar will be $\frac{2*\$1}{n}$, which is less than a dollar if the group is bigger than two people ($n > 2$). Thus, the Nash equilibrium of the game is that no one contributes.

In our neighborhood improvement game, we cannot know whether contributing nothing is an equilibrium strategy as we do not know how much our respondents value their neighborhood. Individuals who care enough may find it optimal to contribute. However, similar free-riding incentives are at play — one could spend their contribution on their own garden as opposed to contributing to the neighborhood fund, which might be spent on projects that one has little interest in.

However, for our purposes, it is neither essential that optimal contribution is zero nor that respondents share preferences for spending on the public good. The random assignment of treatments ensures that the preferences of the respondents within each group are, in expectation, the same, allowing us to estimate whether our treatments affect the respondent's

[19]The effects of legitimacy where compliance is enforced is, of course, also an interesting question. Elsewhere we examine the role of legitimacy when it comes to tax avoidance.

[20]Again, while 'compliance' is normally not associated with public goods games, we consider it appropriate in this context as the government policy is intended to increase the provision of the good.

perceptions of the project's legitimacy and, subsequently, their willingness to contribute to it.

The experiment differs from many public goods experiments in that our experiment considers a hypothetical situation that involves hypothetical contributions to a public good. In contrast, the typical public goods experiment provides participants with monetary incentives that capture the nature of the public goods game. We think there are good reasons to ask our participants to consider a hypothetical situation. With nothing real or tangible at stake in the experiment, the risk, of course, is that our participants will simply seek to do the 'right thing' and contribute generously to the public good. However, as our contention is that greater legitimacy *does not* fundamentally alter the nature of the public goods game, i.e., the incentive to free-ride remains in place regardless of perceptions of the policy's legitimacy, we want the experiment to give legitimacy as big a chance as possible to influence contributions, i.e., to prove us wrong. If we were to introduce monetary incentives, it would reduce our ability to demonstrate that legitimacy has little effect on willingness to contribute to public goods, i.e., one might argue that respondents are simply reacting in a rational manner in an experiment that may lack external validity.[21] Another way to look at it is to note that if legitimacy has no effect when nothing real is at stake and normative assessments of the policy are given a certain advantage, what are the chances that legitimacy has any effect in the real world? Thus, confronting our participants with a hypothetical situation is a logical starting point that could be followed up with incentivized experiments to probe the importance of legitimacy if legitimacy is found to matter.

Turning to the details of our survey experiment, the respondents were asked to consider a simple vignette about a proposal for a neighborhood improvement fund. In the first part of our experiment, respondents are randomly assigned to two treatment factors (i.e., a 2x2 factorial design). The Input Legitimacy treatment suggests that residents were consulted and that the consultation influenced the outcome by appending the following text to the vignette: "The proposal has been developed in close consultation with the local residents and polls indicate that the great majority of them support it." The second treatment, Procedural Illegitimacy, raises concerns about the implementation by adding: "The proposal stipulates that the order of priorities will be decided by political appointees. Many people believe this increases the risk of bias in setting priorities" to the vignette. The treatments are randomly assigned so that roughly a quarter of the sample falls in each cell of the two-by-two factorial design. The text of the vignette and the survey questions are provided in appendix A.

Following the random assignment of the Input Legitimacy and Procedural Illegitimacy treatments, we ask the respondents how legitimate, on a 0-10 scale, they consider the

[21] This is not intended as a general criticism of incentivized experiments. The choice of a non-incentivized experiment is closely tied to our priors that legitimacy has little effect on contributions, and we want to devise a strong test of our conjecture, which here means stacking the deck in favor of legitimacy.

proposal (Decision Legitimacy). As the concept of legitimacy is fairly complex,[22] we also ask the respondents to rate how accepting they are of the decision (Decision Acceptance) and how fair they consider the decision (Decision Fairness). Both are measured on a 0-10 scale.[23]

Following the questions about the policy's legitimacy a third treatment, focused on the intentions of others to contribute, was introduced. The aim is to examine whether information about neighbors' contributions, in addition to the prior treatments the respondents received, affects respondents' propensity to contribute to the neighborhood improvement project. Thus, half of our respondents received a treatment informing them that a great majority of the individuals in the neighborhood contributed the maximum possible amount (20.000 KR, ∼$150). The other half received no information about the contributions. As discussed above, the idea is that individuals may be 'conditional compliers,' that is, they are more likely to contribute if they expect others to contribute. Such 'conditional compliance' may derive from different sources as discussed above.

Our main analysis focuses on the second stage of the experiments which examines the respondents' willingness to contribute to the neighborhood improvement project. As we have argued, it is possible that the Input Legitimacy and Procedural Illegitimacy treatments affect perceptions of legitimacy, but that does not necessarily follow that they translate into larger contributions to the public good. We begin by comparing the average contributions across the cells of our factorial design (now 2×2×2) before examining the robustness of the results using regression models. The respondents' perception of how the policy benefits them personally, which we have identified as a source of output legitimacy, is of particular substantive interest.[24] Ideally, Output Legitimacy would be an additional treatment in our experiment but, given limited resources, we were forced to make some compromises.[25]

Our model specifications control for various respondent characteristics. These include the respondent's age, gender, whether the respondent has completed a university degree, whether they live in an urban or a rural area, and a four-category Occupation status (employee,

[22]An additional complication is that the distinction between what is 'legitimate' and what is 'legal' is not always clear in the language in which the study was conducted.

[23]The text of the survey questions was as follows: Decision Legitimacy: "Keeping the decision-making process in mind, how legitimate or illegitimate do you consider the decision on neighborhood improvement?", Decision Acceptance: "The proposal is accepted by a vote at a citizen meeting in your neighborhood and after that ratified in the town council. Irrespective of what you would have preferred, are you satisfied with the decision?", Decision Fairness: "Keeping the decision-making process in mind, how fair or unfair do you think the decision about the neighborhood improvement project was?"

[24]The question was: "How favorable or unfavorable do you think it will be for you personally that the neighborhood improvement proposal was accepted?" The labeling should not be taken to imply that the question is a measure of output legitimacy but rather that within the context of the theory personal benefit is expected to influence output legitimacy. Furthermore, our balance tests indicate that there was a small, statistically significant difference in the average perceived benefit between those that received the Input Legitimacy treatment and those that did not.

[25]Perceived benefit was left out, as compared with consultation and partiality, it appeared easier to measure and more difficult to manipulate in a non-incentivized experiment.

employer, student, other). Risk-seeking captures the respondent's willingness to take risks as measured by the respondent's answer to the question "How willing are you to take risks, in general?"[26] Finally, we include measures of Trust in Politicians (0-11 scale) and concerns about personal Reputation.[27]

Influencing Legitimacy

As our main interest is in exploring whether contributions to the public good are affected by perceptions of legitimacy and information about the contributions of others, we discuss the results of the analysis of the effects of our legitimacy treatments on perceptions of legitimacy in Appendix C and summarize the findings briefly here. We find some evidence that our legitimacy treatments matter, but the magnitude of the effect is not large and does not account for much of the variance in our measures of perceptions of legitimacy. This stands to reason; perceptions of legitimacy are likely to be difficult to manipulate — and especially so in contexts familiar to individuals. While the project proposed in our survey experiment should be somewhat 'foreign' to the respondents, they are also likely to have experience with both their local government services and their neighbors and are likely to bring that experience with them into the survey experiment.

Contributing to the Public Good

We begin our analysis by comparing the mean contributions across the legitimacy and contribution information treatments. Those that received the Input Legitimacy treatment contributed 409 kr. (about $3) more than those in the baseline (t-test=1.5, p=.06). Those that received the Procedural Illegitimacy treatment contributed 298 kr. less than those in the comparison group (t-test=1.09, p=.14). The Expected Contributions treatment had by far the biggest effect. The respondents who were told that most of their neighbors planned to contribute the maximum amount contributed 8820 kr. while those that did not receive that information only planned to contribute 6563 kr. (about $68 vs. $50, t-test=8.4, $p<.0001$).

Thus, there is some evidence that the input legitimacy and expected contributions treatments have a small to moderate effect while the procedural legitimacy treatment has a

[26] While this is a rather simple measure, Dohmen et al. (2010) show that this simple question performs well in capturing risk attitudes.

[27] Trust in Politician is the response to the question "On a scale of 0-10 how much do you personally trust each of these institutions? 0 means you do not trust an institution at all, and 10 means you have complete trust." Reputation is the sum of the level of agreement with four statements about personal characteristics (recoded to reflect concern about reputation): "I am rarely concerned about my reputation," "I wish to have a good reputation," "If my reputation is not good, I feel very bad," and "I try hard to work on my reputation."

small (and statistically insignificant) effect. However, as we discussed above, the perception of whether the policy itself is good may also affect contributions. Moreover, if the effects of the perceived benefit of the policy work through perceptions of the policy's output legitimacy it may result in biased estimates of the effects of the treatments. To see why, consider an individual who strongly favors the neighborhood improvement policy and who determines that the policy is legitimate on that basis. For that individual, receiving the consultation treatment will not affect their view of the policy's legitimacy as they considered it legitimate from the moment they heard about it.[28] To address this concern, we turn to regression analysis that includes respondents' assessment of how beneficial the project is to them as well as other covariates.

As shown in table 1, Output Legitimacy does have a significant effect. Each unit increase on the 11-point Output Legitimacy scale corresponds to an increase in contributions by about 1230-1270 kr. Neither of the Input Legitimacy nor the Procedural Legitimacy treatments have a significant effect on the contribution levels but the Expected Contributions treatment is very robust to model specification. Hypothesis 5 posited that if learning from the contributions of others has an effect through perceptions of legitimacy, then the effect of receiving the Expected Contributions treatment should be smaller for those that also received the Input Legitimacy and/or Procedural Illegitimacy treatments. There is not much evidence in favor of hypothesis 5. The interactions between the treatments are generally not statistically significant — only in the one instance are they statistically significant (but only at the 90% level) and consistent with the hypothesis.

One might argue that including Output Legitimacy in our models here does not give the argument of legitimacy theorists a fair shake. That is, if our Input Legitimacy and Procedural Legitimacy treatments affect Output Legitimacy, as we show in appendix C, then some of the variance in the planned contributions will be attributed to Output Legitimacy when it rightly should be attributed to the effects of the treatments on legitimacy. Hence, our experimental design is useful in establishing a causal relationship, but it is not necessarily good at giving us a sense of the magnitude of the effect legitimacy has on the willingness to contribute. The magnitude of the estimated effect in the experiment relies on many things, the strength of our treatment, the rigidity of the respondents' beliefs about legitimacy, and, finally, the strength of the effect of legitimacy on the willingness to contribute.

To get a sense of how much legitimacy matters for the willingness to contribute, we turn to regression analysis to analyze the last step of the causal chain and simply use the respondent's stated perception of the legitimacy of the project as an explanatory variable.[29]

[28] It may cause the individual to have more reasons to consider it legitimate, i.e., input and output legitimacy, but that does not have to imply that they need to consider it more legitimate. That is, a single justification may be enough for the individual to accept the policy as legitimate and behave accordingly.

[29] The measures of legitimacy, acceptance, and fairness are highly correlated, so we let it suffice to focus only on the first measure.

Table 1: Contributions to the Public Good
The Effects of Different Types of Legitimacy & Expected Contributions

	(1)	(2)	(3)
Input Legitimacy	−49.259	369.547	315.923
	(239.253)	(334.693)	(442.805)
Procedural Legitimacy	201.230	−133.047	−190.454
	(238.961)	(335.030)	(443.038)
Output Legitimacy	1229.390***	1232.105***	1230.695***
	(46.353)	(46.342)	(63.081)
Expected Contributions	2311.910***	2377.161***	2291.068***
	(238.732)	(416.159)	(547.198)
Input×Exp. Contributions		−836.624*	−628.691
		(477.576)	(634.310)
Procedural×Exp. Contributions		656.060	707.276
		(477.849)	(633.800)
Age			19.211
			(15.145)
Female			−60.890
			(336.216)
Rural			935.307***
			(330.495)
University			772.191**
			(339.567)
Occupation (ref. Salaried):			
– Self-Employed/Employer			1595.074***
			(537.653)
– Student			−2917.417**
			(1173.757)
– Other			−689.167
			(435.264)
Trust in Politicians			220.004***
			(68.779)
Risk-seeking			203.904***
			(69.618)
Reputation			−84.229
			(205.956)
Constant	−714.092**	−758.013*	−3399.472***
	(356.245)	(391.527)	(1246.203)
Observations	2426	2426	1422
R^2	0.25	0.25	0.28

Standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01

This, of course, means that we cannot attribute a causal interpretation to the effects and that the usual caveats must be kept in mind in interpreting the results. We do, however, include the treatment for the expected compliance of others along with an interaction with the respondent's perception of legitimacy.

The results in Table 2 suggest that perceptions of legitimacy may have a substantial effect on the respondent's contribution. In the first model, a one-unit increase in perception of legitimacy corresponds to about a 729 kr. (about $5) larger contribution, with the effect of Expected Contributions being comparable to what we saw earlier. The next two models suggest that there is a strong interaction between Legitimacy and Expected Contributions. The estimated effect of legitimacy is now 467 kr. (about $3) for the groups of respondents that did not receive the Expected Contributions treatment while those that did contribute about twice as much on average, or 1001 kr. (about $7), results in column 4). The results here, thus, run counter to hypothesis 5, which suggests that the effect of learning about others planning to contribute the maximum is not due to respondents assigning greater legitimacy to the policy. To briefly recap the logic, those that assign greater legitimacy to the policy prior to receiving the Expected Contributions treatment should update their beliefs about the policy's legitimacy less than those that didn't see it as very legitimate to begin with. Thus, the effect of the information about the generosity of others should have less effect on those who already considered the policy to enjoy a high degree of legitimacy — again, provided that the causal link between the contributions of others and the willingness to contribute runs through perceptions of legitimacy.

This can be seen in Figure 1, which graphs the marginal effect of Expected Contributions conditional on the respondents' perceptions of legitimacy. As can be seen in the figure, the estimated effect of receiving the treatment ranges from, effectively, zero for those respondents who view the project as having a low degree of legitimacy to nearly 4700 kr. (about $35) for those who have the most favorable view of the project's legitimacy.[30] These results, thus, suggest that learning about the willingness of others to contribute does not affect respondents' perceptions of legitimacy — or, at minimum, it suggests that any such effect on legitimacy perceptions is dominated by other ways in which that information affects the willingness to contribute.

It is, however, clear that learning that others plan on contributing does impact, on average, how much respondents contribute. This is an interesting finding that appears inconsistent with rational decision-making. Above we suggest that such conditional compliance may be the result of decision-making in the context of incomplete information about the costs and

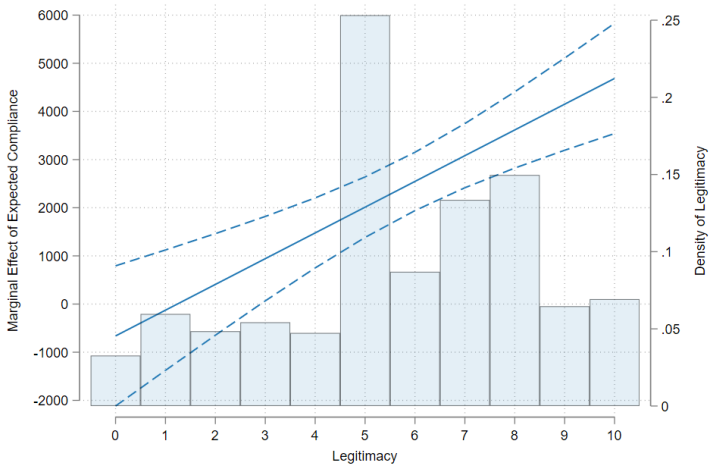
[30]We also included treatment checks in our survey. The correlation between the treatment and responses to the treatment checks was fairly low, indicating that our treatments may have been conservative — or that it is difficult to dislodge existing perceptions of legitimacy. In the appendix, we estimate models similar to the ones presented here where we substitute the treatment checks for the treatment. The results suggest that popular support for the project affects contributions while impartiality in its implementation does not. The results also suggest an interaction between popular preference and the expected contributions of others.

Table 2: The Effect of Legitimacy on Contributions to the Public Good — Measured Legitimacy in Place of Treatments —

	(1)	(2)	(3)
Legitimacy	729.489***	495.316***	466.990***
	(63.371)	(79.312)	(104.250)
Output Legitimacy	725.149***	746.700***	721.003***
	(64.241)	(64.087)	(86.140)
Expected Contributions	2401.145***	−128.671	−661.931
	(235.290)	(569.877)	(742.048)
Legitimacy×Exp. Contributions		437.541***	534.721***
		(89.857)	(117.101)
Age			22.691
			(14.698)
Female			−164.677
			(326.660)
Rural			976.093***
			(320.760)
University			820.498**
			(329.038)
Occupation (ref. Salaried):			
– Self-Employed/Employer			1637.276***
			(523.915)
– Student			−3140.552***
			(1149.882)
– Other			−900.232**
			(422.965)
Trust in Politicians			176.795***
			(67.030)
Risk-seeking			209.206***
			(67.509)
Reputation			−8.552
			(200.041)
Constant	−1878.934***	−636.737	−3245.078***
	(333.367)	(418.514)	(1220.839)
Observations	2363	2363	1397
R^2	0.29	0.30	0.34

Standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01

Figure 1: Marginal Effect of Expected Contributions on Own Contribution — Conditional on Perception of Legitimacy —



the benefits of the policy, where individuals rely on the behavior of others as a heuristic to guide their behavior. An alternative interpretation of the effect is that it reflects norm-driven behavior, i.e., that individuals look to others to figure out what constitutes appropriate behavior. On the one hand, that does sound like a reasonable interpretation as the respondents are presented with a task or a decision that they probably do not encounter very often (or at all) that, furthermore, perhaps does not bear a clear resemblance to other social contexts that could be used to inform what is appropriate behavior in the game.

On the other hand, if one takes the view that norms are equilibria of repeated games in which norms are maintained via the threat of sanctions when norms are violated, that interpretation may seem less plausible as there is no repetition and no possibility of sanctions. However, one cannot rule out the possibility that respondents have internalized norms of reciprocity through repeated interactions and that those are 'triggered' when receiving information about the behaviors of others.[31] Alternatively, we suggested that conditional compliance might be rooted in loss avoidance. That is, rather than investing time and effort in figuring out the optimal level of contribution, the respondent's main concern was not to suffer a loss. Assurances that others will contribute may be enough for respondents to contribute as well as they anticipate benefitting from the program even when they contribute.[32] In addition, respondents may receive a warm glow from contributing to a good that benefits the community. Unfortunately, the design of our experiment does not allow us to distinguish

[31]That we do not find that participants adopt the norm described in the treatment, i.e., to contribute the maximum possible amount, may be considered another strike against the norm-based explanation.

[32]This behavior bears some resemblance to public goods games where some threshold must be met for the good to be provided and an equilibrium exists where everyone's contribution is pivotal. In our experiment, of course, there is no threshold and no one's contribution is pivotal, but it does appear that respondents condition their behavior on others nonetheless.

between these possibilities as our main goal was to explore the role of legitimacy. We do, however, think the effect that learning about the contributions of others is an interesting avenue of research and we aim to explore the logic of conditional compliance in future work.

Another interesting aspect of the findings is that respondents' contributions are more generous the more legitimate they consider the program to be and as figure 1 shows the difference is quite significant. Those who consider the program to lack legitimacy are effectively immune to the Expected Contributions treatment while those who perceived the program to be highly legitimate contributed over 4000 kr. more on average or over one-fifth of the maximum contribution. It, thus, appears that perceptions of legitimacy and information about others' contributions act as complements when it comes to the respondents' own contributions.

Conclusions

The importance of legitimacy in politics is often taken as given. It appears obvious that governments would prefer citizens to consider their policies legitimate and there are good reasons to think that regimes whose decisions are considered legitimate will be more stable, more peaceful, and more likely to survive. Theories of legitimacy, however, often go further and suggest that legitimacy is important for citizens to comply with government policies. Logically, however, there is nothing about legitimacy that compels citizens to comply with government policies. Citizens may well view the policy-making process and the policies to be perfectly legitimate but, yet choose not to comply with the policies when not facing any negative consequences from non-compliance. For example, most probably think that setting speed limits is a legitimate political decision but, at the same time, some of us will not hesitate to speed when there are no speed cameras in sight. Put slightly differently, there is a difference between seeing and understanding the need for a policy — and acknowledging its legitimacy — and wanting to follow that policy.

Legitimacy can thus be seen as sharing certain characteristics with public goods. Many public policies ask citizens to behave in a particular manner, whether to pay taxes or to refrain from speeding, but even when the citizens agree with the goals of the policies (good schools, safe roads) each individual may have an incentive to free-ride on the efforts of others. In this manuscript, we considered a stylized public goods game that has these features — the respondents in our survey experiment would be better off if everyone contributed to the public good but, individually, they have an incentive to withhold their contributions. We then ask two questions: First, can the respondents' perceptions of the proposed project's legitimacy be altered with information about how the policy is made and about the procedural integrity of its implementation? Second, do these perceptions of legitimacy translate into a greater willingness to contribute to the public good?

The answer to the first question is that perceptions of legitimacy can be manipulated. Information about consultation with citizens and the outcome reflecting their preferences appeared more effective than information about whether or not the implementation of the policy might be influenced by politicians. While the results suggest that the answer to the question of whether perceptions of legitimacy can be affected, it is worth noting that the effects are quite small and account only for a small portion of the variation in perceptions of legitimacy. This may reflect that respondents come into the experiment with prior beliefs about politics that are perhaps not easily dislodged.

The answer to the second question is a bit more complex. We do find that respondents receiving the treatments that are expected to increase perceptions of legitimacy contribute slightly more than those that do not — by about 2% of the maximum contribution possible. This does not look like a big win for legitimacy theory but, on the other hand, we already suggested that altering perceptions of legitimacy may be challenging as it was, indeed, in our experiment. In order to probe deeper into that question, we directly examine the effect of perceptions of legitimacy on contributions to the public good — this analysis does, of course, not take advantage of the causal identification that the experimental design offers. The results here suggest that legitimacy may be quite a bit more important — although they make clear that legitimacy alone is by no means sufficient to induce very high levels of compliance.

The most interesting part of our results, however, is the effect that expectations about the behavior of others has on respondents' contributions. Respondents are significantly more likely to contribute large amounts to the public good if they believe their neighbors intend to do the same. Moreover, this effect increases in the respondent's perception of the project's legitimacy, which suggests that the effect is not a function of respondents attributing greater legitimacy to policies when they observe others contributing.

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Appendix

A Vignettes & Survey Questions

This appendix presents translations of the survey vignette, experimental treatments, and the survey questions the respondents were asked and we use in the analysis.

Experimental Vignette: Your local government receives a proposal to improve the appearance of your neighborhood. The proposal includes both public areas and improvements to your property (e.g., yard improvement, house painting) following a solicitation of proposals from residents. The proposal suggests a mixture of government and voluntary funding — every krÃşna of voluntary contribution will be matched by the government. This means that for every krona you contribute to the neighborhood improvement fund, the government will contribute an equal amount, up to a maximum of 20 thousand [about 150 USD] per person. Contributions to the fund are anonymous and allocations to projects, therefore, would not depend on individual contributions.

Input Legitimacy Treatment: The proposal has been developed in close cooperation with local residents and polls indicate that the great majority of them support it.

Procedural Legitimacy Treatment: The proposal stipulates that the order of priorities will be decided by political appointees. Many people believe that this increases the risk of bias when the order of priorities is decided.

Expected Contributions Treatment: After the program is adopted it appears that a great majority of the members contribute the maximum amount possible to the program, 20 thousand kronur [about 150 USD].

Output Legitimacy: How favorable or unfavorable do you think the neighborhood improvement proposal is for you personally?

Treatment Check (Procedural Legitimacy): Bearing in mind the information above, how likely or unlikely do you think that the order or priorities will be affected by political intervention concerning individual proposals?

Treatment Check (Input Legitimacy): How well or poorly do you think the decision reflected the wishes of the local population?

Treatment Check (Expected Contributions): If you had to guess how much residents contribute to the neighborhood improvement project, what would you guess the average contribution to be (0-20000 kr.)?

Policy Legitimacy: Keeping the decision-making process in mind, how legitimate or illegitimate do you consider the decision on neighborhood improvement?

Policy Fairness: Keeping the decision-making process in mind, how fair or unfair do you think the decision about the neighborhood improvement project was?

Policy Acceptance: The proposal is accepted by a vote at a citizen meeting in your neighborhood and after that ratified in the town council. Irrespective of what you would have preferred, are you satisfied with the decision?

Contribution: How much would you contribute to the program (0-20000 kr.)?

B Balance Tests

Tables 3-5 presents balance tests for the three treatments.

Table 3: Balance Test
— Treatment: Input Legitimacy —

	Baseline	Treatment	t-value	p-value
Age	54.85428	55.22502	-.6861388	.4926817
Female	.4903315	.4938893	-.1894875	.8497243
Rural	.384083	.4007194	-.906758	.3646119
University	.4192661	.4001892	.898303	.3691248
Trust in Politicans	3.393013	3.32803	.71527	.4745042
Risk	4.681115	4.658915	.2038984	.8384551
Reputation	2.672534	2.728486	-1.554827	.1201541
Perceived Benefit	5.694978	6.070093	-3.791916	.0001528

Table 4: Balance Test
— Treatment: Procedural Legitimacy —

	Baseline	Treatment	t-value	p-value
Age	55.56873	54.53552	1.912725	.0558838
Female	.4872727	.4965847	-.4958282	.620054
Rural	.3896577	.3946648	-.2727937	.7850317
University	.4176357	.4026906	.7032496	.4819766
Trust in Politicans	3.351104	3.370746	-.2161511	.8288863
Risk	4.608181	4.731707	-1.135604	.2562677
Reputation	2.689072	2.709944	-.5799862	.5619928
Perceived Benefit	5.814027	5.93645	-1.234076	.2172845

Table 5: Balance Test
— Treatment: Expected Contributions —

	Baseline	Treatment	t-value	p-value
Age	55.18919	54.87751	.5768677	.5640746
Female	.4878725	.4964183	-.4551933	.649005
Rural	.3959778	.3883704	.4146055	.6784621
University	.4027523	.4172185	-.681142	.4958552
Trust in Politicans	3.384503	3.337104	.5217406	.6018939
Risk	4.5625	4.780172	-2.002544	.0453703
Reputation	2.699843	2.699345	.0138533	.9889485
Perceived Benefit	5.875373	5.879815	-.0447905	.9642777

C Effect of Treatments on Perceptions of Legitimacy

Influencing Legitimacy

We begin by examining the average levels of legitimacy, acceptance, and fairness by treatment. Figure 2 displays the means along with the 95% confidence interval of the estimates. The first thing to note is that the same pattern is observed across all three outcome variables — the groups receiving the consultation treatment and not the partiality treatment are always found to have the most favorable assessment of the neighborhood improvement project. The mean assessment of those receiving only the input legitimacy treatment is statistically different from the baseline group across all three outcome measures (though only at the 90% level in the case of fairness). In contrast, the assessment of the project is always lowest for the group that received only the procedural illegitimacy treatment although the difference is only statistically significant when considering respondents' acceptance of the project. Thus, there are some suggestions that perceptions of the outcome are influenced by the treatments although the effect is moderate. For example, in the case of perceptions of legitimacy, the effect of the consultation treatment is about .4. To put it in context, this difference amounts to about two out of every five individuals adjusting their assessment of legitimacy by one point on the eleven-point scale. These cannot be considered large effects, but one shouldn't expect large effects either — views about legitimacy and fairness are likely to develop over longer periods of time as a result of people's experiences with political decision-making and policy implementation.[33]

In addition to perceptions of legitimacy, fairness, and willingness to accept policy decisions possibly being fairly inflexible, it also appears plausible that respondents' evaluation of how beneficial to them shapes their perceptions of the quality of the outcome in normative terms, or its output legitimacy. We were unable to experimentally manipulate the benefit of the outcome to the respondent, but we examine its effect using a measure of the respondent's evaluation of the policy in terms of personal benefit along with other covariates.[34]

Given the similarity of the treatment effects in table 2, we confine our attention to legitimacy as the dependent variable in our regression analysis.[35] The first regression in table 6 examines how legitimacy is affected by our treatments and essentially tells the same story as Figure 2 — the only difference is that, for the sake of legibility, the variable Procedural Legitimacy is a recoding of the treatment suggesting that the implementation of the project may not be impartial.[36] The second regression adds controls for the respondent's perceived

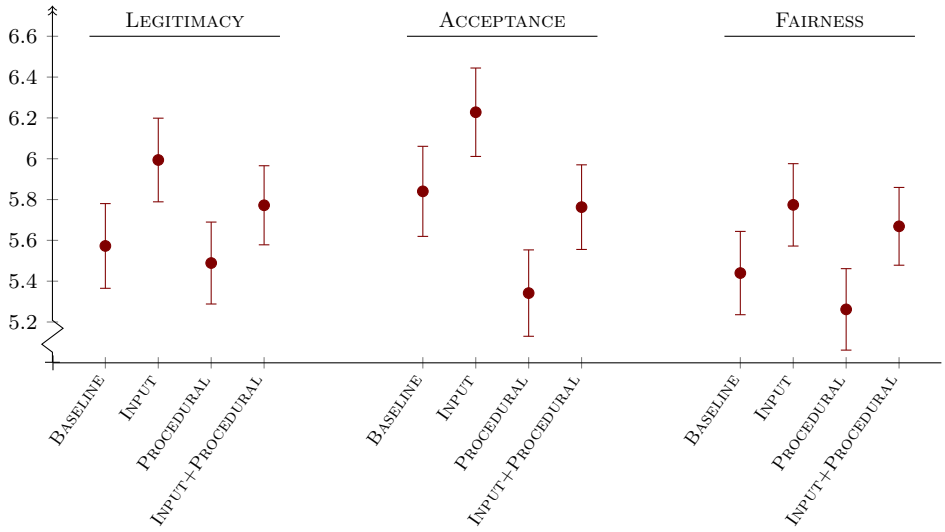
[33]Devine and Valgarðsson (2024) come to similar conclusions in their work on political trust.

[34]Whether we include or exclude other covariates should not affect the estimated effects of our treatments in expectations. We present balance tests of our treatments in Appendix B.

[35]We present the results for acceptance and fairness in appendix D.

[36]That is, the Procedural Legitimacy variable indicates that the respondent did not receive the 'Partiality' treatment. Recoding the variable implies that all the treatment variables are expected to have a positive impact.

Figure 2: Perceptions of Legitimacy, Acceptance, & Fairness
— By Treatment —



personal benefit of the project. The third model adds various socio-economic controls along with measures of risk-seeking, concern about reputation, and trust in politicians. As we are primarily interested in the effects of our treatments, we will simply note that only Trust in Politicians appears to have a small effect on perceptions of legitimacy. However, the respondents' evaluation of how beneficial the policy is to them has a very strong effect on the voters' perception of legitimacy. Moreover, the estimated effects of our treatments are no longer statistically significant when we control for evaluations of perceived benefit.[37]

This stands to reason as the Output Legitimacy question follows the treatments in our survey. The drop in the effect of the Input Legitimacy treatment suggests that the effect of the treatments on legitimacy is being mediated by the Output Legitimacy variable. This, in turn, suggests that the estimated effect of the Input Legitimacy treatment is not completely a function of legitimacy. Instead, it may be the case that upon reading that the project is popular, the respondent assumes that people will be willing to contribute to the project, which makes it more beneficial to the respondent. Thus, to explore what role Output Legitimacy plays here, we regress our treatments and control variables on Output Legitimacy. The results (table 7) are consistent with that argument and, in particular, it appears that those who receive the Input Legitimacy treatment consider the project to be more beneficial to them personally.

Controlling for personal benefit does not make the treatments completely irrelevant — we still find that the treatments affect policy acceptance and perceptions of the policy's fairness. It does, however, suggest two important lessons. First, attention must be given

[37]The results for policy acceptances show a more robust effect of our treatments. See appendix D

to alternative causal mechanisms — overlooking the importance of Output Legitimacy and how the treatments may affect the evaluation of the policy that has little to do with its normative qualities. Second, not considering Output Legitimacy here would result in an overstatement of the value of treatments.

Table 6: Input Legitimacy, Procedural Legitimacy, & Policy Legitimacy

	(1)	(2)	(3)
Input Legitimacy	0.283*	0.091	0.138
	(0.146)	(0.105)	(0.135)
Procedural Legitimacy	0.084	0.091	0.035
	(0.142)	(0.102)	(0.132)
Input×Procedural	0.138	−0.043	0.041
	(0.203)	(0.146)	(0.189)
Output Legitimacy		0.709***	0.725***
		(0.014)	(0.019)
Age			−0.001
			(0.005)
Female			0.149
			(0.101)
Rural			0.048
			(0.099)
University			−0.120
			(0.102)
Occupation (ref. Salaried):			
– Self-Employed/Employer			−0.016
			(0.163)
– Student			0.420
			(0.359)
– Other			0.246*
			(0.130)
Trust in Politicians			0.057***
			(0.021)
Risk-seeking			0.005
			(0.021)
Reputation			−0.053
			(0.061)
Constant	5.489***	1.475***	1.239***
	(0.103)	(0.110)	(0.369)
Observations	2598	2549	1493
R^2	0.01	0.49	0.52

Standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01

Table 7: The Effect of Input & Procedural Legitimacy on Perceived Benefit

	(1)	(2)
Input Legitimacy	0.278*	0.438**
	(0.143)	(0.181)
Procedural Legitimacy	0.034	0.190
	(0.138)	(0.178)
Input×Procedural	0.190	−0.176
	(0.198)	(0.255)
Age		0.003
		(0.006)
Female		0.272**
		(0.136)
Rural		0.321**
		(0.134)
University		0.041
		(0.138)
Occupation (ref. Salaried):		
– Self-Employed/Employer		0.161
		(0.219)
– Student		0.248
		(0.482)
– Other		−0.104
		(0.175)
Trust in Politicians		0.181***
		(0.028)
Risk-seeking		0.006
		(0.028)
Reputation		0.110
		(0.083)
Constant	5.677***	4.231***
	(0.100)	(0.487)
Observations	2638	1528
R^2	0.01	0.05

Standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01

D Effect of Treatments on Acceptance & Fairness

Table 8: Input Legitimacy, Procedural Legitimacy, & Policy Acceptance

	(1)	(2)	(3)
Input Legitimacy	0.421***	0.176*	0.209
	(0.155)	(0.103)	(0.131)
Procedural Legitimacy	0.498***	0.483***	0.464***
	(0.150)	(0.100)	(0.128)
Input×Procedural	−0.033	−0.203	−0.152
	(0.215)	(0.143)	(0.183)
Output Legitimacy		0.799***	0.797***
		(0.014)	(0.018)
Age			−0.016***
			(0.004)
Female			0.109
			(0.097)
Rural			0.123
			(0.096)
University			0.136
			(0.099)
Occupation (ref. Salaried):			
– Self-Employed/Employer			−0.020
			(0.157)
– Student			−0.200
			(0.344)
– Other			0.215*
			(0.126)
Trust in Politicians			0.073***
			(0.020)
Risk-seeking			−0.013
			(0.020)
Reputation			0.003
			(0.060)
Constant	5.342***	0.850***	1.350***
	(0.109)	(0.107)	(0.358)
Observations	2623	2581	1506
R^2	0.01	0.56	0.59

Standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01

Table 9: Input Legitimacy, Procedural Legitimacy, & Policy Fairness

	(1)	(2)	(3)
Input Legitimacy	0.407***	0.206*	0.233*
	(0.144)	(0.105)	(0.137)
Procedural Legitimacy	0.178	0.172*	0.082
	(0.140)	(0.102)	(0.135)
Input×Procedural	−0.073	−0.232	−0.162
	(0.200)	(0.146)	(0.193)
Output Legitimacy		0.687***	0.671***
		(0.014)	(0.019)
Age			−0.003
			(0.005)
Female			0.210**
			(0.103)
Rural			0.275***
			(0.101)
University			−0.126
			(0.104)
Occupation (ref. Salaried):			
– Self-Employed/Employer			−0.138
			(0.164)
– Student			0.160
			(0.366)
– Other			0.232*
			(0.133)
Trust in Politicians			0.072***
			(0.021)
Risk-seeking			0.022
			(0.021)
Reputation			−0.012
			(0.063)
Constant	5.262***	1.378***	1.151***
	(0.101)	(0.110)	(0.378)
Observations	2597	2552	1494
R^2	0.01	0.48	0.48

Standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01

E Regressions Using Treatment Checks

The following tables show regression models for contributions to the public good where instead of the experimental treatments we use the treatment checks included in the survey. The treatment checks asked the respondents to indicate i) whether they thought a majority of the population supported the project, whether it was likely that the project's implementation would be influenced by political actors, and what they expected the average contributions to the public good to be. Examination of the treatments and treatment checks indicated that the correlation between the two was fairly low. Thus, while using the treatment checks introduces uncertainty about the estimation uncovering causal effect, it may still be informative to examine whether those who 'took' the treatment appear to behave differently from those who either didn't receive the treatment or appear immune to it. The first set of results uses the first two treatment checks while retaining our third treatment (which suggested a majority planned to contribute the maximum amount). The second set of results uses manipulation checks in place of all three treatments.

Table 10: Public Goods Contribution
— Manipulation Checks: Input & Procedural Legitimacy
Treatment: Exp. Contributions —

	(1)	(2)	(3)
Input Legitimacy$_{MC}$	519.412***	339.955***	195.392*
	(66.904)	(86.011)	(114.199)
Procedural Legitimacy$_{MC}$	−61.944	77.981	125.216
	(48.564)	(66.016)	(85.613)
Output Legitimacy	942.972***	953.196***	1008.201***
	(59.239)	(59.046)	(78.785)
Expected Compliance	2381.538***	2472.947**	2343.335*
	(240.406)	(964.001)	(1269.709)
Input$_{MC}$×Exp. Contributions		333.849***	456.352***
		(106.140)	(140.701)
Procedural$_{MC}$×Exp. Contributions		−290.748***	−367.231***
		(96.950)	(127.339)
Age			19.004
			(15.296)
Female			−105.254
			(336.349)
Rural			855.837**
			(332.196)
University			800.678**
			(337.626)
Occupation (ref. Salaried):			
– Self-Employed/Employer			1446.613***
			(542.473)
– Student			−3218.508***
			(1198.255)
– Other			−834.135*
			(438.803)
Trust in Politicians			124.980*
			(69.928)
Risk-seeking			193.327***
			(69.715)
Reputation			−15.956
			(206.140)
Constant	−1370.898***	−1346.491**	−3589.129**
	(507.661)	(659.137)	(1446.722)
Observations	2328	2328	1383
R^2	0.27	0.28	0.31

Standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01

Table 11: Public Goods Contribution
— Manipulation Checks: Input, Procedural, Expected Contributions —

	(1)	(2)	(3)
Input Legitimacy$_{MC}$	227.180***	30.566	9.428
	(60.301)	(84.503)	(114.536)
Procedural Legitimacy$_{MC}$	−7.214	14.674	20.771
	(43.305)	(69.842)	(95.454)
Output Legitimacy	693.402***	708.540***	768.779***
	(53.503)	(53.622)	(72.141)
Expected Contributions$_{MC}$	0.739***	0.563***	0.595***
	(0.025)	(0.097)	(0.130)
Input$_{MC}$×Exp. Contributions$_{MC}$		0.034***	0.024*
		(0.010)	(0.014)
Proc.$_{MC}$×Exp. Contributions$_{MC}$		−0.002	0.003
		(0.009)	(0.013)
Age			11.637
			(13.706)
Female			−644.422**
			(303.961)
Rural			472.251
			(299.569)
University			939.259***
			(303.928)
Occupation (ref. Salaried):			
– Self-Employed/Employer			1096.941**
			(482.938)
– Student			−3406.713***
			(1080.417)
– Other			−1080.539***
			(397.824)
Trust in Politicians			111.060*
			(63.268)
Risk-seeking			138.223**
			(63.414)
Reputation			−56.605
			(186.451)
Constant	−2142.049***	−1398.784**	−2913.820**
	(451.644)	(658.614)	(1395.534)
Observations	2228	2228	1324
R^2	0.44	0.45	0.46

Standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01