Taxation and Accountability: Experimental Evidence for Taxation's Effect on Citizen Behavior[*]

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Abstract

In sub-Saharan Africa, low taxes co-exist with even lower government accountability, seen in high levels of corruption and low public goods provision. While there are existing theories of why taxation might be linked to better governance, many of the microfoundations of this effect remain unclear. I argue that taxation impacts governance by altering the expressive benefit citizens receive from sanctioning corrupt officials, making those who pay taxes more likely to hold leaders accountable. I provide new cross-national evidence that taxation and corruption are linked; I then formalize the theory and test the proposed mechanism using a set of laboratory-in-the-field experiments in Uganda. I find evidence that taxation activates a stronger fairness norm, leading citizens to demand more from leaders. This effect is strongest among adult, wage-earning men – exactly the group who has the most experience, historically, paying taxes in Uganda. I then propose additional tests, to be carried out in 2013, to strengthen and expand my findings.

1   Introduction

In Uganda, as in many sub-Saharan African countries, taxation is low and corruption is high. Despite increases in overall tax revenues, direct taxation of poor citizens has actually gone down over the past 15 years: in 2005, leading up to national elections, the government abolished the deeply unpopular head tax, along with the property tax on home-owners. User fees for health centers were abolished in 2001, and primary school fees were removed in 1996. The result is that, outside of Kampala, few individuals pay any taxes. At the same time, infrastructure is poor, and corruption is rampant and getting worse, a situation openly recognized by Ugandan citizens, but one about which there is little concrete outrage or action. A common view among local leaders and civil society organizations is that citizens have disengaged from the political process, in part as a result of the tax cuts. However, it is unclear why exactly this should be the case - this paper argues that existing explanations linking taxation and accountability lack clear microfoundations, then proposes and tests a new mechanism through which taxation can affect citizen preferences over corruption.

The relationship between low taxation and high corruption is not unique to Uganda. Previous empirical work has shown correlations between taxation and democratization (Ross, 2004), and between foreign aid and corruption (Remmer, 2003). Table 1 provides the first evidence that there is also a robust crossnational correlation between taxation and corruption: higher reliance on tax revenue is associated with significantly lower corruption.[1] The results show a strong bivariate relationship that persists even when controlling for development (measured by GDP per capita and per capita growth); democratic institutions; country size; the presence of conflict in a country; and a country's reliance on foreign aid. While these data show correlation, rather than causation, the results do suggest that taxation may significantly improve accountability. Evidence from a number of countries, including Brazil, Tanzania, and Nigeria, shows that this relationship also holds at the subnational level: reliance on locally-generated tax revenue is consistently associated with lower corruption, higher public goods provision, and better institutional development (Brollo et al. (2010), Gadenne (2011), Hoffman and Gibson (2005), and Berger (2009)).

Together, these findings suggest a strong link between the degree to which citizens are taxed

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[1]The analysis was run using OLS with country and year fixed effects, standard errors clustered by country. Taxation, constructed using data from the WDI, is defined as "Non-Trade Taxes as a fraction of all government revenues"; corruption is measured using the Transparency International's Corruption Perceptions Index (CPI) and rescaled such that 0 is least corrupt, and 10 is most corrupt. Data are from the years 1995-2007.

and the likelihood that governments provide the goods and services citizens value most. The standard political economy explanation for this phenomenon is that tax-reliant governments are forced to bargain with citizens, buying quasi-voluntary tax compliance in return for democratic institutions or policy concessions.[2] This literature argues that tax bargaining over policy grants citizens leverage over governments, as they can withhold critical tax funds when dissatisfied with leaders' performance.

However, theories of tax bargaining tend to be general, assuming away problems of collective action and credible commitments. While individual non-compliance by dissatisfied citizens requires no coordination, citizens could potentially extract more favorable bargains when they can threaten leaders, not only with tax noncompliance, but with additional political costs. The mechanism presented in this paper could help citizens credibly threaten to impose greater costs on leaders who break bargains by increasing the selective benefits of taking part in collective action, lessening coordination problems. This is discussed more below.

Tax bargaining may also be less common in developing countries today. Modern examples of tax bargaining typically involve small, cohesive groups of citizens or economic elites with high collective action capacity - for example, labor unions in Poland or oligopolists in Mauritius (Easter (2008), Bräutigam (2008)). In many cases taxation is coercive, rather than relying on the quasi-voluntary compliance that results from bargaining. [3] Additionally, citizens in Uganda, and many other African countries, exhibit low levels of collective action capacity, making it difficult to strike explicit bargains. Political parties, who might normally assist in such bargains, are too weak and divided to do so, making elections a poor locus for bargaining. In fact, taxation in these countries is often highly coercive, removing the ability of citizens to credibly withold tax payments when bargains are not upheld and making even unofficial bargains unlikely.[4] Given that bargaining is difficult and taxation often coercive in developing countries, why would taxation still increase accountability? Furthermore, why should citizens fail to hold

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[2]This literature includes early work by Schumpeter in *The Crisis of the Tax State* (N.d.), as well as that of Bates and Lien (1985), North and Weingast (1989) and Levi (1989) on European state formation.

[3]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 the threat of fines but because of a sense of the overall fairness of the tax system. In these countries the severity, and likelihood, of punishment for tax evasion has been shown to be insufficient to account for the high rates of tax compliance. I define coercive taxation as that in which voluntary compliance is low and governments primarily collect taxes through the harassment, arrest, or forcible confiscation of assets from citizens.

[4]Fjeldstad (2001) argues that taxation in Tanzania, especially at the local level, has typically been extremely coercive. In Uganda, collection of the head tax, even in recent years, was often coercive, and noncompliance was punishable with jail time (Author interview, 2012).

government accountable in the absence of a tax bargain? Many African countries, including Uganda, receive millions of dollars in foreign aid or oil revenues each year; given the potential benefit to local citizens from this money, why should they not be willing to punish corruption that directly impacts how this money is spent?

This paper suggests a new mechanism to explain why taxed citizens are less likely to acquiesce to corruption and more likely to punish nonaccountable behavior: individuals receive an *expressive benefit* from taking punitive action against corrupt leaders, and taxation increases this benefit by activating a stricter norm of fairness. Facing more engaged citizens, and possible sanctions, leaders will therefore have higher incentives to reduce corruption and to provide the goods and services valued by citizens. This proposed mechanism has several advantages over existing theories. First, it can provide an explanation for why the absence of a tax bargain is so detrimental to accountability, and why taxation may have benefits even when it is coercive, or when collective action problems among citizens make formal bargaining difficult. Second, while the proposed theory can function as a stand-alone mechanism, it can also help to explain how tax bargains support accountable governance, in particular by allowing citizens to credibly commit to punishing non-accountable leaders. Finally, it also addresses another key problem in the study of accountability - how to develop and sustain a culture of political engagement among citizens in fledgling democracies. A number of randomized interventions have now shown it is difficult to increase accountability through bottom-up interventions that rely on citizen engagment to hold leaders accountable.[5] In particular, where interventions have successfully encouraged citizens to attend meetings or monitor leaders, these gains often disappear once the intervention is over. I argue that taxation provides a possible way to overcome these issues, creating a self-enforcing equilibrium in which taxation keeps governments honest and citizens engaged at both the national and local level.

The rest of the paper develops and tests this idea more rigorously. I formalize the theory and use it to derive a set of implications, which are then tested using novel laboratory-in-the-field experiments. 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 the willingness to punish the

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[5]See, for example, Olken (2005) on corruption monitoring in Indonesia and Casey, Glennerster and Miguel (2011) on a community-driven development project in Sierra Leone.

Leader; the transfer threshold below which the Citizen will punish increases by 13% overall, and by 30% for the subgroups with the most experience with taxation. I find similar results for a version of the experiments in which a non-political framing was used, but with key differences that support the idea that the experiments successfully activated political norms.

The paper proceeds as follows. Section 2 introduces new evidence that taxation and accountability are linked; it then discusses previous work on taxation and accountability, focusing on how existing theories work in the African context. Section 3 formalizes the theory introduced above and derives a set of testable implications. Section 4 introduces a novel set of behavioral experiments to test these implications; results from these experiments are presented in Section 5. Section 6 proposes further data collection designed to strengthen and expand the existing results, and Section 7 concludes.

2   Background

The existing literatures on fiscal sociology, fiscal federalism, the resource curse, and aid dependency all argue that taxation plays a role in promoting both state development and accountability, but do so through a number of more specific mechanisms. These can be divided into two broad categories: the first argues that the need for tax revenue often leads rulers to alter state institutions in ways that subsequently improve governance and accountability, while the second category suggests that taxation plays an ongoing role in mediating between citizens and their governments, thereby improving accountability.[6] For the first group of mechanisms, subsequent removal of taxation should not necessarily have a negative impact on accountability, while eliminating taxation should have substantial effects if the latter group of mechanisms is at work.

The process of state development in many European countries involved rulers who, faced with the threat of war and in urgent need of revenues, often struck bargains in which elites agreed to pay taxes in return for limited government and policy concessions (Bates and Lien (1985), North and Weingast (1989), and Levi (1989)). Mick Moore (2004) and others have extended this claim to modern states, and Ross (2004) provides some supporting evidence, showing in

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[6]For the purposes of this paper, "accountable" governments are those that provide the goods, services, and other policies that citizens want. This makes limiting corruption, which often siphons resources away from citizen priorities, a critical part of the definition. In developing countries, "accountability" often refers simply to the provision of basic goods and services in the country.

a panel dataset that countries are more likely to democratize in years following significant tax increases. Taxation has also been credited with improving bureaucratic administration, as governments who wish to tax efficiently must be well-informed about citizen activities and needs (Moore, 2004). Both types of arguments imply that taxation fundamentally alters government institutions.

The logic of tax bargaining and institutional spillover is certainly compelling in the European context; it is less clear to what extent it can explain patterns of taxation and accountability in Africa. The few examples of tax bargaining over institutions in African countries tend to be among limited groups who lacked representation under existing systems. For example, Eubank (2012) presents evidence that economic elites in Somaliland were able to bargain for legislative elections in return for submitting to taxation, while Juul (2006) finds that, in Senegal, migrant herders were able to use their status as taxpayers to negotiate representation on local water committees. In both of these examples, the bargain took place between a government in need of revenue and a small, cohesive, well-organized group of citizens; this combination of factors occurs rarely in many developing countries. Additionally, as many African countries are already formally democratic, it is also not clear why citizens should not hold governments electorally accountable in the absence of taxation.

There is also evidence that taxation is less likely to create positive externalities for bureaucratic development in Africa. Under pressure to protect tax collection from the management and governance problems facing the rest of the public sector, many countries set up semi-autonomous revenue authorities (SARAs) in the 1990s, insulating them from other areas of government. While this may have improved tax collection in some cases, it also means that these positive bureaucratic norms are less likely to spill over into other areas of government, creating the positive externalities that European countries benefited from (Fjeldstad and Moore, 2009). An additional barrier to this mechanism is that some countries have privatized at least some types of tax collection, shifting the burden of taxation infrastructure onto firms instead of government.[7]

The second group of mechanisms argues that taxation has ongoing effects on accountability. As mentioned above, tax bargaining can also occur over policy decisions - for example, 17th century British elites traded tax compliance not only for institutional concessions, but also for naval protection for merchant ships (North and Weingast, 1989). There is some cross-national

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[7]In Uganda this is more common at the local level.

evidence supporting this claim; Timmons (2005) shows that regressive taxation is associated with higher public goods provision, whereas progressive taxation is associated with stronger property rights for wealthy taxpayers. We also know that tax compliance is higher in countries with lower corruption and higher public goods provision, suggesting that governments can induce quasi-voluntary compliance with taxes (thus substantially lowering government collection costs) by providing citizens' prefered policies (Levi (1989), Torgler (2007)). As with institutional bargaining, there are issues with applying this mechanism to modern developing countries. Taxation in Uganda and Tanzania has often been highly coercive, and so citizens cannot credibly threaten to withhold funds, as they may face severe punishments for doing so, or because tax collectors may simply extract the taxes by force (Fjeldstad, 2001). Most modern cases of successful bargaining have been either between governments and limited groups of elites[8], or involve highly-organized groups of citizens, such as labor unions in Poland (Easter, 2008). This suggests that less developed countries may lack the necessary preconditions for effective bargaining, especially if legislatures and elections do not function well. The theory section, below, discusses how this paper can also help to explain situations in which bargaining does still occur.

The second way in which taxation may have an ongoing effect on accountability is through increasing the information available to citizens. In developing countries, Paler (2011) and Gadenne (2011) argue that taxation should provide information to citizens about the size of the government's budget, an argument echoed in the literature on the "resource curse"; Paler also uses a set of survey experiments in Indonesia to show that citizens may be more likely to take costly actions to procure more information about government performance. However, to the best of my knowledge there is no micro-level evidence that taxation does in fact provide information to citizens, especially at the national level. Ugandan citizens know that the government receives large amounts of money from foreign donors, and individuals in resource-rich countries certainly know that their governments have access to substantial resources - paying one's own taxes should not change this estimation substantially. This argument may make more sense regarding local governments, who (at least in Uganda) often deflect citizen wishes by claiming they have simply received no money from the central government, as such a claim is less believable if money is derived from local taxes.[9] Thus, if taxation induces individuals to seek information about

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[8]See, for example, the experience of sugar producers in Mauritius (Bräutigam, 2008), or merchants in Somaliland (Eubank, 2012).

[9]Another argument in favor of the informational role of taxation at the local level is provided by Rodden (2005),

government behavior, it should be because they are also more willing to use that information to hold governments accountable - the question then shifts to why citizens should care more about how tax revenue is used.

This paper proposes and tests a new mechanism explaining how taxation may fundamentally affect citizens' preferences in a way that increases the effectiveness of tax bargaining and that can also function where tax bargaining is difficult (due to collective action problems for citizens) or unlikely (because taxation is coercive). Specifically, I argue that taxation may alter citizens' preferences over corruption by increasing the *expressive benefit* that citizens receive from sanctioning leaders who are corrupt or unaccountable. Previous behavioral work has argued that at least some individuals derive satisfaction from sanctions, and this is termed here an "expressive benefit" – individuals receive some utility from exacting punishment on those who have violated social norms of fairness. If taxation activates a different, stronger fairness norm, thereby increasing the benefit received from punishing non-accountable leaders, and if the benefit received is increasing in the size of the perceived offense, then citizens will demand higher levels of accountability from governments when they are taxed.

This idea—that citizens simply care more about how governments use tax money—is not new, but it has never been clearly theorized, and there is no convincing evidence for its existence. 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).[10] This sentiment is echoed in a policy report to the British parliament on the importance of taxation, which states that "The ability to collect taxes...has implications for the quality of governance. Taxpayers...are more likely to hold their governments to account if they underperform" (DFID 2012). Finally, recent empirical work in Paler (2011) provides suggestive evidence for a behavioral effect of taxation, finding that taxation makes Indonesian citizens more willing to pay to obtain information about government performance.[11] The next section uses a simple formal model to describe the mechanism in more detail, then discusses how it relates to existing mechanisms relating taxation and accountability.

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who argues that, in federal systems, local taxation signals to citizens that local, not national, government should be held accountable for failures in fiscal discipline and public goods provision.

[10]However, he adds in a footnote that "We do not know how strong this effect is likely to be" (315).

[11]However, Paler does not find that respondents are then more likely to use this information in holding government accountable; it is unclear why this is the case.

3   Theory

The basic insight introduced above can be formalized using a simple model. Here I present only the "demand side" of accountability; the government's supply-side dynamics are examined in a separate paper. Assume that there is a state consisting of one leader (of mass zero) and continuum of citizens of mass one. The government collects a mandatory, exogenously set, proportial tax, t, on each citizen's income, y_i. Taxation is assumed to be efficient, and there is no cost associated with collecting the tax. The government receives total revenue T (from taxation or other sources) and must allocate it between a public good, G, and a private good, x. Each citizen receives utility from the public, but not the private good; government receives utility only from the private good. There are several way to conceptualize the private good, x. It could represent money that is used for patronage or clientelism; money stolen by a corrupt regime; or money that is simply used for an alternative public good less valued by citizens. The public good, G, could represent roads, schools, health care, infrastructure, or any other good or service valued by the general population. All that is required for these results to hold is that citizens prefer G to x, and that the government prefers x to G.

After observing the government's budget allocation decision, each citizen simultaneously decides whether to pay a cost, c, to sanction the government. This cost could incorporate collective action costs; potential retribution faced by citizens in a non-democratic regime; or any other cost or loss of utility suffered by a citizen who takes part in actions against his or her government. If a citizen sanctions the government, the government faces a cost q, and the citizen gets a benefit, $\beta(t)$, that is scaled by the level of corruption, $\frac{T-G}{T}$ (note that $x = T - G$). The government's loss from sanctions comes from reduced electoral support, the costs of domestic unrest, international audience costs, or other economic or political costs. Note that $\beta(t)$ is independent of any anticipated future economic benefit derived from punishing the leader; it is purely an expressive benefit derived from sanctioning a leader's performance. We now have the complete utility function for a citizen:

$$U_{citizen} = y_i(1-t) + G + s_i(\beta(t)(\frac{T-G}{T}) - c) \tag{1}$$

where $y_i(1-t)$ is post-tax income, G is the level of the public good provided, T is the total revenue available to government,[12] and $\beta(t)$ is the expressive benefit of sanctioning corruption,

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[12]In this model T is not a function of t: non-earned revenue is assumed to make up any difference.

as a function of the tax rate. In particular, this theory assumes that, for all $t > 0$, $\beta(t) > \beta(0)$, and for all t, $\frac{d\beta}{dt} \geq 0$. As discussed above, the cost to the citizen of taking action to sanction the government is c. Finally, $s_i \in \{0, 1\}$ is the decision of a citizen whether to sanction the leader. A strategy for each citizen consists of the decision whether or not to sanction the government, given the level of public good provided. Solving Equation 10 shows that each citizen's equilibrum strategy is:

$$s_i^* = \begin{cases} 1 & \text{if } \beta(t)(\frac{T-G}{T}) - c > 0 \\ 0 & \text{otherwise} \end{cases} \tag{2}$$

This can be used to solve for G^*, defined as the cutoff value of the public good below which a citizen will prefer to sanction the leader:

$$G^* = T(1 - \frac{c}{\beta(t)}) \tag{3}$$

This cutoff point is the main comparative static that will be used to develop the behavioral experiments below. As $\frac{dG^*}{d\beta} > 0$, and as β is increasing in t, we should therefore expect taxation to *increase* the citizens' cutoff point for the minimum acceptable level of pubic good G, thereby *decreasing* citizen tolerance for corruption or other self-serving behavior by government. This implication is tested below.[13]

3.1 Relationship to existing mechanisms

The model above presents a stand-alone mechanism, and it is possible that the behavioral effect of taxation works even in the absence of tax bargains. However there is also an alternative: this behavioral effect helps to support tax bargains. It can do so in two (related) ways. First, it can help citizens solve collective action problems. Earlier work on collective action has suggested that awarding private benefits to participants can sustain engagement. Expressive benefits, such as the one modeled here, are one way to do that. This should then reduce free-riding and make citizens more likely to act together. It may also provide an incentive for individuals to participate in costly collective action even when they do not believe their actions will make a marginal difference to the outcome. This can lead to a second effect: taxation may raise

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[13]The full model also examines the general equilibrium. I find that, when taxation increases citizens' demands for accountability, the equilibrium level of public goods provision increases in some sections of the parameter space, but in other cases the government may respond to citizen pressure by either doing nothing, or even by *decreasing* public goods provision. More work is needed to determine the scope conditions under which each outcome is most likely.

the costs to the government of repression, as it effectively raises the minimum cost necessary to demobilize citizens and prevent them from pushing for change. By making repression more costly, taxation could then increase the likelihood that leaders will instead respond positively to citizen demands for change. This relationship will be formally modeled in future versions of this paper to allow a proper understanding of how compliance and behavioral mechanisms might work together to improve governance outcomes.

4   Methodology

This paper argues that existing explanations for how taxation may affect accountability are incomplete, and has theorized an alternative mechanism in which taxation activates stricter fairness norms, increasing the likelihood that citizens will prefer to punish corrupt behavior by leaders. However, testing such a theory is difficult.

Levels of taxation are almost always endogenous to country and individual characteristics, making it difficult to separate the effects of taxation from issues of (at the country level) state capacity and overall levels of development, and (at the individual level) income, education, and geographic location. Even if taxation were exogenous, it would still be difficult to isolate a behavioral effect of taxation from either information effects or other economically rational behavior. Finally, in an observational setting, citizen preferences about accountability interact with many other features of the political economy to determine whether those preferences are able to translate into change - for example, a citizen might face repression or substantial collective action costs that prevent him from taking action, even if taxation has altered his preferences such that he would wish to do so.

While these issues are difficult to overcome using observational data, it is possible to isolate the desired effect in a lab setting. Below I develop a set of novel laboratory experiments designed to identify whether citizens who are taxed are more likely to punish corrupt behavior by a leader. These experiments, conducted over six weeks in Kampala, Uganda, provide the first evidence that taxation induces citizens to demand higher levels of accountability from leaders. In desiging these experiments, it was critical that they allowed the proposed behavioral mechanism to be separated from other effects of taxation; they have the following characteristics. First, as the proposed behavioral mechanism is separate from questions of tax compliance, taxation in the experiments is *mandatory*, exogenously set, and enforced by the enumerators. Citizens have no

opportunity to use compliance to force leaders to be accountable. Second, to avoid potential information effects, the games are played under complete information - there is no uncertainty, and the size of the government's budget is held constant across treatments and observed by the citizens. Third, to remove the possibility that citizens are using punishment as a signal to leaders in future rounds, the experiments described below are one-shot interactions. This should rule out any economically rational punishment behavior. Finally, citizens do not face any uncertainty about or barriers to punishing non-accountable behavior. Citizens will make an ex ante decision rule about punishing the leader, and this decision rule is always enforced by the enumerators.

The rest of this section describes first introduces some of the relevant literature from behavioral economics, and then discusses the experimental design, and its implementation, in more detail.

4.1 Behavioral Approaches

An extensive literature in behavioral economics has shown that individuals are willing to take costly actions to impose sanctions on fellow players in a number of settings. For example, Henrich et al. (2006) implement the Ultimatum Game in 15 diverse societies, finding that, while there are cross-cultural differences, in all societies individuals are willing to accept monetary losses in order to deny an unfair division to the proposer; many individuals will reject offers of up to 40% of the stake.[14] These results extend to third-party punishment in Dictator Games (Henrich et al., 2006) and versions of the Trust Game that allow punishment (CITE). Fehr and Gächter (1999) show that individuals are also willing to pay to impose fines on free-riders in a public goods game, even when there is no possibility of personal economic benefit from the action. They also use qualitative evidence to show that punishment provides relief from the negative emotions created by unfair or immoral behavior in other players.[15]

A number of theories have been put forth to explain why individuals punish. Fehr and Schmidt (1999) argue that punishment is due in part to inequity aversion; while this may play a role in some punishment, the results of the Tax and Grant games described below cannot be

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[14]In the Ultimatum Game, the "proposer" is given a stake, and can choose how much to send to the "respondent". The respondent can choose to take the money or reject it, in which case both players receive no payout.

[15]More recently, political scientists have used a number of these games to measure various political phenomena. For example, in Uganda, Guy Grossman (2012) uses public goods experiments to measure how elections can alter accountability in Ugandan farmers' associations.

explained by inequity aversion, as this is constant across treatments. Another possibility, raised by Fehr and Gächter (1999), is that negative emotions are generated by behavior that violates norms, and these emotions induce individuals to punish the offender. In particular, they provide evidence from public goods games 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 the degree of corruption; it also supports the idea that fairness norms play a key role in the effect taxation has on citizen preferences for punishment.

4.2 Experimental Design

Drawing on this previous work in behavioral economics, I developed an experiment consisting of two novel behavioral games.[16] Each game is played between one "Citizen" and one "Leader";[17] in both games, the Leader is given a "group fund" of 10 money units (MU) that he must divide between himself and the Citizen. Following this decision, the Citizen can pay a small cost (1 MU) to fine the leader 4 MU if not satisfied with the allocation decision.[18]

The key difference between the games is the source of the group fund. In the "Tax" game, the citizen is given 10 MU as his wage. Half of that money is then taken away as a tax, doubled (to 10 MU), and given to the leader. In the "Grant" game, 5 MU is given to the citizen as his wage, and 10 MU is given to the leader as an exogenous source of funding (similar to foreign aid or other grants). Thus in both games, at the time the Leader makes his allocation decision, the citizen has 5 MU and the leader has 10 MU (referred to as a "group fund" in both treatments). From this point on the games are identical. In both the Tax and Grant games, if the Citizen decides to punish the Leader, he pays 1 MU and 4 MU is removed from the leader.

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 the Tax and Grant games is for the Leader to offer 0 MU to the Citizen, who does not punish. Punishment is strictly non-rational–it entails an economic cost and cannot generate any economic benefit. This means that choosing punishment is a purely expressive action by the Citizen, in direct accordance with the model

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[16]Note that these games are similar to the Ultimatum Game in many ways.

[17]In actual enumeration, both roles were played by ordinary Ugandan citizens who were randomly assigned to a role.

[18]In the Ugandan context, 1 MU was set at 100 Ugandan Shillings (UGX). This is equivalent to about US$0.40, and is a substantial amount of money for the sample population.

developed above. In particular, I expect Citizens to punish offers they perceive as "unfair". It is critical that the only difference between the Tax and Grant games is a simple framing effect created by having the group fund previously owned by the citizen: there is no variation in the size of the group fund, or the decision tree from the point at which the Leader is given the group fund. This means that any differences in gameplay must be due to the fairness norms 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. If anything, this should bias against finding an effect. In some ways the framing is also relatively weak: the Citizen does not earn his endowment, and holds his "wages" for only a few seconds before they are taxed.

While the Tax and Grant games use an explicitly political framing, it seems reasonable that the proposed effect of taxation could have a counterpart in non-political settings; the stricter fairness norms activated by taxation could also apply to non-hierarchical peer interactions. To test whether this is the case, I used versions of the Tax and Grant Games that are framed as between two equal peers (called "Player 1" and "Player 2"), rather than a Citizen and Leader. The games are identical other than the names of the players, and that the word tax is never used in describing the money taken from Player 1 in the "Tax" version; I refer to these games as the Peer games, as opposed to the Political games introduced above. This game was designed to mimic the situation of two members of a group who are sharing some sort of group fund. The current focus in aid circles on community-driven development means that many Ugandans have experience with savings or earnings groups that control money, making this a plausible scenario for respondents. The steps of the Political and Peer games are summarized in Table 2.

In Table 2, the Citizen (or Player 1 in the Peer games) decision was described as a response to the Leader's (Player 2's) allocation decision. In actual game-play, collecting responses in this manner would have drastically decreased the power of the sample, making inference more difficult. For this reason, enumerators instead asked Citizens and Player 1s whether they would pay to punish the Leader (or Player 2) for every possible decision the Leader (Player 2) could have made. 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 said that he would punish if the Leader passed back 300 UGX or less, the punishment threshold would be 400 UGX. This allowed the collection of much more detailed data on each respondent, and meant that data collection was not dependent upon the decisions actually made by leaders.

4.3 Implementation

The experiments were conducted in Kampala, the Ugandan capital, over a six-week period in July and August 2012. Kampala was chosen as the field site because it has seen significant political mobilization over the past two years, and is also the part of Uganda in which citizens are most likely to pay at least some formal taxes: homes in Kampala are still taxed, and greater integration into the market economy means that individuals pay VAT on many purchases. This made it more likely that the experimental treatment would be able to activate the relevant norms surrounding taxation and accountability.

In total there were 29 sessions, each consisting of approximately 20 respondents.[19] The total sample for the Political experiments was 371, of which 296 were Citizens (the Peer games had 260 respondents with 210 Player 1s). For each session, volunteers were recruited from a specified neighborhood surrounding the enumeration site by two trained mobilizers. While a convenience sample was used, every effort was made to recruit equal numbers of men and women, as well as individuals from a range of ages and other characteristics, and to ensure that participants had no prior exposure to others who had taken part in the experiments.[20] As each individual arrived for a session, he or she was randomly assigned an ID number between 1 and 20, which determined the respondent's role and group pairings in the games. In each session either the Political or Peer games were run, randomizing whether the Tax or Grant treatment was played first. Most of the analysis in this paper relies only on the first experiment from each session, as there were substantial ordering effects. At the end of each session, respondents were administered a short survey including demographic, economic, and political information. While this means survey covariates were collected post-treatment, those variables that could most plausibly have been affected by treatment are examined separately.

Because many members of the sample population had low education and low literacy, it was critical to develop experimental protocols that adequately explained the games using solely verbal and pictoral instructions. Enumerators explained each game three times - twice to the entire session (first verbally, then using set examples with diagrams) and once individually, using real coins and another pre-set example.[21] This final example included a series of questions to

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[19]Actual session size varied between 13 and 25 individuals, with an average of 20.6 participants.

[20]The sample was also recruited from areas that were predominantly low-income. This makes the results more generalizable to Ugandans as a whole.

[21]The examples used were the same for every participant, and the examples for the Tax and Grant games used the same values, with the only alteration being the funding source.

gauge the respondent's understanding of the game. After the three examples, each respondent was told whether he or she was a Citizen or Leader and played five rounds of the game. All pairings were anonymous – respondents knew only that they were playing the game with someone else in the session. They were also told that they had a different partner in each round, to stress that these were single-shot interactions. In rounds 2-5, respondents were told the results of the previous round for the pair they were in, but were not told the results of any other groups. This minimized the ability of respondents to signal their preferences to the entire group, again reinforcing the single-shot nature of the games. Respondents were also not allowed to communicate with each other during the session.

All respondents received compensation. The base payment for completing the activities was 3,000 Ugandan Shillings (UGX) - around US$1.40. In addition, participants were told that, for each of the two activities, one round of gameplay would be randomly drawn and paid out, based on respondents' decisions in that round. The average payoff was 4,645 UGX, which is slightly less than US$2; in local terms, this was about a half-day's wage.[22]

5   Results

The key outcome for each round of each game is the lowest level of backtransfer at which the Citizen (or Player 1) would not punish the Leader. This cutoff could take on eleven possible values – the 100-UGX increments between 0 and 1,000 UGX. In the primary analysis specification, the dependent variable is the average of a respondent's choices across the five rounds; this permits me to incorporate learning effects, and to allow for respondents who attempted to achieve a certain average payoff across rounds. Alternative specifications are discussed in the robustness section below. I include fixed effects for each enumerator and each of the three enumeration sites. All errors are clustered at the session level unless specified otherwise. If taxation does activate a stricter fairness norm, increasing the extent to which citizens punish nonaccountable behavior, 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 here focuses on the decisions of Citizens, rather than Leaders. This is for two reasons. First, because the Citizen was the focus of the experiment, there was only one Leader for every four Citizens. This minor deception allowed the necessary sample size to be

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[22]As respondents were at the enumeration site for several hours, they also received a soda and a small snack.

achieved with a smaller number of sessions, but leaves fewer data points for Leaders, making analysis more difficult. Second, while those assigned to be Citizens in the games have real-world experience in the role, none of the Leaders were actual political leaders. This means that, while their responses may tell us something about how community members expect their leaders to behave, they are unlikely to be informative regarding how leaders themselves behave with or without taxation.

While there is significant variation in the overall sample, some groups are overrepresented. This is largely because the timing of the sessions—during normal work hours for many people— meant that non-wage earners, especially male youth, were more likely to be recruited. For this reason, results are presented for the entire sample for each experiment, as well as for key subgroups. In particular, heterogeneity analysis focuses on the effects of age, gender, and income; I expect that taxation should have the strongest effect among citizens who have experience paying taxes, as the games are most likely to activate the relevant norms in these cases.

5.1 Descriptive Analysis

Tables 3 and 4 show balance tests for the Political and Peer experiments. Variables that may have been affected by treatment are excluded.[23] The tables show that the samples are well-balanced; on no variable in either experiment are the samples significantly different. Overall, the sample was about 70% male, with an average age of 22.6 years; a significant portion, 40%, was under the age of 20.[24] About 40% of the sample had zero earnings over the previous four weeks; these individuals were either unemployed, still in school, or worked in the home. Among those with a positive wage, the median monthly income was 110,000 UGX, or US$45. Those who are not earning a wage may still be affected by taxation: unemployment may be seasonal for many workers, and many women still handle money earned by others in the household.

5.2 Results: Political Tax & Grant Games

Figure 1 shows kernel density estimates for the average Citizen punishment threshold 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. In particular, the Grant game shows higher density

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[23]This includes answers to a number of questions about taxation, corruption, and subjective political behavior.

[24]This reflects the available recruitment pool, but also provides an interesting, and useful, comparison for the typical sample (undergraduates) on which many laboratory experiments, and their key results, are based.

at low punishment thresholds, whereas the Tax game has more density at high punishment thresholds. The regression results support this interpretation. Table 5 presents results from five different specifications: Column 1 shows the simple difference-in-means between the Tax and Grant games: on average, Citizens in the Grant treatment demanded 408 UGX from the leaders (just over 40% of the stake), whereas Taxed Citizens demanded almost 460 UGX - an increase of approximately 13%. Column 2 adds site and enumerator fixed effects, and Columns 3-5 include both fixed effects and different subsets of controls; the estimates are remarkably stable across all specifications.[25]

Few of the control variables are significant predictors of in-game behavior. Gender, age, income, voting behavior, education, and social capital all had insignificant effects on overall behavior. The only variable that consistently predicted the punishment threshold was literacy: individuals with high literacy (those who reported being easily able to read a book in any language) had significantly lower punishment thresholds than those with low levels of reported literacy. However, the correct interpretation of this finding is unclear. In some specifications, those saying they were the primary earner in their household also had lower punishment thresholds. Together, these could suggest that those with higher societal positions (often those who may benefit from forms of corruption or patronage) are more understanding of corruption in others. This interpretation received some support - those with high literacy were five percentage points more likely to agree that it was aceptable for civil servants to ask for bribes. In turn, those who were more tolerant of bribes had punishment thresholds about 67 UGX lower than other respondents - this provides some evidence that individuals' attitudes surrounding corruption are driving in-game behavior.

5.2.1 Heterogeneity in Political Games

The sample size is also large enough to examine the behavior of key subgroups - something that has often not been possible in other behavioral experiments, which typically rely on fairly small samples. Here I provide results on three potential sources of treatment heterogeneity: gender, age, and income. Gender may be important because, in Uganda, women have historically been exempt from some forms of taxation, and so we might expect a smaller treatment effect if the relevant norms cannot be activated. The decision to look at income and age was made in part because so many teenagers and unemployed individuals are in the sample, and in part because

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[25]More details about the included controls are available in Appendix A.

those with no wages, or who are too young to pay taxes, may not have developed the relevant norms. In particular, I test whether the results in the previous section are being driven by those who are less likely to be taxed. Table 6 shows the regression results for the three subgroups. For each of the three variables, the first column reports the results without controls; the second includes basic demographic and economic controls. Columns 7 and 8 include all three variables and their interactions.

The results show that age is the most powerful source of treatment heterogeneity - in particular, the treatment effect on teenagers is close to zero, while the effect for adults is significantly larger, approximately twice the size of the effect found in the sample as a whole. In addition, while a control for age is not significant, being under 20 somewhat increases the average punishment threshold. The results for gender and income are weaker. In both cases the coefficient on the interaction term is substantively large, but imprecisely estimated. In particular, the effect of gender appears to be muted once other variables are controled for, indicating that perhaps women appear different simply because gender is correlated with income and other factors. 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 regression on only men age 20 or older, who had positive wages in the past four weeks shows that treatment increases the average punishment threshold from 362 to 470, an increase of almost 30%.

Teens differ in key ways from the rest of the sample, and it is unclear which of these characteristics might drive the heterogeneity results. Teens were more likely to speak English, and had more education, than older Ugandans. However, they earned far less than adults, and–unsurprisingly–were less likely to be heads of households, or to report paying income tax. While they were equally likely to trust members of their community, they were more likely to report trusting the government. At the same time, teenagers are less politically engaged - they are less likely to report speaking out at meetings, or indeed attending meetings at all. They are significantly less likely to feel comfortable contacting an elected official, are less likely to vote, and are more likely to see vote-buying as an acceptable practice. Together, these suggest a group who is less socialized into political behavior, and who may be less willing overall to demand high levels of accountability from leaders.

5.2.2 Robustness

A number of alternative specifications were also run. First, as the data are discrete, I ran versions of the regressions in Table 5 using ordered probit instead of OLS. To ensure that the results were not driven by a single round of the games, I also ran both OLS and ordered probit regressions using five alternative versions of the average punishment threshold, each of which drops one round from the average. To account for learning in the first two periods of the game, I also ran a specification that averages over only the last three rounds. Finally, instead of taking the five-round average, I pooled all five rounds of responses and ran both OLS and ordered probit regressions with a variety of controls and fixed effects.[26] In all cases, the results are virtually unchanged - tables for these regressions can be found in Appendix C, which also graphs the average responses for each round of the Tax and Grant games.

5.3 Results: Peer Tax & Grant Games

Figure 2 shows the kernel density estimates for the Peer Tax and Peer Grant games, in which a non-political framing was used. As in the baseline Tax and Grant game, there is a clear rightward shift in the distribution of responses for the Peer Tax group. The bivariate regression results (Table 7 Columns 1 & 2) initially suggest that the average treatment effect is at least as large as in the Political Games. When controls are added in Columns 3-5, the size of the coefficient shrinks and the standard errors increase, resulting in p-values that are no longer significant at conventional levels. As the sample size was smaller than the primary Tax & Grant Games, this could simply reflect lower power. However, even when Player 1 responses are pooled, instead of using the five-round average, the effect size is less stable and smaller than in the Political games - see Table 8. Unlike the Political games, non of the control variables consistently predicted in-game behavior; in particular the results for literacy, and toleration of corruption, disappeared. Turning attention to the heterogeneity analysis, Table 9 shows that, while the signs on all coefficients are the same as in the Political games, the magnitudes are smaller, and none are significant in any specification - this also holds when rounds are pooled, instead of using the five-round average. This suggests that norms of fairness in peer interactions may be less dependent on individual characteristics than are similar norms for political behavior.

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[26]Standard errors for these regressions were clustered by respondent.

5.4 Evidence on External Validity

The results show that the taxation treatment was effective in raising citizens' demands from leaders. However, it is important to establish whether the political framing, including taxation, succeeded in activating the desired norms, rather than representing, for example, a more general endowment effect that may not translate to political behavior. One piece of evidence supporting the framing is the differences between the Political and Peer games. In particular, the Peer results were less stable, and the covariates that predicted Citizen responses (such as literacy and opinions on corruption) do not predict Player 1 responses in the Peer games. The Peer games also do not exhibit the strong treatment heterogeneity found in the Political games.

There is also more qualitative evidence that the Political treatments were successful. In a subset of the sessions, respondents were asked why they had made the choices they made in the games. This occurred after Round 5 of the first game played (either Tax or Grant). In the Tax game, many respondents 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." A third respondent provided an additional justification, saying 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 fellow citizens who did not have other ways of getting money.

The explanations of respondents who demanded only small transfers from the leaders in both the Tax and Grant games (but primarily the Grant game) are also illuminating. A number of respondents replied that leaders had many responsibilities, and so citizens should not make demands of them - for example, "Leaders should even take more [than citizens] because they do a lot", and "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. These were not exceptional responses – many of the respondents replied in a similar way. This strongly suggests that the game successfully activated the norms involved in citizen-leader interactions, and therefore the results of the games do tell us something about the effects of taxation on citizens' demands for accountability.

The responses of Citizens also provide insight into the mechanism behind these results. A

number refer specifically to norms of fairness in explaining how they made their decisions. One respondent explained that "[he] should have a fair share of the taxed money"; a respondent in the Grant game suggested that he "wants to share equally with the leader since it's a group fund." Several other respondents mentioned how they were basing their decision on what was "fair"; many others specifically mentioned the tax, and that they felt they should earn more than Leaders.

5.5 Discussion

The experiments and analysis above provide the first micro-level evidence that taxation impacts citizen demands for leader accountability, including evidence that in-game play was motivated by actual political norms and beliefs. Taxation increased the average citizen punishment threshold by almost 13%; for adult wage-earning men, the effect was a 30% increase from 362 UGX to 470 UGX. This is a substantively large effect, and it is also possible that the laboratory setting actually underestimates the true size. When citizens are actually taxed, it is from money they have earned, not money given to them by enumerators, and thus the endowment effect should be stronger. Real-world citizens also suffer severely from the lack of basic public goods and services, and are faced with a government that they have elected and know, rather than simply receiving a small backtransfer from an anonymous, randomly selected "Leader" who is really a fellow citizen.

On the other hand, the game made demanding accountability very easy – a Citizen only needed to pay a small cost, and would know with certainty that the Leader was punished. In many settings, accountability is much more difficult. Collective action is costly, civil society is weak, and elections, one normal channel of accountability, are often not free and fair. However, one recent example in Uganda suggests that taxation can have a real impact, especially at the local level. One of the most common local taxes in Uganda is levied on vendors in agricultural markets. Small business owners, primarily women, pay fees to sell produce and other goods in market towns. In Lira District, a group of women recently protested market conditions – the city had not been removing trash, and the piles of rotting vegetables had resulted in unsanitary and unpleasant conditions that kept customers away. In response, market vendors organized and protested to the city government, using the justification that their tax money was not being well spent. They carried buckets of stinking refuse to city hall, dumped it on the doorstep, and threatened to do the same to city council members' houses if the situation was not rectified.

Garbage collection has since resumed. (Uganda Radio Network 2012)[27]

6   Further Research

These results provide strong initial evidence for the effect of taxation on citizens' demands for accountability. They also provide a basis for future research. This section discusses some of the oustanding questions raised by the results in Section 5. It then suggests a second round of data collection that addresses these concerns. The research agenda can be divided into two parts. First, more work is needed to understand the precise nature of the behavioral mechanism. Second, we need evidence regarding how taxation's effect on individual preferences scales up to more general changes in collective action by citizens, or to shifts in the equilibrium supply of accountability. This section outlines this agenda more fully and suggests ways to test many of the questions raised by this research.

6.1   Fine-Tuning the Mechanism

The first set of possible extensions is designed to tease out more precisely the psychological mechanisms responsible for the main findings above. This is critical for properly understanding the policy implications of the findings. In particular, different psychological bases for the taxation effect may suggest different scope conditions for the theory, and propose different ideas regarding how to generate a similar demand for accountability in situations where taxation does not occur – for example, in the presence of substantial resource rents. I focus here on two issues: first, whether loss aversion provides an alternative explanation for how taxation alters citizen preferences, and second the degree to which the expressive benefit depends on *successful* punishment of the leader.

6.1.1   Alternative Mechanism: Loss Aversion

In Section 3, I argue that taxation increases the likelihood citizens punish corrupt leaders by activating a stricter fairness norm. However, there is another possibility that my existing results

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[27]Note that this example does not rely on tax bargaining. Markets are easy and cheap to tax, and tax evasion is extremely difficult, as market entry can be denied to noncompliers. In fact, there have been complaints of excessively coercive taxation, and additional rent extraction by tax collectors, from this group. This idea is supported by the fact that threats of tax noncompliance were not a part of the protesters' strategy.

cannot rule out - that loss aversion interacts with fairness norms to increase citizen's willingness to punish corrupt behavior. To understand how this would work, consider the following.

My existing model claims that citizen utility is

$$U_{citizen} = y_i(1-t) + G + s_i(\beta(\frac{T-G}{T}) - c).$$ (4)

The first half of the utility function is strictly economic: post-tax income plus the level of public good, G, provided by the government. The second half is the behavioral component: $s_i \in \{0,1\}$ is the decision of whether to punish the government; $\beta(t)$ is the expressive benefit; $\frac{T-G}{T}$ is the level of corruption; and c is the cost of punishment to the citizen. I argue that taxation increases β, and thus citizens will be more willing to punish when $t > 0$.

For loss aversion to be responsible for the effect, two changes are needed. First, instead of scaling the expressive benefit of taxation by the degree of corruption, assume that citizens' expressive benefit is scaled by the *utility a citizen loses from corruption*. For example, if economic utility is

$$u(G,t) = y(1-t) + G$$ (5)

then a citizen's overall utility becomes

$$U_{citizen} = u(t,G) + s_i(\beta(\Delta u) - c)$$ (6)

where

$$\Delta u = u(T,t) - u(G,t) = [y(1-t) + T] - [y(1-t) + G] = T - G$$ (7)

Provided economic utilities are linear, the level of taxation does not have any direct effect on Δu. Next, assume that individuals are loss averse with respect to economic utility: let the citizen's utility be concave above the reference point, and convex below. Let $v(G,t,r)$ be the loss-averse utility function, where r, the citizen's reference point, is his pre-tax income y_i, and any utility below y_i is treated as a loss. In this model, taxation pushes a citizen into the realm of losses. It is possible to show that we now have, given $v(t)$,

$$\Delta v(0) < \Delta v(t)$$ (8)

for any given level of corruption greater than zero. Returning to Equation 6 above, we can now

see that loss aversion, interacting with the expressive benefit citizens receive from punishing corrupt behavior, will make citizens less tolerant of corruption, even if β is no longer a function of t. This suggests that loss aversion could interact with fairness norms to make citizens more likely to punish corruption when they are being taxed. Indeed, it would suggest that fairness norms are derived at least in part from the individual's reference point.

Differentiating the Mechanisms

To separarate fairness norms from loss aversion, I propose using a new set of behavioral experiments that employ third-party punishment. In the proposed set-up, the tax-paying citizen has no power to punish, but another citizen, who serves the role of a third-party Enforcer, does. The Enforcer will face no personal loss from taxation or corruption, and so loss aversion should not be activated by the treatment. If the Enforcer is more willing to punish the Leader when a fellow Citizen has been taxed, this points to the existence of a more general shift in fairness norms, rather than the loss aversion mechanism. If the taxation effect disappears, this suggests that loss aversion forms a critical part of the mechanism. The stages of this proposed game are outlined in Table 10.

I propose to run this experiment in Kampala, Uganda on a sample similar to that in the original experiments. This will help to ensure that the sample population is comparable. The sample size will depend on funding and logistical constraints, but will likely be similar to that of the Political Tax and Grant games.[28] This will allow me to measure whether the effects are approximately the same size; it will likely not allow me to detect more subtle differences between the two treatment sizes, as that would require a much larger sample, and a large amount of funding.

Testing Fairness More Directly

Below, I discuss additional survey work that will be done using a sample of Ugandan market vendors. As part of this, I intend to include a survey experiment that tests more directly the extent to which taxation affects fairness norms. The survey experiment would be present the respondent with a scenario in which the local government has a pot of money, derived either from local market taxes or an aid grant, and then ask the respondent to indicate what a "fair"

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[28]Based on the heterogeneity uncovered in the first round of data collection, I will exclude teenagers from the sample, and compare the treatment effect in the third-party punishment games to that of adults in the 2-player games.

division of the money would be between, for example, market upgrades and an alternative use that might be viewed as a less "accountable" way to spend the money, perhaps salaries and expenses for local officials. Finding a treatment effect in this setting would provide more direct evidence that fairness norms are a critical component of taxation's effect on citizen behavior.

6.1.2 Expressive vs. Quasi-Instrumental Preferences

In the original experiments above, the game is structured so that, if a citizen decides to punish the leader, that punishment is always carried out. This may obscure the exact source of the expressive benefit. It is possible that the expressive benefit (β in the model) is actually composed of two parts: one part of the benefit is derived from simply expressing one's preferences, regardless of whether the punishment attempt is successful, while part is received only if the citizen succeeds in punishing the Leader in some way. For example, a citizen may receive some utility simply from attending a protest, but may receive more if the protest is successful enough to create real utility costs for the Leader.[29] The balance between these two types of expressive benefit is important for understanding how taxation affects collective action, and will be discussed further below.

6.2 External Validity and Aggregating Effects

The other type of extension to the initial findings will focus on, first, showing that the experimental results have external validity and, second, examining how taxation impacts collective action. These are both important for understanding how the micro-level behavioral effect may scale up, leading to equilibrium shifts in actual levels of accountability.

6.2.1 Additional evidence on External Validity & Coruption

Another question raised by the laboratory experiments is how in-game behavior translates to citizen preferences about real political problems and behavior, and how revenue source ranks among other factors when citizens evaluate the severity of a corrupt act. To get traction on these issues, I am proposing a set of survey experiments, including a conjoint survey experiment, to be conducted on Ugandan citizens in Kampala and potentially in rural districts. While conjoint

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[29]I am still considering this as separate from any *economic* benefit the citizen may receive from successful collective action against the leader.

analysis is a common survey technique in marketing, it is fairly new to political science, and has primarily been implemented in developed democracies.[30]

In the conjoint survey, respondents are presented with two hypothetical government officials, each of whom has engaged in some type of corrupt behavior. Each official has 4 attributes that are randomly assigned from a set of possible levels. Respondents will read a statement explaining that the Ugandan government is working to fight corruption, but faces limited resources to prosecute wrongdoing. They will then be asked to look at the officials and pick which one they would rather see prosecuted and punished for his behavior. They would also rank the severity of each official's corruption on a ten-point scale. Each respondent will do this for 4-5 pairs of officials. This allows me to estimate the average marginal effect of each level of each attribute, averaging over all other attributes. While I am still developing the exact structure of the survey, some attributes and levels could be as shown below:

Attribute	Possible levels
Type of official	Local elected; local appointed; national elected; national appointed
Source of money stolen: type of funding	Taxes, government transfers, foreign aid
Source of money stolen: program	Health, education, roads, water, administration
What did with stolen funds	Patronage; self-enrichment; used to win an election

And so a sample profile seen by a respondent might look like this:

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[30]For an in-depth discussion of conjoint methodology, see Hainmueller, Hopkins and Yamamoto (2012).

Official A	Official B
Is an elected official in Kampala	Is an appointed official in a District
Is accused of stealing money from citizen's taxes	Is accused of stealing money from a foreign donor.
Stole money that should have been used for primary education.	Stole money that should have been used for primary education.
Used the money to buy things for himself and his family.	Used the money to get support for his party in the last election.

Q1: Governments have limited resources to prosecute corruption. Which of the officials above would you most like to see prosecuted for his accused crime? You must pick one.

Q2/Q3: Now, look at [Official A / Official B]. How would you rate the crime he is accused of? [scale: 0=not bad at all, 10=extremely severe]

These questions will be embedded into a larger survey that will collect basic demographic, economic, social, and political characteristics; this survey may also contain additional survey experiments, discussed more below. For example, I am developing a set of questions on political behavior to be asked following the conjoint experiment. Unlike the behavioral experiments, which measure taxation's effect on individuals' willingness to take economically costly actions, these questions will be aimed at measuring reported willingness to take actions that require investment of time and possible risk. For this module, respondents will be presented with a single hypothetical situation in which they have heard that a local official has embezzled either tax or foreign aid money. They will then be asked how likely it is that they would engage in several forms of potentially costly actions: talking to friends and neighbors about the scandal, taking part in protests, going to community meetings, or voting against the official in the next election. While respondents may overstate their likelihood of participation, the differential between responses in the tax and grant treatments can still be instructive.

6.2.2 Taxation & Collective Action

If taxation increases the expressive benefit received from sanctioning corruption, this has implications for a group of citizens' ability to solve the collective action problem. Earlier work (Olson) has argued that *private benefits* to participants should help overcome free-riding. Expressive benefits, as a form of instrinsic motivation, are one way to provide private benefits that are impossible to gain without taking part in the action. If taxation increases these benefits, we may see a higher degree of collective action when citizens are taxed. Taxation may also benefit collective action by increasing citizens' beliefs about the likelihood that other citizens will act.

Appendix B presents a short model showing this intuition. In particular, I show that the drop in punishment thresholds due to collective action problems is smaller under taxation for at least some types of citizens. This result can be expressed as:

$$\bar{G}^*(t) - \bar{G}_C^*(t) < \bar{G}^*(0) - \bar{G}_C^*(0) \tag{9}$$

Where $\bar{G}^*(t)$ and $\bar{G}^*(0)$ are the average punishment thresholds for taxed and non-taxed citizens in the absence of a collective action problem, and $\bar{G}_C^*(t)$ and $\bar{G}_C^*(0)$ are the average citizen punishment thresholds (with and without taxation) when collective action is required to successfully punish a leader. The key result is that the drop in the demand for accountability is less severe under taxation.

One way to test this prediction is through additional lab experiments that are similar to the model: this game is described in Table 11, and is a modified version of the original Tax and Grant games. It consists of one Leader and two Citizens who face a collective-action requirement if they wish to punish the Leader; however, the Citizens cannot communicate. The testable implications for the game would be that:

1. The average punishment threshold should be higher in the Tax game.

2. The average punishment threshold for both tax and grant groups should be lower than the comparable 2-player game in which no collective action is required.

3. This difference should be smaller for the Taxed treatments.

The first and second implications can be easily verified using the described games. The first implication can be tested using a difference-in-means between the Tax and Grant collective action games. To test the second implication, I can compare the difference-in-means between average punishment thresholds in 1) the 2-player Tax game vs. the 3-player Tax collective

action game, and 2) the 2-player Grant game vs. the 2-player Grant collective action game. Even here, however, I am uncertain about the power of the test: if the difference is relatively small, it will be difficult to gain sufficient statistical power. What is more difficult to test is the third implication: that the collective action problem is less severe under taxation. The primary concern is power, as a very large sample would be necessary to generate a sufficiently precise measure of the difference-in-difference. What is possible is to measure the direction of the effect. While this is less satisfactory, it is the most realistic option given my constraints.

There are also ways to test, outside of a lab setting, whether taxation increases citizens' willingness to particpate in collective action. Some of these are described in the conjoint analysis proposed above, in particular the follow-up questions regarding a respondents' self-reported willingness to take part in protets, meetings, or other types of action. Others are described below in the section on market vendors.

Collective Action and Mechanism Fine-Tuning Above, I described how the expressive benefit could be based in part on expressing disapproval of the government's behavior, and in part on successfully imposing some sort of cost on the government. Collective action games may be one way to separate the two possibilities. For example, some versions of the 3-player Collective Action games could be run in which the Citizen is always informed that the punishment was not successful. If this causes punishment thresholds to drop to zero, this suggests that successful punishment is important for citizens. If punishment thresholds remain positive, even if they are low, this suggests that at lesat some of the benefit is derived from simply voicing disapproval (which will still be communicated to the Leader).

6.2.3 Qualitative Data Collection: Market Vendors

Almost every small town in Uganda has a local market where locals can sell fruit, vegetables, meat, and other small goods. These markets are one of the few remaining sources of significant own-source revenue for local governments, who typically charge a fee for each stall. In 2012, a group of market women in Lira district led protests that used their status as taxpayers to demand increased public service, in particular better government maintenance of the market. Local markets provide an intriguing opportunity to examine taxation in Uganda, and to test some of the initial findings of this project in a different setting. Market vendors work in close proximity on a regular basis and have very similar economic interests: this gives them high

potential for collective action. Because most markets are situated in town centers, they are also physically closer to local government officials, again increasing their ability to demand accountability. However, the variation in fees across markets, and the degree to which vendors demand accountability, is not clear.

I propose to randomly select markets at the District and Subcounty level to develop a deeper understanding of how taxation works in practice, and under what circumstances taxation can create equilibrium shifts in public goods provision and accountability. While I am still developing this piece of the research, it will include the following pieces. Some of these will be collected from vendors directly, while others will rely on information from local government officials:

1. Descriptive Evidence
   - Information on levels of taxation, frequency of collection, and whether vendors negotiate with local officials regarding the level of fees.
   - Information about how taxes are collected (by government employees or contractors) and the degree of coercion in collection.
   - What services are provided in return for market fees
   - Whether vendors think of market fees as taxes or fee-for-service.
   - Whether vendors have ever witheld market fees due to poor service, or whether they have ever organized collectively to demand improved services.

2. Experimental Components
   - To be determined: possibly including the conjoint and fairness experiments described above.

6.3 Discussion

The additional laboratory and survey experiments described in this section will be implemented over a three-month period in 2013. They will allow me to more precisely identify the mechanism by which taxation makes citizens less tolerant of corruption, and to gather information on how the results from the laboratory experiments translate into other areas of political action. They will be supplemented by qualitative interviews with citizens and government officials at both the national and local level. These interviews will focus on the recent changes in taxation in Uganda and how they have affected citizen-government relations.

31

7 Conclusion

This paper has contributed to the literature on taxation and accountability in several ways. It provides new crossnational evidence that taxation and corruption are related, then shows that the existing mechanisms for this effect are not satisfactory in the context of developing countries, in particular sub-Saharan Africa. It then introduces and formalizes a new possible mechanism - that taxation activates stricter fairness norms, increasing the expressive benefit that individuals receive from imposing sanctions on a non-accountable leader. It then tests this mechanism through a set of novel laboratory experiments implemented in Uganda. The results of the experiments strongly support the theory; taxation creates a significant increase in the level of accountability citizens demand from leaders, and this effect is strongest among those with more experience paying taxes. Differences between these results and those of similar experiments that did not include the political framing suggest that the Tax and Grant games were successful in activating the relevant political norms, lending credibility to the external validity of the findings – qualitative evidence further supports this idea. Further data collection is needed, however, to fully understand and expand the results.

Together, these findings have methodological and substantive implications for the study of accountability. First, they 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. Second, 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 some sort of community contribution to external aid programs could encourage give aid beneficiaries more ownership over projects and, this paper suggests, make them more likely to hold local leaders accountable for how development funds are spent.

However, many questions remain. More work remains to be done to determine under what circumstances taxation will be sufficient to improve the equilibrium level of accountability provided by leaders. In particular, there is a need to explore the scope conditions for when taxation leads to accountability; when a high-tax, low-accountability equilibrium is sustainable; and when citizen pressure could lead to a decrease in taxation, rather than an increase in accountability. Future parts of this project will address these questions.

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Figures
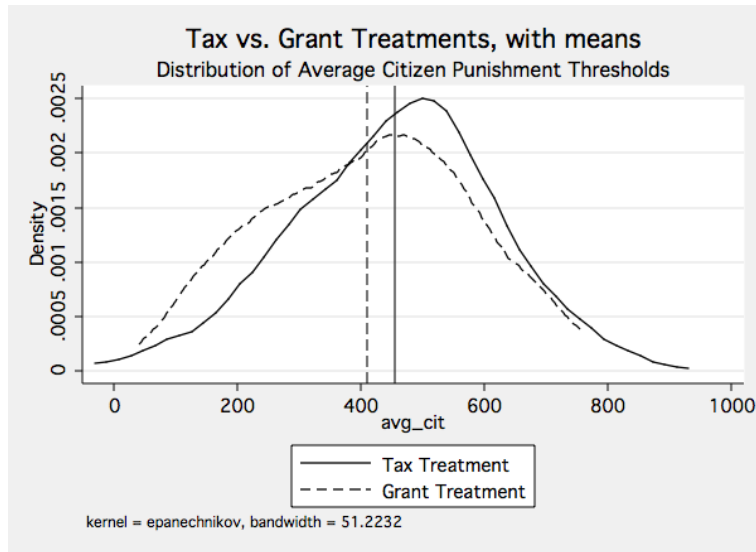
Figure 1: Density estimates for outcomes in Tax and Grant Games. Outcome based on 5-round average of punishment threshold for each "Citizen". Vertical lines show the mean for each group.
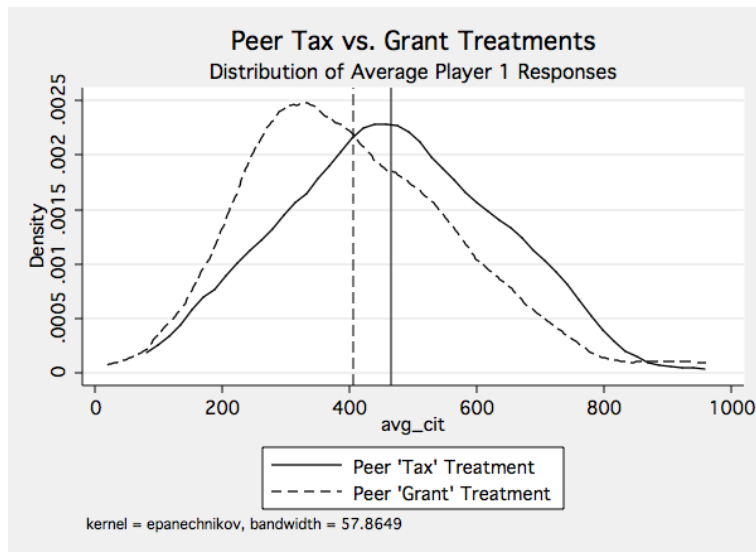
Figure 2: Density estimates for outcomes in Peer Tax and Peer Grant Games (non-political framing). Outcome based on 5-round average of punishment threshold for each "Player 1". Vertical lines show the mean for each group.

Tables

Table 1: Cross-national Evidence for Taxation's effect on Corruption

VARIABLES	(1) corruption	(2) corruption	(3) corruption	(4) corruption	(5) corruption	(6) corruption	(7) corruption
Taxation	-0.827**	-0.786**	-0.644**	-0.581*	-0.659**	-0.646*	-0.638*
	(0.357)	(0.313)	(0.280)	(0.301)	(0.326)	(0.326)	(0.325)
Log GDP pc		-0.593	-0.379	-0.378	-0.0309	-0.0271	-0.0207
		(0.388)	(0.593)	(0.592)	(0.658)	(0.658)	(0.657)
Growth, GDP pc			-0.000340	-0.000882	-0.00170	-0.00172	-0.00165
			(0.00477)	(0.00481)	(0.00498)	(0.00500)	(0.00499)
Democracy (dum)				0.191	0.196	0.192	0.188
				(0.123)	(0.121)	(0.132)	(0.132)
Population (log)					1.547	1.538	1.529
					(1.165)	(1.165)	(1.165)
Conflict (dum)						0.167**	0.168**
						(0.0708)	(0.0711)
Aid/Revenue							0.180
							(0.249)
Observations	993	817	725	725	725	725	725
Number of country	116	113	109	109	109	109	109

Robust standard errors in parentheses

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

Taxation is measured as non-trade taxes as a percent of revenue; corruption is a rescaled version of the CPI (0=least corrupt, 10=most corrupt). All specifications are OLS and include year and country fixed effects; standard errors are clustered at the country level.

Table 2: Timing of Tax & Grant Games

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

This table shows the stages of the Tax and Grant treatments for the Political and Peer experiments. For implementation purposes 1 money unit (MU) was set equal to 100 Ugandan shillings.

Table 3: Balance Tests: Political Tax & Grant Games

	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 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 meetings	0.218	0.214	0.004	0.939
Never go to meetings	0.231	0.214	0.016	0.735
Number groups belong to	0.782	0.750	0.032	0.770
Number groups lead	0.231	0.229	0.002	0.971
Registered to vote	0.519	0.579	-0.059	0.307
Voted last election	0.481	0.507	-0.027	0.650
Know name of MP and LC1	0.538	0.479	0.060	0.305
Know name of MP or LC1	0.859	0.843	0.016	0.698

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. Note: "LC1" refers to a village-level (or neighborhood) elected leader.

Table 4: Balance Tests: Peer Tax & Grant Games

	CitMean treat p=1	CitMean treat p=0	Difference	P Value
Male	0.663	0.695	-0.032	0.625
Age	22.029	23.352	-1.324	0.133
Can Write	0.873	0.885	-0.012	0.792
Can Read	0.890	0.893	-0.003	0.942
Speaks English	0.683	0.600	0.083	0.215
Years schooling	9.962	9.447	0.515	0.209
Post Secondary Ed	0.019	0.057	-0.038	0.151
Wage (past 4 wks)	111.067	116.248	-5.181	0.848
Head household	0.311	0.371	-0.061	0.358
Paid income tax	0.106	0.124	-0.018	0.684
Community Leader	0.029	0.059	-0.030	0.288
Speak at meetings	0.229	0.295	-0.067	0.274
Never go to meetings	0.276	0.219	0.057	0.340
Number groups belong to	0.800	0.971	-0.171	0.185
Number groups lead	0.286	0.362	-0.076	0.385
Registered to vote	0.538	0.619	-0.081	0.240
Voted last election	0.452	0.529	-0.077	0.269
Know name of MP and LC1	0.524	0.581	-0.057	0.407
Know name of MP or LC1	0.790	0.867	-0.076	0.144

This table shows the mean covariate values for Player 1s in the Peer (non-Political) Tax and Grant treatments. "Difference" and P-value calculated using a difference-of-means test.

Table 5: Political Tax & Grant Results: Average Citizen Punishment Threshold (OLS)

VARIABLES	(1) Bivar	(2) Bivar	(3) Ctrls1	(4) Ctrls2	(5) Ctrls3
Taxation	54.18***	54.25**	54.04**	57.91**	56.37**
	(19.10)	(22.44)	(21.29)	(24.30)	(21.52)
Constant	408.3***	413.2***	77.88	128.6	181.8
	(13.86)	(24.32)	(193.0)	(260.4)	(181.9)
Controls	N	N	Y	Y	Y
FE	N	Y	Y	Y	Y
Observations	296	296	266	234	272
R^2	0.027	0.089	0.150	0.197	0.142

Standard errors in parentheses

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

This table shows the main results of the politically-framed tax and grant games. The dependent variable is the average Citizen punishment threshold for an individual. All specifications are OLS; Columns 2-5 include enumerator and site fixed effects, and Columns 3-5 include different subsets of controls derived from a survey of respondents (see Appendix A for details).

Table 6: Treatment Heterogeneity in Political Tax & Grant Games (OLS)

VARIABLES	(1) Gender	(2) Gender	(3) Income	(4) Income	(5) Age	(6) Age	(7) All	(8) All
Taxation	69.39***	61.72***	74.54**	79.54**	85.34**	95.41***	119.4***	115.4***
	(21.72)	(19.84)	(31.58)	(28.57)	(34.07)	(32.67)	(32.61)	(28.25)
Female	14.62	-24.77					17.95	-16.82
	(14.76)	(25.27)					(15.58)	(25.44)
Taxation*Female	-45.98	-20.46					-67.57	-47.25
	(50.23)	(53.36)					(44.90)	(46.95)
No Income			49.94	43.22			39.01	23.03
			(28.81)	(38.86)			(31.24)	(41.95)
Taxation*No Inc			-51.62	-53.00			-21.47	-13.08
			(51.46)	(44.60)			(57.26)	(52.70)
Teenager					41.42***	58.67*	32.90**	59.17*
					(11.58)	(31.53)	(14.54)	(31.25)
Taxation*Teen					-71.78*	-87.22**	-83.02*	-92.33*
					(39.05)	(39.96)	(39.76)	(43.80)
Constant	406.6***	213.2	395.4***	144.6	398.6***	77.61	379.3***	93.41
	(26.14)	(178.6)	(26.55)	(194.0)	(26.53)	(199.4)	(30.30)	(213.3)
Controls	N	Y	N	Y	N	Y	N	Y
FE	Y	Y	Y	Y	Y	Y	Y	Y
Observations	293	272	296	272	294	272	292	272
R^2	0.094	0.142	0.099	0.149	0.102	0.158	0.117	0.164

Robust standard errors in parentheses

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

All specifications are OLS. "No income" and "Teen" are dummy variables for respondents who reported no wages in the past 4 weeks, or who are ages 18-20, respectively. The first column for each type of heterogeneity reports a bivariate regression with fixed effects; the second column includes a number of economic and demographic controls. Errors are clustered at the session level in all regressions.

Table 7: Peer Tax & Grant Results: Average Citizen Punishment Threshold (OLS)

VARIABLES	(1) Bivar	(2) Bivar	(3) Ctrls1	(4) Ctrls2	(5) Ctrls3
Peer 'Tax'	59.81***	63.85**	51.69	42.27	50.25
	(22.74)	(28.74)	(35.13)	(30.14)	(33.68)
Constant	405.9***	428.0***	654.8***	765.7***	597.0***
	(16.08)	(35.64)	(150.8)	(191.9)	(150.2)
Controls	N	N	Y	Y	Y
FE	N	Y	Y	Y	Y
Observations	210	210	190	175	196
R^2	0.032	0.082	0.202	0.251	0.132

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

Standard errors in parentheses

This table shows the main results of the Peer Tax and Grant games, in which a non-political framing was used. The dependent variable is the average Player 1 punishment threshold for an individual. All specifications are OLS; Columns 2-5 include enumerator and site fixed effects, and Columns 3-5 include different subsets of controls derived from a survey of respondents (see Appendix A).

Table 8: Peer Tax & Grant Results: Pooled Citizen Punishment Thresholds (OLS)

VARIABLES	(1) Bivar	(2) Bivar	(3) Ctrls1	(4) Ctrls2	(5) Ctrls3
Peer Tax = 1	48.05***	51.88***	36.44*	37.41*	38.36*
	(12.02)	(18.62)	(20.15)	(20.14)	(19.52)
Constant	410.1***	426.1***	630.8***	695.4***	554.7***
	(8.489)	(23.03)	(149.3)	(159.1)	(137.8)
Controls	N	N	Y	Y	Y
FE	N	Y	Y	Y	Y
Observations	1303	1303	1182	1092	1217
R^2	0.012	0.038	0.079	0.102	0.054

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

Standard errors in parentheses

This table reports the same regressions as Table 7, but the dependent variable is the punishment threshold for each citizen-round, rather than the 5-round average.

Table 9: Treatment Heterogeneity in the Peer Tax & Grant Games (OLS)

VARIABLES	(1) Gender	(2) Gender	(3) Income	(4) Income	(5) Age	(6) Age	(7) All	(8) All
Peer 'Tax'	73.75*	66.91	84.95*	65.48	73.34**	60.72	104.4**	92.44*
	(37.78)	(38.84)	(39.48)	(48.15)	(27.78)	(37.25)	(40.63)	(46.33)
Female	-9.464	-2.395					3.884	4.201
	(31.88)	(37.14)					(28.04)	(38.50)
Peertax*Female	-29.17	-55.82					-47.92	-62.97
	(38.73)	(39.59)					(34.59)	(36.66)
No Income			88.13*	64.76			81.08	65.84
			(40.48)	(73.34)			(51.64)	(76.83)
Peertax*NoInc			-50.25	-32.13			-38.39	-16.20
			(45.59)	(57.85)			(64.13)	(68.01)
Teenager					52.06	-6.085	24.62	-9.425
					(31.29)	(43.66)	(45.61)	(49.10)
Peertax*Teen					-34.87	-28.41	-26.20	-40.50
					(44.23)	(52.77)	(62.76)	(63.61)
Constant	429.7***	632.2***	393.0***	553.6***	405.5***	678.2***	383.6***	693.0***
	(38.99)	(148.8)	(37.50)	(145.9)	(38.14)	(166.1)	(38.48)	(148.2)
Controls	N	Y	N	Y	N	Y	N	Y
FE	Y	Y	Y	Y	Y	Y	Y	Y
Observations	209	196	210	196	209	196	208	196
R^2	0.088	0.138	0.121	0.144	0.092	0.135	0.129	0.156

Robust standard errors in parentheses

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

"No income" and "Teen" are dummy variables for respondents who reported no wages in the past 4 weeks, or who are ages 18-20, respectively. The first column for each type of heterogeneity reports a bivariate regression with fixed effects; the second column includes a number of economic and demographic controls. Errors are clustered at the session level in all regressions.

Table 10: Stages for the Tax and Grant Games with Third-Party Punishment

Stages	Tax Game with 3PP	Grant Game with 3PP
1	Citizen 1 receives a wage of 10 MU; Citizen 2 (Enforcer) receives a stake of 5 MU.	Citizen 1 receives a wage of 5 MU; Citizen 2 (Enforcer) receives a stake of 5 MU.
2	Citizen 1 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 Citizen 1.	
4	Citizen 2 (Enforcer) observes 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).	

This table shows the stages for a proposed set of experiments in which a third party has the option of punishing the leader. This is designed to differentiate between two possible mechanisms - loss aversion and stricter fairness norms.

Table 11: Stages for the Three-player Tax and Grant Games

Stages	Tax Game with 3PP	Grant Game with 3PP
1	Each Citizen receives a wage of 10 MU.	Each Citizen receives a wage of 5 MU.
2	Each Citizen is taxed 5 MU; this is doubled and passed to the Leader as the group fund of 20 MU.	The Leader is given 20 MU as the group fund.
3	The Leader allocates the 20 MU between himself and the Citizens. The Citizens split equally the amount passed to them.	
4	Each Citizen independently observes the Leader's decision and decides whether to pay 1 MU to attempt to punish the Leader. have enumerators remove 4 MU from the Leader (no one receives the money taken in punishment).	
5	If both Citizens punish the Leader, enumerators remove 8 MU from the Leader (no one receives the money taken in punishment). If only 1 Citizen punishes, that Citizen loses 1 MU, but the Leader does not lose any money.	

This table shows the stages for a proposed set of experiments in which two citizens must coordinate to punish the leader. However, the citizens cannot communicate during the game. This is designed to test the effect of taxation on the potential for collective action by citizens.

A   Covariates

The table below shows the variables include as controls in Columns 3-5 of the main regressions.

Variable description	Ctrls1	Ctrls2	Ctrls3
Age	Y	Y	Y
Age Squared	Y	Y	Y
Agree that it's ok for a civil servant to ask for a bribe	.	Y	.
Trust other community members	.	Y	.
Agree that community works together well	.	Y	.
Would contact elected official about a problem in community	.	Y	.
Years of schooling	Y	Y	Y
Speaks good English	Y	Y	.
Thinks last elections were free and fair	.	Y	.
Trusts the government	.	Y	.
Head of household	Y	Y	Y
Community leader	Y	Y	Y
High literacy (in any language)	Y	Y	Y
Male	Y	Y	Y
Does not attend community meetings	Y	Y	.
Member of how many groups	Y	Y	.
Leader of how many groups	Y	Y	.
Paid income tax in 2012	Y	Y	.
Knows name of MP and LC1	Y	Y	Y
Knows name of MP or LC1	Y	Y	.
Registered to vote	Y	Y	.
Often speaks at community meetings	Y	Y	.
Has some post-secondary education	Y	Y	.
Estimated percent of income spent on VAT	.	Y	.
Voted in last election	Y	Y	Y
Agree that it's ok to get paid for your vote	.	Y	.
Wages in past 4 weeks (in 1,000s of UGX)	Y	Y	Y
Can write easily in any language	Y	Y	.

B Modeling Collective Action

My work thus far has shown that that taxation affects citizens' preferences for accountability, making them more likely to punish non-accountable behavior by political leaders. In particular, I argue that taxation activates a stricter fairness norm, increasing the expressive benefit citizens receive from enacting sanctions on a leader.

This finding implies that taxation may affect a group of citizens' ability to solve the collective action problem. Earlier work (Olson) has argued that *private benefits* to participants should help overcome free-riding. Expressive benefits, as a form of instrinsic motivation, are one way to provide private benefits that are impossible to gain without taking part in the action. If taxation increases these benefits, we may see a higher degree of collective action when citizens are taxed. In particular, if taxation activates a stricter fairness norm across the entire population, it will change citizens' beliefs about the relatively likelihood that other citizens will act, alleviating the collective action problem.

This section formalizes this intuition using a simple game involving three individuals. The primary assumption in this game is that the expressive benefit citizens receive is contingent on the sucess of leader punishment: if a citizen attempts to punish the leader and fails, the citizen does not gain the expressive benefit. This assumption is discussed further below. The end of this section discusses some possible ways to test the theory's predictions.

B.1 Model basics

I now modify the model in the body of the paper to incorporate the potential for collective action and free-riding. Assume that there is a (micro) state consisting of one leader and two citizens. As above, the government collects a proportial tax, t, on the citizen's income, y_i. Total government revenue is T (from taxation or other sources); the leader must allocate it between a public good, G (valued by the citizens), and a private good, x (valued by the leader).

After observing the government's budget allocation decision, each citizen simultaneously decides whether to pay a cost, c, to sanction the government. If *both* citizens sanction the government, the government faces a cost q, and each citizen gets a benefit, $\beta_i(t)$, that is scaled by the level of corruption, $\frac{T-G}{T}$. If only one citizen punishes, that citizen still incurs the cost c but the government is not punished and the citizen does not receive the expressive benefit.[31]

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[31] Future analysis will relax this assumption. For example, an individual could take part in an unsuccessful protest but still derive utility from expressing his/her anger to the government, or an individual can vote for a losing candidate

There are two types of citizens. With probability $p \in \{0, 1\}$, a citizen has high expressive benefit (β_H), and has low expressive benefit (β_L) with probability $1 - p$. Note that β is independent of any anticipated future economic benefit derived from punishing the leader; it is purely an expressive benefit derived from sanctioning a leader's performance. We now have the complete utility function for a citizen:

$$U_{citizen} = y_i(1 - t) + G + s_i[-c + s_j * (\beta_i(\frac{T - G}{T}))] \tag{10}$$

Where β_i is the individual's expressive benefit of sanctioning corruption. As discussed above, the cost to the citizen of taking action to sanction the government is c. Finally, $s_i \in \{0, 1\}$ is the decision of a citizen whether to sanction the leader. Note that the expressive benefit is only received if $s_j = 1$; that is, if the other citizen also punishes.

B.2 Solving without collective action

In the absence of the collective action requirement, the citizen's problem is the same as in the previous, 2-player version of the model, and the citizen's punishment threshold is :

$$G_i^* = T(1 - \frac{c}{\beta_i}) \tag{11}$$

Note that each type $h \in \{L, H\}$ has a unique G^* based on the individual's β_i.

B.3 Solving with the collective action requirement.

Assume that each Citizen does not know the type, β_i, of his fellow citizen, but knows that it is H with probability p. I solve for each citizen's equilibrium punishment threshold, $\hat{G}_i(\beta)$. In particular, I solve for an equilibrium in which each type has a unique punishment threshold, and $\hat{G}(\beta_H) > \hat{G}(\beta_L)$.

First, consider the Low type. A citizen of this type knows with certainty that his fellow citizen will have a preference for punishment at least as high as his own. In this case, there should be no collective action problem, and the Low type's punishment threshold should be

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but still feel pride in standing up for her beliefs.

unchanged from the case without collective action:

$$\hat{G}_L = G_L^* = T(1 - \frac{c}{\beta_L}). \tag{12}$$

Now, consider the High type. This citizen knows he is playing another High type with probability p, and thus for all $G > \hat{G}_L$ his expected utility from punishment becomes:

$$-c + p * (\beta_H(\frac{T - G}{T})) \tag{13}$$

At equilibrium, the citizen must be indifferent between punishing and not punishing at $\hat{G}_H$. Setting the above equation equal to zero and solving, we find that:

$$\hat{G}_H = T(1 - \frac{c}{p\beta_H}). \tag{14}$$

Note that the collective-action punishment threshold $\hat{G}_H$ is strictly lower than the previous punishment threshold G_H^* for the high type.[32]

This provides the first result: that higher types will be more adversely affected by collective action problems. This is counterintuitive, as we typically suppose that those with the strongest preferences are most likely to take part in collective action. I discuss below some possible causes for this, and how the model might need to be adapated.

B.4   Adding Taxation

I assume that, for all $t > 0$, $\beta_H(t) = \alpha_H\beta_H$, and $\beta_L(t) = \alpha_L\beta_L$, where $\alpha > 1$ for both types.

To show that taxation alleviates the collective action problem, I want to show the following for at least one type of citizen:

$$G_0^* - \hat{G}_0 > G_t^* - \hat{G}_t \tag{15}$$

This shows that the drop in accountability due to the collective action problem is less severe when citizens are being taxed.

First, consider the Low type. I showed above that there is no collective action problem for

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[32]This assumes that solving Equation 14 produces $\hat{G}_H > \hat{G}_L$. If this is not the case, then the equilibrium will be $\hat{G}_H = \hat{G}_L$.

this type: taxation does not alter this. While it is true that that $G_L^*(t) > G_L^*(0)$, we also have

$$G_0^* - \hat{G}_0 = 0 = G_t^* - \hat{G}_t \tag{16}$$

It is for the High type that taxation will reduce the collective action problem. Without taxation, we have that

$$G_H^*(0) - \hat{G}_H(0) = T(1 - \frac{c}{\beta_H}) - T(1 - \frac{c}{p\beta_H}) = \frac{c}{\beta_H} * \frac{1-p}{p} \tag{17}$$

With taxation, this changes to

$$G_H^*(t) - \hat{G}_H(t) = T(1 - \frac{c}{\alpha_H\beta_H}) - T(1 - \frac{c}{p\alpha_H\beta_H}) = \frac{c}{\alpha_H\beta_H} * \frac{1-p}{p} \tag{18}$$

As $\alpha_H > 1$, we know that

$$\frac{c}{\beta_H} * \frac{1-p}{p} > \frac{c}{\alpha_H\beta_H} * \frac{1-p}{p} \tag{19}$$

And thus taxation reduces the drop in accountability due to collective action.

B.5 Other Equilibria

Note that other equilibria are possible. In particular, if all citizens decide to never punish the Leader, then no citizen can profitably deviate and the result is a total lack of accountability. In fact, for all $G < G_L^*$, there is an equilibrium in which all citizens, of both types, punish the Leader if he provides less than G, and no citizen will wish to deviate.

However, if citizens receive at least some expressive benefit *even when the attempt at punishment fails*, this is no longer an equilibrium, as some types will be willing to express their disapproval attempt to punish at least the worst cases of corruption even when they believe their fellow citizen will not. This will be developed more in future versions of the model.

C Additional Tables & Figures
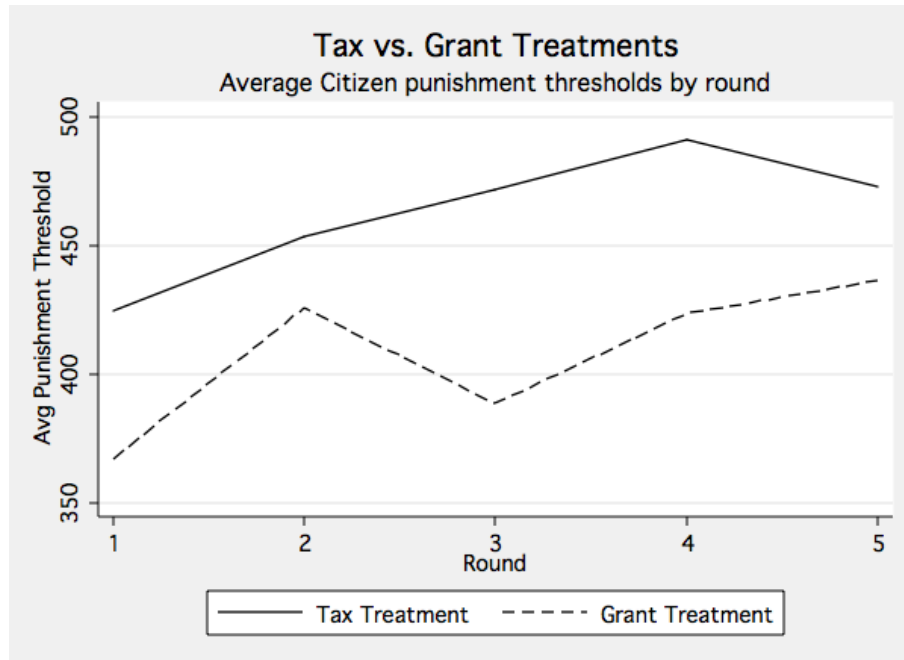
This figure shows the average Citizen punishment threshold for the Tax and Grant Games, by round. While there is variation across the rounds, Tax game is consistently higher than the Grant game.

Table 12: Tax V Grant: Ordered Probit with FE, clustered SE

	(1) Bivar	(2) Bivar	(3) Ctrls1	(4) Ctrls2	(5) Ctrls3
Taxation	0.326**	0.334**	0.357**	0.348**	0.369**
	(0.16)	(0.15)	(0.15)	(0.14)	(0.16)
Controls	N	N	Y	Y	Y
FE	N	Y	Y	Y	Y
Adj. R-squared	296	296	272	266	234

* p¡0.10, ** p¡0.05, *** p¡0.01

This table shows analysis similar to that of Table 5, but using an ordered probit regression instead of OLS.

Table 13: Tax V Grant: Pooled OLS with FE, clustered SE

VARIABLES	(1) Bivar	(2) Bivar	(3) Ctrls1	(4) Ctrls2	(5) Ctrls3
Taxation	54.57***	55.12***	54.79***	57.12***	54.61***
	(19.16)	(18.62)	(19.09)	(20.76)	(16.03)
Constant	408.3***	414.0***	71.51	120.4	345.6**
	(14.17)	(25.65)	(193.2)	(219.1)	(155.4)
Controls	N	N	Y	Y	Y
FE	N	Y	Y	Y	Y
Observations	1478	1478	1321	1161	1695
R^2	0.016	0.052	0.085	0.115	0.059

Robust standard errors in parentheses

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

This table shows analysis similar to that of Table 5, but with a different dependent variable. Instead of creating a five-round average of each Citizen's responses, the five rounds are pooled; a datapoint is the punishment threshold in a single Citizen-round. Standard errors are clustered at the respondent level. Specifications are otherwise as in Table 5.

Table 14: Tax V Grant: Pooled ordered probit with FE, clustered SE

	(1) Bivar	(2) Bivar	(3) Ctrls1	(4) Ctrls2	(5) Ctrls3
Taxation	0.260***	0.265***	0.272***	0.280***	0.261***
	(0.09)	(0.09)	(0.10)	(0.10)	(0.08)
Controls	N	N	Y	Y	Y
FE	N	Y	Y	Y	Y
Observations	1478	1478	1321	1161	1695

* p¡0.10, ** p¡0.05, *** p¡0.01

This table shows analysis similar to that of Table 13, but using ordered probit instead of OLS.