Taxation, Loss Aversion, and Accountability: Theory and Experimental Evidence for Taxation's Effect on Citizen Behavior*

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Abstract

While corruption is a key challenge for state development, we still know little about what factors affect citizens' toleration of non-accountable behavior by government officials. This paper argues that taxation is a significant predictor of citizens' demands, introducing and formalizing a micro-level theory of how taxation affects citizens' preferences over accountability. By taking away earned income, taxation pushes loss-averse citizens below their reference point, increasing the utility citizens lose from corruption and making them more likely to enact costly sanctions against non-accountable officials. Novel laboratory experiments, conducted in Uganda, find that taxation increases citizens' willingness to punish leaders by 12% overall, and by 30% among the group who has the most experience paying taxes in Uganda. Additional experiments confirm that this effect is driven by the loss aversion mechanism, and a conjoint survey experiment demonstrates support for taxation's effect on citizen behavior among politically-active Ugandans.

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1 Introduction

After decades of statebuilding efforts, many African countries still suffer from poor governance and corruption. One constraining factor is low citizen demand for increased accountability, despite the serious detrimental effects of government mismanagement on citizens' wellbeing. And yet, we still know little about what induces citizens to demand higher levels of accountability from their governments—few accountability-building interventions have been successful, even in the short term, and there are few variables that consistently explain when citizens will begin to demand more from their governments.[1] This paper introduces, theorizes, and tests a new mechanism by which citizens' demands for accountability can be increased: it argues that taxation changes citizens' preferences such that they are less tolerant of non-accountable behavior by governments. In contrast to previous work on taxation and accountability, this paper provides theory and evidence on the individual-level mechanisms that drive citizens' behavior when taxed and links these mechanisms to broader demands for accountability.[2]

A number of previous studies have demonstrated strong cross-national correlations between taxation and democratization (Ross, 2004) and public goods provision (Timmons, 2005), and between foreign aid and corruption (Remmer, 2003). Evidence from Brazil, Tanzania, Nigeria, and the United States shows similar patterns at the subnational level (Brollo et al. (2010), Gadenne (2011), Hoffman and Gibson (2005), Berger (2009), and Fisman and Gatti (2002)). The standard political economy explanation for this phenomenon is that taxed citizens can use their ability to withhold critical tax funds as leverage to extract concessions from governments. Tax-reliant governments are then forced to bargain with citizens, buying quasi-voluntary tax compliance in return for democratic institutions or other policy concessions.[3] Tax bargaining undoubtedly takes place in some contexts, including in sub-Saharan Africa today. However, the bargaining explanation cannot explain why citizens fail to use other forms of leverage, such as elections, to hold governments accountable in the absence of taxation. There are also cases in which such bargains do not appear take place, but in which there remains evidence of a link between taxation and accountability.

[1] One exception is the effect of information, which appears to be effective in some contexts – see for example Reinikka and Svensson (2004).

[2] For the purposes of this paper, "accountable" governments are those that provide citizens' preferred public goods and services rather than either misallocating or stealing funds for their own ends. Limiting corruption is an integral part of this definition.

[3] See Schumpeter (1991), Bates and Lien (1985), North and Weingast (1989), Levi (1989), Moore (2004), and Torgler (2007).

This paper theorizes and provides evidence for an alternative but complementary mechanism through which taxation can improve accountability: taxed citizens have a lower tolerance for poor performance and corruption, and are more likely to punish nonaccountable leaders. I argue that individuals receive a non-economic "expressive benefit" from taking punitive action against such leaders, and that taxation increases this benefit relative to the costs of action, inducing citizens to more readily punish governments for accountability failures.[4] There is evidence that most individuals are loss averse, caring more about recovering losses than obtaining gains (Kahneman and Tversky, 1979). I argue that taxation, by removing earned income, shifts citizens into the realm of losses, thereby increasing the utility an individual loses due to corruption or other governance problems. If this loss of utility is tied to an individual's willingness to take punitive action against government leaders, taxation will decrease citizens' tolerance for corruption or poor public goods provision and increase the likelihood that citizens punish their government for such mismanagement. Facing more engaged citizens and a credible threat of sanctions, leaders are more likely to reduce corruption and provide the services citizens desire.[5]

In this paper I develop and test the proposed mechanism more rigorously. I use a formal model to derive testable implications of the theory, most importantly that taxed citizens should be more willing to punish poor performance by government leaders, even absent economic incentives to do so. I then test these implications using a set of novel laboratory-in-the-field experiments conducted in Uganda. In these experiments, respondents engage in a simulated interaction between a Citizen and Leader; the Citizen must decide whether to pay to punish the Leader based on how he allocates a group fund, which is either exogenously given or derived from a tax on the Citizen. I find that the taxation treatment substantially increases Citizens' willingness to punish the Leader: the average transfer threshold below which Citizens will punish increases by 13% overall, and by 30% for the subgroups with the most experience with taxation. In a non-intuitive implication of the formal model, I also find that the largest effect of taxation is on those citizens with a lower underlying propensity for punishment. Additional experiments demonstrate that the results are driven by the proposed loss aversion mechanism, rather than

[4]This idea is related to a conjecture in Sandbu (2006), who argues that endowment effects should induce citizens to care more about government spending. However, that paper does not explain how loss aversion affects the cost-benefit analysis of accountability to citizens, or provide a formal model or evidence for the proposed effect.

[5]This theory accords with the intuition of many observers, but the author is unaware of any direct evidence that it exists. For example, Moore (2004) claims that "the absence of direct taxes reduces the likelihood that citizens will be motivated to engage in politics through a sense of a right to influence the use of 'their' own money" (307). However, he adds that "We do not know how strong this effect is likely to be" (315).

alternative explanations such as more generalized fairness norms. Qualitative data from experiment participants, in addition to evidence from a conjoint survey experiment in Uganda, provide support for the behavioral effect of taxation outside of a laboratory setting.

This mechanism has at least three advantages over existing theory. First, it can operate in contexts where tax bargaining is not possible, either because citizens face collective action problems, or because taxation is coercive and non-compliance is not feasible.[6] This is especially important in African countries, where few examples of tax bargaining—typically involving small groups of well-organized citizens or industries—have been documented (Eubank (2012), Bräutigam (2008), Juul (2006)). Second, a behavioral effect of taxation can also help to explain when and why tax bargains can be maintained. Because taxation increases citizens' willingness to take costly actions against corrupt governments, citizens can credibly commit to punishing any deviations from an agreed-upon bargain; this may increase the probability that the bargain is upheld by both sides. By increasing the personal benefits from taking part in collective action, the proposed mechanism could also lessen the coordination problems facing citizens. This can explain why the absence of taxation is so detrimental to accountability—citizens receive lower expressive benefits and are less likely to act collectively. Third, extensions of the model presented here can explain variation in outcomes surrounding taxation, including when the behavioral effect (and the subsequent pressure on governments) will lead to an increase in accountability, as opposed to a decrease in taxation or even a decrease in accountability. These extensions can help make sense of actual government behavior in countries, such as Uganda, that have reduced taxation in the lead-up to elections, thereby reducing the resources they have at their disposal in return for fewer citizen demands.

This paper also adds to current debates on how to build and sustain a culture of political engagement among citizens in fledgling democracies. A number of randomized interventions have now shown that it is difficult to sustainbly increase demands for accountability.[7] Those interventions that have successfully encouraged citizens to attend meetings or monitor leaders often see gains disappear once the intervention concludes (Casey, Glennerster and Miguel, 2011).

[6] While in some sense all taxation is coercive, many governments rely primarily on "quasi-voluntary compliance", in which most citizens pay taxes not because of coercive threats but because of a belief that the tax system is fair. In many countries punishments for tax evasion are too low to account for high compliance rates. Under coercive taxation, voluntary compliance is low and governments enforce compliance through harassment, arrest, and forcible confiscation of assets. Fjeldstad (2001) argues that local taxation in Tanzania is typically coercive. In Uganda, collection of the head tax was often coercive, and noncompliance was punishable with jail time (Author interview, 2012).

[7] See for example Olken (2005) on corruption monitoring in Indonesia.

Interventions that provide information to citizens have generally been more successful, but only increase citizens' ability to hold governments accountable, not their underlying propensity to do so. This paper shows how taxation can increase citizens' willingness to act beyond the effects of information or capacity-building, and in a way that may be more sustainable: provided governments have an incentive to keep taxing citizens, citizens will continue to monitor and punish non-accountable behavior.[8]

2 Taxation and Accountability in Uganda

Patterns of taxation and accountability in Uganda illustrate how taxation affects citizens' attitudes towards accountability. While overall tax revenues in Uganda have increased in recent years, direct taxation of poor citizens has actually decreased, with tax cuts often timed to win support among key electoral groups.[9] The result is that poor individuals pay few direct taxes, and while even basic public services are difficult to obtain, there is little concrete outrage about poor governance. A common view among local political leaders, civil society organizations, and academics is that tax cuts, in particular the abolition of the graduated head tax, have severed a critical link between citizens and government. As a result, citizens are more disengaged from the political process.[10]

Where taxation is still present in Uganda, accountability demands are higher. For example, at the local level vendors pay fees to sell produce and other goods in agricultural markets - these fees constitute one of the only remaining sources of local tax revenue. In 2012, vendors in the district of Lira were upset—the city had stopped collecting the market's trash, and the resulting piles of rotting vegetables created unsanitary conditions that kept customers away. In response, market vendors organized and protested to the city government, arguing that their tax money was not being well spent. They dumped buckets of stinking refuse in front of City Hall, threatening to do the same to city council members' houses if the situation was not rectified.

[8] Paler (2013) finds that citizens are more willing to seek information about the government's budget when taxed, and Gadenne (2011) argues that taxed citizens may have more information about government spending, but does not provide evidence. In contrast to this paper, Paler (2013) also finds taxation does not induce citizens to be more politically active, but does find that in low-information environments citizens who are already political active are more likely to sanction the incumbent when taxed. Rodden (2005) argues that that, in federal systems, local taxation signals that the locus of accountability lies with local government.

[9] The head tax, homeowner property taxes, health center user fees, and primary school fees were all removed in election years. See Harding and Stasavage (2014) for a broader discussion of the abolition of school fees in sub-Saharan Africa.

[10] Author interviews.

Garbage collection quickly resumed (Network, 2012).

In contrast, a recent scandal provides a striking example of citizens' disconnect from non-earned revenue. In October 2012, a corruption investigation in Uganda found that close to US$20 million in aid money had vanished from accounts in the Office of the Prime Minister. Within two months at least eight donors—including the European Union and the World Bank—announced that they were collectively stopping over US$300 million in aid, almost 7% of the government's 2012-2013 budget. The Ugandan media covered the scandal heavily, and yet citizen outrage was muted. There were few major protests, and while a few officials were prosecuted, there were no serious political consequences for the dominant NRM party. This lack of accountability, despite the importance of aid funding for domestic development and service provision, is puzzling. The scandal was public, the consequences for citizen wellbeing were potentially extremely serious, and yet there were no wide-spread citizen demands for accountability.[11]

3 A Model of Taxation and Citizen Demands for Accountability

An illustrative model can help to explain why taxation affects accountability demands. Here I present only the citizen's "demand side" of accountability; the government's behavior and general equilibrium results are examined in the online appendix. Consider a state consisting of a government and a continuum of citizens of mass one. I compare two taxation regimes with equal budgets derived from different sources. In one regime the government collects a mandatory, exogenously set, proportional tax, t, on each citizen's income, y. Taxation is assumed to be efficient and collection is costless. In the other regime, $t = 0$; all government funds come from non-earned sources such as foreign aid or natural resources. In both regimes the government receives total revenue T and must allocate it between a public good, G, and a private good, p, with $G + p = T$. Citizens only receive utility from the public good; government receives utility only from the private good. The private good represents money that is used for patronage or clientelism, embezzled by a corrupt regime, or used for another public good less valued by citizens. The public good represents education, infrastructure, or any other good valued by the general population. All that is required for these results to hold is that citizens prefer G to p,

[11] As part of the larger dissertation project, I demonstrate that there is a robust crossnational correlation between levels of taxation and government corruption more generally.

and that the government prefers p to G.[12]

Citizens' utility is derived from two components: their economic payoff in relation to their expectations (reference point), and their payoff from any punitive action taken against the government. First, consider a citizen's economic utility, $u(x)$, where

$$x = y(1-t) + G - r. \tag{1}$$

In the equation above $y(1-t)$ is post-tax income, G is the level of the public good, and r is the citizen's reference point. Note that $x > 0$ only when a citizen's economic utility exceeds his reference point; when $x < 0$ the citizen is in the realm of losses. I argue that a citizen's reference point is y, his pre-tax income assuming no public goods are provided.[13] If citizens are not taxed, they expect to receive only their private income, regarding utility from any public goods as an unexpected "gain". However, if citizens are taxed, their utility when $G = 0$ is now below the reference point. The function $u(x)$ can be any function that meets the criteria of loss aversion as defined in Kahneman & Tversky (1979):

1. $u(x)$ is monotonically increasing, with $u(0) = 0$
2. $u(x)$ is strictly concave for all $x > 0$, and strictly convex for all $x < 0$
3. $u(x) < -u(-x)$ for $x > 0$
4. $u'(x) < u'(-x)$ for $x > 0$

Figure 1 depicts such a function.[14]

A citizen's full utility function is

$$V_C = u(x|G, r, t) + s_i(\beta_i * \Delta u(x|G, r, t) - c) \tag{2}$$

where the first term is economic utility given current levels of the public good G, and the second term represents utility derived from punishing the government. Punishment in this context can be understood as taking part in elections, protests, or informal sanctions of government leaders. The citizen's decision of whether to punish the government is $s_i \in \{0, 1\}$. If $s_i = 1$ the

[12] In this section I refer to spending on p as "corruption", although it also includes other forms of non-accountable behavior.

[13] The reference point was chosen partially to map onto the games below, where the respondent's in-game endowment is a logical reference point. It is also in line with the general idea that individuals "own" their pre-tax income (see discussion in Murphy and Nagel (2002) for prevalence of this idea.) The results below also hold if $r = y \pm \epsilon$ for sufficently small ϵ. Proof available upon request.

[14] Note that if $u(x)$ is instead globally concave, the main result derived in Section 3.1 holds, but this utility function generates a different implication for Section 3.2.

citizen pays a cost c and receives a non-economic benefit β_i that is multiplied by the *amount of economic utility the citizen has lost due to corruption*. This corruption loss is defined as:

$$\Delta u(x|\hat{G}, r, t) = u(x|T, r, t) - u(x|\hat{G}, r, t), \tag{3}$$

the difference in a citizen's economic utility between full public goods provision ($G = T$) and actual public goods provision ($G = \hat{G} \in [0, T]$). For each citizen, $\beta_i > 0$ is drawn from some distribution $F(\cdot)$. Citizens with high draws of β_i can be thought of as having a higher propensity for political engagement, either because they care more about corruption, or because they receive a higher expressive benefit from engaging in political action. In equilibrium each citizen punishes if the benefit exceeds the cost:

$$s_i^* = \begin{cases} 1 & \text{if } \beta_i * \Delta u(x|G, r, t) - c > 0 \\ 0 & \text{otherwise} \end{cases} \tag{4}$$

which occurs when the utility a citizen has lost from corruption is sufficiently high:

$$\Delta u(x|G, r, t) > \frac{c}{\beta_i}. \tag{5}$$

If $\Delta u(x|G = 0, r, t) < \frac{c}{\beta_i}$ when $G = 0$, even under taxation, the citizen will never take action against the government. For such citizens the results below will not hold; this is most likely if government is extremely repressive (c is too high), or if a particular citizen simply does not care about politics (β_i is too low). For all other cases, there will be some indifference point $G^* \in (0, T)$ such that

$$\Delta u(x|G^*, r, t) = \frac{c}{\beta_i}. \tag{6}$$

Note that $\Delta u(x|G, r, t)$ is strictly decreasing as G increases, and so the citizen prefers to punish the government only if $G < G^*$; that is, if the government fails to provide at least some basic level of the public good. I define this cutpoint value G^* as the *punishment threshold*; this is the main outcome of interest in the behavioral games below.

3.1 The Effect of Taxation on Citizens' Willingness to Punish

Assuming from above that citizens have a reference point $r = y$ (i.e. pretax income), taxation pushes citizens into the realm of losses. Because the utility function $u(x)$ is steeper below the reference point, this implies that a taxed citizen loses more utility from a given level of corruption $G < T$ compared to a non-taxed citizen—formally, for a given G, $\Delta u(x|G, r, t)$ is higher under taxation. This in turn implies that taxation increases the punishment threshold G^*: citizens punish a wider range of non-accountable behavior when they are taxed.

To see this more clearly, Figures 1 and 2 graph citizen utility with and without taxation. On each graph two points are marked, representing the two components of $\Delta u(x|\hat{G}, r, t)$: citizen utility if corruption was zero—$u(x|T, r, t)$—and citizen utility given that the government is currently providing some level of public good $\hat{G}$—$u(x|\hat{G}, r, t)$. In Figure 1, the citizen is not taxed. Any positive level of the public good represents a gain, although utility is highest when $G = T$. Figure 2 depicts citizen utility under taxation. Now $u(x|T, r, t)$ is at the origin, as the citizen requires full public goods provision to regain his loss of yt. At any level of partial public goods provision $G < T$ the citizen's utility is still below the reference point. The vertical distance between $u(x|\hat{G}, r, t)$ and $u(x|T, r, t)$ on each graph represents the economic utility loss from corruption $\Delta u(x|\hat{G}, r, t)$.

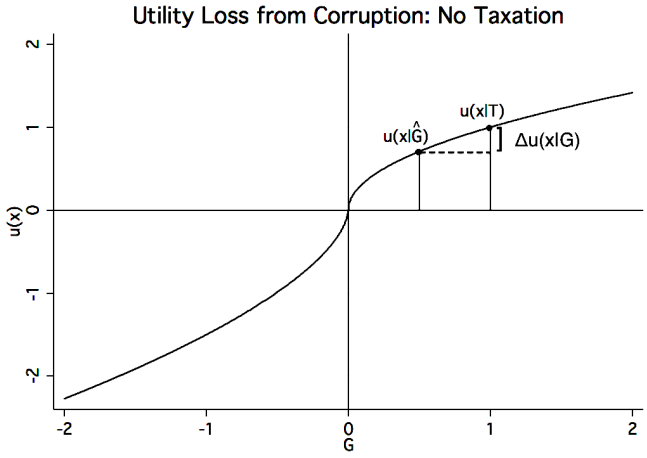

Figure 1: This figure graphs economic utility for a non-taxed citizen. The origin represents utility when public goods provision and taxation are zero. The two points mark utility if $G = T$—the highest possible level of public good —and utility given that the government is providing $G = \hat{G}$. The vertical distance between the two points is equal to $\Delta_0 u(x|\hat{G}) = u(x|T) - u(x|\hat{G})$: the economic utility a citizen loses from corruption when $G = \hat{G}$.

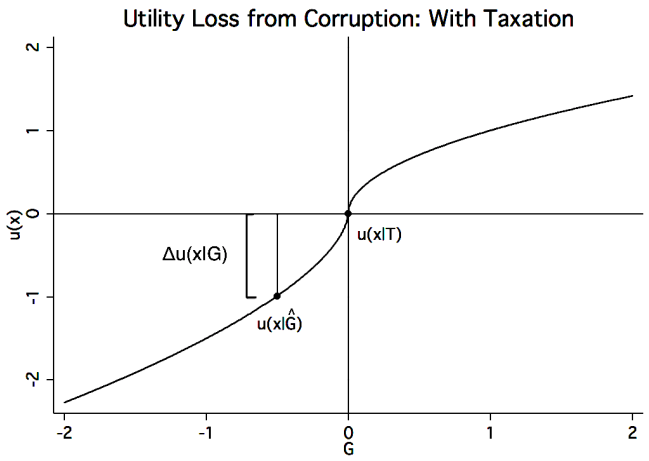

Figure 2: This figure graphs the economic utility of a taxed citizen. For all $G < T$ the citizen receives negative utility, as she is in the realm of losses. The two points mark utility if $G = T$—the highest level of public good possible—and utility if the government actually provides $G = \hat{G}$. The vertical distance between the two points is $\Delta_t u(x|\hat{G}) = u(x|T) - u(x|\hat{G})$: the economic utility a citizen loses from corruption when $G = \hat{G}$.

Let $\Delta_t u(x|G, r, t)$ be the loss from corruption with taxation, and $\Delta_0 u(x|G, r, t)$ be the loss from corruption in the non-tax regime. In the graphs, the slope of the curve between $u(x|T, r, t)$ and $u(x|\hat{G}, r, t)$ is steeper for the taxed citizen, implying that $\Delta_t u(x|\hat{G}, r, t) > \Delta_0 u(x|\hat{G}, r, t)$. Appendix A contains a formal proof that, for any $G \in [0, T)$, $\Delta_t u(x|G, r, t) > \Delta_0 u(x|G, r, t)$.[15] As $\Delta u(x|G, r, t)$ is decreasing in G, this directly implies that $G_t^* > G_0^*$: citizens will have a higher minimum acceptable level of public goods provision (i.e. a higher punishment threshold) when they are taxed. This is the critical implication tested in the experiments below.[16]

3.2 Taxation and variation in the propensity for punishment

The variation in β_i introduced above represents heterogeneity in individuals' underlying propensity for civic engagement: a citizen with a higher draw of β_i receives a higher expressive benefit from punishing the government, leading to a higher punishment threshold G^*. Comparative statics using β_i generate a second prediction: the size of taxation's effect on an individual's

[15]The online appendix presents the full equilibrium. Equilibrium increases in accountability are most likely when citizens can enact a sufficiently high punishment on leaders. This could be through elections but is also possible if citizens can use informal social pressures or protests.

[16]Note that taxation also affects punishment thresholds if citizens are not reference-dependent and have a concave utility function. However, such a model would predict a null effect in the experiments below, which control for such income effects.

punishment threshold—defined as $\Delta G^* = G_t^* - G_0^*$—will be a non-monotonic function of β_i. The model predicts that the effect of taxation on a citizen's willingness to punish should be generally be increasing in β_i among those citizens who are less likely to take action against the government, but decreasing (although still positive) in β_i higher in the distribution.

To see this more clearly, consider Figure 3, which plots a citizen's punishment threshold with and without taxation as a function of her propensity for punishment β_i. The punishment threshold is increasing in β_i, and is always higher when the citizen is taxed. However, the vertical distance between the two curves—representing the effect of taxation on a citizen's punishment threshold—is not constant across the parameter space.

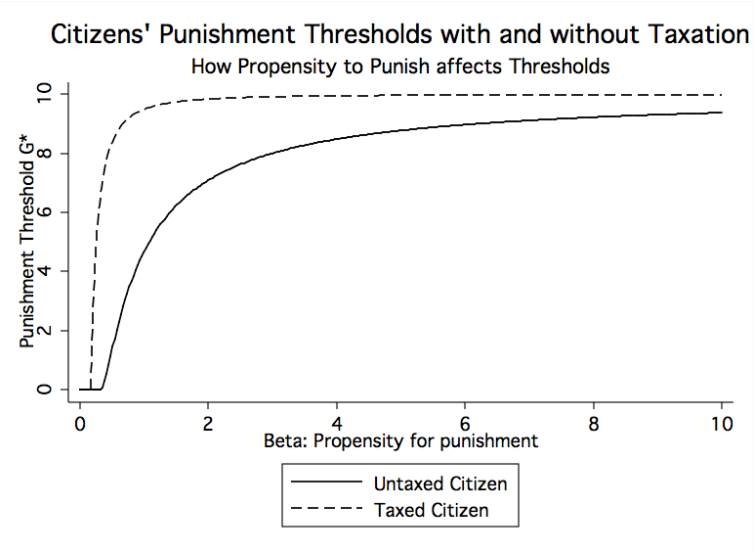

Figure 3: *Citizens' Punishment Thresholds With and Without Taxation: Heterogeneity in* β_i. A functional form was chosen for $u(x)$; c, y, and T were set to match values in the laboratory experiments. For both taxed and untaxed citizens, the willingness to punish is increasing in β_i.

Figure 4 graphs $\Delta G = G_t^* - G_0^*$, the size of taxation's effect on a citizen's punishment threshold, as a function of β_i. At extremely low levels of β_i, the punishment threshold is zero with or without taxation: these citizens never punish, and so the effect of taxation on these individuals is zero. The next segment of the parameter space represents individuals who are "triggered" by taxation, in that G_t^* is positive and increasing but G_0^* remains at zero; the treatment effect is therefore increasing in β_i.[17] Past a certain point, both G_t^* and G_0^* are positive, such that citizens punish at least some levels of corruption with or without taxation. In this

[17]In the experiments below, less than 1% of respondents fall into the first two categories.

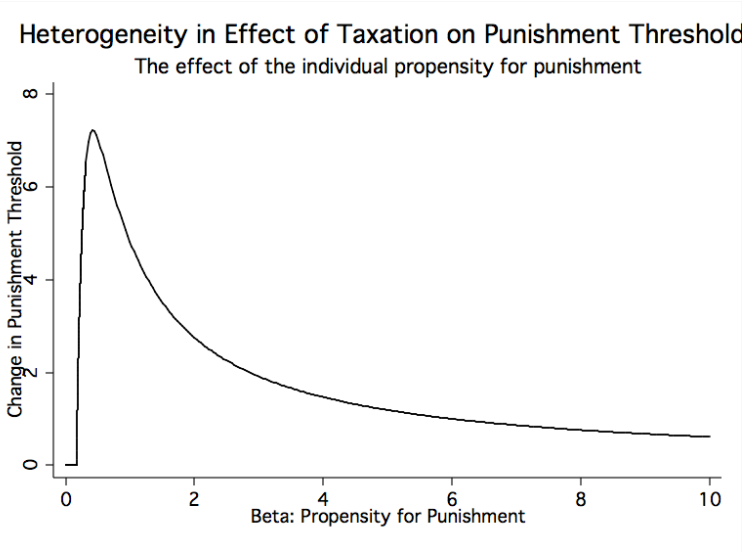

Figure 4: *Heterogeneity in the Effect of Taxation on the Punishment Threshold, by* β_i. The y-axis is $G_t^* - G_0^*$, the difference in the punishment thresholds between a taxed and untaxed citizen for a particular β_i.

part of the parameter space the effect of taxation on punishment is at first increasing in β_i. However, it soon reaches a threshold $\bar{\beta}$ such that, for all values of $\beta_i > \bar{\beta}_i$, the effect of taxation *decreases* as β_i increases, eventually asymptoting towards zero. The online appendix contains a proof that, for any function $u(x)$ that meets the assumptions made above, this turning point will occur for β_i such that $G_0^*(\bar{\beta}_i) \in (0, \frac{T}{2})$.[18] Thus for the experimental sample below, we should expect the effect of taxation to first increase and then decrease as β_i increases.[19]

3.3 Discussion

The mechanism described above demonstrates how taxation can increase accountability even in the absence of formal bargains between citizens and governments. It generates two testable predictions: first, that punishment thresholds will be higher for taxed citizens—that citizens will demand a higher level of public goods from leaders when they are being taxed—and, second, that taxation should raise this threshold the most for individuals who punish only high levels of corruption without taxation; the treatment effect will be smaller for individuals who already

[18] It also proves that ΔG^* will take the shape described here.

[19] Note that, in contrast to the main finding above, this implication is not generated by a globally concave utility function for citizens, which instead predicts that the treatment effect of taxation is monotonically decreasing in β_i over the entire range for which $G_0^* > 0$.

punish even mild deviations without taxation.

Rigorously testing this theory is not simple. It necessitates not only finding exogenous variation in taxation, but also isolating the behavioral effect of taxation from other proposed mechanisms through which taxation affects accountability. While these issues are difficult to overcome using observational data, it is possible to isolate the behavioral effect in a laboratory setting. This paper uses a set of novel laboratory experiments designed to test whether taxed citizens are more likely to punish corrupt behavior by leaders, even absent an economic benefit from doing so. These experiments, conducted in Kampala, Uganda, provide the first micro-level evidence that taxation induces citizens to demand higher levels of accountability from government leaders.

4 Methodology

These experiments build on an experimental literature that has shown that individuals are willing to take costly actions to impose sanctions on fellow players in varied settings (Henrich et al., 2006). More recently, political scientists have used laboratory experiments to measure societal norms, including those relevant for government accountability (see, for example, Grossman (2014)). A number of psychological mechanisms drive this willingness to punish others' behavior. Fehr and Schmidt (1999) shows that punishment is due in part to inequity aversion; note that this is held constant across the two treatments below. Another possibility is that individuals punish to relieve the negative emotions induced by behavior that violates norms; Fehr and Gächter (1999) shows that these negative emotions are increasing as the size of the deviation from the norm increases. This finding supports the model introduced above, in which the expressive benefit of punishment is scaled by one's personal loss of utility from corruption; it suggests that fairness norms might in part be drawn from one's own suffering from unfair or corrupt behavior by others.

A large literature also supports models of reference-dependent utility. These models were first introduced in 1979 by Kahneman & Tversky, and a number of studies have confirmed that most individuals do indeed feel losses more keenly than gains. Tversky and Kahneman (1991) also shows that loss aversion can be present even in riskless choice. More recently Zehnder, Hart and Fehr (2008) have argued that contracts can serve as reference points. This can help to explain how the behavioral mechanism here might be affected by tax bargaining—such bargains

may act as contracts, setting citizens' reference point regarding what level of public goods should be provided.

4.1 Experimental Design

The experiments were designed to separate the proposed behavioral mechanism from other potential effects of taxation. To eliminate the possibility of bargaining, taxation in the experiments is exogenously set and mandatory – citizens cannot use the threat of non-compliance to force leaders to be accountable. To avoid information effects, the government's budget is held constant across treatments and is observed by the citizens, and to prevent citizens from using punishment as a signal to leaders in future rounds, the experiments described below are single-shot interactions. Finally, citizens face no uncertainty about or barriers to punishing non-accountable behavior; they make an ex ante decision rule regarding punishment, and this decision rule is always enforced.

The experiments consisted of the "Tax" and "Grant" games, each played between one "Citizen" and one "Leader".[20] In both games, the Leader is given a "group fund" of 10 money units (MU) to divide between himself and the Citizen. The Citizen can then pay to fine the Leader if she is dissatisfied with the allocation. The games differ in the source of the group fund. In the Tax Game, the Citizen is given a "wage" of 10 MU. Half of that money is taken as a tax, doubled (to 10 MU), and given to the Leader. In the Grant Game, the Citizen receives wages of 5 MU, and 10 MU is given to the Leader as a non-earned group fund (similar to foreign aid or oil revenue). In both games, at the time the Leader makes his allocation decision the Citizen has 5 MU and the Leader has 10 MU; the decision trees are then identical. In both games, if the Citizen decides to punish the Leader, he pays 1 MU and 4 MU is removed from the Leader. For implementation purposes 1 MU was set at 100 Ugandan Shillings (UGX).[21] The steps of each game are summarized in Table 1.

As no one receives the money taken away in punishment, and as this is a single-shot interaction, the unique subgame-perfect Nash equilibrium of both games is for the Leader to offer 0 MU to the Citizen, who never punishes. Punishment is never economically rational, but rather a purely expressive action by the Citizen. The decision tree and payoffs are the same in both games, and so the only difference between the Tax and Grant games is the framing effect created

[20] In actual enumeration, both roles were played by Ugandan citizens who were randomly assigned to a role.
[21] 1,000 UGX is about US$0.40, a significant amount of money for respondents.

STAGES	Tax Game	Grant Game
1.	The Citizen is given a wage of 10 MU.	The Citizen is given a wage of 5 MU.
2.	The Citizen is taxed 5 MU - this is doubled to 10 MU and given to the Leader as the group fund.	The Leader is given 10 MU as the group fund.
3.	The Leader allocates the 10 MU between himself and the Citizen.	
4.	The Citizen observes the Leader's decision and decides whether to pay 1 MU to have enumerators remove 4 MU from the Leader.	

Table 1: *Timing of Tax & Grant Games*

by having the group fund previously owned by the citizen. This implies that any differences in gameplay between the Tax and Grant games must therefore be due to some behavioral effect activated by taxing the Citizen. The decision to call the Leader's 10 MU the "group fund" was made in order to eliminate the possibility that, in the Grant game, the Citizen would think that he had no right to the Leader's money.

4.2 Implementation

The experiments were conducted in three low-income Bugandan neighborhoods of Kampala, Uganda in 2012. Kampala has seen significant political mobilization in recent years and its urban citizens have higher exposure to formal taxes than rural citizens. This made it likely that the experimental treatment would activate the relevant norms and expectations surrounding taxation and accountability. Conducting the experiments in Uganda, as opposed to in the United States, also increased the findings' external validity, as there is strong evidence that cultural differences have large effects on how individuals behave in such games (Henrich et al., 2006).

Enumeration consisted of 18 sessions of approximately 20 respondents each, for a total sample of 371 respondents. For each session, volunteers were recruited from a specified neighborhood near the enumeration site; efforts were made to achieve demographic variation and to ensure that participants had no exposure to previous participants. Upon arrival each participant was randomly assigned to a role and pairings in the games. Respondents in each session played both

the Tax and the Grant games, plus a short survey, randomizing which game was played first. Due to significant ordering effects, the analysis below relies only on the first game played, unless otherwise specified.[22] To increase statistical power, deception was used in role assignment - while respondents believed that there were equal numbers assigned to each role, only 20% of the sample was randomly assigned to be Leaders, and each Leader was matched with four Citizens, resulting in 296 Citizens.[23] All respondents received 3,000 UGX for participation, plus their earnings from randomly selected rounds of each game.[24]

To ensure comprehension, enumerators verbally explained each game to the entire session, then again to each individual using actual coins and asking questions to gauge comprehension.[25] Each respondent was then told whether he or she was a Citizen or Leader and played the same single-shot game (either Tax or Grant) five times: each of these interactions is referred to here as a "round". All pairings were anonymous, and respondents had a different partner in each round; the single-shot nature of each round, and the change in partners, was stressed repeatedly. In rounds 2-5, respondents were told the decisions and payoffs from their previous pairing, but were not told the results of any other pairings. This minimized the ability of respondents to signal their preferences to the entire group.

To increase statistical power enumerators used the strategy method in each round, eliciting Citizens' punishment preferences for every possible decision the Leader could have made.[26] From this the main outcome of interest was constructed: the threshold below which the Citizen would be willing to pay to punish the Leader. For example, if a Citizen would punish if the Leader passed back 300 UGX or less, the punishment threshold is 400 UGX; this punishment threshold is equivalent to G^* in the model. The model predicts that citizens will have higher thresholds in the Tax Game, and that the change in G^* will be heterogeneous in citizens' underlying higher propensity for civic engagement and punishment; that is, those who fall higher in the distribution of punishment thresholds.

The sample was 72% male with an average age of 22.6 years; a significant portion, 40%, was age 18 or 19. As Uganda has an extremely young population—only 30% is over the age of 25—this does not make the sample unrepresentative (*The World Factbook*, 2014). About

[22] Until the first game was completed, the nature of the second "activity" was kept vague to avoid influencing respondents.

[23] To calculate Leader payouts, one of the four matched Citizens was randomly chosen.

[24] The average payout was 4,575 UGX (US$1.83); sessions lasted approximately 3 hours.

[25] The examples used to explain each game used the same values, altering only the funding source.

[26] Enumerators stopped once they reached a sufficiently high allocation such that the Citizen would no longer punish the Leader; this reduced fatigue among respondents.

40% of participants reported zero earnings over the previous four weeks; these individuals were unemployed, students, or homemakers. Among wage-earners, the median monthly income was 110,000 UGX (US$45). Balance tests, reported in the online appendix, confirm that the samples for the Tax and Grant games are well-balanced across a range of characteristics. Heterogeneity analysis below examines how age, gender, and income interact with the taxation treatment; I expect that the taxation framing should have the strongest effect among groups of citizens who have greater exposure to taxation, as this allows them to draw on relevant experiences and emotions when making decisions.

5 Results

The key outcome for each round is the smallest tranfer from the Leader to the Citizen for which the Citizen would *not* punish the Leader, referred to here as the punishment threshold; this cutoff was one of the eleven 100-UGX increments between 0 and 1,000 UGX. The analysis uses the average of a respondent's choices across the five single-shot rounds as a dependent variable.[27] If taxation makes citizens more likely to punish leaders, then the average punishment cutoff for citizens in the Tax game should be higher than the average punishment cutoff in the Grant game. The analysis focuses on the decisions of Citizens, rather than Leaders, as the use of ordinary Ugandan citizens for that role significantly reduces the external validity for their decisions.[28] Where included, fixed effects are for each enumerator and each enumeration site; standard errors are clustered at the session level unless specified otherwise.

5.1 Main Results

Figure 5 presents kernel density estimates for the average Citizen punishment cutoff in the Tax and Grant games. Both curves are roughly normally distributed, with a clear shift to the right in the distribution of the Tax responses; the vertical lines indicate that, as predicted, the mean punishment cutoff is significantly higher for the Tax distribution.[29] The regression results in Table 2 support this interpretation. Column 1 shows the difference-in-means between the Tax

[27] This allows for individuals who adjusted their strategy across rounds. Dropping the first two rounds instead yields similar results.

[28] As only 20% of each session was assigned to be leaders, there are also too few data points for Leaders for proper analysis. The online appendix includes results for Leaders.

[29] A Kolmogorov-Smirnov test rejects the null that the distributions are the same at standard levels of statistical significance.

and Grant games: on average, Citizens in the Grant treatment are satisfied with 408 UGX out of 1,000 UGX from the leaders, whereas taxed Citizens punished when they received less than 460 UGX - an increase of 12.7%. Column 2 adds site and enumerator fixed effects, and Column 3 adds a number of demographic and economic controls; the estimates are stable and significant at the 5% level across specifications.

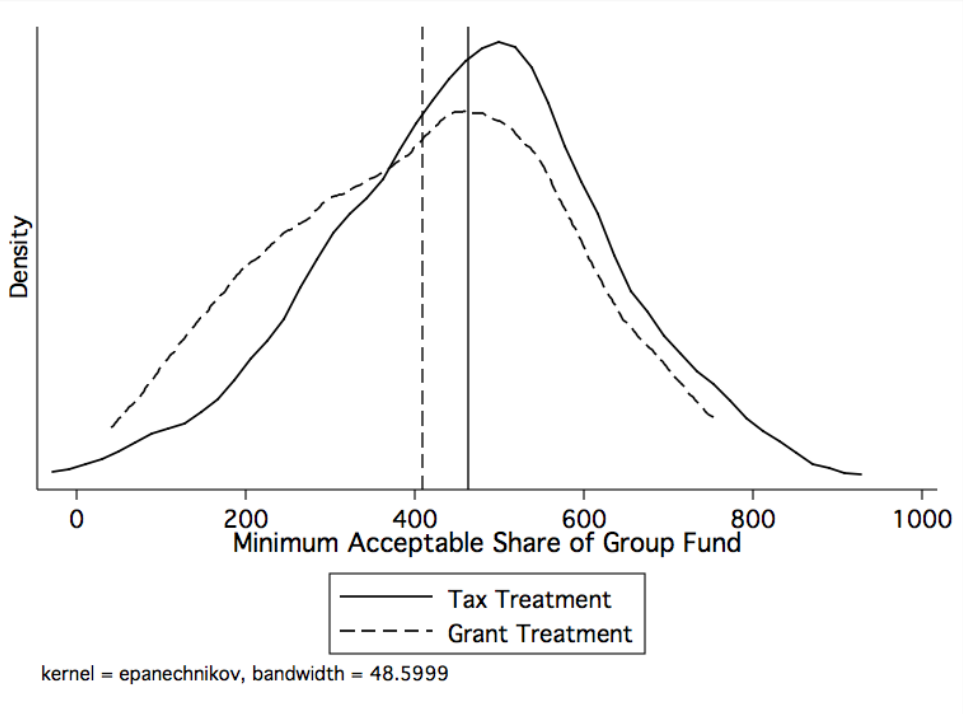

Figure 5: *Tax vs. Grant Treatments: Distribution of Average Citizen Punishment Thresholds.* Outcome is based on the on 5-round average of punishment threshold for each "Citizen" in the Tax and Grant games. Vertical lines depict group means.

These results indicate a strong, sizeable effect of taxation on respondents' willingness to punish leaders for their actions in the games. Citizens consistently required higher transfers from Leaders when taxed, and this result is robust to alternative specifications, including using ordered probit instead of OLS (as the data are discrete) and treating each single-shot round as a separate observation instead of using a five-round average.[30] The results are also unchanged when any one round's responses are dropped from the average, and when different subsets of the available control variables are included.[31]

Figure 5 also demonstrates significant variation in Citizens' punishment thresholds. The

[30]The latter clusters errors at the individual level.
[31]Tables for these regressions can be found in the online appendix.

VARIABLES	(1)	(2)	(3)
Taxation	54.18***	54.25**	56.37**
	(19.10)	(22.44)	(21.52)
Constant	408.3***	413.2***	181.8
	(13.86)	(24.32)	(181.9)
Controls	N	N	Y
FE	N	Y	Y
Observations	296	296	272
R^2	0.027	0.089	0.142

*** p<0.01, ** p<0.05, * p<0.1

Standard errors in parentheses

Table 2: *Tax & Grant Game Results: Average Citizen Punishment Threshold (OLS).* The dependent variable is a Citizen's average punishment threshold. Columns 2 and 3 include enumerator and site fixed effects; Column 3 includes controls for age, gender, education, income, social capital, and voting. SE clustered at session level.

model argues that this variation is due to one's personal propensity for punishment, β_i. However, the results shed little light on what else drives this variation. Measures of gender, age, income, voting, education, and social capital all fail to predict a respondent's punishment threshold. The only covariate that predicts in-game behavior is attitudes towards corruption: those who reported that it was acceptable for civil servants to demand bribes had punishment thresholds that were 55 UGX lower than other respondents (p=.048). This provides evidence that the games successfully induced respondents to play the games based on their real-world political views surrounding corruption. However, one could interpret views on corruption as another measure of β_i, and so this correlation does not necessarily help to explain variation in individual punishment thresholds.

5.2 Heterogeneity in β_i

The other prediction derived from the model is that the treatment effect of taxation will be heterogeneous in a respondent's personal expressive benefit from punishment. In particular, the model predicts that, as the expressive benefit β_i increases, the effect of taxation (i.e. the expected difference between an individual's punishment thresholds in the tax and grant conditions) will at first increase as β_i increases, then decrease over most of the parameter space.

Assuming that the distribution of β_i is balanced across Citizens in the Tax and Grant games, this prediction can be tested using quantile regressions, which estimate how taxation affects different points in the distribution of responses. The critical assumption for this analysis is that if $\beta_i > \beta_j$, $G_i^* > G_j^*$: a respondent's average punishment threshold G^* is a proxy for the level of expressive benefit β_i.[32] If the model is correct, the difference between the average punishment thresholds in the Tax and Grant conditions will vary across the distribution of responses, with the gap first increasing then decreasing. Figure 6 plots the estimated coefficients from quantile regressions run for every quantile between 5 and 95; it also includes the estimated curve for the coefficients.[33] The coefficients show a clear trend: as expected, the effect of taxation first rises, followed by a steady fall in the size of the coefficient as the quantile increases. For the top decile, the treatment effect is only 20 UGX, compared to 80-100 UGX for the bottom deciles. This suggests that the taxation treatment has a larger impact on those respondents who are less likely to punish the Leader, supporting the model's prediction; this also provides support for the S-shaped loss-averse utility function, rather than a globally concave model, which predicts a monotonic decrease in the treatment effect as β_i increases in this range. Note that the drop in the coefficient is not due to a ceiling effect: the highest punishment threshold in the Grant game is 760 UGX out of 1000.

5.3 Subgroup Analysis

The large sample size also allows meaningful subgroup analysis. I expect that treatment effects will be strongest for respondents for whom taxation is most salient, as the treatment can better activate the relevant norms. Three potential sources of treatment heterogeneity are gender, age, and income. In Uganda women have historically been exempt from many taxes, reducing its salience. Teenagers and the unemployed may similarly be less exposed to taxes; their over-representation in the sample also makes it important to check that they are not driving the results. Table 3 shows the regression results for the three subgroups. All specifications include a vector of controls; standard errors are clustered by session, and fixed effects are included. For comparison, Column 1 reports the results for the whole sample. Columns 2-4 show the results for each subgroup, and Column 5 includes age, gender, income, and all three interaction effects.

Age is the strongest source of heterogeneity - the treatment effect of taxation on teenagers

[32] As other covariates fail to predict in-game behavior, this assumption seems reasonable.
[33] All regressions included fixed effects for enumerator and enumeration site.

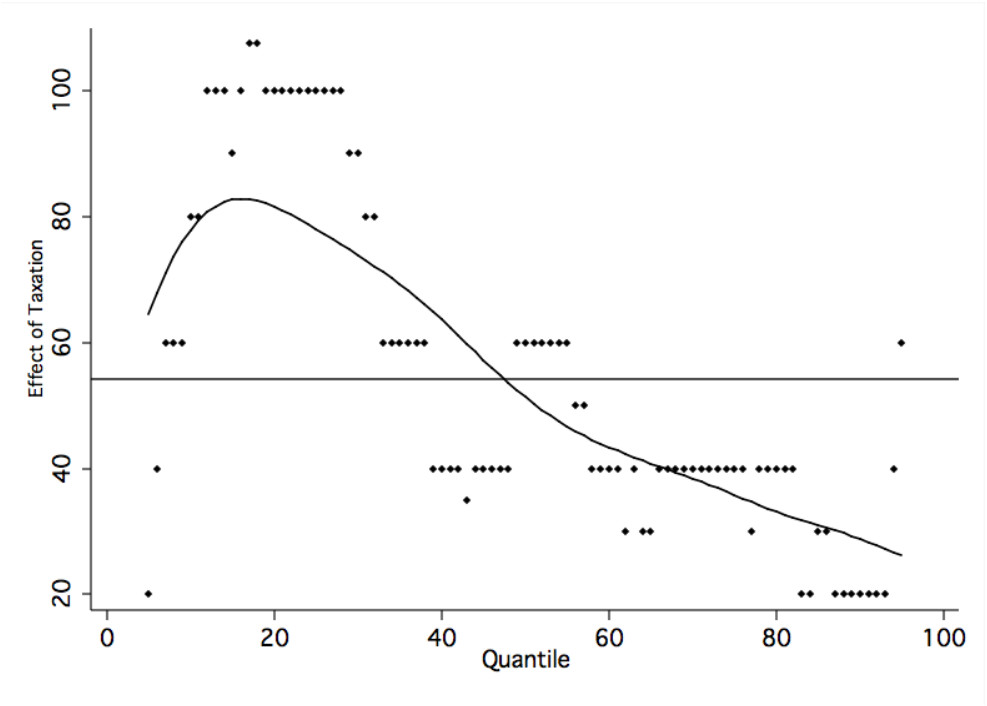

Figure 6: *Estimated Quantile Effects: The treatment effect of taxation on punishment thresholds.* This figure plots the estimated coefficients from 90 quantile regressions for quantiles 5 to 95. Dots depict the estimated treatment effect of taxation on each quantile; the solid horizontal line depicts the treatment effect of taxation on the distribution's mean, while the curved line shows the smoothed values for the pattern of the coefficients.

VARIABLES	(1) Baseline	(2) Gender	(3) Income	(4) Age	(5) All
Taxation	56.37**	61.72***	79.54**	95.41***	115.4***
	(21.52)	(19.84)	(28.57)	(32.67)	(28.25)
Female		-24.77			-16.82
		(25.27)			(25.44)
Taxation*Female		-20.46			-47.25
		(53.36)			(46.95)
No Income			43.22		23.03
			(38.86)		(41.95)
Taxation*No Inc			-53.00		-13.08
			(44.60)		(52.70)
Teenager				58.67*	59.17*
				(31.53)	(31.25)
Taxation*Teen				-87.22**	-92.33*
				(39.96)	(43.80)
Constant	216.3	213.2	181.0	115.1	93.41
	(180.4)	(178.6)	(192.5)	(202.3)	(213.3)
Observations	272	272	272	272	272
R^2	0.142	0.142	0.149	0.158	0.164

*** p<0.01, ** p<0.05, * p<0.1

Robust standard errors in parentheses

Table 3: *Treatment Heterogeneity in Political Tax & Grant Games (OLS).* All specifications include controls, enumerator FE, and SE clustered by session. "No income" and "Teen" are dummy variables for respondents who reported no wages in the past 4 weeks and those ages 18-19, respectively. Column 1 reports the baseline treatment effect of taxation. Columns 2-4 report results for heterogeneity by gender, income, and age. Column 5 includes all sources of potential heterogeneity.

is close to zero, while the effect for adults is almost 100 UGX. The results for gender and income are weaker. While in both cases the coefficient on the interaction term is negative and substantively large, the effects are imprecisely estimated and are not statistically significant at conventional levels. Teens differ in key ways from the rest of the sample, and it is unclear which of these characteristics might drive the heterogeneous results. Teens may lack prior exposure to taxation; they also earn less than adults, are less likely to head households, are less politically engaged along several measures, including voting, and are more accepting of vote-buying. These factors may mute the effect of taxation.

Together, these results show that the treatment effect is largest among adult, wage-earning men – exactly the group with the most exposure to taxation in Uganda. Running the basic specification on only men, age 20 or older, who had positive wages shows that the average punishment threshold moves from 362 UGX in the Grant game to 470 UGX in the Tax game, an increase of 29.8%.

6 Testing the Mechanism

The results thus far demonstrate that taxation makes citizens more willing to punish leaders for non-accountable behavior. One potential alternative explanation is that taxation instead activates a stricter fairness norm regarding how tax dollars should be spent; this would be in line with work from behavioral economics that finds that individuals are more likely to punish behavior that deviates from what is perceived as fair (Fehr and Schmidt, 1999). This mechanism would require a slightly different model. Instead of multiplying the expressive parameter β_i by the utility lost from taxation, assume instead that the benefit is multiplied by $\frac{T-G}{T}$, the percent of the budget that is misused. In this alternative model, taxation affects behavior by increasing the expressive benefit β_i a citizen receives from punishment; this represents a shift in fairness norms, and taxation will then also increase the citizens' punishment threshold G^*.[34]

Differentiating between these two mechanisms has important policy implications. The fairness norms mechanism suggests that public education might be able to create similar norms surrounding foreign aid or natural resource rents, potentially alleviating the "resource curse" and increasing the demand for accountability in affected countries. If the loss aversion mechanism is correct, however, it suggests that education or sensitization campaigns are less likely to

[34]Formally, $G^* = T(1 - \frac{c}{\beta_i})$.

be successful, and that citizens must be given a stake in government budgets for accountability demands to increase.

The loss aversion mechanism is indirectly supported by two aspects of the results of the games described above. First, the fact that treatment effects are stronger for individuals with lower values of β_i is a direct implication of the loss aversion model, but not of the fairness norms argument: there is no strong theoretical reason to expect β_i to increase by different amounts for different individuals. Second, in each session, respondents played both the Tax and Grant games, randomizing the order of which came first.[35] Among those respondents who first played the Tax and then the Grant game, the average punishment thresholds between the two games were virtually identical; the punishment threshold is only 2 UGX higher in the Tax game (p=.82). However, when moving from the Grant to the Tax game, Citizens' punishment thresholds increased by an average of 31 UGX ($p = .03$). This suggests that, once the reference utility is set from the tax game, subsequent rounds of the Grant game may not have not been sufficient to move respondents out of the realm of losses. However, moving from the Grant to the Tax game does change expectations, leading to a strong effect - taxation has again shifted Citizens into the realm of losses, increasing punishment thresholds. The fairness norms mechanism cannot easily explain these differences.

6.1 Experimental Evidence for Loss Aversion

A second set of experiments tests the mechanism more directly. Following Fehr and Fischbacher (2004), I use third-party punishment (3PP) games to differentiate between loss aversion and more generalized fairness norms. This section presents results from a third-party punishment version of the Tax and Grant games introduced above. In these games, respondents were randomly placed into groups of three—a Citizen, a Leader, and an Observer. In the 3PP Tax Game, the Observer and Citizen were each given wages of 10 MU. The enumerator then taxed the Citizen 5 MU, doubled it, and gave it to the Leader. The Leader allocated this group fund between his own salary and the Citizen, and the Observer decided whether to pay 1 MU to reduce the Leader's salary by 4 MU. Note that this game is identical to the original Tax game other than the locus of accountability. The Leader's decision is the same, and the Observer is not directly affected by either taxation or the public good. The 3PP Grant game changes only the source of the funding; Table 4 shows the stages for the 3PP Tax and Grant games.

[35] Only the first game's results are reported above, due to strong ordering effects.

Stages	Tax Game with 3PP	Grant Game with 3PP
1	Citizen receives a wage of 10 MU; Observer receives a stake of 5 MU.	Citizen receives a wage of 5 MU; Observer receives a stake of 5 MU.
2	Citizen is taxed 5 MU; this is doubled and passed to the Leader as the group fund.	The Leader is given 10 MU as the group fund.
3	The Leader allocates the 10 MU between himself and the Citizen.	
4	The Observer sees the Leader's decision and decides whether to pay 1 MU to have enumerators remove 4 MU from the Leader (no one receives the money taken in punishment).	

Table 4: *Stages for the Tax and Grant Games with Third-Party Punishment.*

If different norms of fairness apply to taxes, then the Observers in the 3PP Tax Game should have higher punishment thresholds than Observers in the 3PP Grant Game. If, however, the behavioral effect of taxation is primarily due to loss aversion, there should be no difference between punishment thresholds in the two games, as the Observer is not taxed. The 3PP games were run in 2013 on a sample of 649 low-income Kampalans; the sample is comparable to that used in the two-player games above. Balance tests (not reported) show that the 3PP Tax and 3PP Grant samples are well-balanced.

Figure 7 presents density estimates for the distribution of Observer punishment thresholds. The means are virtually identical, and a Kolmogorov-Smirnov test does not reject the null that the distributions are the same. Table 5 presents the regression results. While the point estimate is slightly negative in all specifications, it is small and does not approach statistical significance. The results are robust to a number of alternative specifications. This presents a striking contrast to the two-player experiments in which the locus of accountability is with the Citizen, suggesting that loss aversion forms a key part of the mechanism.

The behavior of Citizens in the 3PP experiments also supports the loss aversion mechanism. While Citizens did not make a punishment decision, they were instead asked to say for each round what they thought the "most fair" division of the group fund would be between themselves and the Leader. Column 4 of Table 5 shows the difference in the perceived fair allocation of

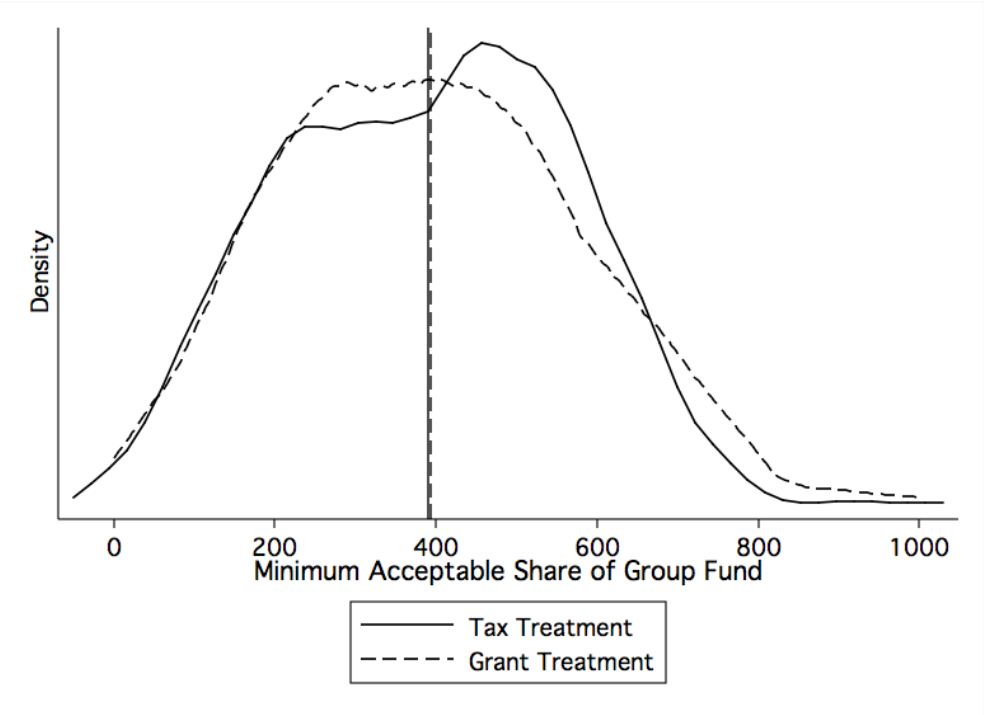

Figure 7: *Third-Party Punishment, Tax vs. Grant Treatments.* Density estimates of individual punishment thresholds in Third-Party Punishment Tax and Grant Games. Outcome based on 5-round average of punishment threshold for each "Observer". Vertical lines depict group means.

VARIABLES	(1) Observer Threshold	(2) Observer Threshold	(3) Observer Threshold	(4) Citizens Fair Dist.
Taxation	-3.018	-5.162	-4.510	54.29
	(14.21)	(16.05)	(15.68)	(37.48)
Constant	392.8***	466.0***	275.9***	476.2***
	(10.16)	(23.10)	(86.92)	(75.33)
FE	N	Y	Y	Y
Observations	649	649	624	70
R^2	0.000	0.082	0.106	0.086

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5: *Results from 3PP Experiment (OLS).* Columns 1-3 show the difference between the Observer's punishment thresholds in the 3PP Tax and Grant games. Column 1 is a bivariate regression; Column 2 adds enumerator FE and SE clustered by session; Column 3 adds controls. FE are for each enumerator and enumeration site. Column 4 reports the difference in the allocations Citizens reported as most fair between the 3PP Tax and Grant games.

the group fund by Citizens in the 3PP Tax and 3PP Grant games. While the small number of Citizens makes the analysis underpowered, the point estimate is large and similar to that found in the two-player Tax and Grant experiments. This has two implications. First, it supports the claim that the null effect for the Observers is due to a real lack of a treatment effect, rather than noise or other measurement concerns. Second, it suggests that taxation, through loss aversion, affects citizens' evaluations of what a "fair" distribution of government resources would look like. Together, these results provide strong support for the theory that the behavioral effect of taxation depends on loss aversion and one's personal experiences and expectations, rather than on more generalized societal norms. It also provides insight into how norms form, and the role that an individual's reference point may play in determining what is perceived as fair.

7 External Validity

The experimental results show that the taxation treatment was effective in raising citizens' demands from leaders. This section presents additional qualitative and experimental evidence that the results shown above are meaningful measurements of citizens' preferences over taxation and accountability in Uganda.

7.1 Qualitative Evidence

In a subset of the sessions, respondents were asked to explain their in-game decisions (N=100). These data provide compelling evidence that the treatments activated the relevant expectations and norms surrounding political behavior. Thirty-five percent of these respondents listed distributive or fairness concerns when justifying their in-game choices, often citing the differing expectations on citizens and leaders in their answers. A number of respondents also specifically cited the tax as a reason for demanding high transfers from the leaders. For example, one respondent said that "As a citizen, since my money was taken as a tax, I want to earn more than the leader." Another made a similar reply, explaining that "Because it's tax money [the leader] has to give back more."

An additional 30% of respondents cited opinions about real political leaders as justification for their decisions.[36] For example, one respondent in the Tax treatment justified high demands

[36]The remaining respondents explained their actions either in terms of economic motivations, or could not explain their decisions.

by stating that"[the leader] has to give me more because he gets money from different sources." This was an especially interesting statement—that was echoed by several other respondents—as the leaders in this case were actually fellow Ugandan citizens who did not have other ways of getting money. Respondents in the Grant game, in contrast, justified low demands in terms of political leaders' responsibilities. One respondent explained that "Leaders should even take more [than citizens] because they do a lot," and another replied that "I have been asking for little money every time because the leader has many responsibilities to take care of." In fact, these leaders had no responsibilities at all, were not elected, and were simply fellow community members playing the games.

Together, these responses strongly suggest that the experiments successfully activated the norms involved in citizen-leader interactions. They also confirm that participants seriously considered their responses in the games, structuring their behavior in reference to how they might behave in actual political scenarios.

7.2 Further Experimental Evidence

Results from a conjoint survey experiment on citizens' attitudes towards corruption provide additional support for the findings outside of a laboratory setting. The experiment was embedded into a larger survey, conducted by the author, of Ugandan citizens belonging to three occupational groups: motorcycle taxi drivers, agricultural market vendors, and small shopkeepers. Compared to the sample used in the behavioral experiments, these groups are wealthier, slightly older, and more politically active. Each group is also electorally important and well-organized, making their views of corruption and accountability especially relevant.

In the experiment, conducted in nine Ugandan districts, respondents were shown two hypothetical government officials, each of whom was accused of engaging in some type of corrupt behavior. Each official had 5 attributes which were independently and randomly assigned from a set of possible levels (see Table 6). One attribute determined whether the official had stolen money from citizens' taxes; from donor funds; or from transfers from central to local governments. Respondents were read a statement explaining that the Ugandan government has limited resources to prosecute wrongdoing. Respondents then saw four different pairs of corrupt officials; for each pair, they were required first to select which official they would rather see prosecuted and punished for his behavior, and then to rank the severity of each official's corruption on a five-point scale. The online appendix reports the full text of the conjoint survey experiment;

Table 7 depicts a sample randomization.[37]

Attribute	**Possible levels**
The official was	Elected by the citizens; Appointed by the government
The official was a member of	Local Government; National Government
The official spent the money on:	Himself; His kin and village; Buying election support for his party
The money should have gone to:	Health; Education; Roads or other infrastructure; Water and sanitation; Government Salaries
The official stole money from:	Citizen's taxes; Foreign Donors; Transfers from Central to Local Government

Table 6: *Attributes and Levels for Conjoint Experiment.*

	Official A	**Official B**
Is an	Elected official	Appointed official
Is part of the	Local government	National goverment
Stole money that should have gone to	Education	Education
Spent the money on	Himself and his family	Election support for his party.
Is accused of stealing money from	Citizen's taxes	Foreign donors

Table 7: *Sample Profile Pair for Conjoint Survey Experiment*

Table 8 presents the effect of revenue source on citizens' willingness to punish, using donor funds as the omitted category. Officials who stole donor funds or central transfers were selected for punishment 42% and 45% of the time, respectively, while officials who stole citizens' taxes were punished 62% of the time (p=.000). Profiles in which the official stole from citizens' taxes are also ranked 0.257 points higher on the 5-point severity scale (p=.000) than those stealing donor funds. This result concurs with that in the behavioral experiments - citizens display a strong propensity to rate corruption involving tax funds as substantially worse than other types of corruption, and this affects their willingness to punish such transgressions.

[37]See Hainmueller, Hopkins and Yamamoto (2012) for more detail on conjoint methodology and causal estimation.

VARIABLES	(1) Pr(Chosen)	(2) Severity Ranking
Citizens' Taxes	0.206***	0.296***
	(0.0167)	(0.0294)
Transfers to Local Gov't	0.0359**	0.0790***
	(0.0164)	(0.0281)
Constant	0.426***	3.678***
	(0.0103)	(0.0607)
Observations	6224	6224
R^2	0.032	0.136

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 8: *Results from Conjoint Survey Experiment: Taxation and Attitudes Towards Accountability.* Column 1 shows the percentage point increase in the likelihood that a profile was selected for punishment when Tax or Transfer funds are stolen, relative to Donor Funds. Column 2 presents the corresponding effects for the 5-point "severity" ranking of each profile. All specifications include enumerator FE; SE clustered by individual.

8 Conclusion

This paper contributes to the literature on taxation and accountability in several ways. It introduces and formalizes a new mechanism for how taxation can affect accountability in a wide range of settings, including when tax bargaining is not possible. This mechanism posits that taxation pushes citizens into the realm of losses, increasing the expressive benefit that individuals receive from imposing sanctions on a non-accountable leader. The paper then tests this mechanism through a set of novel laboratory experiments implemented in Uganda. The results of the experiments strongly support the theory: taxation generates a significant increase in the level of accountability citizens demand from leaders, and this effect is strongest among those with more experience paying taxes. Further laboratory experiments show that loss aversion is a key component of the mechanism, and additional survey experiments show that taxation affects demands for accountability in a range of contexts.

Together, these findings have methodological and substantive implications for the study of accountability. First, they suggest that aid professionals should seriously consider the role of formal taxation, as well as more informal community contributions, when designing development interventions. Adding community contributions to external aid programs could give beneficiaries

more ownership over projects and, this paper suggests, make them more likely to hold local leaders accountable for how development funds are spent. Second, the fact that taxation has the strongest effect on those citizens with a low propensity to punish political leaders suggests that taxation might have the most impact in groups who are traditionally less involved with politics. Finally, the findings suggest that sample selection is critical when using laboratory experiments to test aspects of political behavior. In particular, the standard reliance on U.S. undergraduates may create biased estimates of some effects: in the Ugandan sample, the treatment effect was weakest among teenagers and those without jobs.

The theory presented here is complementary to existing theories of tax bargaining; the behavioral effect of taxation can indeed help to explain how and when tax bargains can be sustained between citizens and government, and how favorable those bargains will be to citizens. By increasing the baseline level of accountability that citizens can achieve under more coercive (non-bargained) forms of taxation, the behavioral effect of taxation increases the reservation payoff for citizens when bargaining. This may increase the quality of the bargain, and thereby reduce the potential for leaders to gain by breaking bargains and decreasing accountability.

These findings also suggest areas for future research. In the full model (see online appendix), the increased demand for accountability under taxation will only translate into an increased supply of accountability under certain conditions - namely when citizens have can exact a sufficiently high punishment on leaders, at a low enough cost to citizens.[38] More work is needed to explore when leaders will respond to citizen pressures by increasing accountability, rather than by reducing or eliminating taxes, as the Ugandan government did with the graduated tax in 2005. One possibility suggested by the variation in local taxation in Uganda suggests that the high-taxation, high-accountability equilibrium is easier to sustain when taxation is visible and when the tax targets a group of citizens who share preferences for a particular, visible public good.

Future work can also explore the relationship between the behavioral effect of taxation and collective action. Olson (2009) argues that private benefits to participants should help citizens overcome free-riding. Taxation may help foster collective action either by increasing the private expressive benefits citizens receive from such actions, or by making citizens believe that others are also more likely to take action, raising the probability of an action's success. Both increase the expected private payoff a citizen receives from taking action. Testing this would require

[38]This could be through voting but also protests or other non-electoral means.

both showing that the behavioral effect of taxation persists in the presence of collective action problems and that taxation alters individuals' beliefs about the likelihood that their fellow citizens will take part in collective action. This would then serve as a coordination device such that taxation decreases the collective action problem for citizens.

I have demonstrated in this paper that tax burdens and accountability demands are strongly linked in dividual behavior; future work will explore more fully how these individual demands for accountability may be translated into broader pressure for societal reform.

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A Proofs

A.1 Proof: Taxation increases citizens' punishment threshold

Recall that citizens punish the government if and only if $\Delta u(x|G,r,t) \geq \frac{c}{\beta_i}$.

Assume that $\Delta_t u(x|G=0,r,t) > \frac{c}{\beta_i}$ - this is the condition necessary for a taxed citizen to have $G_t^* > 0$, where $\Delta u(x|G^*,r,t) = \frac{c}{\beta_i}$. As $\Delta u(x|G,r,t)$ is decreasing in G, a sufficient condition for taxation to increase the punishment threshold G^* is that, for all levels of the public good $G < T$, $\Delta u(x|G,r,t)$ is larger for a taxed citizen. That is, $\Delta_t u(x|G,r,t) > \Delta_0 u(x|G,r,t)$.

From the description of the model above, these parameters are defined as:

$$\Delta_0 u(x|G) = u(y+T-y) - u(y+G-y) = u(T) - u(G) \tag{7}$$

$$\Delta_t u(x|G) = u(y(1-t)+T-(y(1-t)+T)) - u(y(1-t)+G-(y(1-t)+T)) = u(0) - u(G-T). \tag{8}$$

The condition for taxation to increase G^* is therefore

$$u(0) - u(G-T) > u(T) - u(G). \tag{9}$$

Note that the horizontal difference is the same for both sides of the equation: $T - G$. If the first derivative with respect to G is larger for every point on the left-hand side of the equation, this implies that the total utility difference on the LHS is also larger. From the characteristics of loss-averse utility functions, $u'(x) < u'(-x)$. Therefore $u(-T) - u(-G) > u(T) - u(G)$.

For all $x < 0$, $u(x)$ is strictly convex, and so, $u'(-T) < u'(-T+G)$, and $u'(-G) < u'(-G+G)$. The same holds for all values in between. Therefore $u(-T) - u(-G) < u(-T+G) - u(-G+G)$.

Together this implies: $\Delta_0 u(x|G) < u(-T) - u(-G) < \Delta_t u(x|G)$ and so $\Delta_t u(x|G) > \Delta_0 u(x|G)$ for all $G < T$ and $G_t^* > G_0^*$ for all individuals with $\beta_i > \frac{c}{-u(-T)}$.

B Online Appendix

B.1 Equilibria

This section describes the set of general equilibria for the model introduced in Section 3. It outlines the government's utility function, describes the possible equilibria, and discusses the

scope conditions under which taxation will increase accountability. For simplicity, I assume here that all citizens have the same expressive benefit β from punishment, and so either all citizens punish or none. This punishment decision is denoted $\bar{s} \in \{0, 1\}$. The timing of the game is as follows:

1. The Government receives revenue T, derived from either an exogenously-set tax on citizen income y or from an outside non-earned source such as foreign aid, resource rents, or other grants.
2. The Government allocates the revenue between the public good G and rents p, choosing (p, G) subject to $p + G \leq T$.
3. Citizens observe the allocation and make a punishment decision $\bar{s} \in \{0, 1\}$; payoffs accrue.

I solve for subgame perfect Nash equilibria in pure strategies. Note that Section 3 showed that a citizen's best response is:

$$\bar{s} = \begin{cases} 1 & \text{if } G < G^*_{Cit} \\ 0 & \text{otherwise} \end{cases} \tag{10}$$

where $G^*_{Cit} = G^*_0 = \max\{0, u^{-1}(u(T) - \frac{c}{\beta})\}$ if the citizen is not taxed, and $G^*_{Cit} = G^*_t = \max\{0, T + u^{-1}(\frac{-c}{\beta})\}$ if the citizen is taxed.

B.1.1 The Government's decision

The government receives utility from any rents it can extract, and loses utility if the citizens choose to sanction. Let q be the cost the government incurs if the citizens punish ($\bar{s} = 1$). The government' utility function can be written

$$V_{Gov} = p - \bar{s} * q = T - G - \bar{s}q \tag{11}$$

The government's best response will be to either provide no public good ($G = 0$) or to provide the minimum necessary level of public good to avoid citizen sanctions ($G = G^*_{Cit}$, the citizen's punishment threshold).[39] The government's equilibrium response will therefore depend on

[39] If the government provides any other $G < G^*_{Cit}$, the government can strictly increase its payoff by deviating to $G = 0$. If the government provides any other $G > G^*_{Cit}$, it can strictly increase its payoff by deviating to $G = G^*_{Cit}$.

whether it is more costly to endure punishment or grant concessions to citizens:

$$G^*_{Gov} = \begin{cases} G^*_{Cit} & \text{if } G^*_{Cit} \leq q \\ 0 & \text{if } G^*_{Cit} > q \end{cases} \tag{12}$$

B.1.2 The Effect of Taxation on Public Goods Provision

For any given set of parameters there is an unique SPNE. This section describes the equlibria for the game with and without taxation across the parameter space. In the below, G^*_t and G^*_0 refers to the citizens' punishment thresholds with and without taxation, respectively. Note that $G^*_t > 0$ if and only if $-u(-T) > \frac{c}{\beta}$, and $G^*_0 > 0$ if and only if $u(T) > \frac{c}{\beta}$.[40]

Case 1: $\frac{c}{\beta} > -u(-T)$.

In this case the costs of action are too high relative to the benefits, and $G^*_t = G^*_0 = 0$: the citizens will never punish the government, even when $G = 0$. The government's unique best response in both games is to provide no public goods. In equilibrium, $\bar{s}^* = 0$ for all $G \in [0, T]$ and $G^*_{Gov} = 0$, with or without taxation.

Case 2: $-u(-T) > \frac{c}{\beta} > u(T)$

The citizen now only demands a positive level of public good when taxed: $G^*_t > 0 \geq G^*_0$. There are two subcases, depending on the relationship between G^*_t and q:

Case 2a: $G^*_t > q$

When this condition holds, the costs citizens can impose on the government are too small (relative to the demanded level of G) to generate accountability. Equilibrium strategies with and without taxation are ($G^*_{Gov} = 0$, $\bar{s}^* = 1$ iff $G < G^*_t$) and ($G^*_{Gov} = 0, \bar{s}^* = 0 \; \forall \; G \in [0, T]$), respectively.

Case 2b: $G^*_t \leq q$

When this condition holds, citizens have enough leverage over governments for taxation to increase accountability. Equilibrium strategies with and without taxation are ($G^*_{Gov} = G^*_t$, $\bar{s}^* = 1$ iff $G < G^*_t$) and ($G^*_{Gov} = 0, \bar{s}^* = 0 \; \forall \; G \in [0, T]$), respectively: taxation increases the level of public good provided.

Case 3: $u(T) > \frac{c}{\beta}$

In this case, both taxed and untaxed citizens demand positive levels of accountability:

[40] Note that as by definition $u(T) < -u(-T)$, this implies that the taxed citizen will start punishing before the untaxed citizen.

$G_t^* > G_0^* > 0$. Again, the specific equilibrium outcome depends on the relationship between the punishment thresholds and the costs citizens can impose on the government.

Case 3a: $G_t^* > G_0^* > q$

The costs citizens can impose on the government are too small to generate accountability. Equilibrium strategies with and without taxation are ($G_{Gov}^* = 0$, $\bar{s}^* = 1$ iff $G < G_t^*$) and ($G_{Gov}^* = 0$, $\bar{s}^* = 1$ iff $G < G_0^*$), respectively.

Case 3b: $G_t^* > q \geq G_0^*$

In this case, taxation actually decreases accountability: it raises demands to such a level that government would rather accept sanctions rather than buy citizen quiesence. Equilibrium strategies with and without taxation are ($G_{Gov}^* = 0$, $\bar{s}^* = 1$ iff $G < G_t^*$) and ($G_{Gov}^* = G_0^*$, $\bar{s}^* = 1$ iff $G < G_0^*$), respectively.

Case 3c: $q \geq G_t^* > G_0^*$

Taxation here increases accountability. Equilibrium strategies with and without taxation are ($G_{Gov}^* = G_t^*$, $\bar{s}^* = 1$ iff $G < G_t^*$) and ($G_{Gov}^* = G_0^*$, $\bar{s}^* = 1$ iff $G < G_0^*$). Taxation increases the level of public goods provision by $G_t^* - G_0^*$.

This describes the set of equilibria over the entire parameter space. Taxation increases the supply of accountability in cases 2b and 3c: these are the cases in which the costs of engaging in punitive action are sufficiently small, and in which citizens can enact sufficiently large costs on non-accountable government actors. These conditions are likely to be met when citizens can use elections to sanction poor performance; in areas where protests can enact significant costs on leaders (as is likely in urban areas); and when government repression is sufficiently low.

Cases in which taxation do not increase accountability are those in which there are *multiple political market failures*: other facets of the accountability process are broken, and thus increasing citizens' demands will not have an impact on the level of accountability (in the form of public goods) provided in equilibrium. Note that while there is one case in which taxation actually decreases accountability, the scope conditions for the case are unlikely: A government that would sustain sanctions by increasing taxes is likely unwilling to impose a new tax in the first place.

B.2 Proof that the effect of taxation is heterogeneous in β_i

Section 3 above shows that the effect of taxation on the punishment threshold ($\Delta G^* = G_t^* - G_0^*$) is zero for very low values of β_i, increases for intermediate levels, but decreases and asymptotes

to zero as $\beta_i \to \infty$. This section provides proofs for these results.

First, consider low β_i such that the Citizen never punishes the leader even when taxed and $G_t^* = G_0^* = 0$. This implies that $G_t^* = u^{-1}(-\frac{c}{\beta_i}) + T \leq 0$, or: $\beta_i \leq \frac{c}{-u(-T)}$. For this range of β_i, $\Delta G^* = 0$.

Next, consider β_i such that $G_0^* = 0$ but $G_t^* > 0$. Over this range, an increase in β_i implies an increase in G_t^* while G_0^* remains at zero, and so $\frac{\partial \Delta G^*}{\partial \beta_i} > 0$. As $G_0^* = u^{-1}(u(T) - \frac{c}{\beta_i})$, this holds when $\frac{c}{-u(-T)} \leq \beta_i \leq \frac{u(T)}{c}$.

Finally, consider all $\beta_i > \frac{u(T)}{c}$; here both taxed and non-taxed citizens punish at least some level of corruption. Note that

$$\Delta G^* = G_t^* - G_0^* = u^{-1}(-\frac{c}{\beta_i}) + T - u^{-1}(u(T) - \frac{c}{\beta_i}) \tag{13}$$

For this range,

$$\frac{\partial \Delta G^*}{\partial \beta_i} = \frac{c}{\beta_i^2} * ((u^{-1})'(-\frac{c}{\beta_i}) - (u^{-1})'(u(T) - \frac{c}{\beta_i})) \tag{14}$$

which by the properties of inverse functions is equivalent to

$$\frac{c}{\beta_i^2} * (\frac{1}{u'(u^{-1}(-\frac{c}{\beta_i}))} - \frac{1}{u'(u^{-1}(u(T) - \frac{c}{\beta_i}))}). \tag{15}$$

Substituting back in G_t^* and G_0^* using the above definitions:

$$\frac{c}{\beta_i^2} * (\frac{1}{u'(G_t^* - T)} - \frac{1}{u'(G_0^*)}). \tag{16}$$

Therefore $\frac{\partial \Delta G^*}{\partial \beta_i} > 0$ only when $u'(G_t^* - T) < u'(G_0^*)$.

First, consider the threshold case where $G_0^* = 0$, $G_t^* > 0$ and so Equation 16 is positive, as $u'(0) > u'(G_t^* - T)$. As $u'(x)$ is continuous, this implies that $\frac{\partial \Delta G^*}{\partial \beta_i} > 0$ for some range of sufficiently small $G_0^* > 0$, and so for some portion of this range, the effect of taxation is still increasing in β_i.

Next, consider the case where $G_0^* \geq \frac{T}{2}$, and so $G_t^* > \frac{T}{2}$. From the properties of loss averse

functions, the following inequalities must hold:

$$u'(G_t^* - T) > u'(-\frac{T}{2}) > u'(\frac{T}{2}) \geq u'(G_0^*) \tag{17}$$

and so $\frac{\partial \Delta G^*}{\partial \beta_i} < 0$ when $G_0^* \geq \frac{T}{2}$. By the intermediate value theorem, there must therefore be some $\hat{\beta}_i$ such that $\frac{\partial \Delta G^*}{\partial \beta_i}$ is zero at $\hat{\beta}_i$, positive below $\hat{\beta}_i$, and negative above $\hat{\beta}_i$. This inflection point must occur at some $G_0^* \in (0, \frac{T}{2})$.[41]

The above shows that the effect of taxation, $\Delta G^* = G_t^* - G_0^*$, has the following characteristics:

1. For all $\beta_i \leq \frac{c}{-u(-T)}$, taxation has no effect because $G_t^* = G_0^* = 0$.
2. For all $\beta_i \in (\frac{c}{-u(-T)}, \frac{u(T)}{c}]$, the effect of taxation is positive and *increasing* in β_i.
3. For $\beta_i \geq \frac{u(T)}{c}$, the effect of taxation is positive. There exists $\hat{\beta}_i^*$ such that the effect of taxation is *increasing* for $\beta_i \in [\frac{u(T)}{c}, \hat{\beta}_i^*)$ and *decreasing* for all $\beta_i > \hat{\beta}_i^*$.

B.3 Balance Tests

	Tax Citizens	Grant Citizens	Difference	P Value
Male	0.748	0.696	0.053	0.315
Age	22.426	23.007	-0.581	0.429
Can Write	0.836	0.832	0.003	0.938
Can Read	0.831	0.847	-0.016	0.721
Speaks English	0.584	0.504	0.081	0.166
Years schooling	9.188	8.892	0.296	0.398
Post Secondary Ed	0.032	0.043	-0.011	0.625
Wage (past 4 wks)	120.705	111.507	9.198	0.752
Head of household	0.314	0.374	-0.060	0.279
Paid income tax	0.083	0.129	-0.046	0.198
Community Leader	0.058	0.059	-0.000	0.989
Speak at community meetings	0.218	0.214	0.004	0.939
Number groups belong to	0.782	0.750	0.032	0.770
Registered to vote	0.519	0.579	-0.059	0.307
Voted last election	0.481	0.507	-0.027	0.650

Table 9: *Balance Tests: Tax & Grant Games.* This table shows the mean covariate values for Citizens in the Tax and Grant treatments. "Difference" and P-value were calculated using a difference-of-means test.

[41] This holds if ΔG^* is single-peaked over the range of β_i such that $G_0^* > 0$.

B.4 Leader Responses

This section describes leader behavior from the Tax and Grant games. Note that as the role of Leader was played by ordinary Ugandan citizens, the external validity of these results is likely low. Additionally, there are only 75 data points for Leaders, compared to 296 Citizens; this was done to increase statistical power for the main analysis.

Figure 8 shows the distribution of the average transfer the Leader offered the Citizen in the Tax and Grant games. The vertical lines depict the means. The means are virtually identical; regression analysis (not shown) cannot reject the null that they are the same, and a Kolmogorov-Smirnov test cannot reject that the distributions are the same.

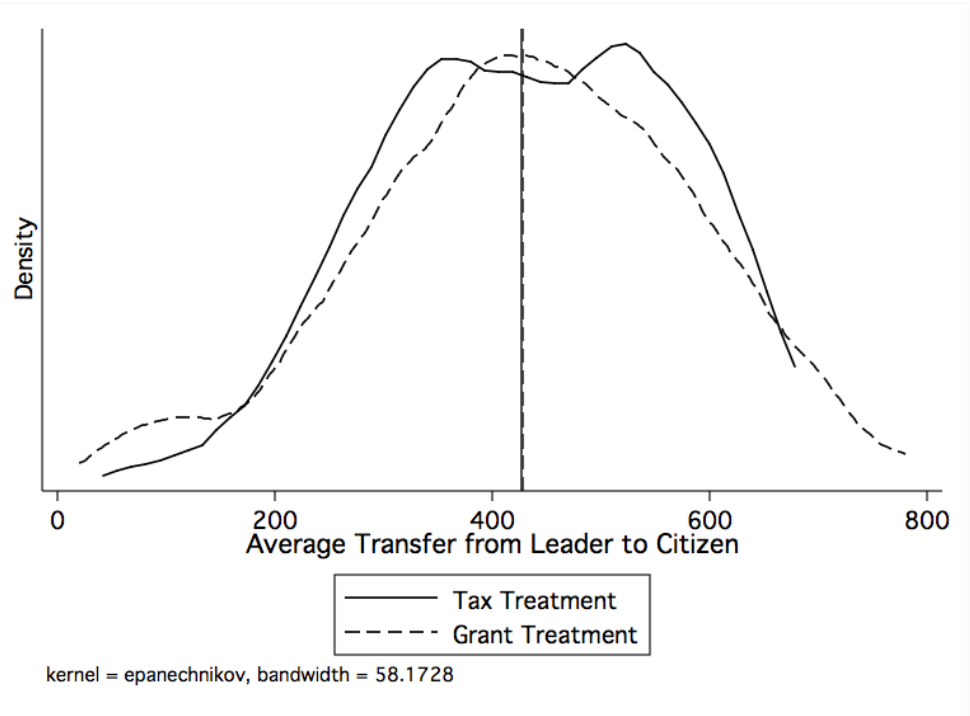

Figure 8: *Average transfers from Leaders to Citizens, Tax vs. Grant Treatments.* Density estimates of average leader offers in Tax and Grant Games. Outcome based on 5-round average of offers from Leaders to Citizens for each Leader. Vertical lines depict group means.

B.5 Robustness Checks

VARIABLES	(1)	(2)	(3)
Taxation	0.326**	0.334**	0.357**
	(0.16)	(0.15)	(0.15)
Controls	N	N	Y
FE	N	Y	Y
Obs	296	296	272

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

Table 10: *Average Citizen Punishments in Tax and Grant Games - Ordered Probit.* This table replicates the OLS results using ordered probit. Column 1 depicts the bivariate relationship; Column 2 adds enumerator and site fixed effects; Column 3 includes controls. All standard errors are clustered at the session level.

VARIABLES	(1) Bivar	(2) FE	(3) Controls
Taxation	54.57***	55.12***	56.08***
	(19.16)	(18.62)	(18.74)
Constant	408.3***	414.0***	181.0
	(14.17)	(25.65)	(184.6)
Controls	N	N	Y
FE	N	Y	Y
Observations	1478	1478	1351
R^2	0.016	0.052	0.083

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 11: *Pooled Citizen Punishment Thresholds in Tax and Grant Games - OLS.* This table shows analysis similar to that of Table 2, but with a different dependent variable. Instead of creating a five-round average of each Citizen's responses, the five rounds are pooled; each observation is the punishment threshold in a single Citizen-round. Standard errors are clustered at the respondent level. Specifications are otherwise as in Table 2.

		Round Dropped				
VARIABLES	All	Round 1	Round 2	Round 3	Round 4	Round 5
Taxation	54.252**	52.337**	47.211*	47.211*	51.761**	60.337**
	(22.441)	(23.639)	(23.009)	(23.009)	(23.340)	(21.698)
Constant	413.169***	426.789***	412.617***	412.617***	406.866***	405.333***
	(24.319)	(28.249)	(22.715)	(22.715)	(26.136)	(25.289)
Observations	296	296	296	296	296	296
R^2	0.089	0.092	0.075	0.075	0.079	0.095

*** p<0.01, ** p<0.05, * p<0.1

Robust standard errors in parentheses

Table 12: *Average Citizen Punishment Thresholds in Tax and Grant Games - Dropping Rounds (OLS).* Column 1 replicates the main analysis, including enumerator and site fixed effects and standard errors clustered by session. Columns 2-6 each drop one round from the average, so that "Round 1" refers to a four-round average that does not include Round 1.

B.6 English-Language Protocols for Conjoint Experiment

I am going to show you some scenarios that we have made up. You will see several pairs of officials who are suspected of corruption. These are not real people, but rather examples of the types of corruption that occur in some countries. Remember, we are not saying that any of your own officials have done this – it is an example of something that might happen in some places. Governments have limited resources to prosecute and punish corruption. For each pair of officials, you will be asked to choose which one you would rather see punished for his or her corrupt behavior. Even if you would like to see both punished, or neither, you must choose one. You will then be asked some other questions about your thoughts on these officials.

These columns represent two different officials. *(Note: Refer to clipboard.)* Each has a different role in government, and is accused of a different type of corruption.

Consider the first official. (NOTE: set out each attribute in turn. Fill in blanks using randomization from survey form.)

1. He is an BLANK official.
2. He works in the BLANK government.
3. He is accused of spending the money on BLANK .
4. The funds were supposed to be used to fund BLANK .
5. He is accused of misusing funds that came from BLANK .

Now, consider the second official. (NOTE: set out each attribute in turn)

1. He is an BLANK official.
2. He works in the BLANK government.
3. He is accused of spending the money on BLANK .
4. The funds were supposed to be used to fund BLANK .
5. He is accused of misusing funds that came from BLANK .

Q1: Which of these two officials would you personally rather see prosecuted and punished for what they have done?

Q2: Now, on a scale of 1 to 5, how serious was the corruption that Official 1 is accused of (point to correct profile)? Was it not at all serious, a bit serious, somewhat serious, very serious, or extremely serious?

(1=not at all serious 2=a bit serious 3=somewhat serious 4=very serious 5=most serious)

Q3: Now, on a scale of 1 to 5, how serious was the corruption that Official 2 is accused of (point to correct profile)? Was it not at all serious, a bit serious, somewhat serious, very serious, or extremely serious?

(1=not at all serious 2=a bit serious 3=somewhat serious 4=very serious 5=most serious)